Journal of Infrastructure, Policy and Development 2025, 9(1), 9483.
https://doi.org/10.24294/jipd9483

Article

Some correlations between interest and willingness to pay

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CITATION

Kálmán BG, Poyda-Nosyk N, Bacho R, et al. (2025). Some correlations between interest and willingness to pay. Journal of Infrastructure, Policy and Development. 9(1): 9483. https://doi.org/10.24294/jipd9483

ARTICLE INFO

Received: 8 October 2024
Accepted: 6 December 2024
Available online: 5 February 2025

Abstract: This article delves into the causes of the 2008 financial crisis, particularly focusing on its inception marked by the collapse of the mortgage market, which cascaded into the bankruptcy of numerous banks. The crisis stemmed from volatile real estate prices, leading to loans being issued to borrowers without sufficient collateral, exacerbating insolvency. In Hungary, the situation was exacerbated as most housing loans were denominated in Swiss francs, causing repayment obligations to soar due to rapid fluctuations in the exchange rate. State intervention became imperative amidst rising insolvency rates. Motivated by a longstanding interest in the economic ramifications of low interest rates, the authors aim to probe the factors influencing loan repayment motivations. Their research centers on the evolution and functions of state interest rate regulation, while also scrutinizing late fees and interest provisions related to tax and civil law claims to evaluate their impact on timely payments. Embracing an interdisciplinary approach blending historical, economic, and legal perspectives, the article underscores the necessity for well-calibrated regulatory interventions to mitigate the excesses of unrestricted free markets, especially in light of evolving global economic dynamics. It also underscores the importance of prudent regulations, given theories suggesting that persistently low interest rates may lead to economic distortions beyond a certain threshold, while acknowledging the constraints of interest rate adjustments.

Keywords: debt; exchange rate; interest; nonperforming loans; repayment

1. Introduction

The persistent economic implications of low interest rates have long intrigued scholars. Over the past decade, much of the literature in economics and finance has focused on the role of interest rates as stimulants for economic growth, particularly emphasizing the relationship between central bank base rates and credit market activity. Conversely, a growing body of specialized research has examined the risks associated with prolonged low-interest-rate environments, including their potential to disrupt economic processes.

Despite these advancements, insufficient attention has been directed toward the behavioral and regulatory consequences of sustained low-interest environments, particularly concerning compliance with financial obligations. When the repercussions for defaulting on financial commitments are priced leniently, there is a theoretical risk that debtors may exploit underpriced liabilities to bypass lending

constraints. This underscores the necessity for consistent state interventions, including stricter enforcement of late payment regulations, particularly in periods of reduced central bank base rates. Legislative measures, such as the amendments to the Act on Taxation regarding late payment compensation (§ 206 of Taxation System Act 2017 (Act CL of 2017)) became effective from 1 January 2019, further emphasize the relevance of these concerns.

This study aims to elucidate the historical evolution and functional dynamics of state-imposed interest rate regulations, contextualized within key economic theories, as well as critically analyze the legal provisions governing late payment fees and interest in the context of tax and other civil law claims, assessing their effectiveness in incentivizing compliance. Adopting an interdisciplinary methodology, the research integrates historical, economic, and legal perspectives, supplemented by temporal legal comparisons.

The relationship between consumer credit behaviors, central bank interventions, and financial stability has been a focal point in economic research. LaVoice and Vamossy (2024) explore the racial disparities in debt collection, highlighting systemic inequalities within financial systems that exacerbate default risks for marginalized groups. This complements earlier work by Albanesi and Vamossy (2019), who employed deep learning models to predict consumer defaults, revealing insights into how credit scores can be restructured for equity and efficiency. Extending this exploration, their 2024 study underscores the performance dynamics and fairness concerns in credit scoring systems, providing actionable frameworks to balance precision with equity.

On the broader implications of decision-making and policy nudges, Thaler and Sunstein's (2008) seminal work offers foundational perspectives on how small policy changes can significantly influence consumer financial decisions, particularly in contexts of borrowing and repayment. These insights are essential for understanding consumer behavior in financial markets. Similarly, Bernanke (2018) investigates the real effects of disrupted credit flows during the global financial crisis, demonstrating how central bank interventions and monetary policies can stabilize markets and restore consumer confidence.

In addressing the complexities of workforce management and organizational leadership, recent studies offer critical insights into evolving challenges and solutions. Jenei et al. (2024) highlight the unique difficulties faced by disabled workers in Hungary and Slovakia during the COVID-19 pandemic, emphasizing the importance of inclusive policies to mitigate adverse effects. Similarly, Köműves, Poór, and Karácsony (2022) underscore the role of managerial motivation in workforce retention, particularly in regional small- and medium-sized enterprises. Furthermore, Módosné Szalai and Jenei (2021) explore the intersection of corporate culture, leadership styles, and corporate social responsibility, suggesting that cohesive organizational values are essential for resilience during crises. The pandemic's broader impact on regional disparities is captured in Módosné et al. (2025), who examine the socio-economic recovery trajectories of the Visegrad countries, demonstrating the critical role of adaptive governance. Collectively, these findings contribute to a comprehensive understanding of the socio-economic and regulatory challenges shaping contemporary workforce and organizational dynamics.

