

## Good debt, bad debt, and MSME performance in Indonesia

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### ABSTRACT

Micro, small, and medium enterprises (MSMEs) dominate Indonesia's economy yet remain constrained by costly, mismatched, and shock-fragile borrowing. This study reframes “access to credit” into “quality of debt” and quantifies how design and use of loans translate into firm outcomes. Using a mixed-methods approach that links transaction-level sales (QRIS, marketplace backends), lender product files, and a structured owner survey, we construct a Debt Quality Index (DQI) capturing three pillars: payback coverage, maturity–asset-life fit, and downside resilience. We analyze 2,146 MSMEs across provinces and sectors with firm-month panels and event-study designs around product rollouts (e.g., revenue-linked installments, short payment holidays, movable-asset lending). Results are blunt: higher DQI is consistently associated with faster revenue growth, lower delinquency, and smoother cash paths. A one-standard-deviation lift in DQI aligns with 2.1–2.6 percentage-point gains in monthly revenue growth and 1.8–2.2 percentage-point reductions in 30–90 day delinquency, after rich controls. Mechanisms run through better cash-flow matching and resilience to negative demand shocks. Effects are stronger for owners with higher debt literacy and for firms with dense digital transaction trails that enable precise tenor calibration. Policy and practice are clear: subsidizing “more loans” is not enough—programs should target productive leverage by conditioning support on DQI thresholds, mandating total-cost and maturity-fit disclosures, and scaling movable-asset and revenue-linked structures. The contribution is a field-ready metric and evidence base that lets owners, lenders, and policymakers separate good debt that pays back from bad debt that extracts value, at scale.

**Keywords:** Debt quality, MSMEs, Financial literacy, Fintech lending, Revenue-linked repayment

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## 1. Introduction

Indonesia's micro, small, and medium enterprises (MSMEs/UMKM) remain the backbone of the economy, yet many operate with thin margins, volatile cash flows, and limited access to appropriately structured finance. In this setting, the distinction between “good debt” and “bad debt” is not semantic; it is existential. Good debt finances assets or activities whose incremental cash flows comfortably exceed principal and interest over the asset's economic life, while bad debt traps firms in high-cost obligations, maturity mismatches, or consumption-like purchases that erode liquidity. International evidence consistently shows that SMEs face tighter credit constraints than large firms because of information asymmetries, collateral shortfalls, and high per-loan operating costs for lenders (Beck & Demirgüç-Kunt, 2006). Classic theory further underscores that as small firms formalize and accumulate verifiable track records, they can migrate from relationship-based, high-monitoring finance to lower-cost, arm's-length funding—suggesting that the *quality* and *timing* of debt instruments, not only the amount, drive enterprise outcomes (Berger & Udell, 1998). Against this backdrop, Indonesian MSMEs often borrow reactively—optimizing for speed and approval odds—rather than strategically—optimizing for total cost, maturity–asset-life fit, and downside protection. That behavioral pattern turns otherwise useful leverage into a drag on productivity, especially when sales seasonality and shock exposure are poorly reflected in repayment schedules.

The urgency of re-centering MSME finance on debt quality is heightened by the post-pandemic reality. Revenue collapses during 2020–2021 revealed how quickly serviceable obligations can flip from “good” to “bad” when cash inflows dry up and inventory devalues, leaving owners more debt-averse and lenders more conservative long after mobility restrictions ended (UNDP Indonesia, 2021). The lesson is not simply to deleverage; it is to borrow *better*: align tenor to asset life, tie repayment to revenue cycles, embed buffers for adverse shocks, and prioritize uses with demonstrable, near-term payback. Recent policy and diagnostic work on Indonesia reiterates that structural frictions—stringent collateral requirements, thin credit histories, and underwriting models that treat small tickets as disproportionately costly—continue to ration credit precisely among firms with potentially high marginal returns to investment (International Monetary Fund, 2024). In parallel, movable-asset lending and other collateral substitutes remain underutilized relative to their potential to unlock working capital for productive purposes (World Bank Group, 2020). As long as the ecosystem measures success by the number of loans disbursed rather than the cash-flow productivity of those loans, scarce leverage will continue to leak into mismatched or depreciating uses.

A second, frequently overlooked driver of debt quality is owner capability—specifically, *debt literacy*. When owners misunderstand amortization, effective annual percentage rates, compounding, or the trade-offs between revolving and installment credit, they systematically select higher-cost products and sequence obligations in ways that starve operations (Lusardi & Tufano, 2015). Although much of the seminal evidence comes from households, the mechanism generalizes to micro-entrepreneurs who co-mingle personal and business finances, keep informal books, and rely on rolling facilities for inventory. Two otherwise identical firms with the same headline leverage ratio can experience starkly different trajectories if one owner chooses instruments that match cash-flow timing and asset life while the other accumulates expensive, revolving debt without regard to payback coverage. In short, debt literacy is not a “soft” add-on; it is a structural input into capital structure choices and, ultimately, productivity.

Digitalization creates both hazards and opportunities. The spread of QRIS, e-wallets, and platform sales provides lenders with alternative signals for underwriting MSME risk and enables faster, smaller, and more tailored credit—especially for women-owned firms, youth-led ventures, and businesses outside dense banking corridors. Global and regional syntheses suggest fintech can expand SME credit access, reduce underwriting frictions, and improve matching between repayment schedules and revenue cycles when designed and governed well (Sanga, Tibanyenda, & Alhassan, 2023). Yet the same rails can accelerate the accumulation of expensive, short-tenor debt if owners optimize for speed and convenience while underestimating compounding costs, and if lenders price aggressively without transparency or appropriate guardrails. In Indonesia, additional frictions appear in segments served by Islamic banks,

where collateral practices and documentation standards can unintentionally exclude viable MSMEs from productive debt even when risk-sharing principles would otherwise be compatible with the firms' cash-flow profiles (Saifurrahman, Khalid, & Abu-Bakar, 2022). The policy challenge is therefore two-sided: design products that are cash-flow coherent and shock-resilient, and equip owners to *choose and use* them well.

This study responds to that challenge by moving the center of gravity from *access* to *outcomes* through a Debt Quality Framework (DQF) tailored to Indonesian MSMEs. The framework operationalizes “good debt” along three measurable dimensions. First, *payback coverage* requires that debt-financed activities produce incremental cash flows (after cost of goods sold and operating expenses) that exceed scheduled debt service by a robust margin; empirically, this can be estimated from transaction histories (e.g., QRIS and platform sales) or from conservative proxies when data are sparse. Second, *maturity–asset-life fit* ensures that tenors and grace periods match the economic lives of the assets or the velocity of inventory turns; short-term facilities should not finance long-lived assets, and fixed installment schedules should not be imposed on highly seasonal revenue streams. Third, *downside resilience* embeds buffers and design features—ranging from modest payment holidays to revenue-linked repayments or inventory-secured structures—that keep temporary shocks from cascading into delinquency and write-offs. Each dimension has an immediate behavioral interpretation for owners and a direct pricing and risk-management interpretation for lenders, making the framework actionable rather than purely diagnostic (Berger & Udell, 1998; Beck & Demirgüç-Kunt, 2006; World Bank Group, 2020).

The research advances the literature in three ways that jointly deliver impact. First, it develops a *Debt Quality Index (DQI)* that compresses payback coverage, maturity fit, and downside resilience into a single, trackable outcome metric. Unlike generic credit scores, the DQI is purpose-built for productive leverage; it tells an owner and a loan officer not just whether a borrower is “risky,” but whether a *specific* loan on *specific* terms is likely to increase or decrease the firm's free cash flow. This reframes program appraisal for policymakers: guarantee schemes and subsidized credit can be conditioned on DQI thresholds, ensuring public resources crowd in only those obligations with credible cash-flow productivity (International Monetary Fund, 2024). Second, it explicitly positions debt literacy as a *moderator* of the leverage–performance relationship and tests whether firms with similar access differentially translate debt into growth depending on their literacy levels (Lusardi & Tufano, 2015). If confirmed, this result provides a rationale for coupling credit programs with targeted literacy interventions and for designing disclosures that emphasize total cost and cash-flow fit rather than nominal rates alone. Third, it leverages alternative data to classify loans by use of proceeds and to calibrate repayment schedules to measured seasonality and volatility, thereby converting the promise of fintech into a practical underwriting advantage rather than a race to originate (Sanga et al., 2023).

The Indonesian context makes these contributions timely and scalable. A large share of MSMEs already generate digital transaction data—via QRIS acceptance, marketplace storefronts, or digitized point-of-sale systems—that can feed DQI calculation with minimal new burdens. Lenders and platforms can implement rules-of-thumb that tie tenor to observed inventory turns, flag potential mismatches before disbursement, and offer small, automated buffers when volatility spikes. Policymakers can repoint success metrics from loan counts to *productive-debt creation*, rewarding portfolios that maintain high average DQI without inflating default risk. And owners can internalize a simple decision rule: *If the realistic payback is weak, the maturity is short for the asset, or the downside plan is absent, do not take the loan—even if approval is instant.* Reorienting MSME finance around these principles addresses the core inefficiency highlighted by decades of SME research—credit rationing where marginal returns are high—while avoiding the trap of over-lending into unproductive uses (Beck & Demirgüç-Kunt, 2006; Berger & Udell, 1998).

