

JIGSAW TALENT MANAGEMENT

MONTHLY MARKET REPORT

OCTOBER 2020



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OCTOBER 2020

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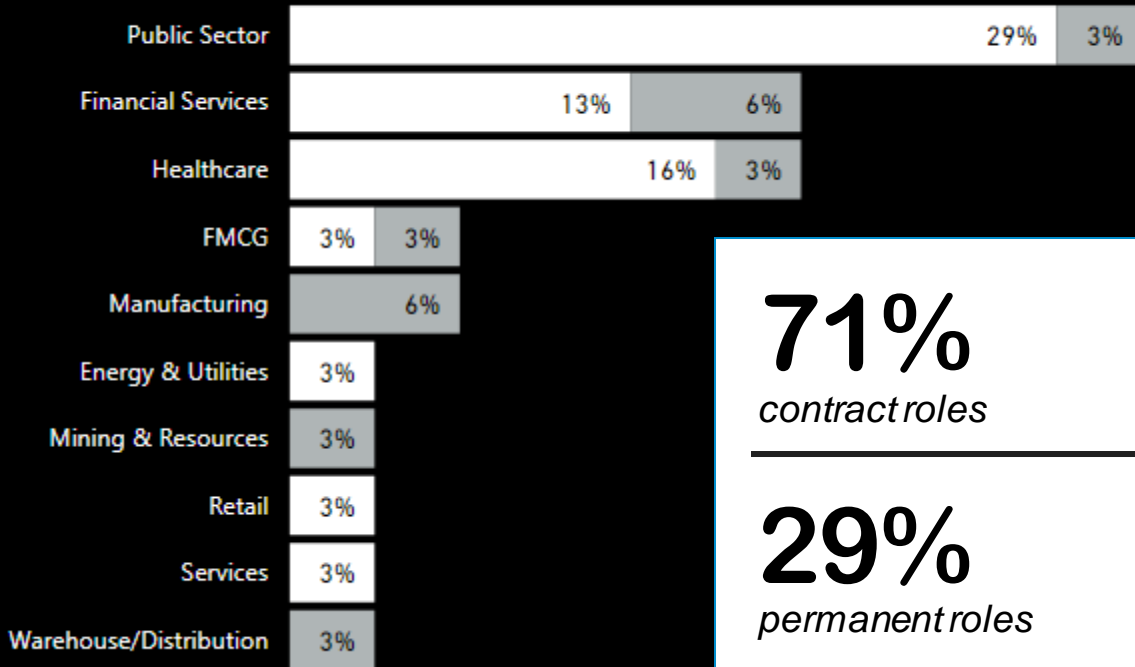


CURRENT MARKET DEMAND

OCTOBER 2020

Live Roles by Industry

Type ● Contract ● Permanent



71%
contract roles

29%
permanent roles

Live Roles by State & Job Type

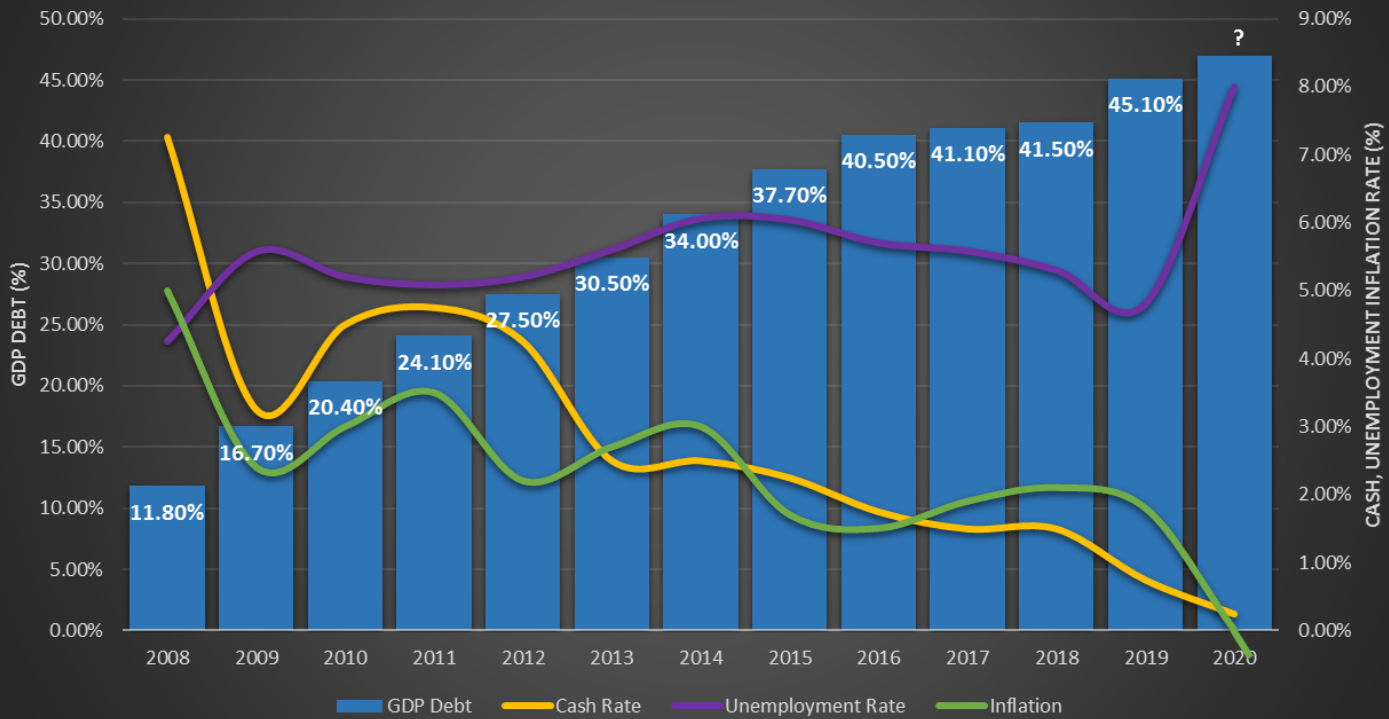
Type ● Contract ● Permanent



A Macro View of the Australian Economy

This month, Jigsaw have taken key data from the RBA going back to 2008 to get a clearer read on how the Australian central bank impacts the Australian economy. In the graph below, we have consolidated the cash rate, debt to GDP, GDP growth, unemployment rate and CPI inflation rate in an attempt to understand the health of the economy prior to lock-downs and Covid-19.

