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ASSET REVALUATIONS AND CREDIT CONDITIONS

by Michele Cascarano*, Cristina Demma* and Litterio Mirenda*

Abstract

Do balance sheet asset revaluations impact firms' credit conditions? This paper provides a positive answer by analysing the effects of unlisted Italian firms.
By leveraging the exceptional revaluation option introduced by the Italian government in 2020, we examine whether companies that deviate from the historical cost principle obtain better credit conditions. We find that firms engaging in asset revaluation benefit from lower interest rates on overdrafts and expanded credit, and have an increased likelihood of forming new banking relationships. The impact is stronger for firms with less transparent financial statements and limited to banks not using internal rating models to assess the creditworthiness of borrowers.
We identify two primary channels through which these accounting changes influence borrowing conditions: a *disclosure* channel, which reduces informational asymmetries in the credit market, and a *tax-saving* channel, which capitalizes on fiscal benefits deriving from increased amortization costs. A text mining analysis of financial statement notes indicates that the disclosure channel plays a central role in enhancing firms' credit access.

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* Bank of Italy.

1 Introduction[1]

Do asset revaluations (AR) have an impact on firms' credit access conditions? Leveraging on a change in the Italian regulatory framework, the present study aims to examine, using a Difference in Differences (DiD) approach, whether companies opting for AR have experienced a premium in the banking credit market (the so-called "revaluation premium") and why is that the case.

In accordance with Italian civil law, unlisted firms compose their financial statements using the historical cost criterion. In 2020, during a phase of potential financial distress for firms caused by the Covid–19 pandemic, the Italian government deviated from this general principle[2] by permitting a one-time only monetary revaluation exclusively for accounting purposes, without imposing any compulsory financial burden on companies. AR can be seen as a specific variant of fair value accounting. Unlike fair value accounting, which involves continuous adjustments to reflect ongoing market fluctuations, AR provides a one-time update at a specific point in time. This update aims to enhance the relevance of financial statements by aligning asset values with current market conditions. However, since AR does not capture continuous market changes, it provides limited support for dynamic monitoring of a firm's financial health over time. As a result, AR may offer less capability to address informational asymmetries compared to fair value accounting, while still ensuring greater reliability for balance sheets by avoiding the volatility and subjectivity of frequent updates. In 2020 the Italian government also granted the opportunity to deduct the depreciation of higher book values arising from asset revaluation in subsequent years from taxable income. This deduction could only be claimed upon payment of a tax rate of 3 percent on the revaluation value.

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[2]The Article 110 of the Decree no. 104/2020 (the so-called "Decreto Agosto") allowed companies to revalue tangible and intangible assets of balance sheets at 31 December 2020. From an accounting perspective, the revaluation value entailed the creation of a revaluation reserve on the liabilities side.

This provision had, thus, the potential to reduce future tax payments.

Considering these two distinctive features of the measure, a possible revaluation premium could be driven by: *i)* a reduction in the estimated probability of default and an increase in the estimated recovery rate by creditors, driven by the increase in the firm's book value resulting from AR (henceforth termed the *disclosure mechanism*);[3] *ii*) potential future fiscal savings attributable to the increase in amortization costs (*tax-saving mechanism*). We aim to evaluate the significance of both channels for the revaluation premium to take place. The existence of a disclosure mechanism would imply that adopting the historical cost principle as a general accounting principle leads to relevant information asymmetries in the bank loan market and thus to a credit misallocation. The argument for a tax-saving mechanism suggests, instead, that lenders consider future fiscal savings as a factor that improves companies' financial soundness perspectives, and thus a driver for enhancing credit condition. Our findings indicate that the revaluation premium is empirically supported and that the disclosure mechanism is the main channel driving this effect.

This study makes a novel contribution to the literature on the impact of financial information on credit conditions by examining, for the first time, a large and diverse sample of non-listed firms, which constitute a significant portion of the productive sector in a major advanced economy such as Italy. Indeed, among Italian non-financial corporations, unlisted firms account for approximately 80 percent of the added value. To the best of our knowledge, no previous studies have explored such a broad and varied sample in this context. In contrast to prior research, which has typically focused on narrower samples, such as publicly listed companies or firms with specific characteristics, our analysis enables a more thorough investigation of heterogeneity. This approach provides deeper insight into how credit conditions differ in various characteristics of the borrower and the lender.

Our econometric estimates are based on a large original dataset, which includes a sample

[3]See Appendix A for a simple algebraic derivation of this mechanism obtained using a Merton approach (Merton, 1974).

of 120 thousand Italian unlisted companies for which balance sheets and credit data are available. For each company, complete balance sheet information and detailed quarterly data are available on each bank loan (amount of credit and rates for each financing contract). The possibility of having information on a contract-by-contract basis allows the exercise to focus on overdraft exposures. This type of financing, which companies primarily use to address liquidity needs, represents almost half of Italian firms' total bank debt and is particularly suitable for the analysis on the existence of a premium, as it refers to revolving unsecured credit lines that can be revoked without notice by banks. These characteristics imply that the financing conditions are subject to constant renegotiation between banks and companies; therefore, any change in the creditworthiness assigned by the lender is quickly reflected in the contractual conditions, both in terms of quantity and cost of credit. Moreover, overdraft contracts offer a notable feature: the possibility to separately measure the credit granted by the lender and the portion actually utilized by the company. Though these measures are interconnected, the former is closely tied to the supply side, and the latter to the demand side of the credit market. Furthermore, the dynamics of overdraft credit lines was only marginally affected by government financial support measures adopted in Italy during the Covid-19 pandemic that instead led to a significant increase in long-term business loans.

The opportunity to observe the credit reports of "treated companies" (defined as those that have revalued their assets) and of a large control sample for a significant number of periods before and after the treatment allows us to test empirically, in a DiD framework, the parallel trend assumptions. We address the endogeneity issues arising from the non-random nature of the revaluation choice (i.e., selection into treatment) by employing a propensity score matching (PSM) procedure. PSM ensures that the treated and control groups are comparable in terms of observed covariates. We use a large set of observable firms' characteristics that a vast literature has associated with the AR adoption. By matching individuals with similar propensity scores (the probability of receiving treatment given covariates), this

method reduces the bias that could otherwise distort the estimation of the effect.

Our results show that Italian companies that have revalued their assets have benefited from a decrease of 6 basis points in the average overdraft interest rate charged (with respect to an average value of 3.4 percent in our sample), a 3.7 percent increase in overdraft credit granted by the banking system, a 2 percentage point increase in the probability of initiating a new bank relationship (11 percent the average value in our sample) and a 2 percent increase in the number of bank relationships.

Making use of the richness of our data set, we examine the possible channels (*disclosure* vs *tax-saving*) through which the revaluation premium arises. Using a text mining approach to the notes on financial statements, we make use of a proxy variable to distinguish between firms that can deduct depreciation from taxable income based on higher book values and those limited to monetary revaluation. Although both channels could impact the former, only the disclosure mechanism applies to the latter. Our findings indicate a similar premium for both groups, suggesting that information disclosure is the primary driver.

Evidence supporting the disclosure channel also arises from the observation that, when focusing on pre-existing and ongoing bank-firm relationships, the premium estimates are only marginally statistically significant and their magnitude is less than one-third of the overall estimation. If the tax-saving effect were a factor in determining the premium, it should be evident in these ongoing relationships with the same strength observed for the overall sample. Instead, this finding underscores the lower relevance of informational asymmetry in existing relationships, while highlighting its importance in new ones.

We then analyze the heterogeneity of the revaluation premium. From the borrower side, the results indicate higher premiums for medium and small enterprises, as well as for those in intermediate probability of default (PD) classes, suggesting that AR is particularly advantageous for companies with greater informational opacity. In contrast, for large firms and those in extreme PD classes —either with very low or high default risk— the premium tends to

decrease, reflecting the greater availability of information. From the lender side, the revaluation premium is positively associated with new credit granted by non-internal rating-based (non-IRB) banks, which typically operate under simpler regulatory frameworks. This finding suggests that smaller banks, often less equipped with advanced analytical capabilities, derive more substantial benefits from AR compared to larger banks. The results contribute to the ongoing debate on the trade-off between relevance and reliability in accounting standards, suggesting that relevant information for efficient debt market functioning can still be gathered from companies adhering to historical cost accounting rules, as indicated by the lack of a disclosure effect for larger banks.

While our analysis focuses on Italian firms, the findings have broader implications for other advanced economies where unlisted firms constitute a significant portion of the productive sector, the historical cost principle prevails, and the banking system plays a central role in financing businesses. These characteristics are common across many countries in continental Europe. Moreover, the heterogeneity in the impact of AR, based on lender characteristics, allows us to extend our conclusions to economies where smaller banks remain critical in local and regional markets, and where their limited analytical capacity continues to present a significant challenge for regulators.

The remaining part of the paper is organized as follows: Section 2 review most of the literature we embed into. Section 3 delves deep into the AR regulatory framework. Section 4 describes the data used for the empirical exercise and presents preliminary statistics. Section 5 examines AR determinants, while Section 6 discusses the empirical strategy. Section 7 presents our main results. Section 8 discusses the potential mechanisms, it also addresses heterogeneity according to firm and bank characteristics. Finally, Section 9 sets out the conclusions.