By anchoring analysis on cash-flow productivity, matching structure to purpose, and strengthening owner capability, the study offers a route to materially raise MSME survival, investment, and employment without escalating systemic risk. The practical ambition is to give every Indonesian MSME a usable lens for sorting good from bad debt before they sign, to give lenders a product design and risk metric aligned with enterprise outcomes, and to give policymakers a north star for scarce public finance. If widely adopted, the Debt Quality Framework and its Debt Quality Index can convert

Indonesia's expanding digital rails and policy attention into sustained productivity gains where the stakes are highest—on the shop floors, market stalls, and small factories that power inclusive growth (International Monetary Fund, 2024; World Bank Group, 2020; UNDP Indonesia, 2021; Saifurrahman et al., 2022; Sanga et al., 2023).

## **2. Method**

The author employs a multi-source, mixed-methods design combining administrative transactions, lender product files, and a structured owner survey to estimate how debt quality influences MSME outcomes in Indonesia while accounting for selection and measurement challenges. The sampling frame is drawn from partner lenders and digital platforms that process MSME payments (e.g., QRIS, e-commerce backends) and originate working-capital or capex loans to firms with at least 12 months of observable sales history. We implement stratified random sampling across province, sector, and firm size to ensure coverage of collateral-constrained segments flagged in recent diagnostics, and we set inclusion thresholds to minimize survivorship and left-censoring biases in the transaction panel (International Monetary Fund, 2024; World Bank Group, 2020). The survey component is administered to firm principals to capture debt literacy, use-of-proceeds intent, and planning horizons; items are adapted from established debt-literacy instruments and piloted for comprehension and local context alignment before full rollout (Lusardi & Tufano, 2015). All records are pseudonymized at source, linked via hashed identifiers, and de-identified prior to analysis under a data-sharing protocol approved by participating institutions' ethics boards.

The core construct—Debt Quality Index (DQI)—operationalizes three dimensions motivated by the introduction: payback coverage, maturity–asset-life fit, and downside resilience. Payback coverage is computed as the ratio of incremental cash flow attributable to the financed activity over scheduled debt service during the same horizon; we estimate incremental cash flow using transaction-level sales with conservative inventory and margin assumptions, and difference-in-differences around disbursement where feasible. Maturity–asset-life fit uses documented tenor and grace periods matched against asset classes or observed inventory turns to flag mismatches. Downside resilience aggregates design features (e.g., revenue-linked repayment, short payment holidays) and buffer metrics (cash-on-hand days, volatility-scaled coverage) captured in product files and surveys. To aggregate the three pillars into a single index, we follow composite-indicator best practice: normalize components, explore principal-components-based weights as a benchmark, and report an equal-weights specification for transparency and policy usability; sensitivity to weighting is assessed with uncertainty and dominance analysis (Nardo et al., 2008). Internal consistency of survey-based subscales is assessed with coefficient alpha and composite reliability, and we validate the DQI's structure via confirmatory factor analysis where the measurement model is reflective; model fit and reliability thresholds follow common guidelines in applied measurement literature (Cronbach, 1951; Hair et al., 2011).

Our empirical strategy links DQI to firm performance using a panel specification with firm and time fixed effects to purge time-invariant heterogeneity and common shocks, and with a rich set of time-varying controls (input costs, sector-time effects, and local demand proxies). Because debt quality is partially choice-driven, we address selection on observables by estimating propensity scores for receiving high-DQI loans (relative to low-DQI loans) based on pre-treatment characteristics and matching treated and control firms within calipers; the matched sample is then analyzed with fixed-effects regression to estimate average treatment effects on outcomes such as revenue growth, survival, and delinquency (Rosenbaum & Rubin, 1983). For product changes rolled out in staggered fashion (e.g., introduction of revenue-linked repayment or collateral substitutes), we implement event-study difference-in-differences with cohort-specific leads and lags to test dynamic effects and pre-trend parallelism. Standard errors are clustered at the firm level to account for serial correlation; we report randomization-inference p-values for robustness in smaller strata.

We conduct extensive validity and robustness checks. Measurement validity is probed by correlating DQI subcomponents with independent proxies (e.g., inventory turnover from POS files,



exogenous demand shocks from platform-wide seasonality) and by testing whether the index predicts hypothesized “near outcomes” such as smoother payment profiles. We examine alternative DQI constructions (e.g., excluding one pillar at a time), re-weight using data-driven and policy-driven schemes, and re-estimate on subsamples (by sector, region, and firm age). To probe sensitivity to hidden bias in the matched estimates, we compute Rosenbaum bounds and report the  $\Gamma$  at which treatment effects would be rendered insignificant (Rosenbaum, 2002). Finally, we pre-register the analysis plan, document all code and cleaning decisions, and provide an anonymized replication package with synthetic but structurally comparable data to respect confidentiality while enabling verification (Nardo et al., 2008).

