Integrated Wealth Solutions

The Good Life

Ideas, advice, beliefs and perspectives for the enjoyment and education of our clients and friends

***period ending September 2018**

October 2018

Fixed Interest					
Years	**1**	**2**	**3**	**10**	**YTD**
One- year	1.9	2.0	2.1	3.5	1.5
Two-year	1.1	1.6	2.0	3.9	1.0
Five-year	0.9	1.2	2.6	5.7	0.7
Long Term					
Australian Shares					
Large	13.4	12.0	12.3	8.3	5.7
Value	15.1	15.6	16.6	7.9	6.4
Small	16.2	9.8	15.2	6.6	4.9
Global Shares					
Large	21.0	19.1	13.1	9.7	13.9
Value	16.9	18.7	12.8	8.8	9.2
Small	17.8	18.4	13.6	11.8	12.0
Emerging Markets	12.6	15.4	13.3	6.1	3.5
Real Estate	13.2	5.4	10.3	6.5	5.1

Description of Indexes	
One-year FI	DFA Short-Term FI
Two-year FI	DFA Two Yr Div. FI
Five-year FI	DFA Five Yr Div. FI
Long-Term FI	Bloomberg Aus Treas. 10+
Australian Large	DFA Aus Large Co
Australian Value	DFA Aus Value
Australian Small	DFA Aus Small Co
Global Large	DFA Global Large Co
Global Value	DFA Global Value
Global Small	DFA Global Small Co
Emerging Markets	DFA Emerging Markets
Global Real Estate	S&P/ASX 300 REIT Index
	Data presented may be based on a combinationof simulated and actual returns.
	Past performance is not indicative of future performance.

What We Are Thinking

Dear Readers

Welcome to the October 2018 edition of *The Good Life*.

This month we have a story from Jim Parker about time and patience. He looks at the 10 years since the GFC and the volatility of markets. Still not convinced?

I have more to say in our Numbers section (it's the numbers that do the talking!) and in a table on the last page.

Good News … We're ALWAYS confident about the future

We're continually blown away by what's happening in what we call the EXPONENTIAL WORLD for a *faster, easier, cheaper and better future.*

The stories I read of amazing discoveries inspire me and give me hope for a better future.

This month in our ***That Bit Extra (Abundance Insider)*** we look at more developments across a wide range of fields, including autonomous farming; avoiding car accidents; biped robots; legislation to keep up with the digital world; blood pressure readings; 3D maps; new forms of barter; programmable pills; more efficient solar power and better space crops.

Numbers

If you look at the table to the left, you'll see that global markets continue to outperform the various Australian indexes, especially over the longer termsuch as 10 years.

In the table on page 9, I looked at the monthly returns for the S&P ASX 300 (Australian market) and the S&P 500 index (US market) since January 1980 and also since January 2008. How many months had positive returns and how many negative returns?

Roughly there are 2 positive months for every negative month. But more simply investing in equities, my research emphasizes the importance of diversification. By restricting yourself to the ASX over the past 10 years, you would have missed a potential return of over 6% pa. **Hopefully the Australian market will provide returns closer to the 465-month returns in the long run.**

GFC 10 Years On: Time and Patience

October 11 2018

Jim Parker
Vice President
Dimensional Fund Advisors

In Leo Tolstoy's great novel 'War and Peace', a Russian general charged with defeating Napoleon and expelling the French from Russian soil argued against rushing into battle, saying the strongest of all warriors were "time and patience".

It's an observation worth recalling as the media runs thousands of words analysing the causes, consequences and legacy of the global financial crisis of 2008.

The GFC, as it's known in Australia and New Zealand, is widely considered by economists to have been the worst financial crisis since the Great Depression. What began as a breakdown in the US subprime mortgage market morphed into a series of credit shocks, bank crashes and a deep recession in much of the developed world. The climax of the crisis was the collapse of US investment bank Lehman Brothers in September 2008, triggering a bailout of the banking system and extraordinary fiscal and monetary stimulus by governments and central banks.

