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Five structural headwinds hitting the global economy

Jason Orthman and Mark Arnold

The bad news is that low interest rates, low inflation and low economic growth are likely to be our global economic reality for at least for the next decade. This means challenging business conditions for businesses and investors.

However, the good news is that quality businesses will come into their own. The cyclical improvement in economic growth that has occurred over the past two years is likely to run its course over the next 18 months or so, and average businesses and speculative stocks that have enjoyed temporary macro tailwinds will face a more difficult environment as the cycle turns. Only quality companies with fundamentally solid business propositions will produce long-term growth.

Let's look at some of the key structural headwinds facing the global economy.

1. The future fall-out from high levels of debt

Consumer and government debt have both increased substantially in most major economies over the past decade. US Gross Federal Government debt to GDP in the US has risen from around 40% in the 1980s to approximately 105% in 2017.



Over the same period, household debt to GDP in the US has risen from just under 50% to around 80%. And the same story has played out in China, where [gross government debt to GDP](#) has risen from under 25% in the 1990s to approximately 48% in 2017, and [household debt to GDP](#) in China has increased from under 20% to 48%.

Higher levels of debt have provided a one-off boost to historical economic growth rates by bringing forward consumption and investment, but at the same time, higher financial gearing has increased financial risk levels generally. The global economy's ability to respond to economic shocks is lowered, while society's sensitivity to future increases in interest rates has risen.

2. Globalisation drives wealth inequality in developed countries

As the world has become more interconnected, materials and workforces can be more effectively sourced from countries with the lowest cost. Access to foreign capital has improved the lot of workers in less developed countries, but placed downward pressure on the income of workers in developed countries.

Furthermore, migration rates and the declining influence of unions in developed countries have also had the effect of reducing labour costs. The benefits of globalisation have become particularly evident in the increasing numbers of high net worth individuals in countries such as China and India. From 2012 to 2017, the growth in individuals with US\$50 million or more in the Asia-Pacific region grew by 37%, and it's predicted that the number of ultra-wealthy individuals in China will double in the next five years.

The wealth of high net worth individuals is growing relative to individuals in the middle and lower economic brackets. A hollowing out of the middle class is occurring due to downward pressure on wages and increases in automation at the middle-income level. Also, a general trend towards lower corporate tax rates and lower effective marginal tax rates for high-income earners over the past few decades has also accelerated the trend towards inequality. Lower corporate tax rates primarily benefit the wealthy because they are the biggest owners of businesses. According to the World Inequality Database, in 2014, the wealthiest 1% in the US owned 39% of total wealth, up from 22% in 1978.

3. No higher productivity despite technological innovation

Humans have always innovated to improve production output and reduce human labour hours for economic gain. At certain stages, technological advancement has caused huge leaps in both productivity and the average standard of living. However, since the late twentieth century, technological changes in the form of computing, communication, robotics and artificial intelligence have not resulted in higher levels of productivity, and average wage levels have remained depressed in most developed countries.

We have reached a point where some predict that most of the jobs currently undertaken by humans will be replaced by machines and artificial intelligence, and the nature of jobs will change fundamentally. The emergence of some fundamental changes are already impacting the workforce: increasing use of robotics and 3D printing in warehouses, manufacturing and medicine, to name a few. Businesses generally benefit from automation through lower costs, whereas workers only benefit if they can be redeployed into better quality, higher paying jobs.

4. An ageing population will suppress real economic growth

An ageing population has implications for labour force growth, both the number of work hours per person and consumer spending. As a population ages, fewer people will be engaged in full-time employment or be able to generate an income from human labour activities. The retirement of the baby boomers is predicted to negatively impact the growth in labour hours per person from 2008 to 2034, with negative implications for real economic growth.

Also, living longer means that individuals will have extended economic requirements that will need to be funded. This may be through government pensions, pension funds or working longer. However, lower incomes mean lower income taxes, at the same time that increasing numbers of retirees are placing strains on pension systems.

5. Climate change and other environment-related constraints

According to the Worldwide Fund for Nature [Living Planet Report](#) from 2016, the bio capacity equivalent of 1.6 Earths was needed in 2012 to provide the resources and services humans consumed in that year, and the situation has since worsened. Demand for natural resources is fast outpacing the rate at which resources can be renewed, and the burning of fossil fuels is most to blame.

The link between climate change and investment markets may not be immediately obvious, but every business and household in the world will be negatively affected.

Extreme weather events, including prolonged drought and super storms adversely affect agricultural production, and acidification of the ocean as it absorbs excess CO₂ does the same to the marine ecosystem and fishing. It is difficult to predict with certainty what the specific outcomes will be, but the geographic distribution of the supply and demand of goods and services will change, redefining global trade.

Concluding

Global economic activity has experienced a cyclical uptick in the past couple of years, but in our view, the longer-term outlook for economic growth remains subdued due to these structural headwinds.

In a low-growth world, most asset classes will produce relatively low total returns. Our base case is for global equities to produce total real returns that average around 3.5% to 4.5% p.a., and many sectors of the market will find it difficult to maintain current levels of earnings in real terms over the next decade.

