JIGSAW TALENT MANAGEMENT

# MONTHLY MARKET REPORT

November 2021


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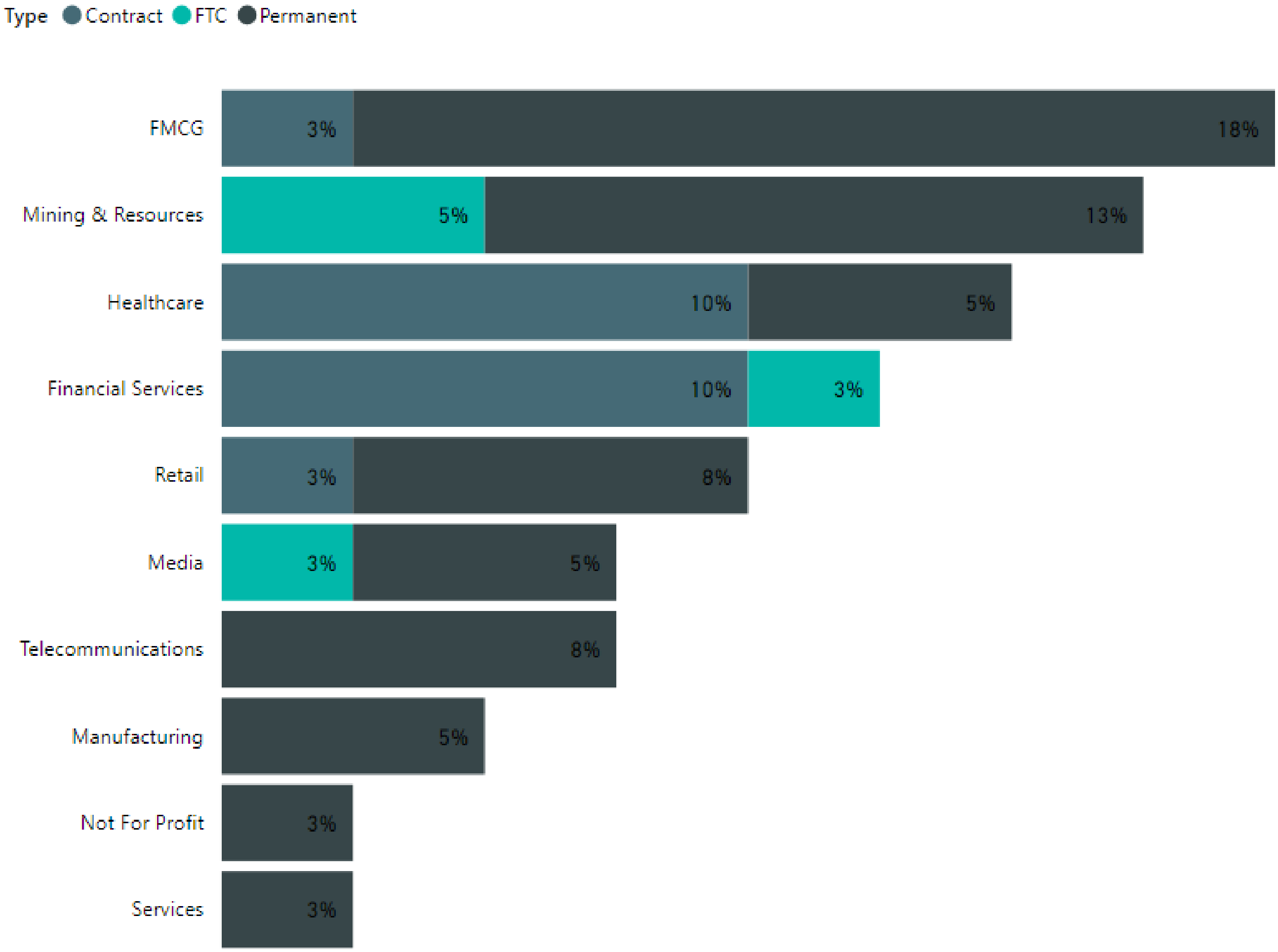
# Contents

JIGSAW JOB STATS

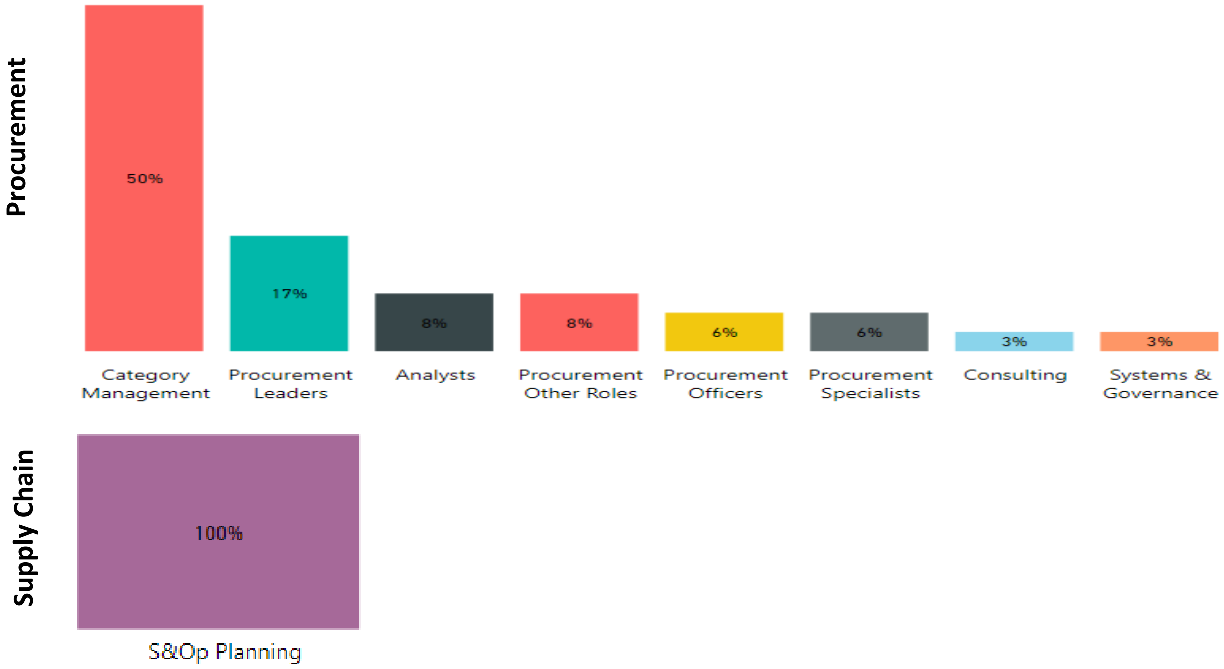
# CURRENT MARKET DEMAND

November 2021

## Live Roles by Industry




## Live Roles by Job Category



# Introduction

For Jigsaw's November report we extend our analysis of China's economy. We summarise China's rise to growth, assess the mainstream narrative re the country's economic future and explore some of the challenges the Chinese economy is facing, considering FX reserves, production and its highly publicised Belt and Road Initiative. As our November report will be the last one of the 2021 calendar year, we will provide links to previous reports that Jigsaw have produced over the past 24 months for easy reference. Many of the topics we have covered are quickly gaining relevance as we move into 2022. As always, we hope you enjoy the content and we at Jigsaw TM wish each and every one of you "A Very Merry Xmas".

Before we delve into this month's core content, we should review market conditions in Australia. So far it seems that Australia has escaped the energy crisis, yet it has not escaped other supply shocks across certain food categories, spare parts, and merchandise. World leaders have had to learn the hard way it seems that supply chains are not something you can just turn off and on again, the consequences for such actions are very real. The world is experiencing a shortfall of nearly everything from energy, materials, chips, food, and labour and although Australia is experiencing some of these conditions, so far, we have escaped the magnitude of which the US, Europe, UK and Asia is facing.

