

# HIGHER EDUCATION AND RESEARCH FACTS AND FIGURES

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UNIVERSITIES  
AUSTRALIA



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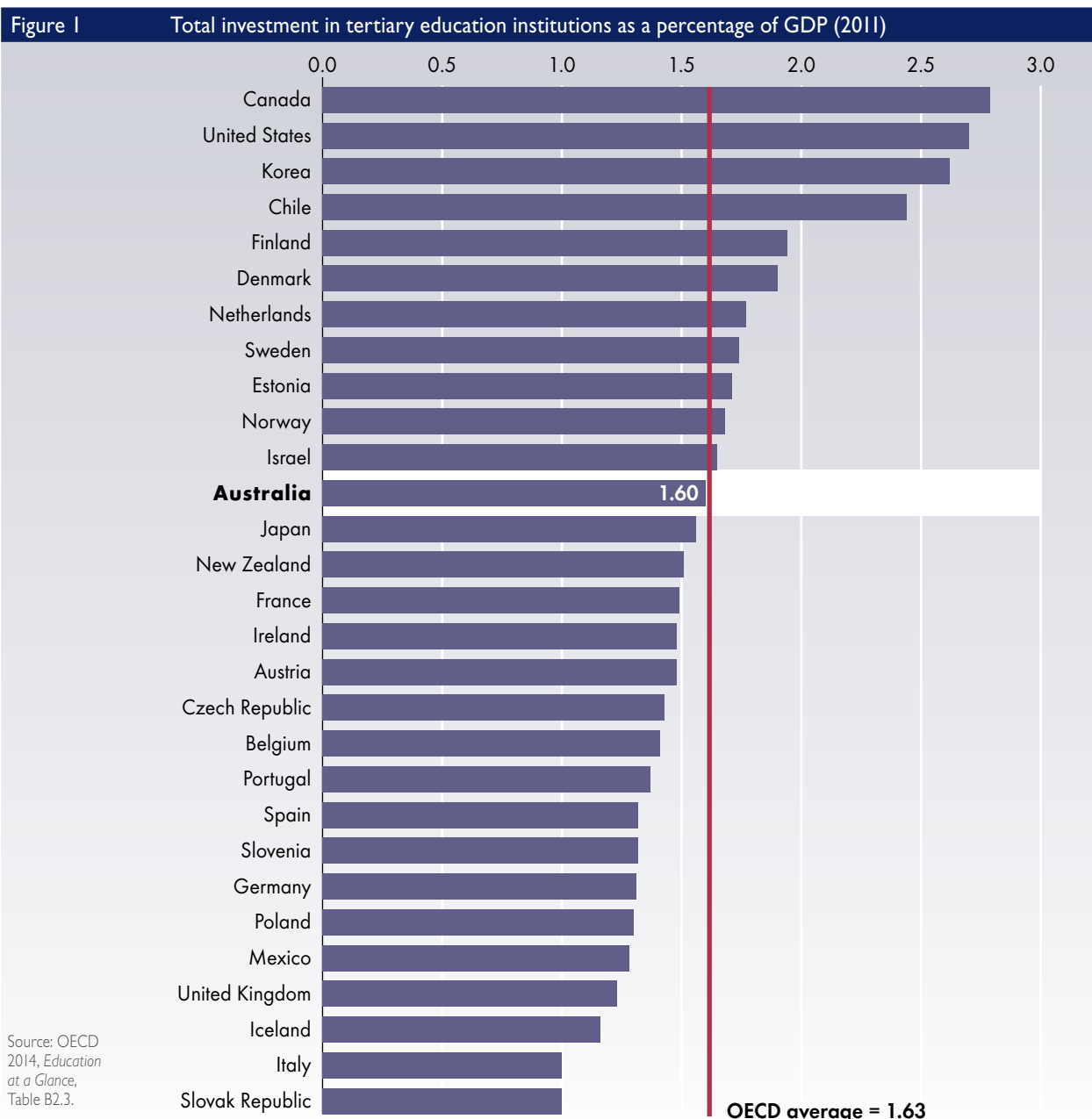
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# I Overall investment in higher education

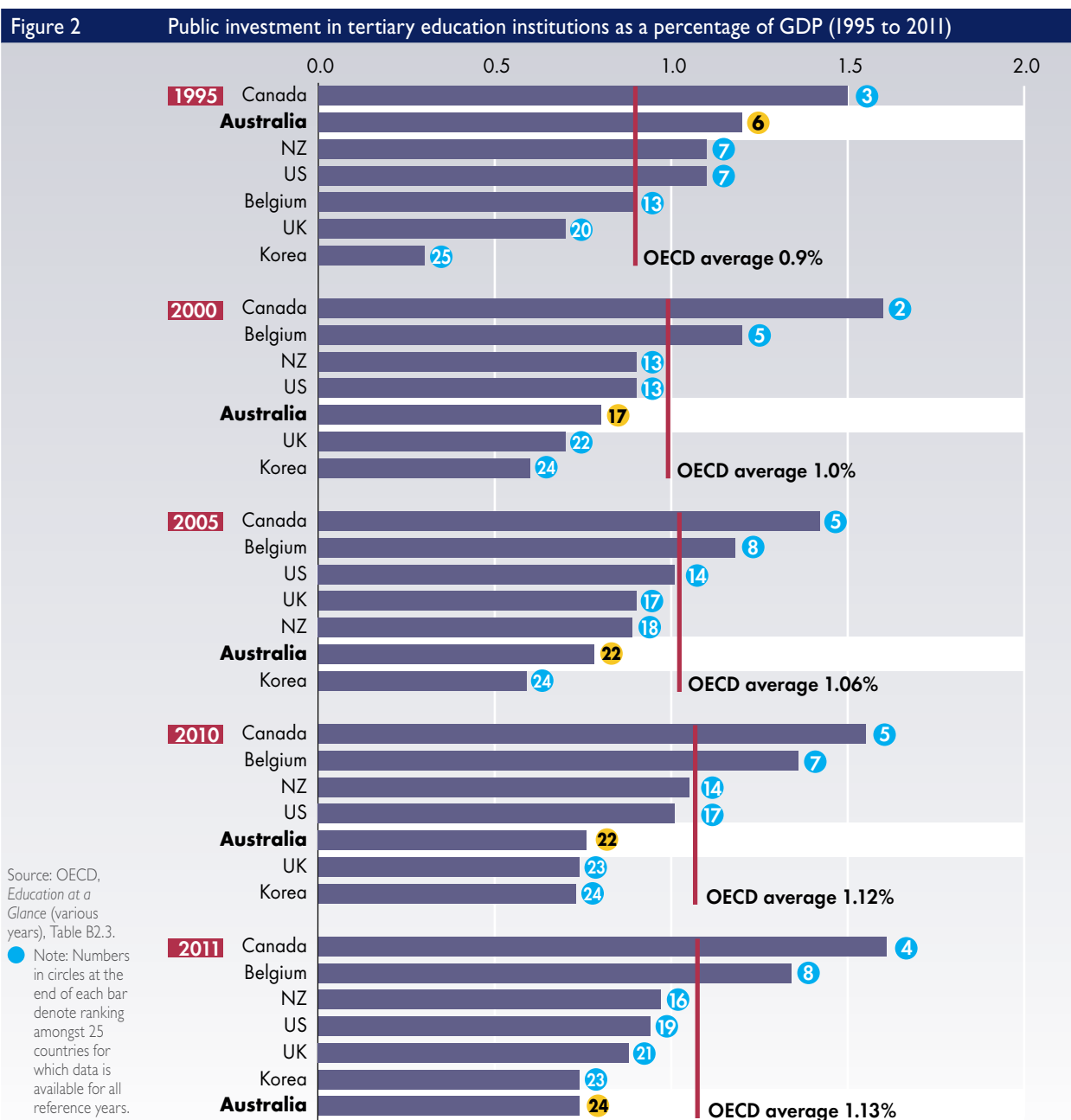
In 1995, Australia's total investment (public and private) in tertiary education institutions as a share of GDP was above the OECD average and the 8th highest overall. By 2011 it was below the OECD average and 12th highest overall.



In 2011, Australia's public investment in tertiary education institutions as a share of GDP was amongst the lowest in the OECD and private investment in tertiary education institutions amongst the highest in the OECD.

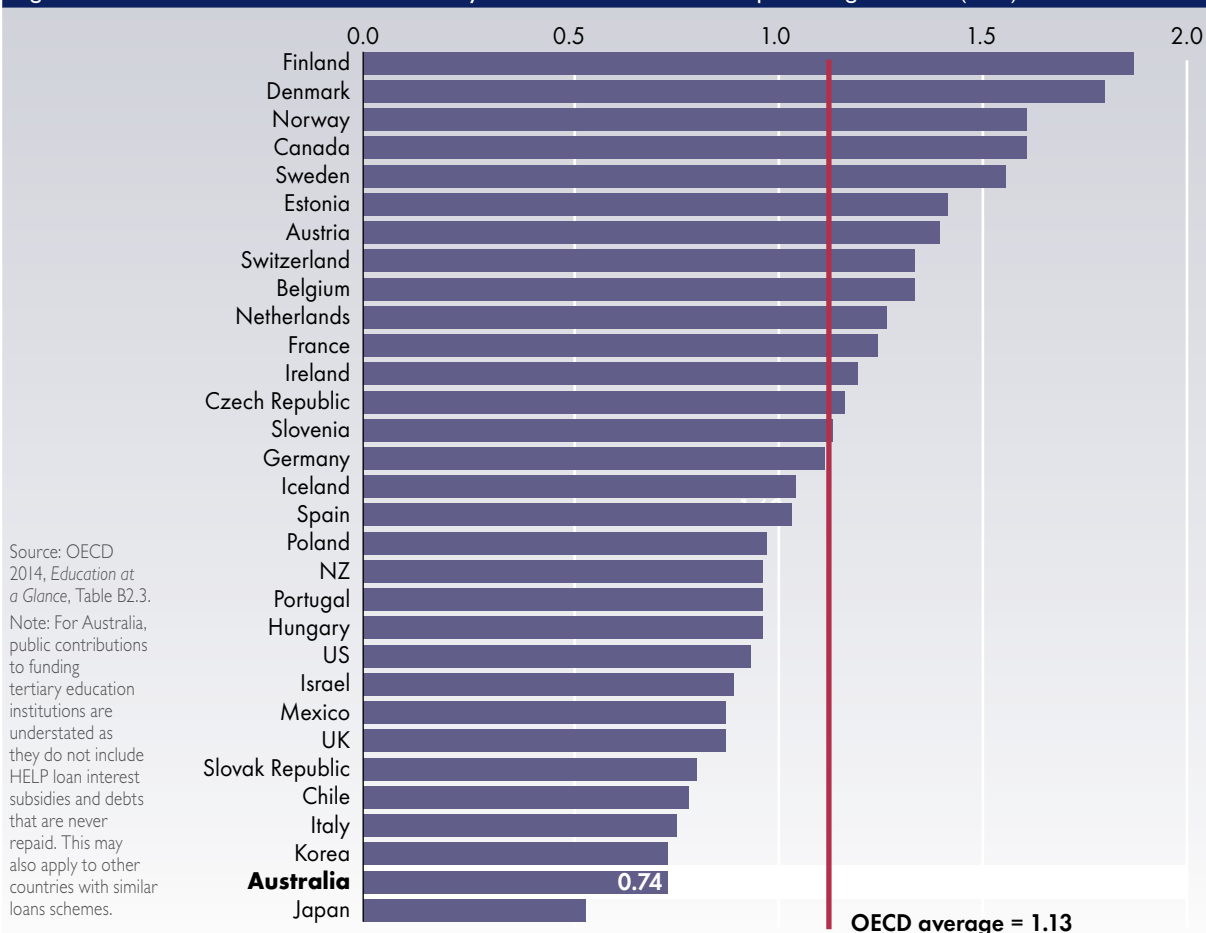
Among the 25 OECD countries for which data has been available consistently since 1995, Australia has dropped from having the 6th highest level of public investment to the 2nd lowest level of public investment in tertiary education institutions as a share of GDP. In 1995, Australian public investment in the tertiary education institutions was 1.2 per cent of GDP and in 2011 it was 0.74 per cent of GDP.

The OECD charts in Figure 2 to Figure 4 are for tertiary education and cover both the higher education and vocational education sectors. Private investment includes fees paid by international students. Public investment is understated as it does not include Higher Education Loan Program (HELP) costs (interest subsidies and debts not repaid) and private investment is overstated as it includes student fees paid by the Australian Government under HELP even if the HELP loan is not repaid. This is likely to apply to all countries with loans schemes similar to HELP.

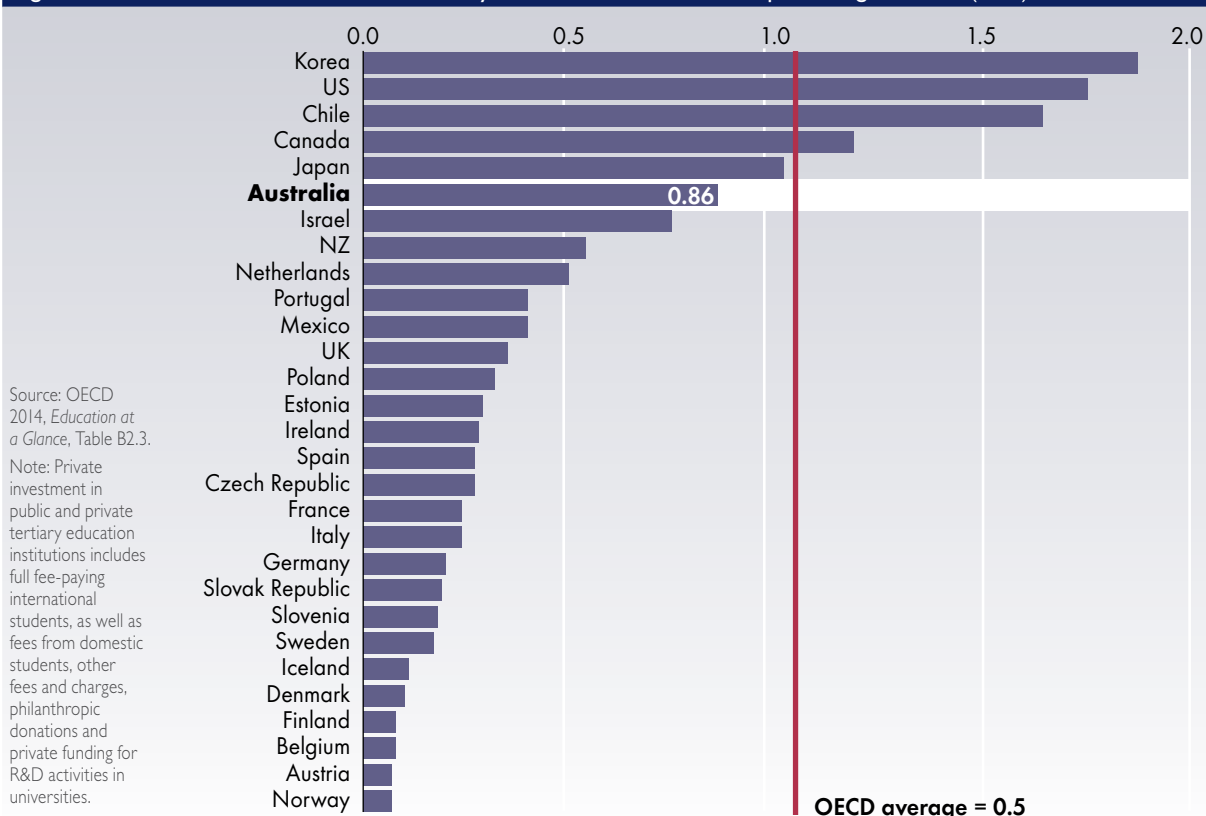




**Figure 3** Public investment in tertiary education institutions as a percentage of GDP (2011)



**Figure 4** Private investment in tertiary education institutions as a percentage of GDP (2011)



Public investment in tertiary education as a share of GDP has been fairly stable in recent years, despite the introduction of the demand driven funding system in higher education. The Australian Government's 2007, 2010 and 2015 Intergenerational Report (IGR) all indicate that Australian Government spending on higher education and vocational education and training (VET) is around 0.8 per cent of GDP.

The 2015 IGR indicates that the Australian Government is proposing that its spending on higher education and VET be reduced from 0.8 per cent of GDP to 0.4 per cent. This reflects the impact of the proposed higher education reforms.

The 2015 IGR also indicates that, in the long term, Australian Government spending on all education will be reduced to around 1 per cent of GDP, down from the 1.9 per cent projected in the 2010 IGR. This decline in education spending is to account for around half of the reduction in total government outlays. These outlays are to be reduced to around 25 per cent of GDP from the 27 per cent projected in the 2010 IGR.

Table I		Projections of government spending on education in IGR Reports (per cent of GDP)									
		2009-10	2014-15	2019-20	2024-25	2029-30	2034-35	2039-40	2044-45	2046-47	2049-50
HE and VET spending (a)	2007 IGR (b)	0.8		0.8		0.8		0.8		0.8	
	2010 IGR	0.9		0.7		0.8		0.8		0.8	
	2015 IGR		0.8		0.6		0.6		0.5		0.4
Total education spending	2007 IGR (b)	1.8		1.7		1.7		1.7		1.7	
	2010 IGR	2.6		1.8		1.9		1.9		1.9	
	2015 IGR		1.7		1.6		1.4		1.2		1.0
Total government spending	2007 IGR (b)	23.9		24.4		25.8		27.2		28.1	
	2010 IGR	26.0		23.0		24.2		25.6		27.1	
	2015 IGR		25.0		24.1		23.9		24.2		25.1

- a Higher Education and Vocational Education and Training figures do not take into account the significant increase in lending to students through the higher education and vocational education and training loan schemes.
- b As revised in 2010 to take into account the methodological changes to the System of National Accounts (SNA) from SNA93 to SNA08 by the ABS in December 2009.

In 2014, total operating revenue for Australian universities was \$27.1 billion, compared to \$18.4 billion in 2004.

This revenue is sourced primarily from government grants and student fees and contributions. In 2004, 80 per cent of total university revenue came from these two sources. In 2014, this was 84 per cent.

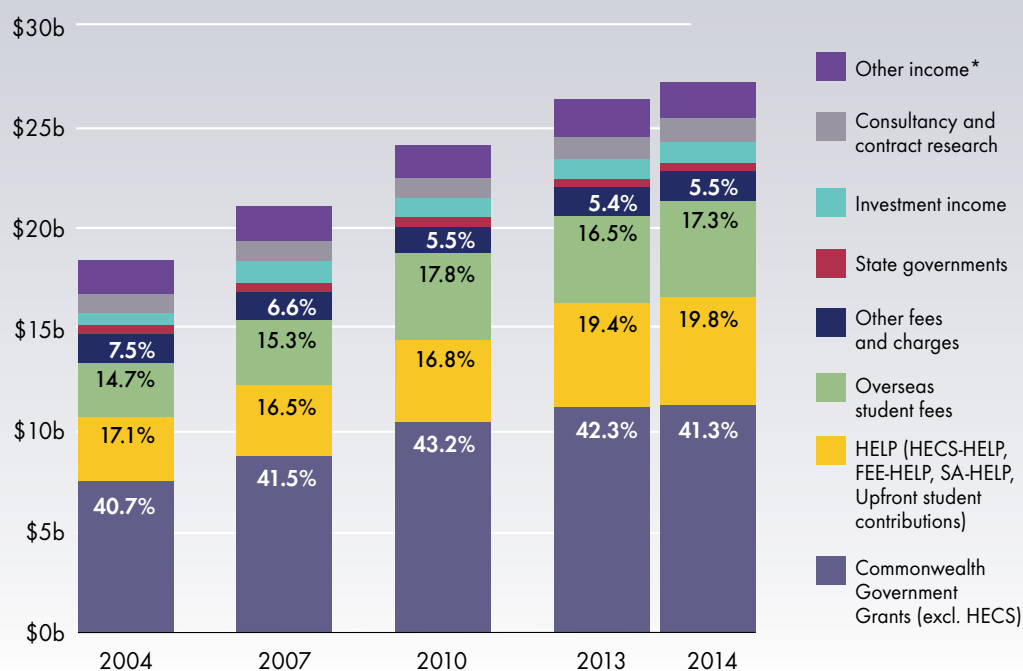
State governments are providing a declining share of revenue. Investment income has increased in its importance. Consultancy and contract research remains important.

This aggregate picture is likely to mask considerable variation between universities. For example there are significant differences in the level of overseas fee income between universities.

Details on the deflator used to produce times series in constant dollars (real revenue and funding amounts) for the analysis in this paper are contained in Appendix A.

**Figure 5** Sources of university revenue (in 2014 constant dollars)

Source: Department of Education and Training, *Financial Reports of Higher Education Providers* (various years), excluding BIITE—Batchelor Institute of Indigenous Tertiary Education, and VET activity for dual sector universities.  
Note: Data are not available for Bond University. Other income includes royalties, trademarks and licences and the share of net result of associates and joint ventures accounted for using the equity method.



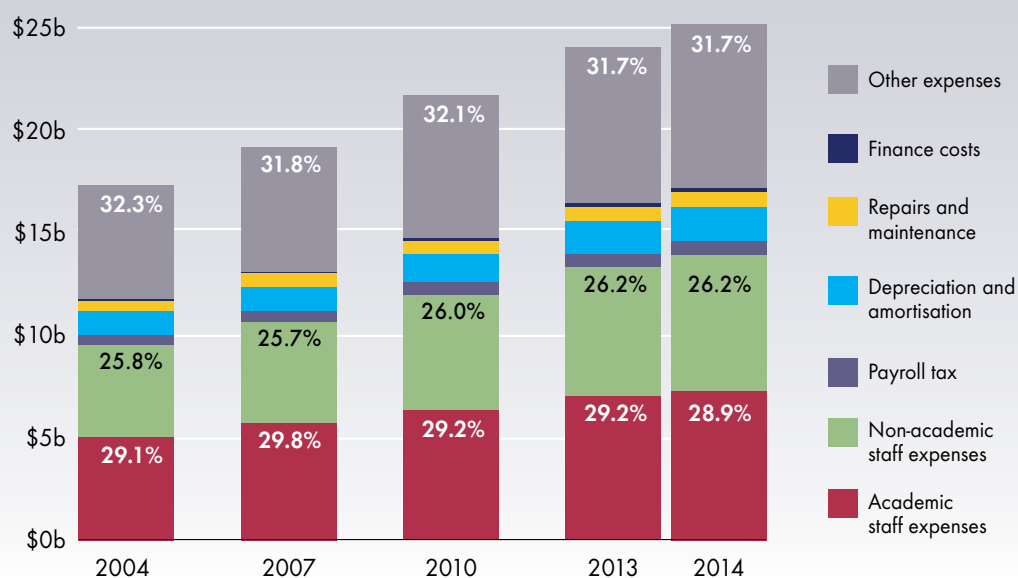
Australian universities' operating expenses have grown broadly in line with revenue growth, with total operating expenses increasing from \$17.4 billion in 2004 to \$25.3 billion in 2014. Changes in the proportion of expenditure on different expense categories have been relatively small.

