

# As Asia's Quarry: Implications for Australia

Leong H Liew  
Griffith University  
Australia

Revised Version: 14 October 2010  
Accepted for publication in the  
*Australian Journal of International Affairs*

## **Abstract:**

The re-emergence of China in the new millennium has increased global demand for mineral resources, causing a return to the Australian vision of national prosperity tied to primary exports – this time minerals. Many analysts have questioned the wisdom of anchoring Australia's prosperity to being a quarry for Asia. The current mining boom has enabled Australia to postpone, but has not removed, the need to develop new industries to sustain a high standard of living in a future marked by global warming.

Since innovation is essential to the development of new industries that can contribute to a strong and sustainable economy, cultivating innovation requires serious national commitment over the long term. This requires Australia to seriously reconsider education policy at all levels and to abandon what I term 'rational choice populism' – a culture of anti-intellectualism and an unequivocal belief in a form of market fundamentalism – that discourages the advanced level of investment in human capital required for innovation.

## **Acknowledgements**

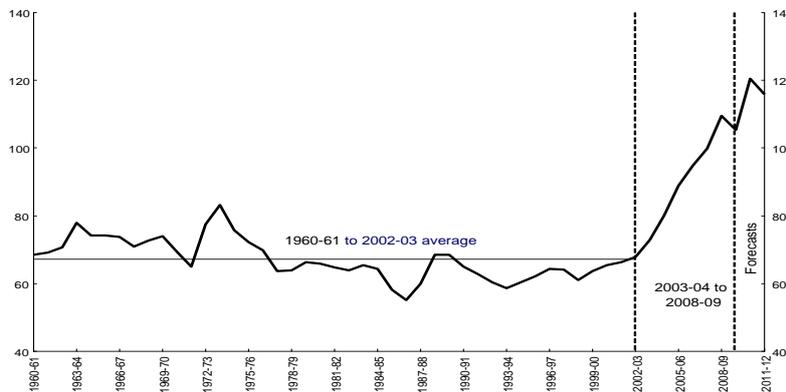
I would like to thank two readers for their useful comments.

# As Asia's Quarry: Implications for Australia

## Introduction: The Lucky Country

Australia's current prosperity rides on the back of natural resources. During the 1980s the Labor government sought to reduce Australia's dependence on primary exports and reorient the national economy towards elaborately transformed manufacturing in response to low world resource prices at that time. But the re-emergence of China in the new millennium has dramatically increased the global demand for mineral resources, reversing the earlier fall in world natural resource prices. Australia's wealth now stems largely from Asia's demand for Australia's natural resources. In 2009, 64.1 per cent of Australia's export revenue came from Asia (ABS 2010). In the first half of 2010, China accounted for about 22 per cent of Australia's export revenue. Resources accounted for 55 per cent of this revenue compared to 35 per cent in the 1990s (Lowe 2010: 6). With resource prices at unprecedented heights, Australian policy makers and many of the nation's industrial sectors see national – or at least their own – prosperity tied once again to primary exports. Australia's terms of trade may inevitably fluctuate, but in 2010 the Australian Treasury forecast future levels well above the average of 1960–2003 (Figure 1).

Figure 1: Terms of trade (2007–08 =100)



Source: AT (2010)

Numerous studies, like Caselli and Cunningham (2009), Robinson et al. (2006) and Ross (1999), explain how a country's abundant natural resources can end up being a 'curse' through extensive rent-seeking under weak governance.<sup>1</sup> It can be argued that democracy has largely spared Australia the resource curse. But the blessings of abundant resources and democracy are fertilisers that have promoted a political discourse that I term 'rational choice populism' – a culture of anti-intellectualism and belief in a weak form of market fundamentalism – to the longer term detriment of the national economy.<sup>2</sup> This paper argues that such a culture weakens Australia's capacity to generate a better informed and more carefully considered national discourse on human capital formation and consequently national policy with long-term vision for producing and sustaining national well-being through a highly educated society. This capacity is crucial as there are serious questions on the long-term sustainability of Australia's dependency on the resource sector.

