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The Future of Australia's Mineral Wealth: Leasing to Support an Ageing Population

K. Morrison¹, D. Giurco² MAusIMM

¹ Energy Journalist, Argus Media, PO Box Maroubra NSW 2035.
Email: kevin.morrison@argusmedia.com

² Research Director, Institute for Sustainable Futures, UTS, PO Box 123 Broadway NSW 2007.
Email Damien.Giurco@uts.edu.au

ABSTRACT

Australia's ageing population means that by 2050 there will be 2.7 people of working age to support each Australian aged 65 years and over compared with 5 working people per retiree today and compared with 7.5 in 1970. (Swan, 2010)

This means that there is going to be a greater demand on social services – for medical and aged care – from a smaller private income base. How will this gap be met? Australia is fortunate in that it has vast resources of mineral wealth, from iron ore; nickel and gas in Western Australia to the giant copper and uranium deposits at Olympic Dam in South Australia.

The prospect of a meaningful profit based tax on this vast mineral wealth has been lost through Australian government's handling of the issue in 2010 and with an industry fiercely opposed to the prospect of a mining tax. There is little political appetite to re-work the issue toward investing the proceeds in innovation, infrastructure and education to ensure that Australian society derives long term benefit from the mineral wealth it holds.

Hence, new ways of thinking are required. This paper looks at the issues facing the implementation of a novel scheme whereby Australia leases the mineral resources it extracts and thus derives income over the decades the metals are in-use in pipes, wires and structures with a premium paid for unreturned material or that used in dissipative applications. Applicable minerals could include copper, aluminium, nickel and rare earths. If Australia simply digs up and sells the metals once, the buyer becomes custodian of that resource and they benefit from controlling the future 'above-ground' resource stock.

A complementary driver for a leasing scheme is the increasing importance of chain-of-custody following initiatives of the Responsible Jewellery Council with gold and diamonds, now with the potential to extend across commodities. The Australian minerals sector could thus position itself as a premium supplier with high social and environmental credentials.

Recognising the implementation challenges, the paper includes a review of how such a system could be enforced to ensure that the metal is tracked throughout its life. It concludes with a discussion of the rates and terms should such agreements hold and suggestions for institutional arrangements for enforcing compliance.

INTRODUCTION

Ageing population challenge – Henry tax review and government response

The issue of financing Australia's aging population was addressed in the review of the Australian tax system ordered by the government of the former Prime Minister Kevin Rudd when he was elected in November 2007. Rudd's treasurer Wayne Swan gave the go ahead for the review and said: "We need a tax system that is fairer, that is simpler, that better rewards people for their hard work, that responds to our environmental and demographic challenges, that makes us internationally competitive, and that creates the incentives to invest in our productive capacity."

The tax study was the Australia's Future Tax System, also known as the Henry Tax Review – due in reference to it being headed by former Australian Treasury secretary Ken Henry. (Henry, 2009)

Henry wrote in his polemic: "The combination of ageing and high population growth will contribute to a considerable increase in public investment needs, and in spending on services, and it will be important that this be funded in ways that improve public saving over time so that our national saving effort is increased and our fiscal strength maintained. We need a tax system that is robust and efficient, and that can adapt to changing future circumstances."

This warning of the future rise in costs of an aging society was also contained in the 2010 Inter generational report, a government report that is updated every five years to take account of Australia's demographic trends in regards to population, health and social costs. Yet despite these warnings from government commissioned work, neither the government led by former Prime Minister Kevin Rudd nor his successor Julia Gillard have responded adequately to the issue and therefore more alternative mechanisms to fund an aging society would have to be discussed.

The Rudd response (the RSPT)

Ken Henry delivered his findings to the Rudd government in December 2009 and in it he recommended a resource rent tax of 40 per cent on profits for all non-renewable resources as one of 138 recommendations to overhaul the Australian tax system. Henry wanted the resource rent tax to replace the state-based royalty systems that were based on production volumes and had little to do with tax on earnings. Henry also recommended a tax cut to 25 per cent, in an effort to spread the benefits of Australia's resource boom to other parts of the economy.

It took six months before the then prime minister unveiled his response to the Henry Tax Review when he announced on 2 May, 2010 that he would introduce the Resource Super Profits Tax (RSPT), which was loosely based on Henry resources tax recommendations of a 40 per cent rate and it became only one of five recommendations the Rudd government accepted as part of the review to overhaul the country's tax system in order to better cope with Australia's changing demographics.

Rudd and his treasurer Wayne Swan unveiled a corporate tax cut to 28 per cent by July 2015, instead of the 25 per cent recommended by Henry. Wayne Swan said at the time of the RSPT announcement that the new tax would raise A\$100 billion over the first ten years of the new tax.