The share of expenditure spent on staff (excluding payroll tax) has remained at around 55 per cent between 2004 and 2014.

Around 10 per cent of university budgets are devoted to depreciation and repairs and maintenance.

**Figure 6** Categories of university expenditure (in 2014 constant dollars)

Source: Department of Education and Training, *Financial Reports of Higher Education Providers* (various years), excluding BIITE and VET activity for dual sector universities.  
Note: Data are not available for Bond University. Other expenses includes impairment of assets, investment losses and deferred superannuation expenses.

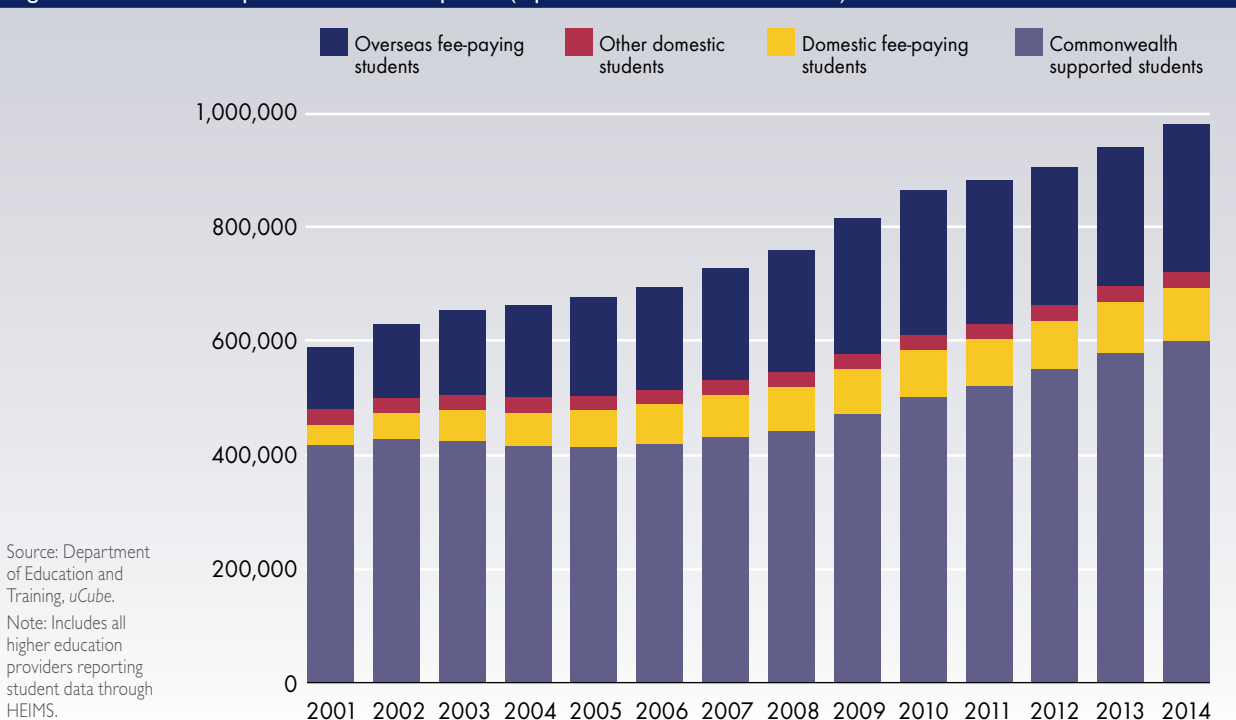


## 2 Providing students with a higher education

Most domestic students undertake their higher education with 'Commonwealth support'. Commonwealth supported student places are funded by a specified level of government subsidy and a student contribution amount set by the Australian Government. The number of these places and their funding arrangements are the major determinant of the opportunity for Australians to undertake a university education.

The total number of student places in higher education increased by almost 70 per cent between 2001 and 2014, from around 588,000 places to more than 977,000. While the number of Commonwealth supported places grew over this period, their share of all places declined from 71 per cent to 61 per cent. Overseas fee-paying places increased their share from less than 20 per cent in 2001 to more than 25 per cent in 2014.

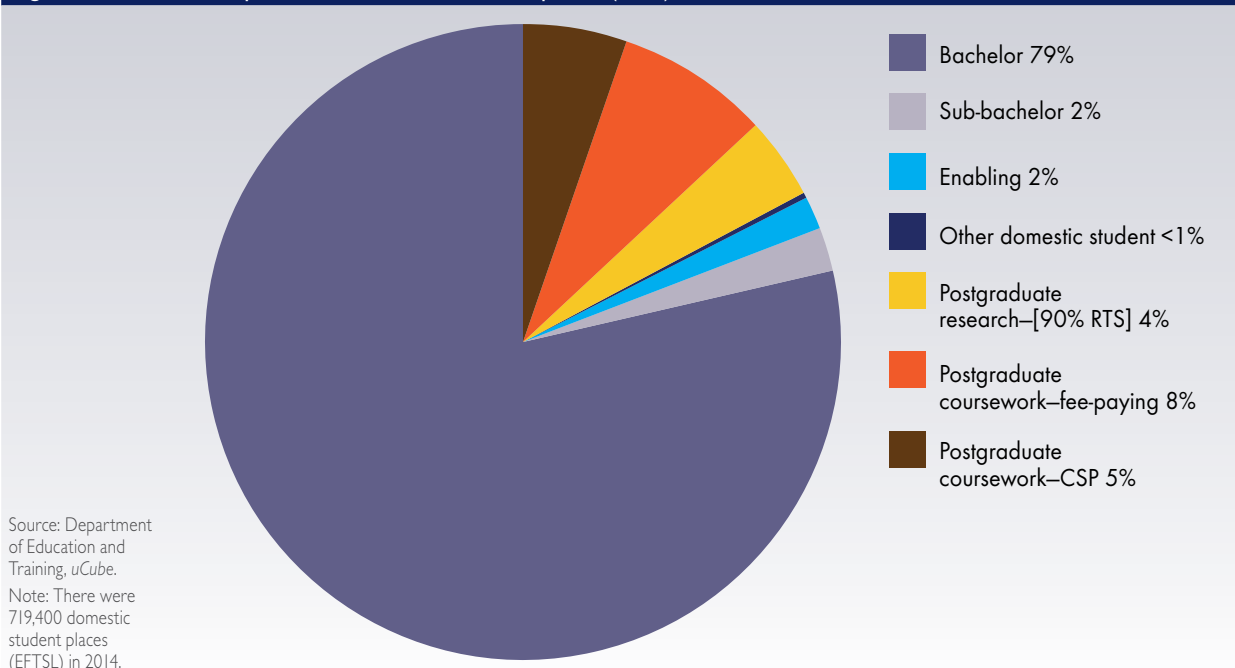
Figure 7 Composition of student places (equivalent full-time student load)



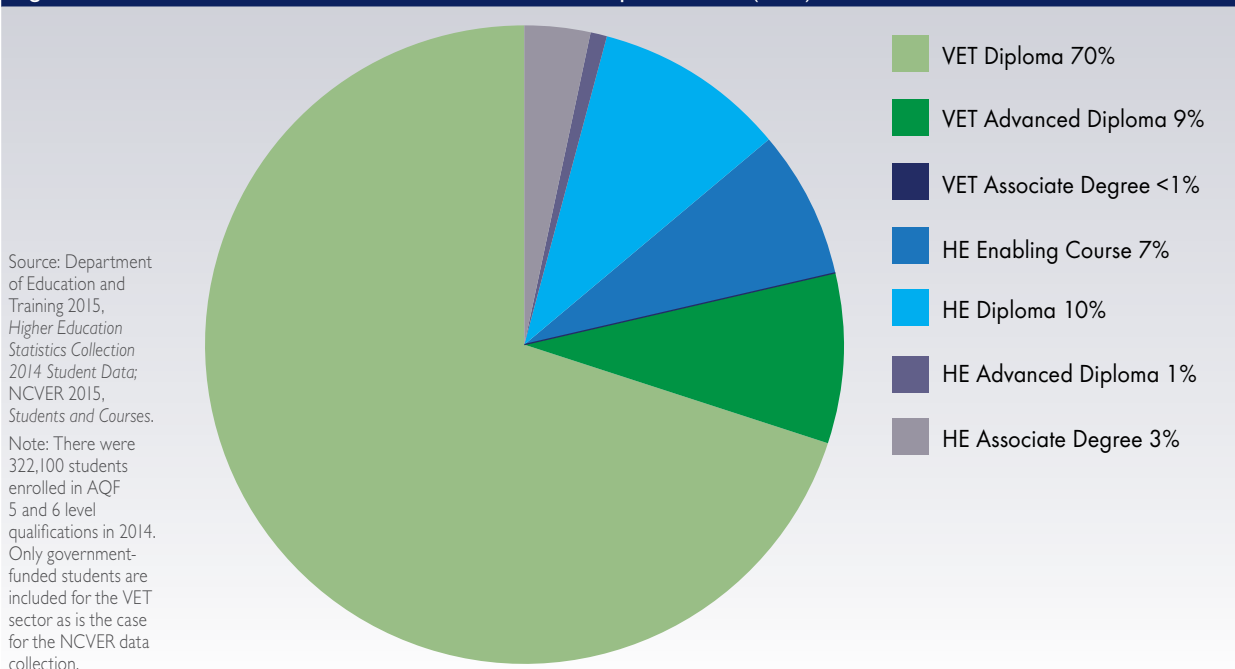
Nearly 80 per cent of domestic places are in courses leading to a bachelor degree (AQF level 7 courses). Around 17 per cent are in postgraduate courses. Less than 4 per cent of domestic places are in courses leading to a sub-bachelor degree (AQF level 5 and 6 courses) or an enabling course.

Around 80 per cent of students in AQF level 5 and 6 courses are in the VET sector and around 20 per cent are in the higher education sector.

**Figure 8** Composition of domestic student places (2014)



**Figure 9** Student enrolments in AQF 5 and 6 level qualifications (2014)



## 2.1 Increasing opportunity to study at university

The previous government introduced demand driven funding of student places in courses leading to a bachelor degree. By 2014, 37.2 per cent of 25–34 year olds had a bachelor level qualification or higher.

However, the 2014 national outcome masks wide variances in attainment levels depending on geographic areas, with major cities recording attainment rates of around 42 per cent compared to 18 per cent for remote and very remote areas. According to the 2011 Census, the attainment levels within different locations ranged from around 10 per cent to almost 60 per cent. As shown in Figure 12, 60 of the 88 locations had attainment levels below 30 per cent.

**Figure 10** Proportion of persons aged 25–34 years with a bachelor degree or above



**Figure 11** Proportion of persons aged 25–34 years with a bachelor degree or above, by remoteness area

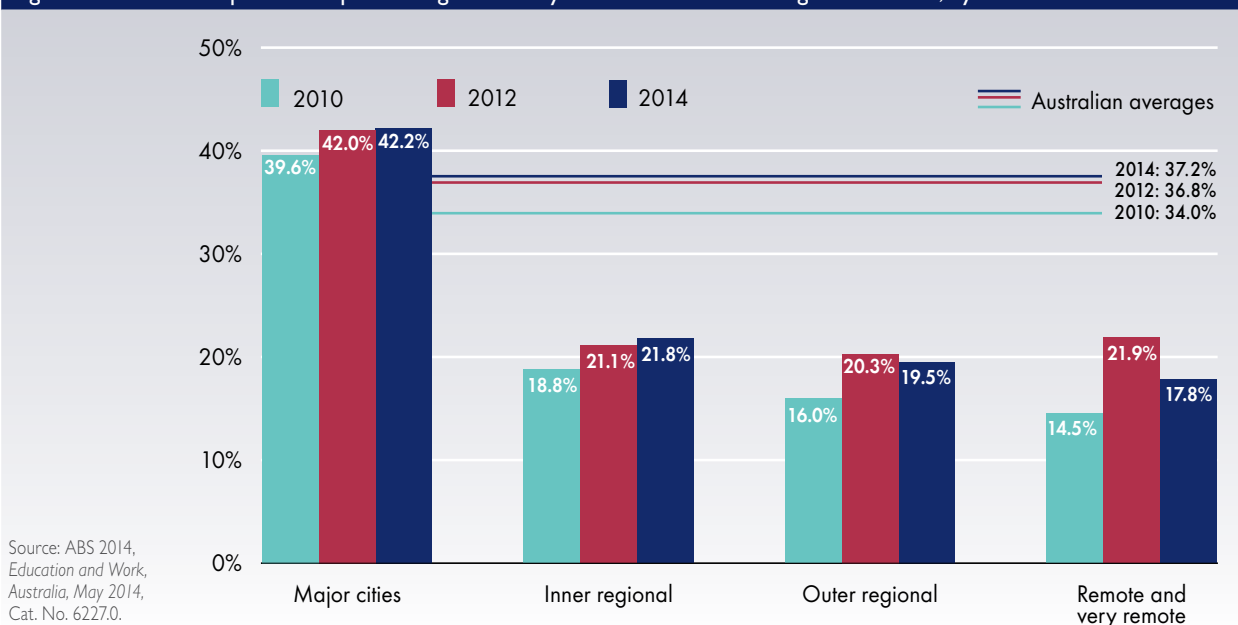
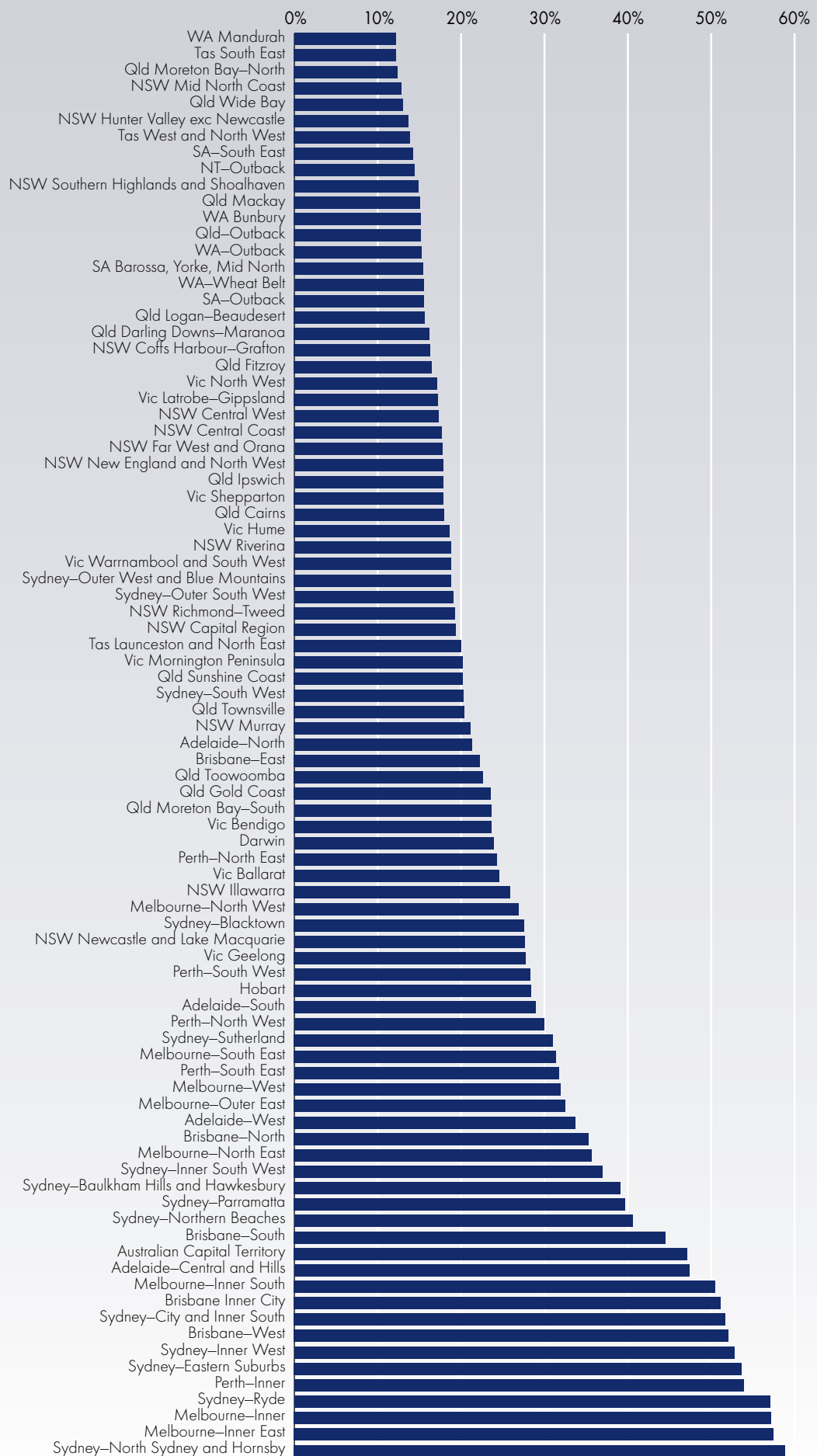


Figure 12

## Proportion of persons aged 25–34 years with a bachelor degree or above, by areas



Source: ABS, *Census of Population and Housing 2011*, TableBuilder.

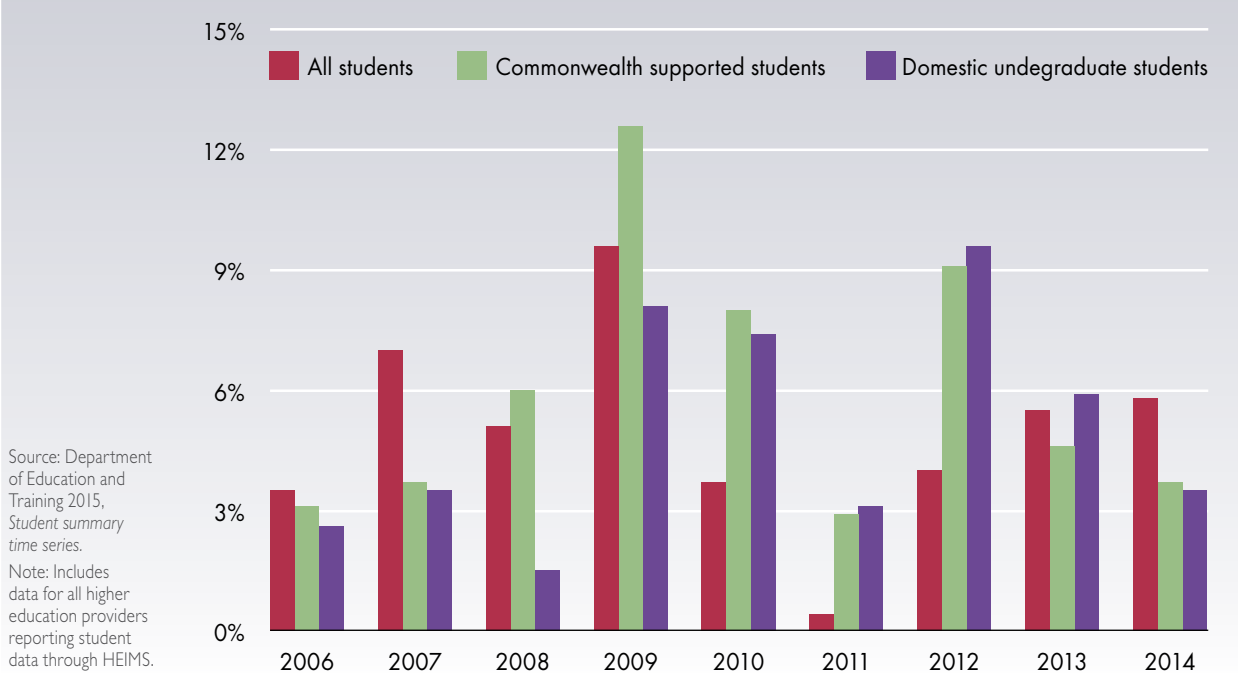
Note: Data are for Statistical Areas Level 4 (SA4).

The growth in student enrolments that occurred under the demand driven system was initially rapid, especially during the transitional years prior to its full introduction (that is, in 2009 and 2010). The growth rate has been declining since 2012, the first full year of the new arrangements.

Growth beyond 2014 is likely to be more closely aligned with population growth. Any deterioration in the labour market and/or changes in higher education policy might also have an impact on student enrolment numbers.

There has been an increase in the number of commencing undergraduate students who are Indigenous, from a low socio-economic background or from a regional and remote area. Indigenous students and students from a low socio-economic background have increased as a proportion of commencing undergraduate student enrolments.