## **Democracy: Prophylactic against the Resource Curse**

Abundant natural resources have turned out to be a curse in many countries, where the lethal combination of weak governance and abundant resource rents creates ample opportunities for corrupt rent-seeking that impacts negatively on GDP growth. For Australia, the huge natural resource endowment has been largely a blessing. Australia and other resource-rich developed countries such as Canada and Norway are mature democracies. They have used their natural resource endowment for national rather than narrowly elite wellbeing. These democracies have escaped the resource curse but are not totally immune from rent-seeking activities, as explained in various studies (example, Dahlberg and Johansson 2002 and Milligan and Smart 2005) that indicate the difficulties even for mature democracies to avoid ‘pork barrel’ politics.

In mature democracies politicians are of course not granted *carte blanche* to pork barrel. A free press and formal processes of accountability help to restrain efforts at pork barrelling and to limit damage from it. Pork barrelling may favour one district over another with larger and better equipped sports fields, schools or hospitals, but there are normally checks and balances in a democracy to ensure the district received value for money from the funds spent. The Howard government was criticised before the last election for taking advantage of the mining boom to expand middle-class welfare, but the criticism was relatively mild compared to the criticisms of the Rudd government over its handling of its home insulation and school-building programs implemented quickly in response to the global financial crisis.

The existing literature conveys a consensus that democratic governance is a prophylactic against the resource curse. But while Australia appears set to retain democratic governance to prevent a ‘resource curse’ outcome, how long can the resource boom in Australia last given limits on both demand for it and supply of it? And while democracy might have saved Australia from the resource curse, will it enhance or diminish Australia’s capacity to adapt to situations in the distant future when the global hunger for Australian resources is no longer there? What approach should underpin Australian policies to develop alternative national strengths that can sustain a strong national economy and society after the mineral boom?

## **Mining as the Holy Grail of the Australian Economy**

Australian state and national governments are now hooked on mining. The resource sector in Australia is seen to sustain employment – a key performance indicator for governments. It provides well paid employment to relatively low-skilled as well as to high-skilled labour and is a major source of government revenue that could expand even further in the long-term (AT 2010). Recent debates over a proposed resource super profit tax (RSPT) have only reinforced official and public perceptions that the resource sector is the Holy Grail of the Australian economy. However, Treasury’s forecasts might be optimistic; high mineral prices encourage investments in new sources of supply that put downward pressure on mineral prices. Global demand for natural resources is also volatile – a bust invariably follows a boom as history has long proven.<sup>3</sup> Moreover, minerals are non-renewable resources. It is therefore not surprising that many analysts have questioned the desirability of tying Australia’s prosperity to heavy dependence on being a quarry for Asia.

Demand for resources, whether renewable or not, is also conditional on foreign national economic policies. China’s energy efficiency improved even before environmental pollution

and global warming became serious policy issues in that country, largely due to market reform that raised very low plan-prices nearer to free market levels. Between 1980 and 2000 the size of China's economy quadrupled, but energy consumption only doubled (Rommeney 2008: 8). Continuing high global demand for energy resources also depends on the absence or non-use of alternate, economically viable and innovative non-resource intensive technologies. The challenge of global warming provides impetus for the development of both alternative energy and resource-saving technologies. The consequences of global warming for economic wellbeing will not disappear and are likely to worsen, despite the failure of national governments at the climate change negotiations in Copenhagen to reach agreement on cutting the amount of carbon emissions. China, Australia's major natural-resource customer, is responding in ways likely to reduce the mineral demand of itself and others over time. It is investing heavily in new technologies to reduce the intensity of carbon emission from GDP growth (Lieberthal and Sandalow 2009: 28-31; Rommeney 2008) and some of these investments have borne fruit and created spinoffs in exports. A Chinese company, Yingli Green Energy, has become one of the world's largest producers of photovoltaic solar panels, exporting half its output to Europe and selling to the US as well (Flax 2010).<sup>4</sup> Other countries are making similar efforts to reduce their carbon emissions and in the process creating new business opportunities that over time will lower demand, and price, for mineral energy resources.

