Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

Financial Stability Notes

SME Repayment Difficulty

Tamanna Adhikari and Michael Mahony

Vol. 2024, No. 7

SME repayment difficulty

Tamanna Adhikari and Michael Mahony[1]

Central Bank of Ireland

December 2024

Abstract

In this *Note*, we compute a SME repayment difficulty outcome for 2023 and show the resilience of Irish Small and Medium Enterprises in the face of increasing cost pressures. We model the determinants of SME payment difficulty in Ireland using detailed firm-level survey data. We find that firms' access to internal sources of finance is the most important contributor in reducing the likelihood of missed payments. Among firms with existing financial debts, leverage, liquidity, and interest burden are key determinants of repayment difficulty. A one standard deviation increase in the leverage ratio, the interest expense to turnover ratio and tax to turnover ratio from their mean values raises the probability of SME financial distress by 6.2, 4.6, and 3.3 per cent (respectively). In contrast, a one unit increase in the cash to total assets ratio from its mean value decreases the probability of SME financial distress by 4.5 per cent. Our results suggest that higher interest rates are unlikely to be the primary driver of missed payment propensity for most firms. Overall, Irish SMEs have demonstrated increasing resilience post-COVID-19 with factors such as attitude to debt, leverage, liquidity and interest burden playing a key role in determining resilience.

1 Introduction

Following the COVID-19 pandemic, despite sharply increased input and finance costs, SMEs have been able to maintain or even raise their profit margins due to robust domestic demand levels (Financial Stability Review H1, 2024). Rising inflation post-pandemic contributed to increased raw materials and wage costs on SMEs, while the subsequent ECB monetary policy tightening (beginning in July 2022, with easing only beginning in June 2024) led to an increased debt-servicing burden for leveraged SMEs[2]. For example, Central Bank of Ireland statistics show interest rates on new lending have increased (on average) by 1.79 percentage points between December 2021 and June 2024. The business and administration sector having the smallest average increase (1.41 percentage points), with information and communication witnessing the largest (2.13 percentage points). As shown in Adhikari and McGeever (2023) a significant deterioration in economic conditions can result in large increases in SME default risk.

The importance of SMEs in the Irish economy warrants investigation of the determinants of their (possible) repayment difficulty during a period of heightened cost pressures, taking into

[1] Tamanna.adhikari@centralbank.ie; Michael.mahony@centralbank.ie. We thank Vasileios Madouros, Mark Cassidy, Cian O'Neill, Fergal McCann, Laura Moretti, Maria Woods, and Niall McGeever for helpful comments. All views we express in this Note are those of the authors and do not necessarily represent the views of the Central Bank of Ireland.

[2] Affecting SMEs on variable interest rates and those that refinanced and rolled over debt.

consideration firm specific characteristics and debt profiles. In Ireland, McCann and Lawless (2014) previously find that, at the sectoral level, indebtedness, liquidity, profitability and sector-specific effects are important borrower-level determinants of SME default. They extend the work of McCann and McIndoe-Calder (2012), who show that typical financial ratios such as leverage ratio, liquidity ratio and profitability ratio are significant predictors of firm default.

Our *Note* builds on this literature by estimating probabilistic models of firm repayment difficulty. In particular, we answer two key questions. First, what financial factors determine the probability of a SME missing a payment? Second, how has this probability evolved post-pandemic? To answer this we use granular firm-level survey data from September 2020 to September 2022[3], which combines data on missed payments with a range of financial ratios as well as other aspects of the firm balance sheet affected by inflationary conditions (including debt, wage, and tax expenditure). We also use information on firm characteristics and account for non-linearity in debt ratios. We then use these results to estimate the probability distribution of missing payments for each year of our study. We then extend this work by imputing the probability distribution for 2023.[4]

In answering our first research question, our key results show that a one standard deviation increase in the leverage, interest expense-to-turnover and tax-to-turnover ratio from their mean values raises the probability of a missed payment by 6.2 per cent, 4.6 per cent, and 3.3 per cent respectively. In contrast, a one standard deviation increase in the cash-to-total assets ratio from its mean value decreases the probability of a missed payment by 4.5 per cent. We also find that a strong preference (both in the past and the future) to rely on internal resources decreases the probability of missing payments by 16.8 per cent. In fact, this is the strongest predictor reducing the likelihood of missed payments. Furthermore, we also show our results are not driven by the COVID-19 pandemic.

