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EU Regulation on combating late payment in commercial transactions[1]

Markus Federau and Bernd Schwendinger,
Vorarlberg University of Applied Sciences

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EU Regulation on combating late payment in commercial transactions

Working capital impact assessment for European firms

Dr. Markus Federau
Senior Lecturer, Vorarlberg University of Applied Sciences
Hochschulstr. 1, 6850 Dornbirn, Austria
markus.federau@fhv.at

Bernd Schwendinger, Ph.D.
Program Director Master of Business, Vorarlberg University of Applied Sciences
Hochschulstr. 1, 6850 Dornbirn, Austria
bernd.schwendinger@fhv.at

Abstract

This paper examines the potential impact of the EU's late payment regulations on the working capital of European firms, with a particular focus on the differences between companies of different sizes. The study employs data from the ERICA and Osiris databases to examine pivotal metrics, such as days sales outstanding (DSO) and days payables outstanding (DPO), with the objective of evaluating the impact of payment terms on corporate liquidity and financing. The findings indicate that, despite a reduction in overall collection periods over recent years, payment terms remain substantially above the target of 30 days. Furthermore, larger companies tend to benefit from shorter collection periods and more favourable financing conditions through trade payables and therefore should be more negatively impacted by the regulation.

Keywords: payment terms, working capital, financing, regulation, ERICA

JEL classification: G31 (Capital Budgeting; Fixed Investment and Inventory Studies; Capacity), G38 (Government Policy and Regulation)

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1. Introduction

On 12 September 2023 the European Commission presented a proposal for a new regulation "on combating late payment in commercial transactions." The proposal represents a revision of the existing EU Late Payment Directive and is intended to replace it. The revision included amendments, particularly the introduction of a uniform EU-wide payment term upper limit of 30 days for business-to-business and business-to-government transactions ("B2B" and "B2G"), without exception. In contrast, the current version of the EU Late Payment Directive sets an upper limit of 60 days for payment terms in B2B transactions. However, this may be adjusted upwards by the contracting parties, provided this is not 'grossly unfair' for the creditor (Directive 2011/7/EU, Art. 3, Nr. 5). From the perspective of the European Commission the current directive lacked sufficient preventive and deterrent effect, and the existing enforcement mechanisms were inadequate. Small suppliers/creditors would face asymmetric bargaining power towards large customers/debtors (European Commission, 2023).

Given that the issue of late payment and long payment terms affects all EU member states, a uniform EU-wide regulation is being sought. Accordingly, the current directive shall be replaced by a regulation which would be applicable across the Union without the necessity of an additional adoption by the national parliaments. Business relationships between companies and consumers (B2C) are not subject to regulation. The proposal was adopted by the European Parliament in the first reading on 23 April 2024 (European Parliament, 2024a).

The original proposal put forth by the Commission underwent significant alterations. Firstly, while a basic payment deadline upper limit of 30 days is applicable in B2B/B2G transactions, it can be extended to 60 days in B2B, provided that this is explicitly stipulated in the contract. For certain retail products, such as slow-moving and seasonal goods, an upper limit of even 120 days may apply. New is also that interest on arrears accrues automatically. It is not possible for public bodies or large corporations, in their capacity as debtors, to contractually exclude default interest. Furthermore, a fixed-rate compensation is applied for each late transaction, with the amount varying between 50 and 150 EUR, depending on the volume. A contractual prohibition or restriction of the right to assign receivables for the use of financing services (e.g. factoring) is generally deemed invalid. The EU member states have to designate bodies responsible for enforcing the law, conducting investigations and authorised to impose administrative sanctions, as well as publishing the names of offenders. A central monitoring centre is to be established at the EU level. The implementation of the revised regulation is contingent upon the European Council's approval, which remains pending (European Parliament, 2024b).

2. Research Question & Methodology

The timing of cash receipts and disbursements affects a company's working capital management, which in turn impacts its internal financing capacity, profitability, and ultimately, shareholder value (Högerle et al., 2020; Le, 2019; Singh et al., 2017). A recent study by Federau (2024) for the German DAX indicates that the impact of the

regulation of payment terms could be significant, particularly for large corporations that rely heavily on the financing from suppliers.

The objective of this study is to expand the scope of analysis and examine the evolution of net working capital in Europe. This will enable an assessment of the current status and an evaluation of the potential impact of the proposed new regulations on payment terms. Additionally, the study seeks to address the hypothesis put forth by the European Commission that larger companies rely more on longer payment terms than smaller companies.

The analysis focuses on the key figures "Days Sales Outstanding" (DSO) for trade receivables and "Days Payables Outstanding" (DPO) for trade payables. The sample data, comprising approximately 1,000 European IFRS statements of accounts, has been derived from the European ERICA (European Records of IFRS Consolidated Accounts) database, the characteristics of which are described in greater detail below. In addition to the interpretation of the results, the limitations of the approach and the ERICA data are described. Recommendations are provided on how the published data can be enhanced for an increased usefulness for external parties. Finally, the results are compared with the analysis of a panel of approximately 1,000 European companies from the Osiris database hosted by Moody's.

3. ERICA sample

The ERICA database was created by the ERICA working group of the ECCBSO (European Committee of Central Balance Sheet Data Offices) and contains information on the annual accounts of consolidated non-financial listed groups from nine participating countries: Austria, Belgium, France, Germany, Greece, Italy, Portugal, Spain and Turkey (as the only country not part of the EU).

The data is not merely collected for the purpose of statistical investigations but also for risk assessment analysis. The comprehensive ERICA data at the company level is accessible solely to the ECCBSO members, ERICA working group members, and analysts affiliated with the European Central Bank (ECB) and the contributing national central banks (European Committee of Central Balance Sheet Data Offices (ECCBSO), 2024). Consequently, since 2019, the general public has only had access to aggregated data, which can be obtained via a web portal hosted by the French Central Bank (Banque de France, n.d.).

3.1 Sample description

The aggregated data from the ERICA database is available for download in a single Excel file from the aforementioned source. The data is categorised according to four distinct criteria: 1.) aggregation by size, 2.) aggregation by detailed sector, 3.) aggregation by country and sector and 4.) total aggregation (European Committee of Central Balance Sheet Data Offices (ECCBSO), 2024). The size classes are based on the companies' revenues with the following thresholds: less than €250 million (small), between €250 million and below €1,500 million (medium) and from €1,500 million and higher (large). The detailed sector aggregation employs a proprietary classification system based on the NACE classification of the European Union

resulting in a total of 14 so-called WGRA sectors such as "food products", "chemicals", "metals, electronic and electrical equipment".[1] The aggregation by sector (so-called "ERICA sectors") employs only the four categories of "construction", "energy", "industry" and "services". The country refers to the country of incorporation of the reporting entity and comprises the nine participating nations mentioned above. The database comprises the years 2005 to the most current year of 2022 (as of September 2024). An annual update shall be published around February (European Committee of Central Balance Sheet Data Offices (ECCBSO), 2023).