For investors, it was clearly an anxious time. Global equity markets plunged by 40% or more. By late 2008 Queen Elizabeth, whose personal fortune had fallen by more than $50 million, demanded economists explain why they hadn't seen the crisis coming.
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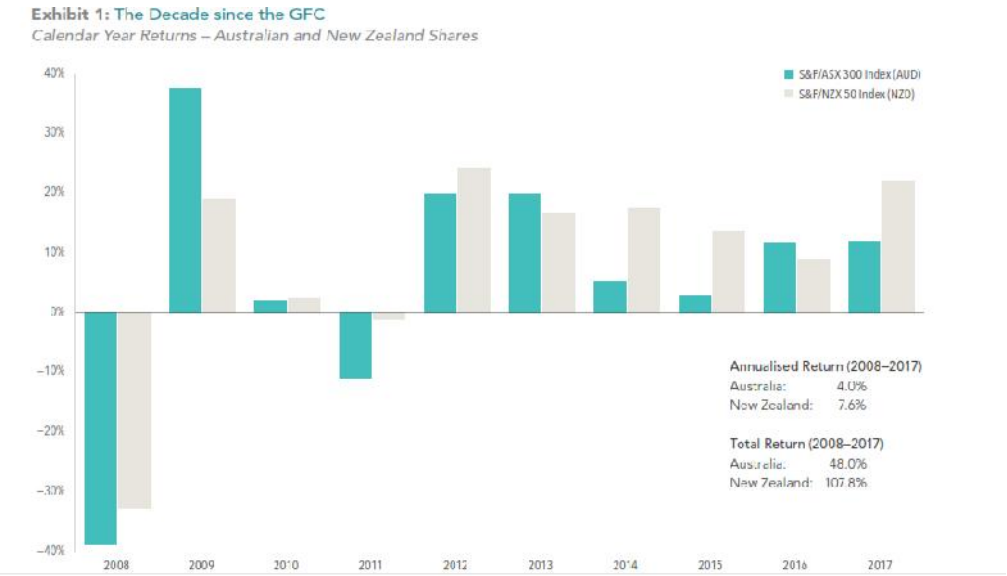
At the World Economic Forum in the Swiss town of Davos in early 2009, the most popular session was one in which a panel of economic experts, many of whom had not predicted in the first place, lined up to provide their analysis of why the crisis had occurred and what would most likely happen next.

In terms of the economic analysis, there clearly was a spectrum of opinion. Some blamed lax regulations; others too much regulation. Many cited excessive debt, irresponsible lending, complex financial products, compromised ratings agencies, an over-reliance on mathematical models or just plain old greed.

But aside from a temporary seizure in short-term money markets, where banks lend to each other, global share and bond markets performed as you would expect at a time of heightened uncertainty. Prices adjusted lower as investors demanded a higher expected return for the risk of investing.



In mid-March 2009, sentiment started to turn. By the end of that year, the Australian benchmark S&P/ASX 300 Index had risen 37.6%, recovering just as dramatically from the near 39% plunge it had suffered the previous year. The New Zealand market rebounded by more than 19% after a near 34% decline in 2008.

By the end of 2017, the Australian index had delivered an annualised return of 4.0%, even to someone who had begun investing just before the crisis began. Using a global balanced strategy of 60% equity and 40% fixed interest, the return was 5.2%.

By the end of the same period, an investor who had begun investing in the New Zealand market at the start of 2008 would still have experienced a 7.6% annualised return by the end of 2017. Using the same global balanced strategy, the New Zealand dollar return was 5.4%.

The lessons from this experience are familiar. Emotions are hard to keep in check during a crisis. There can be an overwhelming compulsion among investors to "do something." But, as it turned out, those who listened to their advisors and stayed disciplined within the asset allocation designed for them have done considerably better than many people who capitulated and went to cash in 2008-2009.

Think of two people reluctantly encouraged to take a rollercoaster ride. One of them focuses on every sharp turn and sudden decline, his sense of terror compounded by the attention he is paying to the screams of those around him. The second person focuses on a static point on the horizon and tells herself the ride will soon be over.

The arguments over the causes and consequences of the GFC will go on and on. But as investors, there's much to be said for focusing on what we can control. Timing the market is tough, as is basing an investment strategy on economic or market forecasts. But we can do ourselves a favour, both materially and emotionally, by accepting that volatility is a normal part of investing and by sticking to a well-thought-out investment plan agreed upon in less stressful times.

As Tolstoy's general said, the strongest warriors are time and patience.

We hope you enjoyed this issue and would like to receive your feedback on articles you would be interested in or ways we can improve our newsletter. We have a lot more information on our website at www.integratedwealthsolutions.com.au where you can register to receive this free monthly newsletter.

