Selector High Conviction Equity Fund Quarterly Newsletter No.64

June 2019

In this quarterly edition, we review performance and attribution for the quarter. We highlight the importance of innovation and culture within organisations and profile ResMed and Cochlear, two leading healthcare businesses. We visit Fisher & Paykel Healthcare in New Zealand and look at one of the biggest growth industries in the world today, cyber security. Photo. Selector analyst trekking through the Atlas Mountains and local Berber kids.

Selector Funds Management Limited
ACN 102756347 AFSL 225316
Level 8, 10 Bridge Street
Sydney NSW 2000 Australia
Tel 612 8090 3612
www.selectorfund.com.au

selector

Selector is a boutique fund manager. Our team, combined, have over 150 years of experience in financial markets. We believe in long-term wealth creation and building lasting relationships with our investors.

We focus on stock selection, the funds are high conviction, concentrated and index unaware. As a result, the portfolios have low turnover and produce tax effective returns.

Selector has a 15-year track record of outperformance and we continue to seek businesses with leadership qualities, run by competent management teams, underpinned by strong balance sheets and with a focus on capital management.

CONTENTS

IN BRIEF – JUNE QUARTER

Dear Investor,

Looking back on 2019, it would be fair to say that few foresaw how the events of the financial year would unfold. As we headed into the December holiday period with global markets in hasty retreat, no one would have predicted the turn of events that eventually saw our local share market close the financial year at a near twelve year high.

In a similar vein, very few gave Liberal leader Scott Morrison a chance to win the Federal Election, certainly not the bookies, but he did, securing in the process a government majority. Incoming Opposition Leader Anthony Albanese correctly identified why voters failed to back his party, *"The language used was terrible ... unions and employers have a common interest. Successful companies are a precondition for employing more workers and that is obvious"*.

While the smart money expected interest rates to rise, the market was wrong-footed with our Reserve Bank cutting cash rates to an all-time low of 1.25% (now 1%). At the same time, the U.S. Federal Reserve reversed its stated course of lifting rates, opening the door to future cuts.

It wasn't only in financial markets that the upsets continued to roll in. On the football field, Liverpool Football Club achieved the unbelievable. Overcoming a 3-0 first-leg deficit, the English based team went on to beat the powerhouse FC Barcelona 4-3 at home, thereby lifting the UEFA Champions League trophy.

As unexpected as these outcomes were, several more pressing issues remain unresolved, think the U.S.-China trade war and the U.K. Brexit saga. Much closer to home, equity investors are also grappling with challenging macroeconomic conditions, as businesses adjust to a slowing economy.

Indeed, it was a year of upsets, unknowns and the unexpected, but somehow the world has muddled on while share markets have learnt to adjust.

Internally, while we are considerate of the economic forces at play in the global arena, our investment decisions are not based on timing markets or picking turning points. Our approach is in fact far simpler; identify the businesses we want to own on a case by case basis, understand them to the best of our abilities and then be prepared to follow it through for as long as the investment thesis and financial metrics support such action.

Our long held view that the ongoing adoption of digital technologies would structurally pressure traditional business models, while keeping a lid on inflation, continues to play out. This has impacted global growth and resulted in more drastic government measures to stimulate activity across all quarters of the world.

To this end, businesses that can differentiate themselves and invest accordingly are more likely to do well over the medium term. As will become evident in the following articles, we have maintained our pursuit of management teams and business models that are striving to innovate and nurture a sustainable and ethical culture.

In this Quarterly Newsletter we discuss why innovation and culture matters, in a world subject to rapid change. We also profile ResMed and Cochlear, two leading healthcare businesses, detailing the positive impact that increasing public awareness and the adoption of digital innovation is having on each offering.

We touch on our two-day site visit to Fisher & Paykel Healthcare's New Zealand headquarters' late in June. We walked away far more appreciative of the company's extensive infrastructure investment and the depth of calibre of an executive team that has executed superbly on the company's long-term business plan.

We conclude with a look at one of the biggest growth industries in the world today, cyber security.

For the June quarter, the Fund delivered a gross positive return of **9.49%** compared to the All Ordinaries Accumulation Index which posted a gain of **7.83%**. For the financial year, the Fund delivered a gross positive return of **15.30%** compared to the Index which posted a gain of **11.04%**.

We trust you find the report informative.

Regards,

Selector Investment Team

"innovation is now recognised as the single most important ingredient in any modern economy…In short, it is innovation - more than the application of capital and labor – that makes the world go round."

The Economist

"We had three big ideas at Amazon, that we have stuck with for 20 years, and they are the reason we are successful: put the customer first, invent and be patient."

Jeffrey Bezos
Founder and CEO Amazon.com

"Innovation is solving a problem."

Mitch Lowe
Co-Founder Netflix

PORTFOLIO OVERVIEW

Table 1: Performance as at 30 June 2019*

	FYTD	3 Month	6 Month	1 Year	3 Year	5 Year	10 Year	Since Inception
Fund (net of fees)	13.37	9.05	25.71	13.37	19.04	17.43	15.81	11.61
Fund (gross of fees)	15.30	9.49	26.75	15.30	21.14	19.51	17.94	13.71
All Ords. Acc. Index	11.04	7.83	19.76	11.04	12.62	9.02	10.00	8.46
Difference (gross of fees)	4.26	1.66	6.99	4.26	8.52	10.49	7.94	5.25

Inception Date: 30/10/2004

**Performance figures are historical percentages. Returns are annualised and assume the reinvestment of all distributions.*

Graph 1: Gross value of $100,000 invested since inception

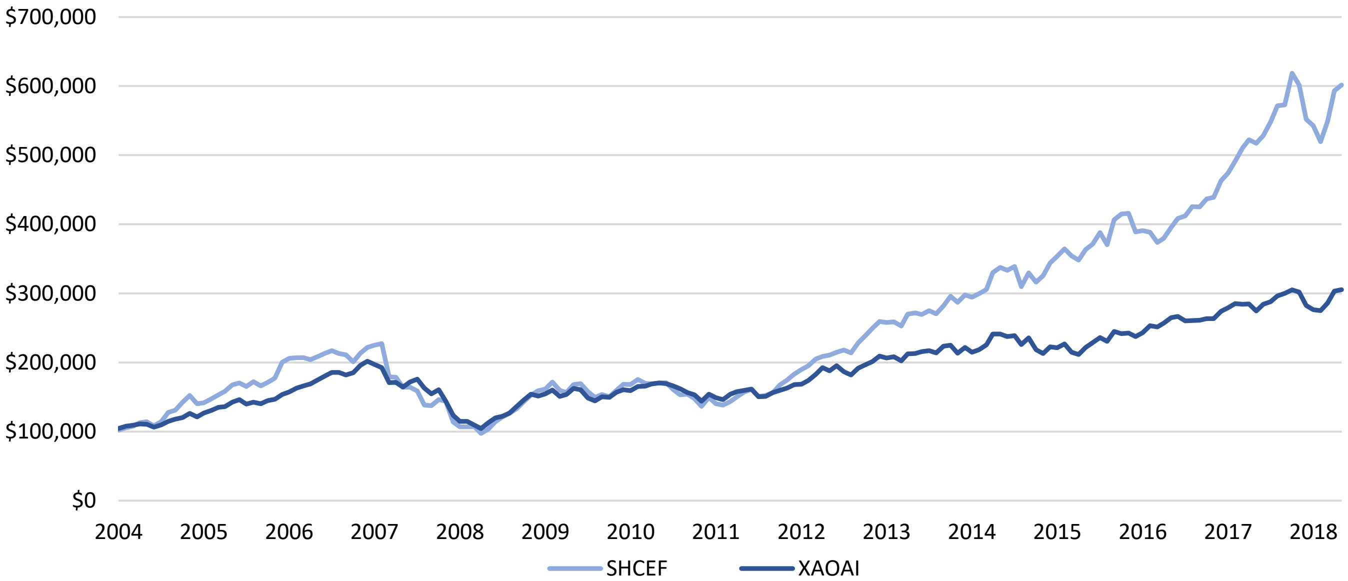


Table 2: Fund's Top 10 Holdings

Top 10 June 2019	%	Top 10 March 2019	%
Jumbo Interactive	6.37	Jumbo Interactive	7.26
Aristocrat Leisure	6.30	Altium	5.97
Altium	5.49	Aristocrat Leisure	4.89
Seek	5.11	IRESS	4.78
Cochlear	4.61	Flight Centre Travel Group	4.31
Flight Centre Travel Group	4.57	Infomedia	4.09
IRESS	4.43	ResMed	4.03
Nanosonics	4.17	Oil Search	3.97
ResMed	4.16	TechnologyOne	3.94
Infomedia	3.98	Domino's Pizza Enterprises	3.87
Total	**49.19**	**Total**	**47.11**

Table 3: Unit prices as at 30 June 2019

Unit Prices	Entry Price	Exit Price	Mid Price	Mid Price (Cum Distribution)
	$2.8962	$2.8818	$2.8890	$3.0662

***FY19 distribution total of $0.1771 per unit*

Selector employs a high conviction, index unaware, stock selection investment strategy, which typically targets 15-30 stocks for the Fund. As shown above, the Fund's top 10 positions usually represent a high percentage of its equity exposure. Current and past portfolio composition has historically been very unlike that of your average "*run-of-the-mill index hugging*" fund manager. Our goal remains focused on truly differentiated broad-cap businesses rather than the closet index hugging portfolios offered by most large fund managers.

Table 4: ASX sector performance – June 2019 quarter

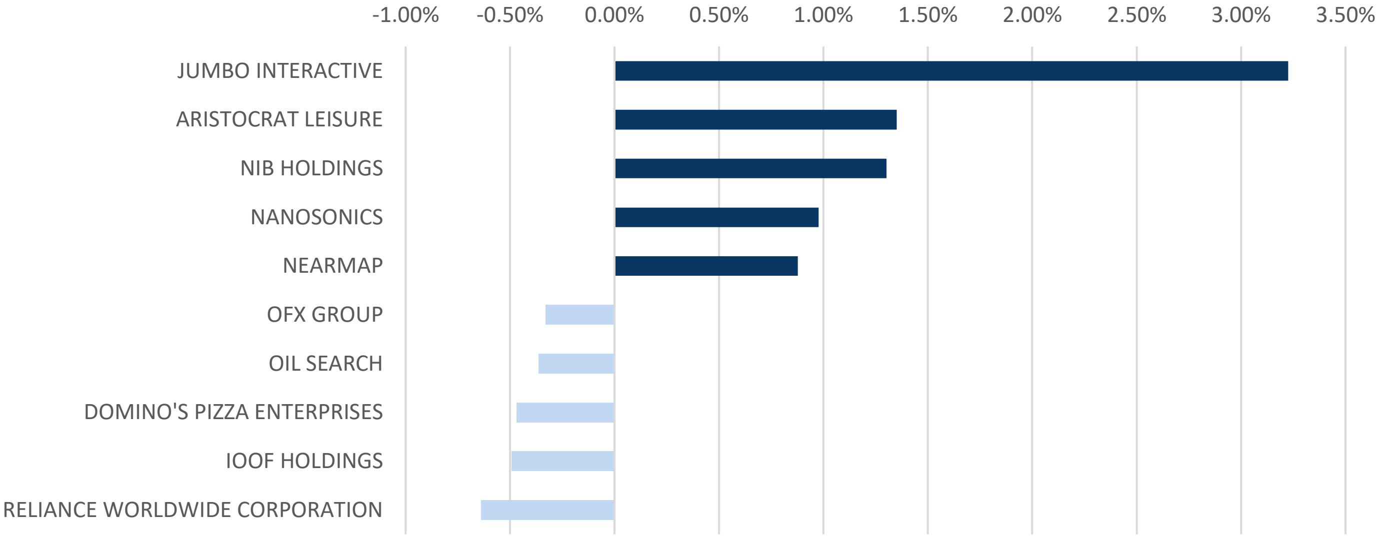
S&P ASX Industry Sectors	Quarter Performance (%)
Telecommunications	12.66
Healthcare	10.61
Financials	8.96
Industrials	7.49
Materials	7.26
Consumer Staples	5.92
Consumer Discretionary	5.19
Information Technology	3.91
A-REITS	2.42
Utilities	0.71
Energy	(0.38)

Table 5: Fund's industry weightings

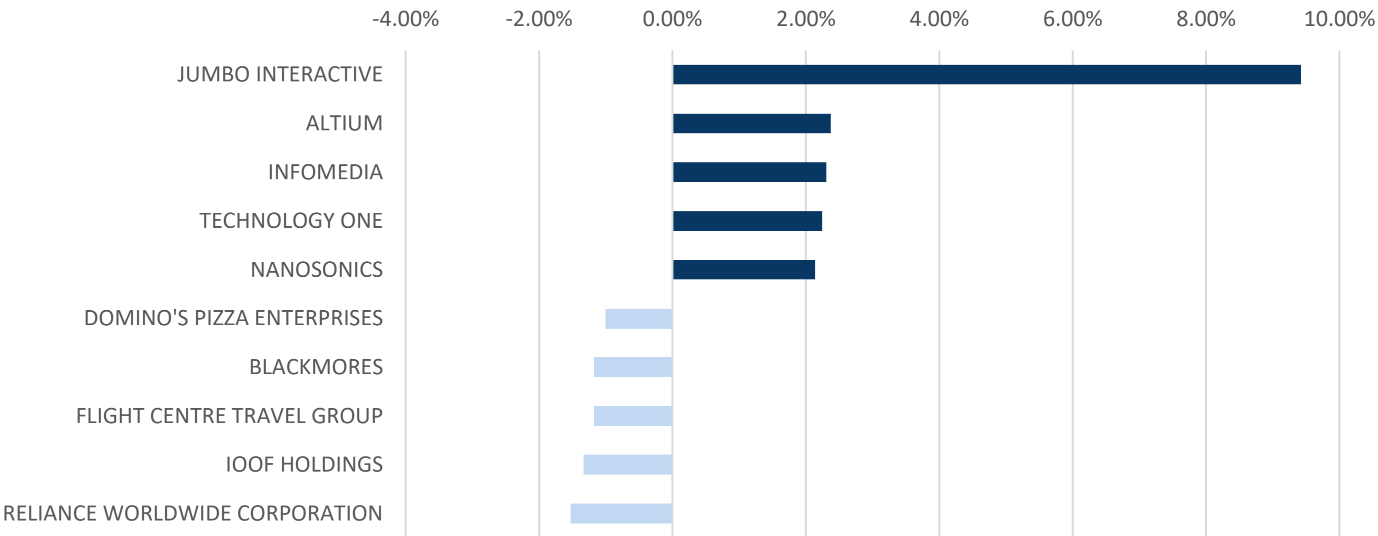
Industry group	June 2019 (%)	March 2019 (%)
Consumer Services	22.45	23.97
Software & Services	19.42	20.81
Health Care Equipment & Services	14.22	11.23
Commercial & Professional Services	8.28	6.55
Materials	6.10	5.09
Capital Goods	5.83	6.69
Diversified Financials	4.99	5.12
Insurance	3.89	3.06
Pharmaceuticals, Biotechnology & Life Sciences	3.30	3.45
Energy	3.10	3.97
Household & Personal Products	2.89	2.02
Cash & Other	2.69	4.97
Media & Entertainment	2.12	2.29
Retailing	0.70	0.80

PORTFOLIO CONTRIBUTORS

Graph 2: Contributors and Detractors – June 2019 quarter



Graph 3: Contributors and Detractors – June 2019 Financial Year



Top quarterly contributors

1. Jumbo Interactive (ASX:JIN)

In February, online lotteries retailer Jumbo Interactive presented its results for the six months to December 2018. Total transaction volumes (TTV) processed by Jumbo rose by 66% to $147.9m as a result of strong customer acquisitions and above average jackpot activity which stimulated increased spend per customer. Changes to the rules of the important Powerball game has been a key driver of the increased jackpot activity.

Jumbo collects a margin on the TTV and larger volumes pushed revenue 57.9% higher to $30.5m. More important was the operating leverage demonstrated by the business, which saw net profit before tax rise 136% to $18.2m.

For the full year 2019, Jumbo's management expects the business to deliver net profit of $24.2m, up 107% compared with full year 2018. Although the level of jackpot activity is volatile from year to year, the level of penetration of digitally sold lotteries tickets in Australia is estimated to be around 22%, well short of the level achieved in other markets around the world. The opportunity to increase digital sales of lotteries in the

Australian market alone provides Jumbo with a long runway for TTV, revenue and profit growth.

Jumbo Interactive has a market capitalisation of $1.3b.

2. Aristocrat Leisure (ASX:ALL)

Global gaming leader Aristocrat Leisure delivered a strong first half 2019 result, lifting revenues 30% to a record $2.1b. Operating profits and net profits adjusted for goodwill amortisation both rose 17% to $644m and $422m respectively.

To appreciate the significant progress the company has made over a relatively short period of time, it's worth reflecting that the group generated revenues of $847m and net profits of $120m in full year 2014. In the intervening years, strong organic growth and several important acquisitions have propelled the business forward. The group's issued capital has remained unchanged at $638m, leaving the use of debt and internal cash flows as the means of funding this growth.

While net debt has risen to the current level of $2.4b, the strong and recurring nature of income earned has provided the business with ample manoeuvrability, with debt cover sitting at 1.6x of operating profits, having peaked at 2x full year 2018. If we assumed that participation gaming operations and digital revenues generate relatively *"sticky"* and recurring income streams, more than 75% of revenues and a higher percentage of profits would be predictable. While this doesn't diminish the need for games to remain relevant and popular, it provides the company with higher levels of earnings predictability and the confidence to invest over the medium to long term.

On this point, the level of annual investment is considerable. In total, the group outlaid $397m during the first half, which included design and development expenditure ($244m) and user acquisition (UA) costs ($153m) associated with its digital business. In addition, capital expenditure totalled $150m. As such, the business generated $2.1b of revenue and net profits of $422m, after fully expensing $397m of investment in the first half. Management have noted that the business has an earnings skew to the second half, implying a strong full year profit outlook.

This level of investment is directed towards expanding the company's addressable market into two key segments. The first is the traditional land-based market, where gaming units are installed in venues. By 2020 the company will be competing in 96% of the outright gaming product segment (one-off sale of gaming units) and 80% of the recurring machine market (continue to receive a daily fee per machine based on the number of units on the venue floor).

In Digital, Aristocrat has begun to expand its coverage along a similar path. In 2014, following its first foray into Digital, the addressable market open to Aristocrat was circa US$2b. Today, the acquisitions of Plarium and Big Fish have opened digital market segments that total an additional US$30b opportunity.

The company is currently enjoying strong market share growth in an otherwise flat and competitive market. This success is a direct by-product of the investments made in earlier years and the conservatism that prevails within the management team. Importantly, under the leadership of CEO Trevor Croker, the investment thesis continues to support a long-term approach.

Aristocrat Leisure has a market capitalisation of $18.5b.

3. NIB Holdings (ASX:NHF)

Following a period of share price weakness, reflecting the potential of the Labor opposition forming government, the subsequent re-election of the Liberal Government drove an immediate and positive share market response. With healthcare premium rises remaining a pressing issue and impacting new customer policy growth, the industry is likely to experience a period of consolidation. With an 8% market share, NIB is well placed to remain at the forefront of change, led by CEO Mark Fitzgibbon and CFO Michelle McPherson. The company's mission statement denotes how this is likely to evolve towards a more *"personalised healthcare"* offering. For the full year, NIB is expected to deliver an underlying operating profit of $195m, compared to the 2018 figure of $180m, with guidance initially set at $180m at the start of the year.

NIB has a current market capitalisation of $3.5b.

4. Nanosonics (ASX:NAN)

Infection prevention specialist Nanosonics posted a robust result for the first half of full year 2019. The install base of the company's ultrasound probe disinfection devices (Trophon and Trophon2) rose from 17,740 at the end of full year 2018 to 19,310 at the end of December. Revenue from capital sales rose 11% and revenue from consumables used in the devices rose 59% compared with the prior corresponding period, now representing 60% of group revenue. As of July 2019, Nanosonics will also benefit from a change in the distribution agreement with GE Healthcare in the U.S. resulting in a material uplift in consumables revenue and gross margins.

The company has a number of tailwinds, largely as a result of the release of a raft of clinical practice guidelines worldwide which encourage or mandate high level disinfection of probes used in critical and semi-critical procedures. Penetration in the U.S., which is far more advanced than most markets, sits at 43%, while markets such as the U.K., France and Germany are all sub 5%. Recent guidelines in the U.K., Germany and France are all expected to help drive adoption.

Given the lack of practical alternatives for hospitals and clinical practices to comply with the new guidelines, we feel confident about the long-term prospects of Nanosonics.

Nanosonics has a market capitalisation of $1.7b.

5. Nearmap (ASX:NEA)

Aerial imagery group Nearmap held its Sydney Navig8 product conference during June. We joined existing Nearmap customers, as the executive team stepped through the company's product progression over the past decade.

In this time, the group's service offering has expanded from its traditional 2D aerial image offer, to 3D and the soon to be launched Artificial Intelligence (AI) dataset. The conference coincided with the official launch of 3D and a glimpse into the early beta work surrounding future AI category offerings. CEO Rob Newman described the company's evolution, noting that the introduction of both 3D and AI has fundamentally altered the business, moving from an aerial imagery business to a location intelligence company. This is reflected in the three offerings with 2D seen as an *"image as a service"*, 3D showcasing *"reality as a service"* and AI providing *"insights as a service"*.

The event also showcased the deep executive talent within the organisation, including John Corbett, Director of Vision Systems, Tom Celinski, Executive Vice President Technology and Engineering, and Mike Bewley, Artificial Intelligence.

A real focus continues to be a commitment to research and development, with a team of 80 operating within Nearmap. Listening to the presenters and attending the workshops, it became very apparent that delivering a high-quality end product, be it 2D or 3D, requires skill sets that are not easy to master. Apart from the actual camera technology, there is the processing capability and a deep understanding of the technology evolution that underpins the development at hand.

Delivering products that the customer needs is the company's primary focus and reflected in its vision, *"We change the way you view the world, so they can profoundly change the way they work"*. The group's sales team, in particular, are active in seeking customer feedback on the type of AI datasets that may prove useful. Currently, the Nearmap team have expanded the AI product set from six to over 30 and long-term management suggests it offers the greatest earnings upside to the business.

Nearmap has transformed its business model over the past decade and remains poised to finish the financial year in a cash flow break-even position. Having recently launched 3D and with AI following in quick succession, there is sufficient reason to be confident that the company's software-as-a-service (SaaS) offering will continue to generate strong growth, both locally and in an increasing number of international regions.

Nearmap has a current market capitalisation of $1.7b.

Bottom quarterly contributors

1. Reliance Worldwide Corporation (ASX:RWC)

The global leader in push-to-connect plumbing equipment, Reliance Worldwide Corporation, updated their earnings guidance for the 2019 financial year. Having guided to operating profits within the range of $280m-$290m at the beginning of the financial year, a series of outcomes, some unexpected and others planned has resulted in a new profit target of $260m-$270m.

Our reading of the detailed release from management pointed to a $20m expected reduction in earnings before interest and tax, depreciation and amortisation (EBITDA) or operating profits. While most of the EBITDA reduction is attributed to items arising during *"the general course of business"*, management provided a detailed explanation. This may have been partially prompted by the high profile exit of the former chairman Jonathan Munz and his families interests in the business.

We note that two of the six issues addressed in the release had been known to the market, including the freeze event and the product launch delays in Australia.

In terms of revenue, the freeze event represented $12m or a *"bit over half"* of the (1-3% EBITDA) impact previously disclosed to the market on two separate occasions.

Product launch delays in Australia had previously been disclosed as a revenue hit of $5m. In this release they were increased by an additional $5m-$6m, for a total revenue impact of $10m-11m.

These two issues combined, amounted to half the EBITDA downgrade or $10m of the $20m.

We would attribute the following EBITDA estimates to each area addressed by the release:

- $7m – U.S., absent freeze event
- $2m – U.S., retailers destocking
- $2-3m – Australia, delayed product
- $5m – Australia, housing starts,
- $2-3m – EMEA, exiting product
- $1m – Spain, competition

Offsetting these items, were the positive company contributions from the newly acquired John Guest business and the positive business direction in both the U.S. and throughout EMEA.

The market's strong negative price reaction following the update appeared harsh and was perhaps driven by other matters including the recent sell-down by its founder as mentioned above.

Going forward we expect the company's forecasting to become more conservative. Guidance will not include upside from potential northern hemisphere weather events, such as a freeze. The potential for a freeze event does see a natural inventory build each year, which does drive working capital up. This will be built into guidance but a potential boost to sales will not be forecast. This drives our view that future company guidance will become more conservative.

Our view remains positive on the underlying business direction and management's transparent assessment of the business with shareholders.