For investment managers, tackling low growth is challenging. When the economic tide turns, average businesses frequently fail, and only those businesses with strong fundamentals, in the form of high-quality business models, including low gearing, and large addressable markets will have the ability to offer earnings growth and long-term returns for investors.

Mark Arnold and Jason Orthman are the Chief and Deputy Chief Investment Officers respectively at high-conviction equities manager, [Hyperion Asset Management](#). This article does not consider the individual circumstances of any investor.

Get real: how we delude ourselves about investments

Graham Hand

In 1988, I bought \$750 worth of special \$5 coins, minted to commemorate the opening of Australia's Parliament House. I figured it was a one-way bet to investment success. They were legal tender costing \$5 and would always be worth at least \$5, and if they became sought-after by collectors, the sky was the limit.

I found the box of coins recently while cleaning the attic. They are made of aluminium bronze, so not only do they have no valuable metal content, but they look slightly tarnished after 30 years. Eager to learn about my booty, I called a coin dealer to check their value.

"They are legal tender, so they're worth \$5 each," he said with little enthusiasm.

"But they're 30-years-old, packed in a commemorative sleeve, marking a proud moment in Australian history," I replied, realising my expectations of untold wealth were draining away.

He sounded rather tired. "They made millions of them, and please don't bring them in here. We'd charge you a handling fee to take them to the bank and collect \$5."

After I spent an hour in a major bank branch where they eventually accepted them, at least I received my money back, right? Wrong.

The importance of real returns

Most of us delude ourselves about our investments. For example, we talk about our winners while the losers sit quietly in the bottom drawer.

The biggest delusion is not adjusting rates of return for inflation, using what is known as the **real** rate. Every investment return should be expressed in real terms, because it reflects the true purchasing power of money. Even with inflation as low as 2.5%, \$100 today will need to grow to \$102.50 to buy the same basket of goods in a year. If your money is in a term deposit earning 2% a year, it's a negative yield in real terms.

The Reserve Bank of Australia provides an excellent inflation calculator, [linked here](#). Every time you think about money or investments over a long time period, put the numbers into this calculator for a reality check. It's

simple to use. All you need is the year you bought something and how much you paid, and the amount is adjusted for inflation to a current day equivalent.

Take my \$5 coins (yes, please take them). My \$5 paid in 1988 adjusted for inflation would now be worth \$11.46, up 129%, with an annual inflation rate of 2.8%. If my coins had doubled in value, I could have deluded myself that turning \$750 into \$1,500 showed my investing prowess, but in truth, my money would not have retained its purchasing power.

Looked at another way, on average, what cost \$1 in 1988 now costs \$2.29. Therefore, what costs \$5 now would have cost $\$5/\2.29 or \$2.18 in 1988. So my \$5 has been eroded by inflation and now has the equivalent of \$2.18 buying power. I didn't really get my money back.

Many people proudly boast of the increase in the value of their house or investment property. Let's say you bought an apartment for \$500,000 in 1998. Average inflation of 2.6% compounded over 20 years reaches \$838,000. Okay, property prices have done well in the last five years, but not only must you adjust for legal fees, stamp duty, maintenance and renovations, but the real price is 68% higher or \$338,000 more than you paid.

While it might sound good to say you doubled your money if you sold the apartment for a million dollars, it's likely you earned little in real terms (of course, there are many other factors such as rent and loan payments to consider in calculating the total real return).

Are we close to an Australian sharemarket all-time high?

The All Ordinaries Index is currently (28 August 2018) about 6,400. The all-time high for the index is 6,873 in October 2007, before the GFC. It then fell precipitously to a low of 3,112 in March 2009, a period that destroyed the wealth of many Australians. Over the past decade, the market has clawed its way back, and a strong second half of 2018 may see the all-time high threatened. There will be headlines and celebrations of the good times across the media.

But the All Ordinaries is a price index, similar to the price of apples or bananas. To measure the all-time high in real terms, the 2007 level should be adjusted for inflation. Using the inflation calculator, 6,873 in October 2007 is 8,795 now in real terms.

So when the news breaks one day that the Australian market is at an all-time high, you can wisely tell everyone that it's a couple of thousand points or 28% away in real (inflation-adjusted) terms – or whatever the number is at the time – and everybody should stop deluding themselves.

Graham Hand is Managing Editor of Cuffelinks. This article was first published by leading retirement website, [YourLifeChoices](#), and some of the comments below are taken from there.

Aussie shares: 50 years and we're finally ahead

Ashley Owen

Over the past few weeks the media have been getting excited about the local stock market hitting '10-year highs'. It is true, but only because 10 years ago the market was falling like a stone in the sub-prime crisis. The All Ordinaries index is still 7% below its pre-GFC peak. It will get there soon enough but Australia will be one of the last countries to do so.