Jigsaw is seeing continued strong demand for procurement professionals who have deep exposure to outsourced operations such as co-packing, MRO, Freight, Capex, and technology. In the supply chain space, we are seeing very strong demand for senior logistics professionals who can drive transformational change and in the mid management sectors across planning and distribution.

Forecasted growth in 2022 will come from several sectors that will be exploiting the supply shocks and ever-increasing global demand or from sectors of the economy that have immature supply chains such as construction and mining. The mining sector will increase M&A, as large multi commodity producers seek out juniors who have significant discoveries in base metals, precious metals, and rare minerals. Logistics sectors will surge as land values and commercial real estate (inventory) will be a key part of supply chain transformations as transport operations are optimised. Jigsaw see reduced growth across services and technology sectors over the next 3 years that are not targeted at supply chain or retail, with the exception of FinTech, which will continue to aggressively take market share off the top 4 banks re both standard products and services and via innovative new products.

Healthcare and Public sector will remain strong as they have for the past 5 years with multiple transformations taking place to accommodate changes in labour and supply markets.

In last month's report, Jigsaw touched on the issues China is facing with its economy, focussing on Evergrande Group and many other Chinese corporations who are defaulting on debt commitments. Jigsaw evaluated that Evergrande was not the only business over leveraged in China, and it was probable other corporate defaults were likely to ensue as we moved into October. This it seems is the reality. One of the many dominos impacted includes Fantasia Holdings Group, a Shenzhen based property developer which has failed to honour a USD $205m debt payment. Fantasia's executives obviously planned for the default and halted trading earlier in September. Their share price had already dropped 60% throughout the year. As time progresses it seems the Evergrande crisis is looking ever more disastrous and could create a global crash that is far greater than the 2008 crisis caused by the downfall of Lehman Brothers. China's property market is the largest asset class in the world, valued at over USD $60 trillion and accounts for over 28% of China's GDP. In comparison, the US property market accounts for only 6% of US GDP. In Australia, a country renowned for having a property bubble, it accounts for circa 18% - 20% of GDP. Considering these figures, it is fair to say China has the largest property bubble of all and it seems the bubble is about to POP! According to our research, 90% of the top 100 property developers in China have seen sales decline on average 36% in the month of September compared to the same period in 2020. Aside from a domino of potential debt defaults and collapsing house prices (63% drop), there are other issues impacting China and these issues may have critical importance for supply chain operations that depend on the Chinese economy such as raw material supply. Magnesium (Mg) is a critical metal for the automotive sector, which contributes to alloys. China produces 95% to the global markets of which Europe is the dominant consumer. As production has been impacted by the energy crises, this is going to cause economic carnage across the globe. Again, Europe has closed all its smelters ensuring the Euro auto economy is dependent on Chinese supply. Coupled with the semi-conductor shortage and minimal inventory for copper, the EV revolution could just be a pipe dream, with millions of jobs at risk if supply chains are not strategically structured to meet both global risk and demand.

Jigsaw will explore a helicopter view of China's economy. We will attempt to cover multiple aspects from manufacturing to the highly publicised Belt & Road initiative. The big question for global supply chain operations is surely "How secure is China's economy?"

# China's Economy

## A Quick Revision

China has been the world's fastest growing economy for the past 40 years, growing at an average annual rate of 10% between 1978 – 2005. China achieved this by transforming its economy from a centrally state planned economy to a hybrid model that was a mix of capital and State-owned entities. In the late 70's, direct foreign investment accounted for a quarter of China's gross national product, today this has increased nearly 100%. In addition to increasing foreign investment, a key strategy enabling China's economic growth was to vastly modernise transport & communications systems, increase raw material resources for infrastructure and energy development whilst allowing a capitalist style framework to mature for key agriculture sectors. Though these changes delivered substantial benefits to a portion of Chinese citizens, the changes in policy created an ever-increasing wealth gap between the haves and have nots, which is not uncommon as countries develop increased wealth. Over the next 15 years China further developed its economy, but for all its success it was still limited by too much state control and poor fiscal systems to support the expansion it desired. It wasn't until the government agreed to privatise many of the countries unprofitable state-run enterprises and provide protection for citizens property rights that the economy really started to ramp up, resulting in the China we recognise today. As China opened up its economy to the world, embraced global trade and increased its dependence on external debt (USD $15billion in 1985 – USD $2.4trillion in 2020) it evolved into a Nation to rival the US in both military scale and economic relevance. So, no doubt China has been on an economic tear over the past 30 years. You do not have to run a business or be an economist to be aware of its impact on world trade. If you live in Australia, US or Britain and check the labels and packaging of many items around the home, likely over 65% of items will have been produced in China. Many economists predict that within a decade, China will surge past the US as the world's leading superpower, a position China has held before in its history. As Jigsaw have reported in previous articles, this prediction could be as much to do with the US enabling its own decline through poor geopolitical and fiscal policy than just a result of China's unwavering growth. The big question is, how will China's economy proceed throughout the next decade?

## The Narrative

The mainstream narrative on China from the US financial sector is bullish. According to Wall St, China is going to continue to grow and will continue to play a dominant role in global trade. Wall St banks are influencing investors to position capital into Chinese markets, believing China is underrepresented as a portion of global investment. Wall St supports triple the amount of capital should be allocated to China, to exploit the rosy economic picture that is forecasted. BlackRock, JP Morgan, Goldman Sachs are all on the same page with this prediction. Citi Group too, upped its investment in China, acquiring HSBC's wealth division, which creates circa $5 billion of revenue and is the jewel of HSBC's Asian operations, attributing a value of 75% of its market cap. HSBC's future earnings are predicted to continue to grow as a result of a strategy labelled "Wealth Connect", where Southern Chinese cities are better synced to Hong Kong, in turn opening up a huge customer base.
So, the question is, are these heavy weight financial firms correct with their predictions? Should investors and companies who have integrated supply chain operations in China believe the prediction that China's growth will continue? Like any prediction, we have to understand what is happening on the ground in China and cycle it back to these forecasts. It is certainly in Wall St's interest to pump the China story, as these firms currently have over USD $70 billion invested in the Chinese market and have strong ties to the CCP, which is evident from media articles over the past decade. No doubt, Wall St is going to continue to push USD into the Chinese economy, an economy that over the past year has seen its top 10 leading tech companies lose over 30% market cap and a looming domino of defaults across its corporations due to the CCP pulling back on debt.

So far 27% of defaults are tied back to the property market, but it does not stop here. Next year, China has external debt maturing worth over USD $190 billion. As pressure mounts across these Chinese corporations to honour debt denominated in US dollars, it could create a crash in the US treasury markets, as US debt is dumped to acquire much needed USD.

## FX Reserves

FX reserves are used by countries to trade across borders. FX reserves have grown by over 700% since the mid 90's to a market worth over USD $10 trillion. When countries embark on investments or trade, they typically lean to the USD, as it is easily convertible and a stable value of exchange. China's FX reserves peaked to nearly USD $4 trillion in 2014. More recently they stand at just above USD $3 trillion. The big question will be how does the Chinese economy deal with a rising US dollar under the current trade conditions? It is Jigsaw's assumption that Chinese imports could exceed the value of its exports as we head into 2022. As the US dollar continues to rise against other fiat currencies as investors predict higher interest rates and a crashing bond market, China is ramping up imports to abate its rising energy crisis. China is not a country that is rich in energy reserves such as oil and gas. As a result, the Chinese energy crisis is a serious issue. China will have to import energy from Iran, Russia and even Australia to appease the crisis. China still relies on coal for over 50% of its energy consumption and will need to accelerate its imports of coal to make it through the winter. China has encountered the perfect storm of a dwindling export markets, production shutdowns, broken supply chain and many of its trading partners facing economic uncertainty in addition to rising unemployment.