The RSPT quickly came under fire because miners did not like the sound of paying so much money upfront and that the 40 per cent tax did not allow for financing deductions such as the cost of debt as resource companies have to carry large sums of debt to fund new mining or hydrocarbon projects. The potential for a rebate on losses did not translate into perceptions by financiers of lower risk either. The tax attracted the ire of the influential mining industry, partly because they were not consulted before hand unlike the introduction of the Petroleum Resource Rent Tax (PRRT) in the late 1980s by the Hawke and Keating government, which consulted oil and gas companies for about two years before its launch in 1987. Miners have a history of rebelling against taxes with the Eureka rebellion of 1854 a revolt by Victorian miners against new taxes imposed by the colonial authorities of the time. (Australian Senate Select Committee on the Scrutiny of New Taxes 2011).

Rudd did not even tell key ministers in his cabinet about the details of the RSPT until days before its release – leaving some of his ministerial colleagues ill-prepared for the debate with political foes, and industry as well as selling the new policy to the electorate.

Rudd paid the ultimate price, becoming one of the few Australian Prime Ministers ever to be turfed out of office in his first term before facing an election when his former deputy Julia Gillard replaced him on June 24, 2010 – a mere six weeks after unveiling the RSPT and following a A\$20 million advertising campaign by the mining industry attacking the RSPT.

The Gillard response (the MRRT)

Julia Gillard quickly found a compromise with the three largest mining groups operating in Australia, BHP Billiton, Rio Tinto and Xstrata by unveiling the Mineral Resource Rent Tax (MRRT) to replace the RSPT. The existing petroleum resource rent tax (PRRT) for offshore oil and gas projects was extended to cover the revival in the onshore gas sector through the burgeoning coal seam gas production in Queensland. However, the rush to find a political palatable compromise has left the government with a tax that is insufficient to meet the long term needs that the RSPT tried to address.

Unlike the RSPT, which was to cover all minerals and metals, the MRRT will only cover iron ore and coal, which are Australia's two largest commodity exports in terms of value.¹ The MRRT is based on a 30 per cent tax rate applied after mining companies deduct their costs of borrowing, which has been linked to the long term sovereign bond rate of about 7 per cent. The bond rate is a measurement of the cost of borrowing capital to fund the initial investment in a mine. The 30 per cent tax rate is less than 40 per cent applied to the oil and gas sector under the PRRT and below the same 40 per cent level that Rudd pushed for in the RSPT.

¹ The Australian government's commodity forecaster the Australian Bureau of Agricultural Resources and Economics and Sciences (Abares) estimated Australia's iron ore exports to reach A\$56.53 billion in the financial year to June 30 2011 and A\$34.2 billion of metallurgical coal exports, with thermal coal exports of A\$15.1 billion. Together iron ore and coal are estimated to account for 57 per cent of Australia's energy and minerals exports in the 2010/11 financial year.

As at 16 July, the MRRT has yet to be introduced as legislation into the lower house of parliament and there still much scope for further refinements given the Labor-led minority government's dependence on independent MPs and the Greens party for legislative support in both the lower and upper house of parliament.

A senate committee, the Select Committee on the Scrutiny of New Taxes, alleged that the MRRT was in fact drafted by Australia's largest resource group BHP Billiton. If this is the case it underlines that the MRRT, which is supposed to be in the national interest has been compromised because of the closeness of government and business.

The government forecast on May 10, 2011 in its Federal budget for the financial year to June 30 2012 that revenue from the MRRT will total A\$11.1 billion in the 2012/13; 2013/14 and 2014/15 financial years, which is about A\$1 billion less over three years than the initial budget of the RSPT in its first two years. (Australian Federal Government Budget 2011/12, Budget Strategy and Outlook. Budget papers)

The revised lower tax revenue forecasts are under pressure to be lowered further as the government faces a large political battle to get the tax through. Not only was it facing poor ratings in opinion polls in mid 2011, the Greens party, which holds the balance of power in the senate and have an MP in the lower house want a more comprehensive tax on the resources sector, the federal conservative coalition are vehemently against it and the large resource states of Western Australia and Queensland oppose the tax and this opposition is creating one of the largest issues of state versus federal sovereignty in recent years.

On May 19, 2011, the Western Australian state government increased its iron ore royalties, which resulted in a projected boost in state revenue by A\$1.9 billion in the five years to the end of the financial year June 30 2016. An increase that will eat further into Canberra's MRRT income predictions. This is due to the Federal government promise to miners to refund state government an increase in tax income generated from further state royalty rate hikes so that it cushions miners from paying more taxes. A promise that effectively means Canberra's MRRT is funding Western Australia's mining royalty hikes. (Western Australia state budget 19 May 2011).