Mokyr (1990) in his impressive historical study provides strong empirical support for the link between technological creativity and economic growth. He recorded how improvements in the stock of human knowledge throughout history were harnessed to create new goods or to produce existing goods with fewer resources. He explained how technological change was instrumental in the creation of substitutes for inputs into production and responsible for extinguishing demand for some final goods. The nature of technological change and the economic impacts of its application are often not anticipated. But even without this knowledge it is clear that the current mining boom has enabled Australia to postpone but not to overcome the need to sustain present industries, develop new industries, and diversify the types of its exports and global markets in ways most likely to yield a high living standard for its population in the future. Australia may have many years of reserves of natural resources, and new technologies that reduce both demand and price for these resources may – or may not – appear only in the distant horizon. But seeds for the innovation Australia needs to plant now depend on a national culture supportive of deep and broad learning and enquiry, a culture now far from mainstream. The vein of anti-intellectualism that historically has marked parts of Australian culture today runs deeply through popular culture and works against appreciation and pursuit of innovation as a national hallmark. Development of a dominant culture conducive to deep learning and enquiry has a long gestation but incomparable rewards as a national investment. The seeds for innovation and intellectual capacity position societies to adapt most effectively to national challenges, whether from severe external economic shocks or natural disasters like those consequential to global warming. For Australia, one such challenge may well be a massive drop in foreign demand for its mineral resources.

### **Resource Boom is a Veil**

In this light we recognise the resources boom as a type of curse as well as a type of blessing for Australia, since it has effectively veiled over Australia's underperformance in innovation and human capital formation. Innovation is the key that opens the door to the development of new industries that create new markets for Australian exports, the route to continuing high

rates of return to capital and comfortable livelihoods for Australian families. But these outcomes require the nation's long-term serious commitment to innovate in areas beyond mining. At present, complacency reigns. The resource boom has drawn attention and priority from the need to invest solidly in innovation and human capital formation. Democracy has spared Australia the resource curse but the good times born of the mining boom have created a national collective myopia. They have camouflaged Australia's far from stellar overall performance in R&D and innovation. Two signifiers of Australia's overall R&D performance are intellectual property outcomes and innovation outputs (DIIR 2010: 47-48). Both show that strong R&D and innovation in the resource sector do not compensate for weaknesses in other sectors. Australia ranks among the top third of OECD countries in the total value of public R&D expenditure and quantity of scientific publications, but is only in the middle third of OECD countries when value of R&D expenditure is adjusted for size of population and GDP, and quality of publications (DIIR 2010: 2). Australia's performance looks even weaker when one takes into account that the 31 OECD members include countries like Chile, Mexico, Slovak Republic and Turkey.

Most Australians remain oblivious to the fact that the core of their economic wellbeing is national productivity growth. Increases in multifactor productivity explain 65 per cent of Australia's per capita growth over the last 40 years, but this is below the median of 19 OECD countries (DIIR 2010: 1). Nobel laureate Paul Krugman has observed that '[p]roductivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker' (Krugman 1994: 11). The quality of its human capital stock determines this ability. Ample evidence points to the low quantity and quality of domestic human capital formation in Australia. Managers responding to a survey by the Australian Industry Group and Deloitte concerning Australian workers' skills reported shortages in literacy (25.1 per cent), numeracy (22.5 per cent) and IT (34.7 per cent). Of greater concern, these respondents reported that more than three-quarters of their graduate staff have only 'satisfactory' generic skills in literacy, numeracy and IT. They reported strong skills in graduate staff at only 14.8 per cent (literacy) 17.9 per cent (numeracy) and 22.6 per cent (IT) (ADG and Deloitte 2009).

