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RCMOS - Multidisciplinary Scientific Journal of Knowledge. ISSN: 2675-9128. São Paulo, SP, Brazil.

Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

Illiquidity premium and credit risk in investment funds in credit rights: theoretical foundations, regulatory architecture and measurement agenda in the Brazilian market.

Illiquidity premium and credit risk in Brazilian receivable investment funds (FIDCs): theoretical foundations, regulatory architecture and a measurement agenda

Rafael Moreira Espindola1

SUMMARY

Investment Funds in Credit Rights (FIDCs) have become one of the main non-bank financing channels in Brazil, with net assets of R$741.1 billion in November 2025, according to ANBIMA. Despite this expansion and the opening of the product to the general public by CVM Resolution No. 175, the national literature still discusses little whether the additional remuneration offered by these funds adequately compensates for the credit, structural, and liquidity risks assumed by the unit holders. This article examines this issue through theoretical-conceptual research, of a qualitative nature, supported by a bibliographic review of international literature on securitization, liquidity pricing, and performance of private credit funds, and by a documentary analysis of Brazilian regulation. The study argues that the spread of FIDC (Credit Rights Investment Fund) quotas over the CDI (Interbank Deposit Certificate) aggregates at least three distinct components, namely, expected credit loss, systematic risk premium, and illiquidity premium, and that conventional performance measurement, based on the Sharpe ratio and comparison with the CDI, tends to overestimate risk-adjusted return due to quota smoothing. As a contribution, it proposes an empirical agenda addressing autocorrelation, credit risk factors, and fund liquidity measures, applicable to the monthly reports published by the CVM (Brazilian Securities and Exchange Commission). It concludes that the evaluation of these vehicles requires separating risk-based compensation from illiquidity-based compensation, otherwise resources may be misallocated, especially by retail investors.

Keywords: FIDC. Illiquidity premium. Securitization. Private credit. Performance evaluation.

ABSTRACT

Brazilian receivables investment funds (Funds of Investment in Credit Rights, FIDCs) have become one of the main channels of non-bank financing in Brazil, with net assets of BRL 741.1 billion in November 2025, according to ANBIMA. Despite this growth and the opening of the product to retail investors under CVM Resolution No. 175, the domestic literature has paid little attention to whether the additional return offered by these funds adequately compensates the credit, structural and liquidity risks borne by investors. This article addresses the question through theoretical and conceptual research of a qualitative nature, based on a review of the international literature on securitization, liquidity pricing and private credit fund performance, and on a documentary analysis of Brazilian regulation. It argues that the spread of FIDC shares over the CDI rate combines at least three distinct components, namely expected credit losses, a systematic risk premium and an illiquidity premium, and that conventional performance measurement, based on the Sharpe ratio and on comparison with the CDI, tends to overstate risk-adjusted returns because of return smoothing. As a contribution, the article proposes an empirical agenda that addresses serial correlation, credit risk factors and fund liquidity measures, applicable to the monthly reports published by the Brazilian Securities and Exchange Commission (CVM). It concludes that the evaluation of these vehicles requires separating compensation for risk from compensation for illiquidity, otherwise capital may be misallocated, particularly by retail investors.

Keywords: FIDC. Premium illiquidity. Securitization. Private credit. Performance evaluation.

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1 INTRODUCTION

The Brazilian credit market has undergone significant transformation in the last two decades.
with the expansion of financing instruments via the capital market that compete with the
Traditional bank credit. Among these instruments are Investment Funds in Rights.
Credit Investment Funds (FIDCs), authorized by Resolution No. 2,907, of November 29, 2001, of the Council.
The National Monetary Council (CMN, 2001) has consolidated itself as the main vehicle for securitization of
receivables of the country. Data from the Brazilian Association of Financial and Capital Market Entities.
Capital Markets (ANBIMA, 2025b) indicate that the net worth of the category reached R$ 741.1 billion.
in the twelve months ending in November 2025, with growth of 22.5% in the period, while
The number of investor accounts increased from 147,300 to 333,700. This growth was accompanied by...
Through the entry of retail investors: the accounts of investors in general, a category that gained access to
Products registered under CVM Resolution No. 175 jumped from 2,400 to 34,300 in the same period.

This growth calls into question an old question of financial theory in a new light.
institutional environment. Assets traded in shallow markets offer returns.
superior to those of liquid assets of comparable risk, and the literature, since Amihud and Mendelson
(1986) interprets part of this difference as compensation for the difficulty of converting the
Cash investment. In the case of FIDCs, the share is rarely traded on the secondary market, the
Redemption in closed-end investment classes occurs only at maturity or during scheduled amortizations, and the value
The quota is determined based on evaluation methodologies that depend on assumptions about
default and discount rates. Thus, the spread over the CDI that remunerates the investor includes, of
In a way that is not directly observable, the expected portfolio loss, the systematic risk premium of
credit and the premium demanded for illiquidity. Separating these components is a condition for evaluating whether the
The investor is being compensated for the risk they actually take.