2 Literature review

The literature has widely established that transparency, quality and timeliness of financial information plays a crucial role in the capital and credit markets. Biddle and Hilary (2006) highlight that accounting quality is particularly important for reducing informational frictions between managers and capital suppliers. Ball et al. (2008) demonstrate that accounting information that is more predictive of credit downgrades can alleviate information asymmetries in syndicated loans, thereby improving risk allocation between the lead arranger and syndicate participants.

Regarding a specific aspect of the accounting system, i.e. asset valuation, an extensive body of literature has focused on analyzing the stock market's response to AR and, more generally, fair value principles adoption for listed companies. Many studies show that stock prices react positively to updates in asset values. In particular Easton et al. (1993) show that, especially for companies with higher leverage, AR are a significant determinant for stock market performance, suggesting that AR provides a better summary of the current financial state of the firm. Barth and Clinch (1998) and Aboody et al. (1999) also found a positive relationship between revaluations and equity performance for the Australian and UK markets respectively. However, the latter point out that the relationship between stock prices and revaluations are weak for highly indebted companies, while Lopes and Walker (2012) shows an opposite result for the Brazilian market. Muller III et al. (2011) investigates the impact of fair value reporting for tangible assets on the stock market performance of real estate firms, demonstrating a reduction in information asymmetry, as evidenced by narrower bid-ask spreads.

Focusing on the credit market, Demerjian et al. (2016) explore the role of fair value accounting in debt contracting, highlighting that it may reduce contracting costs. Bonacchi et al. (2024) find that firms adopting fair value during business combinations under common control are more likely to issue new debt and experience lower borrowing costs. Similarly,

Florou and Kosi (2015) show that the adoption of IFRS, which allows greater flexibility for fair value, improves financial transparency, leading to more public debt issuance and lower bond yields. Finally, Laux and Leuz (2009) and Hail et al. (2010), among others, analyze the trade-offs between fair value and historical cost accounting, contributing to the ongoing debate over the reliability versus relevance of accounting. These authors emphasize the risks that fair value accounting can pose to financial stability, particularly during periods of market distress, when its sensitivity to market fluctuations can exacerbate instability.

The evidence available in the literature on the existence of a premium in the credit market explicitly related to an AR episode is limited to the work of Cho et al. (2021). Focusing only on listed companies and analyzing credit amounts (leaving aside other contractual conditions such as interest rates), the authors find that the revaluation option granted by the government in South Korea during the global financial crisis has been accompanied by an increase in private medium-long-term debt.

Although the aforementioned literature implicitly considers the disclosure mechanism as the main driver of the effects of AR on financing conditions, it overlooks, in fact, any tax implication. Drawing from seminal works by Modigliani and Miller (1963) and Stiglitz (1973), numerous studies underscore the significant influence of corporate taxes on firm decisions regarding investment and capital structure. At the core of the extensive debate in this field is the idea that debt provides tax benefits to firms, especially when interest payments are deductible from taxable income. As outlined by Fama (2011), a key challenge in corporate finance lies in providing evidence that illustrates how taxes influence decisions related to the optimal quantity of debt. Empirical studies in this field aim to discern how firms' debt structures react to varying taxation levels (Rajan and Zingales (1995), Heider and Ljungqvist (2015), Givoly et al. (1992) and van Binsbergen et al. (2010)) among others).

It is essential to emphasize that AR designed by the Italian government in 2020 do not alter the marginal tax benefit of debt: AR produce a pre-determined amount of tax deduction

that depends on the ability to increase the depreciation amount, while leaving the marginal tax rate unchanged. Consequently, they should not induce changes in the firms' borrowing behaviors based on the mechanisms studied by the literature strand founded by the studies of Modigliani and Miller (1963). However, potential effects on the credit market may be triggered by AR from the supply side: a reduction in the tax burden enhances corporate profitability, positively influencing the probability of default and potentially leading to a premium in the credit market. As far as we know an explicit reference to this channel is investigated by Deli et al. (2022) that show a modest credit-supply effect referred to this mechanism.

3 Asset revaluations: the Italian regulatory framework

The historical cost method serves as a cornerstone in accounting regulations across numerous advanced economies, particularly those in continental Europe. This principle, aimed at ensuring the objectivity of balance sheets, plays a crucial role in enhancing the stability and reliability of financial information. However, reliance on this method often leads to the undervaluation of firms' assets. For instance, consider a property acquired many years earlier; in such cases, the market value may significantly exceed the purchase cost reflected on the balance sheet, potentially resulting in the overestimation of financial ratios such as leverage.

The discrepancy between market values and reported values in firms' balance sheets is a widely recognized phenomenon in Italy, impacting nearly all Italian firms[4]. To ensure efficient credit allocation, lenders ideally require comprehensive information about debtors' actual asset values. In the bank-centric financial systems of continental Europe, the historical cost criterion is justified by the fact that banks "have direct access to the company's information (formally or informally) and do not utilize the financial statements as their prime data source" (Barlev et al., 2007).

[4]An exception to this trend is observed in listed firms' financial statements, prepared in accordance with international accounting standards (IAS/IFRS).

Over the past 15 years, Italian policymakers have permitted deviations from the historical cost principle on several occasions. Specifically, extraordinary revaluations of monetary assets were allowed in 2008, 2013, 2015, 2016, and 2020. However, the rules governing these AR vary significantly, both in terms of the types of assets eligible for revaluation and the tax treatment of the revalued amounts.

In particular, the revaluations permitted in 2013, 2015, and 2016 did not allow for the possibility of being carried out solely for accounting purposes; instead, they required the payment of a tax on the revaluation value at a rate that may have made the operation less economically favorable. For example, in 2016, the tax rate was fixed at 16 percent.

On the other hand, the rules applicable in 2008 and 2020 allowed for revaluation solely for accounting purposes, without imposing any financial burden on companies. Additionally, firms opting to pay a tax rate of 3 percent on the revaluation value could acquire the right to deduct the higher depreciation arising from the revaluations. The differences described led to a significant utilization of the revaluation options only in 2008 (De Socio, 2020) and 2020, with negligible usage in the other years. It is important to note that the genuinely advantageous revaluation options were introduced during phases of the business cycle when companies faced heightened financial pressures: the global financial crisis (2008) and the Covid-19 pandemic (2020). This alignment suggests that policymakers may have introduced these options with the intention of bolstering businesses.

Regarding the revaluation upon which this paper relies, the regulatory framework introduced by Decree no. 104-2020, known as the "Decreto Agosto", allowed for the revaluation of tangible assets, legally protected intangible assets, and equity holdings in subsidiaries and associated companies, as reflected in last the financial statements. The law allows firms to revaluate their assets substantially following the levels of the fair value hierarchy established

by IFRS 13.[5]

Under certain conditions, exercising the tax option discussed above could reduce future tax payments. Savings stem from the fact that the corporate tax rate in Italy is fixed at 26 percent, a value significantly higher than 3 percent. However, this delta is not the only factor to take into consideration in evaluating the option. Other factors to consider relate to the type of asset being revalued: for instance, equity holdings are not subject to regular depreciation. Furthermore, companies must anticipate sufficiently ample future incomes in order to be able to deduct the higher depreciation values.

Unfortunately, it is not possible to identify from the financial statements which companies that have implemented the AR have also exercised the tax option. This information is indeed textually reported only in the notes to the balance sheets. In section 8.1, this issue will be discussed in more detail, describing how companies that have implemented the AR can be classified into two subgroups, distinguishing those that are more likely to have exercised the tax option from those that have not.

4 Data description

The data set used to perform the empirical exercise presented in the following Sections is a panel of 9 periods from October 2018 to September 2022. Periods are semesters, with the exception of the first and the last (October-December 2018 and July-September 2022) that are quarters due to data availability constraints. For every bank-firm relationship, the data set contains detailed information on overdraft contracts expressed as averages for each period. The data sources used to build it are the Cerved database and the AnaCredit survey. The former contains balance sheet data for all Italian non financial corporations, while the latter is the database promoted by the ECB, containing detailed information on each bank

[5]The managers and the board of auditors must specify and justify in their reports the criteria adopted for the revaluation of the various asset categories and certify that the revaluation does not exceed the value limits set by the law (L.no. 342-2000).

financing contract with an outstanding amount of more than 25,000 euros. Only some very smaller-sized lenders are exempt from contributing to the AnaCredit reporting, thus the data set provides an almost complete overview of the Italian banking credit market.