In a review for the Group of Eight (Go8) universities in Australia, Brown (2009) reported a serious decline in the mathematical sciences and related disciplines. The Go8 study, which analysed time series data from the TIMSS (Trends in Mathematics and Science Study), found a gradual decline in Australia's performance, with young Australian students outperformed by students in most Asian countries. In 1995 Australia ranked above the US and England, in 2003 they were at par, but by 2007 Australia was statistically below the US and England (Brown 2009: 4). Australia's low formation of domestic human capital forces the Australian economy to rely highly on inflows of foreign human capital. Australia ranks second among OECD countries in its level of dependence on inflows of tertiary educated labour from overseas,<sup>5</sup> while it ranks sixth for its proportion of students in advanced research programs who come from overseas (DIIR 2010: 4). Failure to cultivate sufficient home-grown talent clearly limits Australia's capacity to generate the type and extent of innovation needed to position the national economy in a form beyond serving as a quarry for Asia.

### **Rational Choice Populism**

After almost 12 years of the John Howard government (1996–2007) that worked vigorously, if not overtly, to embed neo-liberal values, Australian political discourse appears to be heavily influenced by what I term rational choice populism – a culture of anti-intellectualism

and belief in a weak form of market fundamentalism. Donald Horne's observation that in Australia 'cleverness can be considered un-Australian' (Horne 1998: 11) can be explained by the way the country became rich. 'Digging mines' and 'grazing sheep' made Australia rich, but they had depended more on the 'practical and physical' than the 'cerebral' (Tanner 2006: 6). The threat to Australia's standard of living from low commodity prices in the 1980s and 1990s seriously challenged this anti-intellectualism but it has survived and even flourished, with significant help from the current resource boom.

Populism emphasises the cultural traits of the common people, as opposed to elites. Populists are anti-intellectual. They value credentials more than knowledge and treat schooling as a commodity, regarding it more as training for the immediate job market than education that lays the foundation for lifelong learning. Rational choice populism reveres the practical and orients towards short-term. The resource boom has been an important lubricant of this culture because it lowers the cost of implementing the promises from competitive politics. The resource industry now hires many skilled and tertiary-educated workers and depends on significant technical innovations (Barlow 2006: 58-61). But what media reports on are the industry's six-figure salary jobs for lowly educated mature adults and even young school leavers. With high compensation wages for even minimally skilled work, many individuals believe one could acquire the necessary human capital for high paying jobs with minimum cost to the state (tax payers) in terms of teacher pay and to the individual in terms of study time. Here we see how the promise of a free lunch is the equilibrium outcome of a prisoners' dilemma in political competition over education.<sup>6</sup> This equilibrium in turn leads to a public education policy that discourages the high level of public and private investments in human capital required for long-term sustainable growth.

Accusations of populist and wedge politics were frequently made against the Howard government on issues such as asylum seekers, welfare and federal takeover of Aboriginal affairs in the Northern Territory, where he rallied the 'masses' against elite opinion (Wear 2008: 618). Even though it is not described as such, education as an issue and education policies are often couched in populism by major political parties. Populism in education is reflected in public feedback, with frequent complaints about poor teaching performance and the number of holidays teachers enjoy, and demands for teachers to be made more accountable for their work and for parents and students to have greater freedom of choice in schools. These responses create an environment of us (parents and politicians) against them (teachers), deflecting from the far greater concern that the nation is half-hearted in its support of education.

Among the clearest indicators of public commitment to education are teachers' pay and entry standards into the profession. Leigh and Ryan (2008) found a substantial drop between 1983 and 2003 in the real earnings of teachers and in their relative earnings compared to non-teacher graduates.<sup>7</sup> They also found that the quality of teachers in Australia has deteriorated significantly. The latter is unsurprising, since relatively poor pay makes teaching unattractive for talented Australians. The average percentile rank of students entering teacher education fell from 74 in 1983 to 61 in 2003, while the rank of new teachers fell from 70 to 62 over the same period. And as reported in Brown (2009), many who teach in the mathematical sciences and related disciplines are not qualified to teach in these areas. This shortcoming has serious consequences for innovation, as maths/sciences are core disciplines behind scientific innovations.