The objective of this article is to examine, in light of international literature and Brazilian regulation,
to identify the determinants of the illiquidity premium in FIDCs and propose a measurement agenda capable of
to distinguish it from credit risk compensation. The contribution is twofold. Firstly, the
This work organizes dispersed contributions on securitization and pricing into a single framework.
liquidity and valuation of illiquid funds, bringing them closer to the particularities of the market.
national, still little studied from this angle since the work of Pinheiro and Savoia (2009). In
Secondly, it presents an empirical specification applicable to the monthly reports published by
Securities and Exchange Commission. The text is organized into eight sections in addition to this introduction: a
methodology, six sections of theoretical development and the conclusion.

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2 METHODOLOGY

Regarding its nature, the research is classified as theoretical-conceptual and qualitative. It does not... It aims to estimate parameters from its own sample, but to construct them based on evidence. already published and in primary sources of a normative and statistical nature, an analytical framework that allow for the formulation of testable hypotheses regarding the illiquidity premium in FIDCs. As for... In terms of procedures, the study combines bibliographic and documentary research. The former focuses on articles published in leading finance journals, such as The Journal of Finance, Journal of Financial Economics, The Review of Financial Studies and The Quarterly Journal of Economics, in addition to national periodicals, most notably the Brazilian Journal of Finance. The second category covers the regulations of the National Monetary Council and the Securities and Exchange Commission. the relevant federal legislation and sector statistics published by ANBIMA.

The selection of literature followed three criteria. The first was thematic relevance, with priority for papers on the economics of securitization, decomposition of credit spreads, pricing of liquidity, measuring the performance of infrequently traded assets and evidence on private credit funds. The second was academic relevance, measured by publication in peer-reviewed journals and the influence of the work on the literature. subsequent. The third was the applicability to the Brazilian case, that is, the possibility of transposing the mechanisms described for funds that acquire commercial, financial and corporate receivables and which, as a rule, remunerate their shares based on the CDI (Interbank Deposit Certificate). Regulatory documents and publications of Market entities were used only to describe institutional facts and aggregate data. never as the basis for theoretical propositions.

The analysis of the material followed the integrative synthesis procedure. Each contribution was examined with the purpose of identifying the proposed economic mechanism, the evidence that the It sustains and the conditions under which it applies. Then, the mechanisms were grouped into Six axes that structure the development of the article: the economics of purpose-built vehicles. Specifically, the regulatory architecture of FIDCs, the fundamentals of the illiquidity premium, the role of subordination and information asymmetry, the problems of performance measurement in illiquid portfolios and international evidence on private credit funds. In the dimension regulatory provisions, including those of CVM Instruction No. 356/2001, CVM Instruction No. 444/2006, and... Resolution CVM No. 175/2022 were compared regarding the target audience and the responsibility of shareholders and the obligations of service providers.

The adopted design has limitations that need to be made explicit. Because this is a study... Theoretically, the proposed relationships are not statistically tested in this work, and the conclusions...

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They take the form of propositions and hypotheses to be verified. Aggregate market data
These were used solely to contextualize the relevance of the topic, without any intention of making inferences.
International literature on private credit largely reflects the American experience.
and European, characterized by closed-end funds with capital calls and benchmark interest rates.
far inferior to Brazilian figures, which requires caution when extrapolating the results. These limitations
They guided the development of the empirical agenda presented in section 8, designed to submit the
The article's propositions are to be tested with data from the national market.

3. Securitization and the Economics of Special Purpose Vehicles

Securitization consists of transferring cash-flow-generating assets to a
a legally separate entity from the originator, which finances the acquisition of these assets through
issuance of securities backed by the receivables themselves. Gorton and Souleles (2007) show that the
A central element of this operation is the special-purpose vehicle, designed to isolate the assets.
ceded from the originator's bankruptcy costs. When the separation is effective, the investor becomes...
exposing the client to the risk of the transferred portfolio, and not to the credit risk of the company that originated it, which allows
Companies with modest risk ratings can raise funds at a cost lower than their debt.
corporate. The same authors note, however, that sponsors can help
implicitly, they put their vehicles under stress in stressful situations, and investors take this possibility into account.
This is taken into account in pricing, which relativizes the formal separation and creates a reputational link between
originator and investor.

In the structured finance literature, the design of the vehicle's liabilities is just as important as
the quality of the asset. Fabozzi, Davis and Choudhry (2006) describe the main mechanisms of
Credit reinforcements used in these operations, including overcollateralization and excessive spreads.
between the rate of assets and the return on liabilities, the guarantees provided by third parties and, above all,
The division of liabilities into classes with different payment priorities. Each of these
The mechanism acts as a buffer against losses and alters the distribution of returns across different classes of shares.
Pinheiro and Savoia (2009), when applying this classification to the Brazilian market, observed that the
National FIDCs were predominantly structured with senior and subordinate quotas, with
Target compensation for senior executives indexed to the CDI (Brazilian interbank deposit rate), with the subordinate class absorbing the result.
residual portfolio. This configuration remains dominant, although the use of intermediate classes,
so-called mezzanine, it has been expanded.