Australian Economy Macro Chart



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GDP Debt	11.80%	16.70%	20.40%	24.10%	27.50%	30.50%	34.00%	37.70%	40.50%	41.10%	41.50%	45.10%	?
Cash Rate	7.25%	3.25%	4.50%	4.75%	4.25%	2.50%	2.50%	2.25%	1.75%	1.50%	1.50%	0.75%	0.25%
Unemployment Rate	4.25%	5.57%	5.20%	5.08%	5.20%	5.60%	6.06%	6.04%	5.70%	5.58%	5.30%	4.80%	8.00%
Inflation	5.00%	2.40%	3.00%	3.50%	2.20%	2.70%	3.00%	1.70%	1.50%	1.90%	2.10%	1.80%	-0.03%

There is a main stream belief that interest rates can stimulate economic growth, lower un-employment and lower the risk and liability of speculative endeavours. Without doubt, removing the price of time and risk does create asset inflation and bubbles, but does it impact growth of the real economy (production, real expansion over consumption and inflation of what already exists)? As you will see in the chart and in our report re interest rates and their influence, Jigsaw conclude that low interest rates are deflationary and actually lower market confidence.



If we look at 2008, Australia was in fantastic shape compared to 2019. Australia had a 11% debt to GDP, a cash rate of 7.25%, GDP growth of 3.7%, inflation was high at 5% and real interest rates (cash rate minus CPI inflation) of 2.25%. Unemployment was low at 4.25% and it seems there was a balance that rewarded governments, consumers and savers. High interest rates meant debt was in check, at least by today's standards, credit was expanding and risk was considered, not speculative. To take on debt meant a substantial ROI was required to service the leverage (housing bubble included), there was confidence in the value of your assets, there was confidence in your savings or you were confident in your ability to stay employed and generate income.

From 2008 to 2009, we have the impacts of the housing crisis and this is likely a catalyst for the big jump in un-employment and increase in sovereign debt. Australia's economy at the time was fiscally sound enough to counter this bubble pop, by reducing the interest rate by over 50% and adding debt to support the financial sectors. Australia mostly came out the other side unharmed and by 2011, Australia seemed to be making headway to lowering un-employment, whilst increasing the cash rate and impacting CPI inflation.

It seems something happened in 2011 that changed this positive recovery and set the RBA on a path of lowering the cash rate which continued over the next 9 years from 4.75% to 0.25%. (For the record, Jigsaw believe the cash rate will drop further in October/November by a further 10 base points). We can see from this chart, from 2011 to 2015, unemployment continued to increase, despite an ever contracting cash rate. In fact, unemployment only started to improve as government debt expanded. So, the lowering of the cash rate seemed to have little impact on un-employment over the past 12 years. What does seem to correlate is the link between un-employment and increased government debt.

To us at Jigsaw, it seems the Australian economy was on the path to recovery, heavily backed by government stimulus, but it could not counter the impacts of globalisation, outsourcing and off-shoring that started to impact domestic jobs in the private sector across all industries. At this time, many global businesses were re-positioning key strategic roles into Asia, Europe or led from head office in the US, Europe or UK.

Australia rapidly became a tactical hub for many global operations and essentially, the bulk of tactical roles in services were outsourced to emerging countries and many senior positions across manufacturing were exported to regional hubs. Middle management was destroyed across almost all sectors (except banking and public sector), org charts became flatter, succession planning and long term retention dwindled. In place were deflationary technologies, roles that had so much global scope and in-direct accountability that the true influence of people taking up these roles made little sense other than an excuse to rip out opex costs. Business philosophies had changed. Global businesses saw little point in paying for high level strategic thinkers and influencers in a country that had a very high price of entry and low overall demand for products. The expense was better positioned in other countries where head quarters were based, costs were cheaper and talent selection was broader.

Businesses do best when they invest in mid management. Employee's in operations understand there is an obstacle in front of them that the guys in the C suite are too high up to see. Issue is, without a middle layer, you have nobody low enough to see the obstacle, yet high enough to be aware you can go around it. Org chart depth is more about layers of problem solving and influence linked to experience. Without ladders for people to climb in sync with their advancements, IP is quickly lost from enterprises as long term retention is impacted. Just like the middle class are the back bone of an economy, so too they are the back bone of a corporation.

Procurement, a function Jigsaw is well versed in, went from National models to Regional and Global. As a result, many people who operated in private sector procurement ended up migrating to government as roles went overseas, org charts got flattened and the only roles that were in abundance were government backed. This migration from private sector to public sector increased the problem of debt in the economy. You could argue for procurement at least, the extra commerciality private sector experience could go some way to making tax payers dollars go further, but in reality, the machine is too big, too slow and too conditioned to misallocating tax revenue for these professionals to have a meaningful impact. This expansion of government resources as an ever expanding contributor to GDP, likely hindered the government's ability to generate tax revenues from an ever decreasing industrialised economy. As public sector extended its hold on the Australian economy, other deflationary forces were taking hold via foreign imports.

So, jobs that were destroyed in the private sector, or were off-shored to other countries, were compensated by an ever-expanding public-sector work force that was funded via a continued reliance on debt. As more treasuries were issued to fund expansion of government, malinvestment of infrastructure, huge rebates to energy sectors and no wealth fund to ensure all Australians benefited from the commodity boom, interest rates had to come down, if for the only purpose of assisting government liability. It was certainly not to enable investment in the private sector. To target inflation and GDP growth, which gets ever harder to achieve as more GDP leans towards public sector spending, Australia increased immigration and exports of Chinese students. This ensured an easy flow of new capital could enter the country, even though private sector jobs were contracting, to be employed in government created roles. It is worth also including the education system here, as the expansion of universities is considerable and they are able to leverage government rates when required and are heavily subsidised by tax payers.

