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WHAT DRIVES WORKING CAPITAL LEVELS?

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Abstract: This study examines factors that influence the level of working capital. This can be measured by the length of the cash conversion cycle (CCC), the period it takes for investments in inventory to generate cash. The CCC is influenced by contingencies: cultures and habits, rules and regulations, information systems, economic conditions, markets and operations, aswell as factors: asset size, sales growth, solvency and liquidity. The article furthermore discusses several specific drivers of working capital, which are related to the accounts of payables, inventory and accounts receivables cycles. While the created framework calls for country and business-wise adaptations, it can yet inspire corporate managers and academic researchers, such as shown by an example case drawn from real world experiences. Two other cases reveal though, that the corporate philosophy cannot be neglected as a driver of working capital levels.

Keywords: *Working capital management, cash conversion cycle, drivers.*

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İŞLETME SERMAYE SEVİYELERİNİ ETKİLEYEN FAKTÖRLER NELERDİR?

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Yazarlar, Jessica Bakker, Willem van Barneveld, Peter Borkens, Peter Holm, Martin Pieter Knipper, Johan van Ophem ve Gerben van Straaten ile birlikte Hollanda'nın Groningen kentinde düzenlenen 12. ISINI Konferansının (Ağustos 2017) katılımcılarına ve bu makalenin hakemlerine katkıları için teşekkür etmektedir.

Öz: Bu çalışmada, işletme sermayesi seviyesini etkileyen faktörler incelenmektedir. İşletme sermayesi, envanter yatırımlarının nakit üretmesi için geçen süre olan nakit dönüşüm döngüsünün (CCC) uzunluğu ile ölçülebilir. CCC, kültürler ve alışkanlıklar, kurallar ve düzenlemeler, bilgi sistemleri, ekonomik koşullar, piyasalar ve işlemlerin yanı sıra, varlık hacmi, satış büyüklüğü, ödeme gücü ve likidite faktörlerinden etkilenmektedir. Makalede ayrıca, borç hesabı, envanter ve alacakların devir hesaplarıyla ilgili itici gücü olan bazı faktörler de tartışılmaktadır. Makalede çizilen çerçeve, ülke ve işletme bazında uyarlamalar yapılmasını gerektiriyor olsa da, gerçek dünya deneyimlerinden alınan örnek bir davada gösterildiği gibi, şirket yöneticilerine ve akademik araştırmacılara ilham kaynağı olabilir. Diğer iki vaka ise, şirket felsefesinin, işletme sermayesi seviyelerinin itici gücü olarak göz ardı edilemeyeceğini ortaya koymaktadır.

Anahtar Sözcükler: *İşletme semayesi yönetimi, nakit dönüşüm döngüzü, etkileyen faktörler.*

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INTRODUCTION

Working capital management is an area of fundamental importance for corporations. Immediately after its establishment in 1602, the Dutch East India Company (VOC) coped with liquidity problems caused by inadequate management of working capital. The VOC was governed from seven Chambers, six in the Netherlands and one in Batavia (now Jakarta) in the Dutch East Indies (now Indonesia), which each had their own financial responsibility and therefore their own administration. Schalk *et al*. (2012) conclude that the Board of the Chamber of Enkhuizen used shareholder funds for direct asset investments and no reserves were accumulated. By trial and error, the Chamber learned to plan for future spending.

Examples such as the above are manifold. Definitely, working capital management is an evergreen. However, it is not always understood as being that important for corporations, since it is concerned with "just" short-term financing issues. Nevertheless, working capital programmes are next to long-term asset and financing programmes crucial to corporate value creation. Other than the latter, their efficiency directly translates into corporate performance (Aktas *et al.*, 2015, Zeidan and Shapir, 2017). Especially in harsh economic times, such as have been faced by many companies during the financial crisis, but also for more country-specific and company-specific reasons anyway, efficient working capital management is sought for (Enqvist *et al*., 2014).

Efficient working capital management is translated into maintaining an appropriate amount of working capital by sustaining sound corporate policies. Making appropriate sales and procurement forecasts, actively managing the supply (inventory) chain, granting and taking proper discounts, as well as many other activities are undertaken to handle the level of working capital throughout. Whereas many companies do maintain performance measures, internal and external benchmarks and even specific scorecards in this respect, they are not always that well aware about the factors that actually influence their working capital more specifically. Actually, these factors are multiple.

While quite some of the above-meant factors cannot be influenced by corporations, it is worthwhile to anticipate on them in an early stage. Other factors can be influenced directly and efforts may be directed towards handling them appropriately. This article therefore singles out the factors that drive the value of working capital in companies. Remarkably, many of these factors are given little or inconclusive attention to by the literature. While we cannot speak the final word here, we do aim to help academics and practitioners to develop their own view on factors that drive working

capital levels, by tying factors discerned discovered by others and ourselves into one useful framework.