In our data set, we associate to each bank-firm relationship observed at the time t the following information: *i)* the most recent company balance sheet data (the one of the previous year); *ii)* the main information (rates and quantities) on existing overdraft contracts. We include in our data set all non-financial Italian corporations for which: *i)* there is a continuous sequence of financial statements in the Cerved database from 2015 to 2020, i.e. the five years preceding the "Decreto Agosto" that allowed the revaluation; *ii)* the total debt exposure to at least one bank is greater than 25,000 euros; *iii)* at least one bank has granted overdraft credit lines. We therefore include in our data set only those firms whose assets are valued according to the historical cost principle for a time period long enough to generate a significant discrepancy with respect to market values (6 years before the possibility to exploit the revaluation option). We instead exclude from our data set listed firms, whose financial statements are prepared in accordance with international accounting standards (IAS/IFRS). These firms account only for 20 percent of the added value of Italian non-financial corporations.

To the best of our knowledge, the literature on AR has never been able to exploit a data set such as the one described above. The literature discussed in Section 2 is indeed characterized by the following features: *i)* it mainly focuses on small data sets, where the observation units are listed firms; *ii)* it takes into account the *total* firm debt on the basis of balance sheet information; *iii)* it is unable to exploit explicit information on the cost of bank credit. We therefore believe that one of the contributions to the literature provided by our work is the possibility to refer to a general and complete data set with the characteristics described above.

We define "treated firms" as those companies that have opted for the revaluation possibility granted by the "Decreto Agosto": the appearance (or increase) of the revaluation

Table 1: Share of firms revaluating own assets according to the "Decreto Agosto"

Geographical area	
North-West	16.0
North-Est	18.4
Center	9.8
South and Islands	7.4
Sector	
Manufacturing	23.1
Constructions	9.4
Services	9.5
Other sectors	15.4
Size	
Big	40.0
Medium	32.7
Small	19.1
Micro	6.7
Total	**13.3**

Source : authors' elaborations on Cerved data.

reserve in the balance sheet was used to identify these companies and to approximate the revaluation value.

As showed in Table 1, the 13.3% of the sampled companies have chosen to exercise the option. This percentage is wider in the northern regions, in the manufacturing sector and growing with the increase in the size of the company.

5 Asset revaluation determinants

Generally, assets on the balance sheet are more likely to depreciate rather than appreciate as they age over the life of the firm. Nevertheless, some items such as real estate and trademarks can increase in value over the medium to long term thereby creating opportunities for AR. Balance sheet data do not reveal the presence of these types of assets. Moreover, these assets sometimes do not contribute at all to the balance sheet because they might already be fully depreciated.

However the presence of such items is correlated with structural characteristics of firms

such as size, geographical location, sector and age. For instance larger firms may present a greater AR capacity as they are more likely to possess real estate or trademarks compared to smaller ones. Moreover, companies located in economically dynamic and attractive regions may experience increasing real estate values over time due to rising demand and more favorable market conditions. Sector may also play a role: manufacturing firms regularly utilize large buildings to accommodate their operations and frequently own trademarks, while construction firms often maintain a portfolio of properties awaiting sale. Therefore, companies in these sectors should have more room for AR compared to those in the service sector. The age of a firm is another determinant, with older firms more likely to have accumulated substantial fixed assets over time and to have experienced periods of price increases.

Given that a firm has room for a revaluation, literature investigating AR determinants posits that revaluations are a tool to enhance stakeholders' perceptions of the firm's financial health, thereby improving borrowing capacity and attracting investors. Consequently, models discussed in many papers focus on covariates that highlight financial constraints, assuming that the latter are positively correlated with AR (Missonier-Piera (2007); Barlev et al. (2007); Lin and Peasnell (2000); Cotter and Zimmer (1995) among others), although Barlev et al. (2007) remarks that these findings do not hold uniformly across different countries.

Following this strand of literature, indicators such as profitability, liquidity, and leverage ratios, as well as covariates that capture features of the relationship between a firm and its lenders, should drive AR decisions. However, it can be hypothesized that the improvement in the external perception of the firm's financial soundness may be linked not only to the possibility of increasing financing capacity but also to the aim of enhancing debt conditions. Moreover, it is important to note that the decision to revalue depends on firms' confidence that AR can effectively improve investor perceptions. This implies that if economic and financial conditions deteriorate beyond a certain threshold, firms may recognize that AR might not influence investor evaluations and, therefore, may opt not to pursue it, considering

it futile. Following this reasoning, in an explanatory statistical model of the probability that a firm undertakes an AR, we do not have a predefined expectation regarding the sign of financial indicators' coefficient. In order to test the aforementioned hypothesis, we run the following logit model:

$$Pr(Treated_{i,t} = 1) = f(Firm\_structural\_features_{i,t-1}, Firm\_balance\_sheet_{i,t-1}, Bank\_loan_{i,t}) \tag{1}$$

where:

- $Treated_{i,t}$ is a dummy equal to 1 if the firm i chose to revalue its assets in accordance with the "Decreto Agosto" and 0 otherwise. t is set at 31 December 2020;
- $Firm\_structural\_features_{i,t-1}$ is a vector of lagged (1 year) structural firm characteristics: size (according to the Eurostat definition), sector, geographical area of the firm's headquarter and the log of the firm's age;
- $Firm\_balance\_sheet_{i,t-1}$ represents a vector of lagged (1 year) balance sheet ratios: EBITDA/total assets, leverage, self-financing/total assets and probability of default;
- $Bank\_loan_{i,t}$ is a vector of the main characteristics of the relationships between the firm and the credit system: the share of collaterized overdraft credit, the margins available on overdraft, the share of medium-long term credit drawn, the short term interest rate, the log of the number of firm's bank relationships, a dummy equal to 1 if the firm borrows from multiple banks, a dummy equal to 1 if the firm initiated new bank relationships in 2020 and two dummies equal to 1 if the firm had access to the government financial support initiatives introduced during the pandemic (public guaranteed loans and public "moratoria", a measure which allowed firms to temporarily suspend loan repayments).

We estimate Equation 1 following a step-wise approach by progressively adding groups of regressors. The results are shown in Table 2. A expected, the probability of revaluing is higher for bigger firms, for older and for manufacturing ones. Firms located in northern regions have also the highest probability of revaluing.

Table 2: Logistic regression: motives for the revaluation decision

	(I)	(II)	(III)	(IV)
Size (Baseline is Large)				
Micro	-2.069***	-1.894***	-1.824***	-1.120***
Small	-1.016***	-0.915***	-0.888***	-0.552***
Medium	-0.301***	-0.273***	-0.257***	-0.191**
Sector (Baseline is Other)				
Manufacturing	0.274***	0.252***	0.298***	0.255***
Constructions	-0.386***	-0.351***	-0.280***	-0.193***
Services	-0.504***	-0.480***	-0.419***	-0.339***
Geographic area (Baseline is North-West)				
North-East	0.116***	0.124***	0.106***	0.0434*
Center	-0.484***	-0.461***	-0.441***	-0.431***
South and Islands	-0.788***	-0.716***	-0.710***	-0.599***
Log(Age)		0.600***	0.595***	0.538***
EBITDA/Total assets		1.529***	-0.484***	-0.178
Leverage		0.0185**	0.0277***	-0.00153
Liquidity/Total assets			-1.468***	-1.322***
Self-financing/Total assets			3.681***	3.457***
Probability of default			-3.868***	-1.637***
Total Collateral/Total granted loans				0.000135
Margins available on overdrafts				0.248***
Share of medium-long term credit drawn				0.513***
Overdraft interest rate				-0.0814***
Log(number of bank relationships)				0.446***
Multi borrowing				-0.0467
New bank relationships				-0.0361
Moratoria				0.208***
Public guaranteed loans				-0.0665***
Constant	-0.0834	-2.159***	-2.143***	-3.019***
Observations	118,951	118,871	118,841	118,841
Pseudo R2	0.114	0.128	0.131	0.152

Notes: This table contains the logit estimated coefficients of Equation 1. *, ** and *** respectively refer to statistical significance at the 10, 5 and 1 percent levels. For the sake of brevity, we do not represent standard errors for any coefficient estimate. A complete table is available upon request.

Among balance sheet indicators, in line with Barlev et al. (2007), revaluing firms present

a higher degree of indebtedness and a lower ratio between liquidity and total assets. Despite that, they are more profitable in terms of EBITDA/Total assets (column (II)). This result supports the hypothesis that the effectiveness of AR on investors' perception is conditioned by the profitability of the companies. Note that when we include an indicator of the firm's cash flow generation ability (i.e., the ratio of self-financing to total assets; columns (III) and (IV)), the profitability ratio's sign turns negative, indicating that the cash flow indicator captures profitability's impact on the likelihood of revaluation. Finally, firms with a higher probability of default tend not to revalue their assets (columns (III) and (IV)). This finding could also be interpreted in connection with the hypothesis of low effectiveness of AR in influencing investors' evaluations when economic and financial conditions are deteriorated.

Regarding firm relationships with the banking system, revaluing firms have higher available overdraft margins, a more balanced bank debt structure (greater share of medium-long term debts), more bank relationships (positively correlated with firm size), and pay lower overdraft interest rates, which align with default probability. Additionally, these firms utilized Covid moratoria more frequently, a measure often used by less liquid firms (Arnaudo et al., 2022), whereas their access to public guarantees was lower.[6]

The analysis of the models discussed reveals results that align with expectations concerning structural variables. However, the picture regarding balance sheet ratios and the variables that define relationships with the banking system does not fully align with the previous findings in the literature.