The cultural and historical context of organizational practices provides additional layers of insight into contemporary challenges. Annus (2021) discusses the significance of "model states" within the European Union, offering a comparative framework that can inspire innovative policy adaptations. Köműves, Hollósy-Vadász, and Szabó (2021) examine the entry of young professionals into the labor market, highlighting structural challenges and opportunities in integrating emerging talent. Complementing this, Köműves, Nagy, and Szabó (2021) investigate leadership styles from an employee perspective, offering a lens into how management practices influence workplace dynamics. Mádl and Annus (2017, 2019) provide a broader cultural perspective by exploring the interplay between tradition and innovation in European contexts.

2. Materials and methods

In the study, the authors review the legal regulations that determine the level of interest rates, and then examines the specific material implications of each interest calculation model using online calculator applications. Adopting an interdisciplinary methodology, the research integrates historical, economic, and legal perspectives, supplemented by temporal legal comparisons.

The initial segment of the study offers a concise historical survey of interest, tracing its trajectory from a transactional tool to a cornerstone of state interest rate regulation and monetary policy. Subsequently, the discussion delves into prominent economic theories surrounding interest, encompassing classical, neoclassical, institutional, and modern monetarist perspectives. Then the paper contextualizes the legal institution of interest within the framework of legal regulation, highlighting the central bank's base rate as a pivotal nexus bridging public and private law realms. Building upon this framework, the last aspect of the research evaluates the adequacy of civil legal repercussions for delays in payments, juxtaposed against fluctuations in the central bank's base rate, with a particular focus on their efficacy in incentivizing compliance, including in the context of tax obligations. Finally, the research concludes by drawing inferential connections between economic management and crises.

Historical evidence of interest-related practices can be traced back to the earliest recorded legal systems. Ancient legal codes, such as the Laws of Hammurabi, addressed the obligations of debtors when land was pledged as collateral. These laws stipulated that if a debtor could not repay a debt secured by land, they were required to provide an equivalent value in grain or sesame oil, calculated according to established royal tariffs. Furthermore, the Laws of Hammurabi included provisions to address exceptional circumstances. For instance, if a debtor's field was flooded by the god Rammán, carried away by a flood, or rendered unproductive due to a lack of water, the law provided relief: the creditor was exempted from claiming grain repayment for that year, and the debtor was not obligated to pay interest. This provision, described as "moisten your document," symbolized the suspension of debt obligations for the affected period (Hammurabi, 2015).

Such early regulations reflect an advanced understanding of the economic and social challenges posed by interest-bearing debts and highlight the interplay between legal frameworks, natural contingencies, and the economic practices of ancient societies.

The Roman approach to interest reflected a pragmatic understanding of farming and its economic constraints, a perspective that included the laws of the Laws of Twelve Tables up to the codification of Justinian (Scott, 2001; Tacitus, 2003). Central to this pragmatism was the legal institution of loan, which established the transfer of ownership of a tradable good with the obligation to return an equivalent amount. This legal construct facilitated the spread of money lending, especially in response to the chronic cash shortages of the ancient economy.

The practicality of interest was further reinforced by the structure of the Roman fiscal system. Taxes and duties to the state were usually paid in cash, which required the availability of liquid funds. The ancient Roman bankers played a key role in satisfying this need, providing bridge loans, operating on a commercial basis, and charging interest (usury) on the principal amount. However, borrowers were often economically constrained, which limited their ability to negotiate interest rates.

To mitigate potential abuses, the Roman state actively regulated private lending from an early stage. The article "uniciarium fenus" in the Law of the Twelve Tables (451–450 BC) is one of the earliest documented examples of such intervention, which set maximum permissible interest rates and imposed fines for usury. If the contractual interest exceeded the legal maximum, the state refused to provide legal support for its enforcement. However, evidence from contemporary sources suggests that these regulations were not effective enough, as repeated legislative measures were needed to restrict the practice of excessive interest.

These interventions highlight the dual challenge that the Roman state faced: balancing the support of credit necessary for the economy with the prevention of exploitative lending practices. They also point to the persistent tension between economic necessity and social justice in the management of financial systems.