If you were employed by the public sector on the back of treasuries or tax revenues, and then bought an overpriced property or extended the credit card to consume, the economy was doubling down on a debt spiral. Sovereign debt was now supporting private debt, and new monetary expansion was mostly for consumption of overpriced assets that already exist or have been constructed so poorly they will not hold value.



Now we have an escalating problem, where public debt is not being utilised to aid a debt to GDP deficit via the creation of production and diversified exports, but is being used to ever expand the government workforce, who in-turn are expanding the supply of credit beyond the real value of assets, created by easy monetary policy and competition from Chinese families and immigration. Still, nominal GDP is increasing at the expense of peoples savings via a 25% devaluation in the Australian dollar per decade, low wage growth and a shrinking private sector workforce, both in volume and complexity. So in actual reality, real life quality of living per person has been heading backwards at an alarming rate over the past decade. (GDP per capita).

As the service sector (70%) and mining sector (15%) make up the bulk of the remaining economy, we have two verticals each with their own risks for the Australia economy. Services is a sector that competes globally, the barrier to entry is typically either scale or the quality of people employed. Services are highly sensitive to the strength of the industrial economy and deflationary forces such as technology, cheaper labour and land in emerging markets and global competition. If an economy is regressing, especially in real terms (GDP per capita), then skilled resources can flow to countries with better standards of living and to where economies are more sustainable and complex. It is not surprising that a large portion of Australia's service sector exists on supporting the Government. Mining has its own issues in that its dependent on other economies demand, and for Australia, it is basically only 3 economies which are Japan, South Korea and China. Commodity exports is an important component, contributes to true GDP growth and sustains the Australian dollar as a key currency in Asia, yet this has left the country at huge risk as geopolitics and domestic economy is too integrated with one country (China) that is accountable for 30% of our export revenues and has arguably led the government to be too complacent with alternative economic progression and development. Jigsaw still stand by our prediction that Iron Ore prices will come down to sub \$100 per tonne early 2021, if not before.

So, was the crisis caused by Covid-19 or was Australia's economy on a path of destruction anyway? In truth, it seems the economy was fragile and already heading in the wrong direction. Consumer confidence not interest rates or government spending is really what drives a sustainable, healthy economy. Confidence in wealth, governments, banks, savings and real improvement to peoples quality of life is the key to sustainable credit expansion. Higher interest rates would have prevented asset inflation and rewarded savers, in turn driving consumption and credit expansion. Reducing unemployment by expanding governments is a path that is only going to lead to destruction. As we can see in the chart, as the growth is forced and artificial for the purpose of votes, not linked to market forces. As a result, you get currency velocity and nominal growth via currency debasement, importing capital and so much artificial red tape that entrepreneurship has little chance, resulting in little GDP growth from productivity. People will get into debt if they believe the value of their reserves are increasing and cash rates/ real interest rates stay positive, employment is sustainable and assets are priced in accordance with domestic income; not foreign capital used to speculate.



Leverage is good if it can be serviced, and it can only be serviced with income and savings exceeding inflation or if asset price discovery exists where genuine capital gains can be made. Government as a % of the economy (GDP) should contract and until this logic is understood, Jigsaw feel we are in a long cycle of stagnation. If you want to see our future, just look at Japan, except for Australia it will be worse, as Japan owns its own liabilities and is a creditor nation, Australia is not in this position.

The US Economy

The FED have indicated they plan to keep interest rates near negative for at least the next 3 years, highlighting that they will only support solvent enterprises, with the goal to let inflation run for the foreseeable future to enable economic recovery. Ignoring the fact they have been indirectly acquiring junk bonds and backing up the US stock market, they have so far failed in all attempts to date to drive the target inflation rate of 2% (CPI). The US has set up a macro economic model that ensures it runs a trade deficit to support the US dollar as the global reserve currency. This model of running a deficit balance on trade (imports are far greater than exports) ensures the US can use the US \$ as leverage to influence foreign countries. As the US is the global reserve currency, and emerging markets that export to the US have pegged currency to the US dollar, the US can afford to import deflation. As the US dollar loses value or gains value, other currencies have to match these fluctuations by manipulating their currencies to keep their booming export markets thriving to the US consumer. Countries that export goods to the US simply sell/buy their own currencies in sync with the changes in the US dollar, this weakens/strengthens their own currencies in relation to the US market which assists their exports and domestic economies which rely heavily on US consumption of their goods. Surplus dollars (reserves) are often re-injected back into the US via securities and as a result, the US government keeps issuing more debt to be soaked up by foreign investors. The US is the world's biggest piggy bank and its biggest export is the dollar. This engineered economic system has flipped the US from being the world's biggest creditor nation to the world's biggest debtor nation, with China being the leading creditor nation and to date holds circa \$1.2 trillion of US debt.

If imports are capital based, such as machinery, plant and things that produce, it typically indicates a thriving domestic economy that is producing products. This means, even if there is a trade deficit, the economy has a long term means of producing its way to an eventual trade surplus or at least stagnating further deficit spending. If imports are consumer based (products that do not contribute towards tangible production), then the domestic economy is more fragile, and it requires more and more debt to keep the system of consumption running. This typically means the trade deficit will continue and GDP will slide. It seems the US and other leading Western economies have been mostly importing to consume and this alone, is a key reason why a V shaped recovery is very unlikely, especially with global trade under pressure as a new cold war emerges. Huge changes to the economic models need to be implemented over a long period of time to repair this damage.



Credit Deflation (The Theory)

The big question for investors, income earners and entrepreneurs is whether all this global Keynesian government stimulus creates inflation or deflation. Most people link the creation of money to inflation. The issue with this theory is most of the credit being created is bank reserves and hence is stagnant. For inflation to happen, real currency must move and touch the real economy. As the economy is credit driven and credit is tightening, we are more likely in a deflationary cycle. Low interest rates are not inflationary as many people believe, they are deflationary. Credit and currency are not the same, although the point is a pedantic one. The amount of debt in the global system is multiples of the currency issued. Low interest rates are set to promote the issuance of new credit to keep the market expanding, they are an action of a deflation that has already happened. If we look at bank reserves, they are, as indicated stagnant and sit in the FED's balance sheet, and the primary banks cannot access these reserves, they are simply a collateral to support the creation of new credit. The reserves act as collateral for credit markets, but no actual liquidity can enter the real economy unless the banks have confidence to create credit and consumers have both the confidence and appetite to demand credit. The difference re logic is if you believe central banks are reactive or proactive. They are absolutely reactive and this is a downfall of too much central planning.