Denmark won the gold medal for the first country to surpass its pre-GFC peak way back in January 2013. The US was second in March 2013. The UK took bronze in May 2013. Dozens of other countries have done it since then, but we are still waiting. Why? Australia has been slow to recover because our 2003-2007 boom was bigger than most. Not only did we have a credit boom like the rest of the world, we had a mining boom as well. The bigger the boom, the bigger the bust that follows it.

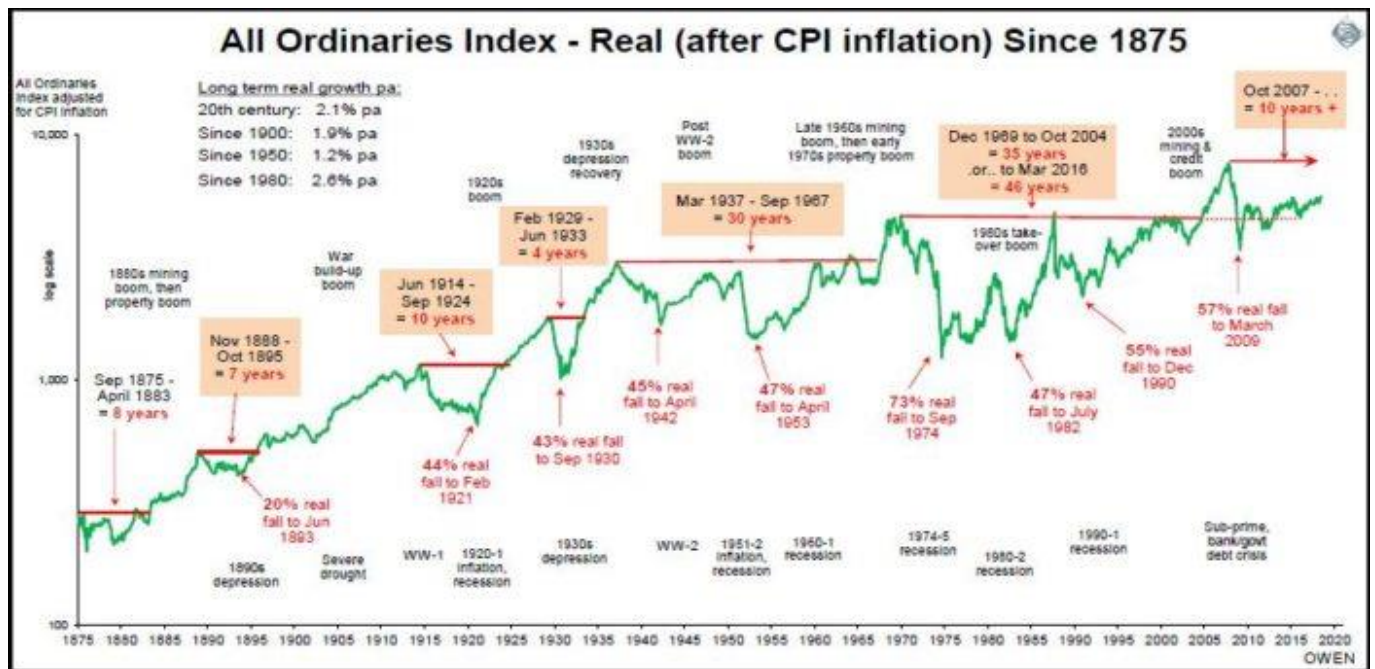
Need to think in real terms

More importantly, in *real* terms (after inflation) the All Ordinaries index is still 27% below its 2007 peak. People who bought in at the top of the boom – which unfortunately was many first-time investors lured in by frenzied media and by the '\$1 million super contribution window' – will have to wait a few more years to get back to

square one after adjusting for inflation. Dividends add to returns, of course, but we want to see the real *capital* value of shares, or real *wealth*, rising not falling.

Am I being too negative by adjusting for inflation? No, because we need to adjust for inflation to measure the real value or spending power of our money. Inflation is everything. If I were to tell you that the Venezuelan stock market index is up by a whopping 6,976% so far this year (it is), would you race in to get some of the action, or would you run the other way? Now if I were to add that the inflation rate in Venezuela is running at 46,000% (it is), you would see that the real value after inflation is a train wreck.

Inflation can cripple real returns for decades. For people who follow the traditional 'buy and hold', 'set and forget' approach to investing, it is sobering to see that the broad market index in Australia (the All Ordinaries and its predecessors) is just 24% higher than where it was 50 years ago in August 1968. The market hit a mini-high on 16 August 1968, and then went on to peak at the end of 1969 at the top of the nickel boom, which also lured in many thousands of first-time investors. It promptly crashed and took 46 years to finally get ahead, in March 2016.



Our biggest companies have done nothing for 50 years

The companies that dominated the index in 1968 are mostly the same old companies that still dominate today. Let's take the largest bank. Bank of NSW, now called Westpac, was \$7.56 which is \$2.18 adjusted for capital structure changes and \$26.82 after inflation. It was \$29.46 at the end of July 2018, a real gain of just 0.1% per year for 50 years! ANZ and NAB are still below their share prices 50 years ago, adjusted for capital structure changes and inflation. BHP is ahead by just 1.7% pa, Woodside is ahead by 1.5% pa. AGL is the best of the bunch, up by +3.6% pa over the 50 years, but CRA (now RIO), Santos, QBE and Lend Lease are all still below.