The economic rationale for dividing liabilities into classes was formalized by DeMarzo (2005).
In the author's model, an intermediary holds private information about the quality of the assets that

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intends to sell. Grouping assets into a portfolio reduces the problem of adverse selection through diversification, but it also destroys some of the seller's information value. Issuance in classes This resolves the dilemma, as the intermediary sells the segment least sensitive to information, the class senior, and retains the most sensitive portion, whose value depends heavily on asset quality. Retention acts as a credible signal, since those who know the portfolio best are willing to bear the costs. initial losses. The logic is the same as that which underlies Brazilian practice, in which the assignor or parties Companies linked to the structure subscribe to subordinated shares, and this helps explain why external investors They accept remuneration only moderately above the CDI (Contribution to the National Salary Scale) in the senior classes.

The division into classes, however, does not eliminate risks; it redistributes them, and in a way that is neither always intuitive. Coval, Jurek and Stafford (2009) demonstrate that the creation of senior classes from Credit portfolios concentrate exposure to systematic events in these classes because losses Payments capable of reaching the senior portion only occur when many debtors fail to pay at the same time. time. According to the authors, the value of structured classes is very sensitive to errors in estimation. probabilities of default and, especially, the correlation between debtors, so that Small inaccuracies in the parameters produce large differences in risk. For the investor of In the case of FIDC (Investment Fund in Credit Rights), the implication is straightforward: the senior tranche with low volatility, under normal circumstances, may have... Behavior similar to that of a short position taken to protect against crises, resulting in losses. concentrated precisely in the economic sectors where investors value liquidity the most.

International experience also reveals the incentives that securitization can distort. Keys et al. (2010), when studying high-risk US mortgage loans, They found evidence that the greater ease of securitizing certain credits was associated due to less rigorous screening of borrowers and a higher default rate among the most expensive loans. easily securitized. The result shows that when the originator does not retain significant risk, the The quality of origination tends to deteriorate. Gorton and Metrick (2012), in turn, showed that The 2007-2008 crisis took the form of a race on backed repurchase agreements. in securitized assets, with a sharp increase in required margins, which turned a problem Credit quality in a liquidity crisis. For FIDCs, this evidence indicates that the The premium demanded by investors depends not only on the expected loss of the portfolio, but also on... quality of origination incentives and the possibility of liquidity disappearing simultaneously across the entire segment.

4. Institutional Architecture and Regulatory Evolution of FIDCs in BRAZIL

The starting point for FIDCs (Investment Funds in Receivables) is CMN Resolution No. 2,907/2001, which authorized their establishment.

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of funds intended for investment in credit rights and assigned to the Securities and Exchange Commission
the authority to regulate them. The regulation came with CVM Instruction No. 356, of 17
December 2001, which defined credit rights as those originating from transactions.
carried out in the financial, commercial, industrial, real estate, mortgage, and leasing sectors.
Commercial and service-oriented companies required a minimum investment of 50% of their net worth in these areas.
assets and allowed the constitution in the form of an open or closed condominium (CVM, 2001). Access
It remained restricted to qualified investors, which, for more than two decades, kept the product...
Concentrated among institutional investors, investment funds, and high-net-worth individuals.
Silva (2006) notes that, in the early years, the structure began to be explored as an alternative.
financing for micro and small businesses, with rates lower than those charged by
conventional financial institutions.

In 2006, CVM Instruction No. 444 created non-standardized FIDCs, intended for rights.
Credits of a more complex nature, such as overdue and unpaid credits, credits owed by
companies in recovery, credits subject to judicial dispute and credits of future existence, among others.
others (CVM, 2006). Access to these funds was limited to investors with greater capacity to
analysis, in recognition that such assets have more uncertain cash flows and more complex valuations.
difficult. From the point of view of the illiquidity award, the distinction is relevant: the more idiosyncratic
The greater the ballast, the lower the probability of a third party quickly assessing it, and therefore the higher the cost of
Transferring the quota in case of cash need. Regulatory segmentation between funds.
standardized and non-standardized functions thus served as an initial institutional approach to
heterogeneity of risk and liquidity existing in the universe of receivables.

The most profound change occurred with CVM Resolution No. 175, of December 23, 2022.
which replaced the previous set of instructions with a single regulatory framework, consisting of a
general part and by specific normative annexes, with Normative Annex II being responsible for regulating the
FIDCs (CVM, 2022). The regulation came into effect on October 2, 2023, and the funds then...
Operations should adapt by November 29, 2024, as clarified by the local authority.
in CVM/SSE Circular Letter No. 6/2024 (CVM, 2024). Among the innovations, the following stand out:
possibility of creating classes and subclasses of shares with segregated assets and the limitation
Regarding the liability of shareholders up to the subscribed value, a right introduced into the Civil Code by Law
No. 13,874/2019 (Brazil, 2019) and incorporated into Article 6 of the general part of the resolution. The same rule
It maintained the requirement of investing a minimum of 50% of assets in receivables, now
as provided for in Article 44 of Regulatory Annex II.

The opening of FIDCs (Investment Funds in Receivables) to the general public is the change with the greatest impact on the discussion.
This article proposes allowing retail investors to acquire shares, provided that certain conditions are met.

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In addition to the protection conditions, the regulation was extended to a public with less capacity to Analysis is a product whose evaluation requires knowledge of credit, structure, and liquidity. The resolution sought to compensate for this shift by strengthening the obligations of service providers. service. Article 36 of Normative Annex II assigns to the manager the responsibility for verifying the existence, integrity and ownership of the underlying assets of credit rights, and article 42 prohibits the acquisition of credit rights originated or assigned by the administrator, the manager, or the specialized consulting or by parties related to them, a prohibition that admits no exceptions when The quotas are intended for the general public. These rules directly address the problems of origination. and the conflict of interest discussed in the previous section.

