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Title:

RI Hub Rule 9: Manage Your Finances Wisely

Date:

2021-07

Citation:

Fatullayev, S. & Sammartino, A. (2021). RI Hub Rule 9: Manage Your Finances Wisely. Ruthven Institute Hub, University of Melbourne.

Persistent Link:

<https://hdl.handle.net/11343/281886>

RULE 9: MANAGE YOUR FINANCES WISELY

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.

"The relative importance of these expenditures as a share of revenue varies enormously from one industry to another. In the case of materials-intensive goods industries, the advent of just-in-time manufacturing (JIT) and distribution logistics, coupled with stock minimisation through factoring financial services, has transformed the efficiency and profitability of firms in these sectors.

Good financial management not only ensures the viability of a business; it is also an invaluable partner in forward planning, leading to the best strategy for a firm. While status and importance vary from industry to industry and firm to firm, good financial management via the CFO is now integral to the support of the CEO – and the business at large – along with Chief Marketing Officers (CMOs) and Chief Operating Officers (COOs). Modern companies have a need of financial disciplines based on a range of factors, including cashflows,...credit management, liquidity, exchange rate and risk management,...business planning and budgets, [and] management accounting."

Ruthven Institute (2019) *Business Success: In Brief the 12 Golden Rules*

Compared to the other RI rules, Rule 9 is unique in that while it has one general (and rather straightforward) message, the formula for success as proposed by the rule has multiple facets. The rule's main message arguably needs no validation: academics and practitioners would agree that prudent financial management is essential to a firm's survival. Therefore, to assess the validity of Rule 9, one has to examine the validity of its various claims and recommendations. The excerpt above includes a number of them, and the sheer size of this list makes it impossible to cover all of them here. Consequently, we focus only on the implications of certain aspects of cash movement and working capital (i.e. "finances" in the traditional sense).

AUTHORS

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July 2021

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A major point of difference between Rule 9 and the other RI rules is that many of its recommendations are aimed at improving the *efficiency* of a company's operations and reducing the *volatility* of its cash flow and earnings. Such recommendations are likely to affect a firm's chances of survival and the sustainability of its profits to a greater extent than the level of its profitability, which has been the point of interest for all other rules we have examined so far. Consequently, some of the topics discussed below are concerned with firm performance while others with firm risk. In the remainder of this review, we look at some of the rule's claims individually and discuss the relevant evidence from prior research regarding their validity.

Cash flows and working capital: Implications for firm performance

Operating cash flow and firm performance

Arguably the most important factor affecting a firm's chances of survival is the level and volatility of its operating cash flow, i.e. the cash it generates in the ordinary course of business on an ongoing basis. Unlike in the cases of cash flows from financing and investing activities, it makes little sense to talk about optimal operating cash flow management as all else being equal, higher cash flow from operating activities is always a preferred outcome (Myers, 1984; Myers & Majluf, 1984).¹ Consequently, operating cash flow is generally considered and examined in the academic literature as an *indicator* of firm performance and profitability. A discussion of the operating cash flow-performance relationship is therefore meaningful only in the context of the informativeness of operating cash flow relative to net income/accruals in predicting future earnings or cash flows, and ultimately, in firm valuation. If investors primarily use net income as a performance indicator and find cash flow figures relatively uninformative, then firms do not have a strong incentive to maximise operating cash flow as long as they report a good bottom line.

Much research has been done in the accounting and finance literatures regarding the information content of cash flows. As accruals are an integral part of these literature streams, it is helpful to understand what they are before proceeding with the discussion of relevant studies. Accruals are created whenever a firm earns revenues or incurs expenses but cash has not yet changed hands. Net income is adjusted by the amount of accruals created regardless of the flow of cash. Accounts receivable and accounts payable are the most common types of accruals on the

¹ This is reflected in the lack of such studies in the academic literature. In many accounting studies, cash flow management refers to an activity whereby managers try to time the flow of cash in and out of the company in order to boost operating cash flows for the purposes of financial reporting (akin to earnings management). This is not the meaning intended here. We use cash flow management to refer to a set of *non-opportunistic activities* aimed at improving the flow of cash in and out of the company.

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the balance sheet. As the firm receives cash for the revenues earned or pays cash for the expenses incurred, accruals are reduced by the amount of cash received or paid.² The accrual system of accounting thus leads to net income consisting of two parts: accruals and cash flows.

It is now well established that operating cash flow provides investors with incremental information over and above that provided by accruals or earnings in general. In arguably the earliest studies in this area, Bowen, Burgstahler, and Daley (1986) and Rayburn (1986) find that both cash flow from operations (CFOP) and accruals remain significant in a mode of stock returns.³ Livnat and Zarowin (1990) confirm these results, and further show that cash flow from financing activities is associated with stock returns. Barth, Beaver, Hand, and Landsman (1999) find that CFOP and accruals each have significant explanatory power in equity valuation and forecasting future unexpected earnings. Recent evidence from Barth, Li, and McClure (2019) indicates that CFOP has been increasing in value-relevance over the years. There is also evidence to suggest that cash-based operating profitability measures outperform traditional operating profitability measures in predicting the cross-section of stock returns, highlighting the usefulness of CFOP for investors (Ball, Gerakos, Linnainmaa, & Nikolaev, 2016).