In answering our second research question, our results show the probability of missing a payment was (unsurprisingly) highest in September 2020. Through subsequent survey waves, the average probability of missing a payment typically decreases. While the September 2022 and the imputed 2023 probability distribution show a slight deterioration, these only represent a minor increase in the mean and median probability of missing a payment (both from a low starting point). In fact, in 2023 average probability of missing a payment was just under 11 per cent – with a median value of 6.3 per cent. Overall, this shows SMEs in Ireland have demonstrated remarkable resilience in recovering from an unprecedented period of economic upheaval (the pandemic) and adapting to a period of increasing cost pressures (2022 and 2023).

The remainder of this *Note* is organised as follows. Section 2 discusses data and methodology, and Section 3 presents the results. Section 4 concludes.

[3] Early in this period firms received payment breaks, creditor forbearance and were able to warehouse tax debt. Aside from those who warehouse tax debt (the only one of the aforementioned which we can directly observe in our survey), the remainder in our study are classified as missing a payment.

[4] Due to a change in survey design we cannot incorporate the latest survey wave directly into our econometric specification.

2 Methodology and Data

2.1 Setup

Following existing literature, the dependent variable (SME payment difficulty) is binary and defined as:

$$D_{i,t} = \begin{cases} 1, \text{SME has missed at least one payment} \\ 0, \text{otherwise} \end{cases}$$

where $D_{i,t}$ is the distress indicator (for SME i in period t), which takes the value of one if the SME has missed one payment or more (and zero otherwise). Following Botazzi et al. (2011), Duan et al. (2018), Duarte, Gama and Gulamhussen (2018), Formisano et al. (2016) and Modina et al. (2023) we employ a standard probit model with $D_{i,t}$ as the dependent variable to model the probability distribution of firm level missed payments.

The data source for this study is the Irish Department of Finance's Credit Demand Survey (CDS), a survey of micro, small and medium enterprise (SME) credit conditions in Ireland. The CDS has around 1,500 respondents per survey wave (which typically run from April to September and October to March)[5], with micro, small and medium firms represented as per the percentage composition of SMEs in Ireland. Data on missed payments from this survey is available from September 2017 onwards – although due to limited comprehensiveness of firm characteristics needed for this study, some earlier waves of the survey are not useful. To include a full set of relevant explanatory variables related to balance sheet of the firm, our empirical model includes SME survey responses from the wave ending in September 2020 to the wave ending in September 2022 (i.e. we have five waves of survey data)[6].

2.2 Defining repayment difficulty

Beginning in September 2017, CDS respondents were asked if they missed or deferred repayments (in the past six months) on bank loans, other business loans, personal loans (while using the business as collateral), other personal loans (such as mortgages or buy-to-let loans), payments to revenue commissioners[7], rent payments[8] and payments to suppliers[9].

We define a firm as having repayment difficulty ($D_{i,t} = 1$) if they miss or defer a payment on a financial loan (e.g., a bank loan or lease payment), a rental payment, or a payment to a supplier[10]

The proportion of SMEs missing payments increased during COVID-19, before steadily declining over subsequent survey waves (see Figure 1). An average of 8 per cent of firms missed payments in each wave from 2017 to 2022 – with a minimum value of 3 per cent in April to September 2017 and a maximum value of 23 per cent in March to October 2020. This large range highlights the impact of COVID-19 on SME financial health – on average 4.4 per cent of SMEs missed payments pre-COVID-19, with this proportion remaining fairly steady throughout this period. In contrast, this

[5] Note there is no October 2019 to March 2020 survey wave. Our sample size is dictated by data availability for the waves.

[6] Note there are no firm identifiers in the CDS dataset. Therefore, individual SME responses cannot be tracked over time (i.e. this a pooled cross-section dataset) nor can they be matched to firm-level external datasets.

[7] Introduced in the April to September 2018 wave.