It seems China is ultimately facing a slowing of GDP growth. A rise in the US dollar will increase the cost of energy imports dramatically. Typically, a strong USD should assist China's exports, yet US policy is heavily hampering this trend. Off the coast of California there are over 200 container ships in a jam. How long this back log of demand will take to be docked, unloaded, and distributed, especially combined with the apparent labour shortage is anybody's guess. Rising inflation, unemployment and looming tax increases will heavily impact consumer demand in 2022 across all markets. China's economic situation will likely cause its own inflationary forces with manufacturing inputs increasing in cost at a time when less product is being produced and prices are fixed. China's export market funds its import market, and over the past 20 years this is a key reason for its strong surplus which has benefited Australia. Official reserves may stand at circa USD $3 trillion, but a large portion of these reserves are in short term debt, so it is possible the net FX reserves are far lower than publicly presented. A Chinese economy that must pivot from being a dominant exporter to importer will eat into these reserves at a rapid rate, meaning China will have to enter into fiscal policy like the US to sustain import requirements or reduce demand with fiscal prudence which would heavily impact New Zealand and Australian exports. If China experiences a sustained compromised export market with ever shrinking domestic consumption due to inflation and energy costs it will further impact the performance of domestic Chinese equities, placing further pressure on corporate debt obligations that mature in 2022. Chinese corporations are on the hook to service over USD $2 trillion of debt commitments next year, this is more than China's debt commitments from 2018 – 2020 combined. China's aggregate debt as a % of GDP is circa 270%, with most government debt being held by State-owned financial institutions, with foreign investment focussing in the bond market and mortgage backed securities. Jigsaw acknowledge that there is a flip side to this situation, as China is now one of the world's largest creditor nations, with outstanding loans to other Nations such as Pakistan, Malaysia and Bangladesh, aggregate debt exceeding USD $5 trillion, a large part of contributing to this is their Belt & Road initiative. Jigsaw will cover this in more detail later in this report.

## Production

The recent energy crisis in China has impacted the countries manufacturing sector with the recent PMI index for September dropping to 49.6. However, the PMI has been steadily falling since June because of disruptions caused by the Covid-19 pandemic. China is keen to keep GDP growth at circa 8% heading into Q3, for 2021 so far it has recorded 18.3% for Q1 and 7.9% for Q2. This target of 8% could be a risk as power rations are taking place across 17 provinces accounting for at least 60% of the country's GDP.
The biggest impact of the energy crisis is for Chinese operations that are energy intensive or are synced to the upstream infrastructure sectors which are experiencing a rapid contraction and liquidity crisis, as Jigsaw covered earlier. According to Larry Lang, who is a leading Hong Kong based economist, China could experience a manufacturing collapse by 2025 if the current system is not transformed. The dynamic of a contracting

property sector and an overly invested luxury goods sector are at odds with China's domestic economic requirements. Domestically, the luxury goods demand is heavily supported by asset wealth, and asset wealth in China is property. The manufacturing sector itself is poorly managed and under invested, especially compared to the capital allocated to property development and non-essential production. Too much capital is being diverted away from where the domestic economy needs it. Most of the core economic production is dominated by European and US companies in the form of semi-conductors etc. On top of this, domestic prices are controlled by the CCP, meaning they do not rise when production inputs rise due to inflation. Instead of rising prices, demand is controlled by the CCP re both production and consumption. As energy and other input costs rise at the tail end, the margins for these producers are eroding due to fixed pricing at the front end. Coupled with heavy taxes and ever increasing ESG pressures, investment in production is dwindling at a rapid rate. China is suffering from excessive production, a lack of consumption and a looming debt crisis. It seems the energy crisis is not the only issue that is impacting production in China, even though the crisis is catastrophic for both businesses and citizens. Of course, the energy crisis is not unique to China, as Europe, UK and the US are all on the hook for energy shortages. Real world issues seem to indicate the ESG movement and strict targets to move into an electric world are too aggressive for a world that has been so reliant on fossil fuels, has under invested in the means to transition and has a moral issue with nuclear energy? It will be interesting to see if the overly aggressive ESG movement will end up both increasing the worlds dependence on coal, gas, and oil in addition to raising the cost of living to levels the advanced world has not yet experienced?

## Belt & Road (BRI) Initiative

The BRI is a global infrastructure strategy led by the CCP to connect Asia, Africa and Europe by land and sea. A revamp of the silk road for the modern world. Instigated in 2013, China set out on a mission to influence countries to invest large scale energy and transport projects. These infrastructure investments would be heavily funded by Chinese central banks, state-owned primary lenders, and wealth funds. The benefits of this large-scale plan were to enable efficient global trade and aid developing nations contribute a greater portion to global GDP, in addition to improving their own economic situation. For China, the initiative would also assist it take over the US as the dominant economic force by expanding Chinese interests in other nations, shifting dependence away from the dollar to the Chinese yen and enabling Chinese credit to strategically position China to take more control of overseas economies. To date, many countries have signed MoU's (Memo of Understanding) with the CCP's BRI, including Angola, Austria, Bangladesh, Cameroon, Chile, Cyprus, Cuba, Greece, Indonesia, Iran, and Iraq. The value of debt loaned to these nations exceeds USD $1 trillion and by 2030, the value of investment is predicted to climb to over USD $26 trillion. These are some serious numbers. As the capital required is so huge contributions will have to come from far and wide, with funds being contributed not just from the CCP but also regional public sectors and the private sector. This means public sector's procurement departments in many of these countries will take a lead role in running many of the tenders for these large infrastructure and energy projects. It will prove challenging for a fair and independent tender process to exist with so much dependence on the CCP's backing. To date over 60% of suppliers awarded to manage BRI projects are Chinese firms. In part, this is due to the cost of capital being far cheaper for Chinese companies and because the deal often ensures the CCP take an equity stake in the venture, enabling the NPV and IRR being more competitive with Chinese corporations than can be achieved by local, European, US or Australian companies. So, we know the Chinese firms can execute projects at a cheaper price point, but the big questions is, can they achieve the same levels of quality and reliability as non-Chinese companies? Are these projects awarded on a total cost of ownership? As an example, Pakistan signed up for a USD $62 billion project to optimise the economic corridor (CPEC) which is the route from Kashgar (China's most Western city) to Gwadar (Port on Pakistan South Coast) to enable a predicted USD $2.5 trillion of trade benefits. Many of the tenders and awards were closed loop processes, only available to several Chinese contractors, which makes it almost impossible for other countries to invest/compete. The big issue for Pakistan and many other countries who have embarked on the BRI is how these projects translate from the deal to real world implementation. If we take the Pakistan example, the Jewel city Gwadar has created a local crisis by signing a deal with the CCP, as the native people are being displaced and dispossessed of their property rights. As Pakistan accelerates further into debt, the local population are being forced out of their prime fishing grounds which they depend on, coordinated by the Pakistan military. On top of this, the locals have seen a dramatic decline in living conditions attributed to lack of energy, healthcare, and water shortages. This situation in Pakistan is not unique, social unrests being created across a wide range of developing nations, resulting in many countries that signed MoU's with the CCP pulling out of agreements.

To avoid malinvestment, countries that engage with the BRI will require GDP to increase to service the CCP backed credit. The macro modelling of the BRI indicates a trade value incorporating 138 nations delivering an inclusive GDP of USD $29 trillion via the construction of modern roads, ports, dams, railroads, gas pipelines etc. If these economies fail to realise economic projections, then they will quickly fall into a debt trap. To date the BRI has led many countries into a potential debt trap equalling $385 Billion, as China expands its creditor nation status via high interest loans to its State Banks. The biggest sufferers of this initiative are the low- and middle-income nations. Forty-Five Countries are currently holding an aggregated liability to China equal to over 10% of their aggregate GDP. So far 165 countries have been allocated funding, amounting to a total of $843 billion to be serviced over 18 years across 13,000+ infrastructure projects.