John McMorrow
Editor

That Bit Extra...

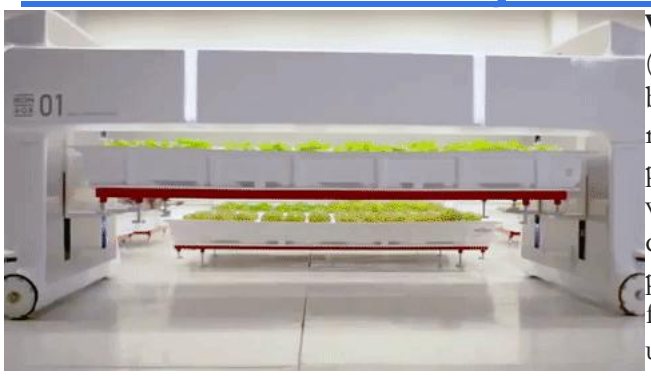
More Amazing Research Happenings in the EXPONENTIAL WORLD to Make Our Lives Better…Faster, Easier, Cheaper, With Bigger Futures

The future is almost *here –*

From Peter Diamandis and the team at …

abundance insider

Inside Silicon Valley's most autonomous farm yet



What it is: Led by CEO Brandon Alexander, formerly of X (formerly Google X), digital agriculture company Iron Ox has built a unique, fully autonomous, robotic farm. The company recently transitioned from a prototype farm into a full-production facility. The first farms, situated in a 92m² warehouse in San Carlos, California, grows romaine lettuce, bok choy, cilantro, and 2 dozen other types of greens. The farm can produce nearly 30 times more produce than a traditional 1 acre farm and uses 90% less water than traditional farming. Iron Ox uses a horizontal, single-floor layout fuelled by natural overhead sunlight.

Why it's important: The global food supply chain is highly inefficient. Iron Ox's scalable, autonomous approach to locally grown food is one of the many digital agriculture solutions bringing farming closer to the table. Produce can travel nearly around the globe before it lands on your plate, resulting in nearly half the cost of food coming from transportation. What if we could dramatically reduce – or even eliminate – these costs? **Share on Facebook**

Spotted by Marissa Brassfield / Written by Max Goldberg

Honda gives cars the ability to see around corners

What it is: Building out what it calls 'vehicle-to-everything' communication (or V2X), Honda is now partnering with the city of Marysville, Ohio to test the company's Smart Intersection technology. In an effort to address the limitations of existing autonomous vehicle sensors which cannot see around corners, Honda's 33 Smart Mobility Corridor project leverages proprietary object recognition software and cameras installed at intersections to provide a 360-degree view of a given street, with distance of up to 90 metres. Intersection-mounted cameras then communicate this data directly to vehicles, allowing them to see around corners and 'through' obstructing buildings to pre-emptively avoid collisions and other threats.

Why it's important: According to Honda's reported statistics, about 40% of all car collisions, and almost 20% of the 35,000 traffic-related fatalities in the US each year, take place at intersections. While autonomous vehicles will dramatically reduce these figures, even the most advanced sensors leave gaping blind spots behind adjacent buildings and other obstructions. However as smart city infrastructure becomes available, V2X technology will grant any connected vehicle the data it needs for contextual vision and preventative decision making. Such smart traffic systems promise zero collisions and remarkable efficiency improvements. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Claire Adair

Biped robot masters human balancing act

What it is: Researchers at the University of Texas Austin are leveraging lessons from human biomechanics to optimise biped robots. UT's new biped robot, Mercury, replicates the fine motor skills that allow humans to walk through crowded spaces without bumping into people or objects. "[The technique teaches] autonomous robots how to maintain balance even when they are hit unexpectedly or a force is applied without warning." The UT-Austin team translated key human dynamics into a set of equations used to program Mercury. These underlying equations can theoretically be programmed into any AI-powered biped robot to improve its balance. The team recently demonstrated a prototype of this self-balancing biped robot at a conference on intelligent robots and systems.