The composition of the database is subject to change; consequently, no aggregated consistent panel data is available. Table 1 provides a detailed overview of the number of companies included in the aggregated numbers for the figures of DSO and DPO over the years of analysis.

Number of companies in ERICA database included in DSO/DPO aggregation

Table 1

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DSO	1,070	1,187	1,072	1,071	1,085	1,075	1,107	1,009	983	975	962	1,053	829
DPO	1,070	1,184	1,072	1,073	1,086	1,076	1,107	1,010	982	972	963	1,054	831

The number for the calculation of the quartiles/averages of the DSOs/DPOs in case of the total sample ranges between 829/831 (year 2022) and 1,187/1,184 (year 2011). The reduction in the sample size in 2022 is likely attributable to the missing Belgic companies from the dataset. Over time, there has been a minimal discrepancy between the DSO and DPO sample sizes, with a range of -0.2% to +0.3%.

A review of the sub-samples by size for the most recent year 2022, reveals a relatively even distribution with approximately one-third of the companies falling into each of the categories "small", "medium" and "large" (see Table 2). Additionally, the discrepancy number of companies for the calculation of DSO/DPO figures is nearly identical.

Number of companies in ERICA database 2022 included in DSO/DPO aggregation by company size

Table 2

	Small	Medium	Large	Total
DSO	282	260	287	829
DPO	282	261	288	831

3.2 Key figures

To analyse the turnover time of trade receivables and payables and to ascertain their relevance with regard to the requirement of working capital, we employ the use of DSOs/DPOs as proxies. As the data necessary for calculating these key figures is not sufficiently available in the public ERICA database, we must rely on the pre-calculated

[1] For more information on the NACE classification, refer to Eurostat (2008).

ratios from, which are designated "r19" for the DSO and "r20a" for the DPO (European Committee of Central Balance Sheet Data Offices (ECCBSO), 2023). Unfortunately, the publicly available documentation does not provide any information regarding the calculation of these ratios. Upon requesting such information from the ECCBSO secretariat, the following response was received:

$$\text{DSO} = \frac{\text{Trade Receivables}}{\text{Daily Average Revenues}} \quad \text{and} \quad \text{DPO} = \frac{\text{Trade Payables}}{\text{Daily Average Revenues}}$$

While the calculated DSO can be regarded as a proxy for the average time between invoicing and payment receipt, this cannot be assumed for the trade payables/DPO side. This is because trade payables are not the result of revenues in the denominator; rather they are driven by purchasing, which could be proxied by material expenses and expenses for other external products and services. However, as previously outlined, such calculations cannot be performed based on the aggregated ERICA data.

Moreover, an additional examination of working capital ratios, such as the ratios of trade receivables or trade payables as a percentage of the balance sheet total, is not possible due to the varying size and composition of the ERICA sample for the different input parameters. Consequently, we must rely on the quartile analysis of the pre-defined DSOs/DPOs.

It is also important to note that the data analysed here pertains to IFRS group financials. Accordingly, the figures do not solely reflect the customer/supplier relationships within Europe; rather, they encompass a global perspective. Therefore, the introduction of a further regulatory measure in Europe would only have a partial impact on the figures presented below.

3.3 Longitudinal analysis

On the trade receivables side, the median DSO decreased between 2010 and 2022 by 8.7 days (see Table 3).

DSOs [days] of ERICA database

Table 3

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Q1	45.4	42.5	41.4	42.1	42.7	42.5	42.7	43.0	40.2	40.6	41.5	41.0	35.6
Q2	68.3	66.3	63.1	63.8	66.6	64.4	66.0	64.7	64.4	62.2	63.9	64.6	59.6
Q3	103.3	104.0	95.8	93.2	95.9	96.9	100.2	98.0	95.2	93.2	95.0	96.8	84.5
Mean	83.3	80.9	77.9	78.2	81.4	88.6	2,525.9	79.7	780.5	85.0	91.5	81.7	68.4
IQR	57.9	61.4	54.5	51.1	53.3	54.5	57.4	55.0	55.0	52.7	53.5	55.8	49.0

Q1...Q3: quartile 1...3 / IQR: interquartile range

The statistical significance of this development cannot be tested based on the aggregated data. A decrease can also be observed for the development of the first

and third quartiles. Although this is a positive development and it appears that the sample companies are receiving their funds more promptly than in the past, fifty percent of the companies wait for their payments 60 days or longer. Moreover, the first quartile is still well above the envisaged policy target of a maximum payment period of 30 days.

An inverse trend can be observed for trade payables (see Table 4). The median DPO increased by 3.7 days between 2010 and 2022. However, between 2011 and 2013, DPOs decreased, specifically the median by -1.9 days and the third quartile by -4.3 days. Overall, the DPO distribution seems to be more influenced by outliers, as the mean DPO deviates noticeably more from the median compared to the DSO figures.

DPOs [days] of ERICA database

Table 4

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	31.9	30.0	28.7	29.5	30.9	30.0	31.2	32.1	34.2	33.1	34.9	38.3	32.6
Q2	48.4	47.9	45.2	46.0	47.8	47.3	47.2	50.4	52.4	52.1	54.3	60.2	52.1
Q3	74.9	75.7	70.5	71.4	73.6	72.8	74.1	76.2	79.8	77.8	84.8	92.0	79.5
Mean	111.7	73.0	63.0	65.5	77.2	1,048	73,692	95.9	99,245	77,951	452.7	100.7	82.0
IQR	43.0	45.8	41.8	41.9	42.7	42.8	43.0	44.1	45.5	44.7	50.0	53.8	46.9

Q1...Q3: quartile 1...3 / IQR: interquartile range

Although the median DPO is at around 52 days in 2022, it can be assumed that the actual payment period for payables in the sample is much higher. This is due to method of calculating DPOs in ERICA, which is based on revenues and not, for example, on material expenses as described above.

3.4 Size analysis

A key argument in favour of stricter regulation of payment terms is that smaller companies have to accept significantly longer payment terms due to their lower bargaining power (European Commission, 2023). As explained in the description of the sample, we have to rely on the thresholds defined in the ERICA database, i.e. €250 million and €1,500 million, to distinguish between small, medium and large groups. The results based on the year 2022 are shown in Table 5.

There is a notable difference between the quartiles of the DSOs of small and large companies, which amounts to 21.8 days for the median, resulting in a more than 30% shorter collection period for large companies. On the one hand, this could be due to a greater bargaining power of large corporations vis-à-vis their customers compared to smaller corporations, or to a more effective receivables management, e.g. through more consequent dunning procedures or the utilisation of factoring (Brealey et al., 2022). On the other hand, it could also be the result of different customer segments, e.g. the split between B2B and B2C customers of large vs. small companies and different payment practices in the different segments.