Collectively, these findings are consistent with the results from Gombola and Ketz (1983), who, upon applying factor analyses to a number of cash flow and profitability ratios, find that cash flow ratios load on a separate and distinct factor not captured by other profitability ratios, suggesting that they may contain information not found in other ratios. They are also consistent with the results from Barth, Cram, and Nelson (2001) that forecasting models where earnings are disaggregated into cash flows and accruals components have substantially better predictive ability for future cash flows. Orpurt and Zang (2009) further show that CFOP components as disclosed in direct method cash flow statements (which are mandatory in Australia) are incrementally informative about future CFOP and earnings.⁴

² This does not affect net income as otherwise it would lead to double-counting.

³ The acronym that is typically used for cash flow from operating activities is CFO, but considering that it is also an acronym for Chief Financial Officer (as it appears in the preamble as well), we decided to use CFOP for cash flow from operations to avoid confusion. A subtle difference between the terminologies "CFOP" and "operating cash flow" in some literature streams is that the former usually refers to a figure reported in the cash flow statement, while the latter may refer to both the operating cash flow figure from the cash flow statement and EBITDA minus interest and taxes. Our discussion largely retains that difference in usage. CFOP is a purer operating cash flow measure (at least over shorter horizons) because it excludes the effects of receivables and payables.

⁴ Arthur, Cheng, and Czernekowski (2010) document similar results in the Australian setting.

The usefulness of operating cash flow as an indicator of firm performance may vary depending on certain conditions, however. Dechow (1994) finds that accruals are more informative over shorter horizons, whereas realised cash flows become a better measure of firm performance as the measurement horizon increases. Abnormal (i.e. unexpected) earnings are also less persistent when accruals comprise a larger proportion of current earnings (Barth et al., 1999), suggesting that CFOP may be a better indicator of earnings persistence when a firm has large amounts of accruals. In some (rare) cases, a very large difference between earnings and CFOP may even signal financial reporting fraud (Lee, Ingram, & Howard, 1999).

Collectively, the empirical evidence discussed in this subsection speaks to the role of operating cash flow as an informative indicator of firm performance, especially over longer horizons. Cash-based profitability measures help investors in assessing the future profitability, and hence, the value of the company. Taking these into consideration, firms need to be mindful of their operating cash flow figures in addition to the net income numbers they report.

Working capital management and firm performance

Working capital refers to the amount of available capital that a firm can use to fund its day-to-day operations, and is calculated as current assets minus current liabilities. It constitutes a significant portion of most firms' assets (e.g., greater than 27% in the US), and managers consider working capital management as a very important determinant of their firms' values (Kieschnick, Laplante, & Moussawi, 2013). Despite this, only a handful of studies have investigated the relationship between working capital management and firm performance.

Kieschnick et al. (2013) explore the association between investments in working capital (excluding cash) and firm value. They find an additional dollar invested in net operating working capital is valued significantly less than the original investment and substantially less than an additional dollar held in cash and marketable securities. The value of a dollar invested in working capital increases in firm's sales growth prospects but decreases if the firm is facing bankruptcy. Boisjoly, Conine, and McDonald (2020) show that firms have significantly improved their working capital management since the 1990s, and that these improvements had a positive effect on firm valuation as well as profitability.

The studies examining the working capital management-profitability relationship have typically used cash conversion cycle (the time between the cash payment for

the purchases of raw materials and the cash collection from sales) as a proxy for working capital management.⁵ Using a large sample of US firms, Jose, Lancaster, and Stevens (1996) find that return on assets (ROA) and return on equity (ROE) are negatively associated with the cash conversion cycle. Similarly, Deloof (2003) provides some evidence that gross income is negatively associated with the cash conversion cycle for a sample of Belgian firms. He further documents a negative relationship between gross income and the three components of the cash conversion cycle (see footnote 6). García-Teruel and Martínez-Solano (2007) document similar results for a sample of small and medium-sized enterprises in Spain. These results suggest that reducing the number of days it takes for a firm to collect its receivables and the number of days in inventory are likely to improve the firm's profitability. The role of inventory management in improving profitability is discussed in greater detail later in the review.

Although the results from the studies discussed so far imply a linear relationship between working capital-related variables and firm performance, findings from Aktas, Croci, and Petmezas (2015) suggest that there is an optimal level of working capital beyond which firm performance deteriorates. Firms that reduce or increase their working capital towards this optimal level improve their operating performance and value. This finding is intuitive as while low working capital may lead to liquidity problems, an excessive amount of working capital may result in a sub-optimal allocation of resources.