The Australian government promotes its *My School* website as an instrument to lift school performance by providing extensive information on Australian schools to the public to introduce a 'new era of transparency [that] will deliver an Education Revolution to all Australian schools' (Gillard 2010). Some have expressed doubt about whether the numeracy and literacy scores on the website are reliable indicators of school performance. But even if the indicators are reliable, the shaming and punishing of poor performing schools and teachers that can result from publishing these data can have only a limited positive impact, especially when poor pay inspires talented Australians to avoid teaching as a profession. And no amount of staff development will be able to turn the people with no or weak aptitude for mathematics and science who are currently teaching these subjects at school into competent teachers in these disciplines. Freedom to choose schools is also not a policy solution but a Clayton's choice, as choice for the average parent is constrained in the aggregate by a fixed available pool of qualified and talented teachers. Nevertheless it provides a feeling of empowerment to the ordinary parent, even though the rich obviously have real choice when compared to the poor. Promises of smaller classes (funded with lower teacher pay in the long run) and *My School* are populist policies that provide short-term big 'political bangs' to the government at relatively little financial cost. They are not, however, a real remedy for weak human capital formation.

Populism and market fundamentalism have intruded on tertiary education, where a heightened climate of anti-intellectualism has commodified higher education credentials as university products and transformed the teacher–student relationship to one between seller and customer.<sup>8</sup> These processes have negative consequences for development of human capital. The 'customer' demands 'relevant' courses, but as Lasch notes, '[t]he demand for more "relevant" courses often boiled down to a desire for an intellectually undemanding curriculum'. '[T]he slogan of relevance embodied an underlying antagonism to education itself – an inability to take an interest in anything beyond immediate experience' (Lasch 1979: 148-9). The demand for 'relevant' courses also echoes in research. Research staff in universities and publicly funded research institutions are under pressure to conduct more applied research for industry. National policy makers applying such pressure seem oblivious to the fact that pure theoretical research underlies many practical applications. The supermarket barcode reader is an unanticipated outcome from research in quantum theory; theoretical physicists with backgrounds in string theory and astrobiology research are currently working on cures for cancer. Major high-technology companies, including Microsoft and Intel, reportedly paid Australia's CSIRO about \$250 million in 2009 for its Wi-Fi patent, which had its genesis in a 1977 paper on sharpening optical images to search for black holes (Moses 2010).

The knowledge that the market values highly in the future is unlikely to be the knowledge that it values today. Knowledge is largely cumulative and builds on or corrects previous knowledge. The capacity of Australia to respond to the challenges posed by its dependence on the global economy depends on its basic core knowledge base, which is increasingly threatened by rational choice populism. In this view the customer is always right, but the average customer wants to pay the minimum – in terms of investment in study time (and enrolment fees) – for a university credential (degree). In this market for higher education, the monetary price is only a component of the total price of education which also includes investment of student time. A survey across nine universities in Australia found first-year students on average spent 10.6 hours per week on private study in 2009 compared to 11 hours per week in 2004. In 2009 first-year students spent less than one hour on private study for every hour of class contact. Domestic students spent only 10.3 hours per week on private

study compared to 13.2 hours per week for international students (James et al. 2010: 38). No data earlier than 2004 was presented in the study. But a similar survey in the US on fulltime students in four-year colleges found the average student spent just 14 hours a week in 2003 on private study compared to 24 hours in 1961 (Babcock and Marks 2010). No study has tracked any direct or proxy measure of human capital development of university students in Australia. But the 2003 National Assessment of Adult Literacy (NAAL) report showed a significant decline in literacy among US college graduates between 1992 and 2003 (NECS 2003), suggesting that lower student investment in study time causes falls in graduate human capital accumulation.