DSOs and DPOs 2022 of ERICA database by size

Table 5

DSOs [days]				DPOs [days]			
	Small	**Medium**	**Large**		**Small**	**Medium**	**Large**
Q1	43.7	37.4	32.4	Q1	31.4	31.3	34.8
Q2	71.2	56.8	49.4	Q2	56.4	48.3	53.2
Q3	103.9	80.1	72.8	Q3	86.7	76.3	75.9
Mean	85.6	63.3	56.3	Mean	122.4	59.4	62.9
IQR	60.1	42.8	40.5	IQR	55.3	45.0	41.1

Q1...Q3: quartile 1...3 / IQR: interquartile range

On the DPO side there is only a small difference in medians, i.e. small companies have a median KPI that is 3.2 days longer than large companies. This does not indicate that smaller companies have less bargaining power with their suppliers compared to their larger peers.

3.5 Summary & Limitations

Overall, the ERICA sample provides a broad basis for analysis with around 1,000 data points per year. The data for the receivables (DSO) of the companies show a level of collection periods well above the targeted 30 days. A regulation could therefore be expected to have an impact at least on the part of B2B sales in Europe. A breakdown of the sample by size reveals a large difference in DSOs between large and small companies , which may be due to different factors and should be analysed in further research.

The main limitations of the analysis that need to be taken into account are the following: The analysed ERICA data is only available in aggregated form. Due to the lack of individual cases, a different level of aggregation as offered by the ECCBSO (e.g. by different size classes or different industry clusters) is not possible. Furthermore, the analysis can only be based on descriptive statistics. Hypothesis testing is not possible due to missing distribution parameters such as standard deviation or rank sums of the sub-samples. The inability to construct stable panels limits the interpretation of time series data. Timely analysis of actual data is also constrained by the relatively long update cycles. The transparency of the calculation of ratios, such as DSO/DPO, should also be improved. For the analysis and benchmarking of balance sheet data, we propose to include not only absolute figures, but also relative values expressed as percentages of the balance sheet total. Similarly, the absolute figures of the income statement could be extended to include ratios for each line item expressed as a percentage of revenues.

4. Osiris sample

To overcome some of the limitations and validate the findings, we conduct a separate analysis based on financial data from the Osiris database. Osiris was previously part

of Bureau van Dijk, which was acquired by Moody's Analytics in 2017. It is sometimes referred to as Orbis Global. It is a comprehensive resource covering balance sheet data of publicly listed companies worldwide (Moody's Analytics, n.d.). The advantage over the aggregated ERICA data is that information is available at the individual company level. This means that the data can be filtered individually, outliers can be assessed, and stable panels can be analysed over longer periods. In addition, KPIs can be defined as needed. They can be calculated at the company level and aggregated and tested as required.

4.1 Sample description

The sample was selected as follows: From the entire database of publicly listed companies (69,327), only those based in the European Union were filtered (5,759 remaining). In a next step financial companies were excluded based on their GICS codes (4,076 remaining). To ensure comparability, companies not applying IFRS were also eliminated (2,913 remaining).

To ensure comparability, we included the same period (2010 to 2022) in our analysis, although more recent figures are available in the database. We used a panel approach to ensure to track the development of the receivables and payables of the same set of companies over time. For the analysis of DSOs and trade receivables we included only those companies which reported meaningful receivables and revenues of over one million Euro in all years (1,011 remaining). For DPOs and trade payables, we applied the same procedure to the values of trade payables and costs of goods sold (1,081 remaining).

In order to compare groups of companies of different sizes, we also analysed the single year 2022. We used the same filter criteria as above, i.e. only companies with receivables/revenues or trade payables/costs of goods sold of more than one million Euro were included. This resulted in subsamples of 2,171 companies for the assessment of DSOs/receivables and 2,170 companies for DPOs/trade payables. For reasons of comparability, we applied the same size thresholds for the categorisation of small, medium and large groups as defined in the ERICA database.

4.2 Key figures

We base our analysis on a total of four different indicators. First, we analyse the receivables side by calculating the DSOs, sometimes also called "average collection period", based on the following formula (Sagner, 2014):

$$\text{DSO} = \frac{\text{Accounts Receivable (current)}}{\text{Total Revenues}} \times 360 \text{ days}$$

The analysis cannot be performed for trade receivables only, as the Osiris format does not differentiate current receivables further. To measure the amount of capital tied in receivables we also calculate the receivables in relation to total assets.

$$\text{AR in B/S total} = \frac{\text{Accounts Receivable (current)}}{\text{Total Assets}}$$

A similar approach is used for payables to suppliers. We calculate the DPOs as follows:

$$\text{DPO} = \frac{\text{Trade Payables}}{\text{Costs of Goods Sold (COGS)}} \times 360 \text{ days}$$

Unlike receivables, there is a separate item in the Osiris database for trade payables. We use the costs of goods sold in the denominator as this results in a closer proxy for payment periods towards suppliers than using turnover. However, it should be noted that ideally only material expenses and other third-party expenses should be included if such data are available (Federau, 2024).

As with receivables, we measure the relative amount of financing provided by suppliers by calculating trade payables in relation to total liabilities and equity:

$$\text{AP in B/S total} = \frac{\text{Trade Payables}}{\text{Total Liabilities \& Equity}}$$

The higher such amount, the more funding is provided by a company's suppliers and the less it needs to be covered by other, more costly financing forms such as financial debt or equity.

4.3 Longitudinal analysis

Looking at the evolution of the mean DSOs of the sample (see Table 6), the amounts decreased from 2010 to 2022 substantially by 12.0 days. However, due to the presence of substantial outliers, we focus on the interpretation of robust quartiles instead.

DSOs [days] of Osiris panel

Table 6

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Q1	43.2	41.7	40.8	40.8	40.6	40.0	41.4	40.5	39.9	37.9	38.3	39.0	35.0
Q2	62.2	60.9	59.3	59.1	59.0	56.5	59.9	59.6	58.9	56.6	55.1	56.4	52.7
Q3	89.8	88.1	85.0	82.8	84.1	80.8	83.6	81.1	81.7	77.7	77.3	76.9	74.7
Mean	74.2	73.2	70.4	69.4	70.4	68.0	70.3	67.9	66.9	63.2	64.1	65.8	62.2
IQR	46.6	46.4	44.1	42.0	43.4	40.8	42.3	40.6	41.8	39.7	39.0	37.8	39.6

Q1…Q3: quartile 1…3 / IQR: interquartile range

As such median decreased as well significantly ($p < 0.001$[2]) by 9.5 days from 62.2 to 52.7 days, representing an annual average (CAGR) of -1.4%. This figure is still well above 30 days. Interestingly, the largest decrease in the third quartile occurred

[2] Two-sided Mann-Whitney-Test, paired.

between 2011 and 2013, the period in which the existing EU Directive on late payment was agreed and came into force. This may indicate that the Directive had indeed an impact by reducing very long payment periods.

A reduction can also be observed when comparing the share of the accounts receivables in relation to the balance sheet total (see Table 7), where the median has decreased significantly by 3.2 percentage points ($p < 0.001$[3]). Overall, the European companies in the sample seem to have been able to manage their receivables efficiently over the period observed, freeing up working capital from receivables.