Collectively, these findings also highlight the importance of having a good working capital policy. As a rule of thumb, accounting textbooks typically recommend a working capital ratio with the caveat that it may vary across industries Carlon et al. (2016).⁶ A working capital ratio within the 1.2-2 interval is often considered healthy by practitioners, whereas a ratio below 1 may signal potential liquidity problems.

Optimal cash holdings and the value of cash

A common aspect of the working capital studies discussed in the previous subsection is that their proxies for working capital management do not involve cash. Unlike in the case of the working capital ratio, there is no commonly accepted or used benchmark/rule of thumb for how much cash a firm can accumulate before it is

⁵ Cash conversion cycle is calculated as the days sales outstanding (i.e. the average number of days it takes to collect accounts receivable) plus the number of days in inventory minus days payables outstanding (i.e. the average number of days it takes to close the payables).

⁶ Working capital ratio (also called current ratio) is calculated as current assets divided by current liabilities.

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considered sub-optimal.⁷ This is because an optimal cash to assets ratio is likely to significantly vary across firms due to various factors.

Researchers have proposed three reasons why firms accumulate cash, and some of these reasons shape the functional form of optimal cash holdings. First, as per the *agency motive* argument, a firm with poor investment opportunities may have large cash holdings because entrenched managers would rather retain cash than distribute it to shareholders (Jensen, 1986). Cash accumulation due to agency motives is clearly sub-optimal, and consequently, penalised by investors (Dittmar & Mahrt-Smith, 2007; Jensen, 1986; Pinkowitz & Williamson, 2004). Faulkender and Wang (2006) further show that the marginal value of cash declines with larger cash holdings and higher leverage. These findings suggest that there may be an upper bound on the amount of cash for which the firm is rewarded by investors, and that investors prefer the firm to pay off part of its debt instead of hoarding cash when it is highly leveraged.

Results from prior studies also indicate corporate governance plays a significant role in how effective a firm's managers are in using its cash reserves. Poorly governed firms dissipate excess cash in ways that negatively affect operating performance (e.g. through increased capital expenditures and unprofitable acquisitions), and choose to repurchase stock instead of increasing dividends (Dittmar & Mahrt-Smith, 2007; Harford, Mansi, & Maxwell, 2008). As a result, cash holdings of firms with weak governance are valued at a significant discount by investors.

Second, firms may have a *precautionary motive* to hold more cash if they have volatile cash flows (especially in financially constrained firms), costly access to capital markets, and/or strong growth and investment opportunities. Consistent with this proposition, Kim, Mauer, and Sherman (1998) show that the optimal investment in liquidity increases in the cost of external financing, the variance of future cash flows, and the return on future investment. Similarly, Palazzo (2012) shows that optimal cash savings are higher for riskier firms. Evidence from valuation studies supports these findings. Specifically, Pinkowitz and Williamson (2004) and Faulkender and Wang (2006) find that investors value liquidity, especially when the firm has constraints in accessing capital markets. The precautionary motive for cash

⁷ The cash ratio, which is calculated as cash and cash equivalents divided by current liabilities, is seldom used in ratio analysis as it is a very conservative ratio.

⁸ For empirical evidence supporting this proposition, see Opler, Pinkowitz, Stulz, and Williamson (1999), Almeida, Campello, and Weisbach (2004), Han and Qiu (2007), Bates, Kahle, and Stulz (2009), and Riddick and Whited (2009).

accumulation has also been shown to play a significant role in the increase in average cash to assets ratios of US firms since the 1980s as the composition of US public firms shifted towards high growth companies (Bates et al., 2009; Begenau & Palazzo, 2021).

The third reason proposed in prior research to explain high cash to assets ratios is the *tax motive* of cash savings. This argument posits that firms facing higher repatriation taxes may choose to accumulate cash offshore rather than spend it. Foley, Hartzell, Titman, & Twite (2007) find evidence consistent with this argument, and further show that less financially constrained firms are more likely to hoard cash due to tax motives. Gu (2017) estimates that cash accumulation due to tax-related incentives accounts for as much as 42% of the cash differential between domestic and multinational firms. Cash holdings increase in the face of greater tax uncertainty in not just multinational firms but also domestic firms (Hanlon, Maydew, & Saavedra, 2017). Results from Hanlon, Lester, and Verdi (2015) also indicate that firms with high levels of cash holdings (due to repatriation costs) are more likely to make foreign but not domestic acquisitions. Investors value such acquisitions as less value-enhancing than those made by firms with lower tax costs, possibly reflecting agency-driven investment by firms with high repatriation costs.

Taken together, the findings discussed in this subsection suggest that proper management of cash holdings can have a significant impact on firm performance as measured by the market value of the firm. Whether investors value the firm's cash holdings at a premium or discount depends on its growth and investment prospects, volatility of its operating cash flow, expenditure patterns or cycles, and the cost and availability of external capital. Consequently, firms should consider adopting different cash management strategies depending on these factors.