The Western Australian government move has created a hole in the federal budget and the government's election promise to return to surplus in 2013/14. When the RSPT was first unveiled prior to the 2010–11 Federal budget, the government estimated A\$3 billion would be raised from the tax in its first year of its planned introduction on 1 July 2012 and increasing to A\$9 billion in the financial year 2013–14. In contrast, the 2011/12 Federal budget released on May 10, 2011 showed that MRRT revenue will total A\$11.1 billion in the 2012/13; 2013/14 and 2014/15 financial years and this estimate will have to be further shaved following the hike in Western Australia's royalty rates.

The Henry Tax Review argued that Australia's mineral resources were owned by both state and federal governments, but the review also argued that royalties were less efficient than a profit based tax, an argument also made by the mining peak body the Minerals Council of Australia (MCA).

Reinhardt and Steel highlighted in their 'A brief history of Australia's tax system' that the state versus federal issue has been one of the challenges accompanying Federation in 1901 as it created a two-tier system of government that centralised control of some functions, while allowing each state sufficient autonomy to meet the social preferences of its constituency. (Reinhardt and Steel, 2006) They argued that the Australian Constitution allocated the majority of expenditure responsibilities to the states and that the federal government would carry out functions that the states were not able to conduct efficiently themselves, such as defence and foreign affairs. However, the issue of state versus federal over royalties is partly to do with the federal government doing more of what state governments traditionally did. The resource boom has created a two-speed economy with resource rich states Western Australia and Queensland experiencing higher economic growth rates than the rest of the country. So that no states are left behind, the Federal government proposed under its health reform in April 2010 that it would be the largest financier of the nation's hospital system. Therefore if the government is prepared to do this in health, why not in other areas such as education and policing so that there is there are uniform polices across the nation and by doing this, it reduces the roles of state governments.

As a result of the introduction of the RSPT and its successor the MRRT, the government is weakened, revenue compromised and any long term policy setting to address changing demographics is absent.

METALS TAXATION FOR THE SUSTAINABLE LONG TERM

Under the current financial model, the Australian-based miner extracts metal; say copper for example, from the mine, sells it to a customer either in a concentrate or refined form for a one-off payment and does not receive any further financial benefit from the continued life of the metal. Given the emphasis to improve recycling rates and a greater proportion of metal supply in the future to come from recycled material - Australian based miners and the Australian Treasury may be missing out financially on a potential growth segment of the metals industry. At present the miner will pay a one off royalty charge to the relevant state government and only if it is iron ore or coal will it have to pay the MRRT tax. This therefore excludes all of the miners that extract metals that have a great longevity by their ability to be recycled time and time again.

Metals such as copper and gold that are still in circulation today may have come from the Roman and Egyptian pharaoh periods, it underlines that the metals will be around long than the current Australian budget economic forecasts or the near term outlook for publicly listed mining companies.

Under the metals hybrid taxation/leasing model, a copper miner could receive for example half the value of the metal through the sale and therefore allow the buyer to have an equity interest in the long term use of the material, or the miner may want to sell its entire interest in the metal by selling its leasing right to the metal to an investor or a refiner or potential customer of the metal such as a car manufacturer. These equity interests can also be sold on in a secondary market with the sale value based on the long term potential recycling income stream therefore create trading opportunities for banks and financiers of mines to become involved in the metals leasing market. However, if the Australian-based copper miner that we are using in our example does sell its leasing interest to an overseas buyer there must be a clause in the contract that the underlying metal comes from Australia and therefore a guaranteed income stream to the Australian treasury must be retained as Australia has not given up its sovereign right over the metal. Under this system, tax or leasing

receipts would flow to the federal treasury and not into the state government ledger. Hence, the implementation of this tax would have to again address the state royalty scheme versus federal tax initiatives issue that arose during the RSPT/MRRT debate.

This form of sale/leasing/tax of base metals, such as copper, aluminium, nickel, lead, zinc and tin as well as the precious metals gold, silver, platinum and palladium reflect the long term life of a metal. A kilogram of copper can take many forms it could be first turned into a copper pipe for plumbing in a house or electrical wiring in a car, once the copper pipe or car comes to the end of its working life it could be stripped from the car or house and reused in making a wind turbine or used for the electrical wiring in a jet. Under the long term leasing scenario, the user of the copper in its second phase of life, i.e. the wind turbine maker or jet maker, will either pay a recycling fee to the miner who first mined the metal and or original buyer, who bought 50 per cent of the metal, as well as resource recycling fee to the Australian Treasury for the use of that copper. Or alternatively they can buy the right to the long term lease through the secondary market. By providing the trading alternative it gives the flexibility for miners, refiners, end users and trading companies to optimise the best financing arrangement to meet their corporate objectives. However, the Australian Treasury or any other sovereign state will not be allowed to trade their right, otherwise the whole rationale for establishing the long term lease is for governments to retain some sovereign right over the metal in order to provide a long term income stream that goes beyond the life of the first use of the metal.

The terms of future lease payments could either be fixed or floating with more companies likely to opt for the latter as the value of future lease payments will be subject to fluctuations in the underlying commodity price and therefore provide a similar price exposure to existing spot market conditions. Whereas a fixed lease price agreement would be done on a bilateral basis between the two parties.