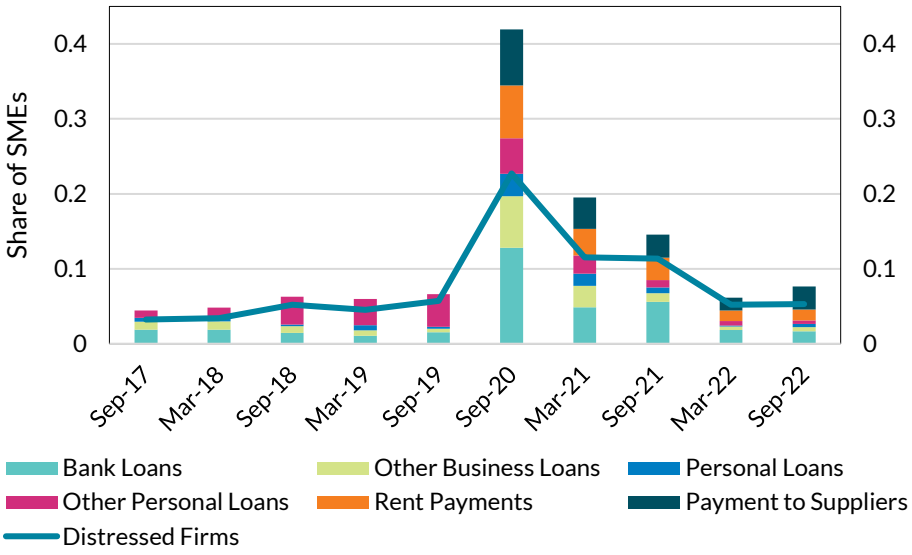
[8] Introduced in the March to October 2020 wave.

[9] Introduced in the March to October 2020 wave.

[10] As firms in our sample period could easily defer tax payments without penalty as a COVID-19 relief measure, we exclude deferred tax payments from consideration when identifying missed payments.

share almost doubled to 8.3 per cent post-COVID-19 – with only recent survey waves showing a return to pre-COVID-19 trends.

Figure 1: The share of SMEs that missed payments by payment type



2.3 Explanatory variables

Our sample starts with the survey wave ending September 2020[11], due to some missing explanatory variables in earlier waves, and ends with the survey wave ending in September 2022.

Following standard practice in the literature, we apply some model selection techniques to arrive at a parsimonious specification.[12] [13] The final set of explanatory variables ($X_{i,t}$) – including time fixed effects – are industrial sector, location, age, size, reliance on internal resources,[14] [15]leverage (defined as debt-to-total assets), cash-to-total assets ratio, operating surplus-to-total assets ratio, interest expense-to-turnover ratio and tax expense-to-turnover ratio. This set of explanatory

[11] Previous survey waves do not include relevant explanatory variables.

[12] Following Formisano et al. (2016), Gallucci et al. (2022) and Modina et al. (2023) variables with a variance inflation factor (VIF) of 5 or greater are removed. Second, following Altman and Sabato (2007), Dainelli, Giunta and Cipollini (2013), Formisano et al. (2016), Modina et al. (2023) and Gao (2015) Least Absolute Shrinkage and Selection Operator (LASSO), backward-selection estimation and forward-selection estimation techniques are applied to the set of explanatory variables.

[14] Reliance on internal resources takes a value of 1 if when asked in the CDS why they did not look for external finance in the past six months the SME selected they had sufficient internal funds, or preferred to use internal finance, or they do not like to be indebted, or when asked why they will not seek external finance in the next six months they selected they have sufficient internal funds/reserves.

[15] Table A1 (see appendix) shows that SMEs which do not seek new credit also have a statistically significant higher cash-to-assets ratio. Note this does not preclude the firm from having existing debt. As we will show, this indicator of a firm's availability of internal resources is by far the strongest predictor in reducing the likelihood of missed payments. This aligns with expectations after Irish firms' deleveraging since the global financial crisis. The amount of debt owed by non-financial firms in Ireland to domestic banks declined by approximately two-thirds between 2012 and 2023. Tables A2 to A3 (in the appendix) cross tabulate dependence on internal resources with age and firm size. Micro firms as well as older firms prefer to take on less debt and rely on their internal resources.

variables has three distinct categories: SME characteristics,[16] SME economic ratios[17] and a final category, which reflects (based on the CDS dataset) Irish SMEs' preference for relying on internal funds[18] – including this explanatory variable captures a key identifying feature of Irish SMEs.