Reliance Worldwide Corporation has a current market capitalisation of $2.9b.

2. *IOOF Holdings (ASX:IFL)*

Fund platform and financial advice provider IOOF has endured a difficult year, following the handing down of the Royal Commission findings in the Banking, Superannuation and Financial Services Industry in February. This has resulted in adverse findings against a number of senior executives including the CEO, CFO and Chairman, instigated by the Australian Prudential Regulator Authority (APRA), which is now being contested in the courts.

The company is also awaiting a positive directive from ANZ, to approve the sale of the One Path Pensions and Investments business to IOOF. This has been deferred until a number of conditions have been met, including the appointment of a new CEO and a positive recommendation from APRA.

In June, the company announced that acting CEO Renato Mota would formally replace the group's previous CEO Chris Kelaher, who stepped down in December 2018. APRA's approval is now sought to allow the ANZ transaction to conclude, pending IOOF successfully meeting their new licence requirements.

The fallout from these events has seen the company's share price drop some 43% over the course of the year. At current levels the business is, in our opinion, substantially undervalued, trading on a PER of 9.7x and a fully franked yield of 9.3%. Pending settlement of the ANZ transaction, the company remains debt free.

While these events have impacted the company's reputation, the appointment of CEO Mota provides a welcome first step in restoring trust and building upon the group's leading position in the advice-led industry, with funds under management and advice (FUMA) of $145b as at March 2019.

The sale of the group's 70% interest in broker Ord Minnett, in late June for $115m, represents the company's clear intention to focus its activities on the group's core wealth management capabilities.

IOOF has a current market capitalisation of $1.9b.

3. *Domino's Pizza Enterprises (ASX:DMP)*

Domino's Pizza Enterprises delivered their result for the first half of full year 2019 during February which received a lukewarm reaction from the market. The group expects to deliver same store sales (SSS) growth and earnings before interest and tax at the lower end of the previous guidance range for full year 2019. SSS growth below management's targets in ANZ and France were the primary causes of the movement in expectations for the full year.

Australia and New Zealand (ANZ) opened its 700th store during the period and now operates one store for every 35,000 people in the region. Although the heady days of SSS growth in excess of 10% are over in Australia, Domino's strategy of getting closer to the customer by splitting store territories and driving faster delivery services is growing the group's fast food market share. While Domino's cut of the pizza market has increased to 43% from 35% two years ago, their share of the overall fast food market, in which they compete with the likes of McDonalds, Hungry Jack's, and KFC, only stands at 3.5%. Domino's is well placed to take advantage of burger and fried chicken fast food restaurants who are unable to provide quality delivery services to customers as preferences shift. Domino's plan to increase their store network in Australia to 1,200.

Although France was soft, Germany, Belgium, Luxembourg, and The Netherlands all performed well. What is more important for the long-term prospects of the business is the scale of individual markets in Europe. Once Germany reaches 500-600 stores (currently around 300) national marketing campaigns become much more effective, and margins will expand as corporate overheads shrink as a proportion of network sales. The dynamic in France is similar, with a critical mass of around 500 stores needed for effective national marketing campaigns. Current penetration sees Domino's operating one store for every 270,000 people in Germany and every 170,000 people in France. Both are prolific pizza eaters. The French are some of the most frequent consumers of pizza globally and Germans are heavy consumers of frozen pizza. These facts support the team's long-term store forecast of 2,700 stores in Europe, up from 1,074 today.

Japan was the standout region for the period, delivering SSS growth of 9.0%. New products and better operational execution were responsible for the growth and the higher sales have materially lifted unit profitability for both franchisees and corporate stores. Although Japanese people consume pizza less frequently than other markets, far higher population density in Japan supports a future store target of 1,000, up from 550 today.

All up, the extensive runway to increase store penetration, especially as key markets reach critical levels of scale, provides Domino's with a long runway for network sales growth. Margins will expand as the business is able to spread corporate costs and operational infrastructure over a larger store network and shareholders can expect to benefit from material increases in profitability over the long term.

Domino's Pizza Enterprises has a market capitalisation of $3.3b.

4. Oil Search (ASX:OSH)

During the year we visited Oil Search operations in both Alaska and Papua New Guinea (PNG). In PNG, Oil Search has signed a Memorandum of Understanding with the Government and progressed the brownfield expansion of its liquefied natural gas (LNG) export terminal, along with setting out the key terms of the development of the Elk-Antelope gas fields. The joint venture partners had originally aimed for the execution of a gas agreement with the Government at the November APEC Economic Leaders' meeting, but final signing took place in April 2019.

Front End Engineering Design (FEED) studies are set to start in the second half of 2019 and the Final Investment Decision is expected in the final quarter of 2020, while the first gas shipment is planned to be exported around the end of 2024.

In Alaska, the company has progressed on two fronts. Recent drilling results in acreage adjacent to Oil Search's Pikka Unit, provided Oil Search management with confidence that the resource is substantially larger than the original 500m barrel base case. Management now expect to confirm the resource upgrade from the Pikka and adjacent satellite field resources prior to the FEED decision, which is expected to take place in the second half of 2019.

Secondly, Oil Search also confirmed its election to exercise an option to double its interest in Alaskan acreage from the original Armstrong vendors. The total cost is US$450m, resulting in the company retaining a 51% share in the Pikka Unit and the Horseshoe Block, with partner Repsol holding the balance of 49%.

The original Oil Search plan was to exercise and onsell a material percentage of the Alaskan acreage to new partners. However, this was suspended following Repsol's decision to delay its participation in the sell down, until the appraisal drilling was complete. Oil Search now expects to complete the sell-down by mid-2020, following completion of the 2019-20 drilling program.

Importantly, the company is now targeting first production in 2022 through a 30,000 barrels of oil per day (bopd) early production system. This will be utilising the existing capacity of an adjacent operator, before shifting to the company owned 120,000 bopd facility, commencing in 2024.

Oil Search has a current market capitalisation of US$10.9b.

5. OFX Group (ASX:OFX)

Money services bureau (MSB) provider OFX Group reported full year results for 2019 during May. The company led by CEO Skander Malcom has been making steady progress over the past few years, building capabilities in key product offerings and scaling existing operations in the U.S. and Asia. For the year, total transaction turnover rose 12% to $23.8b, highlighting the significance of the operation. Fee income margins have remained relatively stable at circa 0.55%, giving rise to annual fee and trading income totalling $128m. A tight and disciplined rein on costs saw operating profits rise 8% to $32.2m and underlying net profits increase 12% to $21m.

The group continues to broaden its offering, with corporate customers a key focus. This is an avenue of the market that is underserviced and substantially more profitable due to the need of small and medium sized enterprises (SME) to transact on a more frequent basis. By way of comparison, management highlight that an individual using the services of OFX would typically transact six times over a three-year period, with average transaction values of circa $16,700. In contrast, SME's would carry out 40 transactions over the same time frame, with average values of $24,700.

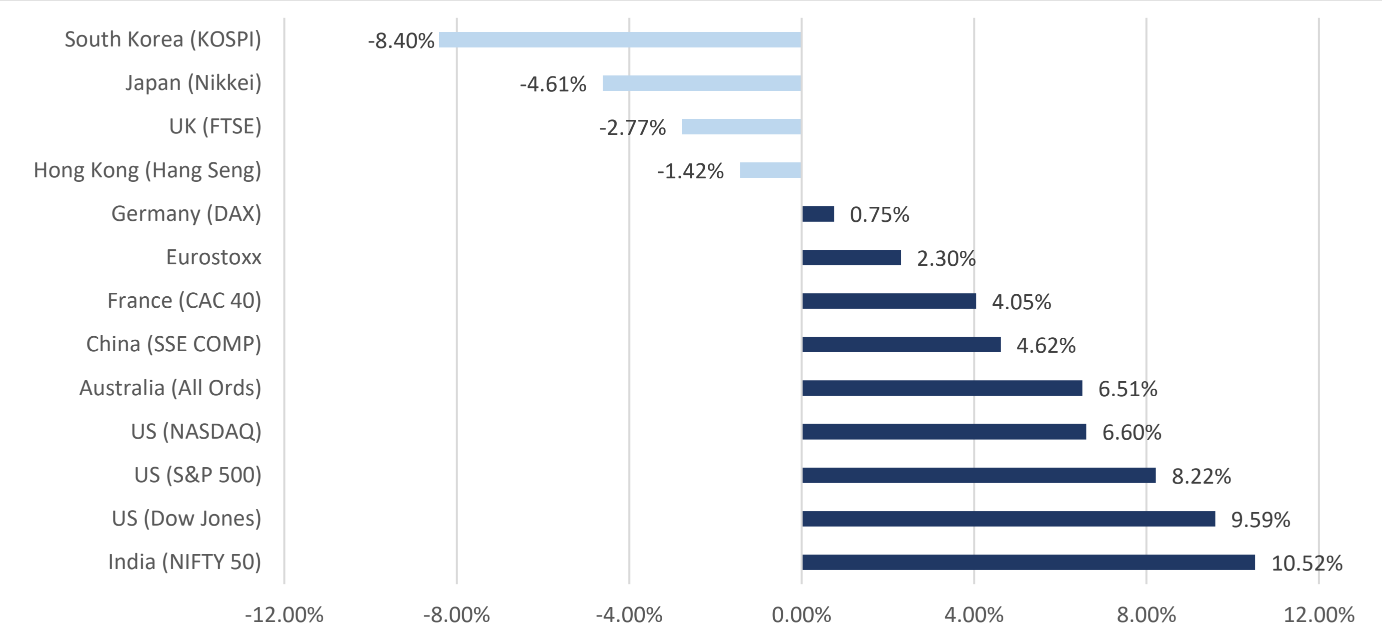
The company's Net Promotor Score (NPS) continues to improve, lifting from 60 to 67. This is an important barometer of the progress being made and is a leading indicator of the group's service offering and product recognition in a highly competitive market. Management confirmed the group's banking relationships remain strong, having exited from its most recent update, describing them as the *"Best ever regulatory and bank review outcomes"*.

The company ended the period with net cash of $58m, while dividends were lifted by 9% to 5.88 cents per share.

OFX Group has a market capitalisation of $336m.

MARKET INSIGHTS AND OBSERVATIONS

Graph 4: Global Equity Indexes Annual Returns to 30 June 2019

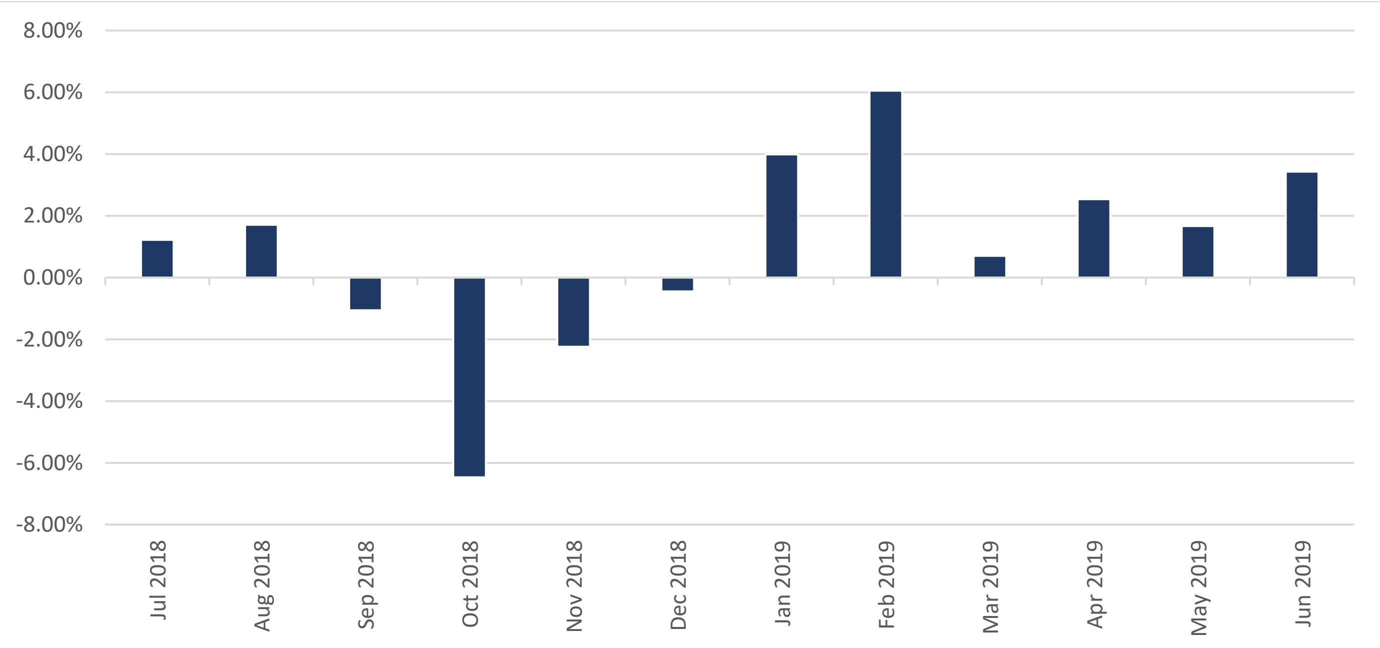


Source: IRESS Market Technologies

As shown in Graph 4, the strongest performing share indexes over the past financial year have been the U.S. and Indian markets. The U.S. has performed particularly well considering the ongoing trade wars and growing concerns of an economic slowdown.

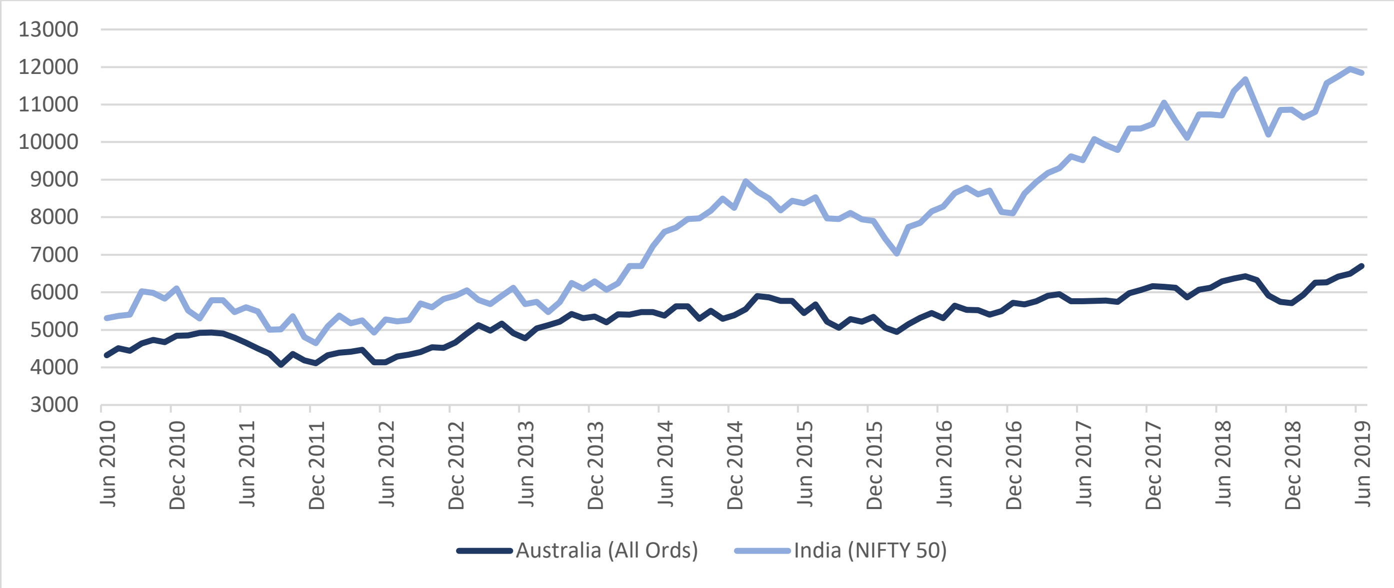
Likewise, the Australian market delivered a solid result while facing similar economic and political concerns. This was a story of two halves, as shown in Graph 5, with the Australian All Ordinaries Accumulation Index recording a 19.8% return in the second half, offsetting a weaker first half.

Graph 5: Australian All Ordinaries Accumulation Index Monthly Returns for 2019 Financial Year



Source: IRESS Market Technologies

Graph 6: Indian NIFTY 50 and Australian All Ordinaries Indexes Since June 2010



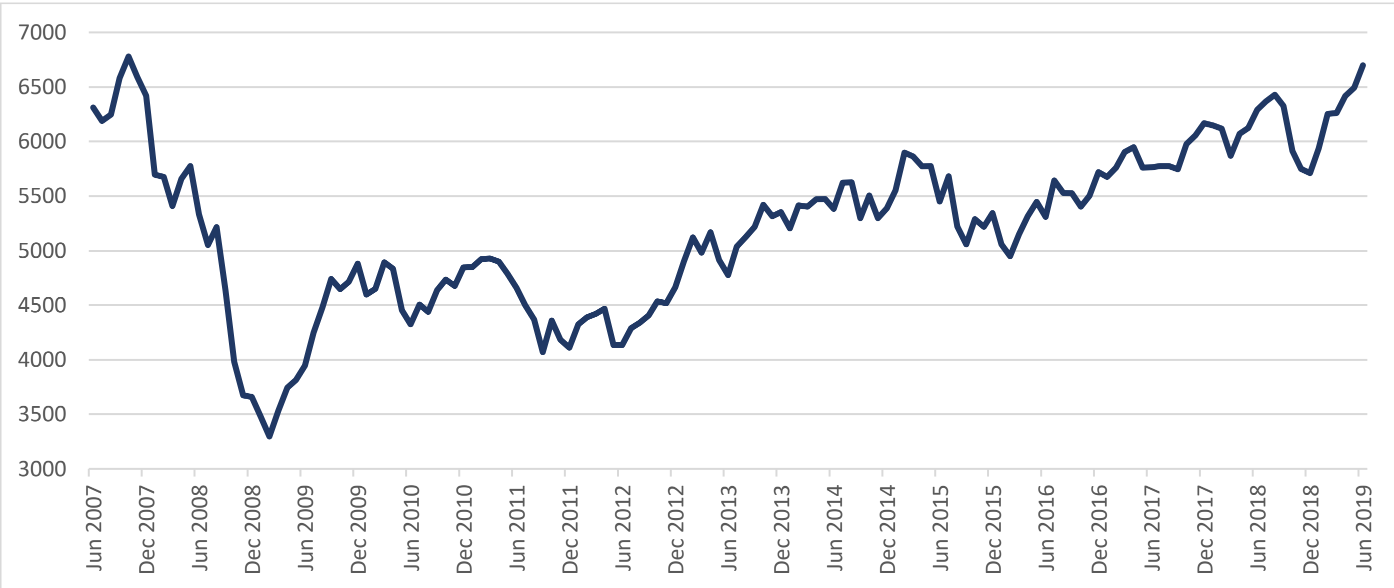
Source: IRESS Market Technologies

Graph 6 compares the Australian All Ordinaries Index to the Indian NIFTY 50 Index, being the strongest performing market we considered. Projected to be the largest country by population in 2024, India is home to more than 1.3b people and is the world's fastest growing major economy, having surpassed China in 2014. Recording the seventh largest nominal Gross Domestic Product (GDP) of $2.7t in 2018, India has experienced rapid growth with its GDP doubling since 2009.

While the Australian and Indian share markets have followed a similar trajectory, they have experienced a different magnitude of performance. The Australian All Ordinaries Index has risen by just under 55% to 6,699 since June 2010, while the Indian NIFTY Index has more than doubled to 11,841 from 5,313.

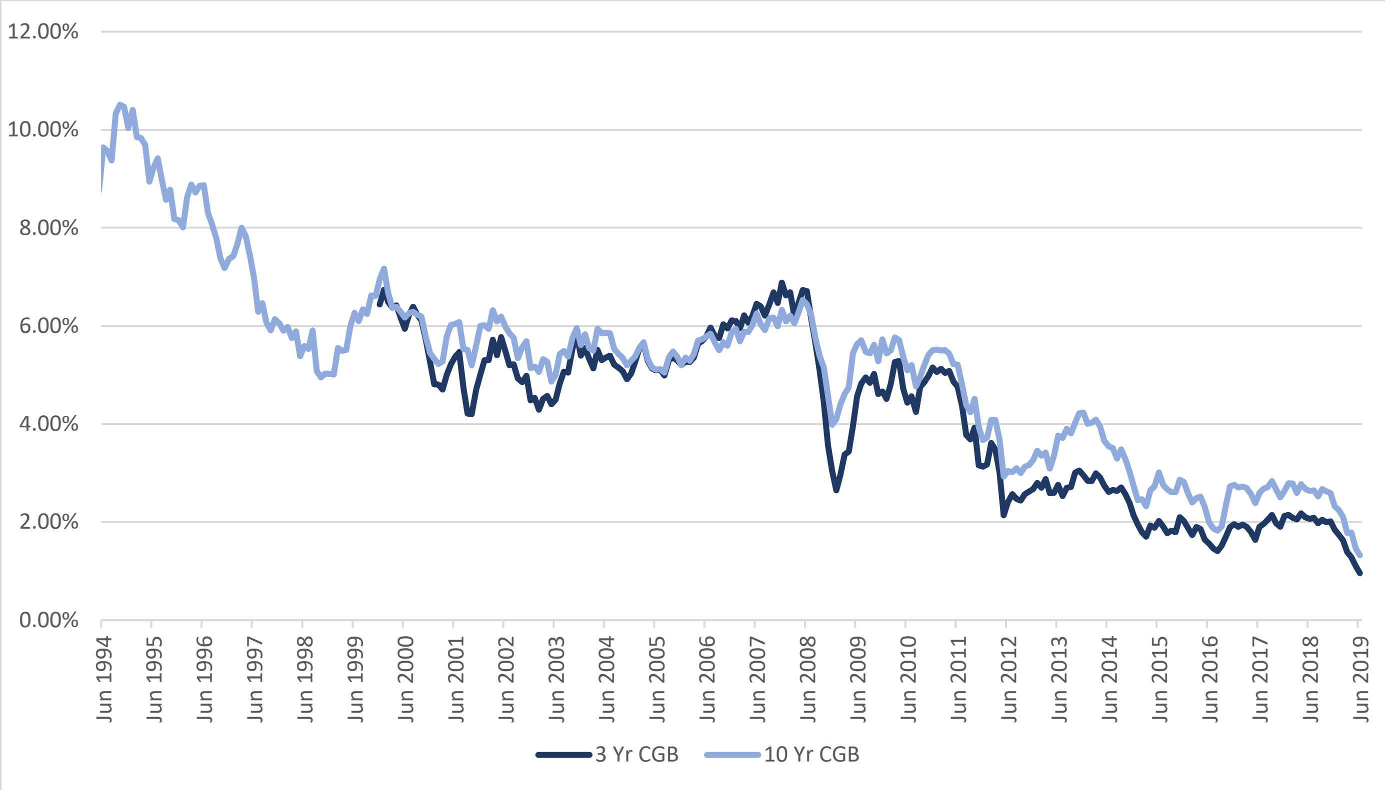
The Australian All Ordinaries Index has yet to return to the all-time peak of 6,873 reached in 2007, although it finished the financial year strongly as reflected in Graph 7.