As mentioned earlier, firms that engage in asset revaluation tend to have lower liquidity and higher debt. However, this does not necessarily indicate a need to raise additional capital, as suggested by numerous previous works on the issue. Instead, it may reflect deliberate decisions to optimize the financial structure. This interpretation is supported by the

[6]The AR determinants are totally confirmed by estimating Equation 1 on the total sample of almost 230 thousands non-financial firms for which there is a continuous sequence of financial statements in the Cerved data set from 2015 to 2020, regardless of whether they are reported by banks to the AnaCredit survey. Results are available upon request.

stronger profitability that emerges for revaluating firms and by the positive picture of their relationships with intermediaries. Moreover, firms that carried out revaluations relied less on publicly guaranteed loans, which had been a very advantageous way for Italian companies to raise capital during the pandemic period.

Following this reasoning, it could be the case that, at least in Italy and during the pandemic, when liquidity was abundant due to public measures, AR have been considered by companies as a tool to reduce financing costs rather than to increase debt levels. This hypothesis is corroborated by the findings in Section 7, which highlight that the revaluation premium in terms of interest rates has not been accompanied by an increase in indebtedness.

6 Econometric modeling

6.1 Propensity score matching

We start with the results of Section 5 as a first step in defining an identification strategy to quantify the effect of AR on credit conditions. In particular, we estimate a one-to-one PSM using the most extensive set of variables employed in the estimation of Equation 1. This approach allows us to correctly identify the effect of the AR option, adjusting for the effects of other confounding policies.[7] In order to enhance the predictive accuracy of the PSM model, we also include additional lags of the variables from the *Bank_loan* and *Firm_balance_sheet* vectors to ensure that the model captures data spanning two years prior to the treatment period. For the *Firm_balance_sheet* vector, we consider the main balance sheet indicators of 2018 and 2019. Meanwhile, for the *Bank_loan* vector, we incorporate values from the last quarter of 2018[8] through to the first semester of 2020. In addition to these time-lagged variables, we also refine the model's industry and geographical area classifications to achieve

[7]Specifically, during the period of analysis, the Italian government also intervened by: *i)* allowing the possibility to postpone loans repayments and lease installments (the Covid moratoria); *ii)* increasing access to additional bank loans with guarantees from national agencies; *iii)* softening the requirements for going concern opinions and *iv)* reducing or suspending depreciation and amortization of fixed assets.

[8]The first available credit data refer to the fourth quarter of 2018 (see section 4).

greater granularity. The industry classification now comprises 23 distinct categories, and the geographical area classification corresponds to Italy's 20 regions. Furthermore, we include the logarithm of total assets as a variable in the model to account for scale effects within firm size categories.

The quality of matching can be assessed by comparing the characteristics of the treated firms with those of the control group observed before and after the procedure. Figure 1 shows these differences for all the variables considered in the matching procedure. The matching procedure appears to solve the biases in the observable characteristics between the two groups of firms. Table 3 reports the mean values for the main non-lagged variables referred to treated and controls, both in the full sample and in the post-PSM sample. It also includes the results of a simple t-test on the differences in mean values. The test shows that, after the matching procedure, the difference in means between treated and control firms is never statistically significant.

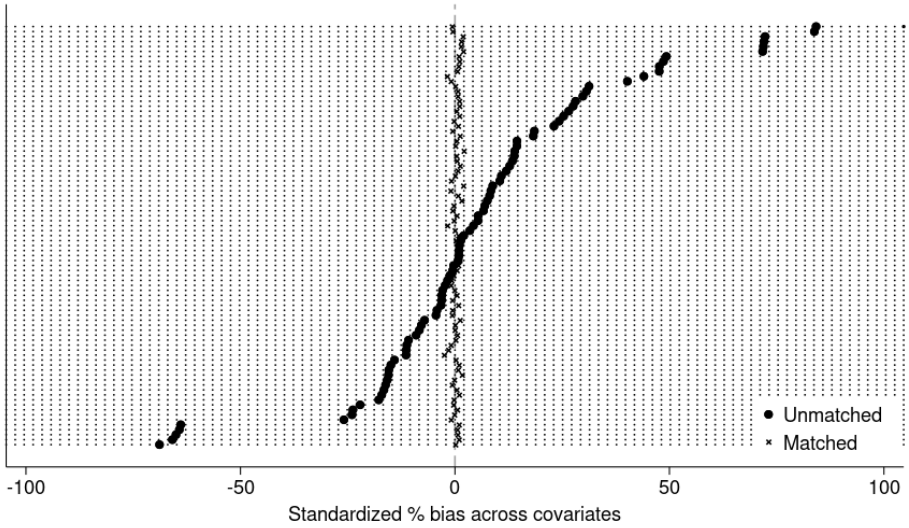


Figure 1: PSM Bias reduction

Figure 2 visually captures the impact of PSM on the distribution of propensity scores. The left side of the graph represents the scores before matching, while the right side illustrates the distribution after the matching process. The PSM technique effectively balances the

propensity scores between the treatment and control groups, enhancing comparability and strengthening the validity of our causal inferences.

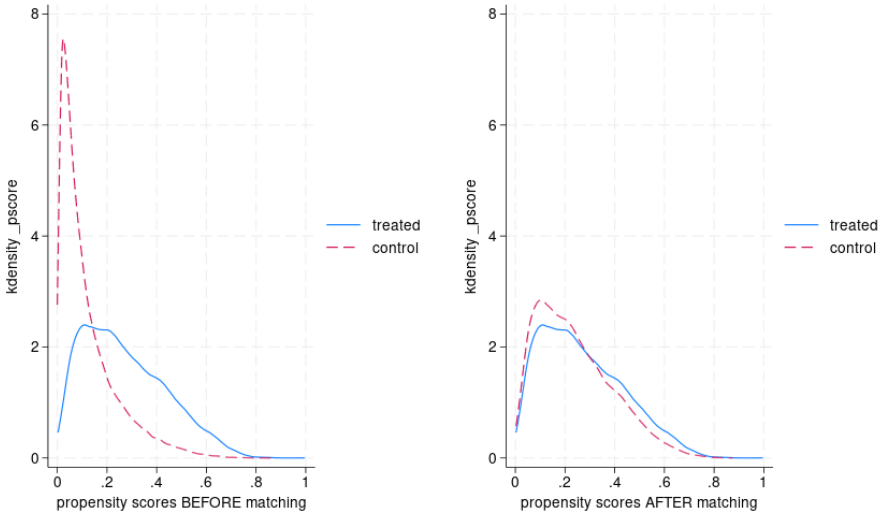


Figure 2: PSM comparison

Table 3: Mean Values and p-values for Treated and Control Groups

Variable	**Treated**	**Controls** (unmatched)	**Controls** (matched)	**p-value** (unmatched differences)	**p-value** (matched differences)
Micro firms	0.471	0.320	0.470	0.000	0.935
Small firms	0.279	0.603	0.279	0.000	0.917
Medium firms	0.199	0.066	0.202	0.000	0.514
Log(Age)	3.122	2.894	3.132	0.000	0.112
EBITDA/Total assets*	0.083	0.071	0.081	0.000	0.053
Leverage*	0.753	0.803	0.754	0.000	0.841
Liquidity/Total assets*	0.056	0.062	0.055	0.000	0.267
Self-financing/Total assets*	0.059	0.042	0.058	0.000	0.351
Probability of default*	0.009	0.015	0.009	0.000	0.331
Log(Total Assets)*	8.247	7.072	8.256	0.000	0.589
Total Collateral/Total granted loans**	3.509	1.656	1.185	0.057	0.318
Margins available on overdrafts**	0.387	0.430	0.385	0.000	0.531
Share of medium-long term credit drawn**	0.653	0.583	0.650	0.000	0.496
Overdraft interest rate (% values)**	3.339	5.208	3.323	0.000	0.593
Log(number of bank relationships)**	1.243	0.786	1.234	0.000	0.211
Multi borrowing**	0.897	0.713	0.895	0.000	0.543
New bank relationships**	0.195	0.141	0.195	0.000	0.930
Moratoria	0.582	0.456	0.576	0.000	0.365
Public guaranteed loans	0.693	0.658	0.686	0.000	0.175

Notes: As for the variables with * (**) we represent only the statistics for 2019 (first semester of 2020). A complete table is available upon request.

6.2 Panel event study model

The matching results are utilized to gauge the impact of AR, our treatment, on three key outcomes: *i*) interest rates on overdraft contracts, *ii*) overdraft credit grants, and *iii*) overdraft credit exposure. Assuming the presence of a revaluation premium, we anticipate a decrease in interest rates and an uptick in credit granted to the treated firm. Regarding credit exposure, the absence of a treatment effect could support the hypothesis that, from the credit demand perspective, firms undergoing AR do not demonstrate distinct behavior compared to the control group. Consequently, if credit grants were to increase for treated firms, it would bolster the hypothesis that AR genuinely influences the supply side. To accomplish this, we estimate a regression model using the following specification:

$$Y_{it} = \beta_0 + \sum_{t=-T_1, t\neq -1}^{T_2} \beta_t \cdot \delta_t \times Treated_i + \alpha_i + \delta_t + \varepsilon_{it} \tag{2}$$

where:

- Y_{it} is the dependent variable for firm i at time t.
- $Treated_i$ is a dummy variable indicating whether firm i has revalued its assets used in Equation 1;
- α_i are firm fixed effects;
- δ_t are time fixed effects;
- ε_{it} is the error term;
- $-T_1 = -5$ represents the last quarter of 2018, $T_2 = 3$ represents the third quarter of 2022 and $t = -1$ represents the last period before treatment occurs (the second semester of 2020; see Section 4).

Equation 2 encapsulates an event study centered on the second semester of 2020, marking the period just prior to the revaluation option. The specification offers the possibility to graphically examine the parallel trend assumption. Through the visualization of pre-treatment trends for both treated and control groups, we ascertain the validity of the pivotal parallel trends assumption, thereby establishing a robust foundation for causal inference in our DiD methodology.

Looking at Equation 2, we aggregate our dataset by firm, computing a unique interest rate as a weighted average of rates applied by each bank lending to a firm. The aggregation of firms' credit grant and exposure is achieved by summing amounts for each bank-firm relation. This model facilitates an assessment of whether AR imparts a premium relative to the entire banking system. Importantly, it accommodates the prospect of firms substituting lenders, terminating existing relations, and initiating new ones.

The choice of the firm as the unit of observation not only allows for this comprehensive evaluation but also opens avenues for exploring additional relevant outcomes. Specifically, we aim to assess the probability of treated firms to establish novel relations with banks and, more straightforwardly, quantify the effect on the number of banking relationships. Both of these additional outcomes will be subject to evaluation using the framework provided by Equation 2.

In addition to employing event study models, we provide a quantitative synthesis of our findings through a streamlined pre-post DiD framework. The objective is to present a succinct depiction of the treatment effect on the outcome variables previously discussed.

$$Y_{it} = \beta_0 + \beta \cdot Post_t \times Treated_i + \alpha_i + \delta_t + \varepsilon_{it} \tag{3}$$

The reference period is the same as in Equation 2 and the variable $Post_t$ is a post-treatment dummy which is equal to one from the 1st semester of 2021 onward.

7 Results

7.1 Main results

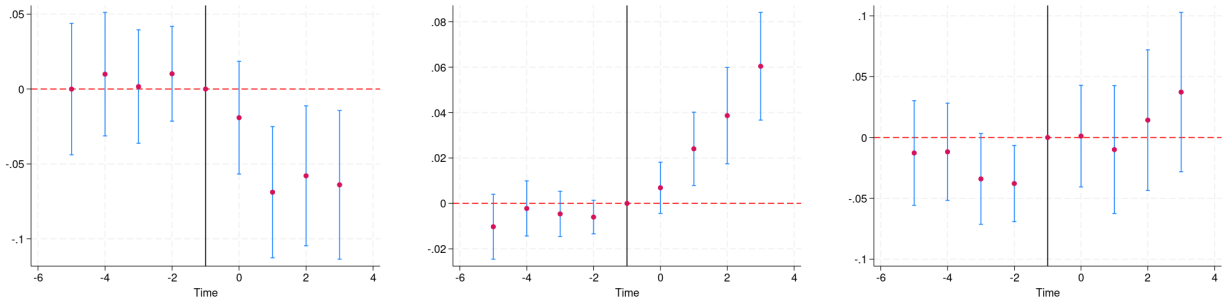
In this section we present the results of the estimation of the equations discussed above. The findings provide a comprehensive overview of AR, indicating positive financial consequences for the treated firms and confirming the existence of a revaluation premium. Beginning with Equation 2, where our unit of observation is the firm, the event study graphs depicted in Figure 3 visually capture the dynamics surrounding short-term interest rates, short-term granted credit (log), and short-term credit exposure (log). Complementing these graphical representations, Table 4 provides a quantitative synthesis of the findings in a pre-post DiD framework (Equation 3).

Regression estimates show a negative and statistically significant gap, growing in magnitude one period after AR, between treated and untreated firms in short-term interest rates after the revaluation (Figure 3, panel (a)). In the two years post-treatment, on average, this reduction is estimated at almost 6 basis points (Table 4, column I). This effect is quite considerable given that the average interest rate charged over the sample period is 3.4 per cent (Table 5). The results of the estimation in the logarithm of total credit granted (Figure 3, Panel (b) and Table 4, column II) highlight a 4-percentage-point increase in the total credit extended to treated firms post-revaluation. Both effects appear to be persistent over time and become evident starting from the second semester of 2021. This is consistent with the fact that the financial statements are generally approved by shareholders' assemblies in May and, consequently, are effectively available to banks only thereafter.

The non-significant effect in the logarithm of credit drawn (Figure 3, panel (c), and Table 4, column III) underscores the trivial impact on the actual credit utilization by firms. This result reinforces the finding reported in column II, as it is possible to exclude that the increase in credit granted is driven by a rise in credit demand by the borrowers. Moreover, it is consistent with our findings on the determinants of AR, where it was highlighted that

companies resorting to revaluations did not exhibit characteristics suggesting strains on their ability to finance themselves in the credit market.

Figure 3: AR effect by firm



(a) Overdraft interest rate **(b)** Overdraft granted credit (log) **(c)** Overdraft credit exposure (log)

Notes: red dots represents point estimates, blue segments are 95% confidence intervals.

Table 4: AR effects by firm

	Overdraft interest rate (I)	Overdraft granted credit (log) (II)	Overdraft credit exposure (log) (III)
$Post_t \times Treated_i$	-0.0560***	0.0369***	0.0293
	(0.0173)	(0.00861)	(0.0225)
Observations	220,554	233,389	223,126
Adjusted R-squared	0.804	0.920	0.729
Firm FE	Y	Y	Y
Time FE	Y	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 3. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level.
*, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

Table 5: Summary statistics for the dependent variables.

	Mean	Std. dev.	Min	5th perc.	Median	95th perc.	Max
Overdraft interest rate[1]	3.43	2.56	0.15	0.29	2.95	8.28	13.10
Overdraft granted credit (log)	13.37	1.65	-1.79	10.82	13.39	16.00	20.90
Overdraft credit exposure (log)	12.09	2.37	-1.79	7.86	12.38	15.25	20.38
New bank relations dummy	0.11	0.31	0.00	0.00	0.00	1.00	1.00
No. of bank relations (log)	1.20	0.65	0.00	0.00	1.10	2.20	3.50

Notes: [1] Winsorized at 2.5-97.5 level.

7.2 Persistent bank-firm relationships

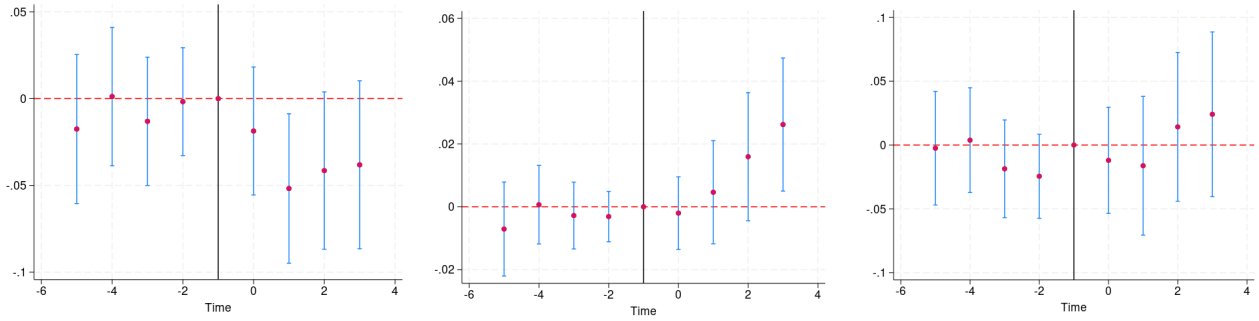
Having established the existence of the revaluation premium in the banking credit market for companies revaluing their assets, it remains to be investigated whether the premium is also realized when we consider only firm-bank relationships that pre-date the treatment and persist over time. This issue is relevant in order to understand which channel is more important for explaining the revaluation premium. Focusing on the disclosure effect, a null or significantly lower revaluation premium for pre-existing relationships would support the hypothesis that, through a long-standing connection with a firm, a bank is capable of properly addressing the informational asymmetries arising from the representation of balance sheet values at historical cost, while this would not be the case for new relationships. In the event that the tax saving effect were significant, instead, one would expect to identify a revaluation premium for pre-existing relationships comparable with those found overall.

Hence we estimate equations 2 and 3 where the dependent variables are calculated on bank-firm relationships existing before the AR treatment and continuing after. Figure 4 and Table 7.2 report graphically and numerically the results of the event study and DiD regressions. For the three outcomes examined, we observe mostly non-significant AR effects[9]. The AR impact appears to be marginally significant in the DiD framework only for overdraft interest rates and with a magnitude equal to half with respect to what is reported in Table 4.