As banks tighten credit due to a complete lack of confidence in the banking network and the overall economy, the reserves are of little use. Even if liquidity does make its way to main street (real economy) via some new policy, such as the general public having direct access to central bank currency issuance (MMT), this currency will without doubt be used to pay off debt, further impacting the deflationary cycle. When credit is flowing freely, banks raise interest rates as they are in the business to make money. High interest rates allow the banks to soak up revenue from debtors and maximise the booming appetite for credit. This offsets the inflation they create by increasing the money supply and typically, if policy and regulation are poor, this monetary expansion is focussed on key asset classes and bubbles are the result. When assets expand beyond people's ability to generate income to service the credit issued to buy the asset, assets deflate, credit contracts and interest rates drop, in an attempt to stimulate more credit creation. This dynamic can go on until interest rates can no longer stay ahead of the deflationary force. Key concept here is central banks are a reactionary force, which means they are far from in control. Typically, deflation improves the value of currency, so what the banks lose in new credit, they gain (theory) in the value of the existing credit already issued. The problem is, deflation also increases the value of debt to be paid back to the banks, and if the debt is defaulted, they could become insolvent without assistance from the central banks or other investments that can off-set the risk.



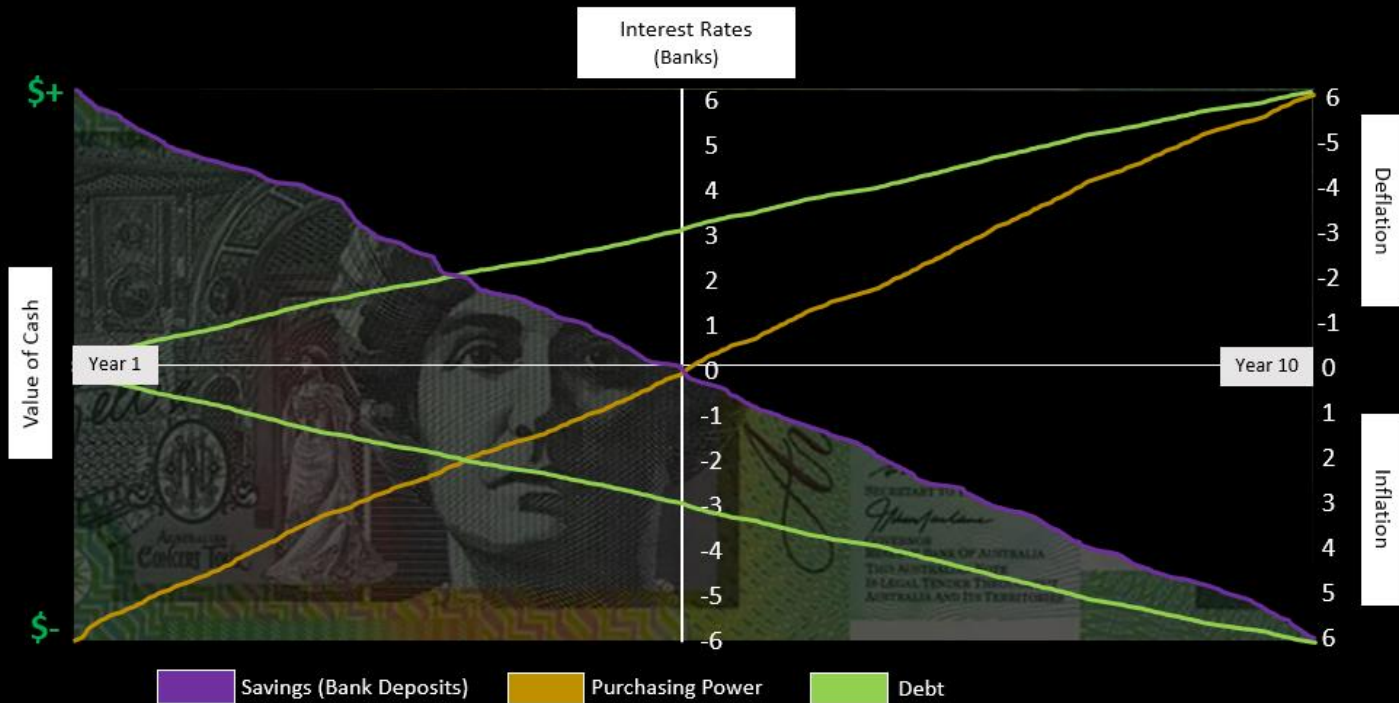
Aside from these viewpoints, the real question is can governments afford to ride out a long term deflation? Can the US, which is the world's largest debtor nation, with an ever expanding debt, really afford to let this happen? A stronger dollar is great for emerging markets re exports, and also great for US creditors, but exports need to be consumed, the value of US household debt will also increase, un-employment will continue to get worse, and overall domestic debt consumer debt will default. What a complex mess we have created.

So, with this view point , in Jigsaw, looking at the various data points, we believe the forces will be initially deflationary in the short term and this will be good for bonds, as less globalisation impacts businesses market share, banks tighten credit to protect balance sheets and consumers strive to de-leverage themselves. This will mean a contraction of small businesses and potentially more M&A activity of larger businesses to gain efficiency to right size costs in line with shrinking demand. Depending on actions by Governments, inflation will likely also occur in sync with credit deflation. Food, energy and commodities could experience high inflation as a result of supply being destroyed as many businesses become insolvent. So short term, the bond bubble will increase further as governments control long term yield, increasing the principle price of bonds. Thing is, long term, confidence will be lost in the fiat currency, and over time, investment will likely swing to commodities and well researched equities.