Institutional evolution is completed with tax and informational changes. Law No. Law 14.754, of December 12, 2023, reformed the taxation of investments in investment funds. investment, including closed-end funds, and established specific rules for FIDCs. according to the fund's framework and portfolio composition (Brazil, 2023), which altered the The relative attractiveness of certain structures, especially those used for heritage purposes. In terms of informational plan, ANBIMA (2025a) began disclosing the aggregated breakdown of portfolios with

Based on reports submitted to the CVM (Brazilian Securities and Exchange Commission): in February 2025, there were 3,068 FIDCs (Investment Funds in Credit Rights) in operation, and

82.2% of the category's net worth, totaling R$ 588.2 billion, was invested in rights. Credit institutions. Increased transparency is a necessary condition for empirical research on the This topic allows for monitoring delinquency, subordination, and portfolio composition over time. of time. Table 1 summarizes the main regulatory milestones discussed in this section.

Table 1: Regulatory frameworks for FIDCs in Brazil

Standard	Year. Main devices related to the topic.
CMN Resolution No. 2,907	2001 Authorizes the establishment of investment funds in credit rights and assigns regulation to the CVM (Brazilian Securities and Exchange Commission).
CVM Instruction No. 356	The 2001 law regulates FIDCs (Investment Funds in Credit Rights), requires a minimum investment of 50% of net assets in credit rights, and restricts access to qualified investors.
CVM Instruction No. 444	2006 Creates non-standardized FIDCs (Investment Funds in Receivables), aimed at overdue debts, debts from companies in recovery, debts subject to legal dispute, and debts of future existence, among others.
Law No. 13,874	2019 Incorporates the rules governing investment funds into the Civil Code and allows for the limitation of shareholders' liability to the value of the shares subscribed.

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Standard	Year. Main devices related to the topic.
CVM Resolution No. 175	2022 Establishes the new regulatory framework for funds; Normative Annex II governs FIDCs (Investment Funds in Credit Rights), with classes and subclasses, public access under conditions and duties of the manager regarding the underlying assets.
Law No. 14,754	2023 Reforms the taxation of investments in investment funds, with specific rules applicable to FIDCs (Investment Funds in Credit Rights).

Source: prepared by the author based on CMN (2001), CVM (2001, 2006, 2022) and Brazil (2019, 2023).

5 Theoretical Foundations of the Illiquidity Premium on Credit Assets

The classic formulation of the relationship between liquidity and expected return is due to Amihud and Mendelson (1986). The authors model investors with distinct investment horizons that They face transaction costs when trading assets and show that the expected gross return is a The increasing and concave nature of the trading cost is a function of increasing trading volume. The concavity results from a clientele effect. Investors with longer investment horizons amortize transaction costs over a greater number of periods. periods and, therefore, become the natural holders of the least liquid assets. The implication for the Structured credit is immediate. FIDC quotas without effective secondary trading and with terms of Long redemption periods need to offer sufficient additional return to attract investors capable of hold them until maturity, and the premium required tends to be lower the greater the stake in Investors with long-term and predictable liabilities, such as pension funds and insurance companies.

Later literature distinguished two concepts that are often confused. The first is illiquidity as a characteristic of the asset, that is, the expected cost of trading it. Amihud (2002) proposed a measure based on the ratio between absolute return and trading volume showed that illiquidity Expected market behavior positively affects the expected excess return on stocks. The second concept It is liquidity risk, that is, the covariance between the return on the asset and variations in aggregate liquidity. Pástor and Stambaugh (2003) found evidence that stocks more sensitive to liquidity shocks market options offer higher expected returns, and Acharya and Pedersen (2005) integrated the two dimensions in a liquidity-adjusted pricing model, in which the required return depends of the average trading cost and three covariances between returns and liquidity. For FIDCs, the The distinction is key: a quota may be illiquid in normal times and become even less liquid. precisely when the investor needs cash the most.

In the credit securities market, the issue took the form of a debate about composition. of the spreads. Elton et al. (2001) showed that the expected loss due to default only explains a small portion of the spread between U.S. corporate bonds and U.S. bonds Treasury, with the difference attributed to tax effects and a premium for systematic risk,

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related to the same factors that explain stock returns. Longstaff, Mithal and Neis (2005),
by using the prices of credit derivative contracts as a direct measure of risk
Regarding default rates, they concluded that this component accounts for the largest part of the spread, but that
There remains a portion unrelated to credit, strongly associated with liquidity measures of
titles. This decomposition provides the conceptual model adopted in this article: the spread of a share.
The return on a FIDC (Credit Rights Investment Fund) based on the CDI (Interbank Deposit Certificate) should be interpreted as the sum of expected loss, credit risk premium, and...
illiquidity premium, each installment with its own determinants.