This is just the big 'blue chip' stocks. Unfortunately, in the booms people chase the speculative 'hot' stocks, which mostly end up worthless.

This is a sobering reminder of the destructive effect of inflation, and also a reminder not to get caught up in boom-time media frenzies that lure people in at the worst time. 'Buy and hold', 'set and forget' only works if you have 50 years to wait to get your money back.

It is also a reminder that GFC-type crashes are not unusual at all, contrary to the media nonsense that the GFC was a 'once in a century' event. The good news is that there are tremendous gains to be made by going against the herd and buying when everybody else is panic-selling in the busts.

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Most estate planning for tax is inadequate

Matthew Collins

Over the next 20 years, there will be an intergenerational transfer of wealth the likes of which has never been seen before. Wealthy baby boomer parents will die leaving their estates, in most cases, to their children. Most will also leave income tax liabilities.

When they receive their inheritance, the children will have two main tax issues to deal with:

- Minimising tax payable on the benefit (eg. tax payable by the estate) and
- Finding an investment structure to hold assets that allows for future tax minimisation.

Through the proper management and planning, the 'after-tax' value of the inheritance can be greatly improved. Despite this, many wealthy individuals have a will that does not deal with the tax consequences of their death adequately.

What can be done within a will?

A will provides excellent opportunities for tax planning. Generally, under a will, assets can be transferred to a new investment structure without the usual impost of stamp duty or capital gains tax. The ownership of assets can be rearranged to provide a better tax result.

A will also allows for the establishment of a 'testamentary trust'. In broad terms, assets can be inherited by a beneficiary but held via a trust which they control. The beneficiary can generally then direct income from the trust to pay various family members in a tax-effective way. Family members receiving distributions may include children under the age of 18. Family trusts, set up while a person is alive, cannot distribute to children under 18 without the beneficiary being taxed at the top marginal tax rate.

Management of tax payable by the estate

In most cases, the assets of the deceased are liquidated and the funds distributed to the various beneficiaries. This can result in two major tax consequences:

- Capital gains tax on the disposal of the deceased's assets
- Death benefit tax on superannuation withdrawals.

Proper planning may reduce or eliminate these taxes.

1. Capital gains tax

In basic terms, a testamentary trust can provide flexibility to who receives taxable income resulting from the sale of estate assets.

I recently had a client die while holding two properties. One was his home, which is exempt from capital gains tax. The other was a 'weekender' which had grown in value by \$400,000 since it was purchased. He had four children, who each had personal taxable income over \$100,000, and 12 grandchildren, all under 18-years-old.

Before the property was sold, it was transferred, under the will, to four testamentary trusts, one for each beneficiary. This allowed for the capital gain to be split between the grandchildren. As a result, no tax was paid.

2. Superannuation death benefit tax

A common scenario is where the last parent dies and leaves superannuation to their adult, non-dependant, children.

Adult non-dependant children will be required to withdraw money from superannuation. They have no choice. This will usually result in tax of 17% being payable on the withdrawal of the 'taxed' portion of superannuation. If the members balance is large, this can amount to many hundreds of thousands of dollars in tax.

So, what can be done?

The simplest way to avoid death benefits tax is for the superannuation to be withdrawn before death. The assets are then held in the member's personal name instead of being held in the superannuation fund. A withdrawal by a member, over 65, and in some cases earlier, is not subject to tax.

The obvious problem with this strategy is we don't know when we are going to die. However, often we have some idea, and if reducing income tax payable is important to the member, then steps can be taken.

In a simple scenario, a member with a terminal illness can withdraw their superannuation themselves. However, individuals are often not able to make such decisions once their health has deteriorated. An alternative is for the power of attorney to be provided with the authority to make the withdrawal. In my experience using an attorney can work, but only if the following takes place:

- The member gives clear instructions to the power of attorney before their health deteriorates
- The process is explained to the other family members.

It always needs to be remembered that the attorney owes a fiduciary duty to act in the best interest of the member.

There are a number of strategies that can be used to make a speedy withdrawal, but these are outside the scope of this article. Suffice to say that, where the tax liability is reasonably high, it may be worth considering as part of a tax effective estate plan.

Strategies to minimise future income tax payable by beneficiaries

In recent years, it has become increasingly difficult to invest in a tax-effective way. Changes to superannuation place limits on the ability to reduce income tax. Labor policy includes additional measures such as the removal of negative gearing and the taxing of trusts at a rate of 30%.

There is every likelihood that future beneficiaries may receive an inheritance in an environment where:

- Family trusts no longer provide a viable tax planning strategy
- After-tax superannuation contributions are limited to \$100,000 per year or less
- A person can no longer make after-tax superannuation contributions once their balance reaches \$1,600,000.