Cash flows and working capital: Implications for firm risk

Risk and credit rating implications of cash flows

In addition to having important performance implications, operating cash flow is crucial to a firm's risk, as firms with high operating cash flows relative to their debt can more easily pay off their debt obligations. Operating cash flow is regularly used by banks and rating agencies in assessing firms' creditworthiness, and therefore, significantly affects firms' borrowing costs and ability. The operating cash flow measures used in such risk analyses are based on either CFOP, which is taken from the cash flow statement, or EBITDA, which comes from the income statement. These measures include funds from operations (FFO), calculated as EBITDA minus interest

and tax; free operating cash flow (FOCF), calculated as EBITDA minus interest and tax; free operating cash flow (FOCF), calculated as CFOP minus capital expenditures; and funds available to pay off the company's debt, calculated as FFO or FOCF minus dividends.⁹ Free operating cash flow is regularly used by equity analysts as well.¹⁰

Debt to EBITDA is arguably the most important ratio for the purposes of rating assessment for all major rating agencies, followed by FFO to debt (although the ratios may not be labelled as such).¹¹ The former is also one of the most commonly used ratios in debt covenants (Dichev & Skinner, 2002). Other frequently used cash flow-based ratios in risk (and rating) assessment include CFOP to debt, FOCF to debt, and interest coverage. In addition to these ratios, academic researchers often use leverage (debt to assets) and current cash debt coverage (CFOP to current liabilities) in empirical studies. The fact that operating cash flow is the main performance metric used in the rating process suggests that a high earnings number by itself is not enough to earn a high rating assessment; it should be accompanied by high cash flow from operations.

Risk and credit rating implications of working capital and cash holdings

Working capital is primarily used to gauge a firm's liquidity by equity analysts and rating agencies. As part of the rating process, liquidity is assessed "as an independent characteristic of the specific company" because "a lack of liquidity could precipitate the default of an otherwise healthy entity" (S&P, 2010). It has also become an increasingly important dimension of the rating process since the financial crisis of 2008, especially for non-investment grade firms (S&P, 2008). However, as is the case with its profitability benefits (discussed earlier), the risk benefits of higher working capital are likely to disappear beyond a certain threshold. Specifically, although higher working capital reduces liquidity risk, it may not necessarily reduce the overall firm risk once a certain threshold is reached because increases in net operating working capital tend to be financed by external debt (Kieschnick et al., 2013).

A firm's cash holdings is also a significant factor affecting its credit risk and rating

9 Major rating agencies (i.e. Moody's, S&P, and Fitch Ratings) use slightly different terminologies to denote the same figures. A reader should keep this in mind when reading the rating methodologies to get a better understanding of how these figures are used in a rating analysis.

10 In practice, CFOP is sometimes replaced with EBITDA less taxes less interest less changes in non-cash working capital. In research, changes in non-cash working capital is often not deducted from EBITDA as it has little impact on inferences when the data used spans multiple years.

11 For key ratios and adjustments used in S&P's rating process, see S&P (2019a). Moody's rating criteria for various industries can be found [here](#).

for two reasons. First, as discussed earlier, cash and liquid investments constitute a significant liquidity source, especially for firms with volatile cash flows and costly external financing options (the precautionary motive of cash savings). This is reflected in the rating process accordingly (S&P, 2019c). Second, accessible cash holdings are deducted from debt before calculating debt-based ratios during the rating process.¹² Therefore, having a higher accessible cash reserve can improve the firm's ratios for the purposes of rating assessment. The rationale behind this adjustment is that a firm with higher accessible cash can more readily pay back its immediate obligations in difficult times. This rationale is consistent with the precautionary motive of cash savings. However, it is possible that an excessive level of cash holdings negatively affects a firm's rating if the rating agencies believe the available cash reserves can be better utilised elsewhere.

Managing inventory: just-in-time manufacturing and firm performance

An important implication of some of the findings discussed earlier is that firms have scope to better manage various components of their working capital. One component of working capital that has received much attention in academic research is inventories, primarily because inventories comprise a significant portion of assets in manufacturing firms and retailers, and good inventory management can help firms to improve their profitability. Having large inventory reduces the risk of a stock-out, but also means money is locked in working capital (Deloof, 2003). One of the most well-known production models with a particular focus on inventory management is just-in-time manufacturing (JIT). In this section, we assess the validity of the claim from Rule 9 that JIT positively affects profitability.

Huson and Nanda (1995) suggest that a prominent feature of JIT, inventory minimisation, can be traced back to Henry Ford. However, it is more commonly associated with the Toyota Production System, which was born through Toyota's efforts to catch up with the advanced auto industries in Western countries. Today, the Toyota Production System is more commonly referred to as *lean manufacturing*, and JIT is either investigated as one of the dimensions of lean manufacturing or the two terms are used interchangeably. In this review, we do not delve into the various dimensions of lean manufacturing or JIT and instead focus on studies that have examined the association between JIT and firm performance.