By default, industrial sector, location, age and size[19] are included in the final specification. Only one variable is removed due to multicollinearity (the expenditure to turnover ratio), while the LASSO and backwards selection estimation[20] select the same set of explanatory variables. Forward selection estimation[21] recommends a more parsimonious explanatory variable set[22].

The difference in summary statistics of our explanatory variables, when split based on the missed payments indicator conforms to a priori expectations. Specifically, it seems reasonable to expect that a firm with higher leverage is more likely to be financially distressed than one with low leverage. Conversely, SMEs with higher cash-to-total asset ratios are expected to be less financially constrained than firms with lower cash on hand. This is demonstrated in Table 1, which presents the mean value of each of the quantitative explanatory variables, split by SMEs who have missed payments (financially distressed) and those with no missed payments. For example, the mean leverage ratio of not financially distressed SMEs is 0.31, while distressed SMEs a mean value of 0.65. Moreover, the difference in these means is statistically significant. In fact, the difference in means is statistically significant for each variable – indicating the potential importance of these variables in explaining the likelihood of missing payments.

Table 1: Mean of firm characteristics by missed payment status

	No missed payments	Missed payments	P-Value
Leverage	0.31	0.65	0.00
Cash to total assets	0.29	0.19	0.00
Gross profit to total assets	0.99	0.72	0.02
Interest expense to turnover	0.01	0.03	0.00
Tax expense to turnover	0.06	0.08	0.01

2.4 What are the Determinants of SME Missed Payments?

We use a probit estimator to establish the key determinants of SME missed payments, by regressing our missed payments dummy variable ($D_{i,t}$) on our final set of (standardised) explanatory variables ($X_{i,t}$). Table 2 reports the results as marginal effects at the average values of the explanatory variables (MEA) – with standard errors in brackets. Column 1-8 refers to all leveraged firms while columns 9 refer to all firms, both leveraged and non-leveraged. Each column differs by its combination of fixed effects and variables included. Columns 1-4 are linear with respect to leverage, while columns 5-8 allow for non-linearity in leverage. This reflects the changing riskiness

[16] Industrial sector, location, age and size.

[17] Debt-to-total assets ratio, cash-to-total assets ratio, operating surplus-to-total assets ratio, interest expense-to-turnover ratio and tax expense-to-turnover ratio.

[18] For example, in the ECB Survey on the Access to Finance of Enterprises (SAFE) the proportion of Irish firms not applying for bank loans is consistently above the euro area median (and in some waves close to the euro area maximum).

[19] Size is follows the standard classification based on employee numbers: 0-9 micro firms, 10-49 small firms and 150-249 medium firms.

[20] Maximum p-value ceiling of 0.3.

[21] Minimum p-value floor of 0.01 and maximum p-value ceiling of 0.05.

[22] As a robustness test, a model based on forward selection estimation is also estimated. See Table A in the appendix for robustness checks.

associated with higher levels of leverage – an increase in leverage of (say) 10 percentage points is going to affect the riskiness of firms with an initial leverage of 30 per cent and 75 per cent very differently. Only columns 4 and 8 include a preference to rely on internal resources as an explanatory variable.

Qualitatively, the results are robust across specifications. In each specification, the leverage, interest expense-to-turnover and tax-to-turnover are positive predictors of missing a payment. In contrast, the cash-to-total assets and preference to rely on internal resources are always negative predictors. Furthermore, where included, the preference to rely on internal resources is always the largest predictor (in absolute value). In no specification, is the operating surplus to total assets statistically significant. In addition, both the Stukel goodness of fit test and Brier score (presented at the bottom of each column) indicate the model is a good fit – while the AUROC indicates each specification has a good performance. Furthermore, as shown in Table A5 (in the appendix), these results are robust to excluding the September 2020 survey wave. Thus, our results are not affected or driven by the COVID-19 pandemic.