The cash conversion cycle (CCC) is the period it takes for investments in inventory to generate cash (see the appendix for a glossary of terms). It can be used as a comprehensive judge to understand working capital management. A long CCC indicates a flexible policy that minimises shortage costs of capital and serves the corporate liquidity smoothly. Whereas this policy is useful to be operating effectively, corporations may rather focus on working capital efficiency to serve the corporate profitability. A short CCC indicates a restrictive policy that minimises carrying costs of working capital and helps to optimise the company value. Anyway, the CCC must be broken up, along country and business lines, in order to understand the actual drivers of three important individual constituting working capital elements parts: accounts payable (A/P), inventory and accounts receivable (A/R).

Hereafter, section 2 confers about contingencies, for the working capital function uncontrollable factors that drive the length of the CCC. Following, various (company-particular) general factors, with moderate working capital function influence, impacting upon the CCC are dealt with in section 3. Specific factors with high working capital function influence acting on the period of time elapsing with accounts payables, inventories and accounts receivables are taken into account in section 4. Section 5 further exemplifies the above with an example taken from real world experience. Section 6 adds another perspective, using experiences drawn from two actual companies. Finally, in section 7, the conclusions to this article are drawn and recommendations for both corporate practice and academic research are provided.

1. CONTINGENCIES

Quite many factors do influence the level of working capital in companies, but are not in control of its working capital officers. One can label these factors as “excuse explanations”, given the way they tend to show up in internal discussions and reports. However, as will be shown, whereas a company’s working capital function may not be able to influence these factors, it can adapt working capital policies and control the CCC levels accordingly. The contingencies to be discussed include local cultures and private habits, governmental rules and regulations, information system developments, general economic conditions, as well as company markets and operations.

Cultures and habits

When commenting on the prompt payment policy of a German company that he had just taken over, a Dutch entrepreneur once claimed that this was not a matter of culture, but rather an old-fashioned habit. Nevertheless, a pre-financial crisis study

amongst selected European companies (Dorsman and Gounopoulos, 2008) showed that German companies paid their invoices the fastest, while for example Greek payment terms were about average and those of Italian companies were the longest. Paying in time is claimed to be the norm in Germany, while raising suspicions in Italy. However, one should not jump to conclusions hastily. The length of the CCC may not be due to country cultures or personal habits, but rather be related to other factors.

Rules and regulations

The working capital management of a corporation is influenced by many rules and regulations of governments on (supra-) national levels. For example, late payment regulations pull strings upon accounts receivables and accounts payables cycles in France. As another example, product standards, transportation limits and safety regulations affect the period during which inventories are held. Following, a company may pay or receive money faster, adapt product specifications (using other inputs) or whatever. Furthermore, occasional export, import and capital restrictions in both developing and developed countries may act upon the CCC severely. Unfortunately, except for being politically sensitive, it is hard to anticipate on regulatory changes.

Information systems

Corporate information systems become more and more advanced and this includes the systems on working capital management. Specific software packages and cloud-based applications facilitate more tailored (e.g. customer-focused), closer to real-time ("just in time") and more accurate (with less mistakes and omissions) treatments of accounts payables, inventories and accounts receivables at various company levels. This may also help to strengthen CCC policies and controls, for instance on customer payment overdues, outgoing payments financial float and intrafirm supplies. Often, a company cannot much influence the developments, but it is worthwhile to keep hold of them in order not to be squeezed out by suppliers, customers and competitors.

Economic conditions

After the global financial crisis, companies have limited their working capital levels, thereby saving cash and limiting risks. There is little to do about a sudden and deep crisis, but in general economic cycles do not fall out of thin air. It is thus useful to take a more than occasional look on economic variables, including GDP growth, risk free interest rates and interest spreads (Westerman, 2010), as well as foreign exchange (FX) rates. The GDP growth is an indicator for sales growth, interest rates bear upon the cost of capital and FX rates drive real and financial market prices. Allowing for this, companies may try to adapt the length of CCC and its individual components.

Especially small and medium sized companies (SME's) have been victims of the economic developments that influence the company CCC. Being aware of this, the government and several companies in the Netherlands entered into a gentlemen's agreement that all governmental institutions will pay their bills to SME's on time. As another example, Germany has introduced working capital facilities for SME's that limit their energy pollution. While not being a general panacea, especially SME's may benefit from shorter CCC's that limits the distress of their increasingly scarce capital.

Another issue is that economies or sectors may enter into "standstill agreements". They still sell and deliver goods and services to each other on order as before, but because of a lack of funds they do not actually exchange money to pay. This may go through whole production chains or areas and even urge tax authorities to wait for their own turn. In which way the length of the CCC is influenced, remains to be seen then. In the end, this may cause economies to start stumbling, slow down or even break down, but on the other hand also new initiatives with local and virtual coins pop up in various countries.

Markets and operations

Markets often maintain strong transaction customs, but pressure of dominant players do change these. For example, strong retailers have been able to make manufacturers to accept less favourable payment terms. Also, cross-country supply chain differences or FX rate changes may cause companies to move production and inventories across national borders. Price changes may hold up sales, and so forth. As a proxy for industrial competition and the weight of large companies, competition level indexes and their developments may be tracked regularly. In as far as company policies on managing operations influence the length of the CCC, the working capital function may internally point at negative consequences of current practices.