Enforcing the leasing model

In terms of tracing the metal, existing forms of verification exist in the metals industry to assess quality in order that it meets a specification that is acceptable to the international metals trading markets of producers, customers and financiers.

Gold and other precious metals, silver, platinum and palladium are all assayed by experts such as companies like UK-based Intertek and Alex Stewart International, which certify that metals meet a specific grade that is acceptable to buyers of the metal. These firms also provide the same services for other metals and even for mineral ores before they are processed to ensure that they meet grade specification.

The London Metal Exchange (LME), where more than 90 per cent of the world's base metals, such as aluminium, copper, lead, zinc, tin and nickel are traded. The LME also trades cobalt and molybdenum and has plans to trade in more minor metals such as lithium and tungsten. In order for any of these metals to be traded on the LME they need to be of sufficient quality to be acceptable for trade and hence they are branded, a stamp of approval.

With this system of branding and assaying, consumers of these metals know they are buying a certain quality of metal. By introducing a system of long term leasing, the participants in the leasing transaction will be assured that the underlying materials has been independently verified. However, subsequent leasing

transactions may become more problematic as there is no technology at present to track the metal once it has been turned into a jewellery item, a component in a car or building.

As an alternative a buyer or seller of metal under lease carries a certificate to prove that it comes from a mine or miner that is part of the long term leasing/recycling model.

James Bradfield Moody and Bianca Nogrady wrote in their book 'The Sixth Wave – How to succeed in a resource-limited world,' (that resource efficiency is the sixth wave of the industrial revolution. (Bradfield-Moody and Nogrady, 2010) The first wave was the industrial revolution between 1787 and 1842 with the start of iron production and the cotton gin, which in turn reduced the cost of textiles; the second wave was the railroad and steam engine era between 1842 and 1897; followed by the third wave between 1897 and 1939 when steel and electricity were first produced and the introduction of the internal combustion engine; the fourth wave was the oil era, which helped bring about the biggest leap in agricultural productivity to feed the growing billions between 1939 and 1982. The fifth wave was the technology era 1982 to the current period. Moody and Nogrady argue that the sixth wave will bring about ways that will allow society to monitor, map and better manage resources.

With improvements in technology it may be possible to track the life of metals and their different products uses.

Any leasing arrangement must include a refinery or smelter as it through this processing facility whereby a metal is turned into a standardisation unit of metal that can be exchanged based on international standards set by the LME or precious metal markets. Under the leasing arrangement a refinery or smelter either acquires part of the long term lease in a secondary market that could evolve for buying and selling long term metal leases – much in the same way there is a secondary market for metals on the LME.

However, one of the problems Australia is facing is the closure of smelting and refining capacity for its metals, partly due to the rise in the Australian dollar, which has spent much of 2011 at its highest level against the US dollar since it was freely floated in 1983. Xstrata plans to shut its copper smelter and refinery at Mount Isa in central Queensland by the end of 2016 as it faces more intense competition from Chinese copper smelters, which in turn are subsidised by Beijing. If Australia continues to sell more copper in concentrate form than as a refined metal, it would be difficult to trace the metal as Chinese copper smelters would be blending the copper concentrate from Australia with concentrate from other copper producers such as Chile and Kazakhstan.

Bank on it

If Australia becomes one of the first players in this market, it could have first mover advantage for the creation of a financial market in long term metal leases. Such a market would be electronically based, as there is no need for an open outcry system as used by the LME.

Australian banks have taken the lead before in resource financing and could do again with long term metals leasing. In the 1980s institutions such as Macquarie Bank were among the first to finance gold mines through forward sales of the gold that had yet to be dug out of the ground. This method of financing gave the

miner the development capital to build the mine and provided a guaranteed sale of the metal output. While this was successful in starting some gold mines, the recent era of ever rising gold prices has seen the financing mechanism go out of fashion as more gold miners want to be exposed to the prevailing spot price, which has continued to hit record levels this year.

Metals have been used as a financing mechanism before, as the leasing system has the inherent assumption underline that there is a long term value in the underlying metal. Gold has long been a store of value and was the basis for one of the world's first monetary exchange systems and hence many central banks keep their country's currency reserves in the form of gold bullion in their vaults. Hence gold has been recycled time and time again over the centuries and largely because of its low industrial use has been kept in circulation since it was initially poured.

Copper is another metal that has been used in the monetary system, copper coins have been used since Roman times. This year Australian investment bank Macquarie Bank said copper is being used as collateral in China for holders to seek finance. Macquarie estimated there are about 550,000 tonnes of copper sitting in bonded warehouses in China in mid-April of which more than half is being used for collateral for raising funds to use for business and investment purposes.