Comparing foreign investment to the current global superpower (America), China is spending twice the amount. Then we must compare the liability itself. China is demanding a shorter time to honour debts (18 years vs 28 years) with interest rates at over 4%. Most of these loans, if not all, are executed off the Governments Balance sheet via State-owned banks. As these deals were cut prior to the fiscal crash in 2020 and pandemic, the ever-rising global debt, and lowering of GDP across countries are proving a genuine threat to China's BRI strategy. As well as the economic issues, many BRI projects are also being withdrawn amid Graft (American term = political corruption for personal gain), overcharging and political changes. As new leaders come into power who can see the potential debt crisis unfolding and underlying motives for the BRI strategy, many MoU's are withdrawn. As we touched on, procurement award has also come under scrutiny and many projects fail to hit total cost of ownership metrics. Government procurement needs to ensure economic prosperity is the driver for award and not savings as is the key metric for the private sector. To date, many countries have cancelled plans to engage projects with Chinese companies as a result of poor project management, a lack of economic value to the country and poor execution by the Chinese corporations. Ghana just withdrew a $100m infrastructure project for such reasons. Kenya too, cancelled a rail infrastructure project due to compliance breaches and corruption. Other countries following suit are Sierra Leone, Myanmar, and Malaysia to name but a few. Then there is Australia. Dan Andrews signed a loose MoU in 2018 with the CCP in an unauthorised foreign policy that was eventually cancelled by the federal government in Canberra re geopolitical and strategic concerns. Ted Baillieu initiated talks with both India and China seeking foreign investment into Melbourne to triple. The deal between the CCP and Melbourne was luckily loosely structured and not legally binding. The 4 agreements initiated that were later cancelled were to gain access to circa $107 billion of capital, yet the economic benefits to Melbournians was far from obvious to Canberra, especially for a State that has debts likely to exceed $100 billion by the end of 2022.

It seems China's BRI is being positioned at a time when world economies are changing their mindset re trade. Developing nations are starting to become more economically aware, valuing their countries resources with intent to leverage these resources to develop a more complex economy that can pull their countries out of poverty. As an example, Congo's President has called for an audit of mining contracts awarded to Chinese firms dating back to 2008 to negotiate more favourable terms for the country's economy. Congo is the largest producer of cobalt and a leading producer of copper in Africa and China currently controls circa 70% of Congo's mining sector.

Aside from the risk of Chinese colonisation via debt obligations, the real issue for the BRI is its focus on investment and infrastructure to countries that may not be ready to exploit it. Investment and infrastructure enables economic prosperity if consumption, production and asset utilisation are also mature. China's own economy was too reliant on investment and production, yet had gaps re consumption, utilisation, and population growth. This is a key reason it created so many ghost cities and the domestic economic weaknesses could be hidden as long as the export markets could function without hiccup. For China to continue its roaring economic expansion outside of its own borders it had to export what it knows, which to be ruthless is malinvestment. The problem is what China was selling as the modern Silk Road had buyers who do not have export markets to support it or mature enough domestic economies to leverage it. The customers of the BRI can obtain some short-term economic gain from large scale investment and development, but over the long term, if the population do not have the means to utilise, produce or consume, the outcome is these countries will find themselves in a debt spiral exacerbated by changing global conditions.

Transformation of these countries will happen over time, but an important factor that always gets missed in any transformation whether it be company, department or country is the rate of change. Pace of change matters and the more complex a system the more the rate of change, not the absolute change needs to be considered.

## Conclusion - China

In a globalised economy it seems no country is immune. In the past there was a balance of trade amongst countries that was not so much dependant on labour and opex arbitrage, but more focused on a country's natural resources, scale, locality, and efficiency of producing. In modern times and with the development of the service and technology based economic model it seems tangible goods have fallen away on the list of priorities for developed nations. Global trade for the two biggest superpowers seems to not be an arrangement of exchange of goods and services, but an arrangement of one produces and the other consumes. The US has one dominant export market which is currency and China seems to handle the bulk of the production. Nations no doubt have become far too reliant on each other and economic balance is out of sync. China much needs the thing the US economy is great at, which is consumption, and the US much needs what China has excelled at, which is investment. In a world without ripples both countries could mask the true weaknesses of their economies. Unfortunately, in a world disrupted, both countries weaknesses are clearly exposed. The question Jigsaw posed at the beginning of this article was twofold. Will China continue to rise over the next decade as is assumed by Wall St and if it does, will it be via a genuinely robust economic model or simply a win by default as the US destroys itself with its ever-eroding adherence to its constitution? It is possible that both countries fail and fall into a sustained economic contraction, leaving the door open for another Nation to rise over the next 20 years? It seems unlikely. Although on the surface nationalism still creates some noise, especially in developing nations, it seems ever more evident that developed countries will conform at a global level, narrowing competition and variations across countries. The Euro was a big step re this trend, over time more evidence of this can be seen re central bank coordination, global covid policy and the new US initiative re a global agreement on tax laws to prevent tax dodging.

It seems China has some very real challenges ahead re its economy, but its challenges may not be as serious as that of the US. China's greatest issue is a lack of asset utilisation, too much debt, non-primary production and a lack of domestic consumption, and what consumption exists is dependent on a property bubble that is popping. No doubt China's economy has a very real chance of imploding over the short term.
A key consideration is the implosion is being instigated by the CCP and is a course of action that the US should have taken back in 2008. The CCP rightfully want to control the amount of leverage in the system to ensure that the volume of money (credit) in the economy is synced with the country's ability to produce and utilise its investments. It is the medicine its economy needs after an aggressive phase of growth. The result is defaults on debt, businesses collapsing, mass unemployment and many people will get fiscally burned. Then, possibly, China will pick itself back up and re-build again with a healthier economy that has western IP and is supported by domestic strength. Its growth ambitions to expand into other countries maybe too ambitious in the near term and require far more rigour re policy, governance, and compliance, as a result it may not achieve its regional and global influence as quickly as planned. The big questions to be answered is if the pullback hints at strategic promise or a desire to focus more domestically and swing back to a communist agenda. Only time will tell, we can be certain that China's actions dictate many elements of the global economy. The US seems to be taking a different path, a path that only has one outcome that cannot be recovered unless it resets its currency and transforms its financial and government sectors. A platinum coin with $1 trillion inscribed on it, as is being discussed, is not going to cut it.

Jigsaw wrote a section back in June 2021 that captures the issues the US is facing right now.
"*With the US and other developed nations seeking to transform their economies from fossil fuel dependency to green energy and global trade continuing to come under the spotlight via geopolitical tensions, it seems a juggling act is upon us. Somehow, developed economies need to transform their infrastructure and energy sources amongst a backdrop of global debt exceeding $250 trillion. The raw material required has had so little capex investment over the past decade there is not enough inventory to service global demand for the commodities needed for the new world of electrical infrastructure. In combination with these factors, the purchasing power of all fiat currencies is equivalent to monopoly money and every country is essentially bankrupt. To fund these economic changes, it seems more money creation will be required from countries who are running ever increasing trade deficits, in turn having to rely on debt, further de-valuing currencies, creating*

*inflation. The result of these economic transformations, if they are in anyway successfully implemented, will be a world that is far more expensive, far more indebted and supported by an economy that is far less efficient. It will not have the energy richness of the past to spur productive growth. People will have to re programme their desires and disregard what they take for granted today. Western populations will live a far more frugal existence. Holidays, vehicles, and high-quality fresh food will be only for the rich. Forces of higher tax, inflation and high levels of unemployment will ensure our children and their children will experience far less consumption. The only situation that can change this fate is a currency re-set that recalibrates the fiat system and its purchasing power to decrease inflation or pivot from this EV revolution which is only in play to benefit the ultra-wealthy."*

# A Refresh of Jigsaw's Most Popular Monthly Reports

As this is the last report for Jigsaw TM this calendar year, we thought we would repost some of our most popular segments written over the past 24 months. We have provided links to the full reports for any of our subscribers who may have missed these reports on initial release, and we are sure you will agree, these topics and the information provided are still relevant as we head into 2022.