¹² For example, see S&P (2019b). Accessible cash refers to the portion of cash holdings that is not committed to a specific purpose or locked due to certain reasons (i.e. to be used as a future payment).

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The main purpose of JIT is to improve productivity and reduce costs by eliminating *wastes* in all production functions, especially in inventories and workforce (Monden, 1994). To achieve this, products are supplied in saleable quantities only, resulting in the reduction of excess inventories (both input and output inventories). To reap the benefits of JIT, the production system should thus be able to easily adapt to changes in market demand “without having wasteful slack time” (Monden, 1994, p13). Building strong relationships with supply-chain partners is important for navigating sudden changes in market demand and supply while simultaneously eliminating waste in production (Jayaram, Vickery, & Droge, 2008). Interruptions to supply chains across the globe during the COVID-19 pandemic is a stark reminder of that. Evidence also suggests that management accounting and control practices, including simplified strategic reporting system, value stream costing, visual performance measurement information, and employee empowerment are useful tools for managing lean manufacturing systems (Fullerton, Kennedy, & Widener, 2013).

Perhaps the earliest empirical study on how JIT affects firm performance is Huson and Nanda (1995). Using a sample of 55 manufacturing firms (across 42 industries) that adopted JIT between 1980 and 1990, they find that JIT increased earnings per share for the adopting firms through the reduction in labour and increase in inventory turnover and sales, even though switching to lean production increased the firms’ unit costs. Nakamura, Sakakibara, and Schroeder (1998) also document a positive impact of JIT implementation on manufacturing performance (e.g. machinery downtime, orders shipped on time etc.) in the auto, electronics, and machinery industries, but do not explore whether these improvements lead to financial performance gains.

Balakrishnan, Linsmeier, and Venkatachalam (1996) examine the performance implications of JIT using a sample of 46 firms adopting JIT over 1985-1989, and find that only the firms with a diffuse customer base were able to retain financial gains from the implementation of lean production. However, as the authors note, they adopt a narrow operational definition of JIT and explore only the impact of improved inventory utilisation. Kinney and Wempe (2002) employ a larger and more recent sample and provide evidence that the lack of a significant relationship between JIT adoption and firm performance in the Balakrishnan et al. (1996) study stems from their sample being biased towards smaller firms. Kinney and Wempe (2002) also find JIT adopters enjoy a significant increase in inventory turnover and higher profits compared to non-JIT adopters.

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Interestingly, the results from their study indicate the increase in ROA for JIT adopters is largely driven by increased profit margin rather than asset turnover. These findings suggest it is the elimination of non-value-adding production costs, rather than leaner inventories, that might be driving the superior profitability of JIT adopters. However, this is in contrast to the results from Hofer, Eroglu, and Rossiter Hofer (2012), who provide evidence that inventory leanness mediates the relationship between lean manufacturing and firm performance. The inconsistent results from the two studies can be explained by Eroglu and Hofer's finding (2011) that there exists an optimum threshold of inventory leanness, beyond which firm performance deteriorates.

Callen, Fader, and Krinsky (2000) employ Canadian data at the plant level from the auto-parts and electronic components industries for their analysis and find that JIT adopting plants exhibit significantly lower work-in-progress and finished goods inventory, lower variable costs, and higher profits compared to non-JIT plants. The study also documents a significant learning effect in that early adopters performed better in the above dimensions than late adopters. Unionisation does not appear to affect the extent of JIT impact on plant performance, which is consistent with the findings from later studies (Shah & Ward, 2003).

Fullerton and McWatters (2001) analyse survey responses from 95 JIT adopting firms to better understand the benefits of JIT manufacturing. The examination of survey responses suggests that the managers of firms adopting JIT practices experienced benefits in multiple areas, including quality, employee flexibility, inventory management, profitability, and customer responsiveness. Additionally, the overall returns from JIT adoption seem to increase in its breadth and depth, suggesting that how comprehensive the adoption is affects the extent of the benefits from JIT implementation. This finding is consistent with the results from Nakamura et al. (1998), and is later confirmed by Fullerton, McWatters, and Fawson (2003) using a different sample.

Later research has generally examined JIT as part of lean manufacturing or sometimes used the two terms interchangeably. For example, Shah and Ward (2003) document a positive effect of lean production (and JIT as its component) on operational performance, which is based on manufacturing cycle time, scrap and rework costs, labour productivity, unit manufacturing costs, first pass yield, and customer lead time. Wu (2003) finds lean suppliers are likely to gain significant competitive advantages over non-lean suppliers in various aspects of production and

logistics, including production systems, transportation systems, distribution systems, delivery timing, and customer-supplier relationships. Fullerton, Kennedy, and Widener (2014) show that lean manufacturing practices not only affect operational performance directly but also positively influence performance through management accounting practices, as such practices provide operations managers and shop-floor employees with more relevant and concise information regarding production. This finding adds further support to the results discussed earlier that lean manufacturing is most beneficial when treated as a holistic business strategy rather than a bundle of isolated activities.