Hugh Henry, who is a leading investor believes that monetary policy is too tight in relation to inflation targets and this is a key problem why the banks are not assisting with credit. This controversial view is that with inflation at circa 1% (real rates at -1%) and interest rates at near zero, monetary policy needs to be loosened considerably to a cash rate of -2 or -3% to create the required inflation. Hugh Henry believes this would motivate money creation and velocity to enable a slow yet real recovery. In Jigsaw, we see no value in negative interest rates and the concept seems to distort economic fundamentals. Negative interest rates in the US banking system would create havoc with interbank lending and the bond market, this would surely destroy all confidence in the US dollar as the world reserve and push precious metals into the mainstream as a long term safe haven asset in place of bonds.



Below, Jigsaw have created a chart that explores typical scenarios re interest rates and how they impact inflation, debt, savings and currency debasement. Please be aware, this chart is based on pro-active tools, which in the real world, rarely happen.



How does Inflation impact us?

The thing that matters most to mums and dads is real interest rates, which is the cost of money (cash rate) minus inflation rate. If the bank interest rate is 0.25% and inflation (the cost of goods) is at 2%, the real interest rates are at -1.75%. Your money is losing value every year by this %. If you have \$100 in the bank you would lose \$1.75 per annum. Your \$100 would only be worth \$98.25 in a year's time.

It is this subtle tax on the population that people do not see. As well as losing this \$1.75 per annum of your \$100 savings, you are also paying tax on the consumer items that are increasing in value by 2%. So if your annual consumption of goods is \$10,000 per annum, it will now be \$10,200.00 per annum. As the government charges GST on this inflation, they gain an extra \$20 in tax revenues. When the government positions inflation as being required for a healthy economy, what they mean is, they need to not only directly tax you on your income and capital gains to meet their budget demands, they need to take more from you by debasing the value of your savings and increasing the tax collected on your utility. Inflation has many advantages that serves governments. It lowers the real value of debt and drives consumerism. If you believe something will be more expensive tomorrow, you will more likely buy it today. On the flip side, if you believe something will be cheaper tomorrow, you will wait, save and contract the money supply.



On the flip side, deflation is fantastic for creditors as it increases the true value of debt, increase the purchasing power of currencies and gives a net gain on wealth. If you were offered a pay rise of \$10k per annum, on a salary of \$100k, the government can tax the business via payroll tax, your income via income tax etc. Your net gain would not be \$10k. If an asset was valued at \$100k Inc GST and deflated by \$10k and now only cost \$90k inc GST, your net gain is \$10k. Your quality of life has improved yet the government could not tax it.

Commodity of the month - Lithium

Moving forward, each month Jigsaw will be focussing on a commodity, exploring a little more detail around key factors that drive demand and utility. This information is a key part of global supply and procurement. For October, Jigsaw are focussing on Lithium.

Lithium (Li) is the lightest metal and its properties include being highly flammable and reactive. It was originally mined in the 60's to supply the industrial markets, assisting in the production of glass, ceramics, pharmaceuticals and some alloys. More recently, the metal is associated with modern batteries and is a key element for future production of electric vehicles and electronic products. Although lithium prices have been down circa 37% in recent times, demand for this metal is expected to triple and Australia is responsible for about 30% of global supply. Lithium typically comes in two forms, Lithium Carbonate and Lithium Hydroxide. It is Lithium Hydroxide that is more costly to produce and will be in demand for electric vehicles. It is produced from a chemical reaction between lithium carbonate and calcium oxide. The biggest producers of lithium are Australia, Chile, Argentina and China; with largest demand for Lithium stemming from China, Japan, US and South Korea. As with all mining, the spot price has to justify the exploration, production and development and as inventories dry up globally, there will be a strong demand for high quality lithium, which should increase the spot price. Thing is, the required quality is very rare and not many companies can produce it.

With a current market value of circa \$3 billion which is expected to reach \$30 billion in the next decade, production quality to meet demand will be tight and need to be 10 parts per million in purity to make it relevant for high grade EV vehicles. Companies that can exploit this will have invested heavily in chemical engineers and have deep networks into the electronic vehicle supply chain. The dynamics of product purity and strong connections with the EV market will have big impacts on the margin's that can be achieved. At \$3K - 5k per tonne, lithium is too cheap to produce. Miners have to factor in import duties, royalties, shipping, tax, re-process costs and other added opex costs to make up shareholder value. The lowest cost route re mining Lithium is Brine to lithium carbonate or hard rock to hydroxide, depending on the integration costs. For investors, serious consideration is required on the supply side, factoring in which junior miners have partner models in play with EV Auto, how solid are their balance sheets and how the Lithium is being produced and developed.



Factoring in clay, brine or hard rock are key as these impact the cost of production. Re the demand side, Tesla needs to be watched closely as the company is likely overvalued and is accountable for most of the demand outside of Asia.

Another key issue for Lithium is how ethically it is mined and sourced across the Automotive sectors. It is all very well feeling smug re your contribution to the environment driving around in an EV, but if you reverse engineer the supply chain, you quickly realise the extraction and production processes to obtain battery grade lithium put a huge strain on environmental factors such as habitat destruction, pollution of air, land, water and carbon release. For instance, in South America Argentina, Bolivia and Chile account for almost 50% of the world's supply. The salt flats are dry and to extract lithium miners have to drill holes and pump salty mineral rich brine to the surface and then leave it to evaporate over months at a time. This creates a mix of manganese, potassium, borax and lithium salts which are then filtered further and placed into another evaporation pool. The process takes 18 months and uses huge amounts of water, around 500,000 gallons per tonne of lithium. These kind of processes can and will place a huge strain on the agriculture sectors and the process leaks a huge amount of toxic chemicals that often result in the death of local wildlife. Chemicals such as hydrochloric acid often end up in the rivers and streams.

An environmentally superior yet more expensive way of extracting lithium is geothermal plants. Europe's first geothermal plant is based in South West England (Cornwall). This unique plant operation is concentrated on mining lithium from geothermal brines. The technology used is nanofiltration. This process could prove, at a far higher price point, that lithium can be produced in a sustainable way with zero carbon emissions. If this process takes off and does prove to be the greenest way to extract high grade lithium, then the cost of production of EV's could increase substantially in the short term.