## Semi-Conductor Supply Shock – October 2021 - **Click here for the Full Report**

The most critical supply shock that looms heavily over global businesses right now is in the semi-conductor shortage. A semi-conductor is a critical component to many business operations around the globe that encapsulates everything from phones to cars. A conductor is a device that allows electrons to flow freely creating electric current. An insulator prevents the flow of electricity. A semi-conductor has the qualities of both an insulator and a conductor, depending on the voltage provided. The most utilised material to produce semi-conductors is silicon which is made from silica sands. The silicon atoms electrons can be manipulated by adding impurities (doping) such as Boron or phosphorus creating either N-Type or P-Type structures. As semiconductors are flexible to voltage inputs, they are critical for sensors and many other complex electronics etc. As a result of this property, they are used in almost everything from phones, computers, cars, fridges, in fact every modern appliance is reliant on this technology, so a supply shock will impact the economy in a very big way in both consumption and investment. This is a detail that many investors and consumers need to be aware of as we move forward. No doubt the disruption of the semi-conductor supply chain could throw a curve ball into projected EV growth. As the capital flowing into commodities relating to battery technology such as graphene, cobalt, lithium, and manganese will experience a demand shock should semi-conductor supply chains lower production rates of vehicles and other appliances. As an example of this risk, many vehicle manufacturers are already warning of elongated lead times for vehicle production and some manufacturers are forecasting a 40% reduction in volume due to semi-conductor shortages. Goldman Sachs estimates the supply shock will cost the automotive industry over USD $20 billion for this year alone (2021). Bosch, which is the world's largest car parts supplier has gone on record stating that the semi-conductor supply chain model is no longer a fit for purpose and requires a transformation. This statement is not surprising when we consider a standard fossil burning vehicle utilises about 300 semiconductor's vs an electric powered vehicle in the same category requiring 3000 semi-conductor chips. No doubt, the entire commodity supply chain is not fit for purpose. Electronic vehicles require vastly more lithium, copper, graphene, aluminium, and other exotic minerals. Two additional forces that will create supply shocks across the entire electronic consumable matrix is lack of capital investment in commodities and a lack of large mineral deposits being sourced by the mining sector. Again, this topic has been covered by Jigsaw in detail in previous articles.

## Understanding the Economy – September 2021 - **Click here for the Full Report**

The real difference in this decade to previous times was the impact QE had on the rules of investment. Prior to 2007, fundamentals dictated the investment strategy. Now, post QE, the market was nervous, Low interest rates meant that the stock market could continue to surge, yet low market confidence also meant that the bond market continued to bubble, further compressing interest rates. In addition, gold, a safe haven asset also started to once again attract capital. A telling signal for the chaos is in the linear line of inflation. As we can see, from a strong JIGSAW TALENT MANAGEMENT MONTHLY REPORT deflationary trend that was obvious from the end of the 1970's, we are in a trend of subtle inflation. This meant the market was divided on inflation or deflation, and hence all asset classes were attracting interest as investors placed their bets on future economic dynamics. It is interesting that this decade is the only one without a recession, which is a result of the 2007 QE programme. In the past, as can be seen in the data, the market was allowed to crash, interest rates were allowed to rise, and the market could reset itself. Kind of like being sick. You have to go to bed and rest for a couple of weeks which means productivity is shelved. The QE of 2007 created a moral hazard, where central banks and governments realised that if they cheat, and counterfeit money centrally, a recession can be avoided, and wealth transfers can be continuous and seamless. As this did not create the predicted aggressive inflation forecasted by many economists, the central banks felt invincible. It was the first wave of MMT for the corporations and the elites, that would eventually trickle down to main street in the form of stimulus cheques.

In September of 2019, the plaster that was placed over the 2007 GFC was starting to come unstuck as the wound expanded beyond the fabrics ability to contain the bleeding. The yield curve was inverted, which simply means short term interest rates were higher than long term interest rates, and REPO operations were increasing across the fiscal complex. This signalled a liquidity issue and indicated that the FED was truly trapped. As the FED attempted to tighten and raise rates once again to curb inflation, the market responded negatively. The narrative was that trade tension with China were causing concerns and the drop was a defensive measure. In truth, although unemployment was low and GDP was around 2%, it was all based on inflation and money printing and an over reliance on foreign nations accepting US abandonment of managing the balance sheet. The fiscal economy had become detached from the tangible economy to such a great extent the cracks were starting to show. The global debt had ballooned from $9 trillion in 2007 to $22.7 trillion in 2019, with public debt accounting for $16.8 trillion (79% of GDP) with a service cost of over $404 billion. Compare that increase in debt to US tax revenues for the same period, which only grew from $2.57trillion to $3.46trillion. From an industry take, the decade from 2010 to 2020 saw huge growth in consumer discretionary spending sectors that include Apple, Visa, Amazon, Microsoft, Netflix and Facebook. The sector rose over 340%. So, growth businesses did exceedingly well as interest rates were low and access to capital was cheap. Low interest rates also enables sectors that create stable value like Utilities to flourish as pension funds and cautious investors attempt to use margin in safer risk assets to achieve a target 7% return. Wages in the US did not grow for the entire decade, which is a first and this wage stagnation combined with asset inflation made economic conditions challenging for the working and middle classes. Unemployment looked strong on a statistical level. but the reality is the gig economy had distorted the link between employment, income and living standards. This is proven by the GDP per capita which was only 1.1%, the lowest recorded since WW2. So, the central bank has saved the fiscal economy from a natural bust cycle, yet as an outcome, it also crippled the real economy and real growth, simply adding to the wealth gap between the haves and have nots.

## Volatile Oceans – August 2021 - **Click here for the Full Report**

The shipping industry has been through a rollercoaster ride over the past 24 months. Since 2020, ocean freight rates have surged on a backdrop of economic lockdowns. The issue facing importers is truly epic. As governments close down economies to prevent the spread of Coivd-19, they also injected huge amounts of liquidity to the public. As a direct result, online retail surged as people were spared debt commitments re rent and mortgage payments while service sectors were shut down, in turn driving capital to products, merchandise and commodities. Instead of buying coffees, eating out and servicing debt commitments, consumers splashed their stimulus on used cars, consumer goods from China and home renovations. As workers in the ports and landside operations were not optimal, efficiencies in producing, loading and un-loading containers were hindered, causing not just delays in imports, but often entire scheduled shipments being cancelled (Blank Sailings). So, we have a perfect storm. Consumer demand is high, supported by government debt, operations are hindered due to government policies, and there are too few ships/containers in operation. Trust and volatility across supply chains are breaking as fixed contracts are not being fulfilled. The shipment spot price (auctions) is heading skywards as the circumstance are being heavily exploited by the carrier industry to drive record profits. The more common supply shocks covered by media were for PPE equipment and defence materials, yet in a globalised economy, containers are the building blocks of the import/export market. When we consider 80% of production the west consumes takes place in an emerging market thousands of miles away, it is a little shocking to know that China is the sole builder and seller of containers. China has its own fiscal issues to contend with and should anything happen to any of these two operations, Houston would have a very big problem. This issue is further exasperated by the US trade deficit with China. As the US is a consumer country, heavily leveraged by its robust capital markets (largest debtor nation) and global currency status, it has very little to export, especially in comparison to its key supply partners. The US top categories for export are Machinery, Nuclear Reactors, Boilers (13%), Electrical Equipment (11%), Mineral Fuels and Oils (11%) and Vehicles (7.4%). The bulk of these exports go to Canada and Mexico. Canada has equal exports to the US, so the trade balance is par, yet US exports to China is 50% less than Canada. When we look at imports from China to the US, the trade imbalance is huge. China accounts for 20% of US imports, with a value of circa $457 billion for 2020. That is a trade imbalance of $332 billion and a key reason why the dynamic of reverse logistics is so disjointed.