The aim of the proposed leasing metal concept is to address the issue that the benefits of the resources boom are spread over generations and not in the form on a one off windfall. This will mean that not only will the current generation of Australians benefit from the original sale of the copper or gold and other base or precious metals, but also the children and grandchildren of the current generation of Australians in a time when many of the existing known resources of minerals will have been depleted.

The implementation of the long term leasing model for metals would provide government with an alternative revenue raising option that will not mean any alteration to the MRRT as base and precious metals along with rare earths are not part of the Federal government's MRRT. It would also be difficult to apply the metal leasing business model to the two commodities under the MRRT, iron ore and coal, which includes both thermal and metallurgical coal. Iron ore and metallurgical coal are used for making steel it would be difficult to trace where the iron ore or coal came from as steel plant owners often mix iron ore blends that come from different countries and do the same with metallurgical coal. Even though Australia is both the world's biggest exporter of iron ore and metallurgical coal, it does not mean that the buyer of these commodities will be using only Australian iron ore and metallurgical coal in the plants blast furnace to make steel.

As for thermal coal it is burnt and turned into electricity and carbon dioxide emissions and is one of the biggest factors in the concentration of CO₂ in the atmosphere, which the climate scientists say is contributing to global warming. So there is no value in the leasing model for thermal coal.

However, if the model was successful implemented it could transfer to other minerals rich economies such as Canada, Chile, Peru and Kazakhstan as well as Australia's near neighbours Papua New Guinea (PNG) and Timor Leste, which are both resource rich – but have had issues with corruption and management issues around the long term management of their resource related income.

PNG is relatively rich in gold, nickel and copper, which are all metals that hold strong appeal for long term monitoring. Timor Leste is better known for the gas and oil resources in the Timor Sea, but it is also potentially a mineral rich country, but land-based mineral exploration is not possible given that there is no clear property ownership legislation since the island state gained full independence in 2002. The country has a mixture of Portuguese and Indonesia property law and under traditional Timorese culture land is owned by the community and not the state or individuals, which is similar to PNG where community landowners account for about 98 percent of land ownership there.

By spreading out the timing of the income from metals, and by putting in the right safeguards it may help smooth out some of the economic downturns resource rich developing nations suffer when the commodities boom ends and prices fall.

We only have to look further east into the Pacific Ocean to see what can happen to once resource rich nations. Nauru - Phosphate mining on the Pacific island of Nauru provides a good example of weak sustainability. Profits from the country's natural capital, in the form of phosphate, were used to establish a trust fund that could guarantee the economic sustainability of the country. However due to unforeseen factors (primarily though poor investment choices) this fund was depleted, and the economic future of the country, once wealthy, is now limited.

Track record

So far there is limited success with long term leasing in the resources sector. A notable exception in the leasing of copper, rather than selling it, is done by Chilean state owned copper producer Codelco. The then president and chief executive officer of Codelco Jose Pablo Arellano said on 25 February 2010 that Codelco had established a subsidiary EcoSea farming S.A. whereby it would lease copper alloy fish cages using the copper from its mines in order to harvest salmon. Copper is Chile's largest export revenue and is the world's second largest producer of salmon.

Codelco marketing director Victor Perez said the rationale for using copper in mesh nets used in fishing is for their durability and for cutting down on bacteria that can gather when lots of dead fish are in a net. By addressing bacteria and having more durable nets, it can improve productivity and sustainability.

On April 12, 2011, the current Codelco chief executive officer Diego Hernandez said: "EcoSea aims to expand in Chile by introducing 400 new aquaculture systems in the next four years. This will create a private equity investment of USD 100 million, which will leverage the growth of its business model."

WHY LOOK AT FURTHER RESOURCES TAXES AND NOT BROADER BASED TAXES?

Extractive industries in Australia are one of the sector's that does have an edge over other industries in the domestic economy due to the country's geology and geographic location, which since white-settlement had long been seen as a negative and hence the phrase tyranny of distance. Australia has large endowments of non renewable resources, including the world's largest economically demonstrated reserves of lead, mineral

sands (rutile and zircon), nickel, silver, uranium and zinc; and the second largest reserves of bauxite, copper, gold and iron ore, according to a 2009 report by the government's Geoscience Australia.

Geoscience said Australia also has the 26th largest proven oil reserves in the world. The government is predicting that by 2030, Australia will be importing 80 per cent of its petroleum requirements. Australia's natural gas reserves are the 14th largest in the world and under current production rates they could continue to be exploited for the next 65 years based on the annual global survey of energy by British oil group BP.

Under the current business as usual scenario, Australia is extracting raw materials at an ever increasing rate (Australia's iron ore output has risen more than 152 per cent in the decade to 2010 from production of 159.7 million tonnes in 2000 to 423 million in 2010 and to rise by half again in the six years to 2016 when output is predicted at 619 million tonnes. A similar trajectory is seen for coal and liquefied natural gas (LNG).