Natural Gas

The prediction is countries will need to invest in local production in future and rely less on imports to ensure against future supply shocks, high unemployment and right the balance between public sector and private sectors. Only the expansion of private sector that can provide the productivity and revenues to off-set the ever expanding government debt. For this to have a chance of happening, business inputs such as capital, land, labour and commodities need to be at a price point that makes investment in new industries and production possible. If these input costs line up, private sector expansion can happen, allowing Australia to expand into a broad based economy, exporting products to a wider array of countries whilst reducing unemployment. So, we have rough idea of what needs to happen, but that is the easy part.



The question is, how do we take the right steps to make this happen. Of the criteria highlighted, capital is cheap and will likely remain cheap for the foreseeable future. Land also is predicted to be in a deflationary cycle that seems to be outside of the influence of government stimulus and policy, to their obvious frustration. So land and capital are on the right path. What about energy? This brings us on to natural gas.

Gas is a natural resource of which Australia has an abundance. It is common knowledge that Australia is now the largest exporter of natural gas in the world overtaking Qatar. Of the fossil fuels, natural gas has the lowest carbon footprint, and is used across a broad array of sectors in the economy from transport, manufacturing, agriculture and domestic purposes. It is both an energy and an input cost of producing metals, chemicals, construction materials and plastics. Australian exports of LNG tripled from 2000 – 2015 and according to Jigsaw's research, tripled further between 2015 and 2019. In 2019, Australia exported over 77 million tonnes of LNG worth just a smidge under \$50 billion. The core market Australia exports this abundant natural resource to is Japan, China and South Korea. The government is keen on a gas led recovery plan to assist the flagging economy, which although is a better source of energy to coal re carbon footprint, is a poor alternative to solar, wind, nuclear and other environmentally friendly options. Further development of natural gas also will impact farm land, ground water potentially adversely impacting Australia's natural land owners and agricultural exports. As a side note, it will also, according to Jigsaw's research, have little impact on the ever increasing un-employment numbers. To date, The LNG sector employs only 0.2% of the Australian labour force. Defenders of natural gas will counter that it is a short term solution (25 – 30 years) that is required to assist the transition into hydrogen technology. Adding also that natural gas is a strong supporting energy for greener less scalable energy transitions such as wind and solar. From a pure efficiency perspective, it is hard to argue that fossil fuels are superior for producing and scaling energy to a nation than wind and solar. Oil is bang for buck the king when it comes to fuelling our modern 24/7 demands.

So, we have a lot of natural gas in Australia. Naturally the assumption for visiting aliens would be, gas is cheap and in addition to deflating land values and cheap capital, why not get on with the task of investing in a manufacturing led recovery? Australians would have to correct the big headed, little bodied bods from Mars and advise them that here in Australia, our domestic gas prices are so expensive that for the South of the country, it is actually cheaper to import it. At this point, our Martian friends leave our fine country to find a more rational, logical country to stay in.

The \$250m project for Port Kembla is being developed to import gas from overseas at a far cheaper price point than it can be sourced domestically. In reality, it may hit our shores at an arguably cheaper rate, but factoring in the capital costs and the likely cost of re-gasification, it will have to be seen if the net benefit to these projects is realised.



If we look at the average domestic bill for gas on the eastern seaboard (Canstar Blue Survey), it is apparently between \$204 and \$299 per quarter, with the high band associated with residents living closer to the CBD's. In comparison, domestic consumers in WA have an average quarterly bill of \$152. Comparing March 2020 prices of Australian gas in kWh, it was US\$0.073 per kWh vs the global market price of US\$ 0.05 per kWh. So why so expensive?

According to an article in Forbes, around 40% of domestic gas consumption on the East coast is under long term export agreements which is to be exported as LNG. So the domestic gas is priced at export rates minus the shipping and processing costs to liquify. Once this price point is adjusted, the gas then needs to be distributed from the North to the South, increasing the cost by an additional \$1 -\$2 per gig. This cost in the supply chain has forced many manufacturing operations to close down. According to the same article in Forbes, South Australia is making a rod for its own back in banning on-shore gas production.

So we can solve the high price of domestic gas it seems by removing government regulation in the South, and in the short term, putting pressure on North based gas producers to allocate a percentage of gas for domestic use only and offer a lower price point for domestic customers, in turn sucking up the opportunity loss of export revenues. New information feeding through to Jigsaw at time of writing (8th Sept) is that Australia will mimic the successful US natural gas model (Henry Hub) which allows gas to be available 24/7 coupled with complete price transparency anywhere countrywide. For businesses, risk is managed via hedging in the futures markets. If this happens, expect to see the Morrison government break policy and build a gas plant in NSW (Hunter Region), with Australia extending its supply chain infrastructure from 30 pipelines spanning only 20,000km to something far more considerable, lowering the cost of distribution to customers. So is the government correct in leaning further on natural gas to aid economic recovery? Will it help us transition to hydrogen and other cleaner energy sources or should Australia look at the other alternative that is likely even more controversial than fossil fuel – Nuclear.

Nuclear - Uranium

Nuclear power. When we think of nuclear energy, I am sure for most people a sense of dread hits their mind, as the flashback to news coverage of Chernobyl (86) and Fukushima (2011). In 1986, a sudden power surge during a routine reactor test resulted in an explosion that led to the evacuation of over 220,000 people. For Fukushima, natural causes, in this case an earth quake led to a tsunami which ended up destroying backup generators handicapping the cooling systems. Overheating created hydrogen explosions and the subsequent radiation leak meant over 500,000 people had to be evacuated. So, with nuclear, when things turn bad, they turn really bad. These events decimated the share price of uranium stocks and resulted in countries continuing with fossil fuels for high grade energy to fuel their economies. So, what's changed?