Reduction in study time has not, however, lowered the grades received by university students in the US, but instead GPAs rose substantially (Babcock 2009). Murray Sperber (2000: 112) explains how this is due to a ‘non-aggression pact’ between teacher and student, which is an inevitable outcome of the inherent contradiction between high academic standards and market fundamentalism.<sup>9</sup> Elite US universities - major incubators of innovation talent - do not face this dilemma. They have large endowments and operate in a sellers market. Their ability to develop human capital for cutting-edge innovation remains unsurpassed. But all tertiary institutions in Australia are now forced to compete for students, whose number helps determine an institution’s financial resources. The effort at study demanded from students is the non-pecuniary component of the total price that an institution charges for its credential and the US experience provides a salutary lesson for Australia.<sup>10</sup> Education cannot be treated like a commodity; ‘nothing that is worth knowing can be taught’;<sup>11</sup> it must be learned.

## **Conclusion**

Many policymakers believe that Australia’s resource sector and trade with Asia promise continuous prosperity for Australia into the future. However, this paper argues that Australia cannot rely on the resource sector and must hedge for uncertainties associated with the mineral boom. In the short-term, demand for resources is subject to the business cycles of Australia’s trading partners. Yet in the long-term, mineral resources are finite and global demand for them depends on both the uncertainty of technological change and foreign national policies that can significantly shift demand away from natural resources to substitutes. Democracy has spared Australia the resource curse, but the wealth and opportunities that the resource boom has generated, even for low-skilled workers, have prevented the emergence of a counterculture that considers ‘cleverness’ as Australian but instead have continued to encourage a culture of anti-intellectualism and market fundamentalism. This culture impedes domestic human capital formation and development of knowledge for innovation, which are foundations for Australia's future prosperity.

## **Footnotes**

<sup>1</sup> I distinguish the resource curse from the Dutch disease, which refers more narrowly to reduction of the international competitiveness of non-resource sectors from appreciation of the domestic currency through booming foreign exchange earnings from mining exports.

<sup>2</sup> What characterises weak market fundamentalism is its belief that consumer sovereignty should reign supreme in every kind of transactional relationship including, for example, that between a student and a teacher. But it is not against the welfare state and state intervention in economic life. The consumer decides what is produced but should not necessarily have to pay the free market price to obtain what is demanded. My definition of market fundamentalism therefore should not be confused with economic rationalism or market populism (see Sawyer and Laycock 2009). I use the term rational choice populism, because individuals in my analysis may not be free marketeers but they are rational. ‘[T]hey act in accord with their preferences for final outcomes and their beliefs about the effectiveness of various actions available to them’ (Shepsle and Bonchek 1997: 35).

<sup>3</sup> Ross Garnaut, former Australia's ambassador to China and one time chief economic advisor to Prime Minister Hawke, made a similar point at a policy forum in September 2010 (ABC 2010). Philip Lowe, assistant governor of the Reserve Bank, has also issued a similar caution (Lowe 2010).

<sup>4</sup> Yingli has global ambitions. It markets aggressively worldwide and was the first renewable-energy sponsor of the 2010 World Cup in South Africa (Flax 2010).

<sup>5</sup> Dependency as measured by the proportion of the total number of people employed in Australia that have a tertiary qualification who are foreign-born (DIIR 2010: 4).

<sup>6</sup> Ross Garnaut believes policymaking in Australia is seen 'more as contest for political advantage, and perceptions of different types of resource allocation, rather than contributing to the productivity of the economy'. The current policy environment is 'the great Australian complacency of the early 21<sup>st</sup> century' (ABC 2010).

<sup>7</sup> Real earnings declined 4 per cent for women and 13 per cent for men.