**Figure 13** Growth in commencing student enrolments (full year)



**Figure 14** Growth in commencing undergraduate student enrolments for selected equity groups

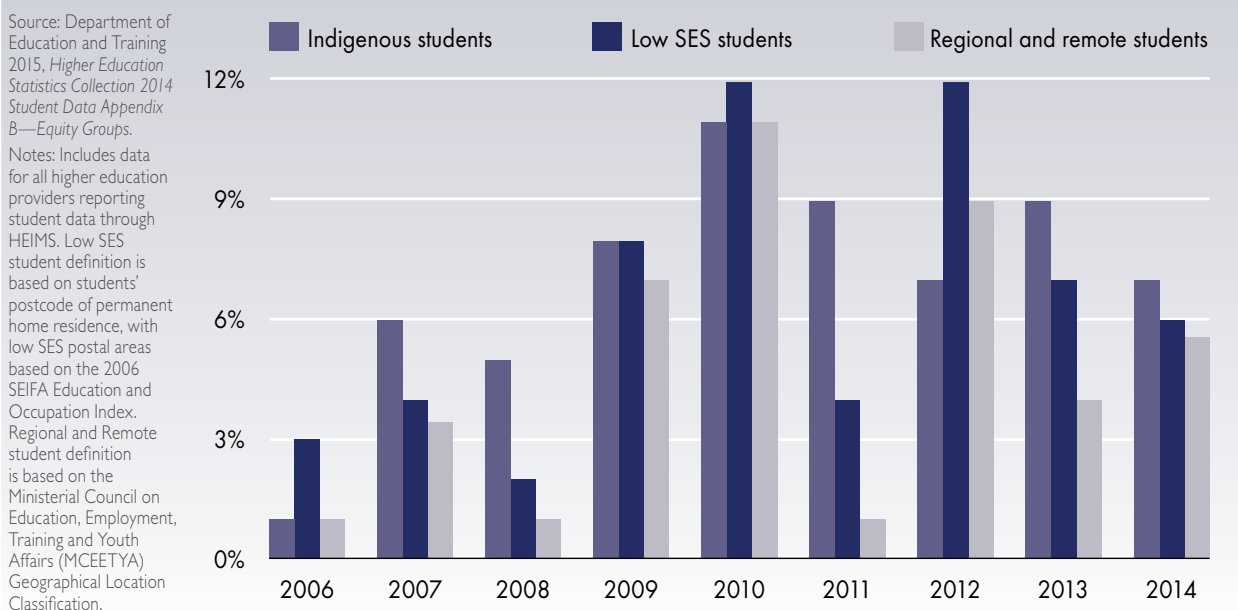




Table 2		Number and share of commencing undergraduate student enrolments for selected equity groups								
		2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of commencing domestic undergraduate student enrolments	Indigenous students	2499	2647	2786	3006	3337	3621	3866	4228	4514
	Low SES students	29,991	31,321	31,878	34,402	38,554	40,158	44,953	48,177	51,087
	Regional and remote students	36,966	38,309	38,605	41,245	45,808	46,282	50,361	52,437	55,338
Share of commencing undergraduate student enrolments	Indigenous students	1.4%	1.4%	1.5%	1.5%	1.5%	1.6%	1.6%	1.6%	1.7%
	Low SES students	16.8%	16.9%	17.0%	17.0%	17.7%	17.8%	18.2%	18.4%	18.9%
	Regional and remote students	20.7%	20.7%	20.6%	20.4%	21.0%	20.6%	20.4%	20.1%	20.5%

Most Commonwealth supported places (CSPs) are provided for students undertaking courses leading to a bachelor degree. Around two thirds of these students are aged under 25 years.

In 2001 and 2002, there were around 1600 Commonwealth supported places for every 10,000 people aged 15–24 years. Prior to the introduction of the demand driven system, this declined to under 1500 places for every 10,000 people aged 15–24 years. The demand driven system has increased the number of Commonwealth supported places to around 2000 CSPs for every 10,000 people aged 15–24 years.

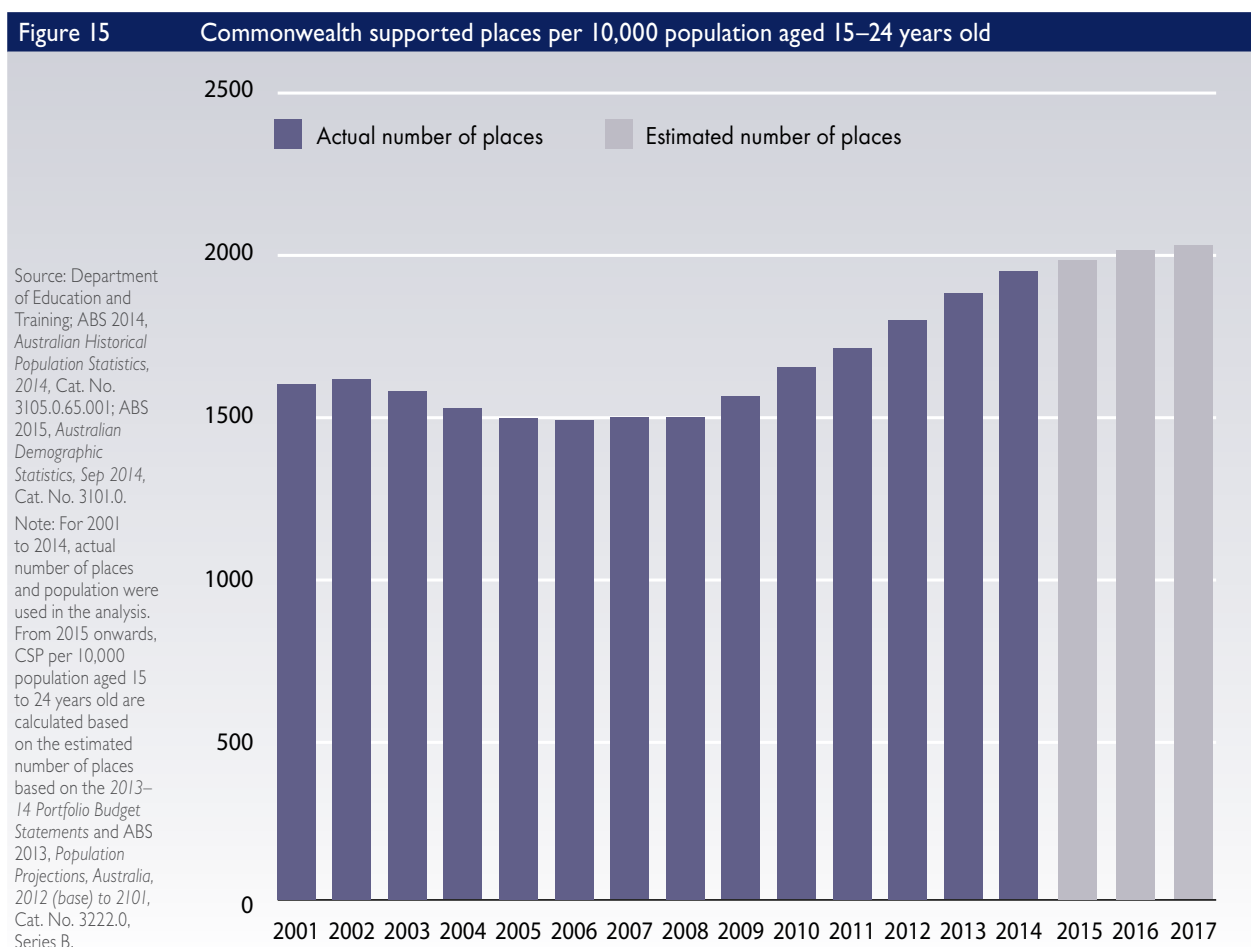
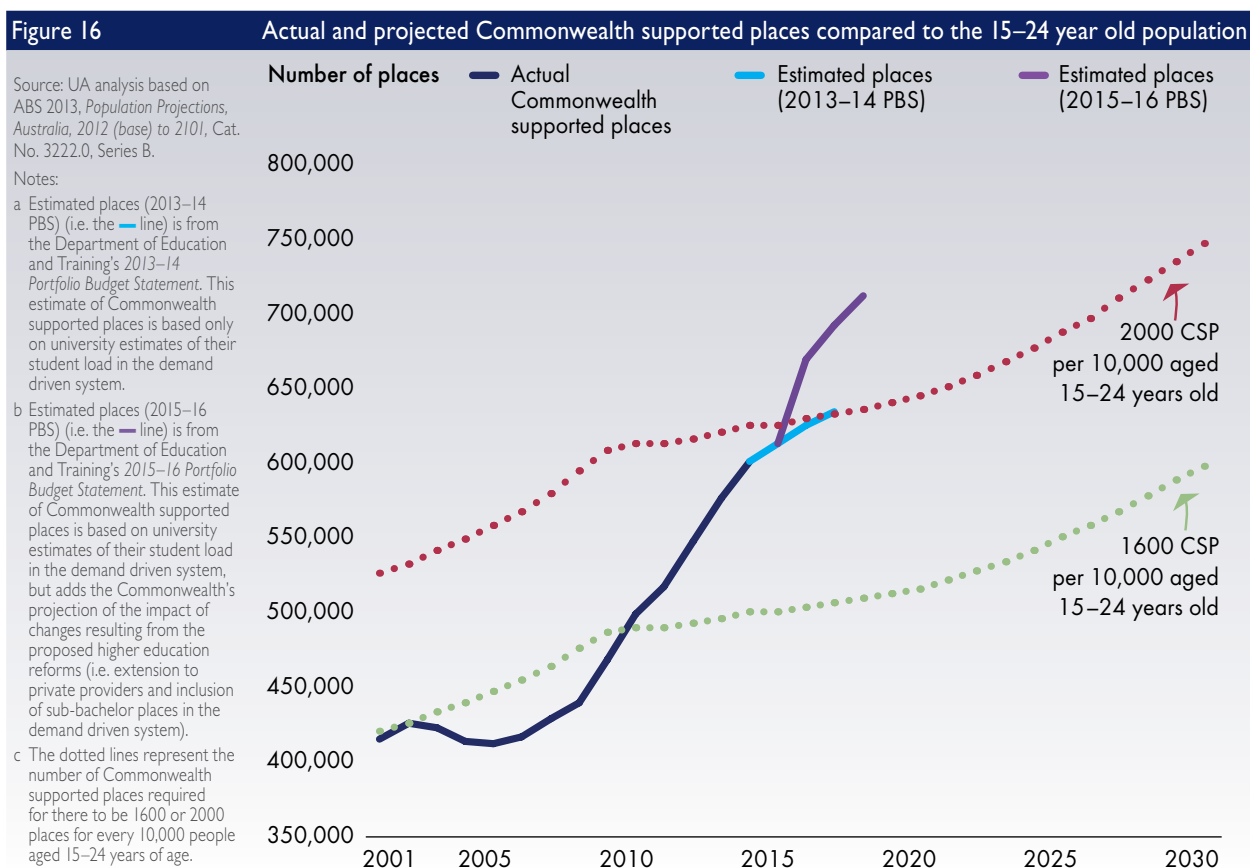


Figure 16 shows that under the demand driven funding arrangements, the growth in Commonwealth supported places was slowing and it provides an indication of the likely trajectory of future growth to ensure opportunities to study are not reduced by population changes.

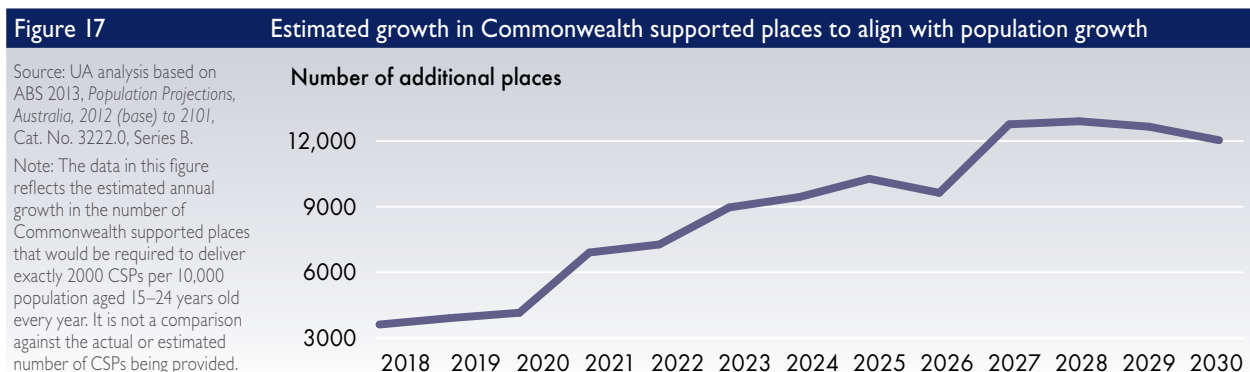
The government's proposed higher education reforms provided for a significant further expansion in places beyond 2000 Commonwealth supported places for every 10,000 people aged 15–24 years.



If the opportunity for Australians to acquire a higher education is not to decline with the growth in population, there needs to be a modest increase in the number of student places each year.

For example, the provision of around 2000 Commonwealth supported places for every 10,000 people aged 15–24 years would require:

- less than 4000 extra places a year, costing around \$48 million each year (in 2014 dollars), up until 2020 (i.e. an extra cost of \$240 million in 2020)
- around 12,000 extra places a year by 2028–30, costing around \$144 million more each year.



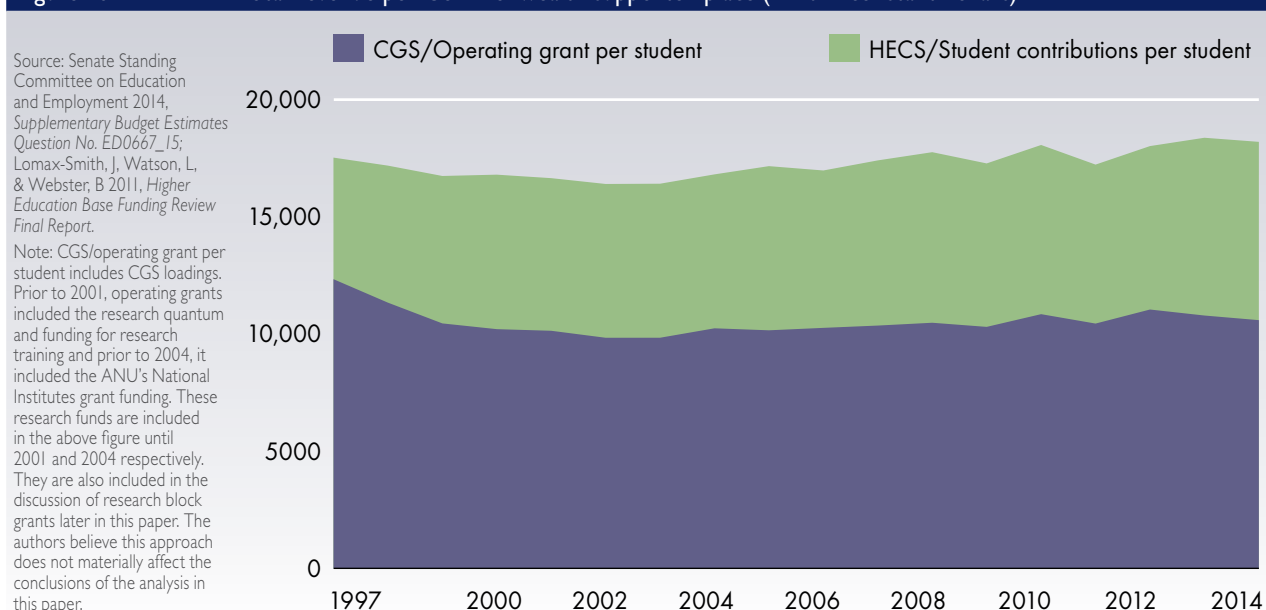
## 2.2

## Real revenue per Commonwealth supported place

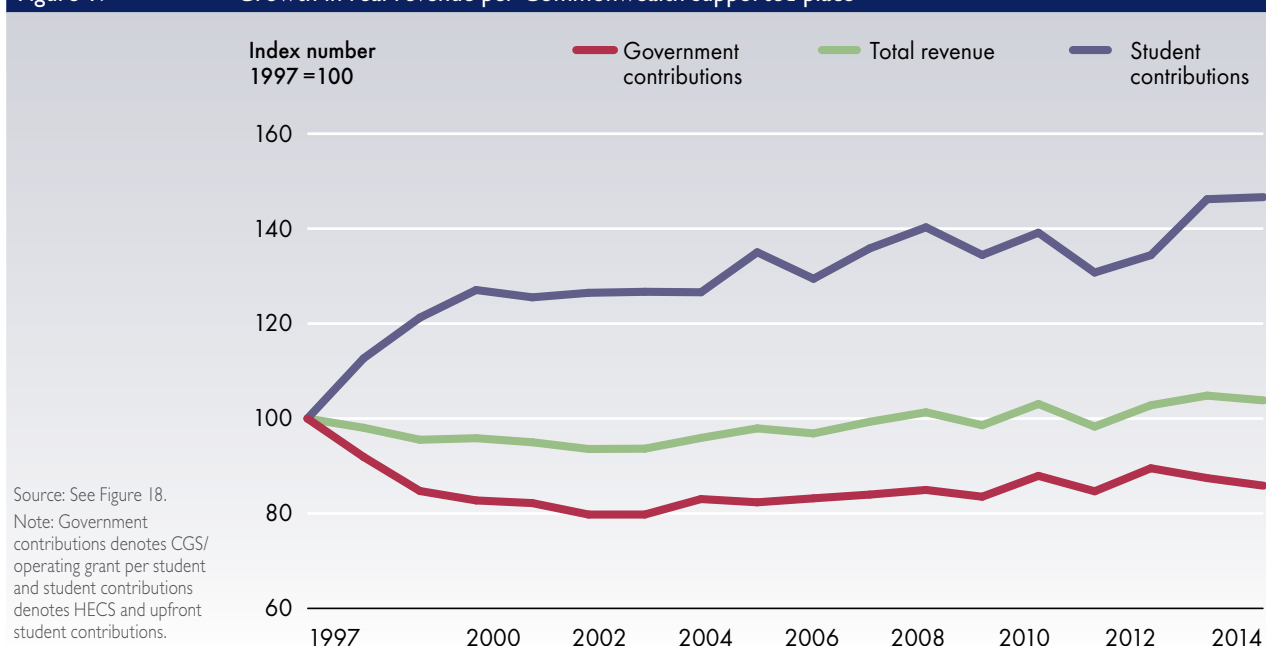
The revenue received by universities, in real terms, for an average Commonwealth supported place is broadly the same as it was 20 years ago. It declined after 1994 to a low point in 2002, but has since recovered. Many factors have contributed to this recovery—notably the 25 per cent increase in student contributions from 2005 and the reduction in unfunded places as a consequence of the introduction of the demand driven system. Some of the increase in revenue is a result of a higher share of places being in more expensive disciplines.

The share of this revenue paid by the government has declined over time, from 70 per cent in 1997 to 58 per cent in 2014, with the government contribution amount declining 14 per cent from \$12,346 per student in 1997 to \$10,600 per student in 2014. Over the same period, the student contribution amount has increased 47 per cent from \$5183 to \$7600 per student.

**Figure 18** Total revenue per Commonwealth supported place (in 2014 constant dollars)



**Figure 19** Growth in real revenue per Commonwealth supported place



## 2.3 Real revenue per overseas student place

Since 2004, the revenue received by universities from overseas students has increased in real terms by almost 75 per cent to \$4.7 billion in 2014. It now constitutes 17 per cent of total university revenue.

The number of full-time student places for onshore overseas students increased by more than 40 per cent to nearly 175,000 over the same period. Most overseas students study full-time.

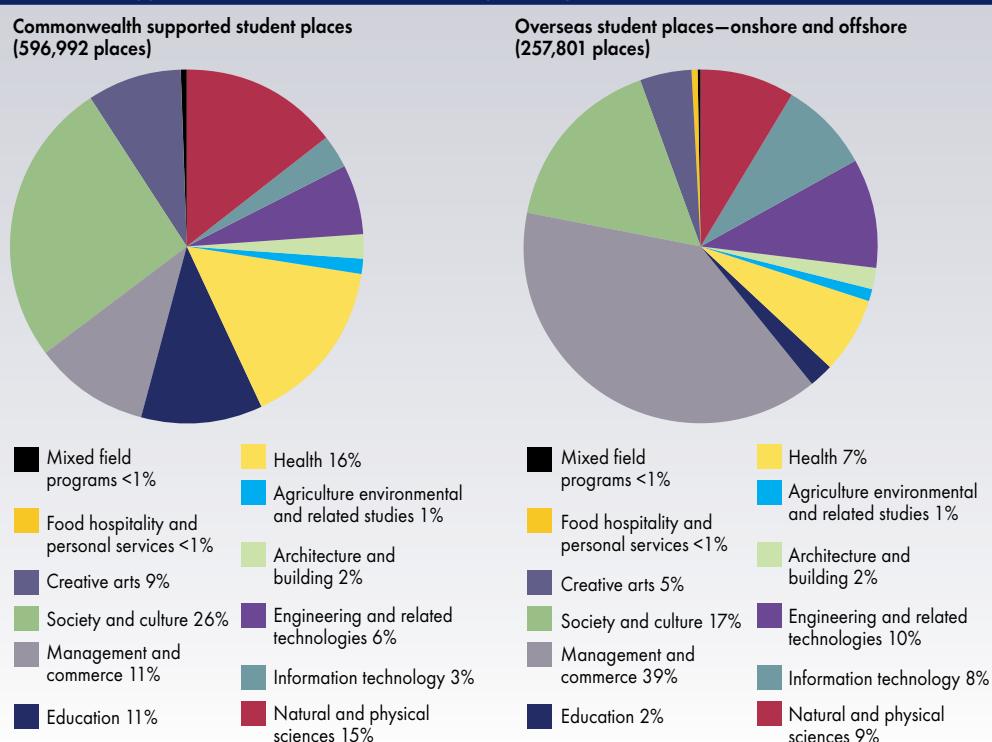
The average fee for a year of full-time study has increased in real terms by more than 20 per cent during this period to over \$26,900. This average fee is not comparable with the average revenue for a Commonwealth supported student place. The discipline profile for overseas students is quite different from that of Commonwealth supported students. Greater shares of overseas students are studying in management and commerce and information technology and smaller shares are studying in health, education and society and culture.

**Table 3** Fees paid by onshore overseas students (in 2014 constant dollars)

	2004	2007	2010	2013	2014
Overseas student fees (\$'000)	2,709,222	3,209,638	4,270,267	4,329,067	4,695,846
Number of onshore overseas student places (EFTSL)	123,681	139,777	179,521	164,928	174,515
Average fee for a year of full-time study for an onshore overseas student (\$)	21,905	22,963	23,787	26,248	26,908

Source: Department of Education and Training, *Financial Reports of Higher Education Providers* (various years) and administrative data.  
Note: Data for Bond University, Batchelor Institute of Indigenous Tertiary Education and VET activity in dual sector universities are not included in the table.

