

## Incorporating unrealized intangibles

### *Acknowledging a Firm's Research and Brand Footprints for Book Value*

By Wang Chun Wei, PhD, Quantitative Analyst

#### Summary

Intangible assets are often overlooked in traditional valuation metrics despite being a meaningful measure of 'firm footprint'. Generally accepted accounting practices often expense rather than capitalize investments into Research and Development (R&D) and marketing. However, acquired firms have their internally generated research and brand footprints realised through the acquirer's goodwill. This creates a discrepancy between internally generated intangibles versus externally generated intangibles with only the latter being realised on the balance sheet (and subsequently in Book Value).

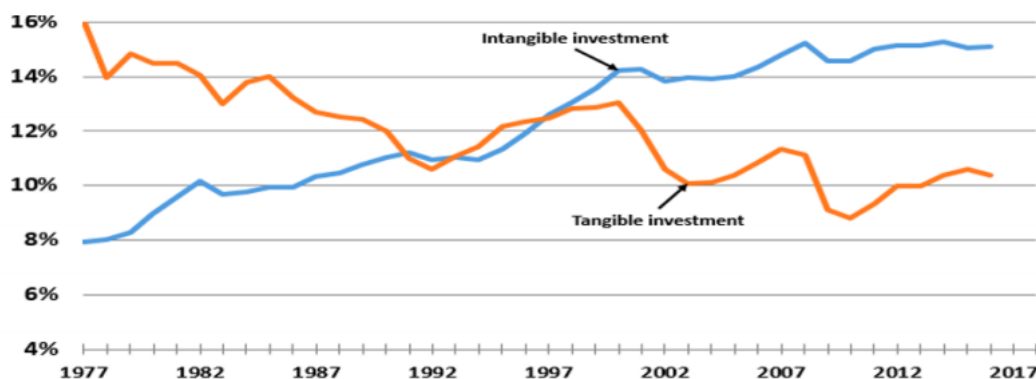
For consistency, we examine adding unrealized intangibles back into Book Value. We show that provides a better measure of firm footprint in a world where intangible assets are increasingly important. Furthermore, we show an improvement in performance across global markets.

#### Motivation.

Corporate investment in intangibles have outstripped tangible assets (see Figure 1). Lev (2018) shows that aggregate spending in intangibles (R&D, patents, marketing, etc.) has outstripped fixed asset capex (PPE). The World Intellectual Property Organization claims that whilst intangible assets accounted for 20% of firm value in the 1980s, they now account for 80%. Corrado *et al.* (2009) show that only 8% of economic growth was attributed to "bricks and mortar" capital.

**Figure 1. The "Intangibles Revolution" from Lev (2018), and Sinclair and Keller (2014)**

**Investment Rates in Tangible and Intangible Assets (Investment Relative to Private Industry Gross Value Added), Private Industries 1977-2017**



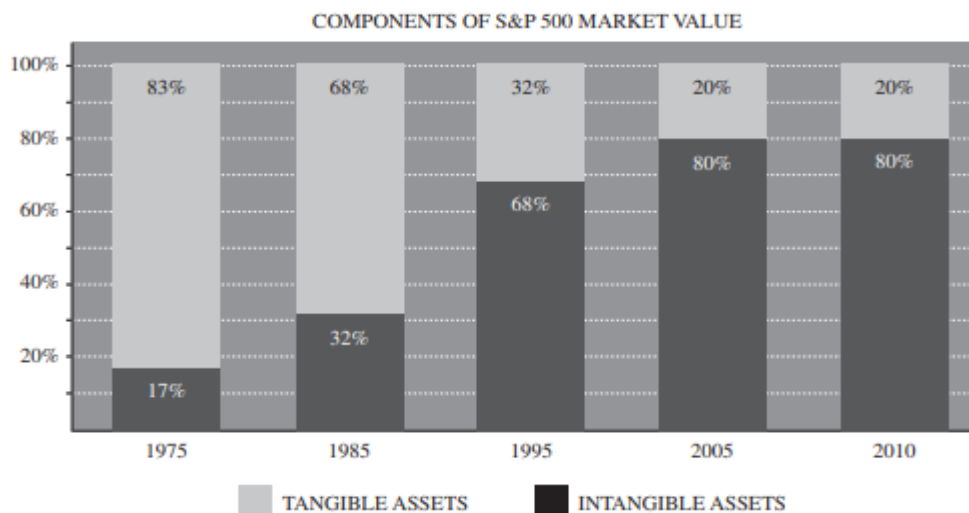


Figure 1: Market to book.