The necessity of state intervention in regulating interest rates is evident from historical examples such as the proposals by Licinius and Sextius in 375 BCE and later measures by Julius Caesar. Yarovenko et al. (2024) emphasize that examining illicit practices in developed countries provides valuable insights into the dynamics of state intervention. These included legal provisions to cancel accumulated debts, waive interest, and allow deductions of interest from principal amounts. Similar efforts are seen in 193 BCE, when the Senate addressed evasion of Roman interest rate caps. Lenders circumvented these laws by conducting transactions with allied citizens, who were not bound by Roman limits. To counter this, legislation first required allies to report loans and allowed Roman debtors to opt for Roman legal protections. Eventually, stricter laws made compliance with Roman interest limits mandatory, removing discretion from the parties involved (Bajánházy, 2014).

Religious texts have also addressed interest and usury. The Old Testament prohibits charging interest among community members but permits it with outsiders (Exodus 22: 25, Holy Bible Old and New Testament, 2023, Deuteronomy 23: 19–20, Holy Bible Old and New Testament, 2023). The New Testament, particularly in Luke, advocates lending without expectation of repayment (Holy Bible Old and New Testament, 2023). Post-biblical Jewish literature and other religions, such as Islam, share similar views. The Qur'an, for instance, condemns interest as unjust (Miháffy, 2018).

In Christianity, early Catholic doctrine, influenced by Aristotle's teachings, strongly opposed interest collection, considering it usurious. This stance persisted until the Reformation, when reformers like Luther (2015) and Calvin introduced more nuanced perspectives (Orosz, 2018).

The establishment of the first banks and the expansion of the credit life through fairs and trade gave new impetus to the development of the rules regarding interest. In Italian cities as early as the XII. In the 19th century, banks were opened, they traded money, accepted money for safekeeping, for which they paid interest, and gave interest-bearing loans to merchants and craftsmen. The source of the loan was a deposit in the bank. The bank's profit was ensured by the difference between the higher loan interest and the lower deposit interest.

The organized exercise of public authority through financial administration evolved significantly over time. Dávid and Szűcs (2009) discuss how information and communication technologies can facilitate the building of networks and clusters, which are crucial for effective regional development and administrative coordination in the Carpathian Basin. Historical sources indicate that, as early as the Middle Ages, offices such as the country judge, treasurer, and chamberlain were established to oversee royal finances. Dávid and Szűcs (2009) discuss how information and communication technologies can facilitate the building of networks and clusters, which are crucial for effective regional development and administrative coordination in the Carpathian Basin. These officials managed public funds, implemented mining and tax reforms, and wielded considerable influence over monetary creation. They also recognized the economic power of monopolizing coin minting, which became a key element of royal authority.

Despite these formal structures, the practical handling of credit and interest persisted, especially during the Renaissance. Bankers, circumventing the church's prohibition on usury, devised creative solutions. For instance, the Fuggers redeemed mortgaged estates, while the Medicis structured loans to be repaid in gold instead of silver, leveraging exchange rates in their favor.

By the 17th and 18th centuries, cameralistics, a distinct academic discipline focused on state property management and the financial administration of efficient governance, had emerged. However, the public law framework for state finances—what is now known as financial law—only began to develop later, alongside the establishment of modern constitutional systems.

The industrial revolution and the establishment of institutions like the Bank of England marked a shift toward modern financial systems, where state intervention in setting interest rates and controlling money supply became central to economic stability. Dávid et al. (2012) discuss how environmental and climatic factors, such as those impacting lake tourism, can intersect with broader economic systems, including state intervention in financial mechanisms. Liberalism in the 18th and 19th centuries emphasized minimal state interference, focusing on safeguarding free-market principles while limiting the economic functions of the state to regulatory roles (Mezey and Gosztonyi, 2020). However, the rise of welfare state ideologies in the 19th century introduced a stronger role for state financial management, including redistributive and stabilizing functions.

The concept of interest can be interpreted through various perspectives, with the most common defining it as the purchase price of money. A more precise definition frames interest as the fee paid by the debtor to the creditor for the immediate availability of money.

Classical economics views capital as a material good, akin to labor or land, with its countervalue represented by interest. In this framework, interest compensates the owner for investing capital rather than using it for personal consumption, positioning capital as a factor of production (Senior, 2002).

Neoclassical economics, in contrast, sees interest as a reward for the creditor's deferred consumption, equating it with profit (Deaton, 1992; Muellbauer and Lattimore, 1999). Keynesian theory brought a shift by distinguishing between profit and interest, emphasizing money's speculative demand as a unique characteristic (Keynes, 2016).

Heller (1945) described interest as arising from the limited availability and productivity of capital, which allows individuals to focus beyond mere survival (Eucken, 1934). Similarly, American economist Irving Fisher's impatience theory linked interest to intangible capital, arguing that it reflects humanity's preference for present over future consumption. Interest, in this view, becomes the price paid to satisfy immediate needs.