The evidence that liquidity is priced in credit markets has been consolidated by
studies that used direct measures of negotiability. Chen, Lesmond and Wei (2007)
They documented that illiquidity measures explain a significant portion of the level and variations in spreads.
of corporate bonds, even after controlling for default risk variables, with effect
stronger among speculative-grade securities. Bao, Pan, and Wang (2011) constructed a measure of
illiquidity based on the negative autocovariance of price variations and showed that it is
strongly associated with spreads, and also rising sharply during periods of crisis.
Translating these results to FIDCs requires adaptation. As most quotas do not
Because it has continuous trading, secondary market measures are difficult to calculate, and
Illiquidity must be inferred through indirect means, such as the redemption period, the existence of a waiting period,
The closed-class condition and the statistical behavior of the quota series.

From the investor's point of view, illiquidity also alters the allocation decision itself. Ang,
Papanikolaou and Westerfield (2014) model an investor who can only trade the illiquid asset.
on random dates and show that this restriction increases their effective risk aversion, in a way
dependent on the state of the economy, and reduces allocation to both illiquid assets and fixed assets.
risky net. The authors highlight the uncertainty regarding the duration of the non-trading interval,
More than a pre-defined grace period, it is the main determinant of the cost of
Illiquidity. In Brazil, this logic is combined with a particularity: the short-term reference asset.
In the long term, represented by the CDI (Interbank Deposit Certificate) and post-fixed government bonds, it offers high nominal rates.
with daily liquidity, which increases the opportunity cost of immobilizing resources. The premium of
The illiquidity required in FIDCs (Investment Funds in Receivables) must therefore be evaluated in relation to liquid alternatives that already exist.
They pay well, and not in relation to the low interest rate environment in which much of it developed.
International literature on private credit.

6. Subordination, Credit Boosting, and Information Asymptomatic

The risk analysis of the different quota classes can be conducted using the model.

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Merton's structural framework (1974). In the author's framework, the value of a company's debt is equivalent to The value of a risk-free bond minus the value of a put option on the company's assets.

with an exercise price equal to the face value of the debt. Translated to the FIDC (Investment Fund in Receivables), the reasoning...

This allows us to interpret the senior quota as a risk-free security, from which a put option is subtracted.

Regarding the receivables portfolio, whose exercise price depends on the degree of subordination. The quota

A subordinated option, in turn, behaves like a call option on the portfolio, as it receives the...

residual value after payment of the higher classes. This reading makes it clear why the

Subordination reduces the risk of the senior quota: it moves the exercise price of the sold option away from the subordination rate.

implicitly by the senior quota holder, and makes a greater shock necessary for this class to suffer.

losses.

In Brazilian practice, the order of payments and allocation of losses follows a cascade.

defined in the regulations. The flows received from the portfolio first remunerate the senior class up to the

target rate, then the mezzanine class, when it exists, and the residue belongs to the subordinate class;

Losses travel the reverse path and are initially absorbed by the subordinate. Figure 1

This illustrates this mechanism. Pinheiro and Savoia (2009) simulated, using Monte Carlo methods, the

returns of senior and subordinate classes of structures with 15% subordination, considering five

Credit modalities and shocks regarding interest rates and default rates. The results indicated that the class

The senior executive achieved target compensation with 99% confidence across all scenarios, while the...

Subordinated investments showed returns lower than the CDI (Brazilian interbank deposit rate) only in specific situations, especially under...

shocks to the level or volatility of defaults and in accounts receivable portfolios, whose margins

Liquid assets were smaller and their losses were more volatile.

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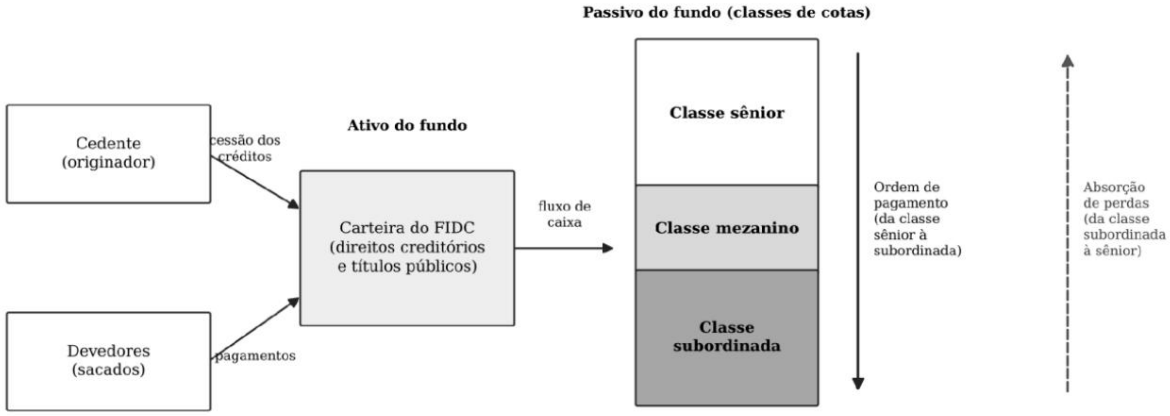
Figure 1: Cash flow and allocation of losses among the share classes of a FIDC (Investment Fund in Credit Rights).



Source: prepared by the author based on Fabozzi, Davis and Choudhry (2006) and Pinheiro and Savoia (2009). Schematic representation, without specific fund data.