Accounts receivables of B/S total

Table 7

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	10.2%	10.2%	10.0%	9.7%	9.3%	9.0%	9.3%	9.4%	9.1%	7.7%	7.1%	7.7%	7.7%
Q2	16.3%	16.4%	15.7%	15.3%	15.3%	14.9%	15.0%	15.2%	14.7%	13.4%	12.0%	12.5%	13.1%
Q3	24.1%	24.0%	23.1%	23.0%	22.9%	22.4%	22.5%	22.7%	21.9%	19.8%	18.1%	18.3%	19.2%
Mean	18.5%	18.6%	18.1%	17.7%	17.5%	17.2%	17.2%	17.2%	16.8%	15.2%	13.9%	14.3%	14.8%
IQR	13.9%	13.8%	13.1%	13.3%	13.6%	13.4%	13.2%	13.3%	12.8%	12.1%	10.9%	10.6%	11.5%

B/S: balance sheet / Q1…Q3: quartile 1…3 / IQR: interquartile range

The analysis of the payables side, measured by DPOs, shows a somewhat different picture (see Table 8). Over the analysis period median DPOs increased slightly, but still significantly, by 1.1 days to 75.3 days in 2022 ($p < 0.001$[4]).

DPOs [days] of Osiris panel

Table 8

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	49.0	46.4	44.2	46.0	48.3	44.7	47.5	48.8	49.5	48.3	49.5	53.9	48.7
Q2	74.2	71.2	69.5	68.5	70.6	71.6	74.0	75.7	77.1	74.5	76.7	85.9	75.3
Q3	116.2	115.4	112.2	111.4	115.6	118.0	127.2	126.8	133.6	130.1	135.3	139.1	123.4
Mean	106.9	108.8	109.8	115.1	110.8	112.3	155.9	181.7	143.3	168.3	147.5	166.2	143.7
IQR	67.2	69.0	67.9	65.5	67.4	73.3	79.7	78.0	84.1	81.8	85.8	85.2	74.7

Q1…Q3: quartile 1…3 / IQR: interquartile range

The averages increased dramatically to 144 days in 2022, driven by a steep increase in the fourth quartile as can also be seen in the boxplots (see Figure 1).[5] This means that at least the 25% companies with longest DPOs increased the average payment periods towards their suppliers sharply.

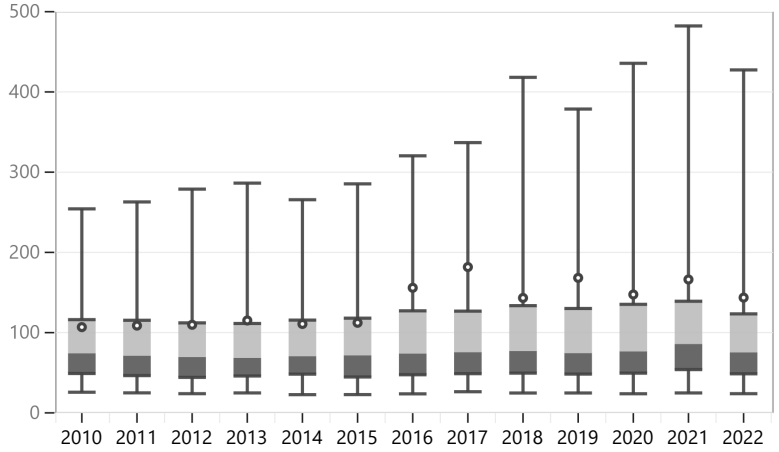
[3] Two-sided Mann-Whitney-Test, paired.

[4] Two-sided Mann-Whitney-Test, paired.

[5] We are setting the whiskers at 0.05 and 0.95 quantiles to give an overview of the overall distribution of the data without inclusion of the most severe outliers.

Boxplot DPOs [days] of Osiris panel

Figure 1



Whiskers representing the 0.05 and 0.95 quantiles

The DPO figures can only be interpreted relatively over time. This is because trade payables are set in relation to COGS. However, under IFRS, the COGS do not only include material expenses from acquired goods but also expenses related to a company's value creation, such as labour costs or depreciation, which are not incurring trade payables (IAS 2: Inventories, 2003). On the other hand, trade payables may result as well from expenses in other functional areas such as selling or general administration. Therefore, the discussed DPO figures give an indication of the trend but cannot be used as an accurate estimate of the actual payment periods or payment terms to suppliers.

The evolution of the trade payables as a percentage of the balance sheet total is rather stable, with a slight decrease in the median from 9.5% to 9.3% (see Table 9).

Trade payables of B/S total

Table 9

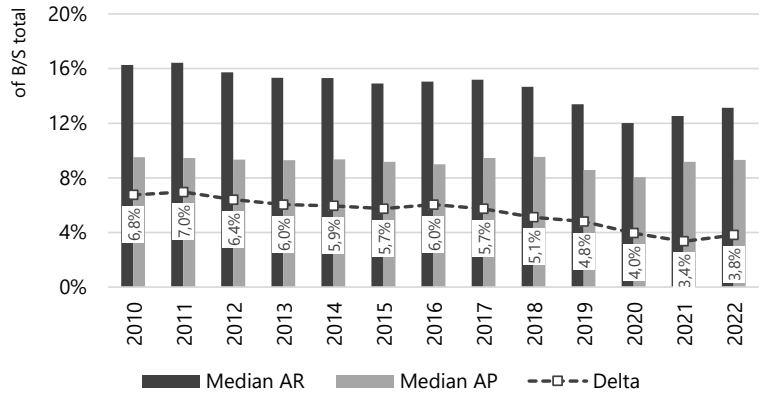
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Q1	5.8%	5.8%	5.7%	5.5%	5.4%	5.2%	5.3%	5.5%	5.5%	4.9%	4.4%	5.0%	5.3%
Q2	9.5%	9.5%	9.3%	9.3%	9.4%	9.2%	9.0%	9.4%	9.5%	8.6%	8.1%	9.2%	9.3%
Q3	15.6%	15.5%	14.9%	15.3%	15.2%	15.2%	15.1%	15.2%	15.7%	14.1%	13.1%	14.8%	14.7%
Mean	12.1%	12.1%	11.9%	11.9%	11.8%	11.7%	11.8%	11.8%	11.9%	10.9%	10.3%	11.3%	11.6%
IQR	9.8%	9.8%	9.3%	9.7%	9.9%	10.0%	9.8%	9.8%	10.2%	9.1%	8.7%	9.8%	9.5%

B/S: balance sheet / Q1…Q3: quartile 1…3 / IQR: interquartile range

Figure 2 shows the comparison between receivables and trade payables in relation to the balance sheet total over time. The aforementioned decline in relative receivables and the rather stable relative trade payables since 2010 imply a decreasing gap between working capital tied up in receivables and supplier financing through trade payables. This gap narrowed from 6.8% in 2010 to only 3.8% in 2022.

Medians of AR and AP in percent of B/S

Figure 2



4.4 Size analysis

Like the ERICA analysis, the next step was to analyse the data clustered by size. To ensure comparability, we applied the same thresholds as in the ERICA database, i.e. revenues less than €250 million (small), between €250 million and below €1,500 million (medium) and from €1,500 million and higher (large). The results for the year 2022 are shown in Table 10.