Two strategies could be considered:

1. Holding investments long term via a testamentary trust

For many years, families have used discretionary trusts (also known as family trusts) to hold investments and distribute income to family members with little or no taxable income. Labor intends to stop this. Their proposed policy can be found in a fact sheet titled "A Fairer Tax System – Discretionary Trust Reform". On page 10, it states that the policy will not apply to testamentary trusts. If legislation is eventually introduced, and this exemption remains, testamentary trusts may become a useful structure for holding investments for the long term.

2. Lending to adult children so they can make contributions

I expect the following scenario becoming common in the future:

- Children not having available funds to make superannuation contributions during their working life
- When they are older, perhaps in their 60's, receiving a sizable inheritance
- Only being able to transfer a small portion to superannuation due to contribution restrictions.

In selected circumstances, the following strategy may be useful:

- The parent lends money to their adult children
- The child makes a contribution to superannuation
- The loan is 'paid back' out of the estate on the death of the parents.

If implemented correctly, this strategy may result in additional funds ending up in the beneficiaries superannuation accounts. However, there is a lot to consider before implementing a strategy like this and professional advice should be sought.

Conclusion

The purpose of this article is not to provide an exhaustive list of potential strategies or to analyse any particular strategy in depth. Instead it is to alert readers that there are opportunities available and to encourage you to seek advice sooner rather than later. I have found that many people are uncomfortable speaking about estate

and death issues. I understand this. However, a well thought out and considered estate plan can not only result in significant tax savings but also provide for greater family harmony.

Matthew Collins is a Director of [Keystone Advice Pty Ltd](#) and specialises in providing superannuation tax, estate tax and structural advice to high net wealth individuals and their families. This article is general information and does not consider the circumstances of any individual investor. It is based on a current understanding of related legislation which may change in future.

Emerging markets: Nothing new under the sun

Jonathan Rochford

"That which has been is that which will be, and that which has been done is that which will be done. So there is nothing new under the sun." Ecclesiastes 1:9.

The events overtaking Argentina and Turkey in recent months are textbook cases of an emerging market crisis. Both countries have racked up substantial amounts of foreign currency debt despite having limited foreign currency reserves, have high rates of inflation and are running budget deficits. Their situations are the same as Brazil in 2015, the Asian financial crisis of the late 1990's and the Latin American crisis of the early 1980's. This article reviews the build-up, the breakdown, the responses and who else is at risk.

The build-up

Any review of emerging market crises has to begin with the lenders not the borrowers. **There will always be countries, companies and consumers that want to borrow excessively and live it up, but they can only do so if there is a willing lender.** This time around, ample liquidity from central bank quantitative easing and yield chasing fuelled by suppressed interest rates kick started a global borrowing binge. There's [evidence of this](#) right across developed and emerging market debt, as well as in government, corporate, consumer and financial sector debt.

Now that the US is normalising its monetary policy (quantitative tightening and raising interest rates) and Europe is reducing its quantitative easing, global liquidity is reducing and yield chasing has pulled back slightly. Emerging market debt, European high yield debt and Chinese shadow banking are the first sectors to show this turnaround.

Turkey's pathway to problems was fairly traditional. [It had the largest foreign currency debt to GDP ratio amongst emerging countries](#) and a high rate of credit growth, leaving it poorly placed if lenders wanted out. The failed coup in 2016 strengthened the political hand of its President and allowed him to proceed with popular but damaging economic policies. The threat of trade sanctions from the US further spooked investors and accelerated the downward trend.

Argentina's pathway was less traditional yet still exhibited many of the same risk factors. It defaulted on its debts in 2001 and sought help from the IMF. It cleared the IMF loans in 2006. It undertook a series of debt restructurings in 2005 and 2010, but a small group of holdout creditors remained. The unresolved debt blocked Argentina from returning to international lending markets until a settlement was reached in 2016. The next 18 months saw Argentina make up for lost time with a series of jumbo bond issues, including US\$2.75 billion of 100-year bonds. The buyers of this bond were comfortable lending for 100 years to a country that has defaulted eight times in the previous 200 years. Madness.

The breakdown

Argentina's currency has been progressively devaluing over time as is expected for a country with very high levels of inflation. However, this accelerated in May 2018 as it became clear that a recession is likely this year. The exchange rate jumped from 20.5 Peso to the US dollar to just over 30 in three months. A recent bond sale failed to achieve the targeted volume, a far cry from the heavily oversubscribed bond issues of 2016 and 2017.

Turkey has seen the Lira jump from 3.5 to the US Dollar a year ago to as high as 7 this month. The 10-year bond yield is now over 21% with inflation running at 16%. Standard and Poor's downgraded Turkey's credit rating to B+ this month and is forecasting a recession in the next year.

The responses

Argentina is following the textbook solution of getting help from the IMF. In return for the US\$50 billion standby facility, Argentina is tasked with implementing a [range of measures](#) to balance its budget, reduce inflation and clearly delineate the government (fiscal policy) from the central bank (monetary policy). This has included pushing the key central bank rate to 45%, a level that should hammer down inflation and stabilise the currency but with the side effect of a recession or substantially reduced GDP growth.

Turkey is trying to avoid an IMF bailout. The country's strongman President wants to continue to run budget deficits and is in no mood to accept IMF spending restrictions. The central bank rate has been increased from 8% to 17.75%, but the threat that the President will intervene and push rates down has spooked investors. Qatar has agreed to provide US\$15 billion of support which has led to a small turnaround in the Lira. However, without vital economic reforms it's likely to be a temporary respite to Turkey's troubles. In recent years Venezuela and Zimbabwe both refused to seek IMF assistance with their economies spectacularly failing.

Who else is at risk?

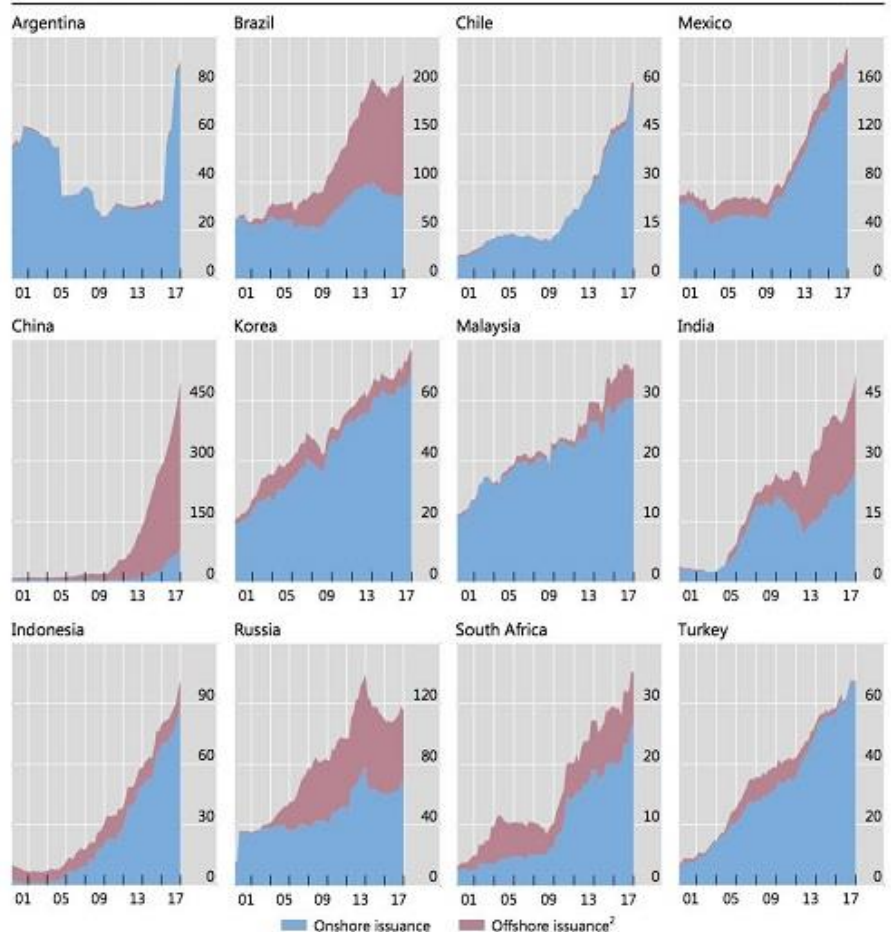
At a simple level, Pakistan and South Africa appear to be the other emerging markets most at risk. However, as the table from a [Bank for International Settlements report shows](#) many emerging market countries have had material increases in their use of US dollar debt in the last five years. The report also found more than half of the international lending to emerging Asian economies was "hot money" with maturities of less than one year.

Pakistan's foreign currency reserves have dwindled at the same time as its budget deficits have lifted government debt levels. South Africa stands out for its profoundly negative current account balance and consistently increasing government debt to GDP ratio. Ongoing corruption, plans to nationalise the central bank, and the wider emerging market sell-off are scaring off lenders and pushing bond yields higher. At a wider level, while Greece and Italy are generally considered developed economies, their falling GDP per capita levels and weak institutions could push them back into emerging market classification. Greece's GDP per capita is already well below South Korea and Taiwan, who are generally categorised as emerging markets. Both Italy and Greece have large amounts of debt in a currency they don't control, very large debt to GDP ratios, weak banks burdened by problem loans and governments that are resistant to economic reforms. Neither has any plan to reduce to their debt levels, other than giving their lenders a haircut.

US dollar-denominated debt securities issued by EME non-banks

In billions of US dollars

Graph 17



¹ Offshore bond issuance is defined as outstanding US dollar-denominated bonds issued offshore (ie outside the country listed in the panel title) by non-banks with the nationality listed in the panel title.

Sources: Dealogic; Euroclear; Thomson Reuters; TRAX; BIS calculations.

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Blockchain revolutionises the cyberworld

Michael Collins

An international shipment of consumer goods typically comes with about 20 sets of documents, many of which are paper-based and relate to trade finance. About 70% of the information is replicated across the forms. This 'red tape,' which costs the freight industry hundreds of millions of dollars each year, has no real time visibility to all parties, is prone to errors and is often complex enough to delay payments.

No more, according to an Accenture-led syndicate. The consulting firm this year said it had a distributed-ledger solution that could "revolutionise ocean shipping" because it reduces data entry by 80%, simplifies amendments, streamlines cargo checks, and lowers the risk of compliance breaches.

Some observers said the innovation could be shipping's biggest breakthrough since the first container ship sailed in 1956. The World Economic Forum says simplifying paperwork and other trade impediments "halfway to global best practices" could increase global trade by 15% and lift world GDP by nearly 5%, a greater boost than trade would receive were tariffs to be abolished.

Distributed ledgers a potential revolution

Such is the promise of decentralised distributed ledgers that sequentially and immutably record and store data in a way whereby people have immediate access to the same information without having to pass through a central point. These ledgers are better known as 'blockchains', the software leap from 2009 that enabled the invention of cryptocurrencies.

Notwithstanding that cryptocurrencies are failing to fulfil money's most central roles, especially to be a store of value, the blockchain rates as a 'landmark' invention. Its innovation was that a self-sustaining network under no peak control was created to allow strangers to make and accept payments over the unsupervised internet. And that's the most apt use of the technology from a technical point of view, and pretty much it's only widespread use so far though much investment is underway to create blockchain solutions.

These distributed-ledger solutions for the regulated world, however, are likely to be less ground-breaking. Nonetheless, ledgers that are destined to be used in the regulated world could enhance productivity across many industries, even if they are not great advances on existing technology. A danger, though, is that these ledgers will create risks, even systemic ones, when used in critical spheres. These risky uses include if they were used to replace paper-based voting in general elections because they are not tamper-proof, or if central banks adopt them for the monetary system at the risk of upsetting the fractional-reserve banking system.

Creating foundational technology

To be sure, future ledger innovations could be leaps akin to blockchain's development. A big hope is that ledgers can secure the internet's protocols, the common agreements that enable devices to interact. Ledgers have this potential because they are considered a 'foundational' rather than a 'disruptive' technology – one that forms the basis of other milestone advances.

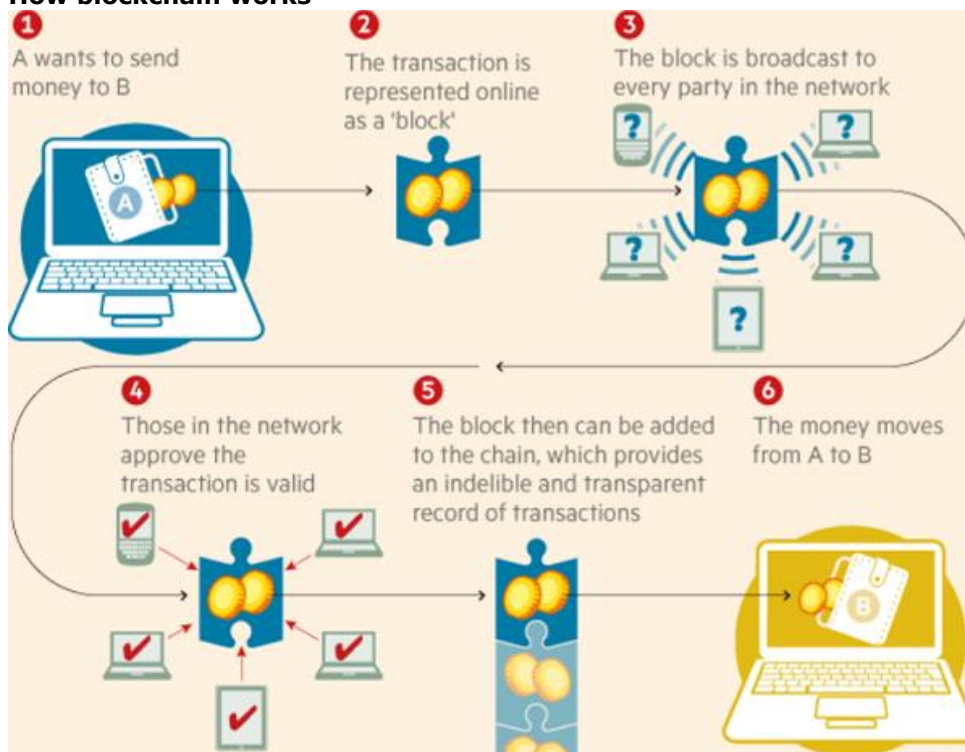
But distributed ledgers have drawbacks. These include privacy concerns, cybersecurity risks, that they require networks to be effective, their high power usage, their capacity limits – and there is always the risk that trust between users could break down.

The complexities in establishing networks and drawbacks in ledger technology mean the paperwork and multiple data entry that still exist after a generational use of computers are unlikely to find a 'hey presto' solution in blockchain form any time soon.