2. GENERAL DRIVERS

Many general factors may drive the length of the corporate or unit CCC and its components, including size in terms of assets or sales and their growth, profitability in terms of gross margin or EBIT (Earnings Before Interest and Taxes) margin, return on assets or return on equity and market-to-book ratios (for listed companies) or price-to-book ratios (for transactions), solvency (financial leverage) in terms of debt versus assets and interest coverage, liquidity in terms of cash ratios and current assets ratios, as well as various others. In this article, however, focus is laid upon drivers that have often been discerned recently and that refer to size, growth, profitability, solvency and liquidity issues.

Size

As a rule of statistics, large companies benefit from economies of scale. Inventories can be (partly) centralised in warehouses, while payments and collections may (partly) flow via shared service centres. Despite interfirm and intrafirm relational issues and after facing start-up losses, cost advantages may be reaped (Blenken Blijdenstein, Westerman, 2008). Large companies, with little financial constraints, may also maintain high working capital levels. Statistical studies on respectively Spain, Malaysia and The Netherlands show conflicting results of size on the CCC (Baños-Caballero *et al*., 2010 and 2014; Haron, Nomran, 2016; Westerman *et al*., 2016).

Growth

A growing company may be urged to "fill the pipelines", which will lengthen its CCC. This may especially count for firms that are cash rich, with strong equity positions. However, growing companies may also have little internal funds, be constrained in attracting external funds and thus for example use trade credit for financing reasons. The effect of growth on working capital levels may therefore go either way and this is exactly what the literature finds (Baños-Caballero *et al*., 2010 and 2014, Haron and Nomran, 2016, Westerman *et al.,* 2016). Furthermore, as will be elaborated below, crisis effects may blur general pictures at times.

Profitability

Profitability can be measured in various ways, but gross margins or EBIT margins, return on assets or equity and market-to-book or price-to-book ratios are often used as proxies. One may argue that a more profitable firm can be more relaxed as to maintaining more flexible and thus more costly policies on accounts payables, inventories and accounts payables. Not per se withstanding this, Baños-Caballero *et al.* (2010), Haron and Nomran (2016), as well as Westerman *et al.* (2016) find mixed results when testing the relationship between profitability and the length of the corporate CCC in various countries.

Solvency

A corporation with much debt will feel high financial constraints and thus save capital by leading accounts receivables and inventories, while lagging accounts payables. Normally, the length of its CCC will be reduced this way. However, Baños-Caballero *et al.* (2010), Haron and Nomran (2016) and Westerman *et al*. (2016) again find mixed results when testing with both stock and flow variables such as debt versus assets and interest coverage. This may be due to a (negative) correlation of financial leverage with profitability. Also, whereas companies aim to reduce their CCC in crisis

times, they may not directly succeed in doing so and feel obliged to compensate this later.

Liquidity

A company's liquidity can for example measured by its cash (flow) versus sales or assets ratio, as well as by its current assets to current liabilities or total assets ratio. Either way, it can readily be imagined that constrained companies feel obliged to release accounts payables and restrict inventories and accounts receivables at the same time. In the same vein, companies with much free cash flow may be expected to "take it easy" and not be highly interested in curtailing their CCC's. Nevertheless, Haron and Nomran (2016) do not find convincing evidence for the above suggestions.

In sum

All in all, there is a lack of agreement on how general factors drive the corporate CCC. Indeed, there are no one fits all solutions on how to handle. Shortage and carrying costs should be traded off against each other. Instead of minimal levels, rather optimal levels of working capital should be strived for, in order to maximise the corporate value (Aktas *et al*., 2015). The above-mentioned general factors do by all means matter for managers, but their target levels cannot easily be prefixed. They depend upon the contingencies in the former section, as well as the specific drivers of the next section.

3. SPECIFIC DRIVERS

Contingencies and general drivers must be taken into account when handling the level working capital level of a corporation in view of the length of its CCC. It is needless to say that this also counts for lower company levels, including country and business units. Therefore, a more focused approach, targeted towards the three individual CCC components, is asked for. It is therefore that this section deals with several factors that drive the accounts payables, inventories and accounts receivables periods respectively. The discussion below is adapted from Van Barneveld, Heijes and Westerman (2013).

Accounts payables

Accounts payable levels are driven by purchase volumes, purchase prices and days of credit from suppliers (Preve and Saria Allende, 2010). One element of the CCC is the Days of Payments Outstanding (DPO), which equals the accounts payables at the end of period divided by the average daily cost of goods sold. Alternatively, the Accounts Payables to Assets (APTA) can be calculated as the quotient of accounts payables and total assets. The Best Possible Days of Payable Outstanding (BPDPO) is

the weighted average of the payables terms. The payments department efficiency can be measured as the spread between the DPO and the BPDPO, the Average Days over Terms (ADT).

Inventories

Inventory levels are driven by sales volume, cost of goods sold and days in inventory (Preve and Saria Allende, 2010). This makes Days of Inventory Outstanding (DIO) another measure that constitutes the length of the CCC. The Inventory to assets (ITA) measure can be constructed as the quotient of account payables and total assets. The DIO can be broken down into Days in Raw Material (DRM), Days of Work in Progress (DWIP) and Days in Finished Goods (DFG). The DIO can be split up into schedules that show aging as fraction of payables. The Inventory Quality Ratio (IQR) is the quotient of the active (moving) inventory and the total inventory.