Subordination is not just a tool of financial engineering; it is also a response to the information asymmetry between those who originate the credits and those who finance them. Akerlof (1970) It showed that when buyers cannot distinguish the quality of goods, the price goes up. reflecting average quality, and sellers of better goods tend to withdraw, which can lead to the collapse of the market. Diamond (1984) explained the existence of financial intermediaries by cost savings resulting from delegated monitoring, provided that the intermediary has adequate incentives for monitoring. Holmström and Tirole (1997) formalized the idea that the The intermediary needs to invest its own capital in the projects it finances so that its effort to Monitoring must be credible to other creditors. The retention of the subordinated quota by the assignor. or by parts linked to the structure applies this principle, as it transforms the expected loss of the portfolio. to the detriment of those who possess privileged information.

However, it does not follow that the subordination index is a sufficient measure of risk. Three Factors reduce its informative capacity. The first is the correlation between debtors, which, as As Coval, Jurek and Stafford (2009) showed, it defines the probability of simultaneous losses and therefore, The effectiveness of the cushion. The second is the concentration of the portfolio in a few assignors or drawees, common In commercial receivables investment funds (FIDCs), this makes the distribution of losses discontinuous, since a single... A credit event can consume all the subordination. The third is operational and collateral risk, that is... That is, the possibility that the credit rights do not exist, or have been assigned more than once. or are not paid into the fund's account. This last risk is unrelated to the quality of The debtor's credit is not adequately captured by statistical default models, the

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Machine Translated by Google
RCMOS - Multidisciplinary Scientific Journal of
Knowledge. ISSN: 2675-9128. São Paulo, SP, Brazil.

Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

which explains the emphasis given by CVM Resolution No. 175 to the manager's duties regarding the verification of ballast.

Regulations often complement subordination with protective mechanisms.
dynamic. Among them are the minimum indices of subordination, the deviation from which requires the
restructuring or halting the acquisition of new credit, liquidity reserves in
government bonds and the events of valuation and early settlement, triggered when indicators
Default rates or concentrations exceed predefined limits. Pinheiro and Savoia (2009)
They observed that several regulations analyzed provided for early settlement if the proportion
The ratio of receivables to assets falls below 50%. These triggers protect the senior asset class, but
They produce a relevant side effect for the discussion on liquidity: in stressful situations, the
Accelerated amortization and the interruption of assignments alter the effective investment term in a way that...
not controlled by the investor. The timeframe for receiving the capital itself becomes a variable.
Random correlation with the credit cycle, which exacerbates liquidity risk in the proposed sense.
by Acharya and Pedersen (2005).

7. MEASURING PERFORMANCE IN ILLIQUID PORTFOLIOS: SMOOTHING, REFERENCE POINT AND RISK ADJUSTMENT

The performance evaluation of funds is traditionally based on measures of return.
risk-adjusted. Sharpe (1966) proposed the ratio between excess return and the standard deviation of
returns, and Jensen (1968) defined alpha as the intercept of a regression of the excess return of
fund on excess market returns. In Brazil, Varga (2001) applied these and other measures.
to the country's largest equity funds and pointed out the difficulties and flaws of their application in
Investment fund valuation. In the case of FIDCs (Investment Funds in Credit Rights), market practice consists of comparing...
The profitability of the shares is measured against the CDI (Interbank Deposit Certificate) and the Sharpe ratio is calculated based on the standard deviation of the...
monthly returns. This procedure assumes that the observed volatility of the share price represents
adequately assess the economic risk of the portfolio, a premise that does not hold when the asset is valued.
by model, and not by prices formed in the market.

The problem was analyzed in depth by Getmansky, Lo and Makarov (2004) to
alternative investment funds. The authors showed that returns from illiquid assets or
Values evaluated by models tend to exhibit positive serial autocorrelation because new information
It is incorporated into the share price gradually. Smoothing reduces measured volatility, increasing
The authors artificially inflate the Sharpe ratio and underestimate exposure to market factors.
They proposed a model in which the observed return is a weighted average of economic returns.

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Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

current and out-of-phase data allows for estimating the degree of smoothing and recovering a closer series.
of the true value. In a FIDC quota, calculated daily by appropriating the receivables rate and
Adjusted especially when provisions for losses are recognized, the phenomenon tends to be
particularly intense: the series grows almost linearly and shows slight drops when the
The deterioration of the portfolio is finally recorded.

The statistical consequences of autocorrelation were formalized by Lo (2002), who
demonstrated that the annualization of the Sharpe ratio by multiplying the monthly ratio by the square root
The square root of twelve can substantially overestimate the annual rate when returns are...
positively autocorrelated. In a different context, Dimson (1979) showed that negotiation
infrequently produces biased beta estimates and suggested summing the regression coefficients with
lagged, contemporary, and anticipated market returns. Geltner (1993), when studying indices
Real estate based on appraisal reports, developed procedures to estimate values of
market based on assessed values, which inspired the treatment of other asset classes.
marked by a model. The combination of these techniques offers an operational path for FIDCs:
to estimate the degree of smoothing of the quota series, reconstruct economic volatility, and recalculate the
Performance measures with betas that incorporate lags.