Note: This figure is featured in the IIRC Discussion Paper (2011) and published here with the permission of Ocean Tomo.

Source: The “Intangibles Revolution” from Lev (2018), and Sinclair and Keller (2014). See References.

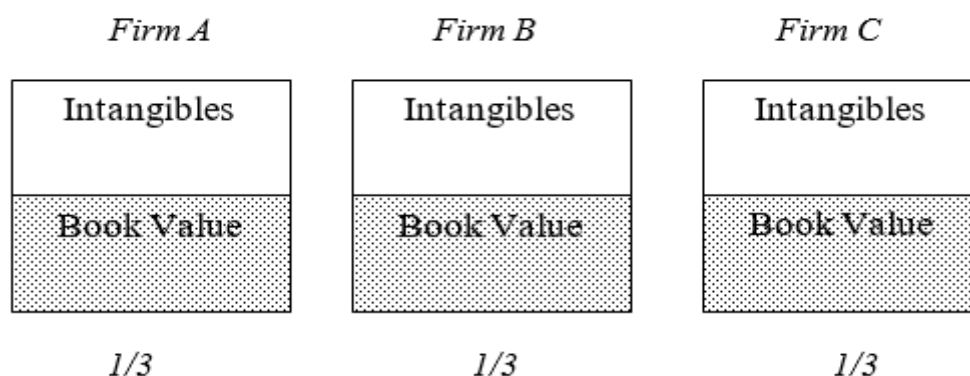
Academic research has long supported the notion that intangible investments can have very tangible impacts on a company’s performance. For instance with R&D, Griliches (1981) find a significant relationship between market value and intangible capital, proxied by R&D expenditure. He shows that the long run effect of \$1 in R&D equates to \$2 to the market value of the firm. Hirschey and Weygandt (1985) and Chauvin and Hirschey (1993) show that R&D and marketing expenses positively influenced firm market value. These studies were conducted prior to the internet revolution and show that discretionary spending in intangibles have always been important. More recently, Chan, Lakonishok and Sougiannis (2001) show intangible spending intensity related to excess returns. In response, Damadoran (2009) and Lev (2018) favoured capitalizing R&D expenses. Moreover, Park (2019) explains that the declining power the book-to-market ratio is related to the growth of intangible assets, and adjusting it yielded a significant improvement.

### The Problem with Book Value: Realized and Unrealized Intangibles.

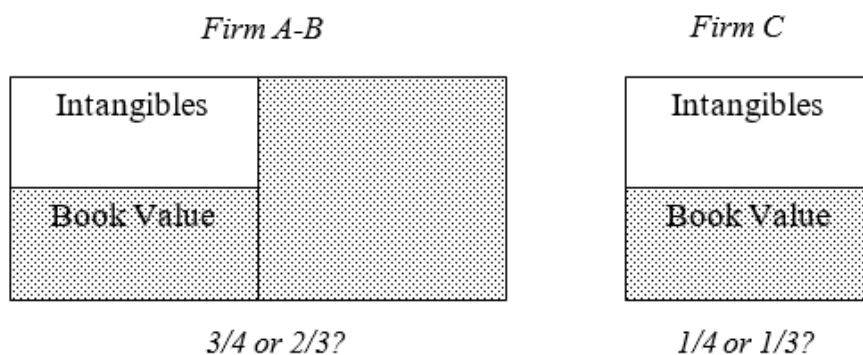
Intangibles are expensed rather than capitalized. At first glance, this means intangibles do not show in Book Value and are completely unrealized. However, this does not mean intangibles are entirely absent from a firm’s balance sheet. When an acquisition occurs, the target firm’s unrealized research and brand value becomes realized and enter the acquirer’s book as goodwill. Therefore, we have realized and unrealized intangibles. The former is already captured in book value as goodwill, and the latter (consisting of internally generated research assets and brand value) is not. We find that size of unrealized intangibles to be not insignificant. Without a merger or acquisition, this footprint is largely invisible from accounting measurements we currently use in the core portfolio. For instance, if we look at P&G’s purchase of Gillette in 2005, nearly the entire 53.4bn purchase price related to intangibles – classified in their accounting notes as “brands with indefinite lives” (see Sinclair and Keller, 2014). Therefore, we believe this contrast in treatment needs to be rectified.