The current super-commodity cycle and high prices have left governments and society with a smaller share of the resource tax take as miners enjoy record profits. In the government's RSPT policy document, it said: "The effective resource charge (charges as a percentage of super profits earned) has more than halved from an average of around 34 per cent over the first half of this decade to less than 14 per cent in 2008/09.

Existing resource taxes and royalties have only delivered a small share of the increased value of resource deposits. Resource profits were over \$80 billion higher in 2008/09 than in 1999/00, but governments only collected an additional \$9 billion through resource charges." This puts the case that the resource sector is under-taxed and given that Australia is seen at the lower end of the tax scale among 30 OECD countries then it is reasonable to put the case for additional tax measures on the resources industry.

With such a rich endowment of non-renewable resources, which are in demand from developing countries, the resources sector appears to be a source for increased government revenue, given the level of investment in the sector, in the medium term as it is one of the few industries that Australia is considered a leader in. Whereas to tax another sector such as manufacturing could see many factory owners move their facilities offshore.

The manufacturing sector is a tougher challenge than the resources sector despite Australia being in the middle of an economic boom, the manufacturing and tourism sectors are suffering due to the high Australian dollar, which has been pushed up by record commodity exports that in turn pushes up the demand for Australian dollars and hence its price. That in turn is having a negative effect on other sectors of the economy such as manufacturing as costs when translated into currencies for potential purchasers such as the US and Europe makes Australian goods more expensive.

This dual economic growth rate of fast growth for resource sector and slow rate for manufacturing and tourism is known as the two-speed economy and can also be described as showing signs of the Gregory effect or Dutch disease.

The Dutch Disease is named following the discovery in the Netherlands in the 1960s of large reservoirs of natural gas which led to appreciation of the Dutch guilder currency and a decline in competitiveness of non-resource industries.

The Gregory effect, (named after Australian National University economist Bob Gregory after he wrote it in 'Some implications of the growth of the minerals sector'), is the same whereby a surge in commodity incomes, following a surge in prices appreciates the local currency in an economy that specialises in commodities. That appreciation makes the rest of the domestic economy less competitive versus imports, which have become cheaper through the appreciation in the Australian dollar. (Gregory, 1976)

So a tax on the manufacturing, tourism or other service sector could have a detrimental effect on the economy. Therefore a solution should be found to flatten out negative consequences of resources boom. It should also take into account environmental factors and climate change, which was the other factor highlighted in the transgenerational report.

Another reason to look at taxation reform of the resources sector is to take account of the increased emphasis on recycling and therefore to create a financial framework that provides metal producers, refiners, financiers and metal consumers with an incentive to increase recycling and improve resource efficiency rates.

The need for greater recycling and improve resource efficiency is driven by the trend of depleting high grade near surface metal ore bodies in politically stable countries that has forced the world's miners to look for metal ores in deeper locations in developed countries and increasingly in politically challenging environments of Africa, central Asia and parts of Latin America. All of these factors have contributed to increased extraction costs and in turn has stimulated a greater emphasis in the developed world to recycle metals.

There is a greater emphasis on recycling given that the increase in the world's population and increase in their wealth is having a greater demand on energy, metals and food, which in turn is putting pressure on the natural environment.

Acknowledging the trend for more recycling, there is a move by the OECD to improve resource efficiency or in other words to do more with the resources the world has through the 3R concept – reducing, reusing and recycling. (OECD (23 May 2011)

These trends are also acknowledged by the mining sector when many mining executives met last year under the World Economic Forum umbrella to develop the Mining and Metals Scenarios to 2030 and they identified resource scarcity, biodiversity regulation, climate change and resource management as drivers for change in the next 20 years.

The world's largest copper miner Codelco also recognised the need for more recycling in a report, (Dr.-Ing et al; (July 2010)), which has only been published in German and was commissioned by the German Federal Ministry for Education and Research into the long term availability of copper.

The report proposed three strategies: improved recycling, urban mining, i.e. landfill, and substitution as the current recycling rates were not sufficient to meet future copper demand with the world's copper recycling rates of about 20 per cent in Europe/US/Asia, which means only a fifth of the copper used in those countries, compared with about 56 per cent in Germany.

The report said the world's copper resources are about 4.4 billion tonnes, of which includes the 3 billion that the US Geological Survey (USGS) has estimated; another 700 million lies beneath the oceans, 330 million is in use and 400 million in landfill.

Recycled copper or secondary copper accounts for about 35 per cent of global copper supply, but this share will have to increase in the future as copper demand is expected to reach 56 million tonnes per year by 2050 compared with about 20 million tonnes in 2011. The report said between 2008 and 2050, about 1.4 billion tonnes of copper will enter the market or about 27.5 per cent of the currently known resources. Hence the copper industry needs to find ways to tap into the rest of the resources.