DSOs/receivables and DPOs/payables 2022 of Osiris panel by size

Table 10

DSOs [days]

	Small	Medium	Large
Q1	41.6	30.2	29.6
Q2	63.6	49.9	45.1
Q3	93.1	68.5	65.1
Mean	103.4	52.8	51.1
IQR	51.4	38.3	35.5

DPOs [days]

	Small	Medium	Large
Q1	52.6	43.1	50.9
Q2	86.1	70.6	80.2
Q3	157.3	122.7	130.9
Mean	190.7	253.9	164.6
IQR	104.8	79.6	80.0

Accounts receivables of B/S total

	Small	Medium	Large
Q1	8.0%	6.7%	6.5%
Q2	14.5%	13.2%	10.3%
Q3	23.0%	18.4%	15.0%
Mean	16.9%	13.8%	11.9%
IQR	15.0%	11.7%	8.4%

Trade payables of B/S total

	Small	Medium	Large
Q1	4.9%	5.3%	6.5%
Q2	9.1%	9.8%	10.6%
Q3	15.5%	15.7%	16.4%
Mean	12.3%	12.0%	12.6%
IQR	10.6%	10.5%	9.9%

Q1...Q3: quartile 1...3 / IQR: interquartile range

When comparing small and large companies, the following findings can be observed. Firstly, the median DSOs are significantly higher ($p < 0.001$[6]) for small companies, with a difference of 18.5 days. The median small company in the sample waits for almost 64 days for payment of their goods and services. A quarter of small companies have even collection periods of more than 93 days, compared with 65 days for large companies. Overall, this also translates into a median share of working capital tied up in trade receivables that is 4.2 percentage points higher for small enterprises. There may be several reasons for this difference as already described in section 3.4.

The picture is slightly different for trade payables. The difference in median DPOs is relatively smaller and insignificant with a delta of 5.9 days ($p = .052$[7]). Also, the group of small companies shows a higher median DPO (86.1 days) compared to the group of large companies (80.2 days). Therefore, the data do not support the hypothesis that large enterprises can obtain significantly longer payment terms from their suppliers. However, in relation to their balance sheet total, large enterprises rely more on trade payables financing than their smaller counterparts (10.6% vs. 9.1%, $p < 0.01$[8]).

4.5 Summary & Limitations

Overall, the analysis of the Osiris data mainly confirms the previous findings based on the ERICA data. Since 2010, there has been a significant reduction in DSOs, leading to a reduction in working capital tied up in receivables. However, the median collection period is still well above the regulator's 30-day general limit. The development of trade payables on the other hand measured by DPO or as percentage of balance sheet total is relatively stable over time. Comparing small and large companies again reveals a significant difference in DSOs and in the share of receivables and payables as well. Large companies have shorter collection periods, less working capital tied up in receivables and more financing through trade payables.

Although the analysis of the Osiris data has several advantages over ERICA, such as a stable panel, there are still some shortcomings regarding the interpretation. First, the analysis of DSOs needs to be based on total receivables as opposed to trade receivables only. Second, the analysis relies on financial data for publicly listed firms only. This means that the sample actually includes very few small- and medium-sized enterprises with a turnover of less than €50 million, which is the formal EU threshold for SMEs (European Commission, 2020).

5. Conclusion

In conclusion, the data examined in this paper, drawn from both the ERICA and Osiris databases, demonstrates that although overall collection periods have been reduced over the last years, the payment terms remain well above the general aim of the

[6] Two-sided Mann-Whitney-Test, unpaired.
[7] Two-sided Mann-Whitney-Test, unpaired.
[8] Two-sided Mann-Whitney-Test, unpaired.

European Commission of 30 days. The results highlight the discrepancies in payment practices between large and small firms. Large companies tend to benefit from shorter collection periods and more favourable financing conditions through trade payables, while smaller businesses face extended payment terms, leading to increased pressure on their working capital.

The question of whether the new EU regulation will come into force in the form decided by the EU Parliament is currently still unclear and depends on the approval of the European Council. In light of the potentially considerable implications, it would be advisable for companies to examine their own payment terms on both the customer and supplier sides in order to anticipate the potential consequences of the more rigorous regulations and to identify potential alternative financing strategies if necessary.

References

Banque de France. (n.d.). *ERICA (European Records of IFRS Consolidated Accounts) database*. https://www.bach.banque-france.fr/

Brealey, R., Myers, S., Allen, F., & Edmans, A. (2022). *Principles of Corporate Finance* (14th ed.). McGraw Hill.

European Commission. (2020). *User guide to the SME Definition*. https://ec.europa.eu/docsroom/documents/42921/attachments/1/translations/en/renditions/native

European Commission. (2023). *Proposal for a regulation of the European Parliament and of the council on combating late payment in commercial transactions, COM(2023) 533 final*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52023PC0533

European Committee of Central Balance Sheet Data Offices (ECCBSO). (2023). *ERICA User Guide Summary*. European Committee of Central Balance Sheet Data Offices (ECCBSO). http://www.bach.banque-france.fr

European Committee of Central Balance Sheet Data Offices (ECCBSO). (2024, February). *ERICA User's Guide*. ECCBSO. https://www.eccbso.org/system/files/2024-02/ERICA_users_guide_2022_data_F.pdf

European Parliament. (2024a). *P9_TA(2024)0299: European Parliament legislative resolution of 23 April 2024 on the proposal for a regulation of the European Parliament and of the Council on combating late payment in commercial transactions (COM(2023)0533 – C9-0338/2023 – 2023/0323(COD))*. https://www.europarl.europa.eu/doceo/document/TA-9-2024-0299_EN.pdf

European Parliament. (2024b). *Procedure file 2023/0323(COD) - Commercial transactions: Combating late payment*. https://oeil.secure.europarl.europa.eu/oeil/popups/printficheglobal.pdf?id=746469&l=en

European Union (2011). *Directive 2011/7/EU of the European Parliament and of the Council of 16 February 2011 on Combating Late Payment in Commercial Transactions*. Official Journal of the European Union, L48, 1-10. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0007

Eurostat. (2008). *NACE Rev. 2: Statistical classification of economic activities in the European Community*. https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.pdf

Federau, M. (2024). Zahlungsziele und Net Working Capital. *Corporate Finance*, *15*(05–06), 109–115.

Högerle, B., Charifzadeh, M., Ferencz, M., & Kostin, K. (2020). The development of working capital management and its impact on profitability and shareholder value: Evidence from Germany. *Strategic Management*, *25*(2), 27–39. https://doi.org/10.5937/StraMan2002027H

IAS 2: Inventories (2003). https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/ias-2-inventories.pdf

Le, B. (2019). Working capital management and firm's valuation, profitability and risk: Evidence from a developing market. *International Journal of Managerial Finance*, *15*(2), 191–204. https://doi.org/10.1108/IJMF-01-2018-0012

Moody's Analytics. (n.d.). *Orbis*. Retrieved 1 September 2024, from https://www.moodys.com/web/en/us/capabilities/company-reference-data/orbis.html

Sagner, J. S. (2014). *Working Capital Management: Applications and Case Studies*. John Wiley & Sons.