**Figure 20** Commonwealth supported and international student places by field of education, 2014



Source: Department of Education and Training, *uCube*.  
Note: Includes data for all higher education providers reporting student data through HEIMS.

## 2.4 Other funding to support teaching and learning

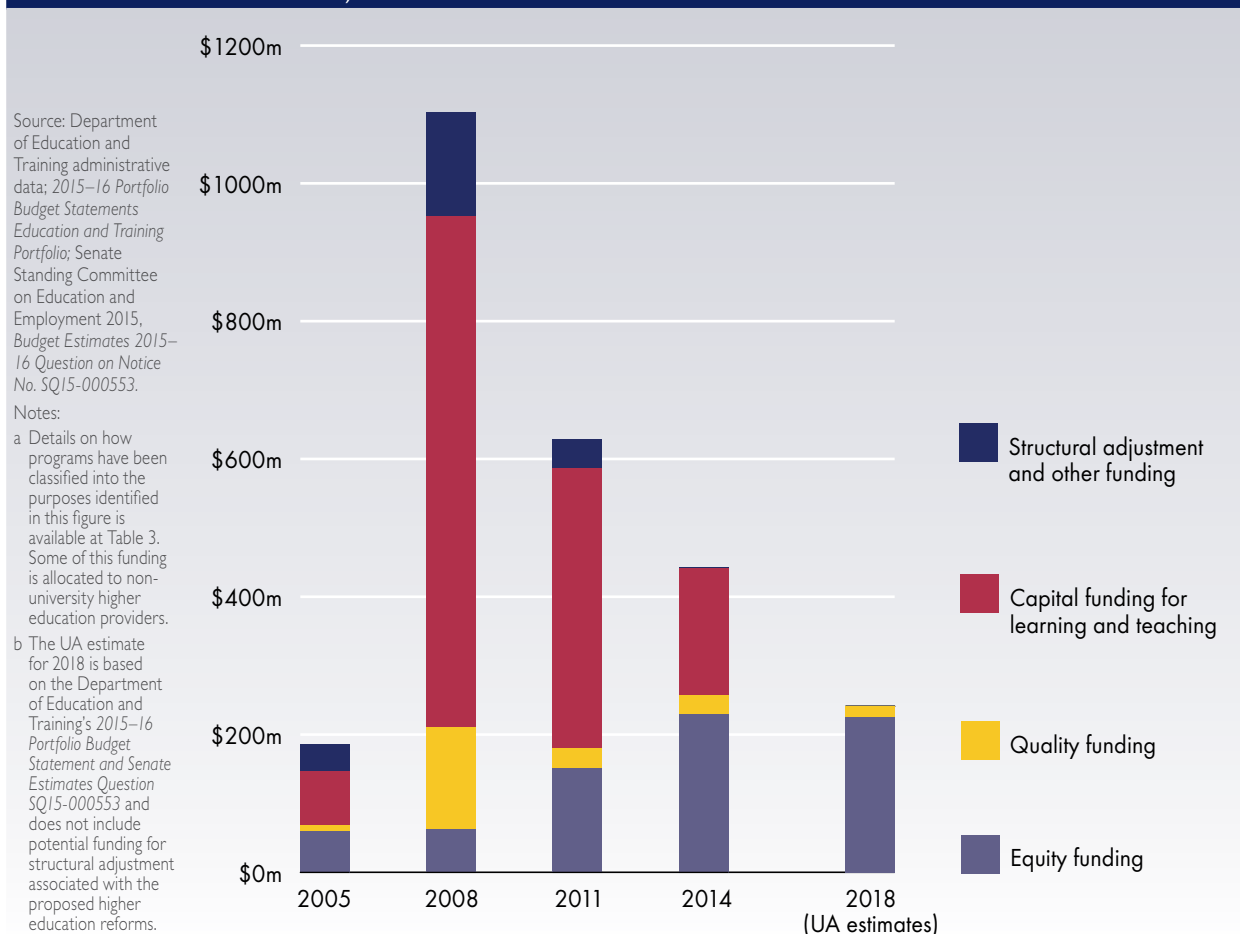
Other sources of government funding to support the education services provided by Australia's universities have been variable and are now declining.

As part of the government's response to the 2008 global financial crisis and to help support the expansion of student places under the demand driven system, there was a large injection of capital funding for teaching-related purposes and funding for structural adjustment from around 2008 to 2012. There are currently no new capital grants for teaching-related purposes.

Funding to support quality and innovation in teaching was increased prior to 2008 but has since declined. Excluding funding for surveys to produce the Quality Indicators for Learning and Teaching (QILT), support for quality and innovation in teaching will be less than \$10 million per annum after 2018–19.

Additional funding to promote equity in the provision of higher education accompanied the introduction of the demand driven system. This funding quadrupled to over \$200 million a year, mainly to support the participation and success of students from low SES backgrounds.

**Figure 21** Other funding to support teaching and learning by purpose (excluding research funding and research element of EIF) in 2014 constant dollars



**Table 4 Other funding to support teaching and learning (2014)**

	Program status as of May 2015	2014 (\$m)	2018–19 Estimates (\$m)
<b>Equity funding</b>			
• Indigenous Support Program	Current	39.3	42.9
• Higher Education Equity Support Program	Ceased	-	-
• HE Participation and Partnership Program	Current	183.1	186.9
• Higher Education Disability Support Program	Current	7.0	7.6
<i>Total equity funding</i>		<b>229.4</b>	<b>237.4</b>
<b>Quality funding</b>			
• Learning and Teaching Performance Fund	Ceased	-	-
• Australian Learning and Teaching Council	Ceased	-	-
• Promotion of Excellence in Learning and Teaching in Higher Education	Current	13.7	8.2
• Australian Awards for University Teaching	Ceased	-	-
• Australian Maths and Science Partnership Program	Current	5.4	-
• Enhancing Maths and Science Teachers Program	Current	3.9	-
• Australian Mathematical Sciences Institute (AMSI)	Current	0.5	0.5
• Graduate Skills Assessment	Ceased	-	-
• Graduate Careers Council	Ceased	0.7	-
• Open Learning Initiative	Ceased	-	-
• Reward Funding	Ceased	0.4	-
• Improving the Practical Component of Teacher Education Initiative	Ceased	-	-
• My University Website	Ceased	-	-
• Quality Indicators for Learning and Teaching (QILT)	Current	2.8	6.8
<i>Total quality funding</i>		<b>27.3</b>	<b>15.5</b>
<b>Capital funding for teaching and learning</b>			
• Capital Development Pool—Other	Ceased	-	-
• Capital Development Pool—Special Projects	Ceased	-	-
• Better Universities Renewal Funding	Ceased	-	-
• EIF Competitive Rounds, including • EIF Regional Round; and • 'Non HESA' capital component of the 'Structural Adjustment Fund' round. (Note: Does not include EIF expenditure on research)	Ceased	184.5	-
• Teaching and Learning Capital Fund	Ceased	-	-
<i>Total capital funding for teaching and learning</i>		<b>184.5</b>	<b>0</b>
<b>Structural adjustment and other funding</b>			
• Collaboration and Structural Reform Fund	Ceased	-	-
• Diversity & Structural Adjustment Fund (including Structural Adjustment Fund—HESA Component)	Ceased	1.9	-
• Transition Fund—CGS	Ceased	-	-
• HEFA—Transition Fund	Ceased	-	-
• Workplace Productivity Program	Ceased	-	-
<i>Total structural adjustment and other funding</i>		<b>1.9</b>	<b>0</b>
<b>Total other funding to support teaching and learning</b>		<b>443.1</b>	<b>252.9</b>

## 2.5 Expansion of student loans

Income contingent loans (ICLs) have been a highly effective way for the government to contain its costs while preserving the total revenue to universities and to ensure that student contributions do not impede access to study at university.

In 1989 when these loans were introduced, they were only available to facilitate student contributions to higher education. Since that time, there have been significant increases in the level of contribution from Commonwealth supported students and loans have been introduced for full fee-paying domestic higher education students and for students in the VET sector. From 2010 to 2014, HELP loan amounts more than doubled from \$3.5 billion to \$7.2 billion.

An increasing number of higher education students require a postgraduate degree for initial entry to a profession and under HELP borrow the full fees for these courses in addition to the contributions for their undergraduate degrees. ICLs are also being created outside of the HELP scheme. In July 2014, Trade Support Loans totalling up to \$20,000 over the life of an Australian Apprenticeship became available to assist apprentices with everyday costs while they complete their apprenticeship. The government has announced that it intends to convert higher education Student Start-up Scholarships to an ICL.

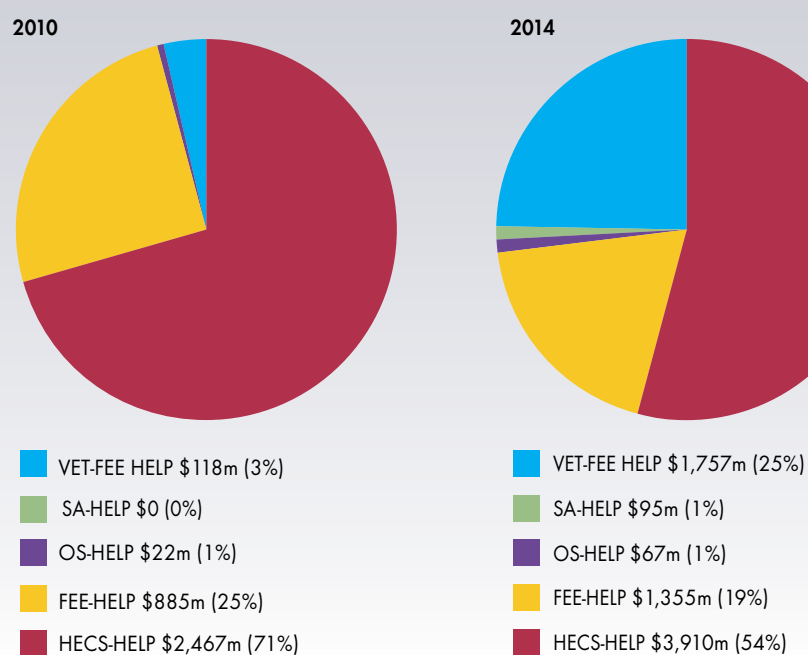
Government modelling indicates a significant increase in the amount not expected to be repaid as total debt levels increase.

**Table 5** HELP loans for student places—all higher education providers

		2010	2011	2012	2013	2014
<b>Number of places (EFTSL) or students receiving HELP loans</b>	HECS-HELP (EFTSL)	395,177	414,709	450,314	484,681	507,629
	FEE-HELP (EFTSL)	64,766	70,849	75,388	76,106	76,613
	OS-HELP	4086	5035	5675	6373	10,986
	SA-HELP	0	0	307,339	414,197	444,344
	VET FEE-HELP (EFTSL)	20,108	28,570	37,700	65,838	131,344
<b>HELP payments to higher education providers on behalf of students (\$ millions)</b>	HECS-HELP loans	2,467	2,646	2,992	3,601	3,910
	HECS-HELP upfront payment discount	535	546	581	594	575
	FEE-HELP loans	885	1,008	1,142	1,265	1,355
	OS-HELP loans	22	28	32	39	67
	SA-HELP loans	-	-	58	85	95
	VET FEE-HELP loans	118	205	325	699	1,757
	<b>Total HELP cash outlays</b>	<b>4,027</b>	<b>4,433</b>	<b>5,130</b>	<b>6,283</b>	<b>7,759</b>
	<b>Total HELP loans</b>	<b>3,492</b>	<b>3,887</b>	<b>4,549</b>	<b>5,689</b>	<b>7,184</b>

Source: Department of Education and Training administrative data; Annual reports (various years), 2010 and 2011–13 Higher Education Reports; VET FEE-HELP Statistical Reports.

**Figure 22** Change in components of HELP loans (2010 and 2014)



Source: See Table 5.

**Table 6** Projected share of new HELP loans not expected to be repaid

Source: 2015–16 Portfolio Budget Statements Education and Training Portfolio; Department of Education and Training, 2014–15 Annual Report; Department of Industry, Innovation, Science, Research and Tertiary Education 2012, 2011–12 Annual Report.

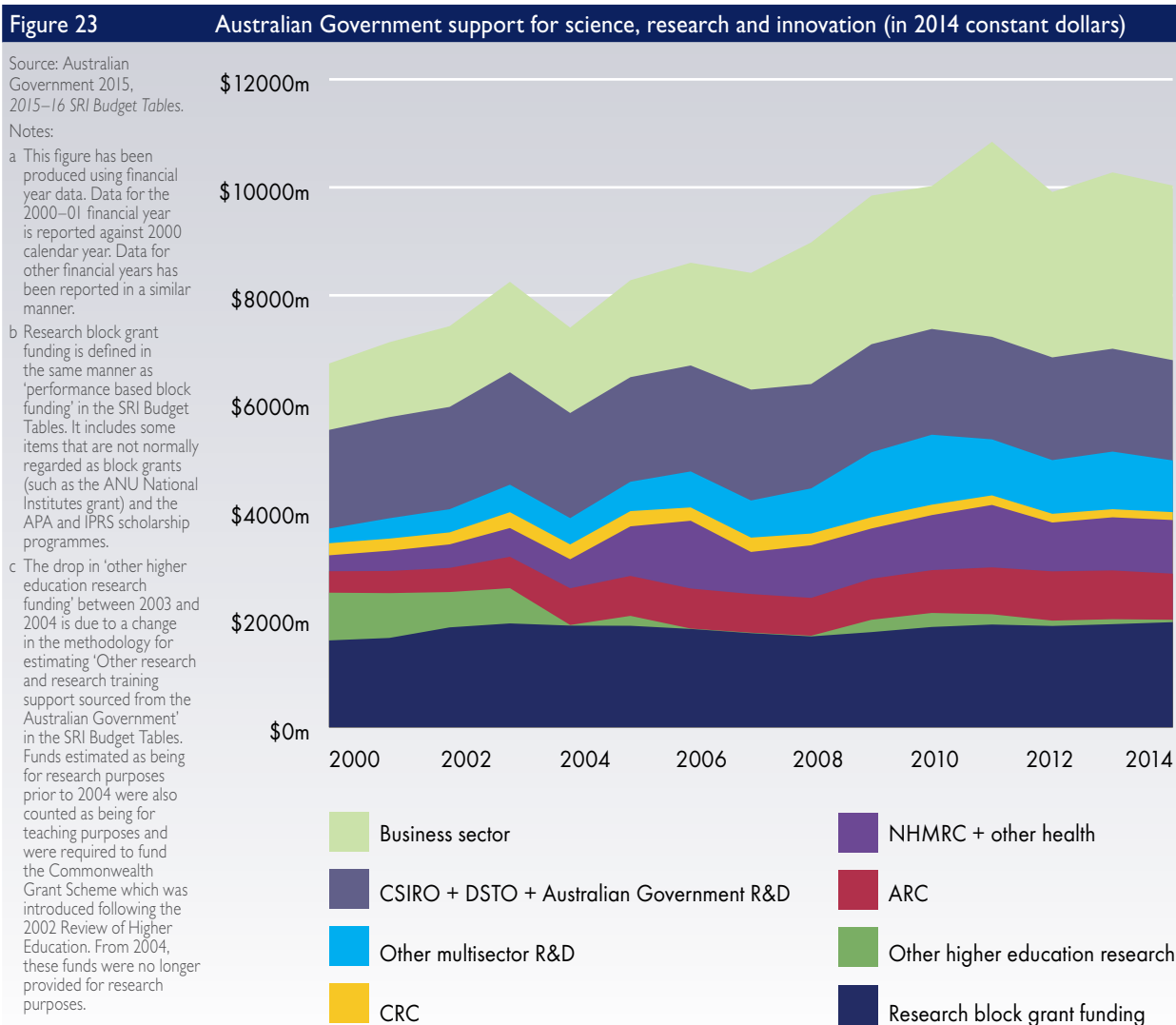
	2010–11	2014–15	2018–19
Proportion of new debt not expected to be repaid	16%	19%	21%



# 3 Contributing to Australia's research effort

## 3.1 Australian Government support for science, research and innovation

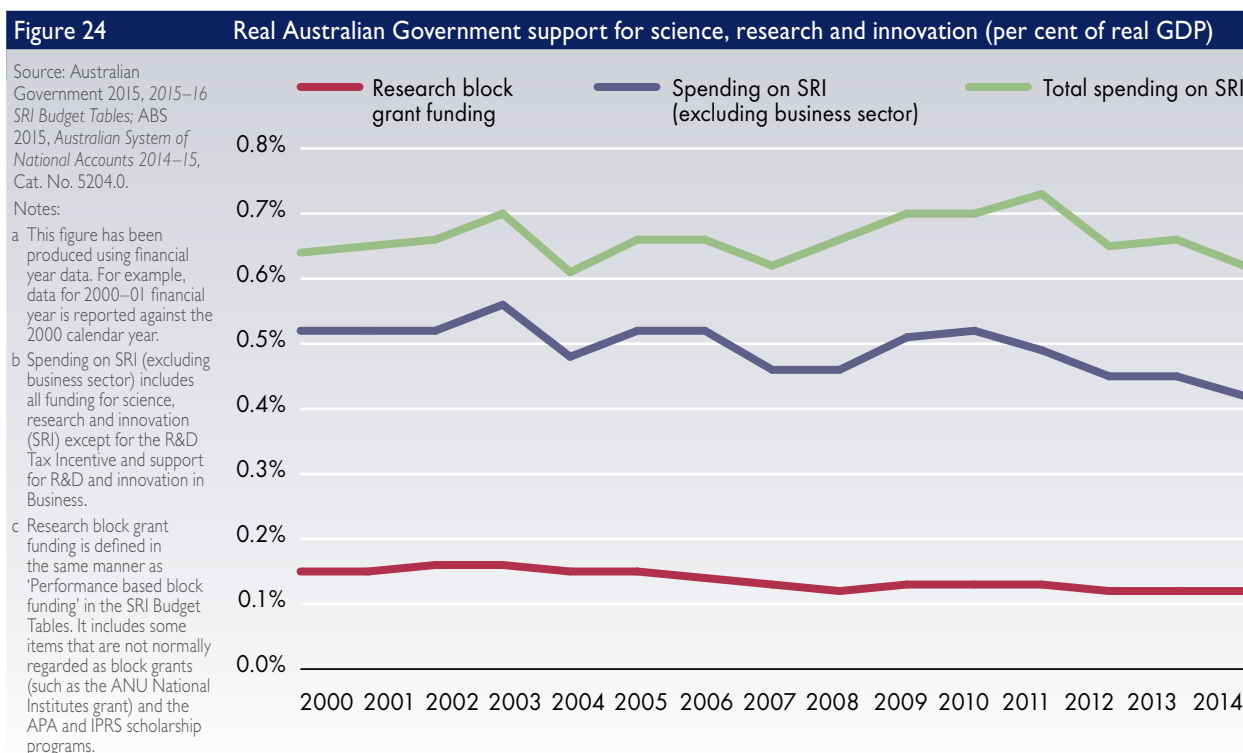
The total amount of real government spending on science, research and innovation has increased from \$6.7 billion in 2000 to around \$10 billion in 2014. Support to encourage innovation in business has more than doubled to around \$3.2 billion a year. Funding for research block grants and other higher education research appears to have declined in value by around 20 per cent to \$2 billion a year, but this result may be affected by how this funding was estimated prior to 2004. NHMRC and ARC funding has increased to nearly \$1.8 billion a year.



Growth in the real value of government investment in science, research and innovation has kept pace with growth in Australia's economy.

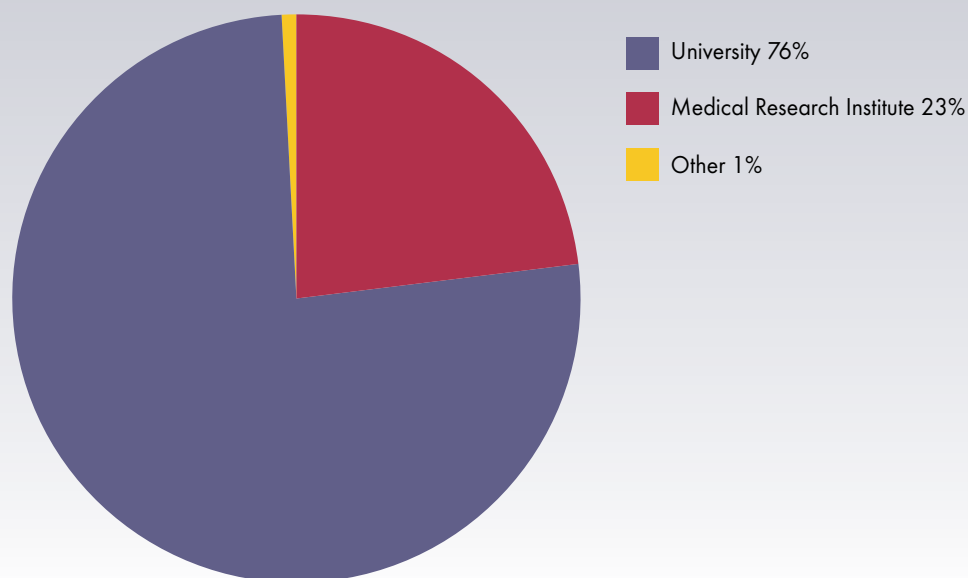
A greater share of this investment is now directed towards business, with around one third of the investment broadly focused on business innovation. Around 90 per cent of this business innovation spending occurs through the Research and Development (R&D) Tax Incentive.

When spending on business innovation is excluded, the direct support for science, research and innovation has declined from 0.51 to 0.42 per cent of GDP.