Accounts receivables

Accounts receivable levels depend upon sales volume, sales price and days of credit to customers (Preve and Sarria-Allende, 2010. The Days of Sales Outstanding (DSO) equals the accounts receivables at the end of period divided by the average daily sales. The accounts receivables to assets (ARTA) are the quotient of accounts receivables and total assets. The DSO can be delineated into schedules that show aging as fraction of receivables. The DSO can be linked to the Best Possible Days of Sales Outstanding. The BPDSO is the weighted average of the payment terms. The Average Days in Delinquency (ADD) is defined as the spread between the DSO and the BPDSO.

Complicating issues

The working capital level can be related the length of the cash conversion cycle (CCC), which can broken down into Days of Payment Outstanding (DPO), Days of Inventory Outstanding (DIO) and Days of Sales Outstanding (DSO). The CCC equals to DSO - DPO + DIO. While it can be inferred that this kind of specificity always conveys interesting information, the CCC as an overarching measure is limited by the interactions between its constituent parts. If for example accounts receivables fall because of low inventories, the length of the CCC drops, but the company suffers.

Another issue is that conflicts interests between head offices and country or business units may occur. Whereas head offices may have more oversight and may establish economies of scale, local units have more an eye for local circumstances. The choice between centralisation and decentralisation of working capital tasks is a company-specific issue. If a local unit is managed stand-alone, its working capital level may account for this. All in all, the targeted CCC period cannot easily be unified in complex companies. However, country or business benchmarks can be used.

4. CASE EXAMPLE: UWP

The above-listed contingencies, general factors and specific factors together provide a framework that companies and financers could use to assess CCC levels, especially those around core elements of working capital (inventories, receivables and payables). This framework is the result of work at, advice on and study of several cases. These include a large industrial conglomerate, a large electronics company, a large retail company, medium-sized food companies, a medium-sized pharmaceutical company, a medium-sized construction company, a fast growing data assembly company and various medium-sized and small-sized companies in notably the energy sector.

General background

Below follows a partly fictitious but realistic example (see also Dorsman *et al*., 2010; Van Barneveld, Dorsman, 2016). The company United Wind Power (UWP) is a UK developer of wind power estates, with four subsidiaries in Western Europe and a joint venture in China. UWP is keen on contributing to the vitality and sustainability of the areas it operates in, for example by targeting at infrastructure and ecology issues when applying its concepts on the estates. As of ultimo 2016, the company manages a wind power estate portfolio worth £ 892 million and it generates annual sales of £ 731 million with some 70 high-skilled employees (UWP Inc., 2017).

The holding of UWP is located in Glasgow (UK). UWP is located in Great Britain, The Netherlands, Belgium, France and (mainland) China. UWP is a relatively small player on the world wind power estate market, which is dominated by few large firms from notably Western Europe and China. However, its "lean" business model has enabled the company to reach interesting market positions in the past few years. UWP has done so by not so much owning windmills itself, but rather renting the land they are located on and leasing the windmills it builds. After operating an estate for some years, the windmills become its property and then UWP tries to sell them out quickly.

The Chinese UWP unit, a joint venture with local partners, was set up in early 2009. After a head start that was followed by six pretty difficult years, the Chinese business unit has recently established an unprecedented growth. In doing so, it has focused especially on the number of windmills built. This performance indicator has become about two times higher than budgeted the last time. And although the local focus has been less on operating and staffing, this has not caused major problems up so far. In a small Hong Kong business unit, the parent company owns a minority stake via the mainland China unit. This unit is operating at (far) arms-length of the mother firm.

Initially, the Chinese business unit was led by direct supervision from the UK headquarters. The business controller received weekly reports. In 2016, a management

control instrument was implemented corresponding to the one UWP used elsewhere. The initial IT problems were eventually resolved. However, it proved difficult for the Chinese staff to familiarise with the system. Only when a holding controller came in to put things in order, the financial reporting became more thorough and reliable. Whereas the Chinese unit continued to lag behind, the following summary reports for 2016 and forecasts for 2017 were compiled on April 10, 2017 (see Tables 1 and 2).

With respect to the balance sheet, two comments have to be made on the Short Term Debt lines. The bank overdraft is an autonomous liability, resulting from the active financing policy of UWP China. The often small and neglected accounts payables item, however, reflects an induced liability. This arises from ordinary activities and being induced by sales it belongs to the induced capital of UWP China. Here it is remarkable that the accounts payables are sizeable and even larger than the inventory. As to the current assets, note that the lines only include Accounts receivables and Inventory, whereas Cash has been set apart to reflect its residual and discretionary character.[1]