Singh, H. P., Kumar, S., & Colombage, S. (2017). Working capital management and firm profitability: A meta-analysis. *Qualitative Research in Financial Markets*, *9*(1), 34–47. https://doi.org/10.1108/QRFM-06-2016-0018

FHV
Vorarlberg University
of Applied Sciences

EU Regulation on combating late payment in commercial transactions

Working capital impact assessment for European firms

BIS/ECCBSO/Banco de España Workshop
New Insights from financial statements
Madrid, 17 Oct 2024

Markus Federau, Bernd Schwendinger

Agenda

1. EU Regulation
2. Research Objectives & Methodology
3. Sample & KPIs
4. Results
5. Conclusion
6. Remarks regarding statistical producers

EU Regulation

Status Quo

- Directive 2011/7/EU
- Applicable from 03/2013

Main Content

- Standard payment term (PT) of 30 days
- Max. PT 60 days
- PT over 60 days possible if…
  …expressly agreed; and
  …not ‘grossly unfair’

Proposed Regulation

- Proposal by EU Commission in 09/2023
- Replacement of EU Directive with EU Regulation
- Adapted and adopted by EU Parliament in 04/2024

Main Content

- General PT limit of 30 days in B2B/B2G
- Increase to max. 60 days in B2B if mutually agreed
- Increase to max. 60 days for book industry and other slow-moving & seasonal goods
- No contractual restriction of assignment of receivables for use of financing services possible

Research Objectives & Methodology

Objectives

(1) Exploration of historical development
(2) Analysis of status quo
(3) Assessment of potential regulatory impact
(4) Recommendations regarding statistical procedures

Methodology

> Group financial statement analysis
> BACH / OSIRIS data
> Receivables/payables
> Days Sales Outstanding (DSO) / Days Payables Outstanding (DPO)
> Descriptives / U-Tests

Sample

ERICA

BANQUE DE FRANCE EUROSYSTÈME | ECCBSO

- Free aggregated consolidated balance sheet data of non-financial groups (mean, Q1-Q3, min/max)
- 8 EU countries + Turkey
- Since 2019 publicly available
- Pre-defined (proprietary) aggregation:
  Size, detailed sector, country + sector, total
- Size: S <250 m€ / M <1,500 m€ / L >=1,500 m€
- Changing sample composition
- Analysed period: 2010-2022
- Varying sample size: 829-1,187 p.a.

Osiris
MOODY'S

- Individual financial data of publicly listed companies
- Global coverage
- Applied filters:
  EU based + non-financial + IFRS application + rec./payables/sales/cogs >1m€
- Same size classes selected
- Stable panel approach
- Analysed period: 2010-2022
- Stable panels: 1,011/1,081
- Year 2022: 2,171/2,170

KPIs

	ERICA / BANQUE DE FRANCE EUROSYSTÈME / ECCBSO	Osiris / MOODY'S
DSO	$\frac{\text{Trade Receivables}}{\text{Daily Average Revenues}}$	$\frac{\text{Accounts Receivable (current)}}{\text{Total Revenues}} \times 360 \text{ days}$
AR in B/S Total	n/a	$\frac{\text{Accounts Receivable (current)}}{\text{Total Assets}}$
DPO	$\frac{\text{Trade Payables}}{\text{Daily Average Revenues}}$	$\frac{\text{Trade Payables}}{\text{Costs of Goods Sold (COGS)}} \times 360 \text{ days}$
AP in B/S Total	n/a	$\frac{\text{Trade Payables}}{\text{Total Liabilities \& Equity}}$

AR: Accounts Receivables / AP: Accounts Payables / B/S: Balance Sheet / DSO: Days Sales Outstanding / DPO: Days Payables Outstanding / n/a: not available

ERICA | BANQUE DE FRANCE EUROSYSTÈME | ECCBSO

Results – Longitudinal

DSO

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	**45.4**	42.5	41.4	42.1	42.7	42.5	42.7	43.0	40.2	40.6	41.5	41.0	**35.6**
Q2	**68.3**	66.3	63.1	63.8	66.6	64.4	66.0	64.7	64.4	62.2	63.9	64.6	**59.6**
Q3	**103.3**	104.0	95.8	93.2	95.9	96.9	100.2	98.0	95.2	93.2	95.0	96.8	**84.5**
Mean	83.3	80.9	77.9	78.2	81.4	88.6	2,525.9	79.7	780.5	85.0	91.5	81.7	68.4
IQR	57.9	61.4	54.5	51.1	53.3	54.5	57.4	55.0	55.0	52.7	53.5	55.8	49.0

- Reduction in median DSOs
- Still well above 30/60 days
- No significance testing possible

DPO

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	**31.9**	30.0	28.7	29.5	30.9	30.0	31.2	32.1	34.2	33.1	34.9	38.3	**32.6**
Q2	**48.4**	47.9	45.2	46.0	47.8	47.3	47.2	50.4	52.4	52.1	54.3	60.2	**52.1**
Q3	**74.9**	75.7	70.5	71.4	73.6	72.8	74.1	76.2	79.8	77.8	84.8	92.0	**79.5**
Mean	111.7	73.0	63.0	65.5	77.2	1,048	73,692	95.9	99,245	77,951	452.7	100.7	82.0
IQR	43.0	45.8	41.8	41.9	42.7	42.8	43.0	44.1	45.5	44.7	50.0	53.8	46.9

Q1…Q3: quartile 1…3 / IQR: interquartile range

- Increase in DPOs
- High distortion of data by outliers
- Impossibility to proxy payment periods

Results – Size 2022

DSOs [days]	Small	Medium	Large
Q1	43.7	37.4	32.4
Q2	**71.2**	56.8	**49.4**
Q3	103.9	80.1	72.8
Mean	85.6	63.3	56.3
IQR	60.1	42.8	40.5

DPOs [days]	Small	Medium	Large
Q1	31.4	31.3	34.8
Q2	**56.4**	48.3	**53.2**
Q3	86.7	76.3	75.9
Mean	122.4	59.4	62.9
IQR	55.3	45.0	41.1

Q1…Q3: quartile 1…3 / IQR: interquartile range

- Notable difference in DSOs small vs. large
- Potentially through bargaining power or different customer structures
- DPOs only smaller differences

Osiris
MOODY'S

Results – Longitudinal

DSO

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	**43.2**	41.7	40.8	40.8	40.6	40.0	41.4	40.5	39.9	37.9	38.3	39.0	**35.0**
Q2	**62.2**	60.9	59.3	59.1	59.0	56.5	59.9	59.6	58.9	56.6	55.1	56.4	**52.7**
Q3	**89.8**	88.1	85.0	82.8	84.1	80.8	83.6	81.1	81.7	77.7	77.3	76.9	**74.7**
Mean	74.2	73.2	70.4	69.4	70.4	68.0	70.3	67.9	66.9	63.2	64.1	65.8	62.2
IQR	46.6	46.4	44.1	42.0	43.4	40.8	42.3	40.6	41.8	39.7	39.0	37.8	39.6