Focusing on column 8 (our preferred specification), a strong preference to rely on internal resources decreases the probability of SME financial distress by 16.8 per cent, when all other explanatory variables are held at their standardised mean values. Furthermore, a one standard deviation increase in the leverage, interest expense-to-turnover and tax-to-turnover ratio from their mean values raises the probability of a missed payment by 6.2 per cent, 4.6 per cent, and 3.3 per cent respectively. In contrast, a one standard deviation increase in the cash-to-total assets ratio from its mean value decreases the probability of a missed payment by 4.5 per cent.

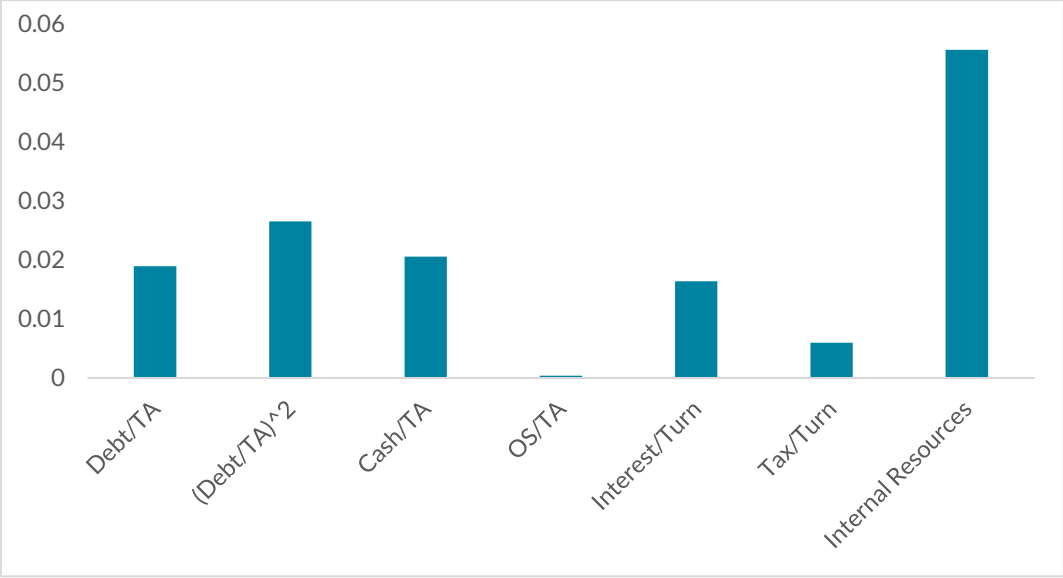
Table 2: Key Results: What are the predictors of SME missed payments?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Leverage (Debt-to-Total Assets)	0.035**	0.026*	0.028*	0.023	0.099***	0.087***	0.091***	0.062**	
	(0.014)	(0.014)	(0.016)	(0.016)	(0.026)	(0.025)	(0.028)	(0.031)	
Cash-to-Total Assets	-0.064**	-0.064***	-0.053***	-0.042**	-0.070**	-0.071***	-0.058***	-0.045***	-0.029***
	(0.028)	(0.021)	(0.018)	(0.017)	(0.029)	(0.021)	(0.018)	(0.017)	(0.008)
Operating Surplus-to-Total Assets	-0.023	-0.016	-0.010	-0.003	-0.026	-0.019	-0.013	-0.005	0.005
	(0.022)	(0.020)	(0.019)	(0.020)	(0.025)	(0.022)	(0.021)	(0.021)	(0.009)
Interest Expense-to-Turnover	0.057***	0.059***	0.051***	0.044***	0.059***	0.062***	0.054***	0.046***	0.042***
	(0.018)	(0.019)	(0.016)	(0.016)	(0.018)	(0.020)	(0.017)	(0.017)	(0.011)
Tax Expense-to-Turnover	0.029**	0.030*	0.030*	0.031*	0.031*	0.031*	0.033*	0.033*	0.021**
	(0.014)	(0.016)	(0.017)	(0.017)	(0.016)	(0.017)	(0.019)	(0.018)	(0.010)
Prefers to Rely on Internal Resources				-0.170***				-0.168***	-0.157***
				(0.035)				(0.036)	(0.025)
Obs.	983	983	980	980	983	983	980	980	1624
Debt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Leverage non-linear	No	No	No	No	Yes	Yes	Yes	Yes	No
Time fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Location fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Age fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Size fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Stukel GoF p-Value	0.0010	0.2236	0.0113	0.1879	0.2069	0.2347	0.8642	0.4144	0.2216
Brier Score	0.1152	0.1104	0.1083	0.1013	0.1133	0.1078	0.1057	0.1000	0.1015
AUROC	0.6981	0.7474	0.7577	0.8100	0.7103	0.7562	0.7694	0.8142	0.8037