Table 1. Balance sheet UWP China, per 31 December 2016

31-12-2016 (x 1,000)			
Debit		**Credit**	
Real fixed assets	*£ 29,025*	*Shareholder equity*	*£ 13,300*
Land	£ 3,000		
Buildings	£ 7,245	*Long-term liabilities*	*£ 37,575*
Machines	£ 17,280	Mortgage loans	£ 13,500
Supplies	£ 1,500	Bond loan	£ 9,450
		Bank loans	£ 14,625
Financial Fixed Assets	*£ 7,500*		
Minority interests	£ 7,500	*Short-term liabilities*	*£ 14,600*
Current Assets	*£ 27,375*	Accounts payable	£ 14,400
Inventory	£ 12,750	Bank overdraft	£ 200
Accounts receivable	£ 14,625		
Cash	*£ 1,575*		
Total assets	**£ 65,475**	**Total liabilities and equity**	**£ 65,475**

Table 2. Profit and Loss Account, UWP China 2016 (realisation) and 2017 (forecast)

Item	**2016 (x 1,000)**	**2017E (x 1,000)**
Net sales	£ 111,350	£ 155,890
Cost of sales[2]	£ (91,800)	£ (128,520)
Profit margin	***£ 19,550***	***£ 27,370***
Sales and marketing costs	£ (6,885)	£ (9,622)
Result on minority interests	£ (1,020)	£ (1,428)
Earnings before interest & taxes (EBIT)	***£ 11,645***	***£ 16,320***
Net interest paid	£ (3,587)	£ (4,726)
Earnings before taxes (EBT)	***£ 8,058***	***£ 11,594***
Taxes[3]	£ 2,337	£ 3,362
Net Earnings	***£ 5,721***	***£ 8,232***

At first glance, it seems that the Chinese business unit will do well next year. It is expected that revenues will increase by 44%. The sales margin, defined as the profit divided by sales revenues, is stable at 17.5%. The EBIT margin will remain at approximately 10.5%. Finally, the net profit will grow by 44%. But what should the holding company controller think of the negative results of the minority interests (and where do those actually come from)? There is definitely room for further investigation, in order to get a good picture of the expected cash conversion in the current year.

It now also strikes the holding company controller that the balance sheet forecast is not provided. The forecast for the profit and loss account shows that capital investments and external funding will have to cover the expected growth. The controller requires additional information from the Chinese unit, which he happily becomes immediately. But now he really becomes frightened. Why he has not previously received this information? He then makes up by himself the balance sheet forecast for 2017 (see Table 3 below). In drawing up the balance sheet forecast adopted by the holding company controller, the financial ratios all remain unchanged.

Although net profit in 2017 is supposed to increase by 44% as compared to 2016, UWP China faces a funding problem (refer to Table 3). The free cash flow is negative at - £ 15,539,000 (see table 4 below) and therefore the local Chinese unit does not generate sufficient cash flows. UWP and is expected to run for a financing gap of £ 29,070,000. Whereas a laissez faire policy seems defendable (who would not fund a profitable and

growing business?), it is wise to take a look into especially banking relationships (assuming that no additional equity is readily available) and see if capital investments (outside of the scope of this article) and working capital (CCC) levels can be reduced.

Table 3. Balance sheet per 31 December 2017, UWP China (forecast)

31-12-2017E (x 1,000) **Debit**		**Credit**	
Real fixed assets	*£ 39,425*	*Shareholders equity*	*£ 13,300*
Land	£ 3,000		
Machines	£ 24,650	Mortgage loans	£ 13,500
Supplies	£ 1,500	Bond loan	£ 9,450
		Bank loan	£ 14,625
Financial Fixed Assets	*£ 7,500*		
Minority interests	£ 7,500	*Short-term liabilities*	*£ 21,704*
Current Assets	*£ 56,175*	Accounts payable	£ 21,504
Inventory	£ 35,700	Bank overdraft	£ 200
Accounts receivable	£ 20,475		
		Retained earnings	*£ 3,026*
Cash	*£ 1,575*		
		Funding deficit	*£ 29,070*
Uses of funds	**£ 104,675**	**Sources of funds**	**£ 104,675**

Table 4. Free cash flow per 31 December 2017, UWP China (forecast)

31-12-2017E (x 1,000)	
Net profit	**£ 8,232**
Interest tax shield	£ 3,355
Depreciation	£ 4,970
Cash flow from earnings	**£ 16,557**
Net working capital addition	£ (21,696)
Cash flow from operations	**£ (5,139)**
Net capital investments	£ (10,400)
Free cash flow (FCF)	**£ (15,539)**

Working capital levels

Banks play an important role as intermediaries. They are relatively stronger in negotiating with companies than other stakeholders, including other providers of capital. Although they may unilaterally terminate a credit agreement, they are the appropriate party to approach when a company unexpectedly needs short-term financing. If the need for additional financing becomes permanent in nature, management should consider switching to a long-term loan or an equity issue. In general, companies discuss the funding decision with the bank, often with both the local branch and the bank's parent company involved.

When UWP China just existed, liquidity shortages were instantly funded. Local business results were on the rise and the cash flow was less important. In addition, there were no other alternatives. However, currently UWP China has a loan agreement with a local bank with a credit limit. As long as an additional amount needed can be financed by funding without breaking this credit ceiling, there is no need for action. Nevertheless, the holding controller realizes that negotiations on a new agreement with the bank are at hand. It is best to start these conversations as soon as possible, because the more funding is needed, the more the banks will probably require.