<sup>8</sup> Significant reductions in government funding forced Australian universities to accommodate to this culture. In 1995 public funding accounted for 65 per cent of university funding; the OECD average was 80 per cent. In 2006 the public share in Australia had fallen to 48 per cent compared to 73 per cent for the OECD (OECD 2009: 233). The real value of Commonwealth funding per subsidized university place in 2008 was 15 percent below that of 1989. The universities responded by recruiting increasing numbers of international students. In 2008 education became the nation's third-ranked export earner after coal and iron ore (Bradley 2008: 88, 149).

<sup>9</sup> Public US universities like those in Australia have to adapt to significant reductions in government financial support.

<sup>10</sup> The new Tertiary Education Quality and Standards Agency (TEQSA) is not a solution as it sets only minimum standards, which by their nature are well below that required to develop the next generation of cutting edge innovators.

<sup>11</sup> Gilbert in Oscar Wilde's *The Critic as Artist* (Wilde 1888).

## References

ABC (2010), 'Garnaut warns on trade reliance with China', *The World Today*, 15 September, <http://www.abc.net.au/worldtoday/content/2010/s3012312.htm> (downloaded 20 September 2010).

Australian Bureau of Statistics (ABS) (2009), 'International trade in goods and services', ABS Catalogue 5368.0, September.

Australian Industry Group (ADG) and Deloitte (2009), *National CEO Study: Skilling Business in Tough Times*, October, Sydney: Australian Industry Group

Australian Treasury (AT) (2010), *Australia's Future Tax System: Final Report*, Chapter 6, 2 May,

[http://taxreview.treasury.gov.au/content/FinalReport.aspx?doc=html/Publications/Papers/Final\\_Report\\_Part\\_1/index.htm](http://taxreview.treasury.gov.au/content/FinalReport.aspx?doc=html/Publications/Papers/Final_Report_Part_1/index.htm) (Downloaded 17 June 2010).

Babcock, Philip (2009), 'Real costs of nominal grade inflation? New evidence from student course evaluations', *Economic Enquiry*, 27 August, Available online ahead of print, <http://www3.interscience.wiley.com/cgi-bin/fulltext/122578690/PDFSTART>

Babcock, Philip and Mindy Marks (2010), 'The falling time cost of college: evidence from half a century of time use data', forthcoming in *Review of Economics and Statistics*, [http://www.econ.ucsb.edu/~babcock/College\\_time\\_use\\_NBER.pdf](http://www.econ.ucsb.edu/~babcock/College_time_use_NBER.pdf)

Barlow, Thomas (2006), *The Australian Miracle: an Innovative Nation Revisited*, Sydney: Picador.

Bradley, Denise (2008), *Review of Australian Higher Education*, Canberra: Department of Education, Employment and Workplace Relations.

Brown, Gavin (2009), *Review in Education in Mathematics, Data Science and Quantitative Disciplines: Report to the Group of Eight Universities*, December, ACT: The Group of Eight.

Caselli, Francesco and Tom Cunningham (2009), 'Leader behaviour and the natural resource curse', *Oxford Economic Papers*, Vol 61, pp. 628-50.

Dahlberg, Matz and Eva Johansson (2002), 'On the voter purchasing behaviour of incumbent governments', *American Political Science Review*, Vol. 96, pp. 27-40.

Department of Innovation, Industry, Science and Research (DIISR) (2010), *Australian Innovation System Report*, Canberra, ACT,  
[http://www.innovation.gov.au/Section/Innovation/Documents/AIS\\_FullReport2010\\_IISR.pdf](http://www.innovation.gov.au/Section/Innovation/Documents/AIS_FullReport2010_IISR.pdf)  
(Downloaded 5 July 2010).

Flax, Steven (2010), 'Yingli green energy becomes leading integrated solar panel maker', *International Business Times*, 28 June  
<http://www.ibtimes.com/articles/31232/20100628/solar-panel-photovoltaic-yingli-green-energy.htm> (Downloaded 30 June 2010).