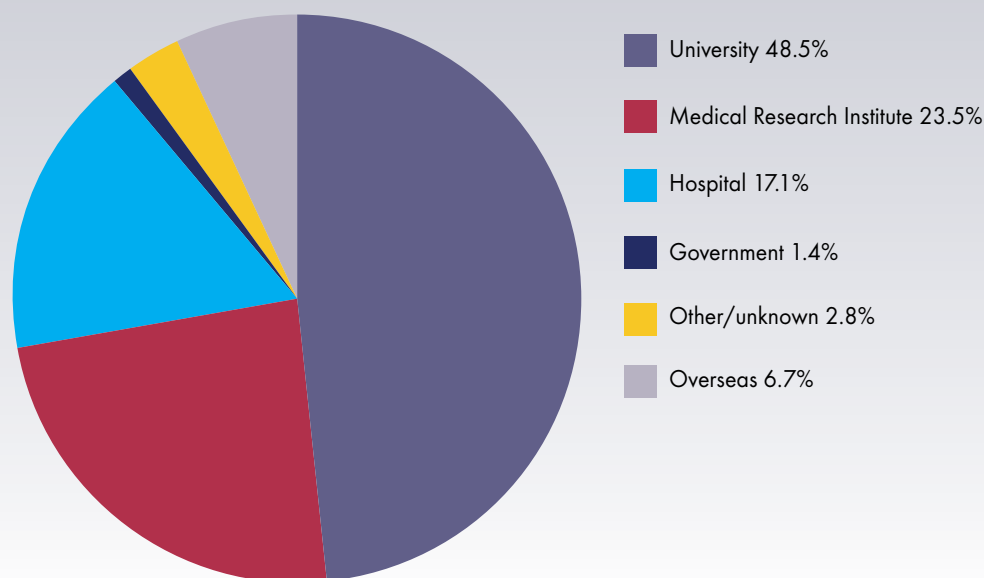
In 2014–15, around three-quarters of NHMRC funding was received and administered by universities, with most of the remainder received by specialist Medical Research Institutes. Health research is conducted in a variety of environments, including hospitals, and the inter-relationships of parties are complex.

**Figure 25** Institutions administering NHMRC grants (2014–15)



Source: Australian Government 2015, 2015–16 SRI Budget Tables.

**Figure 26** Institutions in which NHMRC research is conducted (2004–13)



Source: NHMRC 2014, Research Funding Facts Book 2013, p. 23.

Universities obtain their research income from various Australian Government programs supporting science, research and innovation. Data on the level of funding which goes to universities from each of these programs is not always readily available. For example, universities obtain a significant share of funding from the Cooperative Research Centres program and other multi-sector programs, but it is not always easy to determine the amounts.

To overcome this difficulty, the analysis in the following discussion is based on combining data from the Higher Education Research Data Collection (HERDC) with information on research block grant funding from the Science, Research and Innovation (SRI) Budget Tables.<sup>1</sup>

<sup>1</sup> From 2010, a university was allowed to report in HERDC Category 2: Other public sector research income the proportion of a general or untied grant from an Australian government (whether Commonwealth, state, territory or local) that could be clearly and transparently attributed to direct costs of conducting research. This means a proportion of the ANU's National Institutes Grant (NIG) may be reported in HERDC Category 2 income and hence double counted as it is also included in SRI Budget Tables.

## 3.2

# University research income

Since 2000, the real value of the total research income received by universities has increased by nearly 70 per cent to \$5.5 billion. There are large differences in how the various components of this income have grown.

Research income from non-Australian Government sources has more than doubled in real value over this period to \$1.54 billion, as has income from Australian Government competitive grants (e.g. from the ARC and NHMRC) which is now \$1.56 billion.

Income from the research block grants has increased by 19 per cent since 2000 to \$1.9 billion. While Australian Government other public sector income accounts for only \$0.46 billion of total research income, it has nearly quadrupled during this time.

**Figure 27** Sources of university research income (in 2014 constant dollars)

Source: Australian Government 2015, 2015–16 SRI Budget Tables and Department of Education and Training, Higher Education Research Data Collection—Research Income and Publications Data by sub-category (various years).

Notes:

a Research block grant funding is defined in the same manner as 'performance based block funding' in the SRI Budget Tables. It includes some items that are not normally regarded as block grants (such as the ANU National Institutes grant) and the APA and IPRS scholarship programmes. This data has been produced using financial year data. For example, data for 2000–01 financial year is reported against 2000 calendar year.

b All other categories of research income are defined using the HERDC specifications. There are minor clarifications of the definitions in some years but the concepts behind the classification remain largely unchanged.

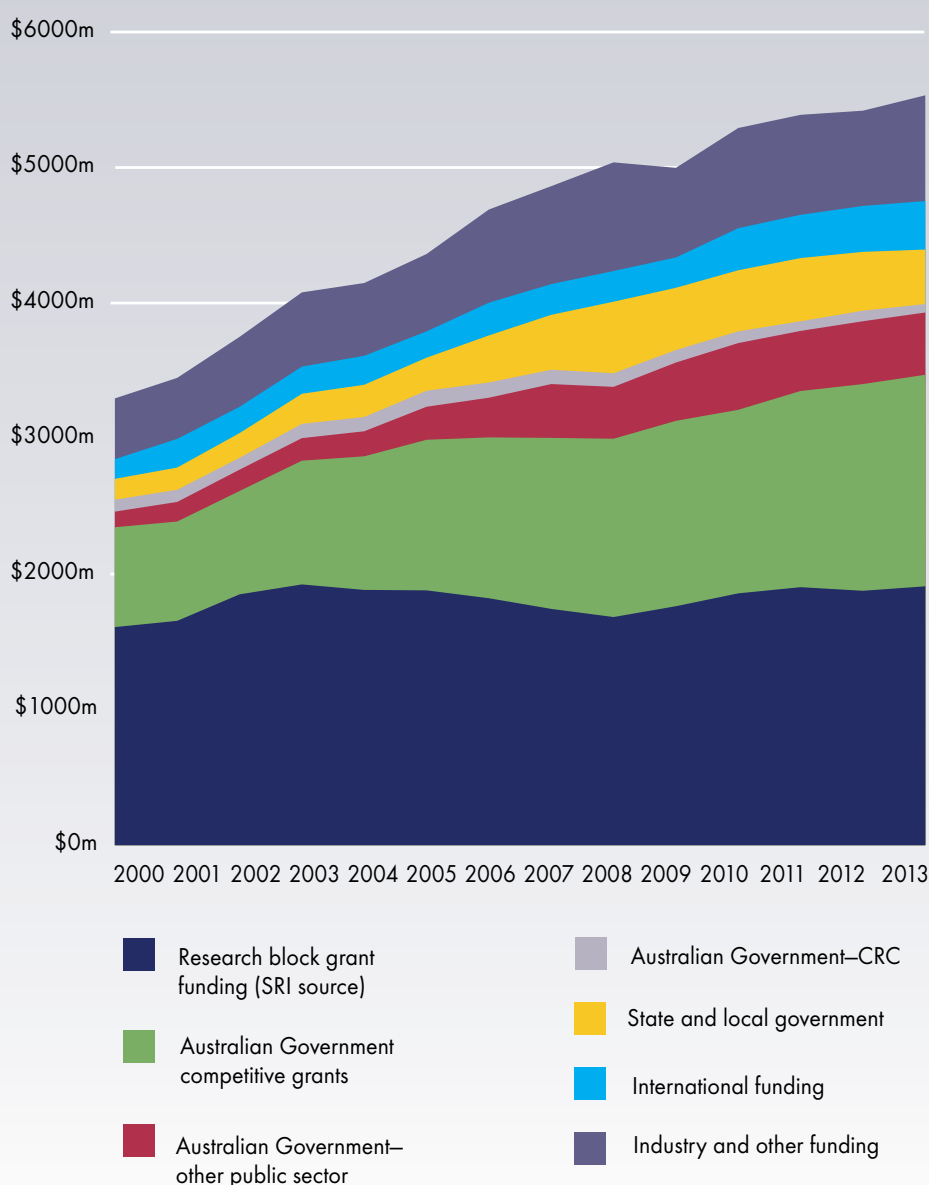
i Australian Government income is separately identified for Australian competitive grants (HERDC Category 1); Other public sector (HERDC Category 2); and CRC (HERDC Category 4). HERDC Category 3 does not include any income from governments.

ii State and local government is defined as local and state government income from within HERDC Category 2.

iii International funding is defined as International income from within HERDC Category 3 and includes HDR fees from international students.

iv Industry and other funding includes Non-Commonwealth competitive income and rural R&D from within HERDC Category 1, all HERDC Category 3 income excluding international funding, and CRC income from non-university participants and other third parties from within HERDC Category 4.

c. Income from rural R&D schemes was treated as an Australian Government competitive grant prior to 2010. It has been reported separately from 2010 and in the above chart is not treated as Australian Government funding from that year. Rural R&D schemes are funded from a combination of levies on production and matching Australian Government funding.



The real value of Australian Government research income increased by 57 per cent to \$4.0 billion from 2000 to 2013. It constituted over 70 per cent of universities' total research funding in 2013. The composition of university research income from the Australian Government is examined in more detail later in this paper.

The next largest source of research funding is 'Industry and other funding', representing 14 per cent of universities' total research funding in 2013. It has grown by around 74 per cent in real terms since 2000. State and local government funding and International funding has increased by two and a half times off a low base.

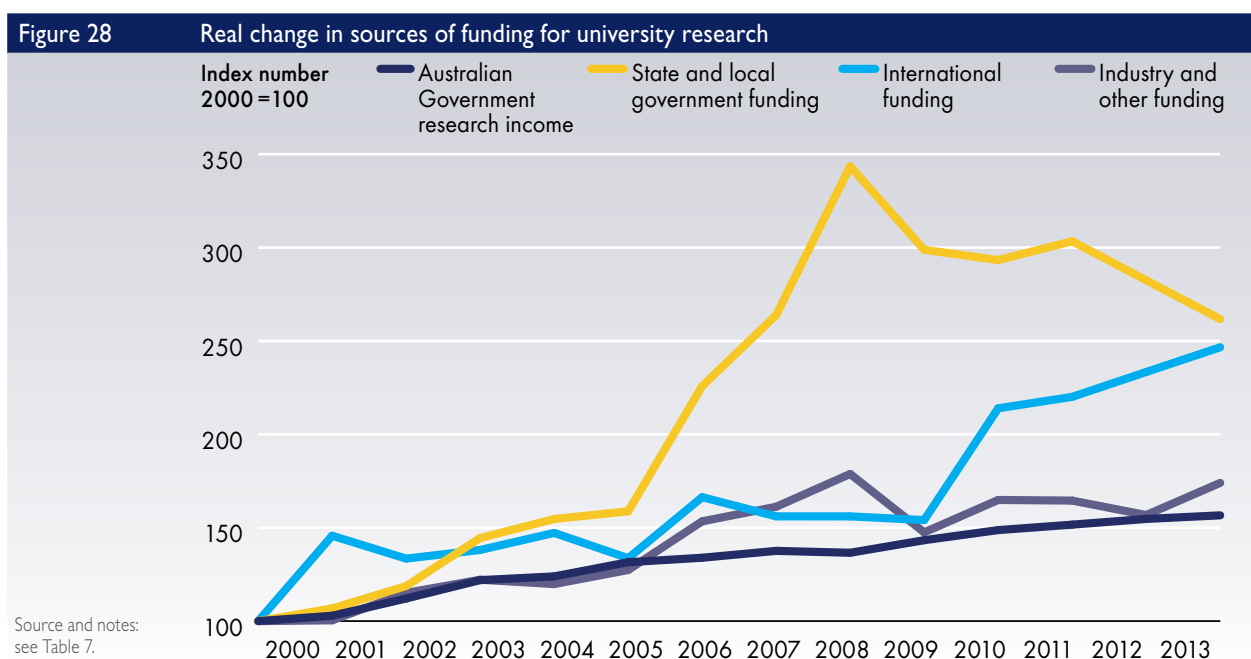
Table 7 Sources of university research income (\$m in 2014 constant dollars)							
2000–06	2000	2001	2002	2003	2004	2005	2006
Australian Government research income	2,549.1	2,622.2	2,858.0	3,108.6	3,159.4	3,352.9	3,414.1
State and local government funding	153.7	164.1	182.5	222.0	237.6	244.0	347.0
International funding	145.1	211.4	193.6	200.4	213.6	194.0	241.4
Industry and other funding	448.4	450.3	516.3	547.8	537.3	571.0	688.0
<b>Total research income</b>	<b>3,296.3</b>	<b>3,448.0</b>	<b>3,750.4</b>	<b>4,078.7</b>	<b>4,148.0</b>	<b>4,361.9</b>	<b>4,690.4</b>
2007–13	2007	2008	2009	2010	2011	2012	2013
Australian Government research income	3,507.7	3,482.2	3,653.5	3,791.4	3,865.8	3,943.8	3,992.7
State and local government funding	405.5	527.8	459.1	450.7	466.1	434.0	402.1
International funding	226.5	226.4	223.6	310.4	319.3	338.6	357.8
Industry and other funding	722.9	801.7	661.5	739.3	737.8	703.1	780.3
<b>Total research income</b>	<b>4,862.6</b>	<b>5,038.1</b>	<b>4,997.7</b>	<b>5,291.8</b>	<b>5,389.0</b>	<b>5,419.5</b>	<b>5,532.9</b>

Source: See Figure 27.

Notes:

a Australian Government research income is research block grant funding plus all Australian Government HERDC income. (See notes to Figure 27 for further clarification of definitions.)

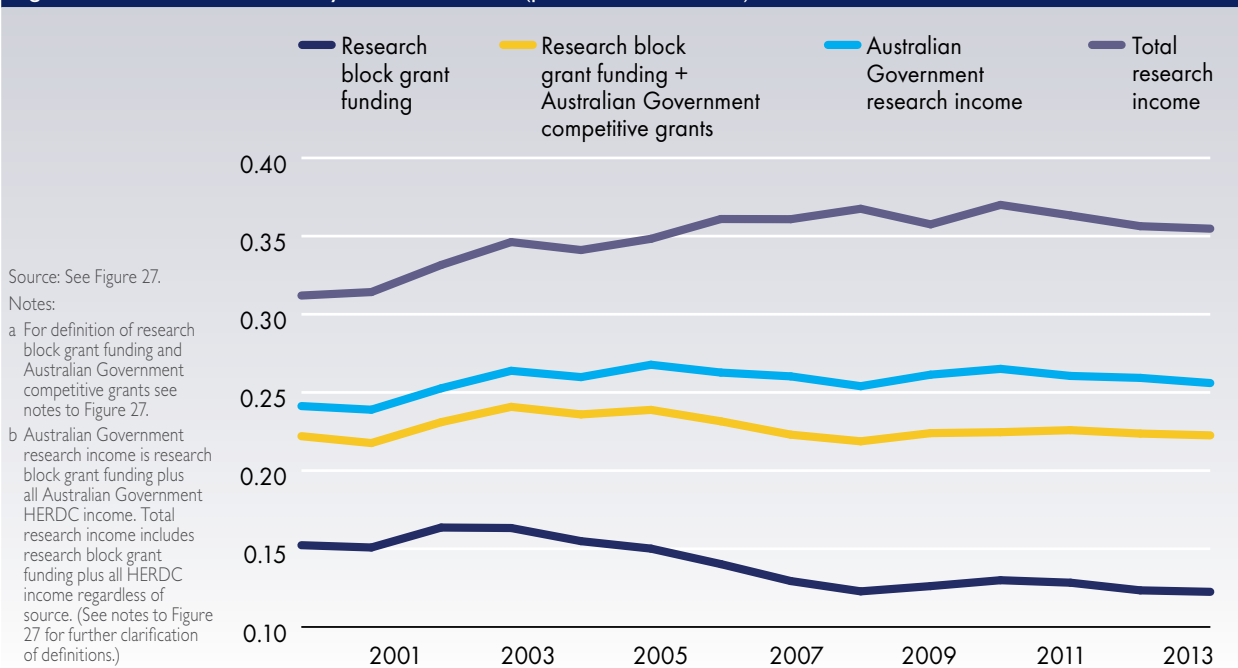
b For definitions of state and local government funding, international funding and industry and other funding, see notes to Figure 27.



As was the case with the government's overall support for science, research and innovation, the growth in the real value of the Australian Government funding provided to universities for research purposes has been broadly commensurate with growth in Australia's economy.

Income from other sources has accounted for most of the 0.4 percentage point increase in real university research income as a share of GDP to 0.35 per cent in 2013.

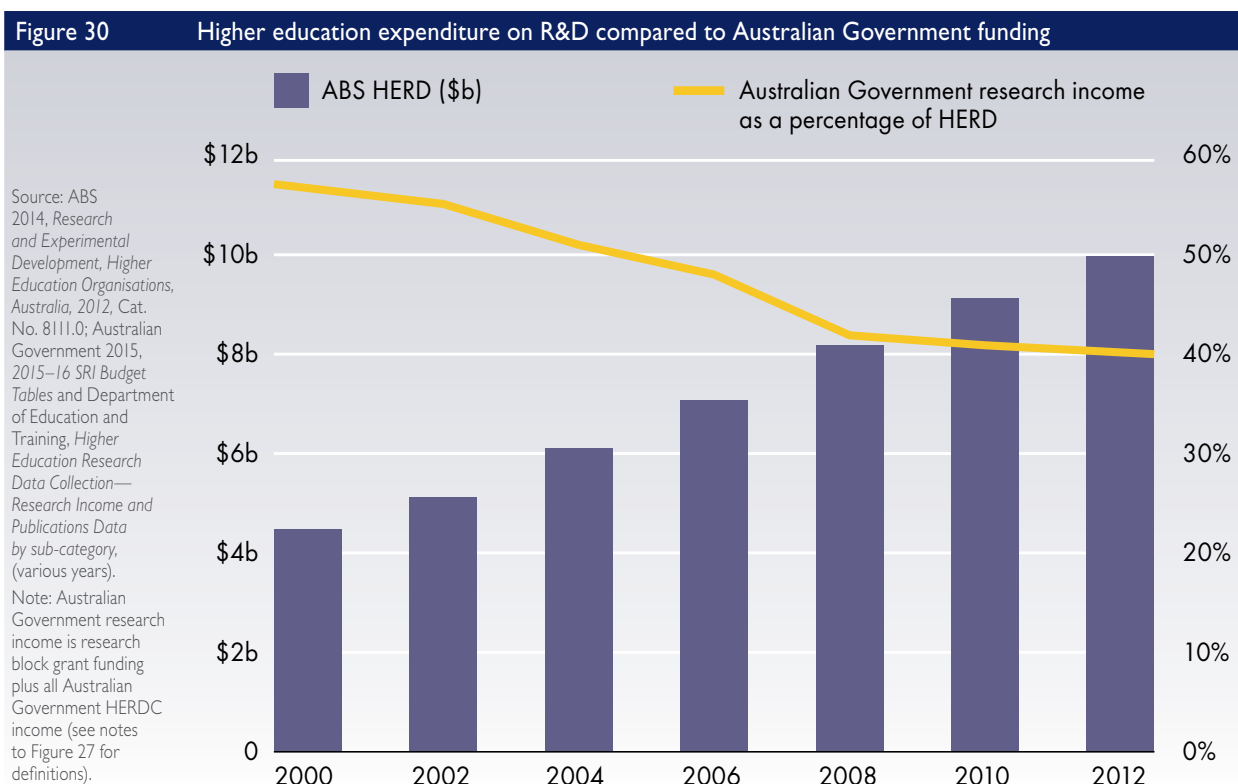
**Figure 29** Real university research income (per cent of real GDP)



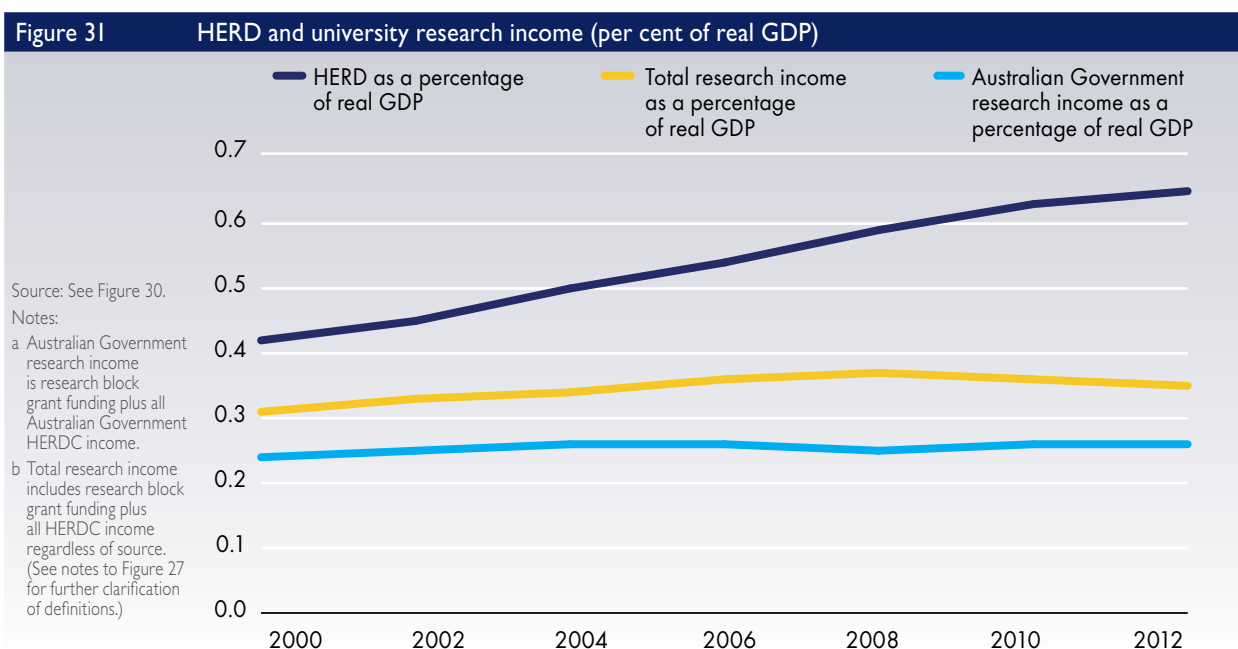
## 3.3 University spending on research and development

Since 2000, the real value of university spending on research and development has increased from around \$4.5 billion to nearly \$10 billion.

The share of that spending which is derived from the Australian Government has declined since 2000. The Australian Government contributed just over 57 per cent in 2000, but by 2012 was contributing less than 40 per cent.



Universities have increased their spending on research from 0.42 per cent of GDP in 2000 to 0.65 per cent by 2012.



In 2012, universities spent 39 per cent of their revenues on research and development. This is a considerable increase on the less than 29 per cent spent in 1996.