> Reduction in median DSOs by 9.5 days ($p < 0.001$*)

> Highest decrease of Q3 between 2011 and 2013

AR in B/S Total

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Q1	**10.2%**	10.2%	10.0%	9.7%	9.3%	9.0%	9.3%	9.4%	9.1%	7.7%	7.1%	7.7%	**7.7%**
Q2	**16.3%**	16.4%	15.7%	15.3%	15.3%	14.9%	15.0%	15.2%	14.7%	13.4%	12.0%	12.5%	**13.1%**
Q3	**24.1%**	24.0%	23.1%	23.0%	22.9%	22.4%	22.5%	22.7%	21.9%	19.8%	18.1%	18.3%	**19.2%**
Mean	18.5%	18.6%	18.1%	17.7%	17.5%	17.2%	17.2%	17.2%	16.8%	15.2%	13.9%	14.3%	14.8%
IQR	13.9%	13.8%	13.1%	13.3%	13.6%	13.4%	13.2%	13.3%	12.8%	12.1%	10.9%	10.6%	11.5%

B/S: balance sheet / Q1…Q3: quartile 1…3 / IQR: interquartile range

> Reduction in median AR ratios by 3.2 ppts ($p < 0.001$*)

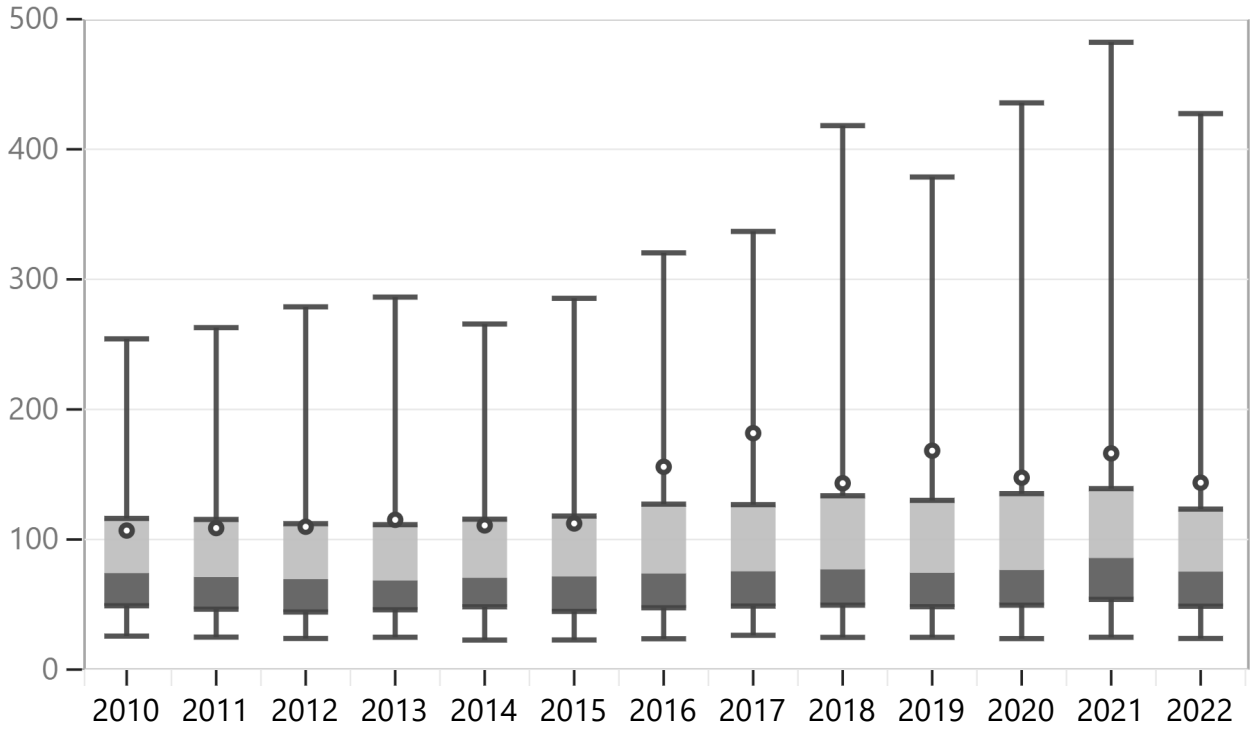
> Efficient receivables mgmt. freeing up WC

* Mann-Whitney-U-Test, two-sided, paired

Osiris
MOODY'S

Results – Longitudinal

DPO



Whiskers representing the 0.05 and 0.95 quantiles

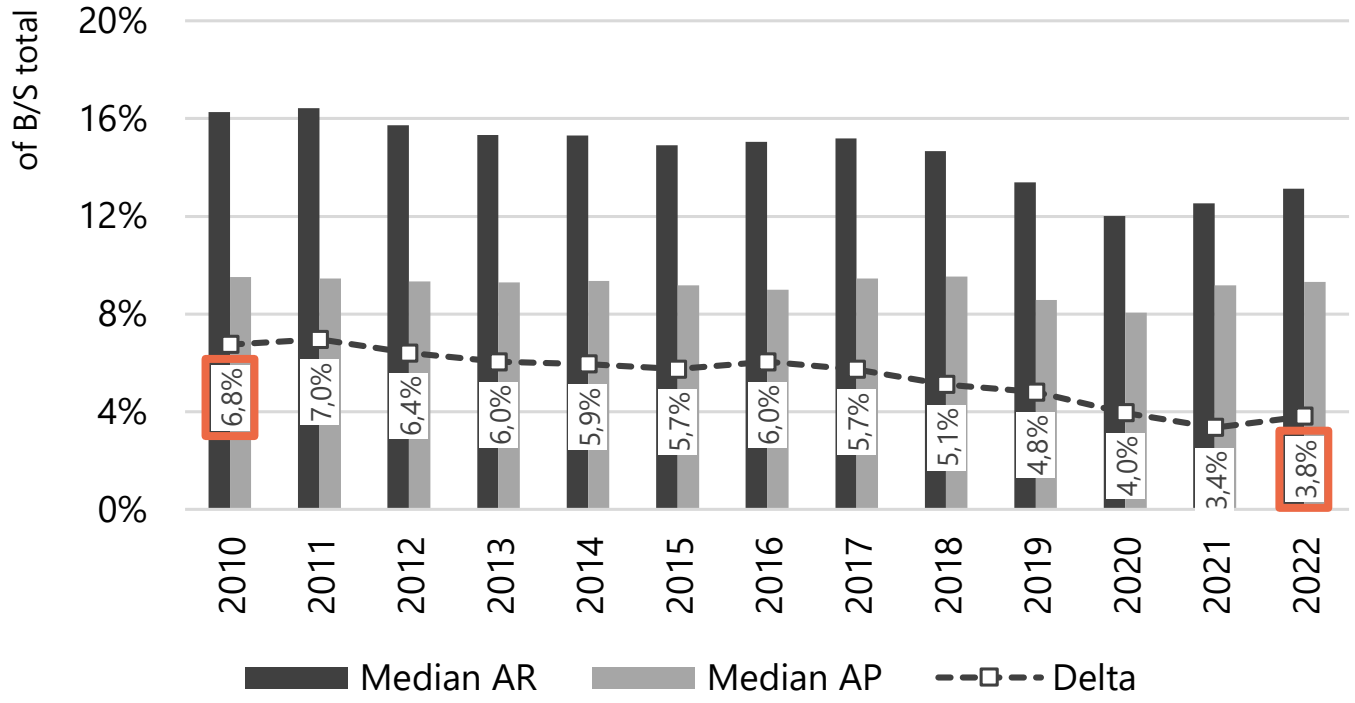
- Slight but significant increase in median DPOs +1.1 days ($p < 0.001$*)
- Steep increase of DPOs of Q4