In summary, there is strong evidence to suggest that lean manufacturing/JIT positively affects operating performance and profitability. Firms that implement more elements of JIT/lean manufacturing (i.e. more in-depth JIT adoption) experience a greater increase in profitability. However, there likely exists an optimum level of inventory leanness, above which firm performance deteriorates. Since lean manufacturing attempts to minimise inventory levels, building strong relationships with suppliers is crucial for success in the face of sudden market demand and supply changes.

Managing receivables

Why extend trade credit

As an important component of working capital, accounts receivable constitutes one of the largest and most liquid asset classes on the balance sheet.¹³ Firms may want to extend trade credit for several reasons, but these reasons are not mutually exclusive.¹⁴ First, firms have a strong incentive to make additional sales without cutting the price to existing customers. By extending trade credit, they can legally price discriminate as offering a trade credit discount lowers the effective price charged on the product, which can be used to capture a market segment that would otherwise not purchase from them (Meltzer, 1960; Mian & Smith Jr, 1992). Extending trade credit can be optimal even when discerning the credit risk of customers is not possible as the increase in sales can offset the reduction in the product's effective price (Brennan, Maksimovics, & Zechner, 1988). Consistent with this argument, Petersen and Rajan (1997) find that there is a positive association between trade credit offering and profit margin. However, evidence is mixed on whether firms are

¹³ Accounts receivable is created when a firm extends a trade credit.

¹⁴ In this review, we discuss the most widely used theories and omit the rest due to space constraints, but they can be found in Ng, Smith, and Smith (1999) and Bougheas, Mateut, and Mizen (2009).

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more likely to offer trade credit discount to their riskier or more creditworthy customers (Giannetti, Burkart, & Ellingsen, 2011; Klapper, Laeven, & Rajan, 2012).

In an alternative version of this theory, Petersen and Rajan (1997) posit that a firm may want to extend trade credit not because the risky customers' demand is more elastic in the short run, but because the firm is interested in the long-term survival of its valuable customers. In a sense, firms extending trade credit act as liquidity providers for their financially constrained customers with the intention of ensuring customers' survival (Cuñat, 2006; Garcia-Appendini & Montoriol-Garriga, 2013).¹⁵ This argument is consistent with the findings from Ng et al. (1999) that a firm's relationship with a given customer is an important determinant of trade credit terms offered to that customer.

Second, in the case of an inventory build-up, sellers may want to better manage their inventory position to reduce the costs of warehousing and financing their inventories. Offering trade credit may increase sales without an overall price reduction and reduce the inventory-related costs (transaction costs theory). Bougheas et al. (2009) provide some evidence that firms increase receivables to reduce the amount of excessive inventories. However, upon examining survey data obtained from a large set of US firms, Ng et al. (1999) fail to find evidence that trade credit terms are used to manage inventories.

Third, extending trade credit may help alleviate the information asymmetries between the buyer and seller in two ways. On the one hand, trade credit may help reduce informational asymmetries regarding the quality of the product sold, as delayed payment gives the buyer time to verify product quality before paying (Deloof & Jegers, 1996; Long, Malitz, & Ravid, 1993; Smith, 1987). On the other hand, it allows the seller to obtain information about its customers' financial health (Petersen & Rajan, 1997). There is evidence to suggest that such information is not available to financial intermediaries, as trade credit facilitates financing by uninformed lenders (Giannetti et al., 2011). Petersen and Rajan (1997) further find that using such information, firms appear to extend credit to customers with currently suspect credit quality but which have a high potential for future business.

Despite its benefits, trade credit may be costly to some firms. For example, a reduction in the average payment speed of a large buyer is likely to negatively affect

¹⁵ Although this hypothesis is often proposed in the literature as a reason why firms extend trade credit, it is not always considered as part of the price discrimination theory.

the investment and general expenditures of small (especially, financially constrained) sellers, suggesting high opportunity costs of extending trade credit (Murfin & Njoroge, 2015). Such costs should be weighed against the likely benefits from extending trade credit and potential future performance improvements (Box, Davis, Hill, & Lawrey, 2018).

Factoring in the academic literature and credit rating criteria

Firms may manage their receivables in many ways, one of which is factoring. Given the importance placed on factoring in Rule 9, in this subsection we discuss it in greater detail. In the next subsection, we briefly touch on other means of managing receivables.

In early academic studies, factoring was defined as a transaction whereby a firm arranges for a third party, called the factor, to manage its trade credit (e.g. Smith and Schnucker (1994)). This definition is based on how factoring arrangements worked historically. The firm may then borrow from the factor using the receivables as collateral if it finds the borrowing terms more favourable than traditional borrowing, or sell the rights to its receivables at a discount in exchange for cash. Factoring has been more commonly associated with the latter (i.e. selling receivables for cash) in more recent studies (Sopranzetti, 1998).¹⁶ Such contracts may be useful for companies that run into liquidity shortages while they wait for the collection of receivables, and hence, are argued to be an alternative short-term financing option for funding day-to-day operations.