A distinct group of interest theories examines capital as a market factor, tracing their origins to classical economics and the fundamental concept of capital demand (Robson, 2017). These theories argue that the interest rate is determined by the interplay of supply and demand for capital, along with its investability and placeability. Capital is viewed as the outcome of saving, with a presumed direct correlation between the willingness to save and the rate of interest. However, empirical observations soon revealed inconsistencies, such as the paradoxically lower interest rates in wealthier countries (Schmoller, 1990). Calculations even suggested that the inclination to save peaks when interest rates range between 3%–6% (Cassel, 2018). The 1970s saw significant contributions from the Chicago School, particularly Milton Friedman, who advocated stabilizing the money supply as a solution to economic fluctuations (Friedman, 2008). Modern economic trends, such as institutional economics, have expanded the analysis of interest by integrating insights from related disciplines, including sociology and behavioral psychology (Nee, 2005). The incorporation of game theory into economics further revolutionized the understanding and interpretation of interest, introducing new perspectives on its role in strategic decision-making (Harsanyi, 1968).

In addition to interest on capital and savings, the role of the state in regulating interest rates must also be addressed. Interest rates are basically determined by market conditions, but the task of the state and even more so of the central bank is to preserve financial stability and keep inflation under control. This is achieved through monetary policy, the traditional instrument of which is the regulation of the base interest rate by the central bank. The base interest rate, also known as the reference interest rate, is the interest rate that the central bank pays commercial banks for their deposits with it. By increasing and decreasing it, the interest rate on loans provided by commercial banks can be regulated, and through this the economy can be stimulated or the rate of inflation can be influenced.

Since the introduction of Hungary's two-tier banking system in 1987, the Hungarian National Bank (MNB) has been responsible for ensuring external balance, moderating inflation, maintaining bank liquidity, and regulating exchange rates (Madarász and Novák, 2018). A pivotal milestone was reached on 15 October 1990, when the MNB assumed responsibility for setting the base interest rate. Guided by the principle of preserving the forint's stability, significant interest rate adjustments were implemented in 1994–1995 to address a growing budget deficit and inflation. Subsequently, gradual reductions in the base interest rate stimulated economic activity, ensured budgetary sustainability, and curbed inflation. Additionally, the MNB employs non-conventional tools, including liquidity provisions, government securities purchases, and direct credit market interventions (Krekó et al., 2013). The central bank's operations are governed by the 2013 Act CXXXIX on the Hungarian National Bank (Central Bank Act, 2013).

Interest, as a legal institution, is multifaceted, encompassing both public and private law dimensions. In civil law, it serves two primary functions: as compensation for the use of money and as an incentive for prompt payment in financial transactions. From a public law perspective, interest acts as a tool of economic intervention, executed through the determination of the central bank's base rate and financial legislation aimed at mitigating market risks associated with interest rates. The nexus of financial literacy and organizational resilience was studied by Bakos et al. (2024), who linked revenue planning in SMEs to broader economic stability, illustrating the importance of a robust financial culture.

The legislative framework for determining the base rate is established by the Central Bank Act, which mandates the MNB to formulate and implement monetary policy with the primary goal of maintaining price stability. To fulfill its responsibilities, the MNB utilizes various monetary policy tools, including:

1) Accepting deposits and providing secured loans,

2) Conducting open-market operations involving securities trading and repurchase agreements,

3) Issuing its own securities,

4) Regulating exchange and interest rates,

5) Calculating and reversing securities,

6) Setting mandatory reserves, and

7) Employing other central bank instruments.

Monetary policy, exemplified by central banks, became critical in regulating base interest rates to influence inflation, credit availability, and economic growth. In Hungary, the Hungarian National Bank (MNB) has been responsible for such policies since the 1990s, using tools like inflation targeting and base rate adjustments to stabilize the economy (Madarász and Novák, 2018). Central banks worldwide now leverage interest rates to manage economic cycles, maintain financial stability, and respond to market dynamics.

Thus, the evolution of interest regulation reflects a complex interplay of historical, religious, legal, and economic factors, transitioning from moral and practical constraints to a central role in modern monetary policy.

3. Results and discussion

3.1. Civil affairs

Examining the legal concept of interest within civil law, we find that interest primarily serves two functions in everyday transactions: firstly, it acts as compensation for the use of money; secondly, it functions as a mechanism to encourage timely performance and prompt action in the event of payment delays concerning financial claims.