Worthwhile ledger solutions might only slowly appear in a regulated world and might only be incremental advances on prevailing technology. That will make them valuable enough in a world in need of productivity growth. But only if their inappropriate use can be limited.

For those who are still getting their minds around blockchain, here's a simple illustration. More details are in the link below.

How blockchain works



Source: Financial Times

Michael Collins is an Investment Specialist at [Magellan Asset Management](https://magellangroup.com.au/insights/blockchain-has-revolutionised-the-unregulated-cyberworld/), a sponsor of Cuffelinks. This article is general information only, not investment advice. For the full version of this article go to: <https://magellangroup.com.au/insights/blockchain-has-revolutionised-the-unregulated-cyberworld/>

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Fight cybercrime by investing in cybersecurity

Tamas Calderwood

Sometime between 2008 and 2009, the number of devices connected to the internet surpassed the number of humans using it. Today, there are close to 4 billion people with access to the internet, while the number of devices connected to the internet is over 8 billion. By 2020 there will be 30 billion devices connected to the internet. Welcome to The Internet of Things, or IoT.

The things on the internet

So, what *things* are we talking about? Chances are you already have a few of them in your home. Australian homes are now packed with smart speakers, wifi cameras, thermostats, televisions and light bulbs that can be controlled from our smartphones or by voice. These devices have their own IP address and can communicate with other devices – the smart speaker can control the lights, the wifi camera can cast to the TV screen – over the internet.

You can already buy a fridge that will send you a photo of its inventory and a doorbell that will alert your phone and stream video allowing you to talk to your visitor while on the other side of the planet. What's coming next, though, are billions of sensors that will measure temperatures, moisture, movement, traffic, crowds, travel times, speeds, positions, chemical concentrations ... almost everything.

These sensors will use little power and have batteries that last for years. They will monitor agriculture, roads, pipelines, sewerage leaks, pollution, bushfires, public transport and our offices and homes. They will be used to help run factories, optimise logistics, manage inventories, avoid traffic jams, schedule timetables and prevent machines from breaking down. To handle all the data they produce, each new 5G phone tower will have the capacity to communicate with up to 250,000 of these devices simultaneously, as well as carry our calls,

messages and browsing. Combined with wired access, the internet can now move over 300 terabytes of data per second and capacity is growing at around 30% per year.

Which is just as well, because we took more photos in the past four years than were taken in the previous 175 years combined. We already produce over 2.5 quintillion bytes of data every day and 90% of all the data that exists in the world today – text, photos, measurements, everything – was created in the past two years.

Public versus private

Much of this torrent of data is public, but there will always be a large part that we wish to keep private. Cybersecurity is a concept that barely existed at the turn of the century, whereas today it's front and centre of the digital age. The biggest concerns aren't that a hacker could see that you quaffed that chardonnay in your fridge or watch who rings your doorbell. Although, who wants that information out there anyway? More importantly, customer data, financial transactions, health records and even our personal browsing history are things that need to be kept safe.

Hacks are on the rise

This spectacular growth in online data in recent years has, unfortunately, also seen equally strong growth in cybercrime – and it's not just billionaires with significant offshore holdings who should be concerned with the increase in cybercrime, everyone with any information online should be wary.

While most people are familiar with the 'big' hacks, such as the 2014 data breach at Yahoo which resulted in over 3 billion user records falling into the hands of criminals there are attacks being attempted every day. From cases of disruption to our transport systems through to a case at the end of 2017 when a British couple found that their shopping loyalty reward points had been used by criminals to book a Spanish holiday, cybercriminals are attempting to disrupt and profit from our online information. Governments, private companies and households across the globe are fighting an ever-intensifying battle with cyber criminals to prevent abuse of their online information and disruption to their IT related activities. The ongoing health of the global economy – and its ever-growing interconnectivity via online networks – vitally depends on cybersecurity systems keeping one step ahead of those with malicious intent.

Cybersecurity: a growing investment consideration

Protecting all that data is a big business, and the global demand for cybersecurity services has grown rapidly in recent years and will continue. According to Gartner Research, global spending on cybersecurity has increased at an annual rate of around 8% since 2011, and is forecast to reach \$US 96 billion by the end of 2018.

In a world where smart, connected devices already far outnumber humans, we need to ensure our data is under lock and key. So update your software, be careful what you click, make sure you have strong passwords with two-step authentication and back-up all your important stuff. Don't get hacked.

(The Nasdaq CTA Cybersecurity Index, the index [our Cybersecurity ETF](#) aims to track, provides exposure to leading global cybersecurity companies from the US, Britain, Israel, Japan and South Korea including names like Cisco, Symantec, CyberArk and Itron.

Tamas Calderwood is National Manager, Adviser Services at [BetaShares](#), a sponsor of Cuffelinks. This article is for general information and does not consider the circumstances of any individual investor. See BetaShares' publication, [The Case for HACK](#), for more information. For more articles and papers from BetaShares, please [click here](#).

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