The academic literature on factoring is quite small, and typically explores the antecedents of factoring. Based on a 1991 survey of large 770 US public firms, Smith and Schnucker (1994) find that about 19% of their sample used factoring, ranging from 8% to 30% across different industries. Most firms engaging in factoring had international customers, likely highlighting the usefulness of specialised factors in managing trade credit overseas. Additionally, results suggest that firms are less likely to use factoring as the percentage of their trade credit customers increases or if they are wholesalers. These findings indicate the presence of economies of scale in firms' management of trade credit (Smith & Schnucker, 1994).

Smith and Schnucker (1994) fail to find significant evidence that firm size matters for the use of factoring, but this finding is inconsistent with results from Summers and Wilson (2000) and Asselbergh (2002), who find that small and medium-sized firms

¹⁶ This appears to be the case in practice as well.

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are more likely to use factoring. They also fail to find significant evidence that cash flow problems are a motivating factor in firms' use of factoring. This finding is consistent with the results from Asselbergh (2002) but inconsistent with those from Summers and Wilson (2000), who employ a battery of financial pressure proxies and find that firms with immediate financial pressures are more likely to use factoring. The inconsistent results could be driven by the use of different proxies or different samples.

Sopranzetti (1998) examines the impact of the moral hazard problem on factoring using a sample of 98 public firms. An important aspect of his study is that it explores factoring with and without recourse separately. In (non-)recourse factoring, the factor has (does not have) the right to collect the unpaid receivables amount from the firm. Therefore, firms bear the credit risk if the factoring contract is with recourse. Sopranzetti (1998) finds that whether factoring is with or without recourse depends on the credit quality of receivables: highest quality receivables are factored without recourse, intermediate quality receivables are factored with recourse, and lowest quality receivables are not factored. This is consistent with Kouvelis and Xu's (2021) analytical model that recourse factoring is preferred when the firm's credit rating is relatively high, while non-recourse factoring is preferred when the firm has a medium-range rating.

The academic research on factoring has recently focused more on reverse factoring, a type of factoring where the contract is initiated by the customer/retailer, not the supplier/seller (Liebl, Hartmann, & Feisel, 2016). The retailer typically offers a payment guarantee, which results in a lower interest rate for the supplier and a more financially stable supplier base for the retailer (Kouvelis & Xu, 2021). Wu, Wang, Xu, and Chen (2019) analytically show that reverse factoring offers additional benefits to the supplier and retailer when the retailer has a financing advantage. However, Kouvelis and Xu's (2021) theoretical model suggests that a retailer can benefit from reverse factoring even when it does not have a credit rating advantage over the supplier and without extending payment terms. What matters is that a retailer should offer reverse factoring only to suppliers with low to medium ratings, but subject to a certain lower boundary threshold.

Whether factoring decisions affect a firm's credit rating or its ratios for the purposes of rating assessment may depend on various factors. For example, despite the argument that factoring is primarily used to finance working capital needs, S&P and Moody's do not consider funds obtained from factoring under sources of liquidity

(Moody's, 2018; S&P, 2019c). S&P treats factoring that is not repeated in the ordinary course of business (i.e. if it is only used occasionally) as an asset sale if the firm does not retain any of the credit risk. However, if factoring happens on an ongoing basis, it is treated as being akin to secured financing (S&P, 2019a). It is treated in the same way even if factoring is non-recourse, because the firm may still decide to pay for the uncollected receivables (moral obligation payments). The same procedure is applied in the case of reverse factoring. When factored receivables are considered to be debt-like, before calculating financial ratios, S&P increases debt by the amount of receivables factored, adds back the same amount to assets, and reverses the impact of cash flow movement from the initiation of factoring (S&P, 2019d).

Moody's (2018) also considers factoring as a type of secured financing, and makes the assumption that factoring programs will not continue. Consequently, they make adjustments to financial statement items that are similar to those described above. The rationale provided by Moody's for these adjustments is that although factoring temporarily improves financial ratios, in general it does not reduce a firm's credit risk because "the related receivables usually represent some of the best assets on the balance sheet, the sale of such prime assets reduces future financial flexibility, and unless the issuer continues to sell receivables forever it will face an eventual drain on cash" (Moody's, 2018, p17). Additionally, factoring may negatively affect the company's expected credit losses as the remaining assets are less liquid and have more uncertain values (Moody's, 2018).

The discussion presented in this subsection suggests that although factoring may provide a means of short-term financing for firms, it is unlikely to improve (and may even negatively affect) their long-term risk profile. This inference can partially explain the differences across countries in the extent to which factoring is used as a financing option and what it indicates for a firm's financial health.