Gillard, Julia (2010), 'My School website launched', *Media Release*, 28 January,  
[http://www.deewr.gov.au/Ministers/Gillard/Media/Releases/Pages/Article\\_100128\\_102905.aspx](http://www.deewr.gov.au/Ministers/Gillard/Media/Releases/Pages/Article_100128_102905.aspx) (Downloaded 13 August 2010).

Horne, Donald (1998), *The Lucky Country*, Ringwood, Australia: Penguin Books.

James, Richard, Kerri-Lee Krause and Claire Jennings (2010), *The First-Year Experience in Australian Universities: Findings from 1994 to 2009*, Centre for the Study of Higher Education, Melbourne University.

Krugman, Paul (1994), *The Age of Diminishing Expectations*, Third Edition, Cambridge, Massachusetts: MIT Press.

Lasch, Christopher (1979), *The Culture of Narcissism: American Life in An Age of Diminishing Expectations*, New York: W.W. Norton & Co.

Leigh, Andrew and Chris Ryan (2008), 'How and why has teacher quality changed in Australia', *Australian Economic Review*, June, Vol. 41, no. 2, pp. 141-59.

Lieberthal Kenneth and David Sandalow (2009), *Overcoming Obstacles to U.S.-China Cooperation on Climate Change*, John L. Thornton China Center Monograph Series Number 1, The Brookings Institution.

Lowe, Philip (2010), 'The development of Asia – risk and returns for Australia', *BIS Review*,  
<http://www.bis.org/review/r100917e.pdf> (downloaded 27 September 2010).

Milligan, Kevin and Michael Smart (2005), 'Regional grants as pork barrel politics', *CESifo Working Paper No. 1453*, April.

Mokyr, Joel (1990), *The Lever of Riches: Technological Creativity and Economic Progress*, New York & Oxford: Oxford University Press.

Moses, Asher (2010), 'CSIRO to reap "lazy billion" from world's biggest tech companies', Sydney Morning Herald, 1 June, <http://www.smh.com.au/technology/enterprise/csiro-to-reap-lazy-billion-from-worlds-biggest-tech-companies-20100601-wsu2.html> (Downloaded 15 August 2010).

National Center for Education Statistics National (NECS 2003) *National Assessment of Adult Literacy* (NAAL), Institute of Education Sciences, US Department of Education, [http://www.nces.ed.gov/naal/kf\\_dem\\_edu.asp](http://www.nces.ed.gov/naal/kf_dem_edu.asp) (Downloaded 11 July 2010).

OECD (2009), *Education at a Glance*, Paris.

Robinson, James A., Ragnar Torvik and Thierry Verdier (2006), 'Political foundations of the resource curse', *Journal of Development Economics*, Vol. 79, pp. 447-468.

Rommeney, Dirk (2008), *Climate Policy in the People's Republic of China*, Heinrich Boll Foundation, March, <http://www.www.boell-china.org> (Downloaded 27 March 2008).

Ross, Michael L. (1999), 'The political economy of the resource curse', *World Politics*, Vol. 51, pp.297-322.

Sawer, Marian and David Laycock (2009), 'Down with elites and up with inequality: market populism in Australia and Canada', *Commonwealth and Comparative Politics*, Vol. 47, pp. 133-150.

Shepsle, Kenneth A. and Mark S. Bonchek (1997), *Analysing Politics*, New York: W. W. Norton & Co.

Sperber, Murray (2000), *Beer and Circus*, NY: Henry Holt & Co.

Tanner, Lindsay (2006), 'Love of learning', Address to the Sydney Institute, 21 November.

Wear, Rae (2008), 'Permanent populism: The Howard government 1996-2007', *Australian Journal of Political Science*, Vol. 43, pp. 617-634.

Wilde, Oscar (1888), *The Critic as Artist*, <http://www.readbookonline.net/readOnline/480/> (Downloaded 4 October 2010).