These results indicate that a disclosure mechanism associated with AR is at play as the informational gap that AR bridges appears to be significantly less relevant within long pre-existing bank-firm connections.

[9]The absence of a significant impact on AR emerges also from bank-firm level regressions. These robustness results are available upon request.

Figure 4: AR effect for pre-existing firm-bank relationships



(a) Overdraft interest rate **(b)** Overdraft granted credit (log) **(c)** Overdraft credit exposure (log)

Notes: red dots represent point estimates, blue segments are 95% confidence intervals.

Table 6: AR effect for pre-existing firm-bank relationships

	Overdraft interest rate (I)	Overdraft granted credit (log) (II)	Overdraft credit exposure (log) (III)
$Post_t \times Treated_i$	-0.0311*	0.0136	0.0104
	(0.0170)	(0.00836)	(0.0229)
Observations	210,138	225,412	213,102
Adjusted R-squared	0.820	0.931	0.741
Firm FE	Y	Y	Y
Bank FE	Y	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 3. The coefficients are estimated collapsing at firm level data only pre-existing firm-bank relationships. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level.
*, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

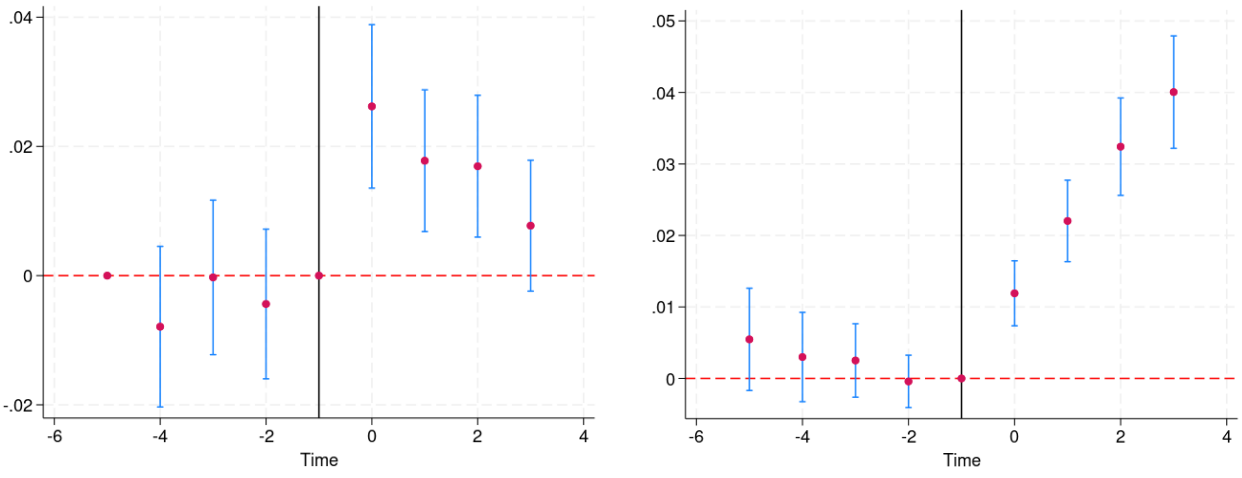
7.3 New credit relationships

Based on the evidence discussed above, the revaluation premium should therefore realize on new relationships, which may become more frequent as a result of the AR.

As a matter of fact the estimations of Equations 2 and 3 with outcome variables being either the opening of new credit relationships compared to the previous period or the log of the number of credit relationships confirm the hypothesis.

In the two panels of Figure 5, graphical representations of the estimations of Equation 2 for the two independent variables are provided. The DiD pre-post estimations according to Equation 3 are reported in Table 7. The probability of establishing a new banking relationship in each semester for treated firms is 2 percentage points higher than for the control group (11.1 percent on average; Table 7, column I). As highlighted in panel (a) of Figure 5, the propensity to establish new credit relationships grows in the periods immediately following the treatment time and then diminishes in the later periods of our analysis. Looking at the logarithm of the total number of relationships for each firm, these grow by 2 percent post-treatment for the treated firms (Table 7, column II). Panel (b) of Figure 5 shows the persistence of this effect.

Figure 5: AR effect on new bank relationships



(a) New bank relations dummy

(b) Number of relations (log)

Notes: red dots represent point estimates, blue segments are 95% confidence intervals.

Table 7: AR effects by firm

	New bank relations dummy (I)	Number of bank relations (log)) (II)
$Post_t \times Treated_i$	0.0203***	0.0244***
	(0.00302)	(0.00326)
Observations	208,458	234,539
Adjusted R-squared	0.068	0.918
Firm FE	Y	Y
Time FE	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 3. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level.
*, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

In the next Section, we provide additional evidence that strengthens the interpretation that the revaluation premium mainly goes through the disclosure channel. More specifically we introduce a new variable that proxies the type of revaluation (presence/absence of the tax option). This will allow us to estimate separately the premium for firms benefiting from tax advantages.

8 Mechanisms and heterogeneity

8.1 AR effects by AR type and robustness check

To determine whether the tax saving mechanism or the disclosure one is more significant regarding the revaluation premium, it would be helpful to have an indicator that divides treated companies into two groups: those that chose the tax option and those that did not. However, directly identifying such an indicator from the financial statement data is impossible. To address this, we implemented a text mining procedure on the notes to the financial statements, aiming to derive an indicator with sufficient predictive capability.

In accordance with Italian Civil Law, companies, excluding the smallest ones, are man-

dated to provide detailed textual notes, known as "note integrative" alongside their balance sheets. Leveraging these documents, we conducted a search for the term "imposta sostitutiva" and its close variations. This expression within Italian fiscal terminology denotes a special or extraordinary tax imposition and represents a precise and relatively rare expression. In order to mitigate the risk of misclassification and refine our focus, we narrowed the search to the sections of the footnotes dedicated to fixed asset evaluation. Considering these two aspects we can confidently rely on an adequate predictive power of the identified variable.

According to our procedure, among the financial statements with available notes, out of the 26,902 companies exercising AR, 5,909 plausibly opted for the tax option (tax option AR group), while 13,518 did not (non-tax option AR); for 7,475 notes to the financial statements are not available in 2020. Obviously, both groups exhibit errors. Specifically, type I errors for the tax option AR coincide with type II errors for the non-tax option AR, and viceversa.[10]

We can then estimate the following model to assess whether tax and non-tax option AR exhibit heterogeneity with respect to the revaluation premium.

$$Y_{it} = \beta_0 + \beta_1 \cdot Post_t \times Tax_i + \beta_2 \cdot Post_t \times NonTax_i + \alpha_i + \delta_t + \varepsilon_{it} \tag{4}$$

Equation 4 mirrors Equation 3, wherein the term $Post_t \times Treated_i$ is decomposed into two dummies, each corresponding to the firm's membership in the tax option group: $Post_t \times Tax_i$ and the non-tax option one: $Post_t \times NonTax_i$. Companies for which notes to the financial statements are not available are excluded from the estimation (both treated and matched controls).

The findings from Table 8 reveal that the revaluation premium remains consistent across both the tax option group and the non-tax one. Both premiums are statistically significant and of similar magnitude. These results strongly suggest that the premium is primarily driven

[10] As shown in Mirenda et al. (2022), it is possible to prove that as long as both errors are below 0.5, OLS estimates on the two treatment types will exhibit the correct sign and estimation bias of the same magnitude, making them comparable.

Table 8: AR effects and tax option

	Overdraft Interest Rate (I)	Overdraft Granted Credit (log) (II)	New Bank Relations (IV)	Number of Bank Relations (log) (V)
AR effects by tax option				
$Post_t \times Tax_i$	-0.0725***	0.0414***	0.00572*	0.0262***
	(0.0268)	(0.0124)	(0.00337)	(0.00518)
$Post_t \times NonTax_i$	-0.0656**	0.0409***	0.00764***	0.0270***
	(0.0214)	(0.0103)	(0.00275)	(0.00412)
Observations	160,363	169,583	151,425	170,361
Adjusted R-squared	0.804	0.920	0.794	0.918
Firm FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

This table contains the OLS estimated coefficients of Equation 4. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

by the disclosure mechanism, as the presence/absence of the tax option does not seem to affect its size. In Appendix B we perform a robustness test for this result using two different PSMs.

8.2 AR effects by firms' characteristics

This Section delves into the nuanced impacts of AR, revealing distinct patterns across different firm categories. We estimate the following model with the same independent variables discussed in the Section 6:

$$Y_{it} = \beta_0 + \sum_{c=1}^{n} \beta_c \cdot Post_t \times \text{Treated}_i \times \kappa_{ci} + \alpha_i + \delta_t + \varepsilon_{it} \tag{5}$$

Equation 5 resembles Equation 3, where the term $Post_t \times \text{Treated}_i$ is decomposed and interacted with n dummies, each corresponding to the firm's membership in the c-th class of the classification under scrutiny. We undertake five distinct estimations to investigate the impact of AR across the following classifications: intensity of the revaluations, industry, firm size, age and probability of default.