Table reports the marginal effects at the average values of the explanatory variables (MEA) – with standard errors in brackets. Column 1-8 refers to all leveraged firms while columns 9 refer to all firms, both leveraged and non-leveraged. Each column differs by its combination of fixed effects and variables included. Columns 1-4 are linear with respect to leverage, while columns 5-8 allow for non-linearity in leverage. Only columns 4 and 8 include a preference to rely on internal resources as an explanatory variable. Standard errors in parentheses. Sample is drawn from September 2020-September 2022. * p < 0.10, ** p < 0.05, *** p < 0.01

Unsurprisingly, a preference to rely on internal resources makes the largest contribution in calculating the probability of missing a payment (see Figure 2). The contribution ratio is defined as the percentage increase in the goodness of fit arising from adding each explanatory variable to the missed payments model. The cash to total assets ratio, debt to total assets ratio and the interest expense to turnover ratio make approximately the same contribution to predicting SME financial distress.

Figure 2: How do the explanatory variables contribute to the probability of missing a payment?



Results are based on coefficient estimates from column 8 in Table 2 (i.e. with non-linearities in leverage and preference for internal resources included).

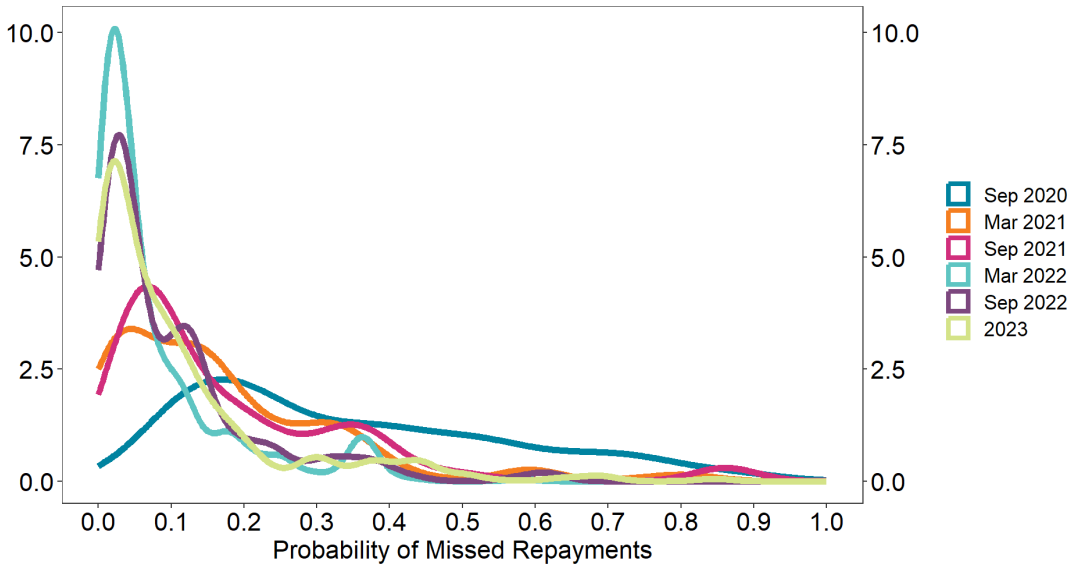
2.5 How has the Probability of Missed Payments Evolved over Time?

Over the course of our sample, the probability of a missed payment has improved – although there is some minor deterioration towards the end of 2022 and in 2023. Figure 3 refers to the density function of probabilities of missed payments over the different sample waves. The September 2020 wave has a large right tail combined with a smaller mass on the left of the distribution, indicating more firms had a higher probability of missing payments during this challenging time for SMEs. In fact, the mean probability of missing a payment was 35 per cent with a median value of 29 per cent.