The management of UWP Inc. can also try to reduce the funding needs of the Chinese unit through internal measures. For example, a linear relationship between capital investment growth and profit may not be essential. One could then decide to accept a lower capital investment to earnings ratio. Also, given that benchmarks differ by country and industry (Dorsman and Gounopoulos, 2008), one could also try to adjust the policy on inventory, accounts receivables and accounts payables such that investments in these items occupy a smaller part of the balance sheet. Apart from this, the holding controller is particularly concerned about the short-term financing of the Chinese unit. Hastily, he therefore manually calculates some general working capital ratio’s on the basis of the forecasts for 2017 (all amounts are in thousands of pounds).

Table 5. Working capital ratio's per 31 December 2017, UWP China (forecast)

Ratio	Actual	Norm Controller UWP Inc.
DSO (Accounts receivables/Sales)*365	48	60
DIO (Inventory/Cost of goods sold)*365	101	90
DPO (Accounts payable/Cost of goods sold)*365	61	50
ITA Inventory/Total assets	34%	12.5%
ARTA Accounts receivable/Total Assets	20%	33.3%
APTA Accounts payable/Total Assets	21%	25%

The controller uses standards as required by the UWP holding controller. Further investigation should show if these are correct and, for example in line with Chinese or European averages and if not, what specific factors can underpin the deviations. In this article, this analysis is disregarded. Given his standards, the misgivings of the holding controller appear partly justified: the DSO is approximately 20% lower than the norm of 60 days and the DIO is well above its three-month guideline. On the other hand, the DPO is also above the standard of 50 days. Also, the ITA is almost three times as high as the rule of thumb of the controller of 12.5%. Furthermore, the ARTA and the APTA are in line with the holding guidelines of respectively 1/3 and 1/4.

Large inventories are not alarming, especially in the context of realistic growth plans. However, a strict policy with regard to inventory is well in place. Also, the favourable debt position is rather the result of a willing market than of effective policies. In addition, the accounts payables level itself is almost at the level of the parent company, which shows that there is not much room is left for adjustment here. It should be recognized that a rising DSO (and ARTA) leads to a lower free cash flow and a higher financial deficit. Overall, there is a surplus of working capital, especially inventories. It will not be easy to overcome this surplus in a business unit that is growing rapidly. A bank will only be willing to fill the unit's funding gap as this issue is resolved.

Looking at the causes of the UWP China inventory problem, the holding controller further details on the DIO measure. It turns out that the score on the DRM

measure is out of line and that inventories are relatively old, other than the innovative business requires. With modern inventory systems lacking, windmill blades numbers and the like are thus high. The sales department of the unit cannot sell "no" to the purchasing department that repeatedly changes its forecasts that often quite differ from the realisation anyway. There is also a quality issue between the departments, which the controller cannot easily pinpoint at, because figures are lacking in this respect. Lastly, UWP's performance accent on numbers of windmills built plays an undeniable role.

The latter aspect should certainly be paid attention to. As regards the stock, the controller thinks of a method in which the respective groups are classified according to volatility and volume, whereby monthly and per category varying tactics are used to balance inventory levels and service levels to a value optimum. With this story, the holding controller can then go to the bank(s), in order to adapt the financial structure of the Chinese joint venture to accommodate its growth optimally. Having said this, the joint venture structure of the Chinese business unit and the thus far unstudied issues with the Hong Kong unit require special care and warrant separate attention.

Working capital drivers

After some deliberations, the UWP holding controller is still not confident on how to address the inventory problem of the Chinese business unit. And so he asks a junior staff member to run some regressions on general drivers of CCC levels and the DIO. The drivers studied cover size, growth, profitability, solvency and liquidity measures. However, whereas the internal data used are reliable and encompass seven years, the relationships found are statistically insignificant for all variables, probably due to the recent growth spurt of UWP China and its complex relations with UWP Hong Kong.

But there is a quirk here. Actually, the relationship between growth measures and inventory levels is complex. The higher the sales growth, the higher the inventory to sales ratio may be. The UWP holding controller holds that size as a driver should not influence the DIO, since the economies of scale are limited. Profitability should by no means drive inventory and thereby CCC levels, since a positive relation would imply operational idleness. In the same vein, a positive influence of solvency and liquidity levels on the CCC would imply financial idleness of the Chinese business unit.

Since it is wise to dig deeper, the holding controller regards local economic conditions, which are favourable but also bumpy and without specific CCC implications. Given the ample UWP experience in this respect, he is not interested in studying information system developments. Rules and regulations related to CCC developments are quite stable. Only FX rate (yuan/pound) developments that may cause major changes in supply chain behaviour bother the controller somewhat. A big thing

may be the rather operational than financial oriented local culture and habits, which may ask for more meddling in by the holding.

5. TWO CASES: WALAS AND NEWWAVE

In this section, two case companies are elaborated on. Both of them are young, with growing operations. One example refers to an urban (re)development company, Walas, whereas the other one is about a machine building and engineering company, NewWave. As to both of the companies, multiple formal and informal interviews were held on and off their business spot in 2016 and (largely) 2017. The results thereof were combined with publically available information and led to the descriptions below.