Uranium is a chemical/heavy metal (Symbol U) and was discovered in 1789 by a German chemist Martin Klaproth. It can be found in the earth's crust and it was formed in a supernovae about 7 billion years ago. Interestingly, it provides the main source of heat inside earth and is responsible for causing both convection and continental drift. Aside from being used as a clean fuel source, due to its high density (it is 18.7 times denser than water), it is also used in the keels of yachts and as counter weights for aircraft control surfaces and radiation shielding. It is as plentiful as other base metals such as tin, tungsten and molybdenum. It has a melting point of 1132C. Uranium, like many elements, has several slightly varying forms, depending on the varying presence of uncharged particles (neutrons) in the nucleus. The uranium sourced in the earth's crust (most commonly found in the form of U-308 when mined, which is Triuranium-Octoxide) is mostly either U-238 or U-235 with U-238 being most common accounting for 99.3%. It is the isotope U-235 that is most important as under the right conditions it can be split in turn creating a lot of energy and it decays faster than that of isotope U-238. As a point of reference, U-238 decays very slowly and has a half-life of 4500 million years. This means it is barely radio-active, generating 0.1 watts per tonne. Still, this is enough to heat up the earth's core.

So, how is this energy created from U-235? When the nucleus is split under the right conditions it releases energy in the form of heat, when this happens, multiple neutrons are dispersed from the nucleus of the U-235 and these neutrons cause the nuclei of neighbouring U-235 isotopes to split, and this chain reaction (fission chain) can continue again and again, millions of times producing tremendous amounts of heat from a very small portion of uranium. This process of essentially burning uranium occurs in all nuclear reactors. The heat is used to create steam and in turn produce electricity. This process also creates plutonium, when U-238 (a fertile isotope) forms into U-239 and sometimes U-240. Jigsaw will leave it to you to research this further if interested, but it is not so important here.

Today, about 10% of the world's energy comes from nuclear and the demand for clean energy is ever increasing. This demand is currently serviced by over 400 nuclear reactors spanning across 30 countries. The US has circa 100 nuclear reactors and gets 20% of its energy from nuclear, France gets over 70%. In addition to this, there are over 100 new nuclear plants planned, 54 under construction and 328 at the embryonic phase of proposal. This is an ever increasing trend, with Poland, Japan, India and China seeking to expand their reliance on nuclear fuel. If we look at China as an example, their nuclear capacity will increase 300% with a target for nuclear to contribute at least 10% of all electricity production by 2030. Demand for uranium will increase 47% by 2025 and by 2030, demand will hit 75 million pounds.

The nuclear fuel cycle (info re Tribeca Investment Partners) includes mining, milling, refining, conversion, enrichment, fuel production, generation and waste management. The process for utilisation takes between 18 months and two years, so the cycle time is longer than that of other fuel sources and the overall utility is not too labour intensive.



This year, due to Covid-19, the uranium price has hit a 5 year high, as 50% of the supply has been disrupted. Cameco's Cigar Lake uranium mine and mills have been off-line and Kazatomprom (world's largest producer) have cut supply by over 17%. So mined uranium is continuing to fall and with the long fuel cycle, this is increasing the spot price. Higher prices will prompt more mining as the commercial feasibility is favourable. To make the investment palatable for mining, the price of uranium needs to be stable at circa \$US 45 pound. In 2019, demand for uranium exceeded supply by about 50 million pounds. This supply deficit will deepen in 2021 as estimated production of uranium will be only 110 million pounds vs a demand base that could be significantly higher than 195 million pounds as of 2019. For Jigsaw's network who are keen investors, this is certainly something for you to explore.

So how energy dense is nuclear compared to the fossil fuel champion oil? Well, 6 grams of nuclear yields the equivalent energy production as 1 ton of coal, 120 gallons of oil or 17000 cubic feet of natural gas. Nuclear reactors are also highly efficient and have an average up time of over 92% compared to the efficiency of coal & gas plants (54%), wind (37%) and solar (27%). If we look at the state of California who unfortunately seem to be embarking on another tragic summer of fires and heat waves, they are experiencing an energy crisis as residents are exposed to blackouts. The electricity grid had not prepared for the heat wave and an energy shortage of over 4,400 megawatts caused blackouts for over 3 million people. California is a highly progressive State and has leaned heavily towards clean energy sources such as wind and solar. It has a 60% target for renewable energy by 2030 and 100% by 2045. It seems the idealism of 100% renewable carbon free energy is causing some very real issues for its residents. Is it possible, without the investment in nuclear energy as a supporting energy supply, the only way California will achieve its goals of supplying clean energy to its population in a satisfactory way, especially in times when heat waves are common place and air conditioners are on full, will only happen if 25% of its citizens leave to other States?

Modern Slavery

Modern Slavery. What is it? In Jigsaw, over the past 3-4 years the term modern slavery have been circulating through our network in procurement conference, conversations, job briefings and job descriptions. The term "Modern Slavery" strikes up images of third world countries, crumbling buildings, floors packed with hundreds of workers, who are either not paid or barely paid an income for their labour, each rubbing elbows and shoulders with their equally exploited co-workers, orchestrated in an Adam Smith type model, dividing labour inputs amongst the masses to produce products at scale and low cost for western consumers and owners of capital. So, is this fleeting image that floods the mind an accurate take on the situation re modern slavery? Is modern slavery less obvious than this horrific image and hence harder to identify and manage? Do corporations and politicians really care about the problem or is it more a case of ticking boxes to achieve the minimum compliance and regulation to mitigate the risks for commerce?



In literal terms, to be a slave, you have to be considered capital or to put it another way, you are an asset that can be both owned and traded by a master who claims ownership of your person. A slave is owned for life, until death or until they escape. It is the responsibility of the master to take care of their utility. Slaves are not paid, and for labour the rewards were food, water, shelter and safety. If we compare this to an employee, again in literal terms, an employee consents to offer their labour out of free will and is paid a currency for their labour in which they then source their own food, water, shelter and utility. An employee's circumstance is also a temporary and not for life. If an employee is not happy with a working arrangement, they have free will to leave and source a more attractive alternative. They do not have to plan an escape. So far then, the distinction is pretty clear between the two.