## The Rise of Stagflation – February 2021 - **Click here for the Full Report**

As financial assets lose favour with investors and US Treasury's are shunned as a vehicle to store reserves, capital will start to seek out commodities to obtain value. Combined with high unemployment, business insolvency and increased central bank stimulus, this could transpire into stagflation. Businesses who are reliant on energy and commodities as key inputs to their operations will see both direct and in-direct costs escalate at a time where consumer demand could start to reduce considerably. Jigsaw are predicting a surge in the price of oil by Feb 2021 which will push the commodity to record prices by mid to late 2021. Copper, Nickel, Zinc, Minerals in fact all commodities will see a huge surge in price as global supply comes under pressure as a result of lack on investment over the past decade re exploration and development of new sources of raw material. With the added pressure on junior miners to obtain capital to both explore and develop, and with many of the large cap miners preferring to leave exploration to the juniors, seeking to swoop in and buy up strong deposits, raw materials supply could get strained. Even when new large deposits are discovered it will have little immediate impact on raw materials supply. The lag time between exploration and production is now at record levels due to increases in environmental policy and regulations. It can take up to 10 years to run the cycle of discovery to production. So, what can procurement departments do to protect their businesses from the certain rise of input prices? Typically, inflation increases the velocity of money for critical items adding to a doom cycle that pushes inflation even higher. As today's prices are typically cheaper than tomorrow's prices, future demand is often acquired in the present to gain greater value in the future and protect budgets. If business inputs are rising, this will result in the products and services downstream also rising, and the competitive advantage for businesses will involve how the supply chain creates downstream consumer value re volume of product and price. Aside from the soft skills which would be obvious to most supply chain and procurement practitioners re managing stakeholder expectation to adverse market conditions and ensuring rising supplier costs are both tangible and measured, what else can businesses do to protect market share and retain customers when the inputs could cause their products to dramatically increase at the point of sale? Of course, Jigsaw acknowledge that many businesses that rely on commodity inputs have dedicated teams who are focused on the fiscal instruments to manage volatility via derivatives. Thing is, these options to combat inflation are standard practice and will likely offer little advantage against competing businesses.

Over the years, many businesses have also taken part in dubious techniques to combat inflation at the expense of consumer value. A key technique is shrinkflation, where the size, quantity or quality of the product is manipulated to retain customer pricing against rising input costs. We have all experienced this in some way, shape or form. When you bite into that nutty chocolate bar that claims it is packed with nuts, only to find a single nut in the entire chocolate bar, or that packet of crisps where the bag is only a 3rd filled. As much as these techniques will still be used in the future, they do present risks to market share retention. Consumers are more clued up these days on value. 3 If your inputs are not perishable, it could be an idea to move away from JIT supply chains and look at holding inventory to ensure present value pricing and less volatile supply. Buying more volume at a fixed price may be a key advantage, especially if the storage costs and improved supply are favourable vs forces of inflation and supply shock. S&OP is also critical to get on point, but never more so than in times of inflation. To under or over supply the market will have increased negative impacts on waste (cost) or missed revenues. As commodity supply will come under pressure moving forward, the price rise may play 2nd fiddle re risk to the ability to actually obtain the raw material in a high demand, short supply environment. Many procurement departments are attempting to use poor economic conditions to further bully suppliers into unreasonable pricing and service levels. As business volume re demand has dried up due to lockdowns the belief is these businesses have no choice but to accept below par terms. This is a dangerous game and could lead to a destruction of the supply base entirely. This may work in the short term with indirect supply, but will be catastrophic if this mind set is attempted with direct costs. A contrarian view could be to pay above market in some cases (business case dependant) or look at other measures to gain supplier loyalty above and beyond competing businesses. As China has been buying plenty of commodities now, fully understanding the future value they hold against currency, it is not a bad idea to mirror the logic and invest in cheap land and real estate to allow bulk buying today of future demand. The more raw material you can buy and store today will pay dividends down the track and if you have an oversupply of non-perishable material, it will be easy to secure demand on the spot market. Coupled with a robust S&OP strategy, optimised employment inputs (preferably automation) businesses have the best chance of operational deflation to combat market inflation and weakening currency.

Over the next 5 years expect to see a huge rise in oil prices, copper, nickel, rare earths, fertilisers and precious metals. The demand from China for copper, iron ore and other commodities is not just because they are keen to build things. It is also driven by a feeling that tomorrow's prices will vastly exceed todays. Inflation expectation drives investment into tangible assets as fiscal assets lose value as they are essentially fiat money investments.

## The Supply Shock across Materials, Food and Energy – December 2020 - **Click here for the Full Report**

As the economy slowly heads towards normality, with people mobilising and the cogs of industry starting to churn, a very real issue will be faced by producers and consumers. Demand can be turned off and on again like a tap. Especially for consumer staple products. Covid-19 and the lockdowns that resulted demonstrated how quickly the demand side of the equation can be instantly switched off, resulting in huge deflationary forces for oil, employment, travel, hospitality, and commercial real estate. The impacts of these adjustments were almost immediate resulting in increased stimulus from governments to appease the public, as they enforced policies that were destructive to any business that was not focussed on home living or virtual communications. As society starts to unwind these measures a second reality will bite consumers; Supply shock. Unlike the demand side, the supply side cannot be easily turned back on. Demand shock will have caused inventories to perish, production lines will have been closed, livestock culled, and employment decimated. The wheels of commerce take time to pick up, for many sectors it will take months if not years to produce pre-Covid-19 outputs. Venezuela was aggressively impacted by the impacts re oil demand, which as that country's key export was the backbone of the country's wealth. Ethiopia's economy was heavily reliant (60%) on tourism which has dried up as international travel contracted to almost zero. These direct impacts on nations economic prosperity are both crippling and long lasting.

Forecasting how these sectors of the economy will return once covid-19 is better managed or accepted as a part of normal life is almost impossible. Combine supply shock (less products/high demand) with ever increasing money supply and the result is stagflation. This, Jigsaw believe is the biggest risk to the working classes. The deflation of assets (bonds, equities, property, land and cars) is a middle/wealthy class issue and only the top 10% of demographics are chasing these assets. Low income demographics do not care about overpriced assets deflating in value. Typically, even assets that present genuine value are outside of these consumers ability to acquire. What low income earners care about is being able to feed, educate and shelter their families, and this is where Covid-19 lockdowns will hit society the hardest. Whether you are upper, middle or working class, there is consistent demand for food and energy. Sustenance is a critical requirement for human life and social order. Livestock and agriculture products etc are cyclical and even without Covid-19 already volatile to weather patterns and pest hazards (insects and other wildlife). This volatility was already causing food shortage issues prior to the Covid-19 crisis. The issue has now morphed from terrible to catastrophic. As a result of lockdowns, global Agri chains have been heavily disrupted, causing a genuine food crisis for many low and middle income countries, who prior to Covid-19, were classified as poor and on the breadline, now being pushed to starvation and in desperate need of aid from developed nations. A key area of the economy, a sector critical for millions or people, is the agriculture chain which involves the farming, production, processing and distribution of food. Pre Covid-19, circa 140 million people required food aid across countries including Yemen, Sudan, Congo, Venezuela, Zimbabwe, Cameroon, Burkina Faso, Nigeria and Ethiopia. The number has now escalated to circa 270 million people. Compounding the result of lockdowns impact on world hunger are other natural disasters such as hurricanes (gulf coast) and desert locust (Ethiopia), heavy rains and flooding (Congo) and civil unrest (Syria). The populations impacted by a food shortage around the world are genuinely shocking and the crisis will get ever worse as time progresses eventually bleeding into western economies.