Graph 7: Australian All Ordinaries Index June 2007 – June 2019



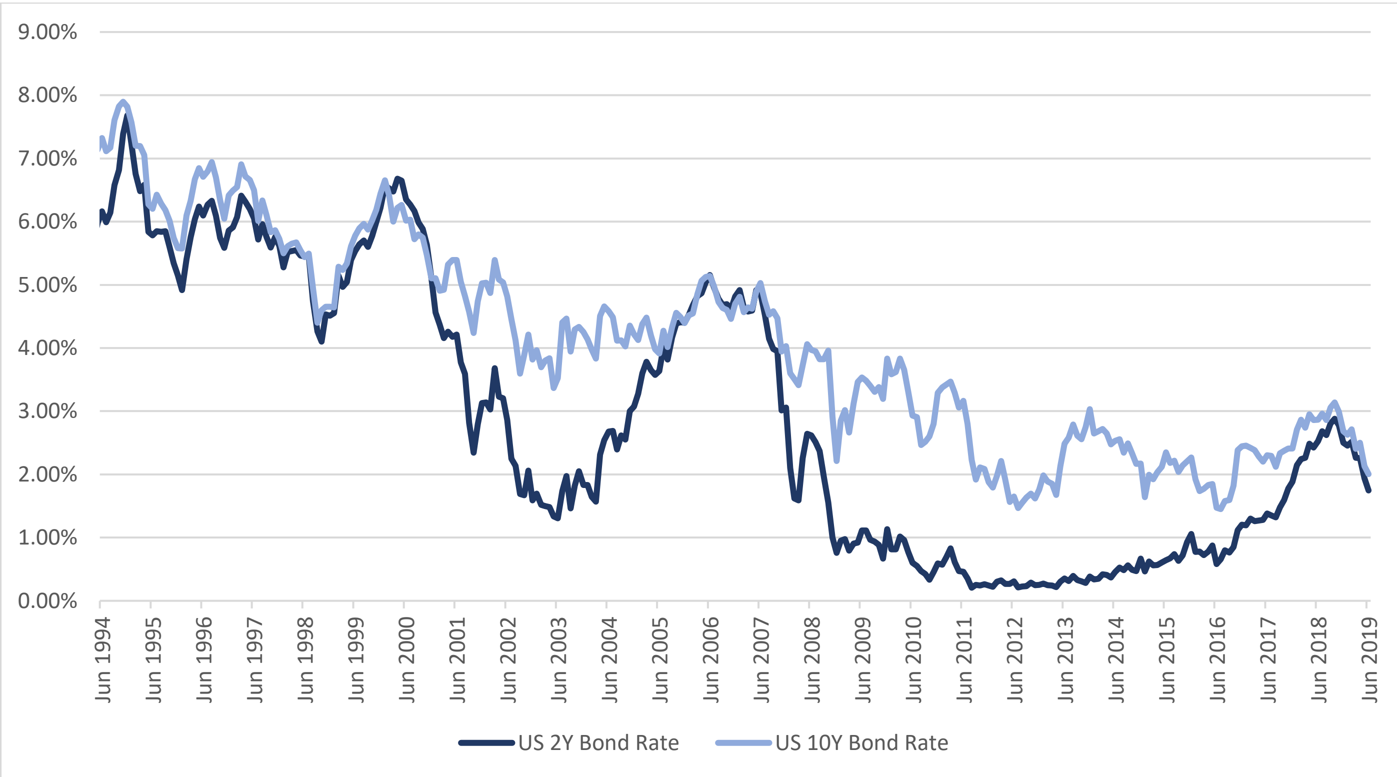
Source: IRESS Market Technologies

Graph 8: Australian 3 year and 10 year Commonwealth Government Bond Rates (FY1995 - FY2019)



Source: IRESS Market Technologies

Graph 9: U.S. 2 year and 10 year Bond Rates (FY1995 - FY2019)



Source: IRESS Market Technologies

The official cash rate (or Federal funds rate in the U.S.) is the interest rate set by the central bank at which depository institutions lend reserve balances to other depository institutions in the short-term money market. Central banks set and control this rate to assist in meeting economic objectives such as managing inflation and unemployment targets.

During the Global Financial Crisis (GFC), central banks acted quickly to reduce the cash rate in order to stimulate economic activity and minimise the fallout from the global credit crunch. Many countries, such as the U.S., progressively cut their cash rate to near zero. It was expected that as economic activity recovered, these rates would normalise and lift from historic lows.

In 2016, the U.S. Federal Reserve began to incrementally increase the Federal funds rate from the low of 0.25% to its current rate range of 2.25%-2.50%. In Australia, our Reserve Bank cut rates to an *"emergency"* low of 1.5% in August 2016. In May 2019, the Reserve Bank moved for the first time in almost three years, cutting the cash rate by 0.25% to a historic low of 1.25%.

Comparing short and long term bonds, as depicted in Graph 8 and Graph 9, can provide insight into the expectations of investors in relation to future economic activity. Generally, bonds with a greater time to maturity (10 years or more) offer higher yields than short-term bonds because they are deemed riskier when time is considered. Short-term bond yields are typically lower than long term bonds yields, referred to as a normal yield curve that displays an upward slope.

When the yields for short and long-term bonds converge, this has historically served as an early warning indicator of an impending economic slowdown. Graph 8 and Graph 9 reflect both the Australian and U.S. short and long-term both yields converging. The recent decision by our Reserve Bank to cut the cash rate highlighted the risk of such an outcome while the U.S. Federal Reserve is yet to move. ***SFM***

INNOVATION + CULTURE = SUCCESS

"A disciplined, long-term commitment to reinvestment challenges a company's relevance and encourages sensible risk-taking."

(March 2018 Quarterly Newsletter)

Co-founder and CEO Mike Cannon-Brookes of Sydney start-up and Nasdaq-listed Software-as-a-Service (SaaS) provider Atlassian, is a big believer in reinvesting. So much so that the US$28b company is spending a large portion of its revenues on research and development (R&D). In the group's recent March quarter earnings release, R&D amounted to 36% of revenues, equivalent to US$110m of their US$309m in earnings.

His reasoning behind this is simple and compelling; it works. Consistent top line revenue growth is driving improved gross profits, leading to excess cash flows. The company's SaaS offering is resonating with customers, with 144,038 organisations now registered and spending at least US$10 per month on the Atlassian service.

Given such success, there is little desire inside the Atlassian camp to change their winning formula. R&D lends itself to customer-centric innovation, by improving a company's product usability or service offering, and assures businesses don't fall into the trap of standing still, which in this day and age can be fatal. Nothing demonstrates this better than how the shift to online has fundamentally altered the way business is carried out.

When we kicked off our funds management operation in 2003, we watched our dollars closely. Yet it was hard to get the basics of business in place without sinking in some decent capital. As Cannon-Brookes is keen to point out, starting a new venture in this day and age has never been easier. The majority of tools required to set up shop can be obtained freely online, and combined with convenient mobile access and cloud computing capabilities, the task of starting and building a business is now more accessible and far less expensive.

It's a market that Atlassian is keen to exploit, since start-ups using the company's free software version might convert organically, once their own business grows, to larger customer paying organisations. This emphasises why a commitment to a long-term reinvestment program is necessary. The threat to the company will arise if it stops innovating, believing that less in upfront investment will deliver more down the track.

The message from Cannon-Brookes is one that should resonate throughout the investment and business community landscape. If a business that didn't exist 17 years prior can go on to deliver the level of growth and success that Atlassian has so far achieved, it should be a wakeup call to all and sundry. This is not because Cannon-Brookes is overseeing something so unique or special within his company. Instead the very foundations the company has been built on, with the flexibility to grow and evolve, puts traditional business models at risk of not being able to keep up.

The advent of technology and increasing adoption of digital is creating new revenue streams and breaking down traditional barriers. Online has now become commonplace. If you look within your own business or personal circumstances it becomes glaringly obvious how much things have changed. In our business alone, we have switched from fixed phone lines to mobile devices, letters to emails and previous paper-based documents are now largely stored on the computer or in the cloud.

In a more broader sense, the economic model is shifting from a pay-per-product model to one that is user and subscription based. Think Foxtel and Netflix all the way to cloud storage, mobile phones, music downloads, toll roads and newspapers. The list is substantial and growing.

In the opening section of our Quarterly Newsletter we introduced some quotes, ones which we deem relevant and carry some weight. While *The Economist* is known for having strong views, their message on innovation gets our vote.

Success is not always easy to measure and the duration is difficult to gauge, but founders Jeffrey Bezos of Amazon and Mitch Lowe from Netflix are both well versed in innovation. Lowe describes it as solving a problem and Netflix has achieved exactly that, making the task of ordering movies simpler and in the process more cost effective. It has inevitably solved a consumer problem, but in the intervening years failed many times.

Equally, Bezos has exceeded the expectations of many. So, what is his recipe for success? Namely, put the customer first, invent and most importantly, be patient.

Innovation requires change and it succeeds when the culture of the organisation is up for the challenge. These two undeniably go hand in hand and whilst it all sounds perfectly sensible and simple in theory, the truth is in the execution, made all the more difficult when the differing views of external owners need to be satisfied.

Cannon-Brookes is unrepentant on bowing to shareholder pressure to reduce research and development spend, *“You won't see that R&D line change. We're up to 144,000 organizations using our products but there's still a long way to go...we need to keep looking for opportunities and growth.”*

Shareholders by and large all want success, but not all are prepared to entertain Bezos' third requirement of exercising patience. Dealing with setbacks or even failure is not what investors sign up for, although in truth that is very much the reality.

Choosing to exit an investment at times of disappointment may seem like the right course of action, but applying such a blunt approach often does more damage than good. Similarly, a business that does exceedingly well will promote a chorus of opinions to take action. In many ways it is one-dimensional thinking. Businesses evolve and the reasoning behind whether to stay or go should extend well beyond a company's valuation at a given point in time.

That said, our industry thrives on such decision making endpoints. Company analysts at the major investment broking houses undertake rigorous research, giving rise to valuation outputs. They get there by plugging in all manner of numbers, business assumptions and industry trends stretching across multiple years. What follows is a share price target. Many fudge their numbers so that the target price is disconcertingly similar to the current share price of a business under review. Overshoot and the stock is a sell, underperform and it becomes a buy. If investing was ever that simple.

The truth is, there is no one-size-fits-all approach. Investing successfully is not easy and the valuation itself forms only one aspect of our decision making process. If we were to reflect on our own big wins over the years, what is most striking is how we got our initial timing wrong but ended up on the right side because the business thesis stacked up. It's an important aspect of investing, and one so often overlooked or more specifically, under-appreciated.

The ideal business is continuously evolving, where building blocks are in place but the future is less assured. In fact, management teams that tell us they have a plan but don’t have all the answers fill us with confidence. It's an honest assessment, an approach that is more grounded and one where the fear of failure is never far away. It also explains why understanding the customer and their concerns is the most important business metric.

Innovation holds the key. CEO Cannon-Brookes maintains the heavy R&D spend to remain relevant and provide scope to pivot if necessary. His description is about driving incremental sales that *“move in waves”.*

At enterprise software provider TechnologyOne, CEO Edward Chung describes the heavy R&D investment profile undertaken as *“pulling threads”*. In 2019 the company is looking to invest close to $60m in R&D, or around 22% of total group revenues. Over the past five years, the firm has invested over $200m in *“pulling threads”*. What has evolved is a company shift to the current SaaS daily revenue model, no longer reliant on selling traditional on-premise lump sum contracts. In the process, the company is addressing the needs of a changing business environment, whereby the customer is at the core and digital is the medium of delivery.

This was exhibited at TechnologyOne's Showcase product conference held in Sydney in June, where CEO Chung provided context around the company's product and service evolution. The shift to SaaS is illustrative of the important role of R&D and while SaaS revenues are now growing strongly and projected to continue, it has been many years in the making.

A similar message was echoed by aerial image capture provider, Nearmap with the unveiling of its newest product offering in June. With Nearmap 3D, customers can stream and export 3D imagery on demand through the company's web application MapBrowser.

Executive Vice President of Product at Nearmap, Tony Agresta stresses the importance of innovation as the backbone of the company, *“Product innovation is in our DNA. Everything we do has the customer at the core. Our* *customers' worlds are evolving every day. We need to keep innovating to continue to give our customers a competitive advantage through technology breakthrough such as those that we're launching today. Nearmap 3D is the result of a significant investment in R&D, but also listening to our customers and what they need to transform the way they work."*

It's an idea that seems to run true across a host of other businesses held by the Fund, including Aristocrat Leisure, Cochlear, CSL, ResMed, Fisher & Paykel Healthcare, Nanosonics, Altium, Reece, Reliance Worldwide Corporation, Seek, Jumbo Interactive and IRESS. In our March 2018 Quarterly Newsletter we profiled a number of these businesses under the article *'Reinvestment'.*

At the time we wrote, *"Reinvestment of a company's retained earnings, to extend or build future revenue streams, is a business quality we seek in any investment under consideration. Strictly in financial terms, the long-term benefits that flow from reinvestment are difficult to measure and are therefore often under-appreciated by investors. Management that follow this strategy are not guaranteed success. Indeed, the most conservative and our preferred approach is that all research and development (R&D) costs be fully expensed. This approach penalises investors in the short run since reported profits will be lower. To be frank, that's how it should be. While nothing is certain in life or business, change is constant. A disciplined, long-term commitment to reinvestment challenges a company's relevance and encourages sensible risk-taking. As an outcome, the financial rewards are thereby measured in years rather than months."*

At a time of increasing competitive activity and concerns of slowing global growth, our conclusion more than a year ago still rings true today, *"These are significant dollar commitments, with the purpose of improving today's products whilst pursuing newer revenue streams. As noted earlier, simply spending money on R&D doesn't guarantee long-term success but without it, a company's long-term competitive position is severely weakened. So next time you are assessing the prospects of a business, don't consider the profits in isolation from the ongoing reinvestment required. It may be recorded as a cost in the financial accounts today, but the very future of that business and what an investor is willing to pay should depend on it."*

Cannon-Brookes and executives like him are encouraging a shift in the investor mindset, one which promotes and cultivates a culture of long-term thinking. It deserves our full attention because it fundamentally drives the right corporate responses of our leaders to view reinvestment and innovation not as cost, but as a necessary requirement for continued success. ***SFM***

RESMED INC.

The ResMed business is valued by the market at US$14.6b. In a period spanning 30 years, the company that commercialised the first successful non-invasive treatment for Obstructive Sleep Apnea (OSA) is now breaking new ground, by catering for the digital needs of patients and healthcare providers.

Short background

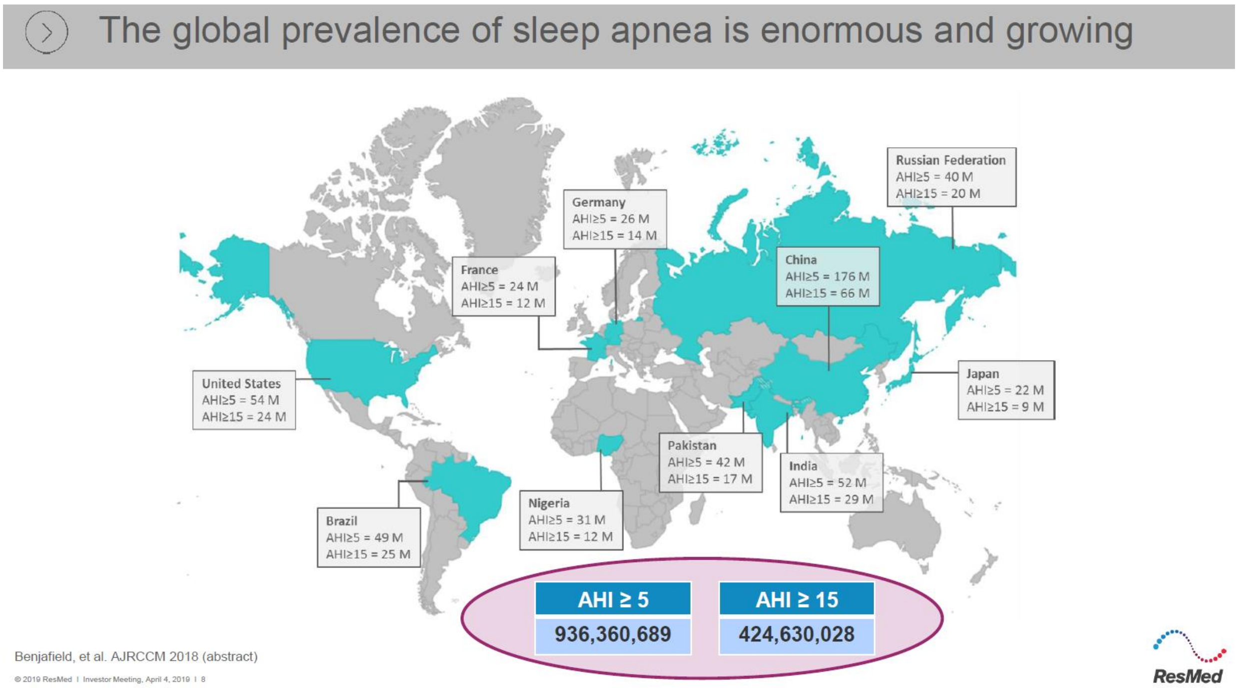
The company is led by CEO Michael Farrell, a role he has held since 2013. He joined the company in 2000 and served as the President, Americas from 2011 to 2013. His appointment followed the stepping down of founder and previous CEO Peter Farrell. As is apparent from the surname, Michael is in fact Peter's son. While initially wary of public companies anointing family members in key roles, sufficient time has since passed for one to make a judgment call. To this end the management team, led by its CEO, have executed the business case well, maintaining global leadership coupled with a strong financial scorecard.

Selector have held an investment in the company for well over a decade. We have written about its progress in the past and the September 2012 Quarterly Newsletter, specifically provides a useful reference point. Importantly, the company's ability to lead an industry that quite frankly didn't exist until Peter Farrell took it upon himself to further the work that inventor, Professor Colin Sullivan had undertaken, and Baxter Healthcare continued, serves to underscore the company's consistent focus.

In 1989, having established ResMed, short for *"Respiratory Medicine"*, Farrell set about commercialising his Continuous Positive Airway Pressure (CPAP) prototype device. The company listed in 1995 and over the ensuing decades focused almost exclusively on interrupted sleep, or more precisely the lack of healthy sleep.

Sleep Disorder Breathing (SDB) describes the condition where a patient experiences abnormal respiratory patterns, including insufficient ventilation during sleep. In short, it's when a patient stops breathing for a period of 10 seconds or more. Figure 1 illustrates the global prevalence of sleep apnea. The Alpha Hypopnea Index (AHI) measures the degree of sleep apnea. Episodes occurring 5-14 times per hour are viewed as mild and more than 15 episodes are considered as moderate to severe. In this context, there are estimated to be 936m mild to severe apnea suffers and within that, 424m moderate to severe patients.

Figure 1: Sleep apnea global prevalence

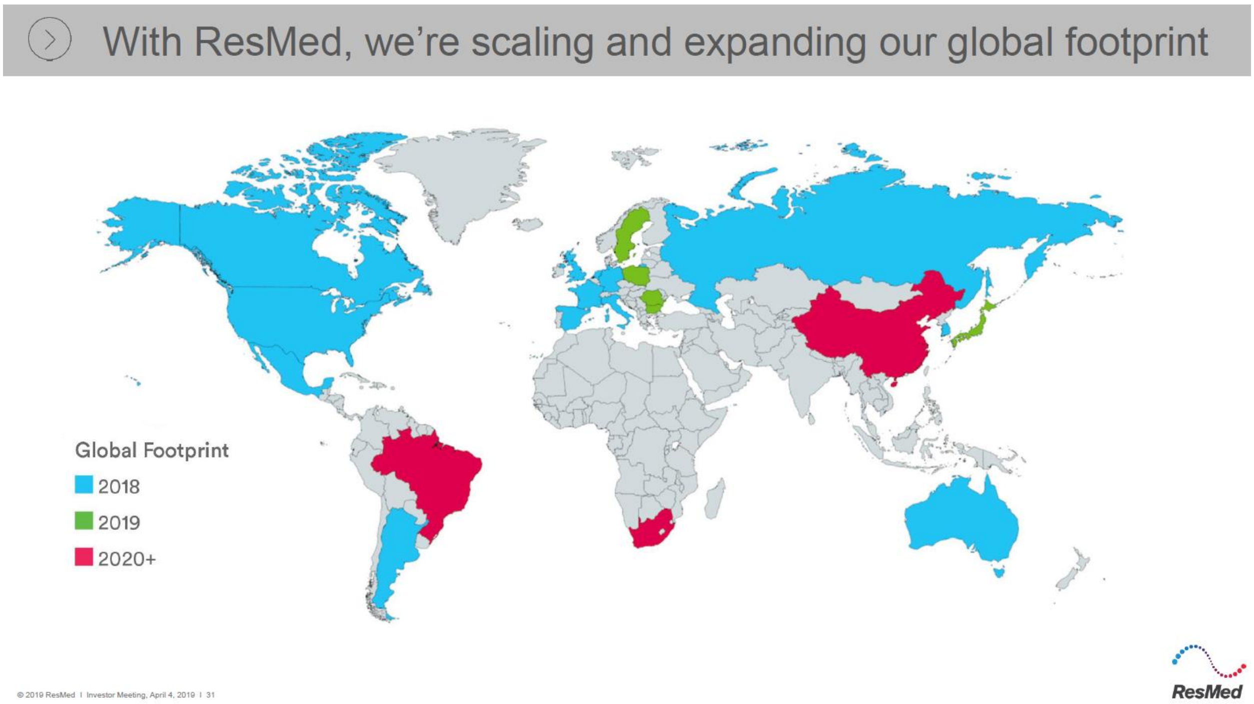


Source: ResMed investor meeting April 2019 presentation

Left untreated SDB not only results in poor sleep outcomes for the patient but can also contribute to long-term health implications, including diabetes, stroke and heart disease. When its impact could be so profound, it is little wonder the company has steadfastly focused on expanding its product and service offering globally, as highlighted in Figure 2.

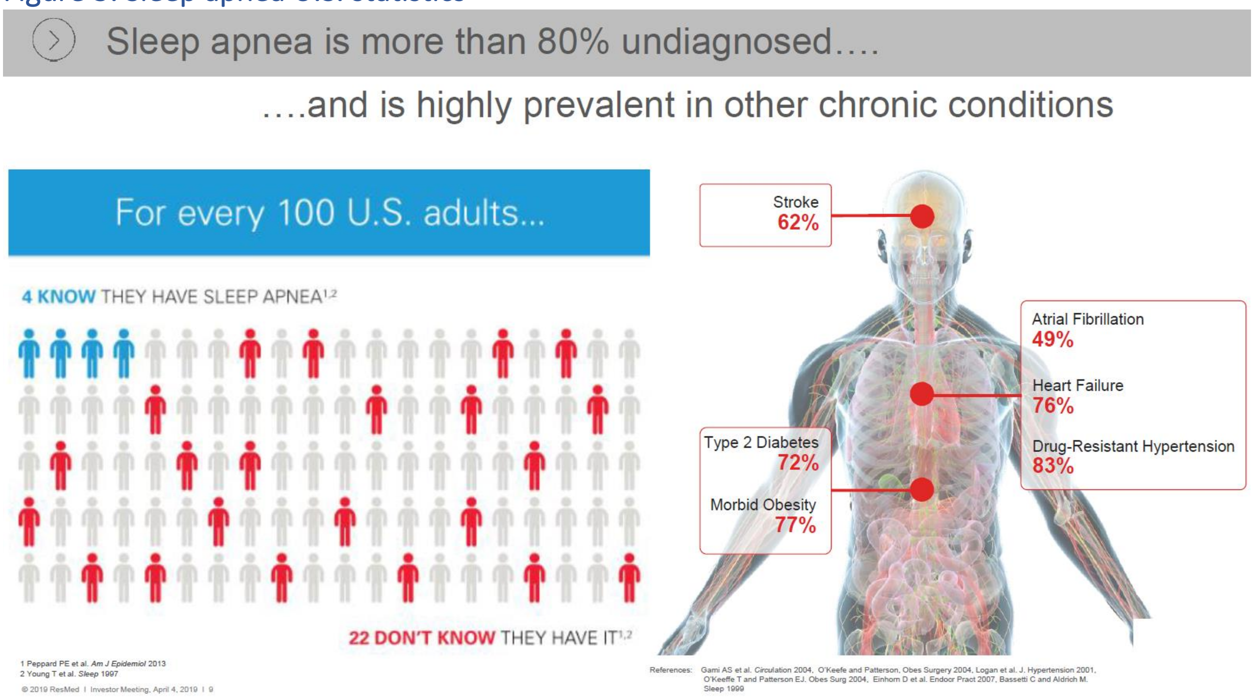
The most common form of SDB is OSA, characterised by repetitive upper airway collapse during sleep. In the U.S., the latest data suggests that some 25% of men and 10% of women suffer from OSA. Despite its prevalence, Figure 3 demonstrates the disease remains largely undiagnosed, with more than 80% of sleep apnea patients unaware of the condition.

Figure 2: ResMed global footprint



Source: ResMed investor meeting April 2019 presentation

Figure 3: Sleep apnea U.S. statistics



Source: ResMed investor meeting April 2019 presentation

Financial Progress

Table 6 below highlights the company's financial progress since 2013. At a high level the numbers are all pointing in the right direction, with growth in revenues and gross profits reflecting the increasing prevalence and subsequent treatment of sleep apnea patients. This treatment takes the form of flow generators that allow the delivery of pressurised air, typically through a nasal mask, to prevent the collapse of the upper airway.

Advancements in technologies have also resulted in quieter flow generators and more comfortable masks. The group's primary role continues to be that of a developer, manufacturer and distributor of medical equipment for diagnosing, treating and managing SDB. However, product innovation and retaining industry leadership remains critical to future success. To this end, the ResMed business model is now pivoting to include digital services.

CEOs – capital allocators

Since 2016, ResMed have undertaken a series of acquisitions that augment the company's long-term vision of driving increased awareness and treatment of sleep apnea patients. In doing so, management have outlaid a serious amount of capital to execute on this plan. However, before we expand on these points, some reflection on the role of the CEO is worth discussing.