Over subsequent survey waves the right tail of the distribution decreases, with both the mean and median values falling as the distributions become more positively skewed. This reflects the improving economic environment faced by SMEs post-COVID-19. Figure 3 also shows an imputed 2023 probability distribution,[23] which largely follows the same distribution of September 2022 and is similar to March 2022. While there has been a slight increase in both the mean and median probability of default (3 and 2 percentage points since March 2022, respectively), these are from low starting points – and overall the probability of the median SME missing a payment in 2023 is still low (at 6 per cent). This demonstrates that Irish SMEs remained resilient in the face of increased cost pressures in 2023, and by this metric at least did not face a material worsening of their economic position.

[23] For 2023 the CDS switched from a biannual to an annual survey. Using coefficients from our model we impute the 2023 probability distribution.

Figure 3: Probability of missed payments



Results are based on coefficient estimates from column 8 in Table 2 (i.e. with non-linearities in leverage and preference for internal resources included). 2023 distribution is imputed using coefficient estimates and latest data from CDS.

3 Conclusion

This Note explores the determinants of SME repayment difficulty by combining a range of financial ratios as well as other aspects of the firm balance sheet affected by inflationary conditions including debt, wage, and tax expenditure. We find clear evidence that the leverage, interest expense-to-turnover and tax-to-turnover are positive predictors of missing a payment. In contrast, the cash-to-total assets and preference to rely on internal resources are always negative predictors. We also show that the preference to rely on internal resources is always the largest predictor (in absolute value). In fact, this makes the largest contribution to predicting SME missed payments – but leverage and interest expense also play a role (albeit smaller). We also show the probability of missing payments has declined compared to September 2020 – Irish SMEs have shown remarkable resilience in this period of increasing cost pressures. While there has been some (minor) deterioration in the probability distribution of missed payments in 2023, this should not detract from the fact that the vast majority of SMEs are unlikely to miss paying their creditors (despite increased costs).

References

1. Adhikari, T., & McGeever, N. (2023). How resilient are Irish SMEs to input cost inflation? (No. 6/FS/23). Central Bank of Ireland.
2. Altman, E. I., & Sabato, G. (2007). Modelling credit risk for SMEs: Evidence from the US market. Abacus, 43(3), 332-357.
3. Cassidy and Sarchi (July 2023). Non-Bank Mortgage Lending: A Look into the Interest Rate Distribution

4. Dainelli, F., Giunta, F., & Cipollini, F. (2013). Determinants of SME credit worthiness under Basel rules: the value of credit history information. PSL Quarterly Review, 66(264), 21-47.
5. Financial Stability Review H2 2023, Central Bank of Ireland
6. Formisano, V., Gallucci, C., Modina, M., & Pietrovito, F. (2016). Bank-firm relationship in default prediction models. An analysis on a sample of Italian firms.
7. Gao, L., & Zhang, J. H. (2015). Firms' earnings smoothing, corporate social responsibility, and valuation. Journal of corporate finance, 32, 108-127.
8. Lawless, M., McCann, F., & McIndoe Calder, T. (2014). SMEs in Ireland: contributions, credit and economic crisis. Policy Studies, 35(5), 435-457.
9. McCann, F., & McIndoe-Calder, T. (2012). Determinants of SME loan default: the importance of borrower-level heterogeneity (Vol. 6). Central Bank and Financial Services Authority of Ireland.
10. McCann, F., & McIndoe-Calder, T. (2012). Determinants of SME loan default: the importance of borrower-level heterogeneity (Vol. 6). Central Bank and Financial Services Authority of Ireland.