**Table 8** HERD as a percentage of universities total operating revenue (in current dollars, \$'000)

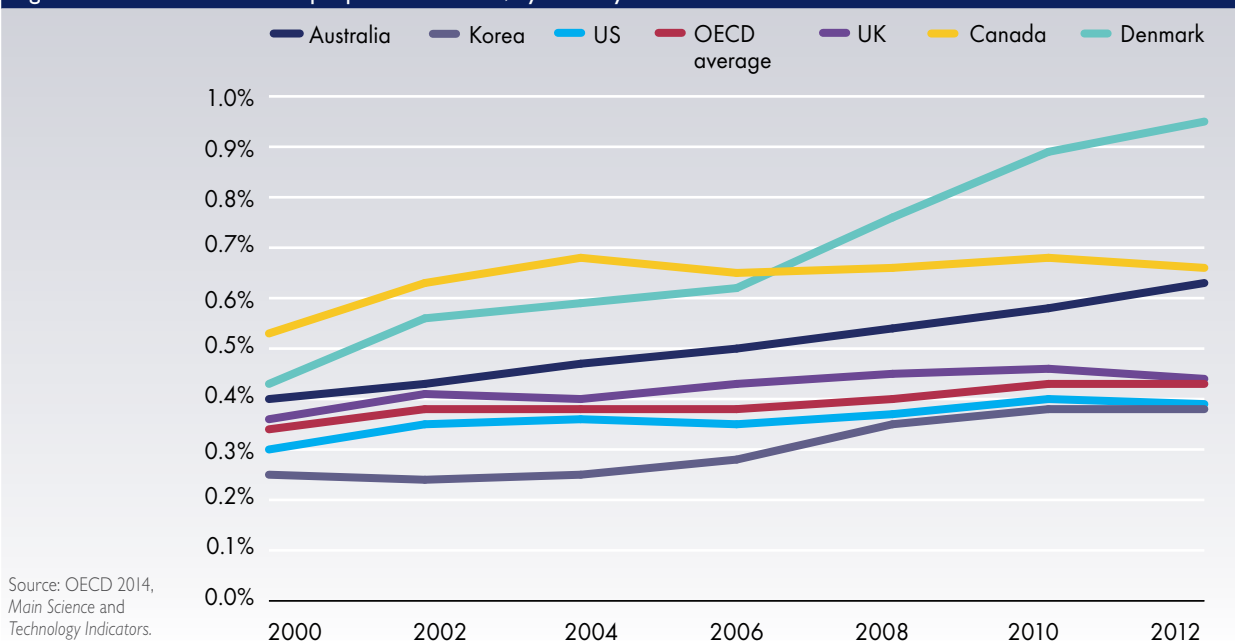
	1996	2002	2008	2012
Higher education expenditure on R&D	2,307,578	3,429,597	6,843,526	9,609,736
Universities total operating revenue (HE only)	8,009,776	11,199,011	18,411,922	24,613,806
<b>HERD as a percentage of universities total operating revenue</b>	<b>28.8%</b>	<b>30.6%</b>	<b>37.2%</b>	<b>39.0%</b>

Source: ABS 2014, *Research and Experimental Development, Higher Education Organisations, Australia, 2012*, Cat. No. 8111.0; Department of Education and Training, *Financial Reports of Higher Education Providers* (various years).

It is university-driven R&D effort that accounts for the comparatively good performance of Australia when higher education research and development (HERD) spending as a proportion of GDP is compared to that of many other countries.

This university driven R&D effort is supporting the research outcomes discussed later in this paper.

**Figure 32** HERD as a proportion of GDP, by country



Source: OECD 2014, *Main Science and Technology Indicators*.



## 3.4 Changing composition of Australian Government funding for university research

While the real value of total Australian Government research income has grown, most of this growth has occurred in Australian Government competitive grants. These grants generally do not cover the full costs of research projects and universities are required to draw on other revenue streams to cover these costs.

There has been a marginal increase in the real value of research block grants. These block grants are provided for a wide range of purposes. Some of these research block grant programs have significantly declined in real value.

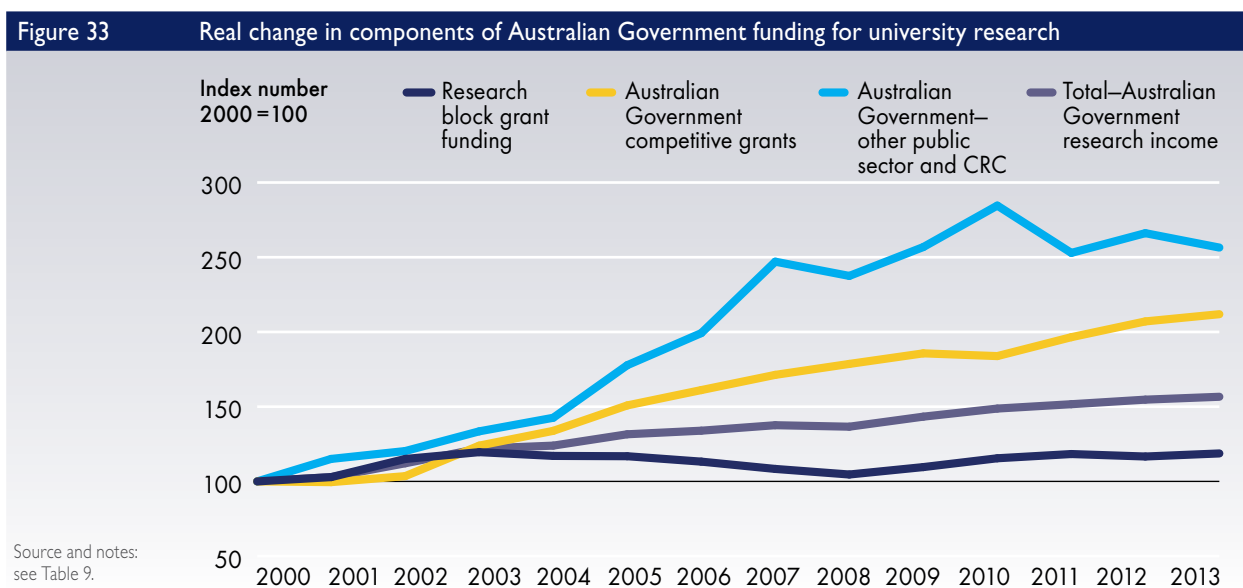
Table 9 Australian Government funding for university research (\$m in 2014 constant dollars)							
2000–06	2000	2001	2002	2003	2004	2005	2006
Research block grant funding	1,609.0	1,655.0	1,850.5	1,923.8	1,883.3	1,880.0	1,821.8
Australian Government competitive grants	736.7	733.0	762.6	913.1	985.9	1,111.2	1,186.9
Australian Government—other public sector and CRC	203.5	234.1	244.8	271.7	290.1	361.7	405.4
<b>Australian Government research income</b>	<b>2,549.1</b>	<b>2,622.2</b>	<b>2,858.0</b>	<b>3,108.6</b>	<b>3,159.4</b>	<b>3,352.9</b>	<b>3,414.1</b>
2007–13	2007	2008	2009	2010	2011	2012	2013
Research block grant funding	1,743.2	1,683.2	1,763.0	1,857.9	1,903.5	1,876.9	1,909.9
Australian Government competitive grants	1,261.9	1,315.8	1,367.9	1,354.4	1,447.6	1,525.4	1,560.9
Australian Government—other public sector and CRC	502.7	483.3	522.6	579.1	514.6	541.5	521.9
<b>Australian Government research income</b>	<b>3,507.7</b>	<b>3,482.2</b>	<b>3,653.5</b>	<b>3,791.4</b>	<b>3,865.8</b>	<b>3,943.8</b>	<b>3,992.7</b>

Source: See Figure 27.

Notes:

a For definitions of research block grant funding, Australian Government competitive grants and Australian Government—other public sector and CRC, see notes to Figure 27.

b Australian Government research income is research block grant funding plus all Australian Government HERDC income. (See notes to Figure 27 for further clarification of definitions.)

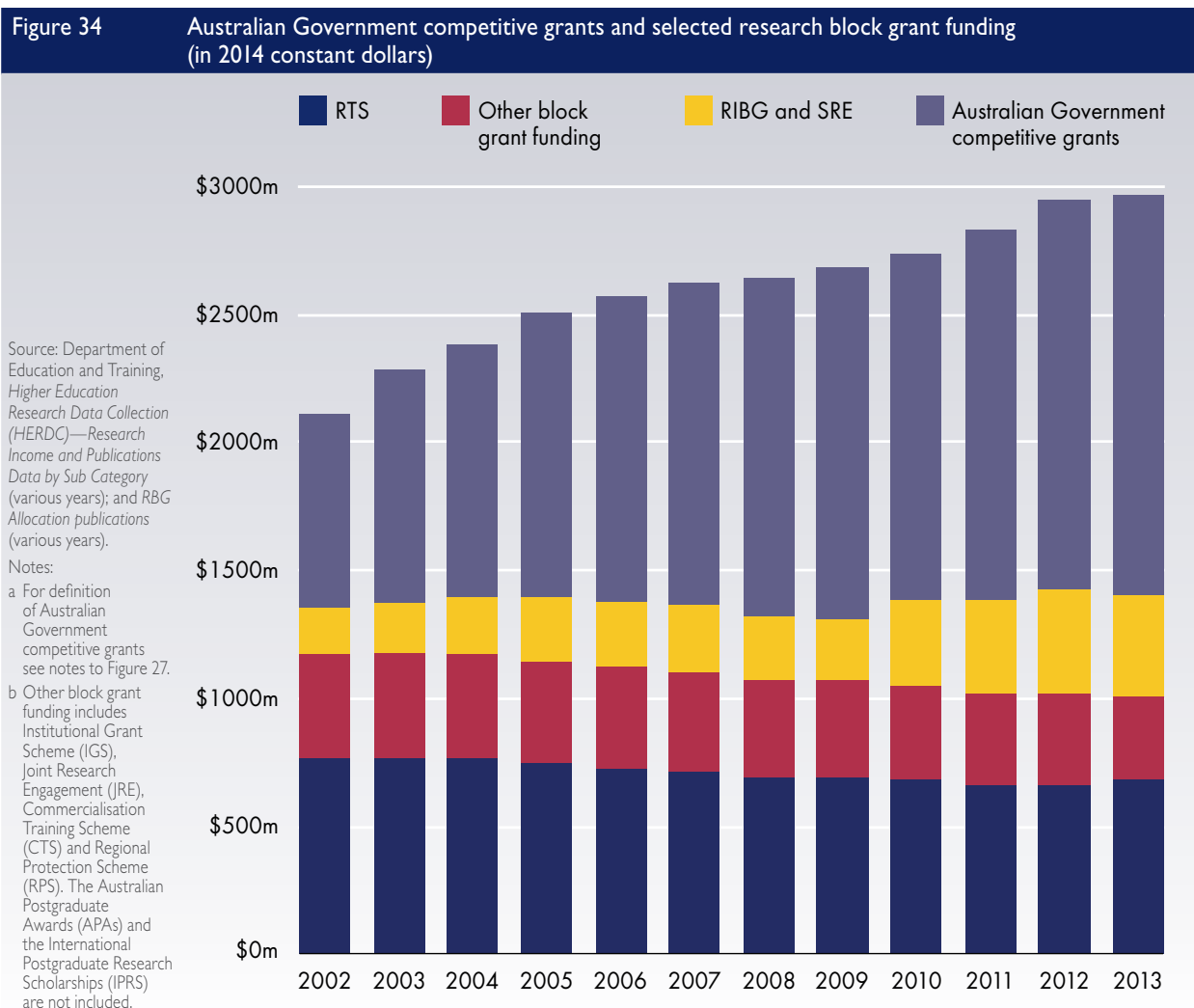


Research block grants are provided for a wide range of purposes. Figure 34 provides detail on research block grant programs over time, excluding the two schemes that provide scholarships to research trainees.

Figure 34 shows that the real amount of funding for the Research Training Scheme (RTS) has been declining since 2002. This scheme supports student places to train Australia's future researchers.

It also shows a real decline in the amount of 'other block grant funding' since 2002. Only one scheme remains in this category. It was formerly the Institutional Grants Scheme (IGS) and provided untargeted funds for university determined research priorities until 2010. Since that time the scheme has been renamed Joint Research Engagement (JRE) and its funding formula amended to provide greater emphasis on engagement.

The Research Infrastructure Block Grant (RIBG) and Sustainable Research Excellence (SRE) are intended to assist in meeting the unfunded costs of competitive research projects and/or to cover 'indirect costs of research'. While there has been growth in the total amount of funding provided by these schemes, it has not grown relative to the amount of Australian Government competitive grants.



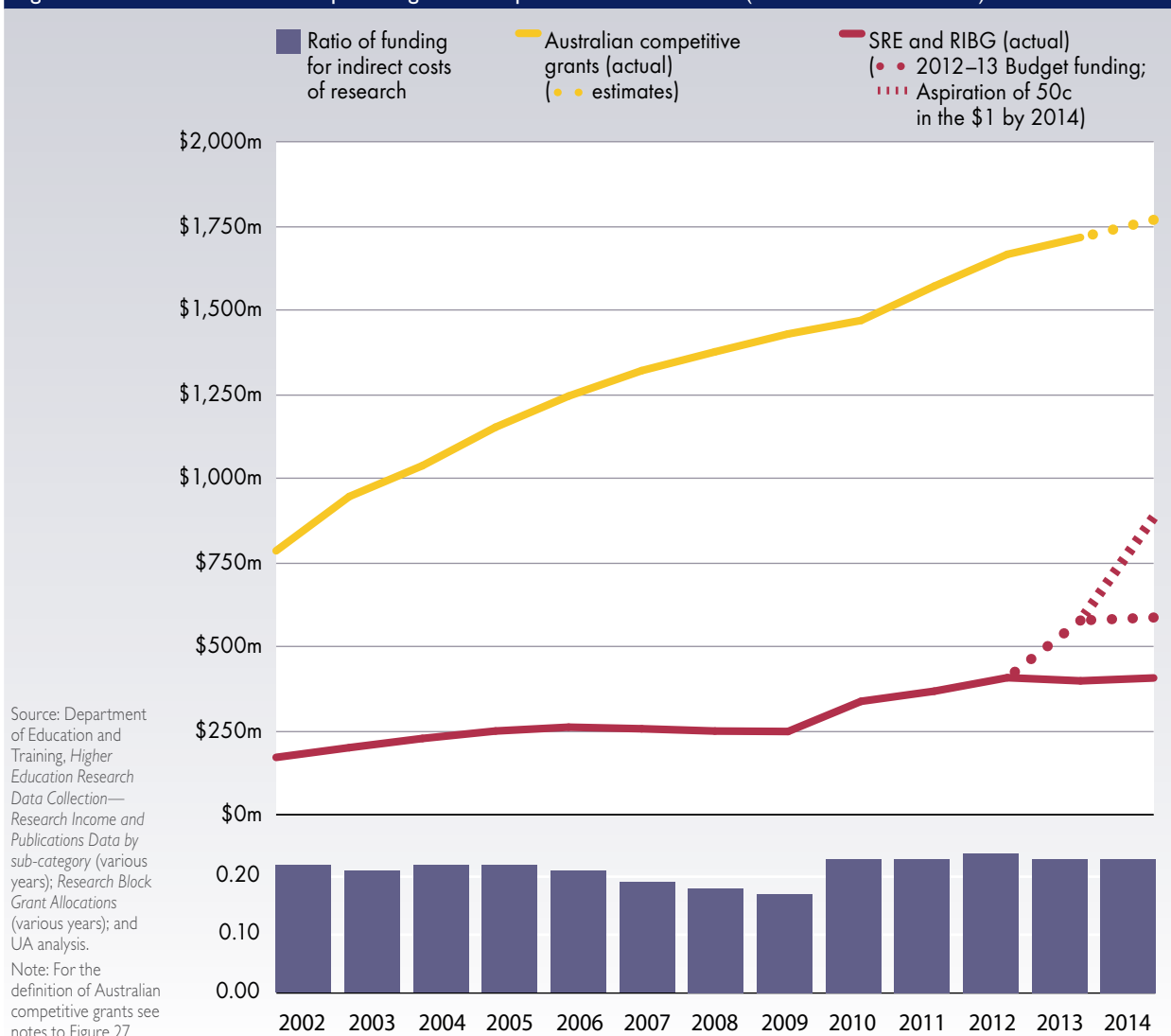
## 3.5 Support for indirect costs of research

The ARC in its submission to the 2008 Review of the National Innovation System estimated that it funded only approximately 60 per cent of the full direct costs of research projects and none of the indirect costs (page 67). The report of that review (entitled 'Venturous Australia') strongly recommended that the government fully fund the costs of university research activities.

Governments have aspired to increase funding for the indirect costs of research to a level of 50 cents for every dollar of competitive research grant, however the level of funding has remained constant at around 23 cents for every competitive research grant dollar. The stability of this ratio masks the significant increases in the amount of additional income universities are having to find to fund research. To illustrate, the gap between funding the indirect costs at 23 cents as opposed to 50 cents was \$460 million in 2013, up from \$212 million in 2002.

In the 2015–16 Budget the government announced further savings of \$300 million over four years from Sustainable Research Excellence (SRE).

**Figure 35** Australian competitive grants compared to RIBG and SRE (in 2014 constant dollars)

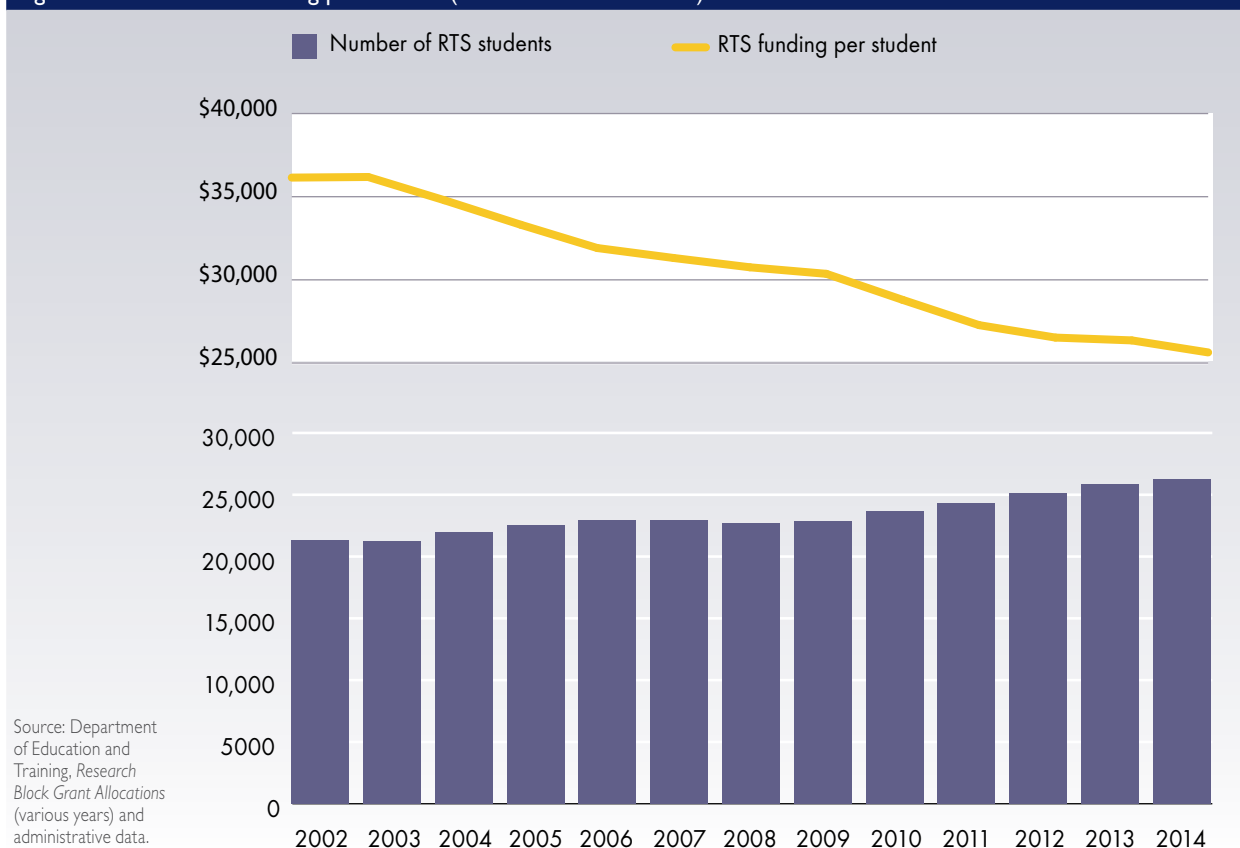


## 3.6 Funding for the training of researchers

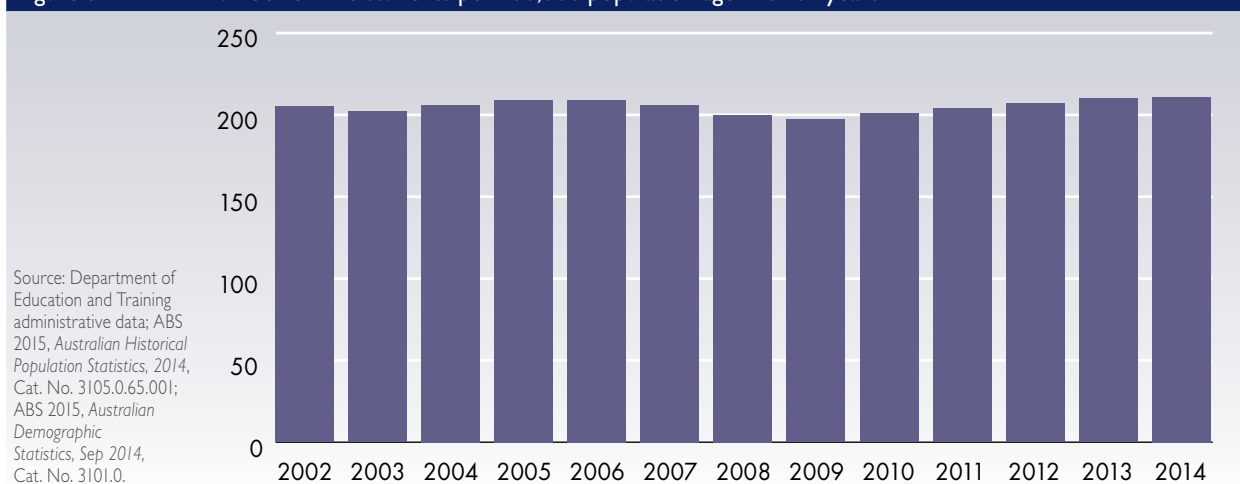
Over the past decade, there has been an increase in the number of research training students. However, it has remained constant as a share of the working age population—just over 200 per 100,000 population aged 25–64 years.

However, the funding to support the training of Australia's future researchers has declined in real terms by over 29 per cent—from around \$36,000 to less than \$26,000 per student.

**Figure 36** RTS funding per student (in 2014 constant dollars)



**Figure 37** Number of RTS students per 100,000 population aged 25–64 years



# 4 Performance of Australia's higher education system

Despite recent falls, Australia is ranked highly in the latest Universitas 21 report which assesses the national systems (rather than individual universities) of 50 countries. Australia ranked 8th in 2013, 9th in 2014 and 10th in 2015.

Australia is ranked 7th on 'outputs' which includes measures of student participation rates, employability of graduates and research performance. We are one of only two countries (the other being the United Kingdom) that are in the top eight for output but do not rank in the top eight for resources.

Australia is ranked 18th based on the resources available to its universities. Australia is ranked at 44th out of 50 countries in government expenditure on tertiary education institutions as a percentage of GDP.

**Table 10** Top 10 university systems and their measures for resources and output (2015)

	Overall ranking		Resources measures		Output measures	
	Score	Rank	Score	Rank	Score	Rank
US	100	1	84.7	7	100	1
Switzerland	87.1	2	92.3	5	61.2	5
Denmark	85.3	3	100	1	62.4	4
Finland	85.2	4	91.2	6	59.6	8
Sweden	84.7	5	93.2	4	61.2	5
Canada	82.8	6	99.6	2	63	3
Netherlands	81.6	7	79.3	10	58.8	9
UK	80.6	8	54.8	26	69.8	2
Singapore	80.3	9	94	3	50.1	16
<b>Australia</b>	<b>77.1</b>	<b>10</b>	<b>64.8</b>	<b>18</b>	<b>60.9</b>	<b>7</b>

Source: Universitas 21 2015, *Ranking of National Higher Education Systems*.

Note: The 2015 report includes the same 50 countries as in the 2014 report, which have again been ranked separately in four areas (Resources, Environment, Connectivity and Output) and given an overall ranking. The overall country ranking is a weighted average of each module:

- **Resources** component (20 per cent weight): covers government expenditure, total expenditure, and R&D expenditure in tertiary institutions.
- **Environment** module (20 per cent weight): comprises a quantitative index of the policy and regulatory environment, business views of the education system, the gender balance of students and academic staff, and a data quality variable. In 2015, a measure of the financial autonomy of institutions has been added to the qualitative index.
- **Connectivity** component (20 per cent weight): includes numbers of international students, research articles written with international collaborators, measures of interaction with business and industry, and web-based connectivity.
- **Output** variables (40 per cent weight): encompasses nine indicators that cover research output and its impact, the presence of worldclass universities, participation rates and the qualifications of the workforce. The appropriateness of training is measured by relative unemployment rates for different levels of education

Australian universities perform well on the various university ranking systems, with eight Australian universities consistently in the Top 200 universities in the world and over half ranked in the Top 500.

Based on the 2013 Times Higher Education World University Ranking's characteristics of the average Top-200 universities, Australian universities are still lagging their overseas peers in terms of resources invested in the sector.

**Table 11** Australian universities performance in different ranking systems

Number of Australian universities ranked in:	Times Higher Education World University Rankings		Academic Ranking of World Universities (SHJT)		QS World University Rankings	
	2014	2015	2014	2015	2014	2015
Top 100	5	6	4	4	8	7
Top 200	8	8	8	8	8	8
Top 400	20	22	18	19	19	21
Top 500	n.a.	27	19	20	23	21

The Times Higher Education, *World University Rankings* (various years); Shanghai Jiao Tong, *University Academic Ranking of World Universities* (various years); QS, *World University Rankings* (various years).

**Table 12** Characteristics of world top 200 universities and Australian universities in the top 200 (2013)

	Average for the top 200 universities	Average for the seven Australian universities in the top 200 universities
Annual Income per academic (in USD)	\$751,139	\$491,376
Total research income per academic (in USD)	\$229,109	\$143,675
Proportion of research papers with at least one international co-author	43%	45%
Proportion of international students	19%	28%

Source: The Times Higher Education 2015, *World University Rankings*; Thomson Reuters 2015, *InCites*; Department of Education and Training, *uCube, Research Block Grant Allocations 2013*, *Higher Education Research Data Collection—Research Income and Publications by sub-category 2013* and *Financial Reports of Higher Education Providers 2013*.

## 4.1 Student outcomes

In 2014, almost 320,000 students completed their degrees. This is more than a 10 per cent increase on 2010. Over 2000 Indigenous students completed their degrees in 2014, an increase of more than 40 per cent on 2010.

Award course completions have increased at an annual average growth rate of around 4.5 per cent since 1999.

**Figure 38** Number of award course completions for all students, by course level



**Figure 39** Number of award course completions for Indigenous students, by course level

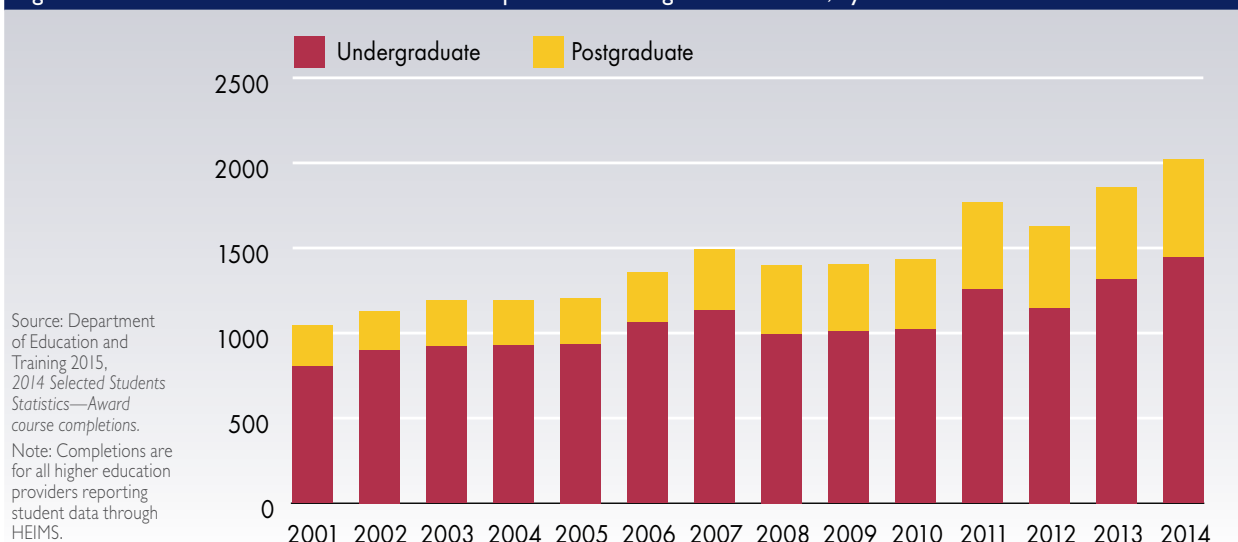


Table 13 shows that the share of students completing for the cohort admitted to a bachelor degree each year has been relatively constant since 2005, the first year this type of analysis became possible. For each cohort, around 67 per cent complete within six years. There is a slightly smaller proportion completing within four years. The extent to which this may be due to compositional changes, such as degree length or share undertaking part-time study, is unclear.

**Table 13 Cohort analysis for commencing bachelor degree students over four-year and six-year periods**

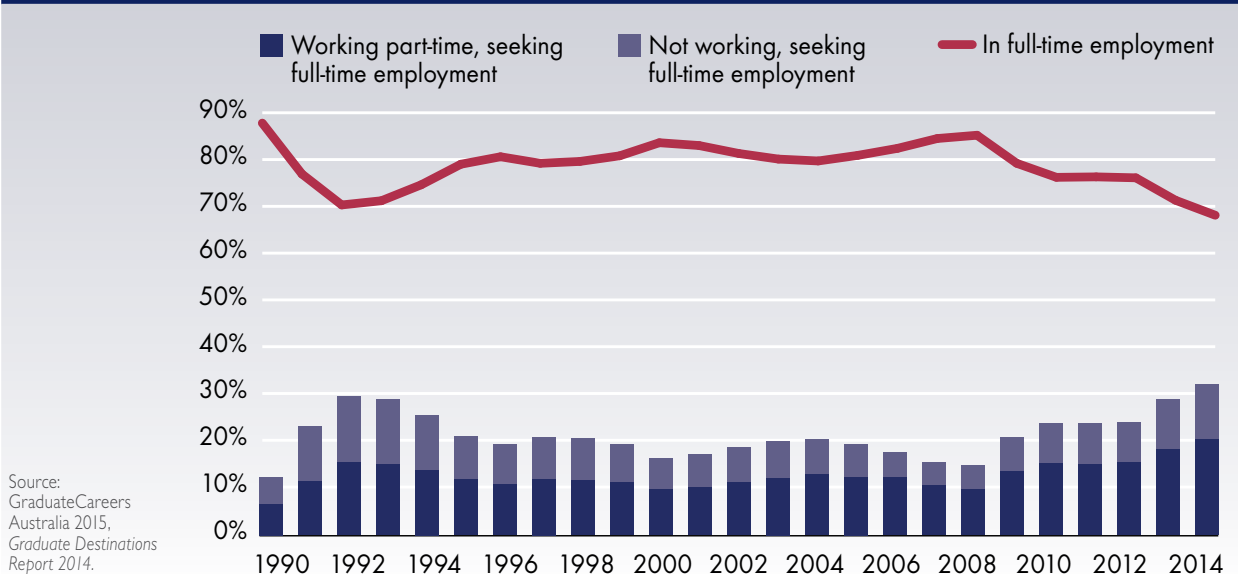
Over a four-year period	Cohort	Completed (in any year)	Still enrolled at the end of the four-year cohort period	Re-enrolled but dropped out	Never came back after the first year
Domestic students	2005	47.3%	30.2%	11.5%	11.0%
	2006	46.7%	32.7%	10.6%	10.0%
	2007	45.9%	33.8%	10.4%	9.9%
	2008	46.7%	33.5%	10.9%	8.9%
	2009	46.1%	34.3%	11.1%	8.5%
	2010	45.1%	34.7%	11.2%	9.0%
Overseas students	2005	64.9%	11.4%	13.0%	10.7%
	2006	67.5%	11.7%	10.6%	10.2%
	2007	68.4%	12.2%	10.4%	9.0%
	2008	70.0%	11.2%	10.4%	8.4%
	2009	71.3%	10.6%	10.3%	7.7%
	2010	71.2%	10.5%	10.5%	7.7%
Over a six-year period	Cohort	Completed (in any year)	Still enrolled at the end of the six-year cohort period	Re-enrolled but dropped out	Never came back after the first year
Domestic students	2005	67.0%	11.0%	12.9%	9.1%
	2006	66.8%	11.0%	13.4%	8.8%
	2007	66.6%	11.4%	13.4%	8.6%
	2008	67.1%	11.3%	13.8%	7.9%
Overseas students	2005	73.3%	1.3%	14.8%	10.6%
	2006	76.0%	1.4%	12.5%	10.1%
	2007	77.5%	1.4%	12.2%	8.9%
	2008	78.2%	1.4%	12.1%	8.3%

Source: Department of Education and Training 2015, *Completion Rates of Domestic Bachelor Students—A Cohort Analysis, 2005–13*.



In 2014, of those bachelor degree graduates available for full-time employment, 68 per cent were in full-time employment within four months of completing their qualifications. There has been a sustained decline of around 17 percentage points in the share in full-time employment since the 2008 global financial crisis. Over the same period, the share in part-time employment has risen by around 11 percentage points. The net result is that the total share in employment in 2014 is at around 90 per cent.

**Figure 40** New bachelor degree graduates available for full-time employment, by employment status

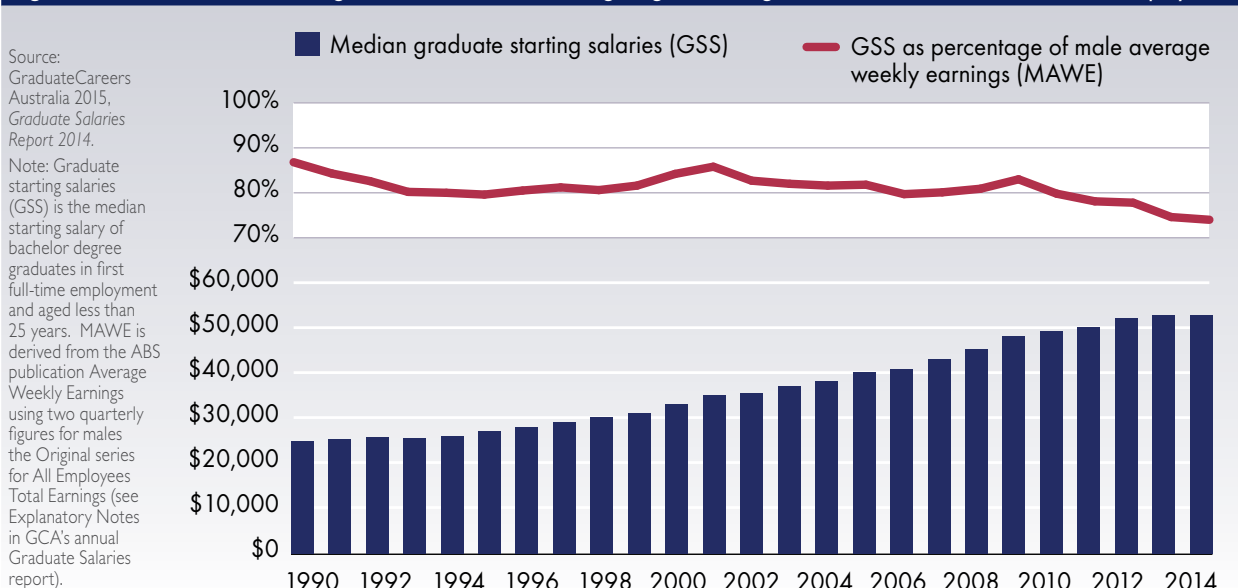


In 2014, the median graduate starting salary (GSS) was relatively unchanged at \$52,500, up from \$52,000 in 2012 and \$50,000 in 2011.

As a percentage of male average weekly earnings (MAWE), the median starting salary has generally been declining for around a decade. It is currently 74.0 per cent of MAWE—the lowest figure observed since the series began in 1977.

This trend may be influenced by a variety of factors, which include the increasing share of graduates who are women and changes affecting the nature of the labour market and the distribution of wages. For example, MAWE may be influenced by comparatively large salary increases for men at the top of the income distribution and/or in later stages of the work life cycle.

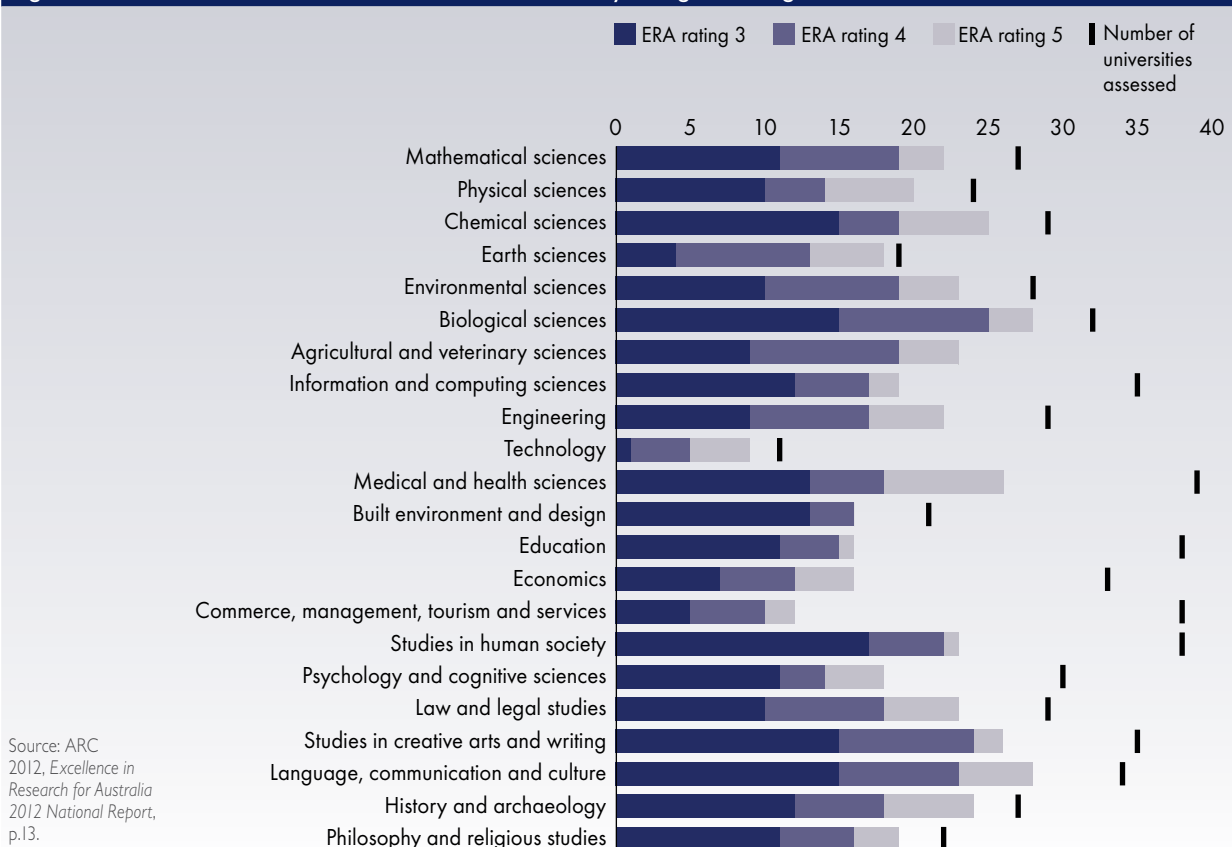
**Figure 41** Median starting salaries for all bachelor degree graduates aged less than 25 and in first full-time employment



## 4.2 Research outcomes

The 2012 Excellence in Research for Australia National Report provides information on the quality of research undertaken by Australian universities. In 19 of the 22 different fields of research, the majority of universities assessed were performing at, or above, world standard.

**Figure 42** Universities at or above world standard by rating—two-digit field of research code



Source: ARC  
2012, *Excellence in  
Research for Australia  
2012 National Report*,  
p.13.

The 2015 Leiden Ranking measures the scientific performance of 750 major universities worldwide, based on Web of Science indexed publications from the period 2010–13. There were 23 Australian universities included in the 2015 ranking.

All 23 of these Australian universities were ranked in the Top 500 based on the indicators for publication impact, inter-institutional and international collaboration. Eight universities were ranked in the Top 500 on the industry collaboration indicator.

**Table 14** CWTS Leiden Ranking 2015—Australian universities

Source: CTWS Leiden Ranking 2015.

Notes:

a Impact indicator is based on the proportion of a university's publication that, compared with other publications in the same field and in the same year, belong to the top 10 per cent most frequently cited in the field

b Collaboration—inter-institutional is based on the proportion of a university's publications that have been co-authored with one or more other organisations.

c Collaboration—international is based on the proportion of a university's publications that have co-authors from two or more countries.

d Collaboration—industry is based on the proportion of a university's publications that have been co-authored with one or more industrial partners.

		No. of Australian universities ranked in the:			
		Top 100	Top 200	Top 400	Top 500
Impact	Proportion of institutions' publications in top 10% cited	1	6	21	23
Collaboration	Inter-institutional	2	11	21	23
	International		5	22	23
	Industry			1	8

The level of collaboration with other countries is recognised as an important contributor to a nation's research performance. While Australia is geographically isolated, our rate of international collaboration is above that of the United Kingdom and the United States.