In his book, The Outsiders, author William Thorndike Jr. discusses what makes a great CEO. From his analysis, Thorndike uncovers what he terms, *"Eight unconventional CEO's and their radically rational blueprint for success."* Many cite Jack Welch, who ran General Electric for twenty years from 1981 to 2001, as one of the greatest CEOs in the past 50 years.

However, Thorndike's approach to CEO greatness points to others. In reaching that conclusion, Thorndike focused on the need to more precisely measure a CEO's ability; a single metric that captures the essence of greatness. Simply comparing growth in revenues and profits, as some are naturally inclined to do, would miss the point entirely. Instead Thorndike argues that, *"It's the increase in a company's per share value, however, not growth in sales or earnings or employees, that offers the ultimate barometer of a CEO's greatness. It's as if Sports Illustrated put only the tallest pitchers and widest goalies on its cover."*

In achieving such success, great CEOs were recognised as being masters of both managing operations and allocating capital. Yet according to Thorndike, very few CEOs understand the importance of this role or are prepared for the task. As he outlined, *"CEOs have five essential choices for deploying capital, investing in existing operations, acquiring other businesses, issuing dividends, paying down debt or repurchasing stock and three alternatives for raising it, tapping internal cash flow, issuing debt or raising equity. Think of these options collectively as a tool kit. Over the long term, returns for shareholders will be determined largely by the decisions a CEO makes in which tools to use. Essentially, capital allocation is investment and as a result, all CEOs are both capital allocators and investors. In fact, this role just might be the most important responsibility the CEO has and yet despite its importance there are no courses on capital allocation at the top business schools."*

In short, what Thorndike lays out in his book, is the importance capital allocation plays in the long-term success of a business. In turn, a shareholder's ability to thrive rests heavily on how well CEOs allocate such capital.

The digital age

What makes the task of allocating capital challenging is in anticipating what path to take. ResMed have been steadfast in building a better business, and their commitment to research and development has now positioned the company as leaders in their field.

They have in turn been good stewards of shareholder capital. Table 7 is illustrative of this. Having delivered both top line and bottom line growth along with real earnings per share performance, ResMed have largely avoided the need to raise debt while paying out excess funds to shareholders via a regular stream of quarterly dividends.

We have focused on the period from 2013 to 2019 in providing a short-term perspective on key outcomes. However, the performance is equally impressive if one looks back over a decade, as illustrated in our September 2012 Quarterly Newsletter.

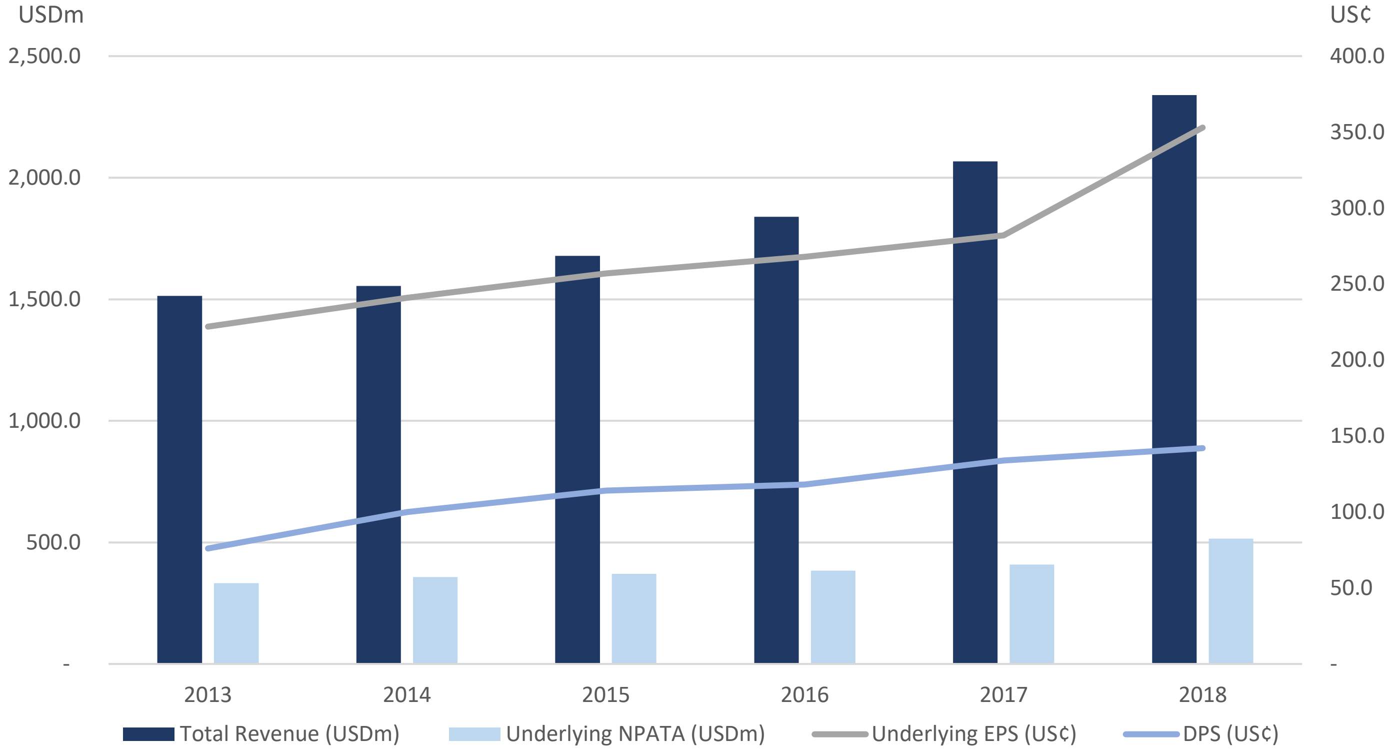
Table 6: ResMed financial performance*

	2013	2014	2015	2016	2017	2018	1H 2019
Geographical Revenue Split							
US	851.6	838.9	904.3	1,056.5	1,229.2	1,345.2	795.6
Rest of World	662.8	716.1	774.6	782.3	837.5	995.0	443.8
Total Revenue	1,514.4	1,555.0	1,678.9	1,838.7	2,066.7	2,340.2	1,239.4
Product Revenue Split							
Flow Generation	823.5	846.7	975.9	1,064.2	1,161.0	1,303.6	666.8
Masks	690.9	708.3	703.0	745.6	767.7	879.6	461.9
Brightree	-	-	-	28.9	138.0	157.0	110.7
Total Product Sales	1,514.4	1,555.0	1,678.9	1,838.7	2,066.7	2,340.2	1,239.4
Group Financial Performance							
Cost of goods sold	573.8	565.2	667.5	772.2	865.0	978.0	512.6
Gross Profit	940.7	989.8	1,011.4	1,066.5	1,201.7	1,362.2	726.8
Gross profit margin %	*62.1*	*63.7*	*60.2*	*58.0*	*58.1*	*58.2*	*58.6*
SG&A expenses	430.8	450.4	478.6	488.1	554.0	600.4	308.9
Research & development expenses	120.1	118.2	114.9	118.7	144.5	155.1	81.9
Other expenses	34.9	16.1	8.7	30.8	77.5	64.8	34.8
Total Expenses	585.8	584.7	602.2	637.5	775.9	820.3	425.6
EBIT	354.8	405.1	409.2	429.0	425.8	541.8	301.2
EBIT Margin %	*23.4*	*26.1*	*24.4*	*23.3*	*20.6*	*23.2*	*24.3*
Underlying NPATA	332.5	357.5	371.0	384.1	408.2	515.3	259.9
Other							
Underlying EPS (US¢)	222.0	241.0	257.0	268.0	282.0	353.0	160.0
DPS (US¢)	76.0	100.0	114.0	118.0	134.0	142.0	74.0
Net Debt (Cash)	(575.3)	(604.9)	(416.7)	443.6	256.7	92.8	1,048.0
Share Price (USD$)	45.1	50.6	56.4	63.2	77.9	103.6	113.9
Issued Shares (m)	143.2	144.4	142.7	149.7	142.5	144.0	144.4
Market Capitalisation (USD$m)	6,463.2	7,308.9	8,043.3	9,463.6	11,092.8	14,914.2	16,444.9

**Figures are denoted in US$m unless indicated otherwise*

Source: ResMed company financials

Table 7: ResMed's key financial outcomes



Source: ResMed company financials

Table 8: Compound Annual Return from 2013 to 2018

Item	%
Revenue	9.1
Underlying NPATA	9.2
Underlying EPS	9.7
DPS	13.3

Source: ResMed company financials

Since 2013, revenues have grown at a compound annual rate of 9.1%, increasing from US$1.5b to US$2.3b. Underlying profits have kept pace, rising from US$333m to US$515m, while in the same period real earnings per share growth and dividend payments have compounded at a faster clip of 9.7% and 13.3% respectively. The company has managed its balance sheet well, having taken on debt to fund the Brightree acquisition. The majority of debt has since been repaid and only now exceeds the $1.0b mark, following recent acquisitions. Importantly, the group's issued capital has remained largely unchanged since 2005, currently sitting at 144m.

If Thorndike were to review the CEO's performance at ResMed, he would most likely look upon it favourably. Since 2016, the company has embarked on a series of acquisitions. So, what has changed to spur such action?

Investor requests for more information on this topic led to the company holding an investor meeting in April 2019, with the aim of providing greater clarity around the group's updated strategy through to 2025. In Table 9, we provide a list of acquisitions recently completed, along with a quick business description and price tag where applicable.

Table 9: ResMed Acquisition Profile*

Date	Acquisition	Cost	Revenue	EBIT**	Business description
Nov-16	Inova Labs	Not provided	Not provided	Not provided	Privately held medical device company specialising in the development and commercialisation of innovative oxygen therapy products for the treatment of COPD patients.
Feb-16	Brightree	800m	113m	43m	Privately held cloud-based leader in business management.
May-18	HEALTHCAREfirst	Not provided	Not material	Not material	Privately held cloud-based software solutions and services provider for the home health and hospice agencies. Complements the Brightree offering.
Nov-18	MatrixCare	750m	122m	30m	Privately held U.S. leader in long term post-acute care software of electronic health records, servicing more than 15,000 providers across skilled nursing, life plan communities, senior living and private duty.
Nov-18	Verily JV	Startup	Startup	Startup	ResMed and Alphabet company Verily agree to form a joint venture (JV) business, combining ResMed's expertise in sleep apnea and Verily's advanced health data analytics technologies. The JV aims to develop software solutions that assist healthcare providers more effectively identify, manage and treat sleep apnea and other breathing related sleep disorders.
Dec-18	Propeller Health	225m	Not provided	(1.5m)-(3.0m) for FY19	Digital therapeutics company providing connected health solutions for people living with COPD and asthma.

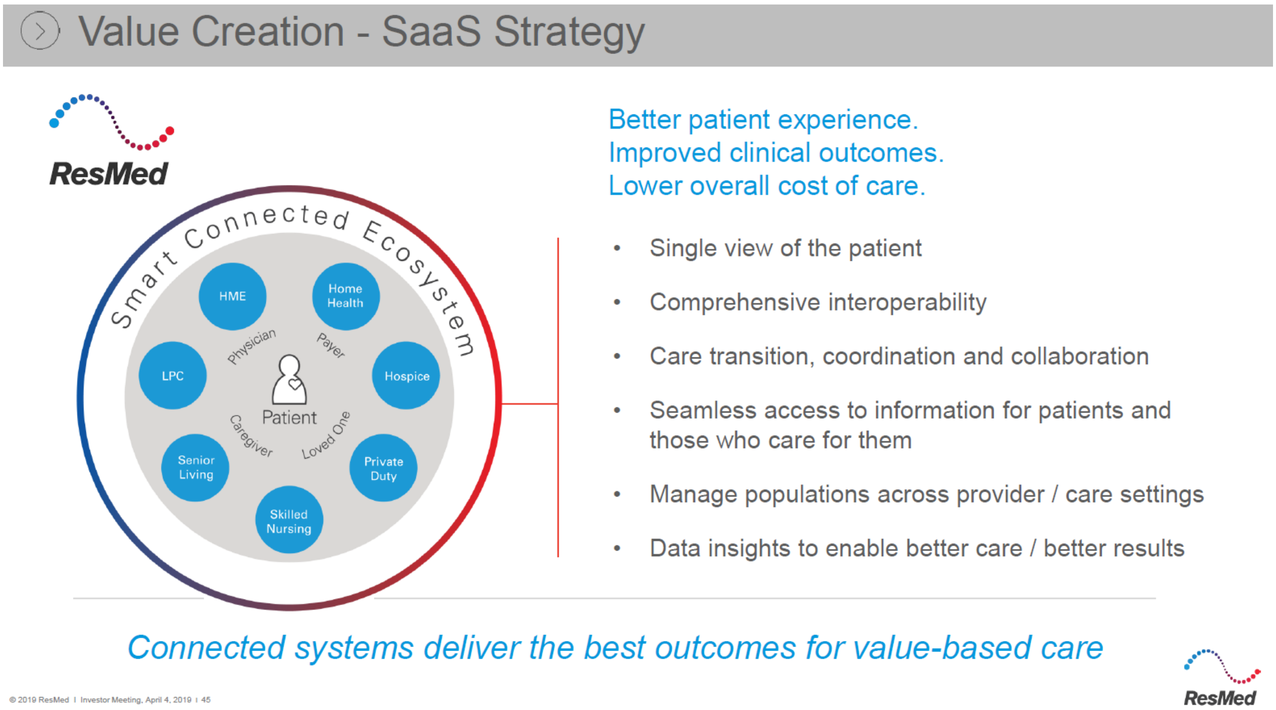
**All figures are denoted in US$ and are as at time of the acquisition unless indicated otherwise*
***Earnings before interest and tax*

Figure 4: ResMed SaaS portfolio

Source: ResMed investor meeting April 2019 presentation

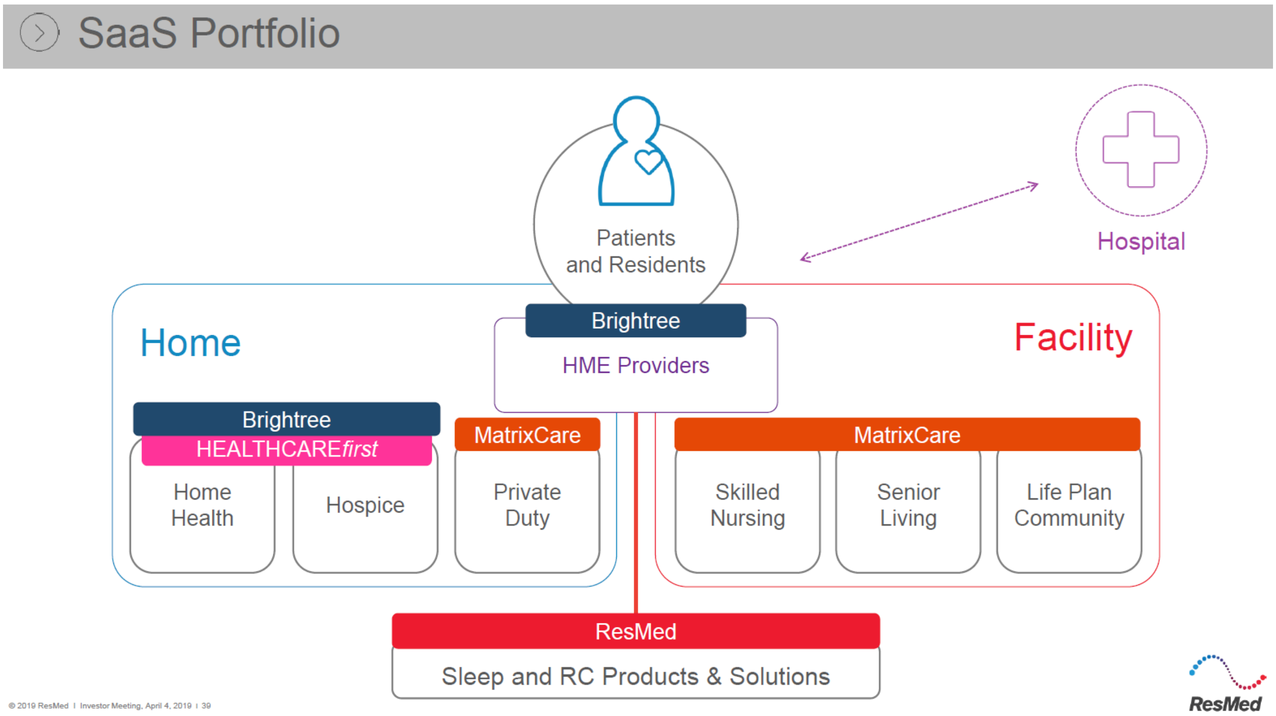
Before commenting on these individual businesses, it's important to note the aim of management is to not only build out its core sleep business, but to adapt its offering for a more connected, data rich world. Robert Douglas, President and Chief Operating Officer openly acknowledges that this is a work in progress and many unknowns remain in delivering on this strategy. What is apparent though is the healthcare settings of tomorrow will shift to a value-based offering, requiring an ecosystem that seamlessly connects all the players, be it healthcare providers, patients or suppliers. Figure 5 and Figure 6 represent ResMed's view of its future service offering.

Figure 5: ResMed SaaS Strategy



Source: ResMed investor meeting April 2019 presentation

Figure 6: ResMed SaaS Portfolio



Source: ResMed investor meeting April 2019 presentation

With this in mind, what have ResMed bought for the circa US$1.8b of capital that has been outlaid?

Brightree

The acquisition of Brightree in 2016 really marked ResMed's push into digital health software. The company's progress towards a more interconnected service offering was already taking shape with the rollout of the group's cloud connected OSA medical devices. More specifically, the big breakthrough came with the release of the company's AirSense 10 flow generator device platform and the Air Solutions software platform some five years ago.

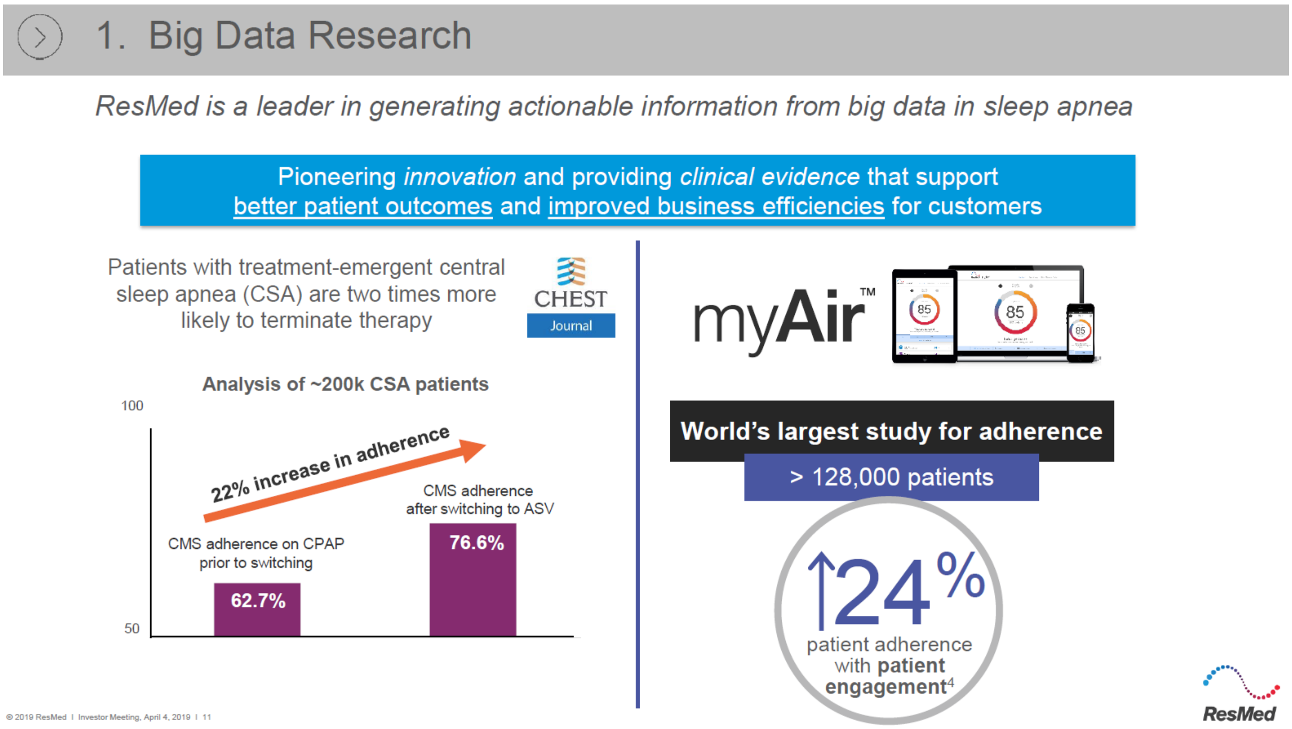
This digitally-enabled product offering allows patient data to be collected via the company's cloud-based management system, Airview. Patients can then track their own nightly sleep data profile through the web based myAir offering. Today, the company's online management system supports over 10m patients within Airview and more than 9m devices are connected to the cloud. Since its market release, more than 4b nights of sleep apnea and COPD treatment data have been collected and stored in the cloud, providing important insights for patients, physicians, healthcare providers and insurance payers. These real world data insights have given rise to new opportunities, better business efficiencies and extended the group's business moat.

The purchase of Brightree represented the company's first foray into the connected healthcare world and set the foundations of a unified business platform, which is now taking shape. For an outlay of US$800m, ResMed bought a market leader, serving over 2,500 businesses operating in the clinical setting. This encompasses Home Medical Equipment (HME) suppliers, home health providers and those operating in the broader healthcare setting.

As a cloud-based Enterprise Resource Planning (ERP) software, Brightree integrates the core business processes of healthcare providers in one platform, thereby allowing for real-time, automated flow-through processing of business reports. The revenue model follows the now widely accepted Software-as-a-Service (SaaS) model, whereby the software is licensed to end users on a subscription basis and accessed over the internet.

Despite the sizeable outlay, the purchase provided an attractive entry point into an industry on the cusp of change. With revenues of US$113m and operating profits of US$43m, the Brightree business enjoys strong double-digit revenue growth, high margins and significant barriers to entry.

Figure 7: ResMed data offering



Source: ResMed investor meeting April 2019 presentation

Once connected, users rarely shift but the most common request is for even greater collaboration and coordination among the multitude of healthcare providers. The demographic shift in healthcare, from hospital care to home setting, and the differing skills required, is driving even greater demand for a one-stop electronic processing solution. ResMed has sought to fill these gaps with suitable acquisitions, as explained below.

MatrixCare

The group's second most significant investment since 2016 involved the purchase of privately held market leader in the post-acute care setting, MatrixCare. The company was acquired for US$750m, delivering revenues of US$122m and operating profits of US$30m. In a similar vein to Brightree, MatrixCare is a SaaS model business, servicing more than 15,000 providers in the out-of-hospital setting.

Raj Sodhi, President of the SaaS business, at the ResMed April 2019 investor meeting, described how healthcare agency providers were struggling to integrate their business needs across a multitude of care platforms and systems. The rationale for MatrixCare was to address these challenges, *"MatrixCare 1 brings a brand new architecture in a single platform that allows us to do the transitions of care between these contexts as well as we're joining Brightree's home health capabilities and hospice capabilities into MatrixCare. So one seamless application across all these care contexts."*

HEATHCAREfirst

The final component of the SaaS model occurred in May 2018, with the acquisition of HEALTHCAREfirst, as depicted in Figure 6. No financials were provided by management, noting that the purchase was not seen as material. HEALTHCAREfirst is described as *"Offering electronic health record (EHR) software, billing and coding services with advanced analytics that enable home health and hospice agencies to optimise their clinical, financial and administrative processes."* The acquisition filled the gaps within the Brightree offering and as a result, the group now had a complete offering to take upmarket to service the larger enterprise customers.

While management have been focused on filling the gaps within its SaaS offering, it has also embarked on less conventional acquisitions. The two that have attracted the most attention among investors are the joint venture with Alphabet subsidiary, Verily and the purchase of digital therapeutics company, Propeller.

Verily joint venture

Sleep apnea remains largely undiagnosed amongst sufferers. Despite its prevalence, a significant proportion of the population are unaware of the symptoms or the treatment options available. While ResMed and other market participants have done their bit in educating individuals, awareness still remains low.

The aim of the joint venture (JV) is to bring new solutions and approaches to the way sleep apnea is tackled. The two parties in the venture bring different skill sets; ResMed providing scientific, clinical and market knowledge, while Verily sets out to complement the offering with its analytical, machine learning and predictive modelling techniques.

Together, the respective parties aim to lift the bar on real world evidence with a focus on undertaking big data research. Along with the development of new technology offerings, the objective is to identify those in need, assist them through the diagnosis and treatment process, while removing the friction points hindering ongoing patient compliance.

The business model is in the formative stages of development, with management openly admitting that plenty of details are still a work in progress. What is apparent is that the joint venture partners expect to each incur ongoing quarterly expenses of US$7m, over the course of 2019 and 2020. Per annum, that's US$28m of expenses with little in the way of revenues, despite management's best intentions, *"To earn a really good return on that investment."*

Propeller

The other acquisition of note concerns asthma and COPD therapeutics group, Propeller. Acquired for US$225m in December 2018, the business is led by founder David Van Sickle.

The technology underpinning the business model consists of small sensors that attach to the individual's inhaler. Paired with a mobile app, it enables asthma and COPD sufferers to track medication and receive personalised data feedback and insights.

Propeller sought and received approval from the US Food and Drug Administration (FDA) as a Class II device. While the company is best known for its hardware, the real value is created through the software experiences and data insights captured. As Van Sickle highlighted, *"So the core insight behind the innovation that grew up into Propeller was that understanding of how people are using their daily medicines, the ones that are taken to prevent symptoms from recurring and then the medicines that they take when they're having symptoms, when they're having an attack or an exacerbation."*

The trick was in applying these digital smarts to the devices themselves. Think of the typical asthma inhaler working in tandem with sensors to deliver personalised data insights, as depicted in Figure 8. Van Sickle explains the reasoning for such an approach, *"We realised back then that people were carrying around and using these medicines, and that the fact that you had a delivery device for these drugs that you could add electronics to would make them amenable to monitoring and to understanding their pattern of use and then putting that information to work and to do that passively without asking the patient to participate in any way in that process. So since then, we've gone on to build about 10 different devices that connect the majority of inhaled medicines on the market."*

Propeller has positioned itself in the centre, with the big drug manufacturers at one end and their patients at the other. The ability to provide real world performance data to each group goes to the heart of the commercial revenue model underpinning the Propeller business. As Van Sickle explains, *"We generally earn revenue on a per patient, per time basis, so we're paid for every individual who enrols in and participates in Propeller and, in some cases, have performance incentives on top of that."*

Figure 8: Propeller's service offering

Source: ResMed investor meeting April 2019 presentation

Connected Care

Described as a healthcare ecosystem, ResMed is building out a larger, more encompassing business, which improves both the transition of care for patients and operational efficiencies. While the sleep and respiratory care businesses remain at the core, digital solutions are providing an increasingly important role in delivering the value that the industry requires. Having invested close to US$2b in capital since 2016, investors are seeking some reassurance that an adequate return can be expected.

Thorndike would be seeking a similar response from a management team that has delivered in the past. No doubt the group has some hurdles to jump in meeting investor expectations. Apart from a hefty interest bill, courtesy of its increased debt pile, the company is also incurring JV losses running at US$28m per annum, while continuing to fine tune its revenue model at Propeller Health.

All in all, management have certainly not chosen an easy or direct path. Despite this, they have a long-term game plan and the readiness to look across the horizon towards a changing healthcare landscape. Investors can also draw some comfort from David Pendarvis, Chief Administrative Officer, on likely returns, "*I mean when you talk about something that you're going to try to do with Verily, that's going to drive incremental growth, that's very hard to measure. But otherwise, we would expect all of these businesses, certainly, you've got 6 years from now to 2025, probably 2 to 3 years in, you'd expect all these businesses to be ahead of our WACC, so we would be viewing strong double-digit returns from the money we've put to work.”*

All things being equal, that would suggest profits north of US$200m on the $2b of invested capital in a relatively short period of time.

Summary – A hardware, software business

In the out-of-hospital setting the group has reached critical mass in three of the seven verticals targeted. It has also begun integrating services within the specific business segments of Brightree, HEALTHcare and MatrixCare.

At the group’s recent quarterly release, CEO Farrell reaffirmed the thesis, *“We’ve built the portfolio, now it’s up to our SaaS team to execute and, ultimately deliver on the promise of this strategy. One that values the out-of-hospital software market at US$1.5b in the U.S. market alone.”*

The core businesses that have underpinned the ResMed group and serve sleep apnea sufferers remain intact. The newest ventures continue to complement this focus, rather than detract from it as COO Douglas comments, *“All of these businesses are aligned or adjacent or support our core businesses – our existing businesses.”*

The result is a hardware, software business, selling manufactured products and digital solutions. ***SFM***

WAKE-UP CALL

We are taught at an early age that humans possess five main senses. Sight, touch, smell, taste and hearing. One can debate which is more important but collectively they form the basis of how we carry on with everyday life. The most important human organ is the brain. It acts like a control centre sending and receiving signals from other parts of the body. For instance, the cochlea receives sound waves and passes them on to the brain.

In this article, our focus centres on hearing loss and the growing global need for awareness and access to cochlear implants. As illustrated in Figure 9, the extent of hearing loss varies. On the top end of the scale are those individuals deemed to have profound hearing loss, which can occur either at birth or develops over time.

The principle measure used in determining sound pressure and ultimately hearing loss is a decibel (dB). When hearing loss is detected, it's described as either mild, moderate, severe, profound, or a combination of these depending on the volume required before sound is discernible. Those that have profound hearing loss have a reading of 90 dB and those deemed to have moderate hearing loss sit above 40dB. By way of comparison a 90db sound would be equivalent to a jackhammer, while a 60dB is regarded as normal conversation or the running of an air conditioner.

Cochlear implant invention

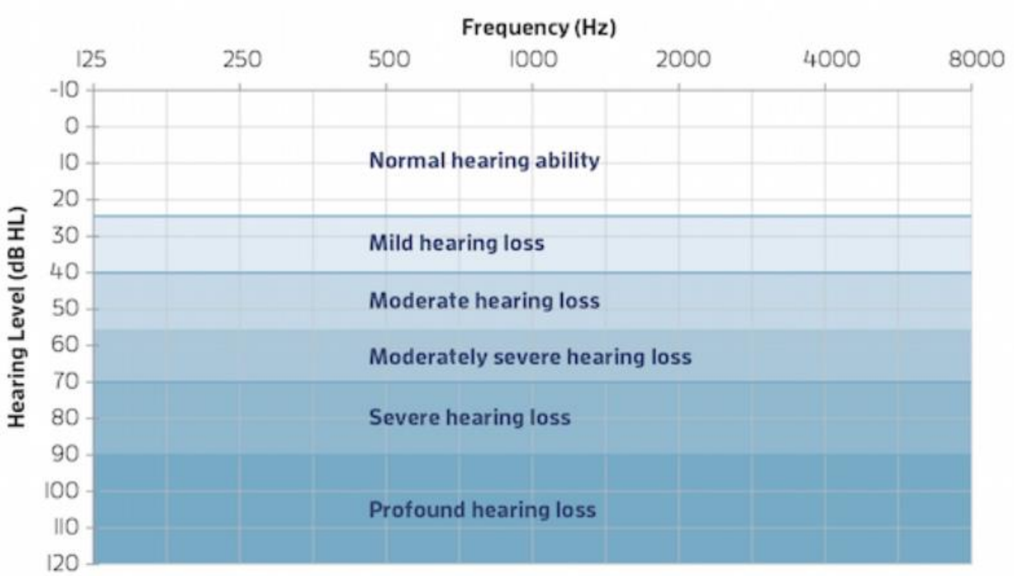
The cochlear implant is an Australian invention, which has helped those that have suffered from profound hearing loss. Having gained regulatory approval in 1985, it was initially purposed as a means of helping adults overcome the loss of hearing, but soon became the standard of care for treating children and the newly born.

The Royal Institute for Deaf and Blind Children states that:

- On average, one Australian child is identified with impaired hearing every day.
- One in every 1,000 babies is born with significant hearing loss.
- By school age, two in every 1,000 children will have been identified with hearing loss.
- By the end of secondary school, more than three out of every 1,000 children will require assistance because of hearing loss.

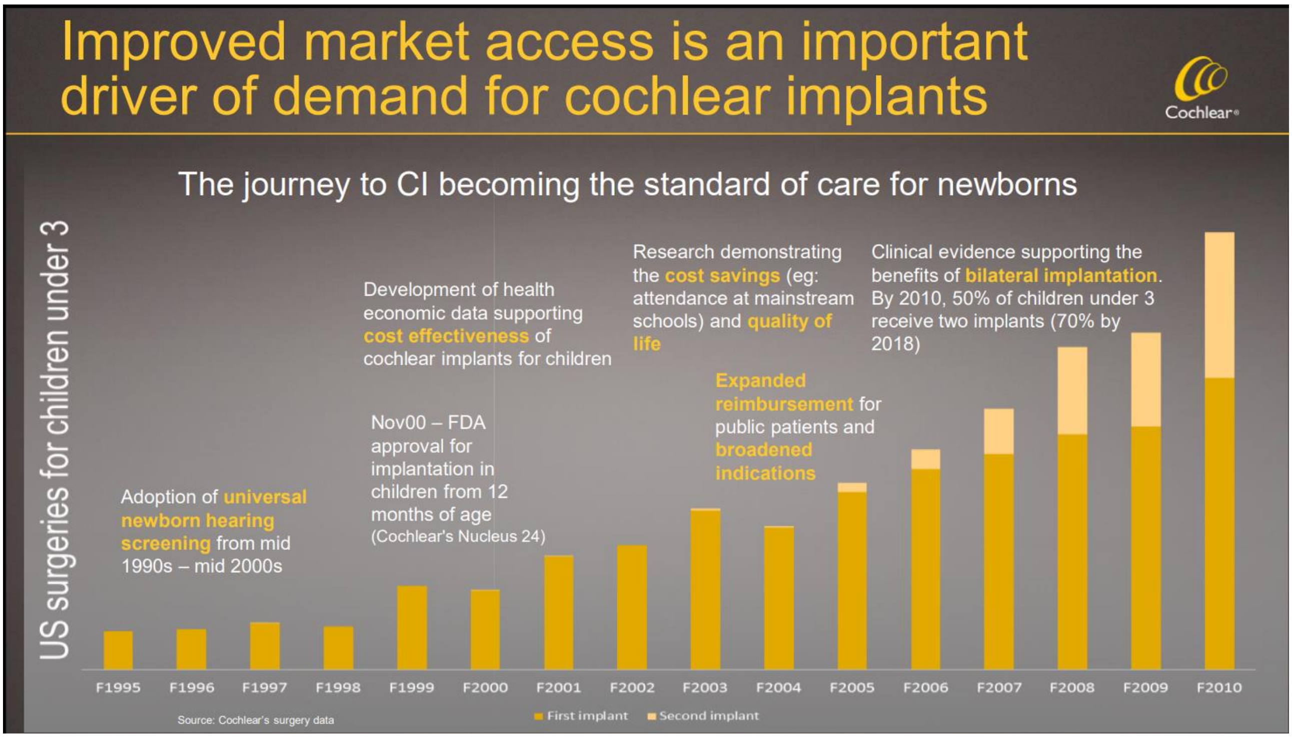
To tackle the long-term implications of hearing loss, early intervention was deemed an important first step. Armed with robust clinical evidence and quality of life outcomes supporting the use of cochlear implants, improved levels of government funding soon followed. This is demonstrated in Figure 10 with cochlear implants gradually being adopted as the go-to treatment for new-borns, initially on one ear and then bilaterally.

Figure 9: Hearing levels severity



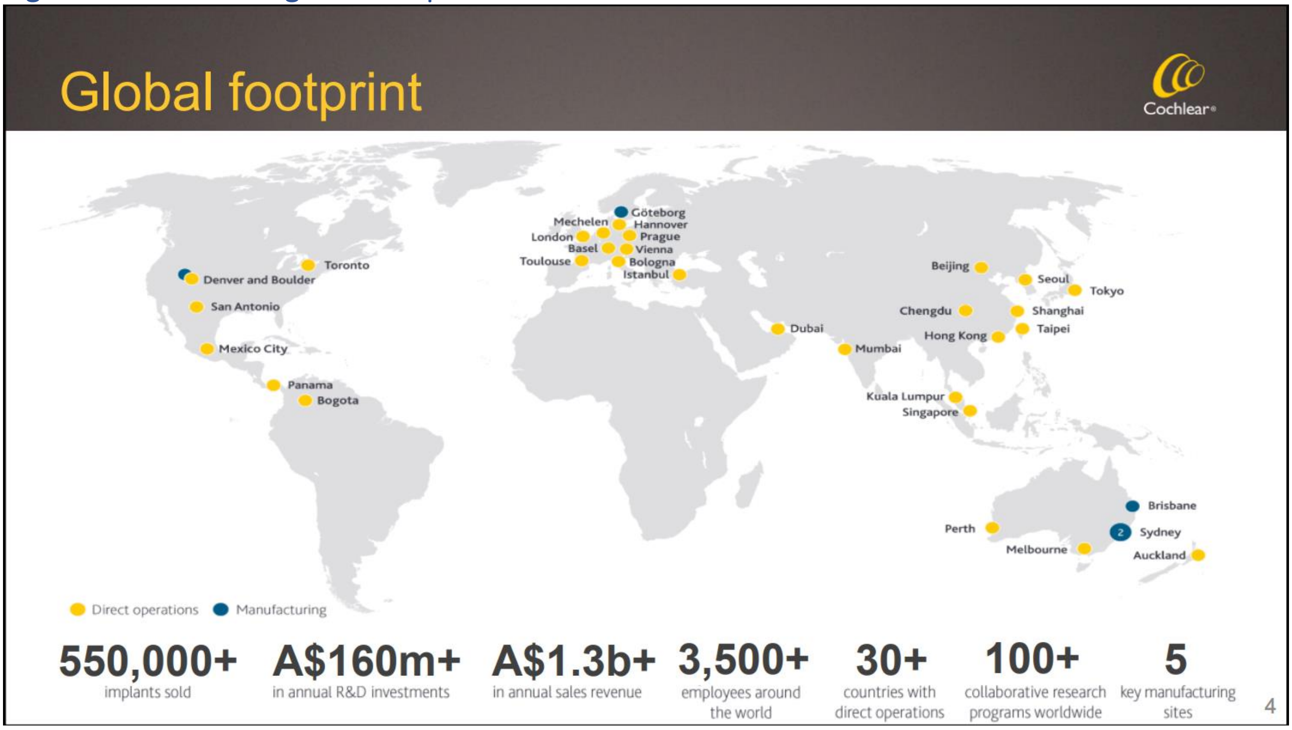
Source: www.healthyhearing.com

Figure 10: U.S Cochlear implant uptake among children



Source: Cochlear 2019 Capital Markets Day presentation

Figure 11: Cochlear's global footprint



Source: Cochlear 2019 Capital Markets Day presentation

Back in 2004

When we launched our Fund in 2004, one of our very first investments was Cochlear. Our timing was fortuitous. The company had suffered a temporary financial setback after overpromising, which led to the appointment of Chris Roberts as its new CEO.

Roberts was an executive familiar to us and his appointment allowed the company to reset growth expectations among the investment community. More importantly, he set in motion a commitment to build a stronger, more robust manufacturing business, one underpinned by a disciplined adherence to maintaining investment in research and development (R&D).

Fast forward 15 years and now under the leadership of CEO Dig Howitt, the results of the company's forward-thinking ethos continues to bear fruit. The group's global footprint is substantially larger, with an employee base now surpassing 3,500.

Yet despite all the progress made to date, the lack of awareness amongst clinicians and hearing candidates on the benefits of cochlear implants continues to overshadow the conversation. In short, many people who would benefit from them either don't get them or aren't aware they need them.

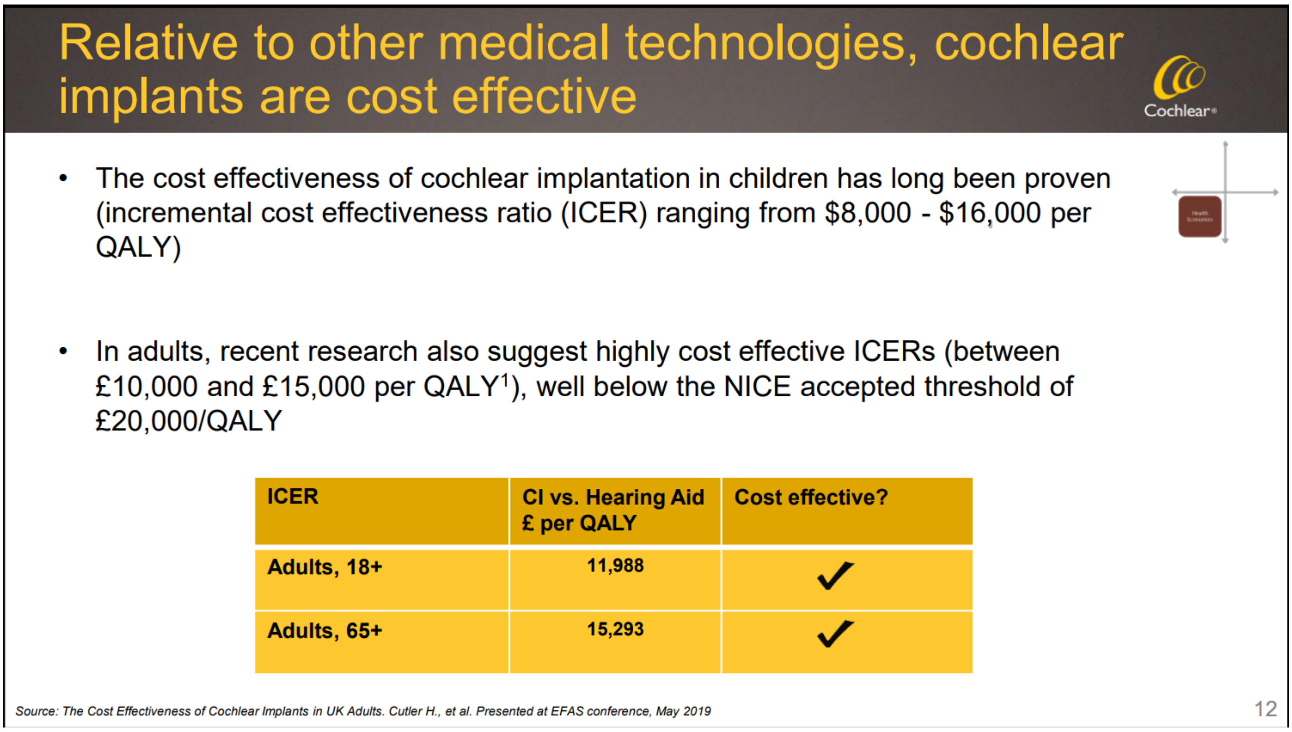
Our attendance at the group's investor day held in May reinforced one of the company's top three strategic priorities, to grow the hearing implant market through raising public awareness.

The company is not alone in their endeavours to lift the profile on hearing loss. In fact, the World Health Organisation (WHO) in March 2017 estimated the global cost of not treating hearing loss at US$750b per annum and recognised cochlear implants as a cost-effective solution.

Cochlear conservatively estimates less than 5% of the 37 million individuals that could be classified as being profoundly deaf are being treated as such.

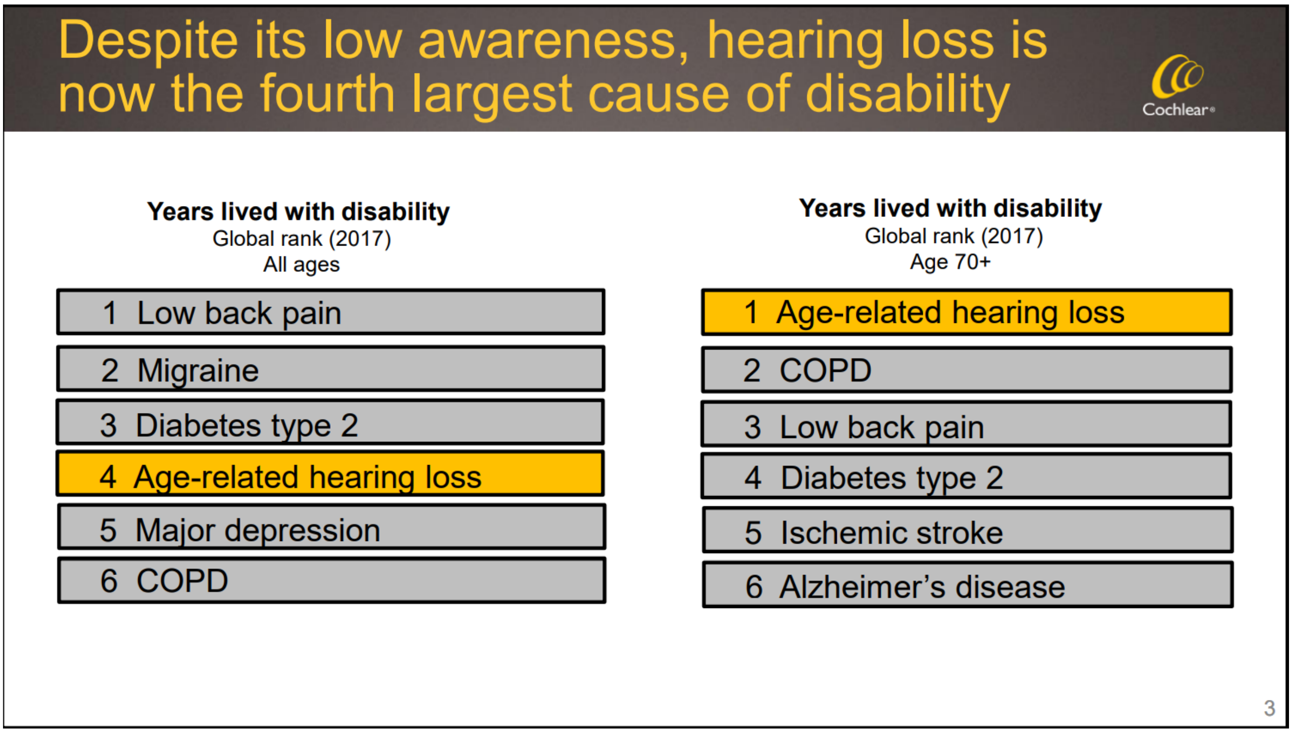
Among all age groups globally, age-related hearing loss is the fourth largest cause of disability, as shown in Figure 13. For those aged over 70, it's now the largest cause of disability.

Figure 12: Implant cost effectiveness



Source: Cochlear 2019 Capital Markets Day presentation

Figure 13: Hearing loss disability ranking



Source: Cochlear 2019 Capital Markets Day presentation

While progress has been made in identifying and treating children in the developed world, with current penetration sitting at 60%, in less developed global regions this figure is closer to 10% for adults and seniors it is sitting at just 3%.

Clinical evidence – adults and seniors

To affect change in clinical practice, evidence-based data is required. While it may make perfect sense to think that hearing loss negatively impacts a person's daily life, changing treatment regimes requires randomised controlled trials.

Cochlear's role in this is two-fold. From a bottom-up perspective, it is committed to designing and manufacturing better implants, while building out a referral pathway for all parties involved. From the top down, it requires governments and health authorities to help drive both awareness and access to hearing impairment treatment. It's a long road until we see this in full fruition, but positive change is already underway.

Dr. Frank Lin, Director of the Cochlear Center for Hearing and Public Health, at the U.S. based John Hopkins Bloomberg School of Public Health, provided further insights on this topic at the group's investor day.

The Center's principal aim is to train a future generation of clinicians and researchers, and in doing so conduct research on the effects of hearing loss on a global scale.

Partly funded by Cochlear's $10m donation over a 10 year period, the centre is focused on why *"healthy hearing for healthy ageing"* matters. As Dr. Lin explained, hearing loss among adults is related to age and yet over the past 10 to 20 years very little has been done to measure its impact.

The Lancet – dementia and hearing loss

As the world's population ages, the global prevalence of dementia is expected to rise from 47m in 2015 to 66m in 2030. By 2050, this figure is predicted to more than double to 131m. In the U.S. this could see 1 in every 30 U.S. citizens suffering from some form of dementia. The annual global cost of caring for people with dementia is estimated at US$818b, with nearly 85% of costs related to family and social care.

It has long been thought there is a close link between hearing loss and dementia. However, only now, as a result of a number of scientific studies, has this correlation been seriously considered.

The Baltimore Longitudinal Study of Aging set the scene, followed by the Caerphilly Prospective Study. In both instances, candidates were studied for well over a decade to measure their progress with ageing. The studies found where candidates developed hearing loss, there existed a high correlation to dementia.

The Lancet, a highly regarded research medical journal, was commissioned thereafter with the task of reviewing all the study literature and trial data undertaken on dementia. In its 2017 publication, *"Dementia prevention, intervention, and care"*, the results of the findings found dementia in 65% of patients was caused by non-modifiable risk factors. That is, nothing could be done about it. The report thus found that as many as 35% of dementia cases could be prevented through modifiable risk factors, including smoking, hypertension, obesity, depression, physical inactivity, social isolation, diabetes and hearing loss.

Of these, it found hearing loss was the largest single risk factor, accounting for 9% of all dementia cases globally. According to the Lancet, as illustrated in Figure 14, when assessing the Population Attributable Fraction (PAF) – the percentage reduction in new cases over a given time, if a particular risk factor were completely eliminated – hearing loss had the highest weighting.

Importantly, The Lancet also identified mild cognitive impairment, those with a slight but noticeable decline in memory, are at greater risk of experiencing dementia. As quoted in the study, *"Around 39% of those diagnosed with mild cognitive impairment in specialist settings and 22% in population studies, develop dementia over the subsequent 3 to 10 years, compared with 3% of the population without mild cognitive impairment at the same age."*

Figure 15 highlights the contribution of the nine modifiable risks to dementia over the course of a person's life. In the case of treating hearing loss, the preferred path is early intervention, identified as *"midlife"* or between 45-65 years, with *"later life"* referring to over 65 years.

Figure 14: Preventable risk factors for dementia

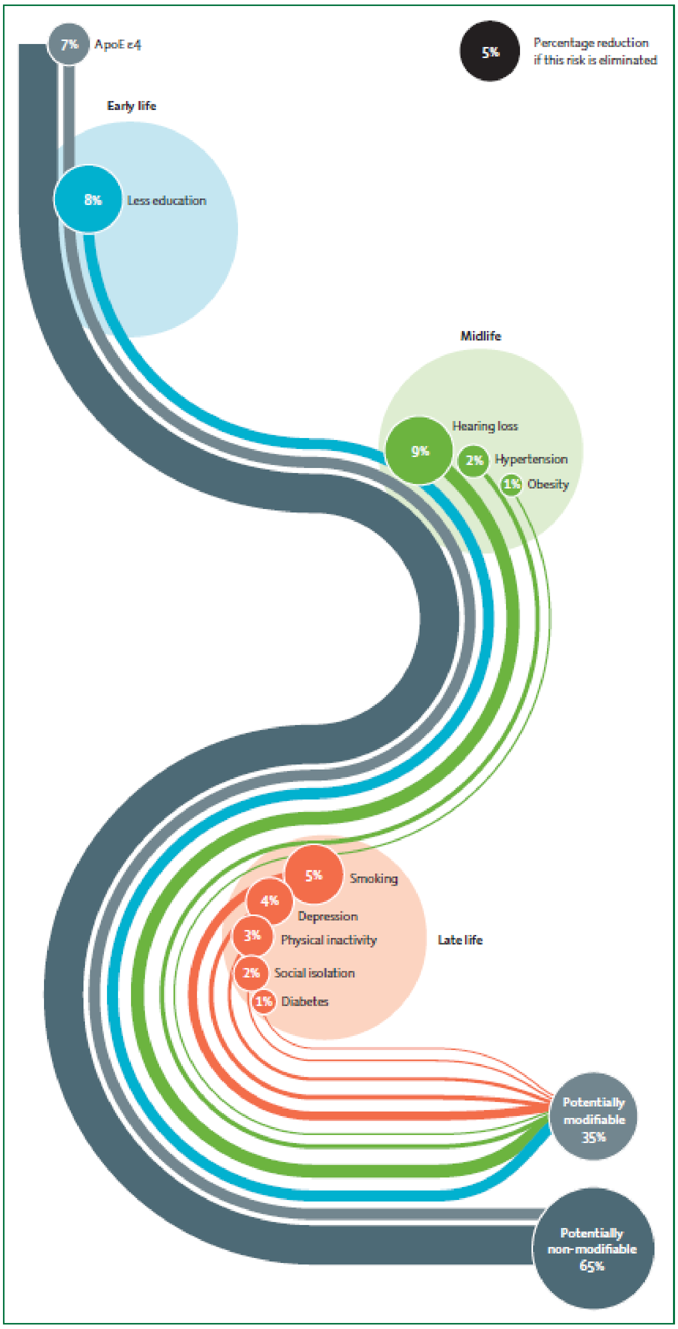
	Relative risk for dementia (95% CI)	Prevalence	Communality	PAF	Weighted PAF*
Early life (age <18 years)					
Less education (none or primary school only)	1·6 (1·26–2·01)	40·0%	64·6%	19·1%	7·5%
Midlife (age 45–65 years)					
Hypertension	1·6 (1·16–2·24)	8·9%	57·3%	5·1%	2·0%
Obesity	1·6 (1·34–1·92)	3·4%	60·4%	2·0%	0·8%
Hearing loss	1·9 (1·38–2·73)	31·7%	46·1%	23·0%	9·1%
Later life (age >65 years)					
Smoking	1·6 (1·15–2·20)	27·4%	51·1%	13·9%	5·5%
Depression	1·9 (1·55–2·33)	13·2%	58·6%	10·1%	4·0%
Physical inactivity	1·4 (1·16–1·67)	17·7%	26·6%	6·5%	2·6%
Social isolation	1·6 (1·32–1·85)	11·0%	45·9%	5·9%	2·3%
Diabetes	1·5 (1·33–1·79)	6·4%	70·3%	3·2%	1·2%

Data are relative risk (95% CI) or %. Total weighted PAF adjusted for communality=35·0%. PAF=population attributable fraction. *Weighted PAF is the relative contribution of each risk factor to the overall PAF when adjusted for communality.

Table 1: **Potentially modifiable risk factors for dementia**

Source: www.thelancet.com Vol 390 December 16, 2017

Figure 15: Life course model of contribution of modifiable risk factors to dementia



Source: www.thelancet.com Vol 390 December 16, 2017

These clinical findings have called into question the long-held belief that dementia is neither preventable nor treatable. Instead, the results have established that through preventive action, dementia, while not yet curable, might be more manageable than first thought.

Also apparent is the significant role of hearing loss treatment in helping to manage this disease. To date, there have been no clinical studies to measure the impacts of hearing loss. However, this is set to change with the ACHIEVE Trial (Aging and Cognitive Health Evaluation in Elders), an 850 patient head-to-head randomised controlled trial, comparing adults with normal hearing with those suffering hearing loss.

Candidates will be followed over three years with the trial expected to report its findings in 2022. The primary endpoints aim to measure cognition, social and physical functioning and quality of life.

This coincides with the WHO Global Action Plan on the Public Health Response to Dementia (2017-2025). This is a direct response to the magnitude of the issue at hand and is intended to lift awareness and generate actionable plans from all government authorities, within a specific time frame, as laid out in Table 10.

Table 10: World Health Authority Global response to dementia 2017-2025

	Global target
Dementia as a public health priority	75% of countries will have developed or updated national policies, strategies, plans, or frameworks for dementia, either stand-alone or integrated into other policies/plans, by 2025
Dementia awareness and friendliness	100% of countries will have at least one functioning public awareness campaign on dementia to foster a dementia-inclusive society by 2025 50% of countries will have at least one dementia-friendly initiative to foster a dementia-inclusive society by 2025
Dementia risk reduction	The relevant global targets defined in, and in keeping with, the global action plan for prevention and control of non-communicable diseases 2013–20 and any future revisions are achieved
Dementia diagnosis, treatment, care, and support	In at least 50% of countries, as a minimum, 50% of the estimated number of people with dementia are diagnosed by 2025
Support for dementia carers	75% of countries provide support and training programmes for carers and families of people with dementia by 2025
Information systems for dementia	50% of countries routinely collect a core set of dementia indicators through their national health and social information systems on which they report every 2 years by 2025
Dementia research and innovation	The output of global research on dementia doubles between 2017 and 2025

***Table:* Action areas in the WHO Global Action Plan on the Public Health Response to Dementia (2017–2025)**[10]

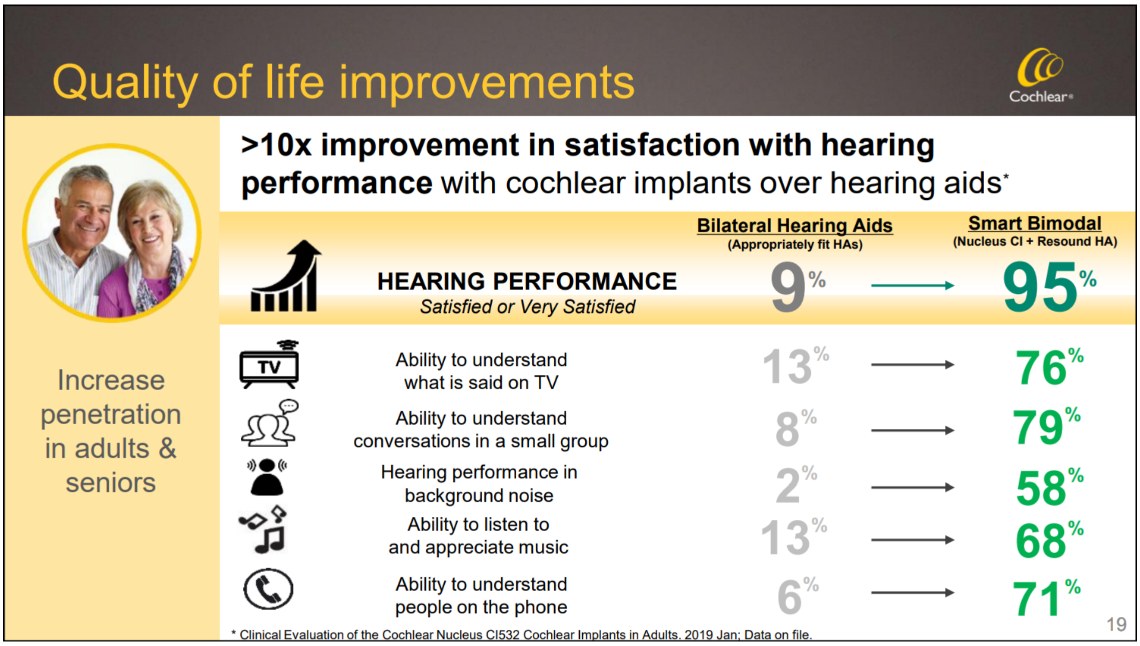
Source: www.thelancet.com Vol 390 December 16, 2017

Cochlear - CI532

Internally, the group's own clinical trial program, designed to understand the difference in a candidate's quality of life when using implants compared to hearing aids, found significant improvement in hearing performance satisfaction levels.

Comparing Cochlear's flagship CI532 electrode and Nucleus 7 Sound Processor with bilateral hearing aids, Figure 16 demonstrates the improvements to the candidate's *"quality of life"* was 10 times greater when using implants verse hearing aids.

Figure 16: Cochlear CI532 trial



Source: Cochlear 2019 Capital Markets Day presentation

Figure 17: Research & Development spend

Source: Cochlear 2019 Capital Markets Day presentation

Cochlear implants; a standard treatment

In March 2019, Cochlear set in motion a path to standardise treatment options for the hearing impaired. This involved funding the development of a consensus statement, delivered by a steering committee and panel of 25 audiologists and ear, nose and throat (ENT) surgeons across 13 countries. The end objective is to lay down the foundations for universal clinical practice guidelines for cochlear implants.

This important first step will be followed by a publication in a high profile journal, leading to the adoption of consensus recommendations in formal clinical guidelines. While this may seem like a long and difficult process, establishing a clear and consistent clinical course of action for cochlear implants is crucial in expanding uptake and awareness among both adults and seniors.

Business investment

Cochlear continues to undertake extensive investment across all aspects of the hearing treatment pathway. Armed with clinical data and a growing body of external literature highlighting the risks associated with hearing loss, the group is pushing firmly into new avenues. Figure 17 profiles the group's significant annual R&D spend, which as an expense is tracking at 12% of revenues. In truth, however, the scope of investment runs much deeper. CEO Howitt has remained consistent in his message that the company will be focused on driving top line growth, while maintaining consistent net profit margins. The excess profits generated will be directed back into the business, rather than flowing through to shareholders. It's a commercially sound outcome that not only aims to extend the company's hearing implant leadership but looks to build upon the addressable hearing market opportunity for all industry players.

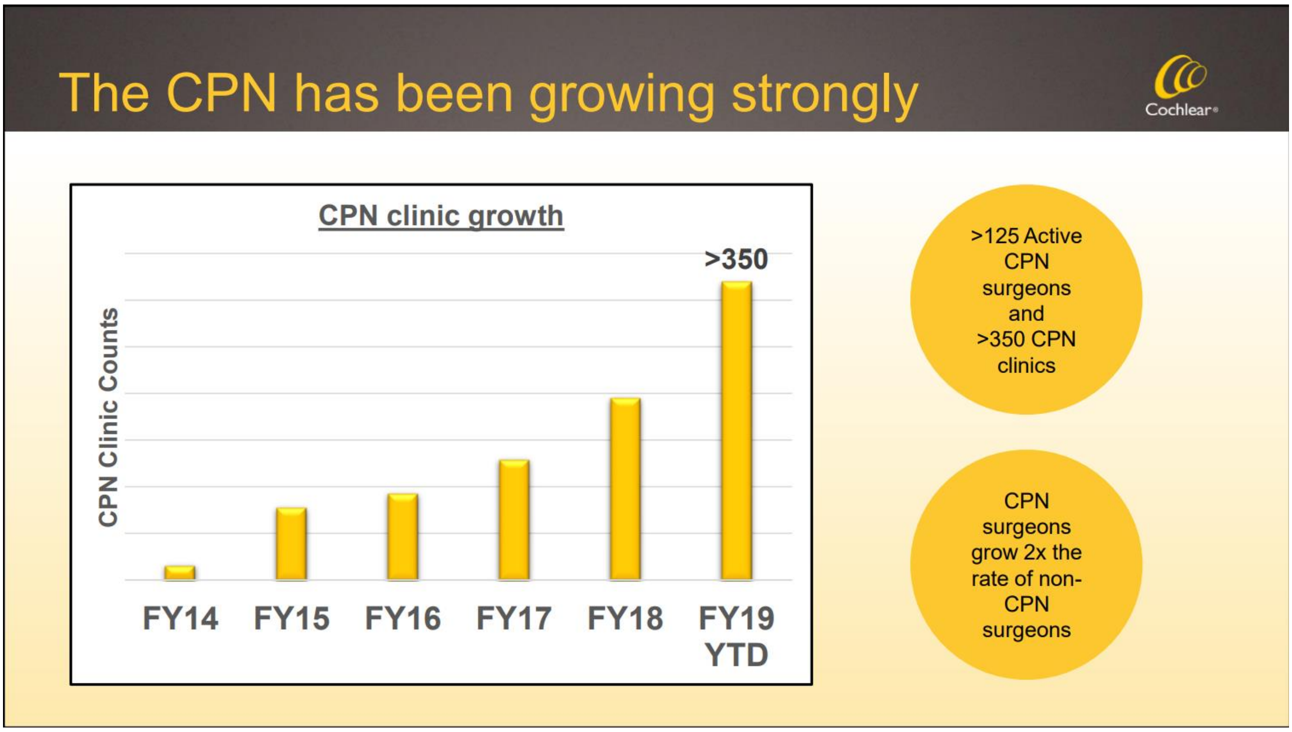
Central to this is the considerable work underway in educating adults around the effectiveness of implants, compared to hearing aids. For a subset of candidates, hearing aids deliver a poor hearing outcome. Cochlear's goal is to build a clear and consistent referral path from the hearing aid channel to cochlear implant specialists.

The rollout of the Cochlear Provider Network (CPN) is illustrative of this investment approach.

The CPN's main objective is to engage with independent audiology practices, with the aim of expanding their services to include cochlear implants. Currently, adult patients are given limited options beyond hearing aids, something which the CPN is seeking to address.

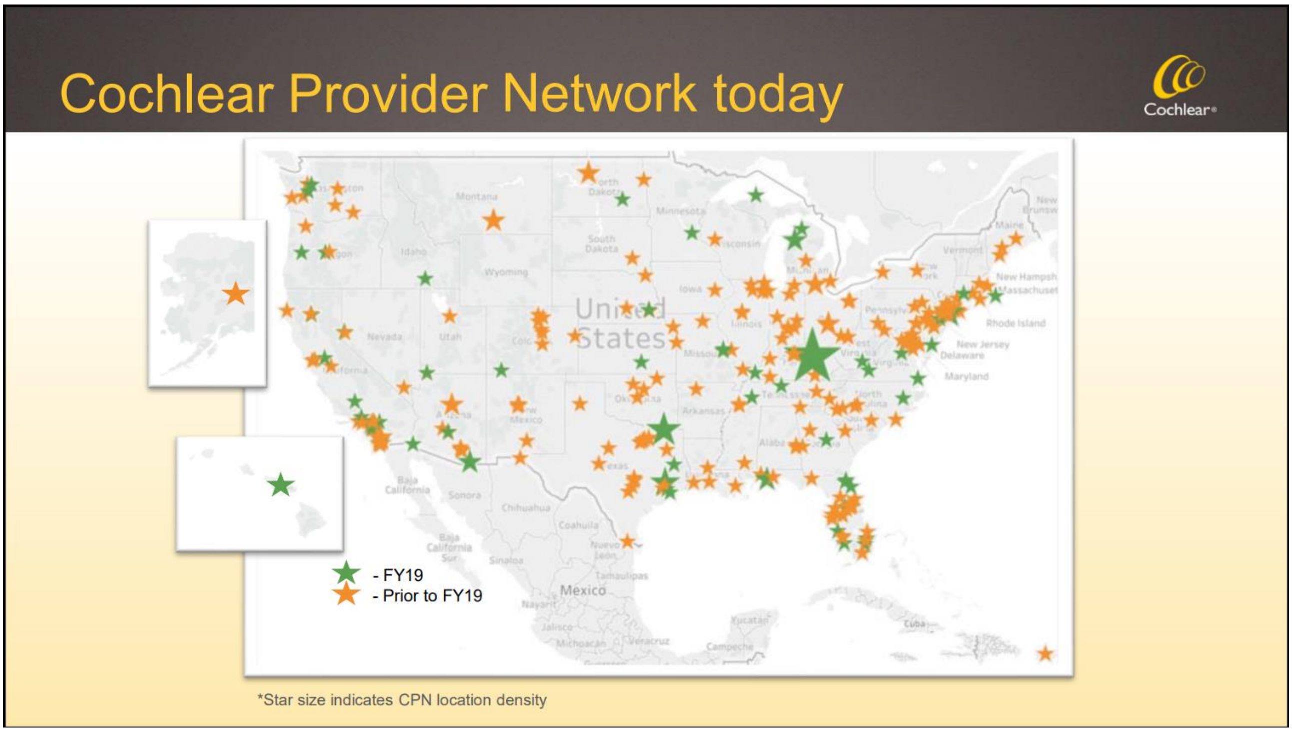
Figure 18 and Figure 19 highlight the accelerated rollout of CPN clinics, both in terms of numbers and locations, throughout the U.S. The company works closely with each clinic, providing education and business training, as well as delivering on the two important goals for the cochlear implant industry; improving awareness and access.

Figure 18: Cochlear Provider Network (CPN) clinic growth



Source: Cochlear 2019 Capital Markets Day presentation

Figure 19: U.S. Cochlear Provider Network



Source: Cochlear 2019 Capital Markets Day presentation

Table 11: Financial summary 2005-2018

	2005	2010	2015	2018
Cochlear implant system sales (units)	10,802	21,023	26,838	35,260
Total revenue ($m)	349	735	926	1,351
R&D expense ($m)	45	95	128	168
R&D expense as a percentage of revenue (%)	*12.8*	*12.9*	*13.8*	*12.4*
EBIT ($m)	83	221	206	348
EBIT margin (%)	*23.6*	*30.1*	*22.2*	*25.8*
Net profit - adjusted ($m)	60	155	146	246
Earnings per share ($)	1.10	2.76	2.56	4.27
Dividends per share ($)	1.00	2.00	1.90	3.00
Net debt ($m)	109	114	141	86
Shareholders equity ($m)	155	438	355	611
Return on Capital Employed (%)	31.3	40.0	41.5	50.0
Issued capital (m)	54.3	56.5	57.2	57.6
Closing share price as at 30 June ($)	39.20	74.32	80.15	200.17
Market capitalisation as at 30 June ($m)	2,123	4,198	4,565	11,519
Number of permanent employees	982	2,006	2,632	3,500

Source: Cochlear company financials

Financials 2005-2018

Table 11 provides a snapshot of the company's key financial metrics, measured at five-year intervals since 2005. During this period, the business has undergone significant growth and invested heavily. This has impacted reported profits in the short term but opens the company to a much deeper and broader market opportunity.

The business has also suffered temporary setbacks, including the voluntary product recall of the Nucleus CI500 implant in 2011 and the recent U.S. court decision to award damages against the company for patent infringement. This case is ongoing and whilst the company remains confident in its position, damage to their reputation is an unfortunate by-product.

Setbacks aside, the business has delivered strong growth over an extended period. The number of annual implants sold is now close to 35,000, yet it remains a small fraction of the potential annual candidate pool that would benefit from such a device. The step change in volumes has provided the business with improved scale efficiencies, resulting in an increase in high gross margins of circa 75%.

From a cost perspective, company expenses fall into three core buckets; administration expenses at roughly 7% of revenues, followed by R&D at 12%, with selling, marketing and general outlays making up the balance at 30%. The two latter cost buckets make up circa 42% of all outlays and include expenses that are directed to future revenue endeavours. Much of the funding of ongoing health programs, including the establishment of the CPN and making investments in long dated infrastructure projects, come at a significant short-term cost.

This is a deliberate decision by management that has seen operating margins remain relatively consistent at 25%. In truth, if the desire was to maximise profits at the expense of longer-term outcomes, the business would be capable of earning much higher returns. Instead, perhaps the key metric that shareholders should focus on is the group's return on capital employed (ROCE). Here the company has lifted returns from circa 31% in 2005 to current levels of 50%. To put that into context, Cochlear is on track to deliver operating profits of $370m for 2019, with a capital base of just $650m, as of December 2018.

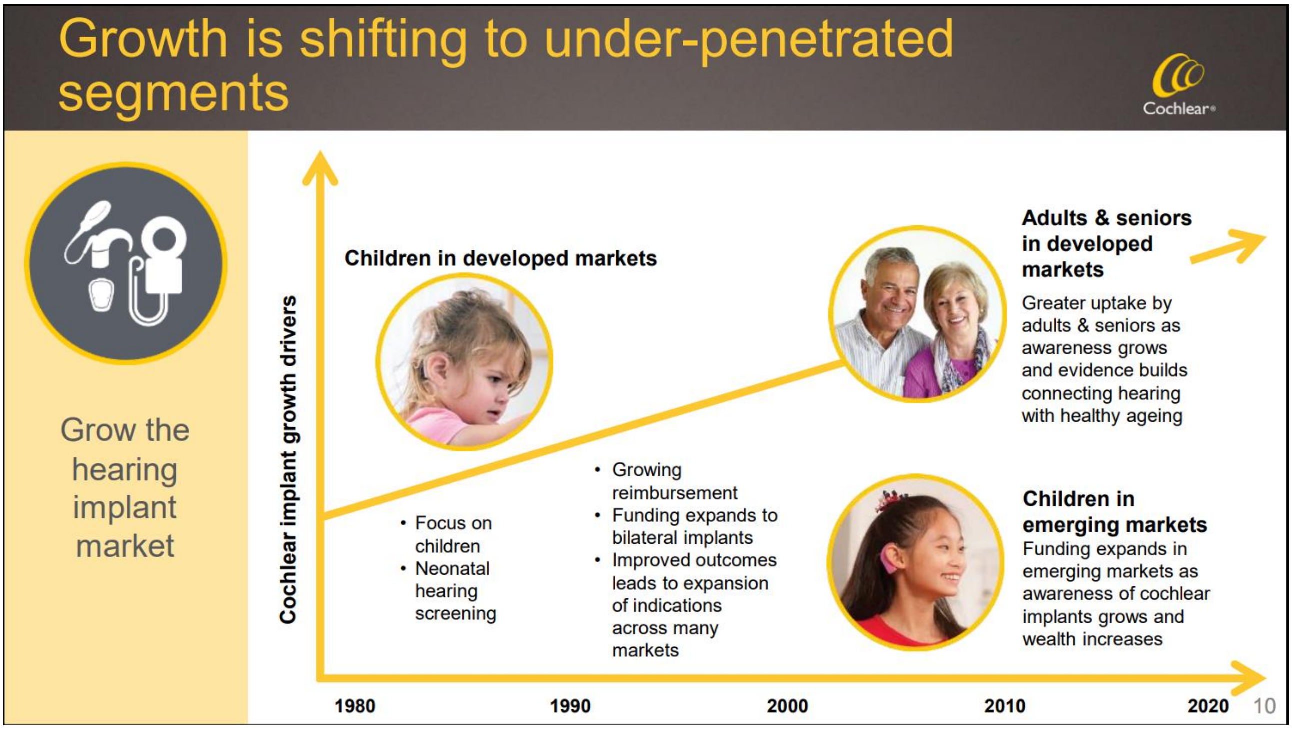
Figure 20 illustrates the deliberate shift in business direction towards emerging markets and the under-penetrated adults and seniors' segment. The investment case for moving in this direction is compelling, underscored by the clinical literature that is supportive of increasing awareness among the affected candidates.