Table 9: AR effects by firm: heterogeneity

	Overdraft Interest Rate (I)	Overdraft Granted Credit (log) (II)	New Bank Relations (III)	Number of Bank Relations (log) (IV)
Baseline (for reference)				
$Post_t \times Treated_i$	-0.0560***	0.0369***	0.0203***	0.0244***
	(0.0173)	(0.00861)	(0.00302)	(0.00326)
Effects by Revaluation Intensity Quartiles				
$Post_t \times Treated_i \times IQ_i$	-0.0203	0.0458***	0.00460	0.0158***
	(0.0258)	(0.0121)	(0.00327)	(0.00481)
$Post_t \times Treated_i \times IIQ_i$	-0.0501**	0.0586***	0.00937***	0.0274***
	(0.0253)	(0.0123)	(0.00310)	(0.00472)
$Post_t \times Treated_i \times IIIQ_i$	-0.108***	0.0554***	0.00279	0.0287***
	(0.0242)	(0.0118)	(0.00311)	(0.00464)
$Post_t \times Treated_i \times IVQ_i$	-0.0392	-0.00403	0.00710*	0.0245***
	(0.0250)	(0.0124)	(0.00362)	(0.00466)
Effects by Industry				
$Post_t \times Treated_i \times Manufacturing_i$	-0.0518***	0.0683***	0.00636**	0.0218***
	(0.0194)	(0.00943)	(0.00250)	(0.00378)
$Post_t \times Treated_i \times Constructions_i$	-0.191***	0.0197	0.0230***	0.0698***
	(0.0401)	(0.0206)	(0.00589)	(0.00775)
$Post_t \times Treated_i \times Services_i$	-0.0174	-0.00100	0.00182	0.0162***
	(0.0229)	(0.0111)	(0.00295)	(0.00406)
$Post_t \times Treated_i \times Other_i$	-0.159**	0.0710**	-0.000828	0.0246**
	(0.0623)	(0.0297)	(0.00821)	(0.0118)
Effects by Size				
$Post_t \times Treated_i \times Big/Medium_i$	0.171	0.0220*	0.00465**	0.0288***
	(0.0239)	(0.0124)	(0.00211)	(0.00435)
$Post_t \times Treated_i \times Small/Micro_i$	-0.0786***	0.0413***	0.00606**	0.0227***
	(0.0185)	(0.00904)	(0.00250)	(0.00350)
Effects by Age				
$Post_t \times Treated_i \times Age > 10y_i$	-0.0612***	0.0302***	0.00482**	0.0194***
	(0.0175)	(0.00870)	(0.00220)	(0.00329)
$Post_t \times Treated_i \times Age \leq 10y_i$	-0.00712	0.0999***	0.0168***	0.0718***
	(0.0412)	(0.0202)	(0.00618)	(0.00809)
Effects by Default Probability Quartiles				
$Post_t \times Treated_i \times IQ_i$	-0.0147	0.0879***	0.00724**	0.0226***
	(0.0255)	(0.0118)	(0.00325)	(0.00473)
$Post_t \times Treated_i \times IIQ_i$	-0.115***	0.0817***	0.00845***	0.0285***
	(0.0234)	(0.0106)	(0.00300)	(0.00449)
$Post_t \times Treated_i \times IIIQ_i$	-0.0974***	0.0431***	0.00575	0.0331***
	(0.0261)	(0.0127)	(0.00350)	(0.00494)
$Post_t \times Treated_i \times IVQ_i$	0.0113***	-0.0651***	0.00225	0.0135***
	(0.0257)	(0.0136)	(0.00361)	(0.00474)
Observations	220,554	233,389	208,458	234,539
Adjusted R-squared	0.804	0.920	0.794	0.918
Firm FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 5. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels. The revaluation intensity is the ratio between the increase in the revaluation reserve from 2019 to 2020 and the total assets. The treatment intensity quartiles are identified by the following thresholds: 0.148, 0.313 and 0.562. For the size classification of enterprises see Commission Recommendation 2003/361/EC, European Commission, 2003. The default probability quartiles are identified by the following thresholds: 0.0012, 0.0043, and 0.0112.

In Table 9, the results of our estimates are reported. The second subsection of the Table aids in investigating the heterogeneity of treatment effects based on the revaluation intensity, defined as the ratio between the value of the revaluation and the total assets. The findings indicate that the revaluation premium follows an ascending trend with higher treatment intensity. However as revaluation strength reaches very high levels (the fourth quartile comprises companies that have revalued their assets by at least 56 percent) the premium fades, particularly in terms of interest rates and credited amounts granted. While we lack a comprehensive interpretation of this trend, a potential explanation for the nullification of the premium in the case of particularly significant revaluations could be attributed again to pre-existing informational asymmetries. In the instance of balance sheet assets that are conspicuously and extensively undervalued, the identification of misalignments between book values and actual values would be facilitated for lending banks, hence rendering such revaluations devoid of any premium. Conversely, it would be more challenging for the bank to identify marginal undervaluations of assets, albeit non-negligible. It is precisely in these instances that AR resolves the asymmetry yielding a revaluation premium.

Shifting focus to industry-specific effects, the results reported in Table 9 show partial divergences. Within the manufacturing sector a consistent impact is observed on interest rates, granted credit, and bank relations, aligning with the general benefits of AR discussed in previous sections. In contrast, the construction sector exhibits a premium on interest rates but lacks positive effects on granted credit. The revaluation premium for the service sector is confined to the number of bank relations. Analyzing effects by firm size, small and micro firms exhibit a response aligned with our main findings. For larger size units, the advantage in terms of interest rates disappears. The analysis across firms of different age groups reveals effects consistent with the main findings for older enterprises. For younger firms, the results show no significant impact on interest rate savings but a substantial enhancement in their ability to establish new relations with banks. This aligns with their developmental phase, suggesting a

preference for leveraging the AR benefit to expand credit availability over achieving interest rate reduction. Analyzing effects across Default Probability (PD) quartiles, the premium is particularly pronounced for companies in the second and third quartiles, while AR appears less effective for firms in extreme PD categories.

As stated above, the results regarding heterogeneity in size and risk indicate higher premiums for medium and small-sized enterprises, as well as those in intermediate PD classes. These combined findings imply that AR is particularly effective for companies considered more *opaque* and, consequently, with credit relations characterized by relatively more pronounced informational asymmetries. In contrast, for large enterprises and those in extreme PD classes (either clearly solid or with significantly high default risk) the revaluation premium tends to diminish, in line with the higher availability of information that characterizes this type of companies.

8.3 AR effects by bank type

In this Section we exploit another source of heterogeneity to shed light on the role of banks in the AR effect on credit conditions. Banks are clearly pivotal on this issue because AR directly impact the accuracy of credit assessments, influencing lending decisions and on the overall credit conditions for firms.

In order to analyze the importance of credit assessment technologies as mediators of AR impact we make use of the main difference among banks in terms of risk models adopted. In particular we distinguish between internal rating based (IRB) banks and non-IRB ones. While the former use validated internal models to assess various components of credit risk, including the probability of default (PD), exposure at default (EAD), and loss given default (LGD), for regulatory purposes Non-IRB banks follow a standardized approach set by supervisory authorities. Therefore IRB banks have the flexibility to incorporate their unique data, methodologies, and risk parameters into credit assessment models (Cucinelli et al. (2018)

and Gallo (2021)). Non-IRB banks, instead, may not have equally sophisticated credit merit assessment systems. On this basis the response of IRB and non-IRB banks to AR may differ substantially. For instance IRB banks, utilizing advanced rating systems that heavily rely on automated credit merit, may be in a position to perceive a mechanical improvement in financial indicators following AR as a strengthening of creditworthiness. On the contrary non-IRB banks might adopt a standard and more conservative approach in risk assessment, potentially identifying that revaluations have not led to any substantive change in the creditworthiness of the firms undertaking them. An alternative hypothesis could be associated with the fact that non-IRB banks with inferior technological capabilities can effectively appreciate the true credit risk of their clients only after the disclosure mandated by AR.

To test these hypothesis we run a regression analysis following the modeling of Equation 5 distinguishing firms between those that have increased their share in credit borrowed from IRB banks after the second semester of 2020 ($\mathbf{1}_{\Delta(IRB)>0}$) and those who have not ($\mathbf{1}_{\Delta(IRB)\leq 0}$).

In Table 10 we show that firms increasing their credit share from non-IRB banks are the only ones for which the revaluation premium (in terms of reduction in interest rate and increase in granted credit) is statistically significant. This evidence would suggest that moving to non-IRB banks would allow firms to pay less for and obtain more credit. Hence this would support our second hypothesis, namely that non-IRB banks would apply better credit conditions to AR firms.

This latter result can be read in the light of the evidence of Section 7 where we proved that the AR premium seems to be not relevant for pre-existing relationships. In Table 11 we show the results of a regression in the same spirit of Equation 3 in which our dependent variables are the dummies for the creation of new bank relationship and the number (in logarithm) of relations, respectively with IRB and non-IRB banks. The estimated coefficients show that the AR impact on creating relation is significant only with Non-IRB banks. At the same time the AR effect on the number of relations is higher within this class of financial institutions.