The OECD through the 3R concept hopes to achieve a decoupling of economic growth with increase material consumption, saying that we can have the former without the latter. By moving to a leasing arrangement it changes the financial incentives for miners and the government as it provides an income stream spread over a longer period than a one off payment and therefore gives both the mining industry and state a vested interest in boosting recycling rates and therefore the prospect of recurring revenue over a longer period.

Bradfield Moody and Nogrady say one of the key tenets of the sixth wave is sell a service not a product and under this scenario leasing the copper or gold as a service, which the lessor can do with whatever they choose providing they don't lose or ruin it to make it unable to be used again. This also brings problems as under any contract between lessor and lease conditions will have to be stipulated such as what to do in the event of theft or damage from a natural event such as a hurricane, cyclone or tsunami.

Bradfield Moody and Nogrady have taken their concept from Swiss industry analyst Walter Stahel and German chemist Michael Braungart who in the mid-1980s proposed the industry model of the service economy whereby consumers obtain services by leasing or renting good rather than buying them outright. (Hawken, Lovins, and Lovins, 1999)

There has been some success to this business model, such as IBM moves from making computers to becoming an IT services company. IBM began life as a specialist in punch card equipment in 1911 and only got into computers in the 1940s and so this is a company that has re-invented itself to changing economic conditions and trends. And in the week ending 27th May 2011 it overtook Microsoft in terms of share market value for the first time in 16 years – which underlines investors support in their services business model.

Miners are valued on their current and future production and the potential to turn metal reserves and resources in the ground into mines that operate at a healthy profit. The business model of miners has changed over the years in the past 10 years there has been a trend to create mining conglomerates, whereby miners have a diversified portfolio of commodities to produce. The best example is the creation of the world's largest miner BHP Billiton, which has ended up far from its roots. The BHP part of the company started life in the outback new South Wales town of Broken Hill mining lead, zinc and silver in the late 19th century and the Billiton part goes back to late 1860 when the then Dutch registered company had the concession for tin on the Indonesian island of Billion, now called Belitung, off the Sumatran coast. BHP Billiton does not produce tin, and its lead and zinc business are a small proportion of its overall business. But

it has never ventured too far down the vertical integration model such as downstream processing, although BHP spent almost 90 years in the steel making business – it is now entirely focused on upstream, extraction of metals, minerals and petroleum out of the ground.

One of the few exceptions of miners transforming into a downstream company with a services division too is the Belgian based Umicore, which is a combination of a series of mergers between several miners in recent decades. One of its predecessors was Union Minière, which had the concession to mine the rich resources of copper, cobalt, tin, gold and silver in Belgium's colony of the Congo from around 1906 to 1968, before its operations there were nationalised by the Zairian government. (*Zaire became the Democratic Republic of Congo in 1997)

Umicore sold its mining and smelting interests and is focused on speciality materials, making products from zinc, cobalt, germanium, platinum and palladium. It also has a strong interest in recycling. Other examples of vertical integration or a move to downstream processing in the resource sector are the Japanese trading houses, also known as the Sogo Shosha, such as Mitsui, Mitsubishi, Sumitomo and Marubeni, which each have interested in mines or petroleum and gas fields scattered around the world, which they often buy for their own industrial needs at their company owned factories to turned into semi-finished goods, such as components for machinery, or finished goods such as cars – as is the case for Mitsubishi. The upstream strategy of the Sogo Shosha's is security of supply of raw material as Japan does not have much in the way of natural resources. Japan as Australia's second largest trading partner could also be a supportive participant in the long term leasing plan as it has set up product stewardship programmes to improve recycling of metal products.

This leasing model could also work in the jewellery world where consumers are becoming more concerned about where the gold jewellery they are buying has come from sustainable sources where it has not be treated with cyanide.

A leasing model could assist in the aims of the gold and diamond industry through its Responsible Jewellery Council (RJC), which was set up to promote ethical, human rights, social and environmental practices from the mine to the retail shop. The council developed the RJC system, a certification system whereby council members are audited by third party auditors to verify their conformance with the RJC code of practice. The RJC includes some of the world's largest gold and diamond miners among its members AngloGold Ashanti, BHP Billiton, Rio Tinto and De Beers as well as jewellers such as Cartier, Tiffany & Co, Zale of the US and Signet Group in the UK. By providing a leasing arrangement AngloGold Ashanti, BHP Billiton, Rio Tinto and De Beers would have a greater say in ensuring their objectives are met as they will want to ensure that certified gold displaces uncertified gold in both the primary and secondary usage of the gold. For instance Tiffany & Company has supported the protection of Bristol Bay in Alaska so that it is not open to mining.