Alternative ways of managing receivables

Firms have several alternative options when it comes to managing receivables. These include (1) issuing accounts receivable secured debt, (2) establishing a captive finance subsidiary, (3) employing a credit reporting firm, (4) employing a credit collection agency, and (5) purchasing a credit insurance policy (Mian & Smith Jr, 1992). These alternative accounts receivable management policies (including factoring) are simply alternate assignments of five functional responsibilities: credit risk assessment, credit granting decision, credit collection, accounts receivable

financing, and credit risk bearing. The first three of these responsibilities can be categorised as credit administration, while the remaining two relate to the structure of financial claims (Mian & Smith Jr, 1992). Firms retain the credit administration responsibilities when they obtain an accounts receivable secured debt, establish a captive finance subsidiary, or purchase a credit insurance policy, and allocate one of the credit administration responsibilities to another party when they employ a credit reporting firm or a credit collection agency. Credit risk is borne by the company in all cases except for non-recourse factoring and purchasing a credit insurance policy.

There has been scant research on alternative receivables management policies, with some studies conducted on the role of trade credit insurance policies and captive finance subsidiaries. Trade credit insurance insures against the risk of non-payment by transferring the risk to a third party for a fee. Li, Bi, Song, and Yuan (2020) analytically show that in a capital-constrained supply chain, purchasing a trade credit insurance leads to an increase in production quantity and the performance and efficiency of the supply chain, although it can also increase the buyer's risk as it takes on too much credit. In the only empirical study on trade credit insurance to the best of our knowledge, Van der Veer (2010) provides evidence consistent with the general prediction of this model. Specifically, he finds that trade credit insurance has a significant and positive impact on the volume of exports.

A captive finance subsidiary is a wholly owned subsidiary whose goal is to finance its parent company's products and/or purchase the parent company's receivables related to retail sales (Roberts & Viscione, 1981). Services provided by captive finance companies can range from basic credit services to full-scale banking. They typically operate as profit centres, borrow on their own, and are subject to monitoring by lenders. Empirical studies find that establishing a captive finance subsidiary is likely to enhance the firm's ability to raise debt and improve its market share and profitability in the long term (Bodnaruk, O'Brien, & Simonov, 2016; Roberts & Viscione, 1981). Murfin and Pratt (2019) also find that by using captive finance subsidiaries, firms can commit to ex-post actions that support future product prices, increasing buyers' willingness to pay for their products. However, being a type of non-bank financial intermediary, captive finance subsidiaries can be severely affected by financial crises in terms of their financing capacity, which can lead to a significant decline in product sales by their parent company to customers that depend on non-bank lending (Benmelech, Meisenzahl, & Ramcharan, 2016).

Summary and conclusions

The goal of this review was to assess the validity of some of the recommendations and claims from Rule 9 in light of the evidence from the academic research. The review primarily focused on the performance and risk implications of cash flows and working capital and the implications of inventory and receivables management. Taken together, the findings from the academic literature are broadly consistent with Rule 9, with the caveat that many of the rule's arguments have not been addressed in this review due to space constraints.

The major findings from the relevant literatures can be summarised as follows. Operating cash flow and some of its components are incrementally informative about future cash flows and earnings, and hence, provide valuable information to investors for valuation and forecasting purposes. Cash flows tend to be more informative than accruals over longer horizons. Good working capital management also improves profitability and firm value; although shorter cash conversion cycles are associated with better performance, there seems to exist an optimal level of working capital beyond which performance deteriorates.

Investors value the accumulation of cash – the most liquid component of working capital – more when the firm has constraints in accessing financial markets and has volatile cash flows, but not so much in firms with poor growth opportunities. These factors are also important determinants of optimal cash holdings. Corporate governance seems to play an important role in how firms spend cash, and investors value the cash holdings of firms with poor governance at a significant discount. Operating cash flow, working capital, and cash holdings all have a significant impact on firm risk and credit ratings. They are regularly used by banks and rating agencies in assessing firms' creditworthiness, and hence, significantly affect firms' borrowing ability and costs.

Regarding the management of the specific components of working capital, evidence suggests that JIT and inventory minimisation improves firm performance, but there is an optimal threshold of inventory leanness beyond which performance deteriorates. JIT is most beneficial when implemented as a holistic business strategy as there appears to be a positive association between the extent of JIT adoption and financial gains from such adoption.

Firms have several options in managing accounts receivable: obtaining accounts receivable secured debt, establishing a captive finance subsidiary, employing a credit

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reporting firm, employing a credit collection agency, factoring, and purchasing a credit insurance policy. Factoring can be a useful tool as a relatively low-cost funding option (especially for small and medium-sized firms), but it also exchanges some of the highest quality assets (i.e. receivables) for cash, so the firm may end up having lower liquidity once the cash from factoring is drained. Additionally, whether the firm ends up bearing the credit risk or successfully transfers it after factoring will likely depend on the quality of underlying receivables and/or its credit rating. In most cases, factoring is unlikely to improve the firm's ratios for the purposes of rating assessment. Although there has been little research on the effectiveness of other receivables management policies, the limited empirical evidence suggests that trade credit insurance and captive financing can enhance firm performance.

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