The choice of reference framework is the second relevant methodological problem. The CDI is the reference.
contractual basis for most quotas, but does not constitute an equivalent risk benchmark, because
This corresponds to a liquid asset with virtually no credit risk. Compare the FIDC with the CDI.
This is equivalent to assigning the entire credit risk compensation to the manager as a form of superior performance and
due to illiquidity. Fama and French (1993) showed that fixed income returns are explained
due to two common factors, one associated with the deadline and the other with the risk of default, and Carhart (1997)
It has become clear that the apparent persistence of fund performance is largely explained by
Common risk factors and costs. For funds with irregular cash flows, Kaplan and Schoar
(2005) disseminated the logic of the public market equivalent, which compares the fund's outcome
This contrasts with what would be obtained by applying the same flows to a traded index. These approaches
They converge on one point: performance can only be attributed to the manager's skill after...
discounting the premiums that any investor would obtain by assuming the same risks.

There are also selection biases that affect investors' perception of performance. Rankings
Profitability figures published by distribution platforms generally only consider the funds themselves.
assets and past share return, without adjustment for smoothing, portfolio concentration or
Subordination level below the offered class. Funds closed after credit events leave
databases introduce survivorship bias, a problem recognized in the literature.
evaluation of funds, which led Carhart (1997) to use a bias-free database precisely for this purpose.

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To avoid overestimating average performance. For the newly admitted retail investor in this

The market is characterized by a combination of low apparent volatility, returns above the CDI (Brazilian interbank deposit rate), and the absence of adjustments.
Illiquidity can lead to the perception of a fixed-income asset with risk similar to that of a...
Bank title, a perception that does not correspond to the economic nature of the instrument.

8 International Evidence on Private Credit and Empirical Agenda FOR THE BRAZILIAN MARKET

The expansion of private credit after the 2008 financial crisis produced empirical literature.
which allows FIDCs to be placed in a comparative perspective. Block et al. (2024) conducted a survey
with private debt fund managers in the United States and Europe, responsible for assets
exceeding $390 billion. Respondents reported primarily granting loans.
based on cash flow to medium-sized companies and declared financing borrowers and levels of
leverage that banks would not accept. The funds reported seeking unleveraged returns.
which seem high relative to the risk, use leverage that is considerably lower than that of
banks and vehicles of collateralized loan obligations and actively monitor the
borrowers through restrictive contractual clauses. The picture is that of an intermediary who occupies
space left by banking regulation and which is remunerated both for credit risk and for
The ability to originate, structure, and monitor transactions without market trading.

Chernenko, Erel and Prilmeier (2022) investigated why medium-sized companies in
The United States borrows funds directly from non-bank lenders. Evidence suggests that these
Creditors more frequently serve companies with negative operating results and charge fees.
higher interest rates, a pattern consistent with the hypothesis that regulatory restrictions limit the
The willingness of banks to finance this segment. This result complements that of Block et al.
(2024) by showing that part of the return on non-bank credit stems from occupying a niche with
Restricted access to traditional credit, and not just the expected loss for borrowers. The two studies
They also suggest that distinguishing between risk premium and illiquidity premium is particularly difficult.
In this type of intermediation, because the same borrowers who offer high spreads are the ones...
whose credits have a lower resale potential, which makes the two components correlated.
in the sample and requires careful identification strategies.

The parallel with the Brazilian market is instructive. Commercial receivables investment funds (FIDCs)
Consumer credit and supply chain financing largely fund businesses and individuals.
who find bank credit scarce or expensive, which brings their economic logic closer to that of
described for private debt funds. However, there are structural differences that prevent the

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Knowledge. ISSN: 2675-9128. São Paulo, SP, Brazil.

Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

Direct transposition of international results. FIDCs are remunerated predominantly
Based on a post-fixed rate, which reduces the interest risk of the shares, but does not eliminate the mismatch.
with fixed-income assets as pointed out by Pinheiro and Savoia (2009); international funds, in turn,
They operate with capital calls and long settlement horizons. The competition also seems
increasing: according to ANBIMA (2025b), the number of FIDC managers increased from 372 to 426
between December 2024 and November 2025, and emissions totaled R$ 90.1 billion during the period, the
which tends to compress the portion of the spread associated with niche market occupancy.

Based on this framework, an empirical agenda for the Brazilian market is proposed in three
stages. In the first stage, based on the monthly reports of FIDCs published by the CVM, a...
a panel of quota classes with information on return, equity, subordination ratio,
delinquency and portfolio term, concentration by assignor and drawee, type of joint ownership and term.
rescue. In the second, the degree of smoothing is estimated for each class using the Getmansky model,
Lo and Makarov (2004) recalculate the volatility and Sharpe ratio based on the adjusted series.
with the correction of Lo (2002) for annualization. In the third, a panel model is estimated in which
The excess return of the quotas over the CDI is explained by term and credit factors, along the lines of...
of Fama and French (1993), with the inclusion of delayed betas in the manner of Dimson (1979), and in which the
The intercept is broken down based on the fund's liquidity characteristics, such as redemption period,
existence of scarcity and closed class status.