Table 10: AR effects by IRB credit share variation

	Overdraft Interest Rate (I)	Overdraft Granted Credit (log) (II)
$Post_t \times Treated_i \times \mathbf{1}_{\Delta(IRB)>0}$	-0.00430	0.00118
	(0.0221)	(0.0104)
$Post_t \times Treated_i \times \mathbf{1}_{\Delta(IRB)\leq 0}$	-0.0785***	0.0553***
	(0.0218)	(0.0100)
Observations	220,554	233,389
Adjusted R-squared	0.804	0.920
Firm FE	Y	Y
Time FE	Y	Y

This table contains the OLS estimated coefficients of a modification of Equation 5 where the main explanatory variable is interacted with the indicator variables ($\mathbf{1}_{\Delta(IRB)>0}$) and ($\mathbf{1}_{\Delta(IRB)\leq 0}$) representing firms that have or have not increased their share in credit borrowed from IRB banks after the second semester of 2020, respectively. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

Table 11: AR effects by IRB credit share variation

	New IRB-bank Relations (I)	New non-IRB-bank Relations (II)	Nr. of IRB-bank Relations (log) (III)	Nr. of non-IRB bank Relations (log) (IV)
$Post_t \times Treated_i$	0.00138	0.00474***	0.0160***	0.0196***
	(0.00194)	(0.00164)	(0.00317)	(0.00468)
Observations	208,458	208,458	217,221	174,878
Adjusted R-squared	0.710	0.738	0.916	0.856
Firm FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

This table contains the OLS estimated coefficients of Equation 3 for the different subsamples specified in the first row of the table. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

9 Conclusions

This paper investigates whether AR affects firms' financing conditions. We exploit a regulatory change introduced by the "Decreto Agosto", which allowed Italian firms to revalue their assets at the end of 2020. Focusing on overdraft credit, we document a "revaluation premium" characterized by a significant reduction in interest rates, an increase in credit availability, a higher likelihood of initiating new banking relationships, and a growth in the number of banking ties.

We highlight two possible mechanisms driving the AR premium: a disclosure channel that reduces information asymmetries by improving the transparency of financial statements, and a tax-saving channel, which lowers amortization costs. We find that the disclosure channel acts as the primary driver, as the premium is similar for firms benefiting from tax savings and those that do not. Heterogeneity analyses further reveal that AR is particularly effective for opaque firms, where information asymmetries are more pronounced.

This paper is among the first to address the limitations of the historical cost accounting analyzing a broad and diverse sample of unlisted firms, a category that remains largely underexplored in the current literature. By shedding light on how AR improves financial transparency and mitigates the frictions caused by information asymmetries, we contribute to the literature on credit markets and firm financing, particularly in contexts where financial opacity poses a major challenge, such as Italy and other countries with a high concentration of opaque SMEs that predominantly rely on banks for financing.

Heterogeneity analyses on the lender side indicate that AR has a stronger impact on firms' relationships with non-IRB banks, which rely on less sophisticated credit evaluation processes. Revaluing firms are more likely to establish new ties with these banks, and the premium grows as their reliance on non-IRB banks increases. Moreover, in contexts where non-IRB banks or less sophisticated credit assessment methods are prevalent, AR may enhance competition by improving financial transparency and reducing the information gap. However, these benefits

are not limited to specific banking structures, as the disclosure channel appears to be broadly relevant.

All in all, AR could thus represent a useful policy instrument for swiftly mitigating latent information asymmetries in credit markets arising from the quality of financial reporting. However, its impact is likely to be transient, as a more durable resolution of these asymmetries would necessitate enhancing banks' capacity to gather information and improving the borrower screening processes.

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Appendix

A The disclosure effect in a distance to default framework

For a simple description of the disclosure mechanism, we can refer to the concept of distance to default (DtD) derived from Merton's model. DtD(t) measures how far a firm's asset value (V_A) is from its default threshold at time t, typically its debt obligations (D), adjusted by the volatility of its assets (σ), the expected growth rate of the asset value (μ) and the time until the debt matures (T). It is computed as:

$$\mathrm{DtD}(t) = \frac{\ln\left(\frac{V_A}{D}\right) + \left(\mu - \frac{1}{2}\sigma^2\right)(T-t)}{\sigma\sqrt{T-t}}$$

The probability of default (PD) can be related to the distance to default using the cumulative distribution function of the standard normal distribution $N(\cdot)$, as $\mathrm{PD}(t) = N\left(-\mathrm{DtD}(t)\right)$.

In order to establish credit conditions consistently with the PD lenders need an estimate of V_A. If operators have perfect information the estimate of V_A is not influenced by the book value of the firm and consequently not by AR. The less firsthand information lenders have, the more they will rely on the balance sheet book value to estimate V_A. In these cases AR discloses a new proxy of V_A value, which is mechanically higher than the previous one. This is modeled as $V_A' = V_A + \Delta V_A$. In the simple assumption that AR is orthogonal to the riskiness of the business (i.e. σ is AR-independent), this will result in an increase in the DtD, and consequently in a PD reduction and a revaluation premium:

$$\mathrm{DtD}'(t) = \frac{\ln\left(\frac{V_A'}{D}\right) + \left(\mu - \frac{1}{2}\sigma^2\right)(T-t)}{\sigma\sqrt{T-t}} = \frac{\ln\left(\frac{V_A+\Delta V_A}{D}\right) + \left(\mu - \frac{1}{2}\sigma^2\right)(T-t)}{\sigma\sqrt{T-t}}$$

However, the premium is not only generated by the perceived increase in the distance to default. AR also has an impact in terms of the expected recovery rate. Referring again to Merton's model, under the assumption that the distribution of the firm's value remains

unchanged, a realization of this distribution (X) that generates default considering both V_A and $V_A + \Delta V_A$ will result in different recovery rates RR, with the latter being higher:

Without ΔV_A:

$$RR(t) = \frac{V_A e^{(\mu - \frac{1}{2}\sigma^2)(T-t) + \sigma\sqrt{T-t}X}}{D}$$

With ΔV_A:

$$RR'(t) = \frac{(V_A + \Delta V_A) e^{(\mu - \frac{1}{2}\sigma^2)(T-t) + \sigma\sqrt{T-t}X}}{D}$$

Since $V_A + \Delta V_A > V_A$, for any realization X of the normal distribution $N(0,1)$ that leads to a default in both scenarios, the realized value of the firm will always be higher in the case where the initial value was set to V_A'. Therefore, we have $RR' > RR$. The inverse relationship between PD and recovery rate has been extensively studied by numerous studies, including Altman et al. (2004); Acharya et al. (2007); Bruche and González-Aguado (2010).

B AR impacts by AR type: propensity score matching

In this appendix we report a robustness test for the results of the heterogeneity analysis in Section 8.1: Equation 4 has been estimated using the control sample selected through PSM, as detailed in Section 6.1. This sample was identified based on a single definition of treatment that did not differentiate between the two groups. To bolster our findings, we conducted a robustness check by employing a strategy that focuses on each group separately. More specifically, we estimated two distinct PSM models, mirroring those discussed in Section 6.1, with one model considering Tax_i, the tax option revaluation, as the only treatment and the other focusing on $NonTax_i$, the no-tax option revaluation. Subsequently, we run two separate estimations of the model described in Equation 3, with $Post_t \times Tax_i$ and $Post_t \times NonTax_i$ as the variables of interest, respectively. The results of these estimations, presented in Tables 12 and 13, reaffirm the conclusions drawn from the estimation of Equation 4.

Table 12: AR effects for the tax option AR group

	Overdraft Interest Rate (I)	Overdraft Granted Credit (log) (II)	New Bank Relations (III)	Number of Bank Relations (log) (IV)
$Post_t \times \text{Tax}_i$	-0.0446*	0.0268**	0.0206***	0.0192***
	(0.0228)	(0.0113)	(0.00396)	(0.00431)
Observations	113,495	120,096	107,265	120,708
Adjusted R-squared	0.817	0.924	0.073	0.921
Firm FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 3 obtained for the sample of firms that opted for the tax option revaluation. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

Table 13: AR effects for the non-tax option AR group

	Overdraft Interest Rate (I)	Overdraft Granted Credit (log) (II)	New Bank Relations (III)	Number of Bank Relations (log) (IV)
$Post_t \times \text{NonTax}_i$	-0.0442**	0.0489***	0.0192***	0.0205***
	(0.0185)	(0.00968)	(0.00326)	(0.00356)
Observations	176,536	186,722	166,807	187,670
Adjusted R-squared	0.811	0.917	0.069	0.918
Firm FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

Notes: This table contains the OLS estimated coefficients of Equation 3 obtained for the sample of firms that opted for the non-tax option revaluation. $Post_t$ is a dummy that assumes value *0* before the treatment and *1* after. Standard errors are clustered at the firm level. *, **, and *** respectively refer to statistical significance at the 10, 5, and 1 percent levels.

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