## The Demand for Rare Earths – December 2020 - **Click [here] for the Full Report**

Globalisation of supply chains has created a demon that will unravel countries. Procurement power has replaced procurement knowledge, and short-term thinking has displaced long term thinking. If the trade war continues between China, Australia and the US, have no doubt that along with coal, oil, copper, meat, wine, barley, rare earths will be on the menu to be leveraged creating a critical supply shock that will impact millions. This will cripple the not so green energy movement and create incomprehensible inflationary forces on military budgets and stall production of defence equipment of which rare earth minerals are critical. Jigsaw recommend strongly for anybody interested in exploring rare earths, our dependence and the damage created in producing them to read "The War on Metals" by Guillaume Pitron. If you do this, I am sure you will feel less confident in the popular narrative of the benefits of an energy transition, at least without considering huge inflation forces to achieve it and the real problems that will result in a transition that is overly aggressive. As the developed nations rely more and more on end user consumption and utility, we are increasingly being further removed from the impacts of the supply chain upstream that is more destructive to process than oil, coal and gas and only represents a cleaner comparison at the stage of utility. The other point to consider, even if you drive an electric car or ride on an electric plane (once invented), these modes of locomotion still use fossil fuels to produce the actual electricity itself via coal and gas burning and still require other carbon releasing processes for components such as tyres. One solution that is being heavily investigated by countries like Japan, who are resource light and heavily reliant on imported commodities is how to efficiently recycle rare metals to avoid the continuous mining of them.

In a recent interview, Robert explains that a grade of mineral 10 times inferior will require 10 times more energy, capital and labour to extract. This will result in commodities having a far more complex array of standards in future depending on the energy that was required to produce them through the process of exploration, development and production. This will result in much higher metal prices over the next two decades. Nickel, Silver, Vanadium, Copper, Cobalt and other metals that the electric revolution will be dependent on will be in huge demand, and the mining of them will have a far more critical lens making minable deposits rarer and far more costly.

## Procurement - Economic Lever - November 2020 - **Click [here] for the Full Report**

The government is like a company, it has inputs, outputs and exists to have a revenue surplus. Key here is the government exists for a revenue surplus, not the de-centralised agents and procurement departments. The government should not exist to expand itself but indirectly expand its influence on a growing economy. The government should be attempting to improve Australia, the company brand that is Australia, and that means driving economic growth via private sector expansion. Problem is, it is using its own procurement departments as a brake and hindering its own agenda of growth and prosperity. Procurement for government surely should be an investment vehicle, not a function to look at cost (which is a poor metric of return) but look at return on tax dollars spent to private expansion, employment and confidence. Money should freely flow to sound businesses when times are hard, not be contracted via a flawed savings mandate that essentially adds petrol to a fire you are trying to put out. When you run a business, you invest money to grow the business further and create value to the equity owners. If you are holding back on capital and not going full steam for expansion with a mind set on generating future value (profit), you should be replaced as CEO. Procurement in government should be tracking the investment of taxpayer money not just in the infrastructure and assets it purchases but in the actual companies themselves and the wider chain of commerce.

Procurement should be tracking the indirect expansion of the businesses it engages with. Supplier Management actually can exist in public sector and the SRM should be tracking growth, increases in employment and generated goods. The dollar should go into the market to multiply, not be contracted and re - allocated in a spiral of ever decreasing value. 26 Public sector procurement is the perfect lever to do this having an inverse relationship to the function in the private sector. Via government procurement, the economy can increase private sector employment, increase tax revenues and enable genuine business expansion. The larger the private sector gets the more tax (new revenue, not recycled revenue) gets collected to further develop education, healthcare, aged care and other key projects. The more the private sector expands, the more consumption is achieved, and production generated. The more the private expands, the more genuine profit can be aligned to the share price of a business, the greater the dividends for investors and the greater the confidence for entrepreneurs. As private sector uses procurement for deflation, government procurement counters with inflation. As government procurement invests in private businesses, private businesses use the deflationary elements to be globally competitive, enabling Australian businesses to be world beaters, in turn maximising exports and allowing capital to expand overseas and domestically. As terms of business are transacted at standard terms, and assuming value is created by selecting good management teams with no moral hazard, strong balance sheets and excellent vision for future growth, procurement is achieving what it preaches, being a true driver of value and revenue generation for the economy. Procurement should be the 1st lever in the governments arsenal of tools to manage the economy, only using monetary and fiscal policy as tools if government procurement fails in its new primary objective. Like interest rate manipulation, procurement can be used to expand or contract an economy. If inflation is too high, the government procurement switch to private sector mandate, and contracts market liquidity via negotiating terms, driving down both turnover and profits and putting a brake on growth re its direct deals. If like now, the market needs a kick start, then procurement eases the market liquidity and drives stimulus to businesses in a tangible way that impacts employment and future returns via capital allocation not consumerism via income allocation (Job Keeper). 27 This, over time, as a lever protects savers as interest rates are not a primary tool for stimulation and the currency does not get debased via open market operations. Governments can rely on less debt as tax increases and exports are multiplied. As we have written before, confidence drives an economy, nothing else. That is why a lack of confidence in currency, governments or businesses can be a doom cycle that feeds itself. Contracting revenue and profit releases bad news into the markets, this creates a lack of confidence for investment and consumption and contracts the growth of private enterprise. Savings mandates repeated over time are terrible for an economy as businesses have to keep making ends meet with ever declining turnover and profits. The private sector does this to itself, it does not require public sector to jump on the bandwagon.

## US and China Economic imbalance – October 2020 **- Click here for the Full Report**

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, to date holding 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.

## Energy Crisis – October 2020 **- Click here for the Full Report**

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. 14 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.

## The Rise of Nuclear – October 2020 - **Click here for the Full Report**

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. 17 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 commonplace and air conditioners are on full, will only happen if 25% of its citizens leave to other States?

## Supply Chain Risk – August 2020 - **Click here for the Full Report**

Jigsaw's procurement networks across manufacturing have reported to us they will be combating the economic downturn by optimising operational cash flow, de-rationalising the supply base of critical categories, focussing on waste reduction and drive further demand management with greater upstream sponsorship. Some manufacturers reported that procurement view the landscape as opportune to drive new agreements (further price reductions), whilst others within our manufacturing network view cost increases across raw materials as a given due to inflationary forces across a broad spectrum of raw material inputs. Jigsaw's view is procurement should tread cautiously on over stressing suppliers' ability to generate reasonable profits in these times, as direct input costs will certainly rise in conjunction with reduced overall market demand. Aside from BAU operations, many businesses will have the added cost of re-modelling operations to meet the changing economic conditions with future operations becoming more dependent on analytics and automation. Supplier solvency and sustainability will be key to prevent future supply chain disruption, with greater cost reductions coming organically from reduced real estate, travel, catering, marketing and increased productivity coming from operational transformation and the virtual workforce, which in many cases, will also contract in some cases by 30%. According to many of our clients, retained employees are thriving in stay at home conditions with benefits such as travel stress and expense being converted to business productivity, improved family balance, wellbeing and reduced living expenses. Manufacturing in Australia now accounts for only 6% of GDP, which for a developed nation is very low. Back in the 70's, manufacturing in Australia accounted for at least 30% of GDP. Over the years, manufacturing decreased as a result of tariff policies, exports breaching anti-dumping rules and the commodity boom. The boom in commodities increased Australia's income by 15%-20%, but as a negative, it increased the value of the currency and made it challenging for Australian exports to compete with emerging markets. At the same time as Australia was experiencing a soaring demand for iron ore, China was quickly becoming the manufacturing hub of the world, reclaiming its economic relevance. In 1000AD, China contributed over 50% to the world GDP.