Why it's important: Advanced motor skills may eventually be applied to robots in emergency rescue, defence, entertainment, food service and more. Leveraging lessons from AI and biomechanics, we're seeing robots that are increasingly human-like. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Max Goldberg

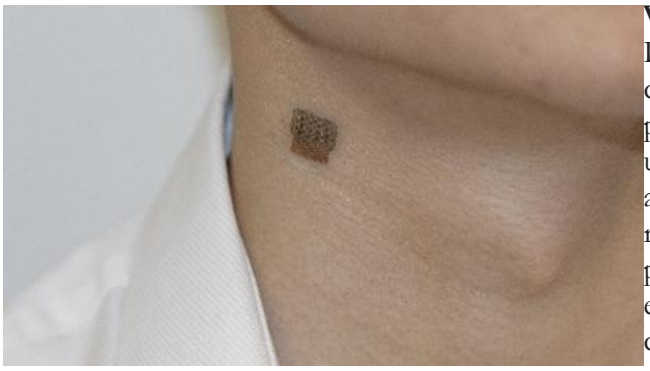
A new California law forces chatbots to 'fess up'

What it is: Last month, California Governor Jerry Brown signed SB-1001 into law, requiring companies to disclose when customers are communicating with a bot. The new law is intended to cover commercial and political communications in environments such as social media but will likely face significant litigation before going into effect in July 2019. For starters, it is not easy to define what constitutes commercial or political speech, and the difference between an automated script used to reply to emails versus a third-party service such as Marketo or Infusionsoft is unclear. Regardless of the outcome, as we've seen with GDPR in the EU, the world will be watching as it is difficult to draw geographic lines on the internet.

Why it's important: This is likely to be the first of many legislative battles around the use of AI and bots in daily lives. What opportunities do you see for increasing trust and transparency into the system to head off the potential for regulatory overreach? **Share on Facebook**

Spotted by Marissa Brassfield / Written by Jason Goodwin

Wireless micro chip blood pressure patch



What it is: A team of researchers led by Sheng Xu at UC San Diego is working on a patch that can continuously measure central blood pressure, touting dimensions no greater than a postage stamp. The stick-on silicon elastomer patch emits ultrasonic waves that penetrate the skin and reflect off tissue and blood underneath. Once sent back to the sensor, these reflections are then communicated to a laptop which instantly processes blood pressure data. Although the device is most effective when placed on the neck, it is capable of continuously and accurately monitoring central blood pressure from multiple contact points, sensing deep beneath the surface of a patient's skin.

Why it's important: While the patch's current iteration must be wired to a laptop and power source, it's the first known wearable device that begins to approximate the current gold standard for measuring central blood pressure, an invasive technique requiring a catheter inserted near the heart. Long term, as such devices advance in accuracy and go wireless, monitoring heart conditions as well as other vital organs will become an automatic,

everyday convenience, allowing doctors to keep an eye on patients with conditions like hypertension without posing an infection risk. And as suggested by Sheng Xu, such ultrasound patches could yield results even outside the body, for instance finding small cracks in complex mechanical parts. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Claire Adair

3D world scan to the detail of a single grain of sand

What it is: Umbra is redefining rapid visualisation of 3D objects, structures and landscapes. Last year, the company unveiled a tool called Composit, a software for viewing complex 3D models in the cloud. The core of Umbra's cloud services enables anybody, anywhere to upload and share complex 3D environments. The Umbra team now says that they can create 3D models of entire cities, with resolutions as fine as a grain of sand. Umbra plans to crowdsource the image capture of cities by leveraging people with smartphones. Umbra recently announced a partnership with Helsinki to produce a high-resolution, textured 3D mesh. The team's long-term goal is ambitious: generate a high-resolution 3D map of the entire planet, potentially a formidable rival to Google Maps.

Why it's important: Cloud-based 3D modelling can digitise and delocalise hardware limitations, allowing engineers and designers anywhere in the world to take advantage of powerful graphics software. As Peter Diamandis says, we are rapidly approaching a trillion-sensor economy and this story is further evidence that anyone, anywhere with a smartphone can contribute to a massive global information project. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Max Goldberg

Students trade their personal data at the no pay café

What it is: Testing a new form of barter near Brown University in Rhode Island, Japanese-owned Shiru Cafe is an unconventional coffee shop where data and not cash is the preferred currency. Trading personal data for cups of coffee, students visiting Shiru give their names, phone numbers, email addresses, academic majors, and — likely of greatest interest to Shiru — their professional interests and intended career choices. Shiru's corporate sponsors pay the cafe for access to its clientele via logos, apps, digital ads, surveys and in-person barista promotions.