To further illustrate, let us consider a simplistic example:

We know firm value consists of both tangible and intangible assets. The former is captured by Book Value, whilst the latter is not. Suppose we have three identical companies.



Clearly, they should be weighted equally - and this is indeed the case with Book Value. Suppose however, Firm A acquired Firm B. The intangibles component in Firm B thus is realized as Goodwill and part of Book Value of the combined firm.



Now the weight of Firm AB is 75%, and Firm C is 25% under Book Value fundamental weighting. This means a down-weight in Firm C from 33% to 25% and an up-weight to the combined Firms A and B from 67% to 75%. This is problematic as the underlying values of the firms have not changed at all. One would argue maintaining the 67% (Firm A & B) and 33% (Firm C) weighting makes more sense. The changes in weights simply reflect that some intangibles (acquired) are part of Book Value whilst others (internally generated) are not.

(NB: One solution might be to simply subtract Goodwill from Book Value. However, the increasing importance in intangibles means that this is a much more drastic approach with many undesirable outcomes.)

We intend to alleviate this bias by incorporating internally generated intangible assets into Book Value.

## Types of Intangibles Expenditures.

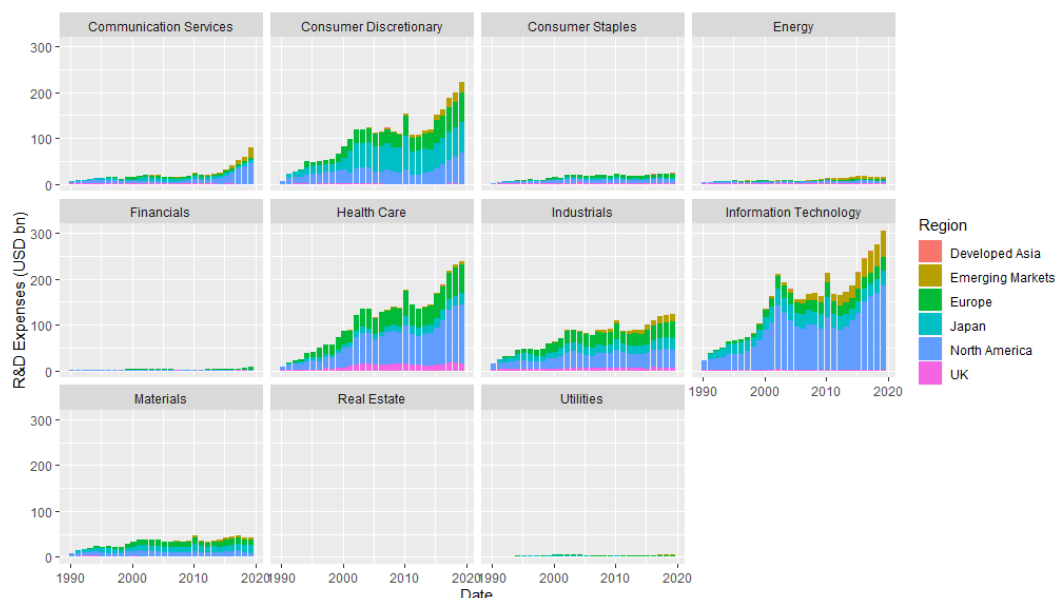
Before incorporating intangibles assets, we need to understand how they are formed. They are created through firm spending in two broad categories:

1. R&D expenditure
2. Advertising and marketing expenditure

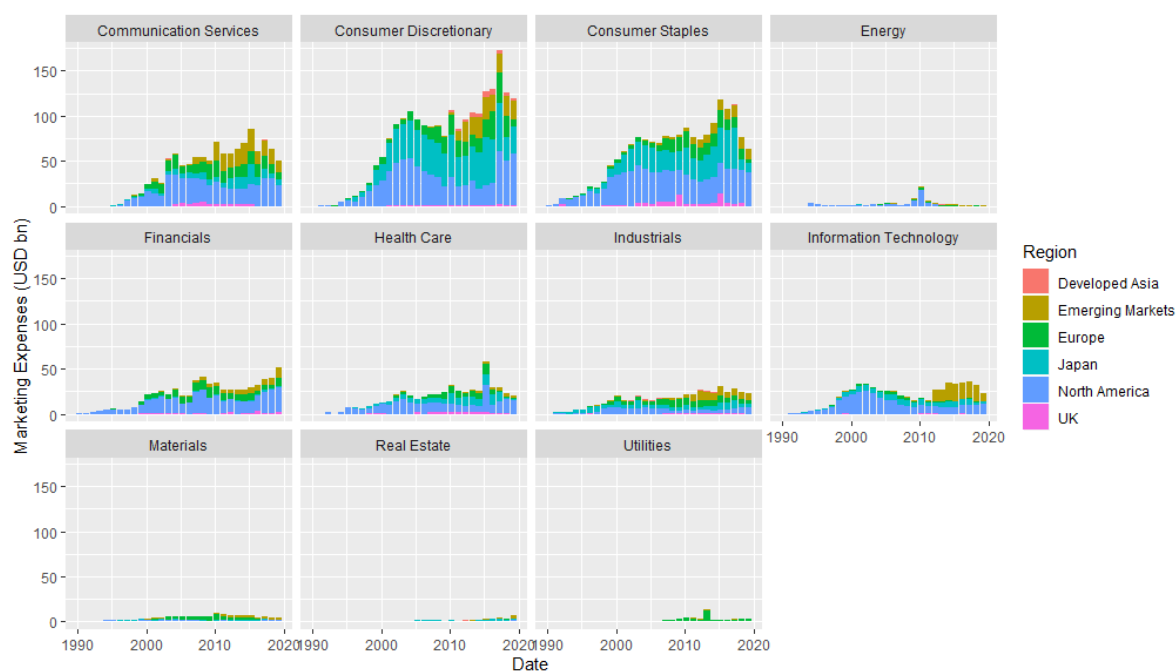
These two expenditures relate to two intangible asset types: relational assets and intellectual assets. Relational assets are based on the relationships between the firm and outside stakeholders (suppliers, customers, etc.), and intellectual assets refer to knowledge or Intellectual Property (IP) that a firm uses to create new products. (see Peterson and Jeong, 2010). Chart 2 shows the growth in both types of expenditures across time and sectors.

## Chart 2. Aggregate Intangible Expenditure among Global stocks

### Panel A. R&D Expenditure



Panel B. Advertising & Marketing Expenditure



Source: Realindex, Factset, data as at 31 December 2019

In competitive markets, firms differentiate themselves based on branding, product innovation and quality. Hence, advertising and R&D expenditures are a means for firms to remain competitive. Chauvin and Hirschey (1993) show that higher expenditures in both causes greater differentiation and subsequently higher market valuations. Moreover, higher expenditure is an indication of managerial confidence and the willingness to invest in firm profits (as both R&D and marketing expenditure are discretionary managerial activities).

Corporate brand value is a function of both advertising and R&D expenditure (see Chart 3). Advertising plays a role in communicating product features and services whilst R&D contributes to brand value through the creation of these products and services.

Chart 3. Peterson and Jeong's (2010) corporate brand value model

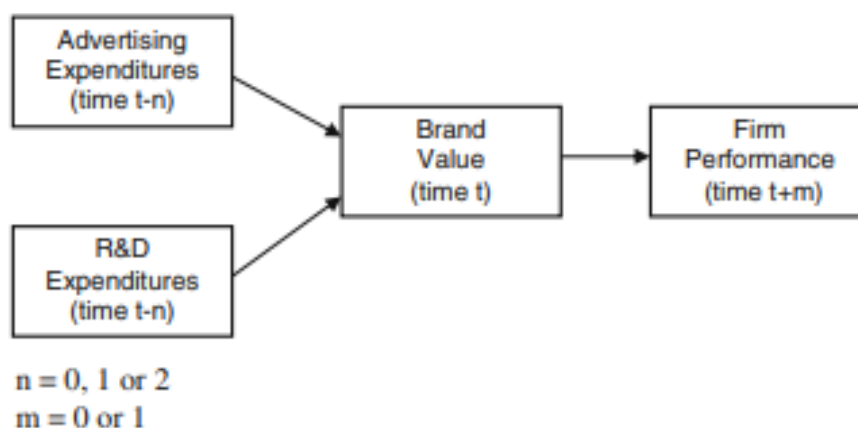


Figure 1 Advertising and R&D expenditures as investments: a parsimonious model.

Source: Peterson and Jeong's (2010). See References.

## Adjusted Book Value.

We measure unrealized intangibles simply and uniformly across the investable universe. This is achieved through capitalizing items that would have otherwise been expensed from an accounting standards perspective.

Internally generated brand value is measured by aggregating tax adjusted advertising and marketing expense. It reflects the additional 'firm value' not captured in retained profits. Internally generated research value is measured by aggregating tax adjusted research and development expense. It reflects the additional value created through research, which arguably will improve firm profitability in the future. Our methodology follows that of Damadoran (2009).

$$\text{Brand Value Adjustment}_t = \sum_{k=0}^{n-1} (1 - \text{tax rate}_{t-k}) \times \text{Advertising \& Marketing Expense}_{t-k}$$

$$\text{Research Value Adjustment}_t = \sum_{k=0}^{n-1} (1 - \text{tax rate}_{t-k}) \times \text{R \& D Expense}_{t-k}$$

$$\text{Adjusted Book Value} = \text{Book Value} + \text{Brand Value Adjustment} + \text{Research Value Adjustment}$$

We sum intangibles expenses over 5 years (i.e.  $n = 5$ ). This is consistent with the 5-year averaging we conduct on Sales, Dividends and Cash Flow portfolios in the Core process. The lag length is not entirely arbitrary. We find it a reasonable average for amortization length of intangibles across sectors (see Damadoran, 2009). Chan, Lakonishok and Sougiannis (2001) also amortize their advertising and R&D expenditures by 5 years when they analyse its effect to future stock returns. They show that expensing R&D costs distorts conventional valuation metrics such as Book Value. They also suggest adjusting Book Value by adding R&D assets back.

Furthermore, we have discovered the performance difference between using a blanket 5-year amortization period and sector variable amortization based off Damadoran's amortization tables to be largely negligible. In light of this, we have chosen an Occam's razor approach<sup>1</sup> because whilst the materiality of sector based amortization length is marginal, it does introduce significantly more model parameters.

Moreover, we validate our intangibles adjustments by comparing companies with the largest adjustment factors to brand recognition surveys (Interbrand and Forbes). We find that firms with the highest unrealized intangibles boost are indeed companies with significant brand value as per surveys.

## Rest Assured: Still a Value Portfolio.

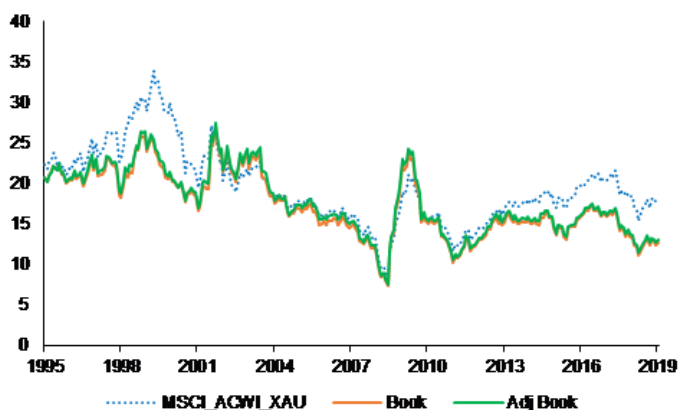
The impact of the adjustment on Book Value's "value" characteristic remains unchanged.

In chart 3, we show key portfolio characteristics of the global portfolio. We note very marginal changes to key ratios, and that the overall flavour of the Book Value portfolio remains intact.

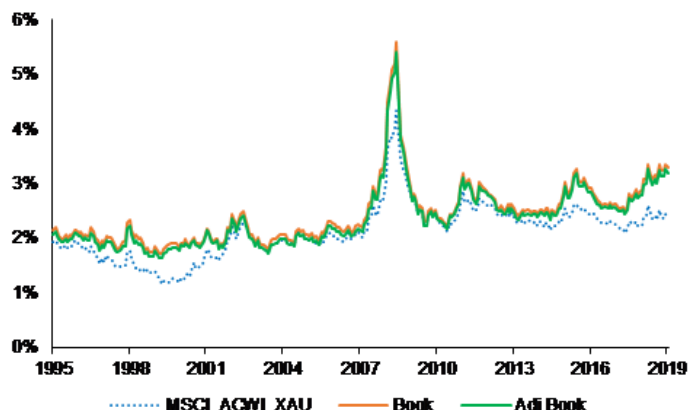
<sup>1</sup> Occam's razor approach is the problem solving principle that "Entities should not be multiplied without necessity". So when presented with competing hypotheses that make the same predictions, one should select the solution with the fewest assumptions.

**Chart 3. Portfolio Characteristics for Global ex AU**

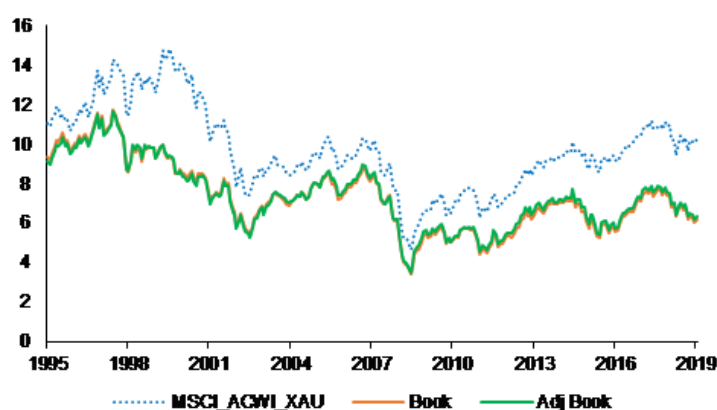
*Panel A. Price-to-Earnings*



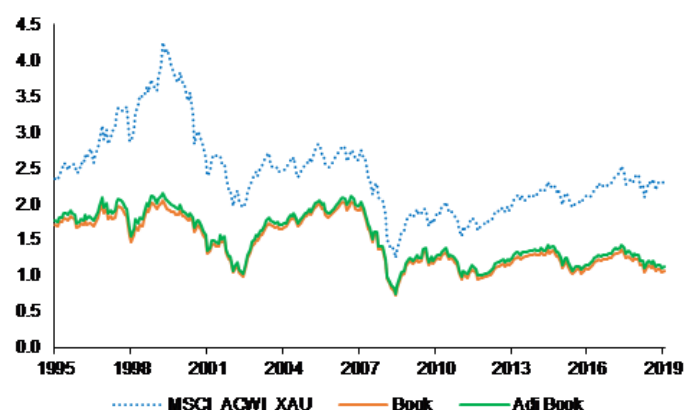
*Panel B. Dividend Yield*



*Panel C. Price-to-Cash Flows*



*Panel D. Price-to-Book*



Source: Realindex, Factset, data as at 31 December 2019

### The Performance Impact to Book Value.

Overall, we find a subtle improvement in both absolute and relative return space. As noted from Table 3, we find more improvement in Developed Markets, where intangibles are more sizeable.

By incorporating accumulated R&D expenses and marketing expenses to Book Value, we capture a new measure of firm footprint (unrealized intangible assets) currently missing in our core portfolio. We show that intangible assets are growing in value and importance, and thus should be included. We propose a simple and transparent methodology of adjusting for book value that is not inconsistent with the academic literature. Our results show a mild performance boost in developed markets, whilst reducing some of our systemic sector tilts in Health Care, IT and Financials without changing the value characteristics of the portfolios.

**Table 3. Performance Summary**

	Global ex AU		Developed ex AU		Emerging		Australia	
	Book	AdjBook5	Book	AdjBook5	Book	AdjBook5	Book	AdjBook5
Total Risk	12.42%	12.43%	12.74%	12.73%	18.13%	18.09%	12.84%	12.82%
Total Return	8.11%	8.36%	7.94%	8.24%	9.31%	9.39%	10.54%	10.59%
Sharpe Ratio	0.65	0.67	0.62	0.65	0.51	0.52	0.82	0.83
Active Risk	3.85%	3.52%	3.95%	3.58%	5.57%	5.49%	3.80%	3.76%
Active Return	0.44%	0.69%	0.16%	0.45%	2.58%	2.66%	1.00%	1.05%
IR	0.11	0.2	0.04	0.13	0.46	0.48	0.26	0.28
Avg Turnover (1-way)	15.55%	15.05%	14.91%	14.44%	21.04%	20.93%	13.92%	13.88%
Avg Num Stocks	1712	1708	1083	1081	593	592	202	202
Worst Active Drawdown	-19.52%	-15.58%	-21.68%	-17.65%	-12.29%	-11.90%	-13.38%	-13.32%
Worst Drawdown	-40.67%	-40.02%	-42.36%	-41.44%	-44.13%	-43.97%	-50.08%	-49.92%

Source: Realindex, data from 1995 - 2019

## Conclusion.

The core portfolio is about measuring different dimensions of firm footprint. Over time, as firms evolves, we believe these dimensions need to be revisited and adjusted accordingly. We have found that intangibles assets have become increasingly important for developed market firms. However, their accounting treatment is inconsistent and depends on whether the intangibles have been acquired or internally generated. The research we have conducted shows that an adjustment for book value largely accounts for internally generated intangibles which currently are expensed through either R&D or marketing avenues and an improvement in backtest performance.

In conclusion, not only does the adjustment to Book Value make economic and intuitive sense, but a small but positive impact on returns and is an area that we are researching.



**References**

- Chan, L. K., Lakonishok, J. and T. Sougiannis (2001) The stock market valuation of research and development expenditures, *Journal of Finance*, vol. 56 (6), pp2431-2456
- Chauvin, K. W. and M. Hirschey (1993) Advertising, R&D expenditures and the market value of the firm, *Financial Management*, Vol 22, pp128-140
- Clausen, S. and S. Hirth (2016) Measuring the value of intangibles, *Journal of Corporate Finance*, Vol 40, pp110-127
- Damodaran, A. (2008) Research and Development Expenses: Implications for Profitability Measurement and Valuation, NYU working paper No. FIN-99-024
- Damodaran, A. (2009) Valuing Companies with intangibles assets, NYU Stern School of Business working paper
- Griliches, Z. (1981) Market Value, R&D and Patents, *Economics Letters*, Vol 7, pp183-187
- Hirschey, M. and J.J. Weygandt (1985) Amortization policy for advertising and research and development expenditures, *Journal of Accounting Research*, Vol.23, pp326-335
- Lev, B. (2018) The deteriorating usefulness of financial report information and how to reverse it, *Accounting and Business Research*, Vol. 48 (5), pp465-493
- Malmendier, U., and G. Tate, 2008. Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction. *Journal of Financial Economics* 89, 20-43.
- Nakamura, L.I. (2010) Intangible assets and national income accounting, *Review of Income Wealth* Vol 56 (1), pp135-155
- Park, H. (2019) An Intangible-adjusted Book-to-market ratio still predicts stock returns, CUNY working paper
- Peterson, R.A. and J. Jeong (2010) Exploring the impact of advertising and R&D expenditures on corporate brand value and firm-level financial performance, *Journal of the Academy of Marketing Science*, Vol. 38 (6), pp677-690
- Sinclair, R.N. and K.L. Keller (2014) A case for brands as assets: acquired and internally developed, *Journal of Brand Management*, Vol.21(4), pp286-302