In the real world, it is debatable if these distinctions between employee and slave ring true. Many people in the world who are classified as employee's have little choice re their circumstance, and are so poorly paid that covering utility is impossible. Many modern employees have to choose re shelter, food, water or safety. As their income will not cover total utility requirements, let alone retirement. It is also a fact that many modern employees have less time and work harder than a 14th century slave. Compared to slaves of the past, many modern day employee's put in 2 months per annum more (1,440 hours vs 1,179 hours) labour. So, although distinctions are clear, the real picture is not. Historically, according to the data, slaves worked less, had all their utilities taken care of and were looked after in retirement. Many modern workers are obligated to work via fiscal pressures to achieve utilities that the income achieved cannot cover, work more hours, have less down time and no future security for retirement. It is another topic, but it has to be questioned, if you are not making something to sell directly, are you simply selling yourself and as a result, are you free?

According to Business & Human Rights Resource Centre, modern slavery includes forced labour, bonded labour, human trafficking and child labour. Mandatory transparency requires companies to disclose actions they are taking to address the issue throughout the supply chain. Most of the focus seems to be at a business to business level, where complex supply chains that are tiered require increased awareness, policy and governance to ensure slavery is both identified and avoided where possible. Key to the agenda are improving governance and transparency about what is actually happening throughout global supply chains, addressing corporate behaviours, and ensuring a level playing field for commercial sustainability so companies that do not follow these steps are at a clear unfair advantage. Industries that are impacted are broad including retail, manufacturing, mining and finance.

Of the circa 40 million modern slaves that are having their human rights violated today, 75% are female (circa 30 million) and are being forced into labour, marriage or sexual exploitation. There are about 160 countries who have modern slavery happening within their borders. The worst offenders being Indonesia, Congo, Nigeria, Russia, North Korea, Uzbekistan, Bangladesh, Pakistan, China and India.



These countries cover commerce such as palm oil, pet food, construction materials, mining commodities, agricultural produce and cotton. The top 10 countries with the least exposure to modern slavery include Austria, Germany, Sweden, Belgium, Australia, Canada, Spain, US and France.

So how does a person get caught up in this horrible situation of modern slavery. According to Jigsaw's research, the most common vehicle is via deception. People who are keen to secure a job to create income for their struggling families and position themselves for a chance to improve on their circumstances are given fake promises of legit employment for income, illegitimate contracts that are structured in either a foreign language or the person seeking employment cannot read. Often, once committed to the job, especially if in a different country, their ability to leave is severely hindered as identification, passports etc are removed from their possession. Pay is also withheld and used as ongoing leverage. Other methods include debt. Many victims have cash advances and have to work to pay off the debt. This debt is not open book and is manipulated to keep them in debt and in long term serfdom. Then there is the more direct and brutal methods that cover physical and emotional abuse to both the person and their direct families.

So, modern slavery is very real, is happening daily and unfortunately is accepted in many countries in the developing nations. How do we solve it? The question is, is it enough for governments and companies to select suppliers that may not practice modern slavery themselves directly or in-directly via the value chain? Should this issue be solved at a macro level, by country? Is this a real solution if considered? Let's look at China, India and Indonesia as real examples. India is a key strategic economy for Australia, especially if we are on a journey to de-couple from China as a trading partner. India is a developing market and as of 2019 was the 5th largest economy by nominal GDP and the 3rd largest in PPP (purchasing power parity). To date, Australia exports coal, wool (66%), grains, pulses and dairy to India. India's strategy is to be self-reliant and enforces this strategy by making it challenging for foreign investment.

Jigsaw have highlighted in previous reports, it makes more sense for foreign investors to take a stake in Indian companies than enter the market as an international brand competing with them. As a trade partner, they are very attractive and Australia is in a prime position to fulfil demand for iron ore, high grade coal, metals (base, precious and strategic). This all sounds fantastic, but if we look at the countries slave labour statistics, they are not so clean cut. India accounts for over 8 million victims of modern slavery, who's human rights are being removed by forced marriage, child labour, human trafficking, forced begging.....the list goes on. China, who already has many manufacturing operations from global blue-chip companies imbedded in its country is being investigated for the mistreatment and imprisonment of millions of Uighurs. These people, who are Muslims, are being subjected to forced re-education and post this, a lifetime of slave labour or if preferred forced labour. Although paid, the minority groups are forced to take on work, cannot take leave or see their families and are under 24/7 surveillance. There are many global blue-chip companies that have profited from this.



Indonesia has one of the strongest economies in the world pre Covid-19, with a projected growth rate of 5%. It is Southeast Asia's largest economy, 16th globally in nominal GDP and 7th in PPP and a respectable debt to GDP ratio of 30%. Indonesia has an issue with managing ocean based slavery across its fishing sectors.

We have to start to take on this challenge and we have made some very positive steps tackling the supply chain. The key question is, has the Covid-19 pandemic given socially responsible companies and governments a once in a life time opportunity to impact the issue at a country level with capital investment? If we are de-globalising, with capital being pulled from China and other emerging markets due to supply risk, is there a chance now to use the re-investment of this capital under conditions that leverage governments to take more aggressive steps to eradicate this violation of human rights?

The question is, as a business or government, do you have the moral high ground to preach a policy on modern slavery, whilst your business capital is still based in countries that are executing human rights violations on a massive scale. The truth of the matter is, even aside from forced labour, positioning your production in China and other emerging markets opens up other concerns as many of the workers in these countries who are paid for their labour still have exposure to lax environmental and safety regulations. Even though China brought in laws in 1995, they are not enforced and as a result, China is a dangerous place to work. Deaths are common from heavy machinery, chemical poisoning and terminal illnesses such as brown lung, cancer and mercury poisoning. So the cheaper cost to produce is not just about slavery, it is also about cheaper equipment, less safety, less regulation, more pollution and overall less accountability and liability.

The issue is both tragic and complex, and Jigsaw have also enabled the recruitment of talent in such countries, so don't think for one minute we are pointing the finger or judging. We are simply exploring the issues, attempting to think through the issues and questioning all of our actions. As with many things, we have to question everything, find out the real facts, understand if we are direct or in-direct enablers of what is wrong in the world and collaboratively, further attempt to fix them.