While Europe was still believing in the existence of witches, China was already a sophisticated economy. In 1970, China was a far cry from its historic dominance and after the death of Mao, was in stagflation. In 1979, China opened up to foreign trade and became one of the world's fastest developing economies. With the development of key economic zones and the maturation of cheap ocean freight, China has emerged as an economic power house, contributing to over 30%+ (90% electronics in Shenzhen) of world manufacturing. Cheap currency (manipulated by government), labour, transport, energy and food combined with low regulations have been key factors in China's production dominance. Australia, as has been highlighted previously, cannot compete on cost and scale with China or other emerging markets. Land, energy, labour and regulation are all factors working against us. No doubt, Australia has serious gaps in its supply chain capability and our economic complexity is lagging according to OECD. A solution for Australia is to invest its way out. With developments in digital automation and analytics and some government attention (think passive tax across commodity exports), there is a chance we can develop a respectable manufacturing capability. Future consumers want customisation, speed and quality, with products that are intuitive to how we live. If the government, universities and businesses come together and truly collaborate, manufacturing can get off the ground once more. Proximity is something we can learn from China. Its dedicated manufacturing zones greatly improve speed of development, the overall value chain and information flow (word of mouth). Close proximity of plants and students could increase innovation, drive forward new start-ups and support the growth of SME's. Information on product demand, complimentary products, aggregated sourcing, distribution etc could materialise and go some way to countering the inflationary cost of local supply. Innovative products that are unique could create new exports markets. The success of future production outside of China will rely on optimising productivity, safety, waste and communication. Over 200,000 manufacturing jobs were lost in Australia since 2008.

If Australia managed its commodity boom with vision and its citizens in mind, options were available for it to leverage its commodity exports to benefit the wider economy and drastically improve the government's budget deficit. Norway for example, developed a sovereign wealth fund, also known as the oil fund. Established in 1990, it was created to invest surplus revenues from the sale of its nations oil. To date, it has generated over $1 trillion in assets and owns 1.4% of global shares/stocks. It has a value per capita of circa $200k. As the fund is not connected to the economy of Norway, it plays a key role in de-risking the country. It is linked to over 9000 companies across 70 countries. Whether its exposure in overseas investments and fiscal products adds alternative risks, is fair question, but the concept seems solid, strategic and allows Norway to maximise on its natural resources and invest in any number of key issues for the country's future, from pensions, R&D, NPD and other initiatives that benefit the people. Another option is for Australia to create zones across its land mass that locate all manufacturing and industrial focussed universities (design and engineering) together? There is nothing wrong in mirroring key elements that make Chinese production have high velocity, productivity and efficiency. Couldn't the Australian government offer tax breaks, as well as mandate public procurement to allocate 30% of public spending to these organisations at full terms for a period of time to assist with operational cashflows? With time and maturity, Start Ups and SME manufacturing operations would thrive domestically and soon find export markets such as Indonesia etc. These are just ideas and we in Jigsaw admit, this is not true capitalism, but it is a far better use of taxpayers revenues than supporting zombie companies that make no profit or overseas businesses that contribute little to taxes. In fact, why can't we take a leaf out of Norway's thinking and fund this movement with a sovereign wealth fund? Both options are complimentary to each other.

Risk efforts are difficult to value. Like insurance, it is hard to realise its true benefit when nothing goes wrong. Often, only when things do go wrong, can models, policies and actions be evaluated. Supply Chain, in recent times, in many businesses, ma y have been driven to focus on optimising return on capital and return on assets. Typical risks for a modern supply chain include cyber-attacks, political predictability, economic stability, weather patterns, product quality, slave labour, catastrophes and environmental sustainability. A question mark hangs over how many of these perceived risks have been adequately prioritised over EBIT performance. In a global supply chain, it is likely impossible to model all of these factors to tangibly understand and mitigate all risks. Jigsaw predict many countries will withdraw from globalisation of supply chain. This will be an option for only a lucky few. These lucky countries will have key fundamentals to drive self-reliant supply chains/economies that will include a well invested transportation network, robust borders, a strong labour force that is not aging, predictable government and favourable climate. Countries that will potentially succeed in driving national supply chains include Argentina, France and the United States. Jigsaw predict countries that will struggle to drive a Nationalised supply chain include China, Japan and Brazil. China especially is reliant on globalisation re foreign investment, exports and in future, its aging labour force (exported opex) will likely cease as an option

## Economic Predictions – July 2020 **- Click here for the Full Report**

Mining – As indicated in the opening segue, commodities are grossly under-valued in comparison to bonds and stocks. We have had the dot.com bubble, the housing bubble and the everything bubble (stocks, housing, tech and bonds). Jigsaw believe the next 10 years will be the golden decade of commodities. As Iron Ore prices may gradually diminish (predicted to drop to $80 per ton by Xmas) as we decouple from China and there is even talks that China will cease demand for Australian ore absolutely, with Africa and Brazil being the sole suppliers. Strategic minerals should take over as economic drivers for Australia. China currently supplies over 80% of the world's strategic metals and the world seems to believe China is quickly migrating into a criminal regime (look at Hong Kong), Australia is in a prime position to muscle in on this global supply. By description, a strategic metal is defined as having vital importance for defence and energy. These metals include Niobium, Vanadium, Tellurium, Germanium, Cobalt and Chromium. As with precious metals, Jigsaw see increased productivity and investment in these sectors and increased M&A activity to drive scale and reduce opex costs. For gold, re an investment perspective, there are risks to both investors and the mining operations in Nations that are in emerging markets or countries outside of the USD $ swap lines. As currencies come under continuing pressure in relation to the US dollar, it is feasible that precious metal operations could be nationalised to aid reserves in wealth. The US dollar is weakening and there is real risk of capital flight from US treasuries as the currency continues to weaken. The US cannot just go to negative interest rates without destroying the bond market and handing the baton to gold as a vehicle for national savings. Reducing the value of long term debt or even turning debt into a cost of ownership will be a drastic dynamic. Gold hit US $1800 per ounce this month and is predicted to challenge $2000 per ounce by Xmas. Silver will follow as the ratio has shrunk from a peak of 120 - 1 to now under 100. These prices create huge productivity and incentive for the junior miners, with silver offering the greater upside for speculators. In fact, silver is both the most corruptly manipulated and undervalued commodity on the planet right now in our opinion. For more market reports, visit www.jigsawtm.com 1300 655 633 | info@jigsawtm.com Uranium is also a very interesting space right now and like the junior mining sector will present strong employment opportunities over the next 10 years and even drive more capital to SA, as it has some rich resources for the space and cheap real estate in comparison to VIC and NSW. With the looming death of the US fracking sector and an ever increasing push to move to cleaner, cheaper energy, Jigsaw are confident that we are also in the new bull market for uranium, and - like with precious and strategic metals - Australia is in a prime position to exploit these conditions. Businesses like Bannerman, GTR and TNT are surging in the small cap markets. Countries such as China, Poland and the US are committing to nuclear. Steve Moore, advisor to the US president, has indicated positive policies towards Nuclear. Coal, it seems, for many progressive countries has no future. For instance, Japan is pushing hard to reduce coal dependency by 26% by 2030, while investing in nuclear energy to 22%. This means Japan is dedicated to constructing a further 25 reactors over the next decade. This increased demand will surge the price of uranium.