Case 1: Walas

World of Walas is a growing group of companies based in Canada, The Netherlands and Germany. It focuses on sustainable urban (re)development, with a people-first approach. In this sense, Walas engages in concepting and design, development and construction, project management, property management and access to innovations. It works with cities, communities, governments and businesses, and it also partners with innovators to provide solutions to their projects and to help market their innovations.

Being founded in 2010, Walas comprises sustainable city servicer Dudoc Vancouver in Canada (since 1991), ecological famer Farm2Future and energy cost saver CarbonBlue in Heerlen (The Netherlands), real estate developer the Spinnerij in Enschede (the Netherlands) and renewable energy provider Walas Greenchoice Energy. Walas' CEO Gerben van Straaten happily points at sparkling planning, design, project management and funding of sustainable urban community-led initiatives in Hamburg (Germany). Major developments for developing sustainable areas in Chinese cities are underway.

Peter Borkens is Global CCO and Vice-CEO Europe of Walas. He explains that the urban development market is characterized by highly specialized stakeholders. Many of them are "Last In, First Out". They capitalize investments quickly to maximize the profit of their own company in a short period of time. This may lead to unrestrained and unsustainable property development, creating short supply with inflated prices but also high vacancy at times. Walas however utilizes a long-term, concentric and circular view on urban development, whereby a company becomes a part of the World of Walas and builds up gradually, ultimately thereby enabling other companies to step in as well.

On the contrary to the "avalanche capital companies", in the World of Walas working capital is moving in gradually as the development of a company makes progress. It thereby focuses on cash value instead of intrinsic value. Walas puts in relatively little financial investments upfront and puts in and takes out working capital as a project progresses from preparing, via designing, caring, venturing, branding and performance. Moreover, the size-varying and often steadily increasing tenants of buildings pay sales dependent rents. They may accept that heating system investments are postponed until being sustainable. All of this enables a steady cash flow to both the tenants and Walas, which encourages Walas to grow at an even pace and to keep its ecosystem on order.

The World of Walas can be compared to a school of fish that gradually grows and swims ahead in unity. In doing so, the group as whole needs significantly less working capital investments than its individual companies would have to consume. Whereas this is due to statistical notions such as normal distributions and non-perfect correlations, it is however a part of the World of Walas philosophy of integrative chain development. This can also accelerate the run through rate and increase working capital efficiency. While projects may not always (shortly) be feasible, working capital risks are curbed this way. Also, risks are not really an issue in the World of Walas, Peter Borkens says.

Gerben van Straaten adds that banks have difficulties with understanding the business model of Walas and often do not see room to facilitate the local activities of the group. From a traditional ratio funding perspective, this is understandable but also annoying. The intrinsic value of the assets of an activity rises during the development process, but this process can and should not be foreseen in detailed terms of actual brick values and timing of cash flows. In this respect, Van Straaten praises German banks that enable growth of the Hamburg activities in a pace that would otherwise not have been possible.

The Walas story adds a new element to the drivers of working capital levels singled out above, namely the corporate philosophy that shapes the general corporate strategy and also the working capital strategy. Walas is particular in that it puts much weight on a sustainable (urban) environment and even furthers this towards steady working capital cash flows. Projects consume little working capital investments up-front, the additional working capital when filling in a building or growing an operation remains in check and as soon as a project is full-grown, the free cash flow released from it can be used to start up a new project. Whereas this leads to an efficiency drive, it may also limit corporate growth, but this would (should) not hinder a company with a philosophy that Walas has.

However, it may do so. No single business model fits all the time. Both the UWP and the Walas case examples show that with exceptional growth the pecking order theory may become true in that external funding via for example banks becomes necessary. If so, corporate communication on business and financial matters is of utmost importance. The CEO of Walas, Gerben van Straaten, but even also its COO Peter Borkens, spend much effort on explaining what the World of Walas is about. At a local level profound relationships with banks are sought for, such as Walas has established in Germany now.

Case 2: NewWave

While having been founded in 2015, NewWave Engineering staff can reckon on more than 20 years of experience in machine building and engineering. Being located with a production center in Echt (The Netherlands), the company finds itself within close distance of major industrial areas in The Netherlands, Germany and Belgium. The firm searches for innovative solutions on increasingly complex tools and machines, together with customers in the car, construction, food and processing industry among others. NewWave typically favors an open approach and has started to cooperate with companies outside of its traditional field on e.g. sustainable energy solutions.

Peter Holm is one of the two owner/managers of NewWave. He has much experience with companies in financial distress situations. Such situations may heavily impact upon business lives and personal lives of those involved. His role is then to listen and analyze, to facilitate rethinking and to help with energizing. Building trust is key here. Parties may open up this way, ever more so. But the game has its rules, with money as its denominator. Making sales with innovative ideas and keenness on costs all the time generates cash while controlling outlays. Selling fast and buying late, while leading accounts receivables and lagging accounts payables, all has to be managed carefully.

In this process, one has to be aware of uncontrolled rule setting by specific game players, made up of monopolistic buyers and sellers that enforce depressing market conditions, banks, social funds and fiscal bodies who claim over-timely and to the fullest amount, owners and managers that rather fight with each other than with the competition, insufficient or contradictory direction and lacking or counterproductive enforcement, as well as scrupulous corporations and individuals taking advantage of the situation. Often, financially distressed firms face multiple of these challenges.