* Mann-Whitney-U-Test, two-sided, paired

Osiris
MOODY'S

Results – Longitudinal

AR vs. AP in B/S Total



- Overall freeing up of NWC over time
- Reduction of gap between AR/AP by 3 ppts

Osiris
MOODY'S

Results – Size 2022

DSOs [days]	Small	Medium	Large
Q1	41.6	30.2	29.6
Q2	**63.6**	49.9	**45.1**
Q3	93.1	68.5	65.1
Mean	103.4	52.8	51.1
IQR	51.4	38.3	35.5

DPOs [days]	Small	Medium	Large
Q1	52.6	43.1	50.9
Q2	**86.1**	70.6	**80.2**
Q3	157.3	122.7	130.9
Mean	190.7	253.9	164.6
IQR	104.8	79.6	80.0

Accounts receivables of B/S total	Small	Medium	Large
Q1	8.0%	6.7%	6.5%
Q2	**14.5%**	13.2%	**10.3%**
Q3	23.0%	18.4%	15.0%
Mean	16.9%	13.8%	11.9%
IQR	15.0%	11.7%	8.4%

Trade payables of B/S total	Small	Medium	Large
Q1	4.9%	5.3%	6.5%
Q2	**9.1%**	9.8%	**10.6%**
Q3	15.5%	15.7%	16.4%
Mean	12.3%	12.0%	12.6%
IQR	10.6%	10.5%	9.9%

Q1…Q3: quartile 1…3 / IQR: interquartile range

- DSOs large vs. small -18.5 days ($p < 0.001$*)
- 4.2 ppts less WC tied in receivables ($p < 0.001$*)
- Smaller difference in DPOs of -5.9 days ($p = 0.052$*)

* Mann-Whitney-U-Test, two-sided, unpaired

Conclusion

1. EU regulation upcoming but still pending
2. Similar results based on ERICA / OSIRIS samples
3. Collection periods decreased significantly but still well above 30-day target
4. Larger companies benefiting from shorter collection periods
5. No longer DPOs for large vs. small companies
6. Review of payment terms for companies and preparation for upcoming regulation recommended

Remarks regarding statistical producers

Limitations of ERICA usage in benchmarking and scientific research

1. Long update cycle; some 2022 data still missing
2. No panel data available
3. Definition of pre-calculated ratios not public
   → *Possible Solution:*
   Include ratio definitions in ERICA documentation
4. Only pre-defined aggregations (e.g. size, industry) possible
   → *Possible Solution:*
   Continuing of aggregated data only but with dynamic filtering capabilities
5. No possibility of hypothesis testing
   → *Possible Solution:*
   Add std. dev. or rank sums to sub-samples
6. Only absolute B/S & P+L figures available
   → Possible Solution:
   Add ratios (% of B/S total or % of sales)

Resources

- Banque de France. (n.d.). *ERICA (European Records of IFRS Consolidated Accounts) database*. https://www.bach.banque-france.fr/
- Brealey, R., Myers, S., Allen, F., & Edmans, A. (2022). *Principles of Corporate Finance* (14th ed.). McGraw Hill.
- European Commission. (2020). *User guide to the SME Definition*. https://ec.europa.eu/docsroom/documents/42921/attachments/1/translations/en/renditions/native
- European Commission. (2023). *Proposal for a regulation of the European Parliament and of the council on combating late payment in commercial transactions, COM(2023) 533 final*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52023PC0533
- European Committee of Central Balance Sheet Data Offices (ECCBSO). (2023). *ERICA User Guide Summary*. European Committee of Central Balance Sheet Data Offices (ECCBSO). http://www.bach.banque-france.fr
- European Committee of Central Balance Sheet Data Offices (ECCBSO). (2024, February). *ERICA User's Guide*. ECCBSO. https://www.eccbso.org/system/files/2024-02/ERICA_users_guide_2022_data_F.pdf
- European Parliament. (2024a). *P9_TA(2024)0299: European Parliament legislative resolution of 23 April 2024 on the proposal for a regulation of the European Parliament and of the Council on combating late payment in commercial transactions (COM(2023)0533 – C9-0338/2023 – 2023/0323(COD))*. https://www.europarl.europa.eu/doceo/document/TA-9-2024-0299_EN.pdf
- European Parliament. (2024b). *Procedure file 2023/0323(COD) - Commercial transactions: Combating late payment*. https://oeil.secure.europarl.europa.eu/oeil/popups/printficheglobal.pdf?id=746469&l=en
- European Union (2011). *Directive 2011/7/EU of the European Parliament and of the Council of 16 February 2011 on Combating Late Payment in Commercial Transactions*. Official Journal of the European Union, L48, 1-10. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011L0007
- Eurostat. (2008). *NACE Rev. 2: Statistical classification of economic activities in the European Community*. https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.pdf
- Federau, M. (2024). Zahlungsziele und Net Working Capital. *Corporate Finance*, *15*(05–06), 109–115.
- Högerle, B., Charifzadeh, M., Ferencz, M., & Kostin, K. (2020). The development of working capital management and its impact on profitability and shareholder value: Evidence from Germany. *Strategic Management*, *25*(2), 27–39. https://doi.org/10.5937/StraMan2002027H
- IAS 2: Inventories (2003). https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/ias-2-inventories.pdf
- Le, B. (2019). Working capital management and firm's valuation, profitability and risk: Evidence from a developing market. *International Journal of Managerial Finance*, *15*(2), 191–204. https://doi.org/10.1108/IJMF-01-2018-0012
- Moody's Analytics. (n.d.). *Orbis*. Retrieved 1 September 2024, from https://www.moodys.com/web/en/us/capabilities/company-reference-data/orbis.html
- Sagner, J. S. (2014). *Working Capital Management: Applications and Case Studies*. John Wiley & Sons.
- Singh, H. P., Kumar, S., & Colombage, S. (2017). Working capital management and firm profitability: A meta-analysis. *Qualitative Research in Financial Markets*, *9*(1), 34–47. https://doi.org/10.1108/QRFM-06-2016-0018

Thank you

Q&A