Appendix

3.1 Cross Tabulations by Firm Characteristics

Table A1: Cash to Assets ratio by firm characteristics

	Yes	No	P-value
Reliance on internal resources	32%	27%	0.00
Financial distress	24%	33%	0.00

Table A2: Dependence on internal resources vs Firm size

Dependence on Internal Resources, Firm Size	Micro	Small	Large
No	42%	39%	19%
Yes	50%	38%	12%

Table A3: Reliance on internal resources by Mean Age

Internal Resources	Average Age
No	24
Yes	28

3.2 Robustness Checks

Table A4: Initial Robustness Checks

	Forward Selection Estimation (MEA/SE)	Include Missed Tax Payments (MEA/SE)
Leverage (Debt-to-Total Assets)	0.035***	0.058***

	(0.013)	(0.018)
Cash-to-Total Assets		-0.052
		(0.064)
Operating Surplus-to-Total Assets		-0.000
		(0.007)
Interest Expense-to-Turnover	1.498***	2.070***
	(0.260)	(0.643)
Tax Expense-to-Turnover		0.400**
		(0.200)
Prefers to Rely on Internal Resources	-0.140***	-0.194***
	(0.022)	(0.034)
Obs.	1931	1602
Debt	Yes	Yes
Leverage non-linear	No	No
Time fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Location fixed effects	Yes	Yes
Age fixed effects	Yes	Yes
Size fixed effects	Yes	Yes
Stukel GoF p-Value	0.14	0.13
Brier Score	0.11	0.11
AUROC	0.79	0.81

Standard errors in parentheses. Time fixed effects excluded.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Exclude September 2020 wave

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Leverage (Debt-to-Total Assets)	0.036**	0.032**	0.031**	0.023	0.077***	0.065***	0.064**	0.045	
	(0.016)	(0.013)	(0.015)	(0.014)	(0.026)	(0.023)	(0.030)	(0.031)	
Cash-to-Total Assets	-0.028*	-0.037**	-0.034**	-0.022	-0.030*	-0.038**	-0.034**	-0.022	-0.021***
	(0.016)	(0.017)	(0.017)	(0.015)	(0.017)	(0.017)	(0.017)	(0.016)	(0.006)
Operating Surplus-to-Total Assets	-0.008	-0.007	-0.001	0.004	-0.007	-0.006	-0.001	0.004	0.010
	(0.024)	(0.023)	(0.022)	(0.023)	(0.025)	(0.024)	(0.023)	(0.023)	(0.009)
Interest Expense-to-Turnover	0.063***	0.059***	0.050***	0.045***	0.066***	0.062***	0.053***	0.047***	0.034***
	(0.018)	(0.014)	(0.013)	(0.012)	(0.017)	(0.014)	(0.013)	(0.012)	(0.008)
Tax Expense-to-Turnover	0.031**	0.035**	0.034**	0.033**	0.034**	0.038**	0.036**	0.035**	0.023**
	(0.014)	(0.015)	(0.017)	(0.016)	(0.015)	(0.016)	(0.018)	(0.016)	(0.009)
Prefers to Rely on Internal Resources				-0.110***				-0.109***	-0.108***
				(0.036)				(0.038)	(0.025)
Obs.	676	676	673	673	676	676	673	673	1122
Debt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Leverage non-linear	No	No	No	No	Yes	Yes	Yes	Yes	No
Time fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Industry fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Location fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Age fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Size fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Stukel GoF p-Value	0.0604	0.0293	0.8955	0.0001	0.1201	0.2917	0.0992	0.0000	0.0656
Brier Score	0.1172	0.1154	0.1136	0.1096	0.1163	0.1144	0.1128	0.1093	0.1105
AUROC	0.7008	0.7097	0.7237	0.7754	0.7082	0.7182	0.7323	0.7789	0.7615

Table reports the marginal effects at the average values of the explanatory variables (MEA) – with standard errors in brackets. Column 1-8 refers to all leveraged firms while columns 9 refer to all firms, both leveraged and non-leveraged. Each column differs by its combination of fixed effects and variables included. Columns 1-4 are linear with respect to leverage, while columns 5-8 allow for non-linearity in leverage. Only columns 4 and 8 include a preference to rely on internal resources as an explanatory variable. Standard errors in parentheses. Sample is drawn from April 2021-September 2022. * p < 0.10, ** p < 0.05, *** p < 0.01

T: +353 (0)1 224 6000
www.centralbank.ie
publications@centralbank.ie

Bosca PO 559, Baile Átha Cliath 1, Éire
PO Box 559, Dublin 1, Ireland

Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem