RESEARCH NOTE #7

RI HUB

RULE 8: DON'T OWN HARD ASSETS

The Ruthven Institute has developed 12 rules for business success. Based on 45 years of analysis of Australia's top 1000 companies, the Ruthven Institute has distilled the essence of a winning business strategy. Research undertaken by the University of Melbourne between 1998 and 2001 supported many of these rules. In this series, the RI Hub examines the literature to assess the validity and continuing relevance of these rules. In each of the following sections, the literature is summarised, the key issues for implementation highlighted, and the questions for future research identified.

> "For much of human history, land, buildings and equipment were inextricably linked to the definition of wealth creation. [These] assets … are termed 'hard assets'. But, as demonstrated in Rule 4, it's the so-called 'soft assets' – the intangible assets such as IP, brand strength, and organisational culture (among other intangibles) – that create more wealth today…
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> Some industries have light balance sheets, because hard assets are not required, have been leased, or have been eschewed due to the outsourcing of their respective business functions. Then there are industries where a big investment in hard assets is necessary to conduct business. That doesn't mean, however, that the industry concerned needs all those hard assets on its own balance sheet. Superannuation and other mutual funds, property trusts and other instruments are increasingly absorbing the outsourcing of hard assets. Naturally enough, these enterprises can't follow this rule, although some financial leveraging raises their ROSF."
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> Ruthven Institute (2019) *Business Success: In Brief the 12 Golden Rules*

Rule 8 and the underlying assumptions

As is clear from the preamble, RI Rule 8 posits that firms should reduce the amount of property, plant, and equipment (PPE) – called *hard assets* – they own and invest the freed resources in developing and improving their *soft assets* such as intellectual property (IP), patents, and brand strength. A reader who is familiar with Rule 4 (Be forever innovative) will notice that the investment-firm performance relationship proposed by Rule 8 is, in a way, an extension of that posited by Rule 4. Specifically, while Rule 4 suggests investing in IP improves firm performance, Rule 8 goes a step further and claims that resources tied up in physical assets should instead be invested in soft assets. Underlying this claim is the implicit assumption that soft/intangible assets generate higher returns on investment than hard/tangible assets do. Therefore, a researcher whose goal is to assess the validity of Rule 8 must

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investigate the validity of this assumption. This rationale has been the main factor shaping the structure and content of this review. We abstract away from the RI's propositions on *how* firms should execute the rule, and discuss them briefly in the conclusions section.

The importance of intangible resources

The role of intangible assets in a firm's competitiveness, profitability, and survival is well-established in both academia and practice. Managers seemingly view innovative capability and stakeholder relationships as instrumental in sustaining a firm's competitiveness (especially in intangibles-intensive industries), as the evidence suggests that firms are likely to retain their R&D expenditures and corporate social responsibility-related spending even in the face of a financial crisis while reducing their capital expenditures and workforce (Flammer & Ioannou, 2020). Such a strategy appears to pay off, as firms following this strategy tend to perform better than other firms post-crisis (Flammer & Ioannou, 2020). Results from Youndt, Subramaniam, and Snell (2004) also indicate that a small group of superior performing firms exhibit high levels of human, social, and organizational capital, whereas underperforming firms tend to have very low levels of all three types of intangible capital.

Based on the rationale outlined in the previous section, and taking into that we have already covered the impact of a number of intangible resources on firm performance in our Rule 4 research note, this review focuses primarily on the empirical studies whose results help us gain insights into the validity of the assumption underlying Rule 8. The resource-based view of the firm (hereafter, RBV) and related empirical evidence is a particularly useful and relevant framework for this purpose. RBV argues that it is the resources a firm controls, rather than its products, that lead to sustainable competitive advantages and profitability (Wernerfelt, 1984). The term intangible resources is typically used by the proponents of RBV as an umbrella term that covers various intangible assets and competencies. These include IP rights (patents, trademarks, and copyrights), trade secrets, contracts and licenses, personal and organisational networks, the know-how of employees, brand strength, and the culture of the organisation (Hall, 1993).

An oft-cited argument in the RBV literature is that sustained competitive advantage derives from the resources and capabilities that are valuable, rare, imperfectly imitable, and not substitutable (Barney, 1991). Although such resources and capabilities may be either tangible or intangible, the latter class of resources will

satisfy the above criteria more often. Indeed, proponents of the RBV perspective have noted that greater ease of trading tangible resources in and out of organisations renders them less likely to be an imitable source of advantage (Peteraf, 1993).Therefore, investments in intangible resources are more likely to help firms to differentiate themselves from their rivals and achieve sustainable competitive advantage (Dierickx & Cool, 1989; Nelson, 1991; Winter, 1998).

Despite the numerous studies exploring the impact of intangibles on firm performance, Villalonga (2004) argues that examining the importance of intangibles *relative* to tangibles is a better test of the arguments posited by RBV. When framed in this manner, it also more closely aligns with the claims from Rule 8. Interestingly, however, fewer studies have attempted to provide evidence on the extent to which the performance implications of intangible investments differ from those of physical/capital investments. They are also scattered across different disciplines, have different research goals, and scrutinize different elements of intangible resources. In the next section, we discuss these studies in greater detail.

Intangible resources and firm performance

Evidence suggests that rising unmeasured intangibles is one of the main contributors to the increasing difference between return on private capital and risk-free interest rate over the last 30 years (Farhi & François, 2019). Intangible capital, which includes factors such as software, intellectual property, brand, and innovative business processes, can also explain much of the decline in physical capital investment since 2000 (Crouzet & Eberly, 2019).

Arguably the earliest study whose findings allow us to compare the differential impact of intangibles versus tangibles on firm performance is Woolridge and Snow (1990). The main research question Woolridge and Snow (1990) attempt to address is whether investors react significantly to the announcements of strategic investment decisions, but they also conduct some sub-sample analyses to test whether the market reaction to R&D announcements is more pronounced than that to capital expenditure announcements. Their results indicate markets favour announcements regarding investments in R&D over those in capital expenditures. Using UK firms as their sample, Green, Stark, and Thomas (1996) find that investors appear to value R&D spending at least as highly as capital expenditures.

Another early study whose results speak to the question of interest in this review is

Waring (1996). Although Waring (1996) was primarily interested in examining whether the persistence of profitability varied across industries due to different industry structures, he also found that the average skill level of employees and R&D intensity positively affected the persistence of industry returns (as measured by ROA). To the extent that the persistence of earnings is associated with competitiveness, these results suggest investments in intangible resources are more effective in improving firms' survival. It should be noted, however, that Waring's (1996) results are at the industry level, so there is a possibility these findings do not apply at the firm level.

There has been more interest in the differential role of intangible capital in firm performance since the early 2000s, which is not surprising given the increased use of IT resources since the 1990s. Based on a sample of large US firms over 1987-1997, the empirical work of Brynjolfsson, Hitt, and Yang (2002) is among the most comprehensive. Their major finding is that a dollar invested in computers during their sample period was associated with an increase in market valuation of over $10, compared to an increase of just over $1 per dollar of investment in other tangible assets. They additionally found that firms with strong IT use were also more likely to adopt a set of organisational characteristics such as greater use of teams, broader distribution of decision rights, and increased worker training, which increased their market valuation even further. Such firms also had significantly higher output in subsequent years. One can argue that these results may be less pronounced today than they were in the 1990s as all large firms have since heavily invested in the computerisation of their systems, i.e. now there is arguably less heterogeneity among firms in terms of IT investment than there was in the 1990s. However, Ashrafi and Mueller (2015) provide evidence that it is the intangible IT resources and IT capabilities, not the tangible IT resources, that lead to improved firm performance. Therefore, it is reasonable to assume that the results documented in Brynjolfsson et al. (2002) would also be largely applicable today.

Using firms in the pharmaceutical and chemical industries as their sample, Hsieh, Mishra, and Gobeli (2003) examine the effect of R&D intensity on operating margin, sales growth, and market value, and compare it with the effect of fixed assets on firm performance. They find that the impact of R&D investment on firm value is about twice as much as that of fixed assets.

Villalonga (2004) examines the extent to which firm-specific intangibles, as measured

by Tobin's *q* and the predicted value of Tobin's *q*, affect the persistence of a firm's profits as measured by ROA.[1] Using Tobin's *q* as the measure of intangibles relative to tangibles rests on the idea that the value of a firm's intangible resources can be estimated as the difference between the market value of a firm's assets and the replacement cost of its tangible assets. She finds that the greater a firm's intangible assets in relation to its tangible assets, the more persistent its profits. Landsman and Shapiro (1995) also provide evidence of a positive association between Tobin's *q* and ROA. To the extent that Tobin's *q* and the predicted value of Tobin's *q* are valid measures of a firm's intangible assets relative to its tangible assets, these findings confirm Waring's (1996) results at the firm level.

In a similar vein as Villalonga (2004), Galbreath and Galvin (2008) investigate whether tangible or intangible assets are more successful at explaining firm performance. Since they use data collected from a survey of Australian companies, the performance measure used in the study is subjective and is calculated using the managers' responses to questions asking them to rate how their company performed vis-à-vis their competitors in terms of sales turnover, market share, and profitability (not specified which profitability measure).The results indicate that intangible resources have a bigger impact on firm performance than tangible resources in services but not in manufacturing industries. However, it should be noted that in the main model of the study neither type of resources significantly affects firm performance in manufacturing firms, which is unlikely to be the case in real world and is a potential indication of a biased sample.

Orhangazi's (2019) analysis of US non-financial corporations yields a set of interesting results that are relevant for this review. The study's results suggest that, consistent with Crouzet and Eberly's (2019) findings, the ratio of intangible assets to capital stock increased over the years, and industries with higher intangible asset ratios tend to have higher profit to investment ratios and higher markups and profitability. He also finds that intangible-intensive industries' profitability has increased faster than their share of investment. A potential caveat about Orhangazi's (2019) findings is that, like those of Waring (1996), they are at the industry level and hence, may not necessarily be applicable to the differences across firms *within* a given industry.

1 Tobin's *q* is calculated as the market value of debt plus the market of equity, divided by the replacement cost of assets. Empirical studies often use book value of assets instead of replacement cost of assets as the latter is hard to estimate. Book value of debt is also commonly used as a proxy for market value of debt.

Prior research has also provided evidence that strategic investment decisions made by firms undergoing initial public offering (IPO) have a significant impact on the probability of their survival. Specifically, Jain and Kini (2008) find that IPO firms with larger industry-adjusted R&D spending have significantly higher survival rates, whereas the relationship between industry-adjusted capital expenditures and post-issue firm survival is not consistently significant. Interestingly, however, the opposite is true when the dependent variable is operating performance instead of probability of survival: the strength of the relationship between post-IPO operating performance and early R&D spending depends on model specifications, whereas the association between capital expenditures and post-IPO performance is consistently positive. The latter result is not surprising considering that R&D investments generate future benefits that are more uncertain than those from investments in physical capital (Kothari, Laguerre, & Leone, 2002).

Conclusions and future research opportunities

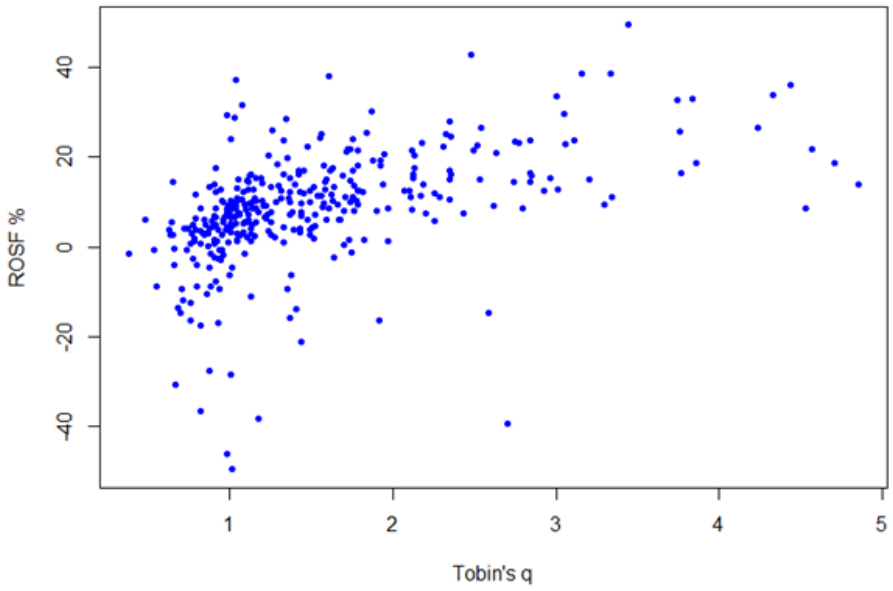
Rule 8 posits that firms should substitute away from investing in hard assets and use the freed resources in developing intangible assets and competencies. Underlying this claim is the assumption that investments in intangible assets generate higher returns than those in tangible assets. Although there are only a handful of studies that have investigated this issue and the evidence is rather disjointed, the assumption underlying Rule 8 seems to be broadly consistent with the findings from the extant academic literature. Assuming that Tobin's q is a valid proxy for intangibles relative to tangibles (as in Villalonga (2004)), Figure 1 overleaf also suggests a positive relationship between intangibles and ROSF in the Australian context.[2] However, a more systematic study where other factors are controlled for is clearly needed before more definitive conclusions can be reached.

Evidence from prior research also suggests that in addition to potentially generating higher returns, intangible assets can improve the returns to physical investment. For example, Lin (2012) shows that technological progress, driven by R&D investment, raises the marginal benefit of physical capital while reducing the marginal cost of physical investment. As a result, expected returns on physical investment increase in R&D investment. On the contrary, expected returns on physical investment decrease in physical investment due to the diminishing marginal returns of physical capital production. Crouzet and Eberly (2019) find that productivity gains derived from

2 The plot includes public firms for which data is available in the IBISWorld database for the year 2019. Firms with extreme ROSF ratios and Tobin's q are excluded from the plot.

intangible capital investment have been among the major drivers of rising industry concentration in the new age economy.

Figure 1: Intangibles and Return on Shareholder Funds



One important result that naturally arises from Lin's (2012) model is that R&D-intensive firms earn high average stock returns while capital investment-intensive firms earn low average stock returns. Riley, Michael, and Mahoney (2017) further argue that high physical capital intensity could indicate a firm has substituted away from labour, and that it is more difficult for firms with high physical capital intensity to create and sustain a competitive advantage with its human capital investments. Consistent with this rationale, they provide some evidence that stock market reaction to human capital investments is significantly weaker for physical capital-intensive firms.

It is important to note that although we have shed some light on the validity of the main assumption underlying Rule 8, it is still unclear to what extent the other propositions of Rule 8 should be applied by a firm to improve its performance. Can a firm safely unload most, if not all, of its hard assets from its balance sheet and achieve a sustainable improvement in performance? Is there any "golden" threshold in terms of what proportion of hard assets a firm should own? How does owning versus leasing/outsourcing a hard asset affect the firm's flexibility in the short-run and the long-run? Furthermore, although some firms in hard-asset heavy industries

can potentially outsource their hard assets to superannuation and mutual funds, property trusts, or other similar entities (a proposition of Rule 8), many firms with very specialised assets may find it hard to find a buyer to be able to unload their hard assets.

Last but not least, reducing the amount of tangible assets may have strong implications for a firm's borrowing ability. Intangible assets, no matter how high, cannot be used as a collateral in debt contracts, which is likely to negatively affect the firm's cost of borrowing and/or the firm's debt capacity and banking relationships (Gan, 2007). Reduced capacity to borrow funds will in turn affect how much additional funding the firm can allocate to improve its intangible resources once it uses up the freed-up resources from selling its tangible assets. Although a firm with fewer hard assets may not need as much funding as comparable firms with a substantially higher amount of hard assets, diminished access to external funding can curtail its long-term growth. These arguments suggest that firms are likely to end up operating in a new equilibrium that may or may not improve their performance once a certain threshold is reached. This issue is also likely to be more pronounced in private firms than in public firms as unlike private firms, public firms can issue stocks to raise funds when their borrowing ability is diminished. Better understanding the implications of the propositions of Rule 8 would be the natural next step and constitute interesting research questions in their own rights.

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