Summary

The question of valuation is often touted as a reason not to invest in Cochlear. All businesses have their price and for Cochlear this is no different. In this instance, the level of business investment that is front-ended is considerable and is slowing down overall profits. More importantly though, substantive progress on multiple fronts is lifting awareness among governments, health authorities, clinicians and patient candidates.

The opportunity is undeniably there for Cochlear and its management team have set ambitious long-term targets, supported by a commitment to provide the most effective hearing solutions to a growing global audience. For those prepared to take a decade long view, the case for owning Cochlear remains compelling. ***SFM***

Figure 20: Cochlear's future growth paths



Source: Cochlear 2019 Capital Markets Day presentation

FISHER & PAYKEL HEALTHCARE – JUNE 2019

"There is no choice but to be thinking long-term."
Fisher & Paykel CEO Lewis Gradon

We ventured to New Zealand in the latter part of June to visit the headquarters of Fisher and Paykel Healthcare.

This year the company celebrated 50 years of operations. What started from humble beginnings, with just three staff members and the pursuit of an idea, has seen the company evolve to become one of the country's largest businesses.

It's apt that we should be writing about this group at the same time we are discussing the importance of innovation and culture to the long-term success of a company.

Across its lifetime the group's primary purpose has been an unwavering focus on patient care.

Our meeting with senior executives over the two days, allowed us to fully appreciate the importance of this commitment and the other core values central to the business and its staff, as reflected in Figure 21.

Figure 21: Fisher & Paykel Healthcare's values and beliefs

Source: Fisher & Paykel Healthcare 2019 Annual Report

Auckland headquarters

One certainly comes to understand the significance of this international business after a visit to its sprawling Auckland campus. Housing over 2,500 employees out of their total 4,500 global workforce, all aspects of company operations are undertaken, including marketing and sales, engineering, research and development (R&D) and manufacturing.

We provided an insight into Fisher & Paykel Healthcare in our September 2016 Quarterly Newsletter. At the time of writing, the group was generating revenues of NZ$819m and operating profits of NZ$211m. Three years on, revenues have exceeded the NZ$1.0b mark, while operating profits have jumped to NZ$293m.

The business is in a strong financial position, carrying no net debt and importantly the group's organic growth profile continues to be internally funded.

While many companies are grappling with how to generate growth, Fisher & Paykel's dilemma is quite the opposite. They service a market that is in need of their products, stretching from invasive and non-invasive humidification, to respiratory solutions catering for patients in both the hospital and home-care settings.

Internally, the task at hand is how to manage a business doubling in size every five to six years, without stumbling. Figure 22 illustrates their revenue trajectory since 1970, where the company has extended its product offerings from its historical respiratory humidification beginnings into the newer fields of CPAP and now extending into Hospital and Home Respiratory Services.

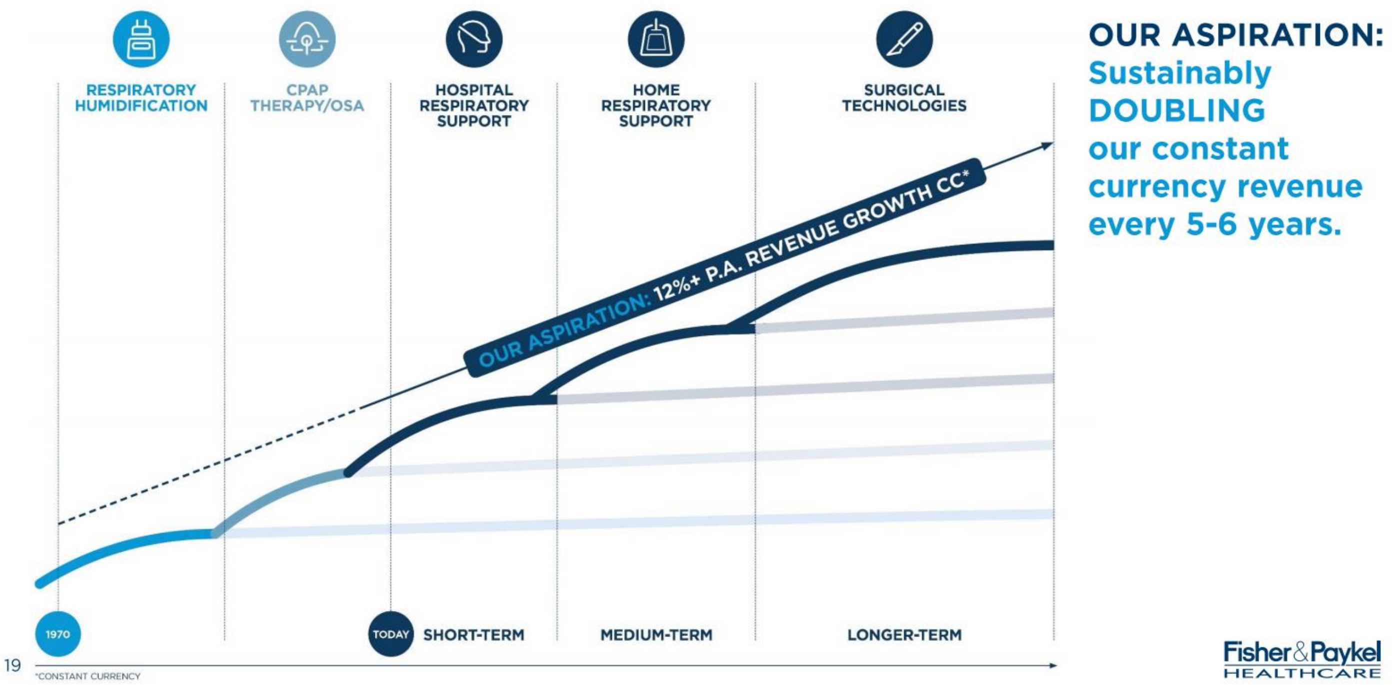
This is no easy feat and explains why management are looking as far ahead as 2035 in their planning process.

As is evident with the majority of companies, success doesn't just happen nor does the responsibility of it fall on the shoulders of one person. Instead, it requires a significant commitment from a unified team.

Instrumental to this and what newly appointed Chief Financial Officer Lyndal York notes as the company's key competitive advantage, is a commitment to continuous improvement. It's a focus that is engrained within the company culture, with employees empowered and actively encouraged to take ownership, solve problems and strive for better outcomes.

There is a clear alignment between delivering better patient care and excellent financial outcomes. Ensuring this is maintained across the entire organisation and in step with the group's underlying growth profile continues to be CEO Gradon's constant focus.

Figure 22: Fisher & Paykel Healthcare's growth profile since 1970



Source: Fisher & Paykel Healthcare FY19 Full Year Update Presentation

It also underscores why Gradon offers the following succinct piece of advice, *"There is no choice but to be thinking long-term."* Innovation is the conduit to achieving these outcomes and it is the company's long-term commitment to investing circa 10% of revenues on research and development that remains pivotal. During 2019 the company's R&D spend amounted to NZ$100m, while a cumulative NZ$750m has been invested since listing in 2001.

The constant need to innovate and drive company culture is not easy. However, when combined, the chances of long-term success are dramatically improved.

Our visit to the group's headquarters was a timely reminder of what the financial numbers don't tell you. The very things that can't be easily measured are precisely the factors, which are capable of delivering the long-term surprises.

Fisher & Paykel Healthcare has achieved a great deal in a relatively short period of time. All the indications suggest this trend is set to continue. ***SFM***

Table 12: Fisher & Paykel Healthcare financials*

	2015	2016	2017	2018	2019
Financial Performance**					
Operating revenue	672.3	815.5	894.4	980.8	1,070.4
Gross profit	410.9	521.7	590.4	650.4	715.8
Gross margin (%)	*61.1*	*64.0*	*66.0*	*66.3*	*66.9*
Other income	5.0	5.0	5.0	5.0	5.0
SG&A expenses	(180.9)	(242.3)	(269.3)	(290.9)	(327.8)
R&D expenses	(65.0)	(73.3)	(86.0)	(94.7)	(100.4)
Total operating expenses	(245.9)	(315.6)	(355.3)	(385.6)	(327.8)
Operating profit before financing costs	170.0	211.1	240.1	269.8	292.6
Operating margin (%)	*25.3*	*25.9*	*26.8*	*27.5*	*27.3*
Profit after tax	**113.2**	**143.4**	**169.2**	**190.2**	**209.2**
Geographical Split					
North America	290.7	385.9	433.0	458.5	501.5
Europe	223.4	253.7	272.0	297.6	314.6
Asia Pacific	127.2	142.6	154.8	181.0	208.1
Other	31.0	33.3	34.6	43.7	46.2
Total	**672.3**	**815.5**	**894.4**	**980.8**	**1,070.4**
Segment Split					
Hospital products	357.2	436.3	500.4	572.1	642.3
Homecare products	302.0	365.8	381.5	398.1	421.4

**All years are ending 31 March*
***Figures are denoted in NZ$m unless indicated otherwise*
Source: Fisher & Paykel Healthcare company financials

RISK OUT…UPFRONT

We are regularly asked to describe how we consider risk within the portfolio. Eyebrows can be raised when we explain that we pay little heed to the Global Industry Classification Standard (GICS).

This classification methodology was applied to Australian listed equities by S&P Dow Jones Indices on 1 July 2002. Its aim was to bring Australia into line with global standards and to encourage foreign participation in our market.

Hopefully those foreign investors don't get too confused when they find classifications such as, Carsales (Industrials / Media & Entertainment), Seek (Industrials / Commercial & Professional), Jumbo Interactive (Consumer Discretionary / Consumer Services) and Nearmap (Industrial / Commercial & Professional). You could be mistaken for thinking one or two of these might be (IT / Software & Services), like Computershare, IRESS or TechnologyOne.

Managing risk based on a classification system that we don't believe in makes little sense to us. We prefer to stick to our own common-sense *"risk out"* approach. There are some subtle differences to this approach.

In general, active managers use benchmark indexes as reference points. They hold positions that range from equal weight to overweight or underweight an index. Active managers aim to beat the index without taking too much risk of underperforming the index.

We are not an active manager. We are benchmark agnostic. This means we pay no attention to the constituents of a benchmark index.

Our approach aims to mitigate the risk of holding shares in a business that we don't believe has the ability to grow real earnings per share over time.

Our *"risk out"* approach is applied to bottom-up stock selection. This simply means we take as much risk off the table, as possible, before we invest. We don't invest in any business that does not meet the four requirements listed below, regardless of the percentage of an index it comprises.

1. *Competent Management and Board*
   We meet management, board members and long serving staff members of businesses, who understand our propensity to invest for the long-term. This provides us with great insights into the individual risks within a business. Our bottom-up process means we focus on understanding risks at the business level. Over time we gain insights into the culture created by management. If we don't establish trust in management and have confidence in the culture, we simply don't invest. For us this is a key risk that can be managed.

2. *Business uniqueness*
   We seek to invest in businesses that develop unique qualities or leadership positions. Forward investment, ahead of the curve, is a lead indicator that we seek to understand. A business that is not investing in research and development (R&D), risks being subject to disruption and or structural changes. These are two key risks we seek to avoid.

3. *Balance sheet optionality*
   All businesses suffer setbacks. For long-term investors, a strong balance sheet means avoiding the key risk of dilution in the event of a setback. With a strong balance sheet, a business will have the optionality to fight back without raising capital at the wrong time. We call this the *"get out of jail card".*

4. *Approach to capital management*
   The approach to capital management is key. We are seeking real earnings per share growth over time. We model cashflow and seek to understand the financial trends of a business. Fully expensed R&D is the most conservative approach. It is our preferred model. Free cashflow that can be taken to the bank means a business is sustainable and has optionality. Sensible capital management options, described aptly as the management toolkit in a previous article, can be pursued thereafter. If earnings grow, then dividend growth follows, which in turn drives share price capital appreciation.

Table 13: Top 3 Business Risks Globally 2019

Country	1	2	3
Australia	Changes in Regulation	Business Interruption	Cyber incidents
USA	Business Interruption	Cyber incidents	Natural catastrophes
Canada	Business Interruption	Cyber incidents	Climate change
China	Business Interruption	Natural catastrophes	Fire, explosion
UK	Changes in Regulation	Cyber incidents	Business Interruption
Germany	Business Interruption	Cyber incidents	Changes in Regulation
France	Cyber incidents	Business Interruption	Fire, explosion
Spain	Business Interruption	Cyber incidents	Changes in Regulation
Italy	Business Interruption	Cyber incidents	Natural catastrophes
South Africa	Business Interruption	Cyber incidents	Changes in Regulation
Brazil	Cyber incidents	Business Interruption	Market developments

Source: Allianz Risk Barometer 2019

This is not rocket science, but we have found that a consistent application of this common-sense approach generates returns over the long term. As we noted above, the short term is harder to predict because businesses have setbacks, just like economies and stock markets have setbacks from time to time.

Macro

A common-sense approach is also applied to macro risk assessment. We consider and discuss macro issues daily and our views are constantly evolving as new information is introduced.

Remember, our focus is on the individual business through bottom-up stock selection. So, we don't make macro calls or try to time the market because we simply never hold all the pieces of the global economic puzzle.

Falling under Environmental, Social and Governance (ESG), cyber security is an example of both a macro and a business risk that we are seeking to better understand.

At a glance you could draw the following conclusions from Table 13. We have no doubt this year's Royal Commission into Financial Services elevated the threat of legislation and regulatory risk within the Australian business community. Unsurprisingly, Brexit has elevated this risk in the U.K. and across the European Union (Spain & Germany). Clearly street demonstrations, rioting and looting by *"yellow vests"* have scared business owners in France.

China, as often is the case, is an interesting outlier. Cyber incidents do not register as a top 3 business risk in China. At a time when cyber risk has evolved from the domain of the individual hacker and terrorist groups, to sophisticated business-like criminal associations and even nation states, China apparently remains impervious. The rest of the world disagrees.

The 2019 Allianz Risk barometer found business interruption (BI), which is supply chain disruption, and cyber incidents (CI) which include cybercrime, IT failure and outages, and data breaches, were ranked equally as the number one global risk to business for the first time in 2019.

The survey was conducted by global insurer, Allianz, in October and November of 2018. The ranking was generated from 2,882 survey responses. Data was aggregated from small to mid-sized and large enterprises across 86 countries. BI has topped the global risk list for seven years running, whilst 2019 marked the first year for CI on the podium.

Of the 2,415 respondents surveyed, CI was identified as the business interruption trigger they feared the most. This is not surprising considering the number of complex supply chains now driven by sophisticated IT systems and platforms. IT, which was once considered a support function in many businesses, has now become a core asset. Evidently, BI and CI are becoming increasingly intertwined.

Allianz notes that, *"BI loss was a hallmark of the WannaCry and NotPetya malware attacks (both were cyber incidents) in 2017, which disrupted shipping, logistics and manufacturing companies. BI losses associated with cyber incidents have seen insurance claims exceeding US$100m".*

Figure 23: Causes of Business Interruption (BI) that businesses fear the impact of most

Source: Alliance Risk Barometer 2019

Figure 24: A US$2 trillion market by 2020

Sizing it up: Cyber risk v the GFC

How do we think about the size of cyber risk? One number we use as a reference point for risk, is the Troubled Asset Relief Program (TARP). In 2008, at the height of the Global Financial Crisis (GFC), U.S. Congress authorised US$700b of funding for the TARP, through the Emergency Economic Stabilization Act. The TARP was overseen by the U.S. Department of the Treasury.

A lessor known fact was that the Treasury loaned US$20b of TARP funds to the Federal Reserve (the Fed). The Fed created the Term Asset-Backed Securities Loan Facility (TALF). The TALF was designed to be the circuit breaker, which would restore the pipes of the global financial system by allowing credit to flow.

The Fed provided its member banks with government loans to replace the overnight lending market, which had all but frozen, as their primary funding source. The theory was, with the Fed guaranteeing funding for the banks, the banks would in turn have confidence to provide credit to business.

So, the US$700b number sticks in our collective minds. Because it was this headline-grabbing amount that eventually restored confidence in U.S. financial markets, after fallout from the historic day of 15 September 2008. On that day the GFC risk became real when Lehman Brothers, holding over $600b in assets, initiated the largest bankruptcy filing in U.S. history.

The fact that the Dodd-Frank Wall Street Reform and Consumer Protection Act passed through law in 2010 and reduced the TARP to US$475m is less relevant, because the dooms day scenario had passed.

Of relevance today, however, is that both Allianz and the U.K. Government believe sophisticated computer hackers are stealing an *"eye watering"* US$600b per year. This amount is only US$100b short of the figure required to save, or restore confidence in, the U.S. financial system. What's even more remarkable is that while the U.S. government got its money back over time, as loans were repaid, cyber theft is a globally recurring annual loss.

Table 14: Mega data breaches

Company	Date	Individuals impacted	Estimated cost
Uber	2016, Disclosed 2017	57 million	Paid hackers US$100K to keep data private. Fined US$148m
Equifax	2017	143 million	Ongoing with estimates > US$1.4b
Marriot Hotels	2018	380 million	Estimates US$200-US$600m
Facebook	2018	50 million	Ongoing with estimates > US$1.5b

Source: Alliance Risk Barometer 2019 and search

Coventry University in the U.K. claim today's US$600b in annual losses are projected to rise beyond US$2 trillion by 2020. If this were to pan out on an annual basis it would be unprecedented. At this scale not even the GFC is a contender for the heavyweight risk title.

Beached or breached

Cyber risk is clearly a significant threat and the business of cyber security is already a large opportunity. Alongside the business threats and opportunities are the challenges faced by insurers, regulators and law enforcement agencies. We touch on each of these elements in Table 14.

According to Accenture, a typical data breach now costs a company US$4m. Large breaches damage consumer brands and balance sheets, driving up insurance premiums at record rates. The prospect of litigation including class actions will increasingly be closely associated with breaches under new global legislation regimes including Europe's enforceable General Data Protection Regulation (GDPR).

As highlighted in the table above, Air Worldwide, a US catastrophe modelling specialist, estimated the Marriott breach to cost between US$200m-US$600m. Costs associated with Facebook and Equifax are set to exceed this.

The Insurance Council of Australia sees cyber security as the fastest growing area of the insurance market, while Insurance Australia Group, one of Australia's pre-eminent general insurers, also claim it is one of the biggest issues facing businesses today.

We can certainly vouch for the growth in insurance premiums. For the first time last year, we were required to hold a cyber security insurance policy for compliance purposes. This year our policy premium is set to double, while our cover remains unchanged.

What the hack is happening?

Most cyber-attacks start with a computer virus or ransomware. Ransomware is a type of malware that threatens to publish the victim's data on the internet or perpetually block access to data unless a ransom is paid.

"Ransomware is a pandemic in the United States," according to Joel DeCapua, supervisory special agent at the Federal Bureau of Investigation's (FBI) cyber division.

Ransomware attacks often start when an employee opens a link or an attachment in a phishing email. Hackers also look to exploit vulnerabilities in businesses' security system, particularly when old software is widely used across an organisation. The ransomware then blocks files, which the cyber attackers claim they will unlock in return for a payment, typically in the form of bitcoin.

Table 15: A hacker's target

Type	Description
1. Network security	• Password security testing • Switch security assessment • Router security assessment • Antivirus system security assessment and management strategy • Storage Area Network (SAN) security • Firewall security assessment • Wireless Local Area Network (WLAN) security assessment • Intrusion detection/prevention system security assessment • Internet user security • Virtual Private Network (VPN) security assessment • AS 400 security • Lotus notes security
2. Host security	• Unix/Linux system security assessment • Windows systems security assessment • Novell Netware security assessment • Web server security assessment (not just the internet ones, but also the admin GUI for routers, etc)
3. Application security	• Source code auditing • Binary auditing • Web application security assessment (SQL injections)
4. Database security	• Remote enumeration of databases • Brute-forcing of databases • Process manipulation attack • End-to-end audit of databases

Source: Ethical Hacking, Coventry University

This might all sound a bit farfetched, but the reality is we live in a digital ecosystem and no business is immune. The problem is magnified in the U.S., and according to JPMorgan Chase CEO Jamie Dimon, *"the threat of cyber security may very well be the biggest threat to the U.S. financial system… We spend nearly US$600 million a year on these efforts."*

Not all businesses have this level of capacity to devote to risk management. Municipalities, including local councils in Australia, are less prepared in dealing with cyber threats than well-funded public companies. This is largely due to limited resources and the difficulty of competing for expensive cyber security talent. While they are increasingly reliant on technology to deliver city or local government services, many have aging computer networks or operate a patch work of systems that do not communicate with each other, which only exacerbates the problem.

It's an area that is of particular interest to us. TechnologyOne (TNE), a long-term portfolio position, operate in this vertical of government enterprise software-as-a-service (SaaS) segment. Now a leader in its space in Australia, TNE was the first SaaS solution to operate under the Australian Federal Government's Information Security Registered Assessors Program (IRAP), the highest security designation available in Australia. International expansion is firmly on this company's radar.

After years of plodding, TNE is on the cusp of profitability in the U.K. and cracking this market represents a significant extension of its total addressable market (TAM). According to TNE's CEO, Edward Chung, success in the U.K. is also a non-negotiable precursor to entering the world's largest market, the U.S. As we observe below, the U.S. is a market with significant unmet need.

On 7 May 2018, the U.S. City of Baltimore, the largest city in the State of Maryland, was hit by hackers, when local government computers were compromised. At the time of writing, a demand for US$76,000 worth of bitcoin remains unpaid. Due to stalled computer programs, Baltimore City has since been unable to settle property transactions or issue water usage bills for over a month.

"Governments are less likely than private firms to pay, as officials want the public to see them heeding the FBI's advice, which is to not pay criminals".

In reference to private companies, DeCapua may well have been referring to Uber, who paid a 20-year-old hacker US$100,000 to delete stolen data and keep the data breach out of the public eye. Uber deny the cover-up. The payment, however, triggered multiple lawsuits and was initially investigated across five U.S. states. In 2018, Uber was fined US$148m.

But private companies are not alone in paying up. Against FBI advice, governing bodies have also paid ransoms.

The U.S. County of Jackson, Georgia, was hit with the Ryuk virus in March 2018. The County claims hackers also compromised its backup data. It decided to pay the hackers bitcoin, equal to US$400,000 from its US$10.5m rainy day fund. The County of about 70,000 people regained its data and largely returned to normal operations within five weeks, according to Kevin Poe, the County manager.

"If we didn't pay the ransom, we could have been down for months," he said. *"In a perfect world, everybody would say we're not going to pay and you kind of put them out of business."*

In April this year, a similar Ryuk virus attack demanded a steep US$1.2m for Imperial County, California. In this case though, secure backup data helped the County avoid paying the bounty. Instead, the County has spent more than US$1.6m to beef up equipment and security, costs largely covered by a cyber-insurance policy.

A 2018 global survey by CyberEdge, a Maryland-based IT research and marketing firm, found 40% of victims who paid a ransom didn't have their data restored. However, cyber security professionals say hackers often operate with a warped sense of business ethics to exact payoffs, even offering to provide references from entities, which can be used to recover files after the ransom payments are made.

It gets murky when hackers operate from overseas, stymieing law-enforcement authorities. A federal grand jury in Atlanta indicted two Iranian nationals for allegedly hacking into the city of Atlanta's network in March 2018. Both men remain wanted by the FBI. Atlanta, which refused to pay the ransom of US$51,000 in bitcoin, has endured millions of dollars in losses from the attack, according to the local U.S. attorney's office.

Complicating matters further is the growing belief that nation states are embracing cyber security espionage. In October 2016, the U.S. Government accused Russia of meddling in their Federal Election proceedings. More recently, 20 Chinese authorities have been implicated in the theft of Personally Identifiable Information (PII) from the cellular networks of at least 10 global carriers. This has unfolded on existing 4G LTE networks, and it reveals the growing vulnerabilities and implications for global business. The rollout of next-generation 5G networks promises speed and connection. Globally, however, this has sparked national-security fears, as a hyper-connected world makes many more susceptible to hackers.