Why it's important: While Shiru reportedly doesn't release specific student data, Shiru's aggregate data on students — if cleaned and optimised — represents a data-driven recruitment centre. Maximising data throughput with student-coveted goods (paid for by a third party) is itself a new business model, brokering personalised professional connections using one of the most important assets on a modern company's balance sheet: data. And with a history of prominent corporate sponsors like Microsoft, Nissan, and Suzuki, Shiru sets a promising precedent for those looking to better leverage customer data and pursue top talent. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Claire Adair

Programmable pills from DNA-based computing

What it is: Researchers at the University of Chicago aim to harness untapped information about how our cellular systems work by deploying a series of DNA-based molecular computing circuits. The researchers propose that specific arrangements of these molecular logic gates can give specific analogue signals of the concentration of the molecules as they are released over time, opening up the information contained in the temporal portion of our cells' communication mechanisms. Accessing the time-dependent information of these cellular signals is akin to knowing the tune of a song, rather than solely the lyrics.

Why it's important: As we approach a trillion-sensor economy by 2020, the quality and versatility of these sensors is critical. This research is evidence that rapid improvements in biosensor technology are bringing us deeper layers of data. Higher order, temporal microbiology data is what we need for meaningful long-term studies of our bodies, and for the development of real-time monitoring and treatment systems. What physiology do you want to precision-monitor – and therefore optimise, treat, and/or understand – on a molecular scale? **Share on Facebook**

Spotted by Max Goldberg / Written by Max Goldberg

New material efficiency for concentrated solar power

What it is: Scientists have identified a material that could dramatically improve the efficiency and lower the cost of concentrated solar power. Using mirrors or lenses to focus large amounts of solar thermal energy onto a small area, concentrated solar power involves converting concentrated sunlight to heat up a working fluid, used to drive turbines. Promising an expected efficiency boost of over 20%, steam can even be replaced with supercritical carbon dioxide. But temperatures required of over 1000 Kelvin also promise to melt many metals or cause them to react with CO_2. In a new feat balancing high heat transfer rates and chemical and heat resistance, researchers have refined a composite material called tungsten and zirconium carbide. These materials are extremely effective heat conductors, each with a melting point of 3,700K and the ability to form a complementary pairing.

Why it's important: Boasting much greater resilience than currently used metals, this zirconium carbide and tungsten composite has remarkable economic implications, requiring much less of the material for an effective heat exchanger. Concentrated solar has the tremendous advantage of superior heat storage, allowing the technology to generate power 24/7. By integrating storage in the process of energy production, concentrated solar might pose a more stable way of harnessing the sun. **Share on Facebook**

Spotted by Marissa Brassfield / Written by Claire Adair

Plant hormone study boosts space crops research

What it is: On Earth, a plant-fungal symbiotic relationship helps plants absorb nutrients from low-nutrient soil; in return, the plant keeps the fungus healthy by feeding it with carbohydrates. However, this symbiotic relationship degrades in microgravity. University of Zurich researchers promoted this plant-fungal symbiosis, even in microgravity, by treating the plant-fungal system with a synthetic version of the hormone strigolactone. Experiments determined that given this treatment, the plant and fungus were able to thrive even in low-gravity and low-nutrient environments.

Why it's important: One of the key challenges of Moon and Mars mission planners is producing food on other planets. Shipping soil millions of miles from Earth and producing artificial gravity are limited by the laws of physics, so explorers will need to leverage engineering to achieve sufficient crop yields, using entirely alien resources. This research out of Zurich is one of many studies focused on extra-terrestrial agriculture. Even on the Moon and Mars, there's an abundance of resources, we just need to figure out how to efficiently use these resources to host human life – and one day, whole civilizations. Share on Facebook

Spotted by Marissa Brassfield / Written by Max Goldberg

Up and Down Periods S&P/ASX 300 and S&P 500

Monthly Jan 1980 to Sep 2018 (465 periods)

and Jan 2008 to Sep 2018 (129 periods)

Index	Periods / No of Months	Annualized Compound Return	Positive Return Months	Negative Return Months
S&P/ASX 300	465	11.26%	294	171
S&P/ASX 300	129	4.26%	78	51
S&P 500 Index	465	13.07%	294	171
S&P 500 Index	129	10.88%	78	51

Source: Dimensional Returns Program

What does this tell us? If anything!

Over the long-term positive monthly returns out number negative monthly returns by around 2 to 1.

However as you can see, the S&P 500 Index has greatly outperformed the S&P ASX 300, especially since 2008.

MU v THS 0-3 loss