From this design, testable hypotheses arise. The first is that the average excess return
The senior quotas are increasing in terms of redemption period and closed-class status, even after the
control through default and subordination, which would characterize an illiquidity premium. The second is the
that the autocorrelation of returns is greater in funds with less standardized portfolios, in
consistency with the difficulty of assessment recognized by the regulatory distinction between funds
Standardized and non-standardized. The third is that alpha measured against the CDI is reduced.
substantially when lagged credit factors and betas are included, which would signal that part
The relevant aspect of reported performance corresponds to risk-based compensation, not the ability to...
management. The fourth is the entry of retail and new managers after CVM Resolution No. 175
This was associated with the compression of emission spreads, a hypothesis that can be examined with data.
of registered offers. Testing these hypotheses would allow for the systematic quantification of the portion
of the return of FIDCs that remunerate illiquidity.

9 CONCLUSION

This article examined the illiquidity premium in Investment Funds in Rights.

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Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

Creditors, based on a synthesis of international literature on securitization and pricing of
Liquidity and performance of private credit funds, linked to an analysis of Brazilian regulation.
The starting point was the observation that the recent growth of the industry, accompanied by
The product's availability to the general public broadened the relevance of a question that the literature...
The national government has not yet responded systematically to the question of to what extent the spread paid for quotas on
The CDI compensates for illiquidity, not just the credit risk assumed by the investor.

The first conclusion is conceptual in nature. The excess return of a FIDC quota.
It should be understood as the sum of at least three components: the expected portfolio loss,
The systematic credit risk premium and the illiquidity premium. The decomposition proposed by
Elton et al. (2001) and Longstaff, Mithal and Neis (2005) for corporate titles can be transposed
for FIDCs, with the caveat that, in the absence of secondary trading, the portion relating to
Liquidity needs to be inferred from the fund's contractual characteristics and behavior.
statistical analysis of their quotas.

The second conclusion refers to the structure of the funds. Subordination, interpreted in light of
Merton (1974) and de DeMarzo (2005) argue that it is simultaneously a mechanism for protecting the senior class and
A tool for aligning incentives between those who know the portfolio and those who finance it.
Effectiveness, however, depends on the correlation between debtors, the concentration of the portfolio, and integrity.
of the collateral, so the percentage of subordination, in isolation, is an insufficient indicator of risk.
The experience analyzed by Coval, Jurek and Stafford (2009) and by Keys et al. (2010) shows the cost of
to ignore these dimensions.

The third conclusion concerns performance measurement. The calculation of quotas by
The appropriation of the receivables rate and the delayed recognition of losses produce smoothed series.
with apparent volatility lower than economic volatility. Under these conditions, the Sharpe ratio and
Direct comparisons with the CDI (Interbank Deposit Certificate) tend to overestimate the risk-adjusted return. The procedures
developed by Getmansky, Lo and Makarov (2004), by Lo (2002) and by Dimson (1979) offer
Appropriate tools to correct this bias should be integrated into the practice of evaluating managers.
distributors and institutional investors.

The fourth conclusion is of a regulatory nature. CVM Resolution No. 175 broadened access to...
FIDCs and, at the same time, reinforced the duties of verifying collateral and the prohibitions on conflicts of interest.
interests, in line with the origination problems pointed out in the literature. However, they persist
relevant informational gaps for the retail investor, especially regarding the presentation of
risk measures that consider the smoothing of quotas and the standardized disclosure of
Liquidity indicators for asset classes. The disclosure of aggregated data by ANBIMA represents
This is an important step forward, but it does not yet replace comparable risk metrics across funds.

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From a practical standpoint, the analysis suggests that investors and managers should treat the premium... illiquidity as an explicit component of the allocation decision. In a country whose basic interest rate... It offers high returns with daily liquidity, allowing you to immobilize resources in shares without trading. A secondary market is only justified when the additional spread exceeds, by a margin, the sum of the expected loss. and the opportunity cost associated with the impossibility of redemption. The Ang, Papanikolaou model Westerfield (2014) indicates that this cost is higher when there is uncertainty about when the The asset may be traded, a typical condition for investors with unpredictable cash needs. like retail.

The proposed empirical agenda, based on the CVM's monthly reports and adjustment techniques. The smoothing and regression analysis with credit factors allows these propositions to be subjected to testing. Four hypotheses were formulated regarding the effect of the redemption period on autocorrelation in portfolios. less standardized, to the reduction of alpha after controlling for risk factors and to the compression of spreads After new participants join, they can be examined with public data and offer a point of reference. starting point for research relating structure, liquidity, and performance in this segment of credit market.

The limitations of the study are acknowledged, as, by its theoretical nature, it does not estimate the magnitude. from the illiquidity premium and relies on literature produced mostly in interest rate markets. and institutional structures distinct from those in Brazil. These limitations, however, clearly define the next step in the investigation. As FIDCs consolidate as a channel for financing the real economy and reaching less experienced investors, understanding how much of His return stems from the fact that illiquidity ceases to be an exclusively academic issue and becomes... to be of interest to investor protection and the stability of the credit market.

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Machine Translated by Google
RCMOS - Multidisciplinary Scientific Journal of Knowledge. ISSN: 2675-9128. São Paulo, SP, Brazil.

Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

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Year VII, Vol. 2, 2026 | Submitted: September 7, 2026 | Accepted: October 14, 2026 | Published: November 4, 2026

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