As part of our ESG assessment, we are exploring the risks associated with information technology (IT) systems and failure. This is particularly relevant to IT companies in our portfolio including Seek, IRESS, OFX Group, TechnologyOne and Jumbo Interactive. Yet, it equally applies to all business that use even the most basic enterprise resource planning (ERP), electronic payroll, electronic banking systems or just simply have connectivity to the internet.

As our regular readers would know, we are generalists rather than specialists. A more detailed understanding of cyber risk requires some new knowledge. To achieve this, we enrolled in a short online course, titled *Ethical Hacking,* offered by Coventry University. This course was provided by FutureLearn, owned by SEEK, also a long-term portfolio holding.

Is hacking ethical?

One of the techniques used to validate and improve the security of a computer system is penetration testing (also known as pentesting and ethical hacking). It is aimed at finding and fixing vulnerabilities in digital systems before any malicious attackers ('black-hat' hackers) can exploit them.

In short, ethical hackers receive full consent and permission to attack the systems, in order to report the

Table 16: Layers of pentesting

Type	Description
Information gathering	Use both technical and non-technical methods to find out relevant information about the target or reconnaissance.
Network mapping	Identify all systems and resources within the target network.
Vulnerability identification	Detect vulnerabilities in the targets.
Penetration	Gain unauthorised access bypassing the security measures (get as wide access as possible).
Gaining access and privilege escalation	Get administrator-level privileges on the target.
Enumerating further	Obtain additional information about processes on the systems with the goal of exploiting the network/systems (moving laterally).
Compromise remote users/sites	Exploit the trust relationships and communication between remote users and enterprise networks.
Maintaining access	Use covert channels, backdoors and rootkits[1] to hide the hacker's presence and provide continuous access to the system(s).
Covering tracks	Eliminate all signs of compromise by hiding files, clearing logs, defeating integrity checks and defeating antivirus software.

Source: Ethical Hacking, Coventry University

vulnerabilities and loopholes back to the organisation and provide recommendations on how to improve the overall security.

As the title implies, the main expectation of an ethical hacker is that they will comply with the relevant laws and regulations. We touch on some of these laws later. Although the *"good guys"* use the same tools, techniques and processes as the *"bad guys"*, the objective and outcome of the endeavour is what sets these two apart.

How it works

Before the penetration testing begins, the ethical hacker agrees on a formal contract with the client organisation. The client specifies the rules of engagement, covering the scope (targets – such as servers, networks, employees, etc), dates and times of testing. There are two types of penetration tests, often referred to as *'white-box'* and *'black-box'*. The difference here is the amount of information and access provided to the ethical hackers prior to testing.

For a *'white-box'* penetration test, hackers may have access to network diagrams, Wi-Fi passwords, source code and even some internal accounts. The advantage of this is the ethical hackers will have a much more holistic view on the system and potentially find more vulnerabilities. It will also be cheaper[2] and take less time.

In the case of a *'black-box'* pentest, little information is provided bar the parameters of the targets in scope. The ethical hackers will have to find all the information and gain access themselves. The advantage of this approach is that they are essentially simulating a real attack.

How do businesses address cyber risk?

Seek (SEK) believe one of the single greatest environmental risks to their business is cyber security. They currently have 16 full time employees in the ANZ IT team and they have 36 across the Asia, Pacific and America's (AP&A) division.

Head of cyber security at Seek, Liam Connolly is responsible for all aspects of cyber security. Connolly has more than 15 years of progressive information security experience in a long list of disciplines, including incident response, forensic investigations, security operations, application security, threat intelligence, security training, governance, risk management and compliance.

[1] Rootkit is a collection of computer software, typically malicious, designed to enable access to a computer or an area of its software that is not otherwise allowed and often masks its existence or the existence of other software.

2 Pentesting is not cheap. OFX undertake annual pentesting that costs in the region of $100k. Seek pays a fee per successful attack on its systems, that result in a remedy to the vulnerability.

Prior to joining Seek, Conolly was the Chief Information Security Officer for Zynga and has held security leadership and technical roles at HSBC, AT&T, and University of California, Berkeley.

His expertise is in working with organisations to assess their information security risk posture and as an extension of that, their security-related risks. Following this, he works to design, implement and manage a security program, often from the ground-up, which is aligned to the organisation's culture, vision and strategic initiatives.

Seek also engages external penetration testing, specifically through Bugcrowd. Designed to bridge cyber skills shortage, the security company harnesses the power of a global community of ethical hackers to surface or uncover critical software vulnerabilities.

As a technology enabled platform itself, it connects an army of *"white hat"* hackers to corporates, including Mastercard, Indeed, Netflix, TripAdvisor, HP, Atlassian, Western Union, Under Armour and Seek.

Bugcrowd sources and vets its crowd of IT savvy researchers (white hat hackers) from across the globe (internet) and invites them to attack (test) the web applications, API's and other connected services of its corporate clients.

A protocol is established to control the penetration test. The aim of these pentests is to identify security weaknesses that might lead to the compromise of customer data.

At TaxSlayer, a U.S. based online platform for filing tax electronically, Bugcrowd penetration testing is used to mitigate the risk of a malicious hack. TaxSlayer stores critical customer data, such as tax file numbers and bank account details. If this type of information is disclosed, leaked or hacked, customers are immediately impacted, and the result could be potentially fatal for their business model.

Whilst Seek arguably holds less critical private information than TaxSlayer, a data breach for Seek represents brand and reputational damage, which is considered an unacceptable business risk. It would also require disclosure under the Notifiable Data Breaches Act.

As a result, Seek offers Bugcrowd financial rewards or a *"bugbounty"* between $50 and $10,000. As is evident in Table 17, rewards are based on the technical severity of the weakness identified by the approved *"white hat"* hacker. We note that over a 3-month period the average pay-out was $890.30, representing the lower end of the level 2 (P2) penetration test category.

In 2016, Uber was using Bugcrowd. Like Seek, they were paying bounty fees to resolve technical issues. However, problems arose when Uber paid a US$100,000 ransom to an unauthorised hacker who was not part of the bug bounty program.

In Uber's defence they identified the hacker and attempted to pay through legitimate channels to secure the destruction of the stolen data. Uber claim that the media misrepresented events. That said, Uber were found to be in breach of data laws. This case is representative of the severity of this type of risk to business.

Table 17: Bugcrowd Reward Range

Technical Severity	Reward Range
P1 — Critical	$5,000 - $10,000
P2 — Severe	$700 - $5,000
P3 — Moderate	$200 - $700
P4 — Low	$50 - $100

P5 submissions do not receive any rewards for this program.

Source: https://bugcrowd.com/seek

At OFX Group (OFX), CEO Skander Malcolm acknowledges cyber security as a significant risk to the business. It is now discussed at every OFX Audit and Remuneration Committee (ARC) meeting and board meeting.

Adam Thomas is the Head of Engineering at OFX, as well as the acting Chief Technology Officer. In his words he is currently *"backfilling for OFX CTO Wendy Glasgow, while she is on maternity leave for a company that values gender equality"*.

Thomas has an engineering background and formerly held roles as Global Chief Architect, Global Head of Architecture and Technology Strategy at News Corp. Thomas reports directly to the CEO, the ARC and the board of OFX.

Of the 60 engineers building technology and product at OFX, several are focused on cyber security. Whilst it might not seem like a lot, this business is built around meeting the many global audits of systems that allow OFX to operate on the *"banking rails"*. This means being licenced to settle international transactions using two counterpart banking partners.

On this front, OFX recently disclosed that it had received its best ever audit outcomes. Financial regulation in the state of California provides an audit rating on a scale of 1-5, for which OFX recently achieved a high ranking of 2. The cyber security planning and process is heavily scrutinised by these audits.

OFX have also worked towards partnering with best in class providers rather than rebuilding the security wheel. By way of example, services are increasingly being hosted on secure cloud offerings instead of being hosted internally. This is more cost effective and harnesses the security expertise of large-scale technology companies such as Amazon, via its subsidiary Amazon Web Services. This in turn removes a significant risk within the business.

One of the key ESG questions to ask a technology company is, *'What cyber security frameworks or standards do they operate under?'*

The highest bar that OFX operates under is the New York State Department of Financial Services (NYDFS). This is in addition to ISO 27001, the National Institute of Standards and Technology's (NIST) Cyber Security Framework and the EU's General Data Protection Regulation (GDPR). What make GDPR and NYDFS interesting is that non-compliance carries legal ramifications.

In 2017, the NYDFS launched GDPR-like cyber security regulations for its massive[3] financial industry. Unusual at the state level, this new regulation includes strict requirements for breach reporting and limiting data retention.

Figure 25: Covered entities will have to implement the following

Source: https://www.varonis.com/blog/nydfs-cybersecurity-regulation/

[3] *Massive, model architecture & system for special interaction in virtual environments*

Like the GDPR, the New York regulation has rules for basic principles of data security, risk assessments, documentation of security policies, as well as designating a chief information security officer (CISO) to be responsible for the program.

Despite differences between the two, the ultimate goal of these rules is to protect sensitive non-public information, or PII.

The NYDFS Cybersecurity Regulation works by enforcing what are in fact, common-sense IT security practices. In short, NYDFS is asking organisations to assess their security risks and then develop policies for data governance, classification, access controls, system monitoring, and incident response and recovery. The regulation calls for companies to implement, at a minimum, specific controls in these areas that are typically part of compliance standards.

As the New York State regulators at the Department of Financial Services are enforcing these rules, not complying with the regulation becomes a legal matter. They are even requiring covered entities to designate a CISO who will annually sign off on the organisation's compliance.

The regulatory environment is becoming increasingly onerous. We see this having two positives; firstly, businesses are better off when accountability and governance improves, and secondly in the case of OFX, the tough global regulatory frameworks that it complies with are a clear tailwind. The regulatory environment that permits OFX to operate on the banking rails, requires a series of regional and national licences, which are difficult to obtain and expensive to maintain through a series of annual audits. They are a clear barrier to entry in the payments space.

Operating in global financial markets, IRESS has similarly identified cyber security as a serious business risk. IRESS (IRE) CEO Andrew Walsh believes cyber risk is ever present and increasingly delivered by sophisticated operators that are today resourced just like large companies.

Walsh notes it's not merely about the budget that is devoted to cyber threats, as this would see a business chasing its tail. Instead it's about internal culture and the delivery of internal training. When the most common cyber-attack comes in the form of a malicious email, it's easy to understand why employees have a key role to play.

Darren Pitman has been in his new role, as Head of Information Security at IRESS, for a month. Pitman has 25 years' experience in cyber security, including Clarks (UK) Global Head of IT Security & Continuity. His formative years were spent at Cap Gemini as a Security Consultant, and importantly, to us, he has also run his own business. Today Pitman is reporting directly to CEO Walsh. At IRESS, cyber security is also now receiving the ongoing attention of the Board of Directors.

IRESS has worked hard to embed security into the culture of the firm. They start with the premise that the greatest risk in their business comes from their own people. This is not to denigrate staff. Rather, it acknowledges the importance of a grass roots approach that is typical of Walsh's approach to business. IRESS believe that training and vigilance are a key starting point for tackling the issue of cyber risk and system protection.

Training occurs at a department level, which means everyone in the business becomes responsible for security, rather than an isolated team or individual business unit. This is achieved through third party training modules that can be delivered by an internally developed security team. The team has global reach, but the message is delivered via a regional push. Canada for instance drive a security message through its regional operations.

In the first instance, staff are taught to recognise a security issue and the correct procedures for how to identify, respond and report actual threats. Awareness training aims to assimilate a security-first mindset into a healthy culture, rather than driving inefficiencies and reducing productivity in core business units. Inefficiencies develop when system wide rules and protocols are applied on a universal basis, as would occur in a command and control culture. Another key efficiency drive employed by IRESS includes a focus on reducing security risks that are introduced at the coding level. We believe this common sense ground up approach to security is consistent with the culture at IRESS.

It's a crime

Regulation is a tough gig at the best of times. It is generally issued in response to events that have increased the level of risk.

Table 18: Cybercrime Act 2001

Activity	The Crime
Access	• Unauthorised access, modification or impairment with intent to commit a serious offence.
Modification	• Unauthorised modification of data to cause impairment. • This criminalises activities such as hacking a system to impair data or intending to spread a virus.
Impairment	• Unauthorised impairment of electronic communication. • This was intended to cover Denial of Service attacks such that any unauthorised impairment of electronic communications to or from a computer now carries the maximum penalty of 10 years imprisonment. • An example of an offence here would be to flood a website with requests, resulting in a denial of service.
Other	• Unauthorised access to, or modification of, restricted data. • This relates only to unauthorised access or modification of data that is protected by an access control system such as password protection. • Someone that enters a system with access control without authorisation can be imprisoned for up to two years.
Other	• Unauthorised impairment of data held on a computer disk. • This relates specifically to a Commonwealth computer disk, credit card or other device, and carries a maximum of two years imprisonment for someone that destroys one of these devices. • For example, by magnetically scrambling a disk
Other	• Possession or control of data with intent to commit a computer offence. • Producing, supplying or obtaining data with intent to commit a computer offence. These cover the use and supply of programs (and or data) intended to commit a computer offence. • A person can be imprisoned for up to three years if he/she possesses a computer security or diagnostics tool with the intent to commit a computer offence based on the data they obtain using such tools.

Source: https://www.legislation.gov.au/

Two pieces of legislation of note are Cybercrime Bill of 2001, the first of its kind in Australia and the more recent Telecommunications Act of 2018, a forward-looking Bill that introduces a new set of challenges for technology companies to consider.

The Cybercrime Bill 2001 was first tabled by the Attorney-General of Australia in June 2001. This Bill was primarily based on the Council of Europe Draft Convention on Cyber-Crime 2000.

In the wake of the September 11, 2001 terrorist attacks in the United States, the Cybercrime Bill 2001 was rushed through the Australian Parliament with a host of other legislation. The need to move hastily was cemented when the Australian Government's Intelligence Agencies determined that terrorist groups were using technology to facilitate and coordinate terrorist acts.

The Cybercrime Act 2001 updated the Criminal Code of 1995, a time when cybercrime was nearly non-existent. This legislation criminalised various computer activities, including hacking, virus propagation, denial of service attacks and web site vandalism.

The Telecommunications Legislation Amendment (Assistance and Access) Bill 2018

The Telecommunications Act starts with a golden rule about what law enforcement agencies are not permitted to do. For example, they cannot require technology companies to build a *"systemic weakness"* or back door gateways into their products.

Under the 2018 Amendment Bill agencies gain new powers to issue notices for companies to render assistance, or build a new capability, to help them watch over criminal suspects.

The list of acts or permissions include removing one or more forms of electronic protection, providing technical information, facilitating access to services and equipment, installing software, modifying technology, and concealing that the company has done any of the above.

With these compulsory notices, subject to varying levels of safeguards, police could, for example, send a suspect a notification to update software such as Facebook Messenger that will in turn provide police intelligence (cyber) units access to their messages. Agencies can't directly decrypt messages, especially if the messages are located overseas. This is the case with the popular Russian developed app Telegram. The fact that messages can't be decrypted has been identified as a key weakness of the U.K.'s security architecture.

But using these notices, Australian agencies could install key logging software to enable them to see, keystroke by keystroke, what users type into a message. Similarly, software could take repeated screenshots that don't break encryption but photograph everything going in and out of the communications application.

Other examples include: modifying a device such as an Apple Home or Amazon Alexa to record audio continuously; requiring a service provider to generate a false website that appears to be protected but isn't, similar to a phishing email, or requiring companies to hand over more accurate phone geolocation data.

Patrick Fair, a partner at law firm Baker and McKenzie who represents telecommunication providers, believes *"the fear is that an agency will actually build a virus based on information you give them that will be used by bad actors as well if it gets out in the public domain"*.

Fair argues that compromising a messaging system, website or cloud storage system to get at one user may affect others. *"Web services include many things that are shared – they could take down a webmail system that a whole lot of people use or create a major vulnerability … as they are going after a particular unnamed person."*

The Communications Alliance, the lobby group for Australia's communications industry, is one of the bodies calling for a rethink on the laws. They join an unprecedented campaign that includes Digital Industry Group Inc (Digi), an industry body representing Google, Facebook, Twitter and Amazon.

John Stanton, the chief executive of the Communications Alliance, noted the example of WannaCry in which *"the biggest ransomware attacks the world has ever seen originated with code written by the [National Security Agency]"*.

"If the NSA – one of the world's most capable agencies – can lose something that causes damage like that, who's to say that Australian state police agencies are going to be any less likely to unleash unintended consequences?"

As the new law includes secrecy provisions, Stanton warned that companies would be unwittingly operating networks and devices with security flaws.

A final comment

This article highlights a broad macro-economic risk that has direct implications at a business level. What is apparent is that there is no silver bullet solution to risk.

What we do know is that burying your head doesn't work in any business.

A strong culture of awareness seems to make sense as a starting point. Cyber risk is part of our new world, as is privacy, climate change and from 1 January 2019 modern slavery policy.

The common thread in dealing with these risks will not be portfolio constraints related to GICS sectors. The thread that we need to follow, and that businesses and leadership teams need to get right, is culture. ***SFM***

COMPANY VISIT DIARY – JUNE 2019 QUARTER

Date	Company	Description
1-Apr	CSL	CSL US Investor Tour
3-Apr	NEA	Nearmap GS Emerging Leaders Conference
3-Apr	SIQ	Smartgroup GS Emerging Leaders Conference
3-Apr	SPL	Starpharma Holdings GS Emerging Leaders Conference
3-Apr	Z1P	Zip Co GS Emerging Leaders Conference
3-Apr	SM1	Synlait Milk GS Emerging Leaders Conference
3-Apr	NWL	Netwealth Group GS Emerging Leaders Conference
4-Apr	NHF	NIB Holdings GS Emerging Leaders Conference
4-Apr	BUB	Bubs Australia GS Emerging Leaders Conference
4-Apr	MP1	Megaport GS Emerging Leaders Conference
4-Apr	NXT	Nextdc GS Emerging Leaders Conference
4-Apr	MP1	Megaport SFML Management Meeting
5-Apr	RMD	ResMed Investor Meeting webcast
5-Apr	DMP	Domino's Pizza Enterprises Investor Tour in Japan
8-Apr	SGM	Sims Metal Management Sydney Strategy Day
9-Apr	SGM	Sims Metal Management Adelaide Strategy Day
11-Apr	ATHM.NYSE	Autohome Inc Macquarie Management Meeting
16-Apr	BKL	Blackmores Q3 FY19 Results Conference Call
16-Apr	BKL	Blackmores SFML Management Meeting
18-Apr	AD8	Audinate SFML Management Meeting
23-Apr	OSH	Oil Search SFML Management Meeting
23-Apr	OSH	Oil Search Annual Perception Study Call
30-Apr	IPD	Impedimed Q3 FY19 Results Conference Call
30-Apr	NAN	Nanosonics Trophon 2 Demonstration
30-Apr	TCL	Transurban Macquarie Conference Presentation
30-Apr	CSL	CSL Macquarie Conference Presentation
30-Apr	OSH	Oil Search Macquarie Conference Presentation
30-Apr	WTC	Wisetech Global Macquarie Conference Presentation
30-Apr	BRG	Breville Macquarie Conference Presentation
30-Apr	SEK	SEEK Macquarie Conference Presentation
30-Apr	APT	Afterpay Touch Macquarie Conference Presentation
30-Apr	JBH	JB Hi-Fi Macquarie Conference Presentation
30-Apr	MPL	Medibank Private Macquarie Conference Presentation
1-May	ARB	ARB Corporation Macquarie Conference Presentation
1-May	NHF	NIB Holdings Macquarie Conference Presentation
1-May	SDA	Speedcast International Macquarie Conference Presentation
1-May	IEL	IDP Education Macquarie Conference Presentation
1-May	PPT	Perpetual Macquarie Conference Presentation

Date	Company	Description
1-May	NXT	Nextdc Macquarie Conference Presentation
1-May	NEA	Nearmap Macquarie Conference Presentation
2-May	JIN	Jumbo Interactive Macquarie Conference Presentation
2-May	SM1	Synlait Milk Macquarie Conference Presentation
2-May	PNI	Pinnacle Investment Macquarie Conference Presentation
2-May	PME	Pro Medicus Macquarie Conference Presentation
2-May	MMM	Marley Spoon Macquarie Conference Presentation
2-May	WOR	WorleyParsons Macquarie Conference Presentation
2-May	API	Australian Pharmaceutical Industries Macquarie Conference Presentation
3-May	RMD	ResMed 3Q FY19 Results Conference Call
3-May	IPD	Impedimed SFML Conference Call
3-May	IRE	IRESS SFML Conference Call re Cyber Security
6-May	DMP	Domino’s Pizza Enterprises SFML Meeting with Board
9-May	IPD	Impedimed Investor Conference Call re PREVENT trial
9-May	ARB	ARB Corporation UBS Hosted Conference Call
10-May	COH	Cochlear Capital Markets Day
10-May	JOBS.NASDAQ	51job Q1 FY19 Results Conference Call
14-May	IRE	IRESS SFML Meeting with CEO & Chairman
14-May	OSH	Oil Search SFML Conference Call
16-May	RVS	Revasum Semi-Conductor Conference
16-May	SE1	Sensera Semi-Conductor Conference
16-May	4DS	4DS Memory Semi-Conductor Conference
17-May	BUB	Bubs Australia DB Management Meeting
21-May	JHX	James Hardie Industries Q4 FY19 Results Conference Call
21-May	CPU	Computershare Investor Day
21-May	OFX	OFX Group FY19 Results Conference Call
21-May	TNE	TechnologyOne 1H19 Results Conference Call
22-May	JHX	James Hardie Industries JP Morgan Management Meeting
21-May	JHX	James Hardie Industries Management Meeting
22-May	RWC	Reliance Worldwide SFML Conference Call
22-May	OFX	OFX Group DB Management Meeting
22-May	OFX	OFX Group SFML Management Meeting
22-May	TNE	TechnologyOne UBS Management Meeting
22-May	TNE	TechnologyOne SFML Management Meeting
22-May	DMP	Domino’s Pizza Enterprises CEO Webcast
23-May	JHX	James Hardie Industries SFML Management Meeting
23-May	ALL	Aristocrat Leisure HY19 Results Conference Call
24-May	IPD	Impedimed SFML Conference Call with Dr Sheila Ridner
24-May	COH	Cochlear SFML Conference Call re remuneration changes
24-May	ELS	Elsight SFML Management Meeting

Date	Company	Description
27-May	FPH	Fisher & Paykel Healthcare FY19 Results Conference Call
27-May	OFX	OFX Group MS Management Meeting
27-May	SEK	SEEK SFML Management Meeting
28-May	BKL	Blackmores Meet the Management at Warriewood
28-May	IRE	IRESS UBS Emerging Companies Conference: Technology
28-May	SPT	Splitit UBS Emerging Companies Conference: Technology
28-May	N/A	Lendi UBS Emerging Companies Conference: Technology
28-May	HUB	HUB24 UBS Emerging Companies Conference: Technology
29-May	NAN	Nanosonics UBS Emerging Companies Conference: Biotech
29-May	OPT	Opthea UBS Emerging Companies Conference: Biotech
29-May	PNV	Polynovo UBS Emerging Companies Conference: Biotech
29-May	FPH	Fisher & Paykel Healthcare Management Meeting
30-May	CSL	CSL MS Conference Call with Genesis Bio-Pharmaceuticals
30-May	ALL	Aristocrat Leisure SFML Management Meeting
31-May	IRE	IRESS Conference call re QuantHouse acquisition
4-Jun	TNE	TechnologyOne Showcase event
11-Jun	SGR	The Star Entertainment Trading Update Conference Call
11-Jun	SGR	The Star Entertainment Site visit
12-Jun	NEA	Nearmap MS Management Meeting
12-Jun	JIN	Jumbo Interactive MS 2019 Emerging Companies Conference
12-Jun	NEA	Nearmap MS 2019 Emerging Companies Conference
12-Jun	N/A	Education Centre of Australia Macquarie Management Meeting
12-Jun	OFX	OFX Group Management Meeting with acting CTO
13-Jun	NEA	Nearmap Naviga8 Conference Event
14-Jun	PNV	Polynovo Management Meeting
19-Jun	IPD	Impedimed SFML Management Meeting with CEO and CFO
20-Jun	FPH	Fisher & Paykel Healthcare SFML Management Meeting and NZ site visit day 1
21-Jun	FPH	Fisher & Paykel Healthcare SFML Management Meeting and NZ site visit day 2
21-Jun	SKO	Serko Management Meeting with CFO
26-Jun	N/A	Retail Zoo UBS Non-Deal Roadshow Management meeting
28-Jun	IPD	Impedimed SFML Management Conference Call
28-Jun	N/A	Education Centre of Australia SFML Management Meeting

Selector Funds Management Limited Disclaimer