It is a well-known connection that actors in economic life be they individuals or businesses, develop preferences regarding the direction of spending money. In extreme cases, the choice between preferences could even lead to the disregard of the pacta sunt servanda principle (the basic principle requiring the performance of contracts in good faith), which is the basic value of the civil law approach. As civil law regulations governing the rate of late payment interest are aligned with the central bank's base interest rate, when this rate remains consistently low for a foreseeable and extended period, and the late payment interest rate mirrors the central bank's base rate, the late payment interest alone may not provide adequate motivation to fulfill payment obligations, particularly in the absence of additional legal mechanisms such as penalty or forfeiture clauses.

In such cases, it may be justified to assume that the reason behind the delayed performance is not insolvency or difficulty in payment, but rather the "bad faith" recognition that the debtor of the basic transaction - given the low rate of late interest—has a greater interest in using the otherwise available money for other purposes for its use as the contractual fulfillment of the claim under the basic transaction.

Looking at the interest provisions of the Hungarian Civil Code, we can come to the conclusion that the outlined assumption is justified primarily in the case of debts of natural persons, and in legal relationships between businesses only if the claim arising between the businesses is not contractual—but based on another legal relationship, e.g., it is based on an obligation to compensate from unjust enrichment. In the case of an individual debtor, the Civil Code 6:48 a.m. § according to its provisions: "(1) (...) starting from the date of default, the obligee is obliged to pay default interest equal to the central bank base rate (...) valid on the first day of the calendar semester affected by the delay, even if the monetary debt was otherwise interest-free. (2) If the creditor is entitled to interest up to the date of default, the obligee shall, from the date of default, in addition to this interest, pay the central bank base interest rate valid on the first day of the calendar half year affected by the delay—in the case of monetary debt denominated in a foreign currency, the base interest rate determined by the issuing central bank for the given currency, failing that he is obliged to pay late payment interest equal to one-third of the money market interest, but in total at least the interest specified in paragraph (1).

To verify this assumption, see the calculation below (**Table 1**, **Figure 1**).

Table 1. Calculation of late payment interest for private debts.

Variable	Value	Description
Principal Amount (HUF)	1,000,000	The original amount borrowed or owed.
Annual Base Interest Rate	5%	The central bank base rate applied to the debt.
Penalty Rate	3%	Additional penalty interest as per regulations.
Delay Period (in days)	365	The duration of delay in fulfilling the financial obligation.
Formula Used	(Principal × Rate × Days) ÷ 365	Formula for calculating daily interest based on base and penalty rates.
Total Interest (HUF)	80,000	The total late payment interest accumulated over the delay period.

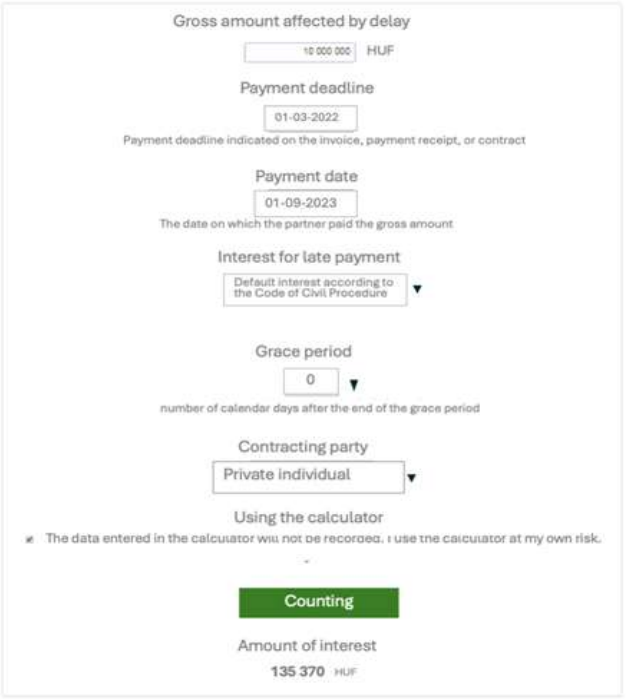

Figure 1. Calculation of late payment interest in the case of debt between individuals.
Source: https://www.e-mi.hu

Table 1 demonstrates the process of calculating late payment interest for private debts under the provisions of the Hungarian Civil Code. The calculation considers key variables, including the principal amount, the annual base interest rate set by the central bank, and any applicable penalty rates. For this example, the base interest rate is 5%, and an additional 3% penalty rate is applied, making the total interest rate 8%.

The table highlights the formula used to compute the daily interest:

$$\text{Daily } interest = \frac{Principal \times Rate \times Days}{365}$$

Using this formula, the interest accrued for a one-year delay (365 days) on a principal amount of HUF 1,000,000 is calculated to be HUF 80,000. This process provides transparency in how late payment interest is derived and ensures that the obligations align with legal stipulations.

This calculation illustrates the financial implications of delayed payment and emphasizes the need for robust mechanisms to encourage timely compliance. It serves as a basis for comparing late payment penalties across different contexts, such as private debts, tax obligations, and business transactions.