The RJC is also a registered participant with the United Nations Global Impact, which is an initiative for businesses to commit to respecting business sustainability principles in the area of human rights, rights of workers, environment and anti-corruption. This UN initiative also compliments other sustainability initiatives in the resource sector such as the Extractive Industries Transparency Initiative (EITI), which has a significant focus on revenue transparency – to ensure that revenues from the mining sector is not flowing to participants

in armed conflict, corrupt mining executives or government officials or mismanagement. Hence a move to a transparent leasing metal model would also have benefits for pursuing these objectives.

CHALLENGES

Nevertheless, many challenges remain in implementing the long term leasing scheme. Umicore as mentioned earlier has a major interest in recycling. The Brussels-based company said despite initiatives by the European Union (EU) such as the Waste Electrical and Electrical Equipment (WEEE) from January 2003 and End of Life Vehicles from September 2003 there are lower levels of recycling because cars and electronic waste are being shipped to East Asia where fewer regulations exist.

Umicore precious metal refining Christian Hageluken wrote in a report titled: The challenge of open cycles (Hageluken, . 2007) – barriers remain to boosting recycling levels. Hageluken said that about 50 per cent of used information technology electronics are leaving Europe in one way or another. In the case of mobile phones, less than 5 per cent of the theoretical recycling potential is recycled in a compliant way.

He said results for the end of life vehicles of the 3.1 million deregistered vehicles in Germany only 540,000 had been recycled, 580,000 were exported officially and 2 million were exported 'undetected'. The export of these volumes of cars equates to the export of 1.3 million tonnes of steel, 180,000 tonnes of aluminium and 110,000 tonnes of non-ferrous metals.

Hageluken argues that this is because old cars and electronic waste operate in a global market and bypass national or region legislation. He argues that more needs to be done to boost recycling rates such as expanding the target rates of collection under WEEE, more control and enforcement is needed to prevent illegal exports and non-compliant recycling processes.

The cooperation of stakeholders of the recycling chain needs to be further improved, this could provide a role for miner to off-take company under leasing arrangement as it means both parties have a financial stake in the use of that metal.

It is interesting that much of the moves towards recycling have come from Europe where after more than 1,000 years of mining that it has largely depleted its primary mineral resource and that the end of life products provides Europe with its largest resource stock, according to Hageluken.

CONCLUSION

Australia has always been a resource dependent economy. Some of its first taxes were on major commodity exports such as timber, wool, seal and whale oil, and seal skins. Its vast lands helped ride the sheep's back and in more recent decades it was the natural resources below ground that the country drew its riches. The demand for Australia's minerals and energy has underpinned the longest resource demand boom in its history since European settlement.

Hence the revenues from the resources sector to towards the public pursue in compensation for depleting Australian of its natural endowment is an important issue for the industry and Australian society. The leasing metals option would also provide income from Australia's rich natural endowment over generations and not

in a once-off windfall. It also aligns financial incentives with the broader trends in the global economy of a rising population, a carbon constrained world and a greater emphasis on preserving non-renewable mineral resources.

Under the current system, there is no incentive to align Australian fiscal interests with the end life of its non-renewable natural resources.

Australia is at a critical juncture as the resources boom is built around the premise that the country's relative abundance of natural resources is providing the necessary materials to the two most populous countries in the world China and India as they industrialise on a scale that overshadows the industrialisation of the USA, and the post war reconstruction of Europe and Japan. Given the scale of turning two fifths of the world's population from largely agrarian societies into industrialised economies, the demand outlook for Australia raw materials is seen in terms of decades and not years.

At the same time Australia is undergoing a dramatic demographic shift as the first of the post-war baby boomers starts to retire leading to a wave of the largest number of people reaching retirement age over the next 18 years, which will result in few workers per retiree and in turn put more pressure on the public purse as older people traditionally require more services such as home care and medicine.

The structural changes required in Australia's tax system is dramatic considering at the end of the Second World War, the country's entire taxation revenue represented about 22 per cent of GDP. Tax revenue accounted for just 11 per cent of GDP prior to the outbreak of the Second World War. Now Australia is looking at spending 22.4 per cent of GDP on ageing and healthcare alone in 2016 to largely pay for the retirement of the 'baby-boomers' – the generation of 4 million people that were born after the war between 1946 and 1964. The first of those boomers, the women became entitled to a state pension last year and the first of the male baby boomers are eligible this year as they have to be 65 and women 64. Not only are there more people retiring, they are also living longer with the Australian Bureau of Statistics (ABS) estimating that at retirement age in 2006, women were expected to live for another 21.5 years and men by 18.3 years compared with 14.4 and 12.3 years respectively at the end of the war.

However, Australia may be in a better position to raise taxes than other developed countries as its tax to GDP ratio is currently the eighth lowest among the 30 OECD countries.

Given Australia's recent history on major tax changes, a move to a long term leasing model could still be some time off. The Asprey Committee in 1975 recommended the introduction of a broad based consumption tax. There were unsuccessful attempts in 1985 and 1993 before it was introduced in July 2000 as the goods and services tax (GST).

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