NewWave emerged from a financial distress situation such as sketched above. Effort was put into sustaining existing relationships with suppliers and customers. Short and long-term plans helped to guide future operations. Initial financing came from non-

real time wage and benefit payments, after-period fiscal remittances, as well as debtor and creditor financing (ideally, the first pay before the latter are paid). Bank financing was not involved and is also not planned for. "We have a bank account, that is it", Peter Holm denotes impassively. In this way freedom (but within boundaries) is acquired, which gives a "pleasant feeling" and fosters a search for opportunities.

Today, NewWave Engineering is riding on an ever-rising wave. The company's sales and staff numbers increase by more than 50% yearly. The Free cash flow shortages that go along with such a fast growth ask for keen cash flow management. Therefore, much is invested in external relationships. All stakeholders, including suppliers and customers, are better off if the company is successful. That makes it easier to make arrangements about paying schedules. That this may go along with giving up some margin is readily accepted. The practice is that all payments take place before the agreed deadline. Next to this, NewWave keenly steers on its earnings before interest, taxes and amortization (EBITA) and keeps its activities under control with one, two and five year plans. The company happily does not look beyond a five-year horizon.

The NewWave case confirms the Walas case in that corporate philosophy is here an important driver of working capital levels. However, there seem to be some striking differences. Less than Peter Borkens and Gerben van Straten of Walas, Peter Holm maintains a "sustainable finance" philosophy. However, this is a matter of business model (sustainable urban development versus machine building and engineering) and perhaps even more of framing and communication (ecological growth aspiration versus creating bounded freedom). Moreover, equivalent to Walas, NewWave is supply chain relation driven, with both its business operations and its working capital.

CONCLUSION

Managing working capital levels, as measured by the length of the cash conversion cycle (CCC), is a complex and challenging task. Contingent factors include rules and regulations, information systems, general economic conditions, as well as markets and operations. They are external to the working capital function. General internal factors include the size of the company and its growth, profitability, solvency and liquidity. These drivers are partly in control of working capital staff. Yet, they can control the specific drivers of days in payables, inventory and receivables, as specified by the length of their cycles as well as aging schedules and best possible actions measures.

Table 6. Drivers of Working Capital Levels

Contingent drivers	General drivers	Specific drivers
Cultures and habits	Size	Days of Payments Outstanding (with aging schedules and "best" measure)
Rules and regulations	Growth	Days of Inventory Outstanding (with aging schedules and "quality" measure)
Information systems	Profitability	Days of Sales Outstanding (with aging schedules and "best" measure)
Economic conditions	Solvency	
Corporate philosophy	Liquidity	

The contingent, general and specific drivers of Table 6 are interrelated. They jointly provide a framework to manage working capital levels. Such a framework is industry- and company-specific, which is why it was furthered with the UWP case example. Even this stylised case readily shows that management can make insightful analyses following the framework. Experience of the authors with various cases learns that the general validity of the framework could be fairly high. Further design and testing can show how it may be adjusted for other environments, sectors and companies. In doing so, researchers may also look at individual working capital items more specifically.

Having said all of this, the Walas and NewWave cases teach that the framework would be incomplete if it would ignore corporate philosophy as a driver of working capital levels. The cases teach though, that it must be recognized as an important, if not the one overarching, contingent factor. Traditional textbook trade-offs on optimizing investment levels and costs of working capital already recognize the importance of firm-specific choices. Yet, this finding further stresses the meaning of corporate, organizational and operational designs on working capital levels that need more study.

The above framework largely coincides with factors that are recognised in the general literature (Platt, 2010; Preve and Sarria-Allende, 2010; Sagner, 2010; Sagner, 2014). However, while these books were already written in the aftermath of the global financial crisis, the notions included in the framework have not been taken up well by academics yet. The present article may help to change this. It is advised to combine the framework with developments regarding a more optimal funding of working capital, including issues such as supply chain finance, reverse factoring, credit unions and term euro's.

In terms of research methods, many opportunities arise. Whereas this study used one case example and two actual cases, longitudinal case research with a few inspiring companies and careful selection of cases in various sectors can bring about additional

insights. It struck the authors how many companies with experiences and views such as those of UWP, Walas and NewWave they already met "in passing" so to say. Therefore, it is also interesting to find out how important developments on "old" and new" factors influencing CCC levels actually are in practice. Regression analyses on suitable databases may uncover not just figures, but also relationships in this respect.

NOTLAR

[1] Cash management is a topic of its own and falls outside of the scope of this paper. In the present case example it can be argued that UWP has little cash at hand, namely less than 2% of its sales. Whereas this is in principle already a worrisome issue by itself (if not just being a mere coincidence), the description below shows other short-term financial management issues that should draw holding company attention.

[2] Including €4,970,000 depreciation: 8% on buildings, 15% on machines and 30% on inventory.

[3] Taking into account tax routings, effective corporate tax rates are set at 29% for both 2016 and 2017.

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