In the **Figure 1**, we calculated interest on late payment for private individuals with the late payment calculator application. In the computation process, we determined the default interest according to the provisions of the Civil Code. Consequently, by withholding the principal amount for a period of 18 months, the debtor is required to pay an additional late interest amounting to 135,370 HUF along with the principal sum.

Figure 2a,b depict the evaluation of money usage terms offered by a credit institution, considering identical principal amounts, projected over an 18-month period. Examining the APR, it becomes evident that, depending on the monthly net income, the cost of borrowing HUF 10,000,000 can range from HUF 817,000 to as high as HUF 2,105,000.

Comparing this with the late payment interest of HUF 135,370 obtained from **Figure 1**, it can be clearly established that, in the absence of stipulation of other legal sanctions in addition to late payment interest, the private individual may have a greater interest in not paying the debt than in applying for a loan.

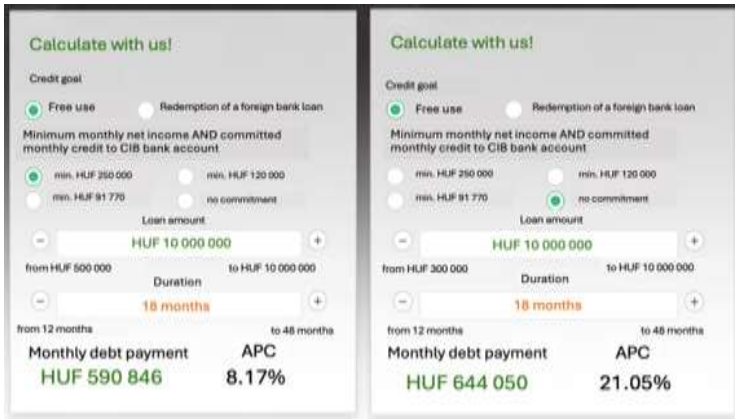

Figure 2. Calculation of interest on private bank loans **(a)** with income credit; **(b)** without income credit in the case of a loan (APR).
Source: https://www.bankracio.hu

In the event of a delay in the contractual relationship between enterprises, the rule of the Civil Code is stricter: "the rate of interest on late payment is the central bank base interest rate valid on the first day of the calendar half year affected by the delay—in the case of monetary debt denominated in a foreign currency, the base interest rate determined by the issuing central bank for the given currency, failing that, the money market interest—its value increased by eight percentage points. When calculating the interest, the central bank base interest rate valid on the first day of the calendar half-year affected by the delay is applicable for the entire duration of the given calendar half-year" (Ptk. § 6:155 (1) para.).

In this provision, we can already see that the legislator tightens the interest rate in order to maintain the motivating role of interest on late payment, and increases the penalty to the value of the central bank base rate increased by 8 percentage points.

As the calculation below (**Figure 3**) illustrates, this provision is more suitable to prevent the underpricing of non-payment, since there is no disproportionate difference between the tightened interest rate and the loan interest rates available on the market.

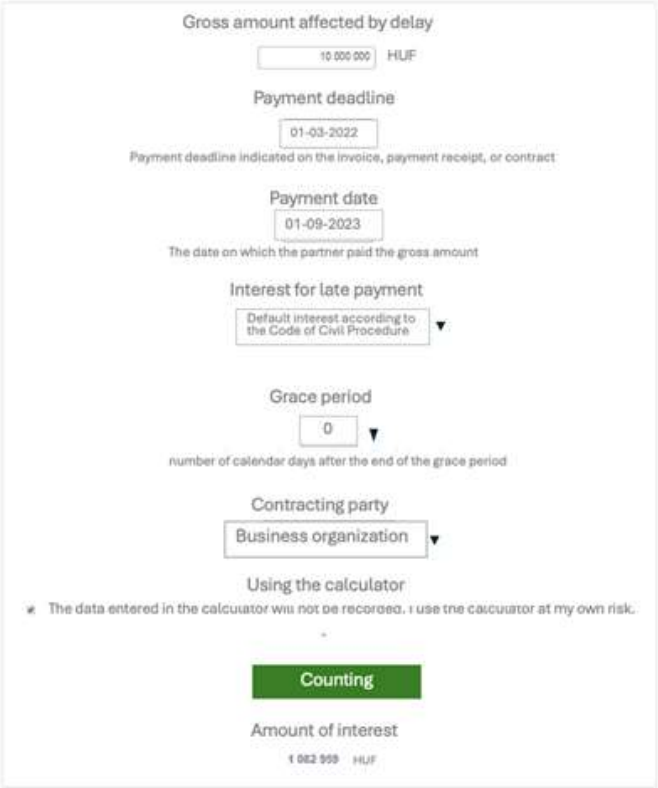

Figure 3. Calculation of late payment interest for late payment by a business organization.
Source: https://www.e-mi.hu/