**Websites:**

<https://sloanreview.mit.edu/article/finance-intangible-investments-tangible-results/>

[https://www.wipo.int/wipo\\_magazine/en/2016/01/article\\_0002.html](https://www.wipo.int/wipo_magazine/en/2016/01/article_0002.html)

<https://www.pginvestor.com/Cache/1001181145.PDF?>



**For further information contact:** [clientservices@realindex.com.au](mailto:clientservices@realindex.com.au)

**Andrew Francis**

Chief Executive

[Andrew.Francis@realindex.com.au](mailto:Andrew.Francis@realindex.com.au)

+61 2 9303 7079

**Iain McLear**

Investment Manager

[imclear@realindex.com.au](mailto:imclear@realindex.com.au)

+61 2 9303 6329

**Bonnie Chow**

Investment Analyst

[bonnie.chow@realindex.com.au](mailto:bonnie.chow@realindex.com.au)

+61 2 9303 1734

This material has been prepared and issued by First Sentier Investors Realindex Pty Ltd (ABN 24 133 312 017, AFSL 335381) (Realindex). Realindex forms part of First Sentier Investors, a global asset management business. First Sentier Investors is ultimately owned by Mitsubishi UFJ Financial Group, Inc (MUFG), a global financial group.

This material is directed at persons who are professional, sophisticated or 'wholesale clients' (as defined under the Corporations Act 2001 (Cth) (Corporations Act)) and has not been prepared for and is not intended for persons who are 'retail clients' (as defined under the Corporations Act). This material contains general information only. It is not intended to provide you with financial product advice and does not take into account your objectives, financial situation or needs. Before making an investment decision you should consider, with a financial advisor, whether this information is appropriate in light of your investment needs, objectives and financial situation. Any opinions expressed in this material are the opinions of the Realindex only and are subject to change without notice. Such opinions are not a recommendation to hold, purchase or sell a particular financial product and may not include all of the information needed to make an investment decision in relation to such a financial product.

The product disclosure statement (PDS) or Information Memorandum (IM) (as applicable) for those registered managed investment schemes mentioned herein that are managed by Realindex (Funds), which are issued by Colonial First State Investments Limited (ABN 98 002 348 352, AFSL 232468) (CFSIL), should be considered before deciding whether to acquire or hold units in the Funds. The PDS or IM are available from First Sentier Investors.

CFSIL is a subsidiary of the Commonwealth Bank of Australia (Bank). First Sentier Investors was acquired by MUFG on 2 August 2019 and is now financially and legally independent from the Bank. Realindex, MUFG, the Bank and their respective affiliates do not guarantee the performance of the Fund(s) or the repayment of capital by the Fund(s). Investments in the Fund(s) are not deposits or other liabilities of MUFG, the Bank nor their respective affiliates and investment-type products are subject to investment risk including loss of income and capital invested.

To the extent permitted by law, no liability is accepted by MUFG, Realindex, the Bank nor their affiliates for any loss or damage as a result of any reliance on this material. This material contains, or is based upon, information that Realindex believes to be accurate and reliable, however neither Realindex, MUFG, the Bank nor their respective affiliates offer any warranty that it contains no factual errors. No part of this material may be reproduced or transmitted in any form or by any means without the prior written consent of Realindex.

In Australia, 'Colonial', 'CFS' and 'Colonial First State' are trade marks of Colonial Holding Company Limited and 'Colonial First State Investments' is a trade mark of the Commonwealth Bank of Australia and all of these trade marks are used by First Sentier Investors under licence.

Copyright © First Sentier Investors (Australia) Services Pty Limited 2020

All rights reserved.