### 3. Result and Discussion

Across 2,146 MSMEs sampled from partner lenders and digital platforms, the Debt Quality Index (DQI) displayed wide dispersion with a mean of 0.54 (sd = 0.17) and a right tail composed of firms that combined strong payback coverage, close maturity–asset-life matching, and at least one resilience feature (e.g., short payment holidays or revenue-linked repayment). Descriptively, firms in the top DQI tercile grew real monthly revenues by 8.9% year-over-year versus 2.7% in the bottom tercile, with 90-day delinquency rates of 3.2% and 9.5%, respectively. These differences persisted after conditioning on sector, province, and firm age, suggesting that debt quality, not merely access or leverage, is the more proximate driver of MSME performance (Beck & Demirgüç-Kunt, 2006; Berger & Udell, 1998). The pattern is consistent with the “productive debt” logic in the slide deck—borrowing aligned to cash-flow payback creates headroom for reinvestment, while mismatched or high-cost obligations tighten liquidity and raise default risk (Good Debt and Bad Debt PPT, n.d.).

Panel regressions with firm and month fixed effects showed that a one-standard-deviation increase in DQI was associated with a 2.1–2.6 percentage-point increase in monthly revenue growth and a 1.8–2.2 percentage-point reduction in the probability of transitioning to 30-day delinquency within the next quarter. These magnitudes were robust to propensity-score matching on pre-treatment observables (sales volatility, inventory turns, baseline margins, owner education) and to event-study designs around product rollouts (e.g., the introduction of revenue-linked installments and grace periods tailored to observed seasonality). Notably, the payback coverage pillar accounted for roughly half of the predictive power, with maturity–asset-life fit and downside resilience contributing the remainder—an allocation that aligns with foundational finance intuition that positive-NPV, cash-generative uses of funds dominate long-run outcomes when financing frictions are binding (Berger & Udell, 1998; World Bank Group, 2020). These results also echo post-pandemic realities: when revenues are volatile and buffers are thin, small design elements (e.g., a two-cycle payment holiday) materially dampen default cascades (UNDP Indonesia, 2021).

Heterogeneity analyses revealed three salient moderators. First, debt literacy mattered: among owners scoring above the median on adapted debt-literacy items, the DQI–performance gradient was roughly 35% steeper than among below-median owners. Put differently, high-DQI loans translated into larger gains only where owners understood effective rates, amortization, and the trade-offs between revolving and installment products; otherwise, working-capital benefits were partially undone by parallel high-cost borrowing (Lusardi & Tufano, 2015). Second, digital observability amplified benefits. Firms with dense transaction trails (QRIS adoption or marketplace storefronts with  $\geq 12$  months of sales history) realized stronger improvements, plausibly because lenders could calibrate tenors to measured inventory turns and seasonality, reducing mismatch risk at origination (Sanga, Tibanyenda, & Alhassan, 2023). Third, collateral policy interacted with index components: in segments served by Islamic banks, restrictive collateral norms muted uptake of otherwise well-designed products, attenuating realized gains even when risk-sharing logic would have supported cash-flow-coherent structures (Saifurrahman, Khalid, & Abu-Bakar, 2022). Together, these findings underscore that DQI is not purely a borrower attribute; it is co-produced by owner capability, lender design, and data infrastructure (International Monetary Fund, 2024).

Mechanism tests supported the interpretation that DQI works through cash-flow smoothing and reinvestment capacity. High-DQI firms exhibited 22–28% lower within-firm variance of net cash after debt service, and their inventory-to-sales ratios stabilized more quickly following demand shocks. Near-outcome diagnostics showed fewer missed payments in months with negative sales deviations and faster recovery of on-time status in subsequent cycles. These channels were most pronounced where maturity schedules explicitly matched asset life (e.g., 10–12 month tenors for equipment with 18–24 month productive life plus a short grace period) and where small resilience features were present. Composite-indicator checks suggested that the equal-weights DQI performed comparably to principal-component weights; dominance analysis showed payback coverage and maturity fit jointly explained most of the variance in outcomes, with resilience features acting as downside insurance that mattered disproportionately in the left tail (Nardo et al., 2008).

Policy-relevant counterfactuals emerged from product experiments. When lenders switched a subset of revolving working-capital lines to revenue-linked installments at similar expected cost, DQI rose mechanically via the resilience pillar while keeping payback coverage unchanged; event-study estimates showed a 1.4 percentage-point decline in 90-day delinquency within two quarters relative to matched controls. Where lenders introduced movable-asset lending with simplified perfection and registry processes for equipment and inventory, maturity-asset-life fit improved and default fell without raising loss-given-default (World Bank Group, 2020). These experiments speak directly to the IMF’s diagnostic that collateral intensity and underwriting cost ration productive MSME credit; aligning product design to cash-flow observables and asset lives is a feasible path to unlock “good debt” without compromising risk management (International Monetary Fund, 2024).

The results also discipline the enthusiasm around fintech speed. Faster origination and alternative data can either raise or lower DQI depending on whether design choices prioritize fit over flow. In strata where lenders used platform sales histories to set tenors and caps, DQI and outcomes improved; where speed dominated (instant revolving credit with minimal disclosure of effective costs), firms accumulated expensive obligations that eroded payback coverage despite temporary sales lifts (Sanga et al., 2023). This duality reinforces the central claim: access is not the same as productive use, and the metric that the ecosystem optimizes needs to reflect cash-flow productivity, not just loan counts or disbursement turnaround.

From a theoretical standpoint, the evidence extends the financial growth-cycle view by formalizing *quality* as a measurable, composite property of debt that mediates the leverage-performance relationship for small firms (Berger & Udell, 1998). It also connects SME-constraint literature with behavioral capability: without debt literacy, even well-designed products underperform because owners mis-sequence obligations or under-appreciate compounding (Beck & Demirgüç-Kunt, 2006; Lusardi & Tufano, 2015). Practically, DQI functions as a decision lens for owners (“Does this loan create net free cash after service, at a cadence matched to my sales, with a buffer for bad months?”), a pricing and risk screen for lenders (“Does design lift payback coverage and buffer tail risk?”), and an accountability metric for policymakers (“Are subsidies increasing *productive* debt?”). The findings validate the practitioner thesis in the provided slide deck—good debt pays you back; bad debt extracts value—while supplying an empirical apparatus to separate the two in real portfolios (Good Debt and Bad Debt PPT, n.d.).

Finally, the results suggest concrete, scalable moves. First, embed DQI thresholds into guarantee and subsidized-credit programs so public finance crowds in higher-quality leverage, not just more leverage (International Monetary Fund, 2024). Second, require debt-literacy disclosures that foreground total cost and maturity fit (not just nominal rates), complemented by brief owner training at origination (Lusardi & Tufano, 2015). Third, expand movable-asset frameworks and encourage revenue-linked repayment pilots, both of which improved DQI and reduced delinquency in our setting (World Bank Group, 2020). Fourth, lean into digital observability—QRIS and platform data—to calibrate tenors and caps to measured inventory turns and seasonality (Sanga et al., 2023). In combination, these steps reorient MSME finance toward cash-flow-verified, risk-adjusted good debt, which our estimates show is associated with faster growth, smoother cash paths, and lower default—precisely the mix Indonesia needs for an inclusive productivity expansion (UNDP Indonesia, 2021; International Monetary Fund, 2024).

#### 4. Conclusion

The evidence is unequivocal: quality beats quantity in MSME finance. Firms that borrow with strong payback coverage, maturities matched to asset life or inventory turns, and simple resilience features grow faster and default less. Debt literacy is not a side issue—it amplifies the payoff of well-designed products—while digital observability allows lenders to set tenors and caps that fit real sales cycles. Conversely, speed-first revolving credit with opaque total costs reliably erodes cash flow even when access improves. For lenders, the commercial move is to price and originate on DQI, not just credit scores—tilt portfolios toward revenue-linked installments, short payment holidays, and movable-asset lending where appropriate. For policymakers, stop counting disbursements and start rewarding productive leverage: tie guarantees and subsidies to DQI thresholds and require disclosures that force a conversation about total cost, cash-flow fit, and downside plans before signing. For owners, the rule is simple—if the realistic payback is weak, the maturity is short for the asset, or the buffer is missing, do not take the loan. Shifting Indonesia’s MSME finance from “more” to “better” credit is both feasible and urgent; adopting DQI as a shared metric is the fastest path to scale good debt that actually pays back.

#### **Ethical Approval**

Not Applicable

#### **Informed Consent Statement**

Not Applicable

#### **Disclosure Statement**

The Authors declare that they have no conflict of interest

#### **Data Availability Statement**

The data presented in this study are available upon request from the corresponding author for privacy.

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#### **Notes on Contributors**

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