To verify the accuracy, we requested the individual responsible for corporate loans at CIB to perform a calculation similar to the one mentioned above, but with the assumption that the debtor is a company rather than an individual. The bank declined his request, stating that it was essential to specify the intention to enter into a contract and provide a tax number for the calculation. However, they did provide a list of credit conditions for small businesses. Subsequently, another list was acquired from OTP Bank in response, also available in the Appendix F02. It can be seen in both announcements that the loan interest rates set for entrepreneurs are based on a value increased by 4%–6% of one of the governing interest rates (BUBOR, LIBOR, EURIBOR), thus reducing the "temptation" of delayed debt settlement for businesses.

3.2. Tax aspects

The sanctioning of delay in relation to the central bank base rate is important not only in the field of civil legal transactions, but also in tax law. The state tax authority sanctions a late fee if the taxpayer fulfils his payment obligation not before the payment deadline (due date) defined in the legislation, but after it, or if he uses the budget support before the due date. In the case of late payment of the tax, a late fee must be paid from the due date, and in the case of using the budget support before the

due date, a late fee must be paid until the due date. The rules for the calculation of the late fee are set out in CL of 2017 on the taxation system. Act XXVII. chapter, which provides as follows regarding the basis and amount of the delay allowance.

3.2.1. § 208 [the basis of the delay allowance]

(1) The basis of the late fee must be taken into account separately for each tax and budget support, unless they are recorded on one account.

(2) It reduces the basis of the delay allowance

a) the amount of overpayment in relation to other taxes registered with the same tax authority at the due date (net surcharge calculation),

b) the debt for which the tax authority has granted payment relief.

(3) The basis of the late fee charged for the tax deficiency shall not be reduced by the amount of overpayment registered with the same tax authority and existing in connection with another tax at the time of the due date.

(4) The provisions of this Act relating to the calculation of net allowances shall be applied in the absence of a different provision of the legislation establishing the payment obligation.

3.2.2. § 209 [the amount of the delay allowance]

(1) After each calendar day, the amount of the late fee is three hundred and sixty-fifth of twice the central bank base interest rate valid at the time of the delay or the use (charging) before the due date. A late fee cannot be charged after the late fee.

(2) The late fee for the tax deficiency may be charged for a maximum of three years from the original due date to the date of the audit report.

Based on the above rules, the calculation carried out with the help of the late fee calculation calculator available on the website of the tax authority clearly illustrates that in the case of a tax arrears amounting to HUF 10,000,000 for an 18-month delay, the amount of the fee charged is only HUF 220,000, which is extremely low compared to the available market loan rates, and therefore does not materialize real penalty in case of delay (**Figure 4**).

Figure 4. Calculation of late payment interest in case of tax liability (NAV).
Source: https://www.nav.gov.hu/nav/szolgaltatasok/kalkulatorok/potlekszamitas

Legislation also came to this realization when Act XLI of 2018 on the amendment of certain tax laws and other related laws. With the adoption of the law, it decided to adopt the rules regarding the amount and method of calculation of the delay allowance.

Pursuant to the new regulation, the rules in Art regarding the amount of late payment interest will be tightened as follows from 1 January 2019.

Section 209 "The amount of the delay allowance" stipulates that the delay allowance amounts to three hundred and sixty-fifth of the central bank's base interest rate applicable at the time of the delay or the charging before the due date, with an additional increase of 5 percentage points. It is important to note that a late fee cannot be imposed following the application of the delay allowance. The late fee for the tax deficiency may be charged for a maximum of three years from the original due date to the date of the audit report.

The Government of Hungary proposed a legislative amendment in T/625 through bill no., with the objective of addressing the current scenario wherein the tax authority or the state is the least expensive creditor.

4. Conclusion

The narrative of recent interest rates intertwines with the narrative of crises. An economic crisis, typically triggered by some form of financial turmoil, constitutes a downturn in economic activity. While the term "crisis" is commonplace in everyday discourse, economic crises themselves are not exclusive to modern times. In 33 BC, Publius Spencer's substantial demands from his bank led to bankruptcy, causing a ripple effect that ensnared numerous other banks within days. Emperor Tiberius intervened by employing a strategy still employed today: he recapitalized and merged the banks with loans from the imperial treasury, averting a total economic collapse.