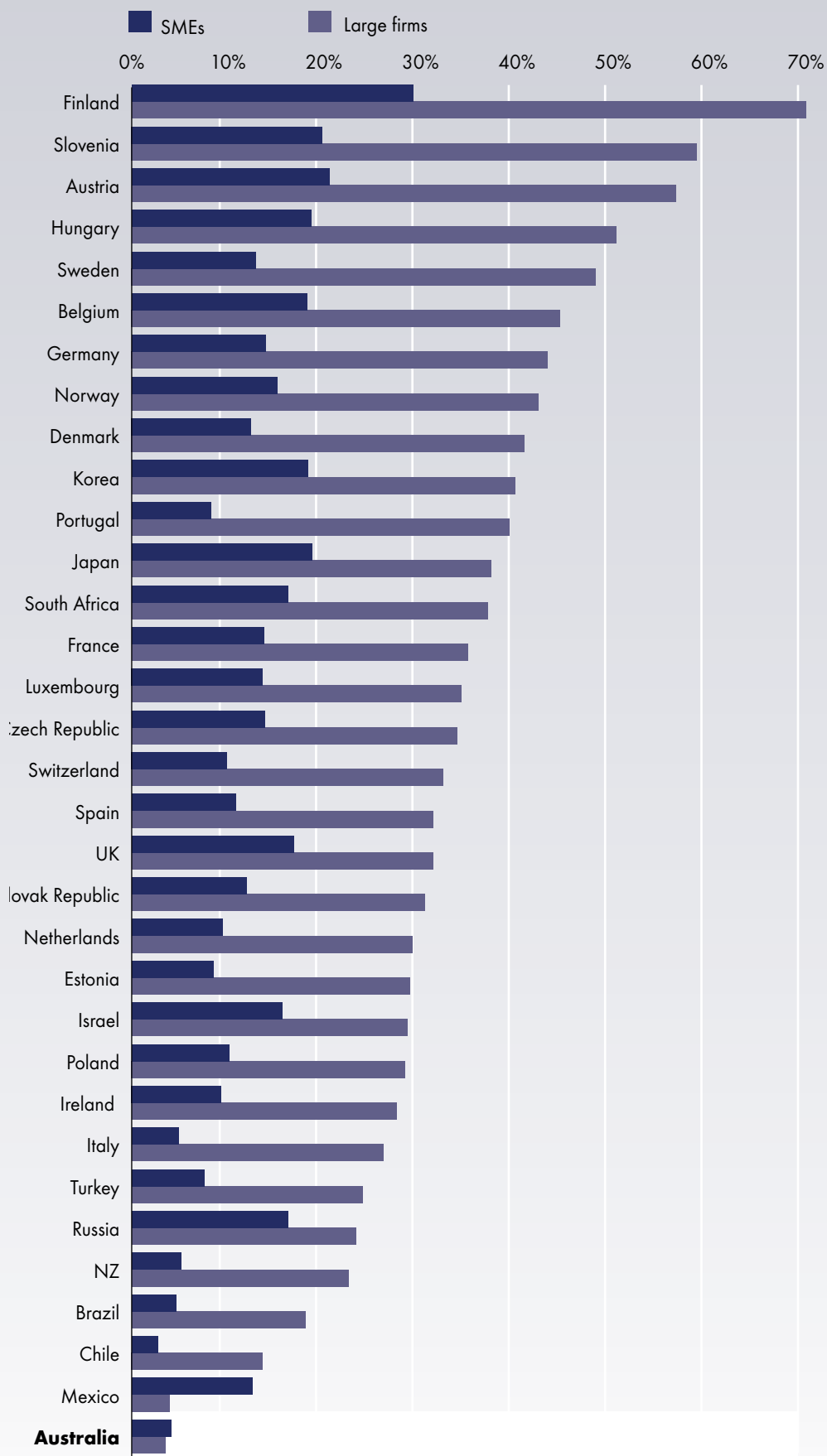


The level of collaboration between business and research institutions is consistently highlighted as an area of weakness for Australia. Despite tax incentives for industry research and development now being the largest single component of government research and innovation expenditure, the level of collaboration between Australian firms and public research agencies/higher education institutions is very low by OECD standards.

During 2008 to 2010, Australia ranks 33rd out of 33 countries on the proportion of large businesses collaborating with higher education institutions or public research agencies on product or process innovation. It ranks 32nd out of 33 countries for the proportion of small and medium enterprises (SMEs) that do so. Around 4 per cent of our large firms collaborated, compared with Finland where it is about 70 per cent for large businesses and 30 per cent for SMEs or the UK where it is about 30 per cent and 20 per cent respectively.

Figure 44

Business collaborating with higher education institutions or public research agencies, selected countries, 2008–10



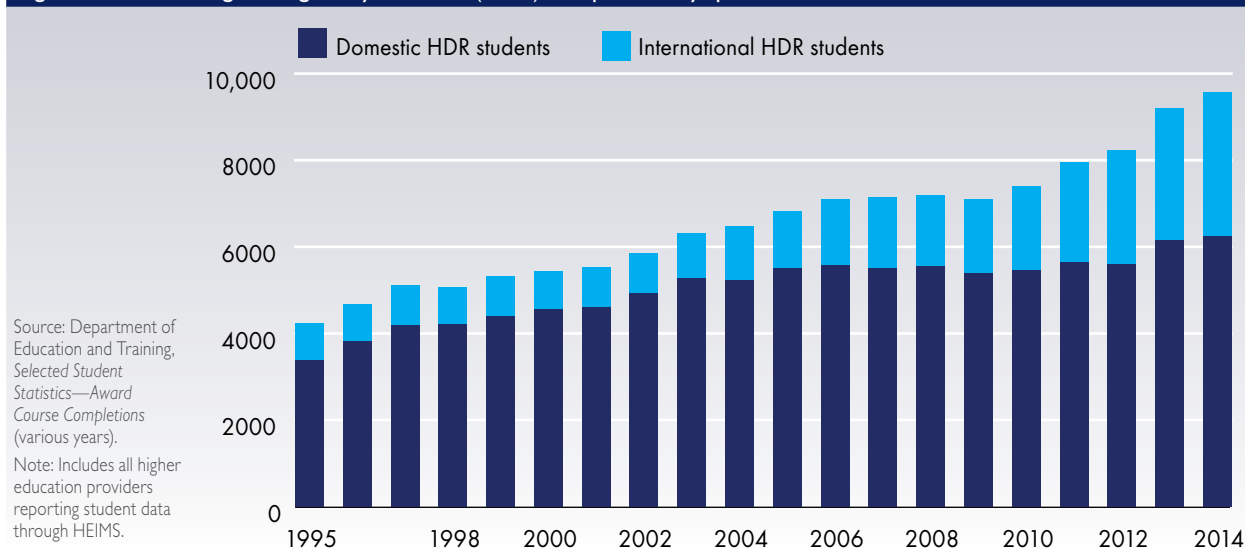
Source: OECD 2013, *Science, Technology and Industry Scoreboard 2013*, p.127.

Note: Collaboration between business and higher education institutions or public research agencies is measured as the percentage of product and/or process innovative firms in each size category that have engaged in collaboration. A product and/or process innovative firm is one that has implemented product or process innovations, or with ongoing/abandoned innovation activities relating to product/process innovation. The data includes three non-OECD countries i.e. Brazil, Russia and South Africa.

Over the last 20 years, the number of students completing a higher degree by research (HDR) has more than doubled.

The number of domestic students completing a higher degree by research has increased by around 84 per cent between 1995 and 2014.

**Figure 45** Higher degree by research (HDR) completions by qualification



## 4.3 Employment and wages

Australian universities employ more than 120,000 staff on a full-time equivalent basis. Over the last 20 years the level of increase in academic and non-academic staff has been similar.

Like many areas of the labour market, the impact of the baby-boomers on the structure of the workforce is evident. There has been greater growth in more experienced senior academic staff, who attract higher wage rates, than in lower level staff classifications.

Over the last decade there has been a significant increase in casual staff, primarily to support teaching.

Growth in university wages over this decade has been comparable to growth in wages for all employees in professional, scientific and technical services, though the timing of increases varies from year to year. It has been higher than for comparable employees in the last three years.

**Figure 46** Total academic and professional staff, including casual staff (full-time equivalent)

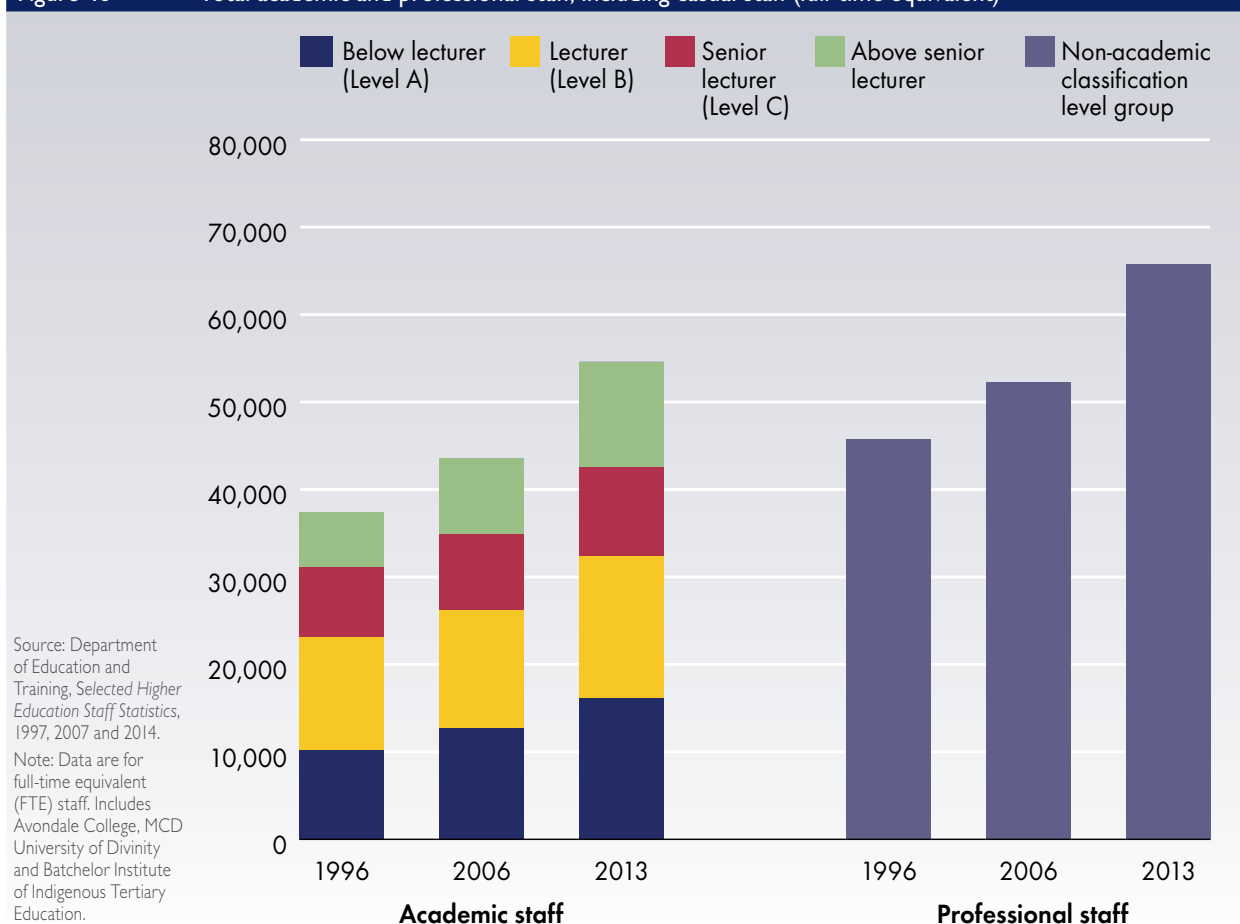


Figure 47

## Number of full-time equivalent casual and permanent staff by function

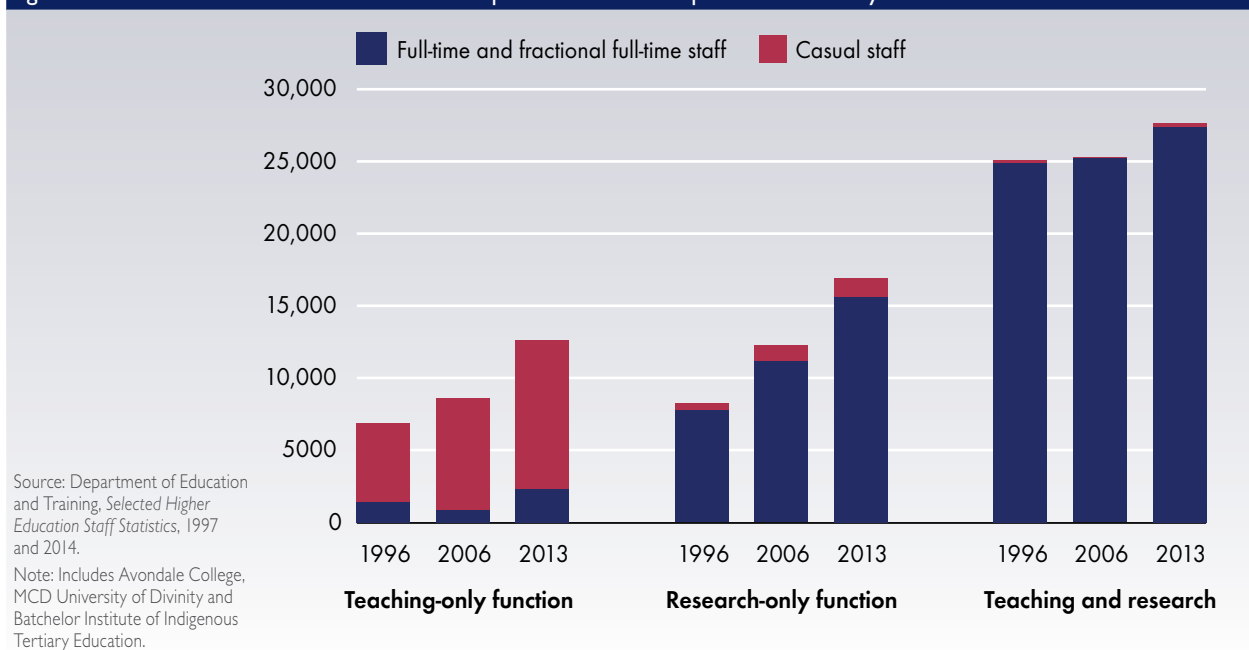
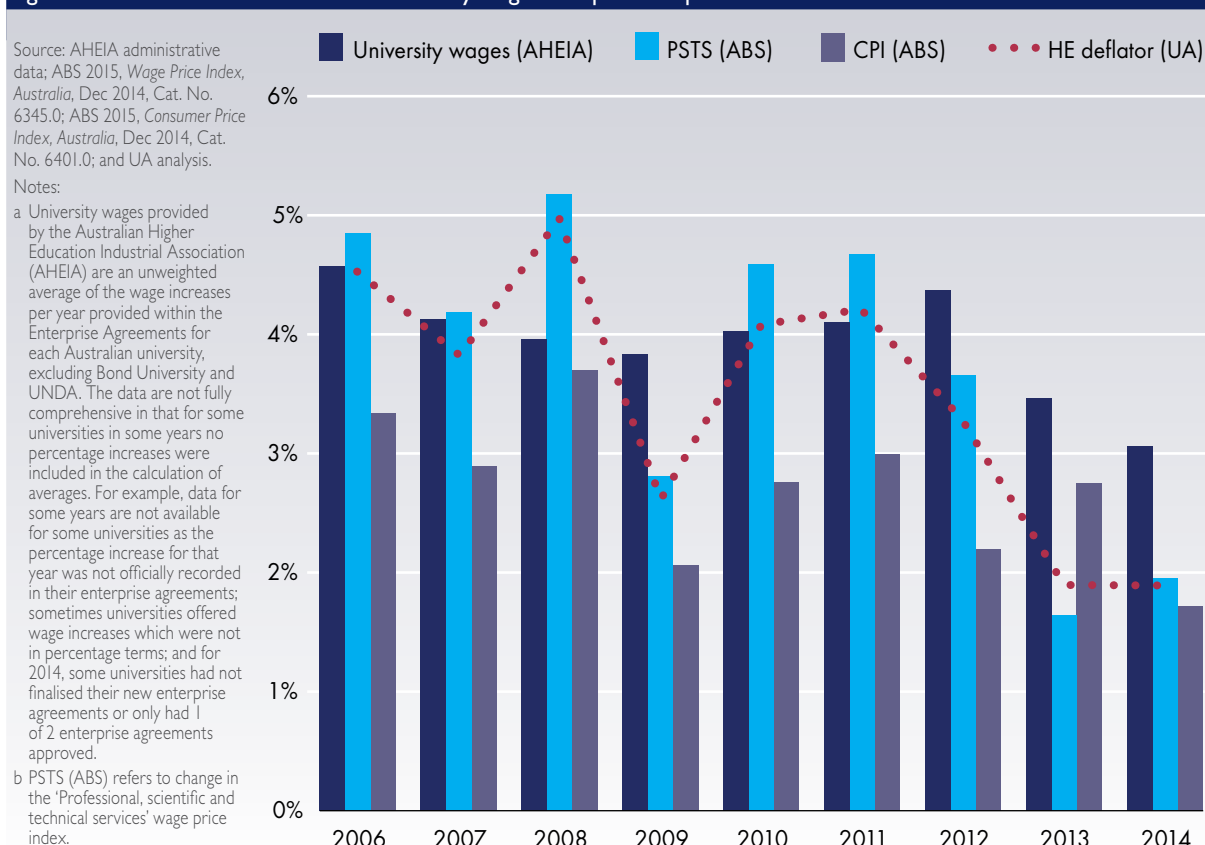


Figure 48

## Growth in university wages compared to price indexes



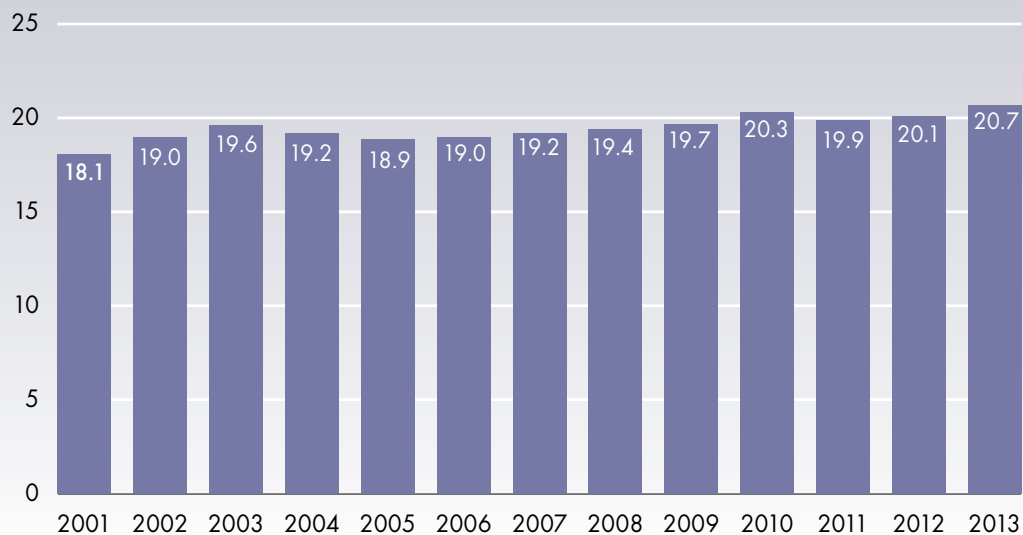
## 4.4 Student to staff ratios

The average student to staff ratio across the higher education sector has risen from around 18:1 in 2001, to almost 21:1 in 2013. These aggregate ratios can mask widely divergent situations across disciplines and years, but are an indicator of significant change occurring in higher education delivery.

**Figure 49** Student to staff ratio: Number of students per academic staff

Source: Department of Education and Training, *uCube* and *Selected Higher Education Student and Staff Statistics*.

Note: Based on onshore equivalent full-time student load (EFTSL) only (including onshore international students) and full-time equivalent (FTE) academic staff (including casual staff). Academic staff only includes staff involved in teaching. Excludes Bond University due to lack of staff data before 2007.





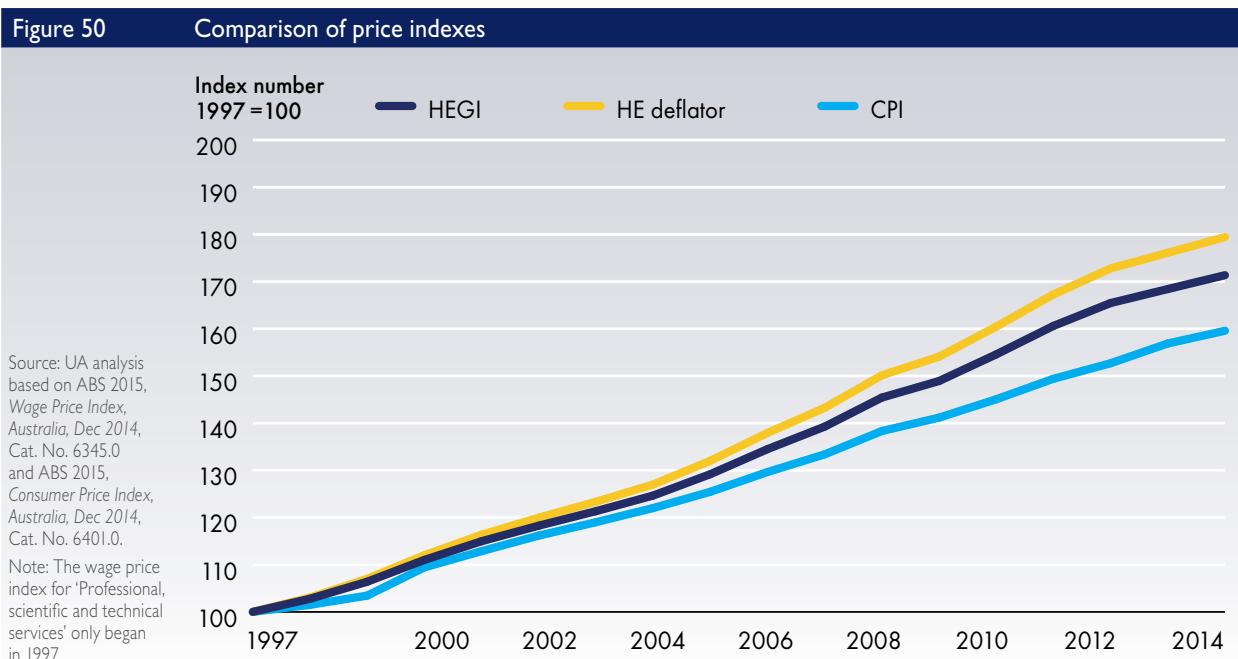
# 5 Appendix A: Deflator for analysis

The analysis in this paper required a deflator to be selected for the purpose of determining whether the 'real' value of funding/expenditure over time had changed. The authors considered a range of potential indexes, including the Consumer Price Index (CPI) and the Higher Education Grants Index (HEGI) which is the current method of indexing grants made under the *Higher Education Support Act 2003* (HESA).

The HEGI is a composite index calculated by adding 75 per cent of the movement in the Wage Price Index for Professional scientific and technical services (PSTS) discounted by 10 per cent and 25 per cent of the movement in the CPI index. The 10 per cent discount applied to the PSTS is intended to require ongoing improvement in productivity within the higher education sector. There is a time lag in the application of HEGI under the HESA arrangements.

In this paper, the authors have chosen to use what is referred to as the Higher Education (HE) deflator. This index is calculated in the same way as HEGI, except that there is no 10 per cent 'productivity' discount. There is also no time lag in application of the index. The index value for a year reflects the growth during the 12 months to December quarter of that year. The composition of the index is intended to broadly reflect changes in costs experienced the higher education sector.

Figure 50 shows the growth in the three indexes discussed here since 1997.





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