In 1973, due to the sudden growth of the European real estate market, the increased credit stock and the influx of cheap American products to Europe, the banks' money supply decreased, the interbank interest rates rose high, and then the banks went bankrupt in a chain reaction. The event commonly referred to as the Great Depression of 1929–1933 was initiated by a rise in interest rates by the US central bank, the Federal Reserve (Fed), which was subsequently mirrored by European banks. The economy collapsed due to the overproduction crisis associated with this and the resulting drop in stock prices. In 2008, the collapse of American real estate loans started the crisis, although signs of this were already visible earlier (Caballero et al., 2008). In its 2009 report, the European Union's high-level research group also pointed to the connection between the development of the crisis and the interest rate level, according to which abundant liquidity and low interest rates were the most fundamental reasons that led to the spread of the crisis and especially credit expansion. The credit volume grew rapidly and consumer inflation remained low, while the central banks, especially the Fed, did not consider it necessary to tighten the monetary policy. These macroeconomic conditions have led to increasing imbalances in global financial and commodity markets through rising asset prices. The 2008 crisis also reached Hungary and led to a loan repayment crisis to such an extent that state intervention was necessary to save foreign currency borrowers—first in the area of housing and later in the area of car loans (Lentner, 2015).

A Hungarian example used in order to avoid similar crisis phenomena is the debt brake rule introduced for housing loans with variable interest rates, which will be applied from 1 October 2018, and aims to curb the risks arising from future interest rate changes by creating an income-proportioned repayment installment index (JTM) limit.

Financial crises are becoming more frequent, the main tool of monetary policy has reached its end, as the base interest rates are at their minimum, and the regulatory effect of market freedom is only slowly taking effect. After the 2008 crisis, they wanted to promote economic recovery by introducing low interest rates worldwide, but nowadays, more and more theories have come to light that, despite the effect of low interest rates bringing recovery, draw attention to the negative and harmful effects of excessively low interest rates. Therefore, in today's global economic situation, more and more people are proposing the introduction of well-thought-out regulatory measures that limit the unlimited free market. Especially given that, according to some theories, a permanently low interest rate can cause distortions in the economy beyond a certain point, and the possibility of interest rate cuts has a lower limit as well.

This study examined the historical evolution and contemporary implications of state-imposed interest rate regulations, particularly in contexts of tax and civil law. Ogutu, El, and Dávid (2023) provide a comprehensive bibliometric analysis highlighting current trends in sustainable organization management, emphasizing the importance of adaptive regulatory practices to align with evolving organizational and societal needs. Zelles, Bilinovics-Sipos, and Remsei (2024) highlight the significance of robust reporting frameworks in understanding economic and social dynamics related to regulatory practices.

By integrating economic, legal, and historical perspectives, the research aimed to assess the effectiveness of these regulations in incentivizing timely financial compliance and mitigating economic distortions in low-interest environments.

The findings underscore the critical role of central banks in maintaining financial stability through monetary policy tools, particularly the regulation of base interest rates. Historical insights illustrate that interest has long served as both an economic enabler and a source of systemic risk, necessitating consistent state interventions. Contemporary legal frameworks, such as those in the Hungarian Civil Code and the taxation system, reveal that late payment interest rates often fail to adequately motivate compliance, especially in prolonged low-interest scenarios. Enhanced legal measures, including additional penalties or tighter regulations, are essential to prevent "bad faith" exploitation of lenient financial conditions.

Moreover, the research highlights the broader implications of interest rate policies on economic cycles and financial stability. The study identified that excessively low interest rates, while stimulating short-term growth, can contribute to long-term market distortions, echoing findings from global financial crises. This reinforces the need for balanced and well-calibrated regulatory measures to mitigate risks associated with unregulated free markets.

Finally, this work emphasizes the importance of interdisciplinary approaches in understanding interest regulation. By combining legal analysis with economic modeling, it provides a robust framework for policymakers to evaluate the effectiveness of interest rate mechanisms in achieving compliance and financial

stability. Future research should further explore the behavioral dimensions of debt compliance and the potential for technological tools in improving regulatory outcomes.

Author contributions: Conceptualization, SM and GSS; methodology, KSA; software, NPN; validation, RB, BGK and KSA; formal analysis, NPN; investigation, KSA; resources, GSS; data curation, RB; writing—original draft preparation, NPN; writing—review and editing, BGK; visualization, RB; supervision, GSS; project administration, KSA; funding acquisition, SM. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Act CXXXIX of 2013 on the Hungarian National Bank (in Hungarian). https://net.jogtar.hu/jogszabaly?docid=a1300139.tv).

Act on taxation (in Hungarian) 2017 CL. https://net.jogtar.hu/jogszabaly?docid=a1700150.tv (Access: 12.12.2023)

Annus, I. (2021). Az EU mintaállamai. In Az Európai Unió a 21. Században (pp. 277–306).

Aristotle (1981): The Politics (First book, paragraph 11). Penguin Classics, ISBN: 978-0140444216 pp 512

Bajánházy, I (2014) - State finances in the Roman Republic (in Hungarian), teaching aid, Miskolc, pp 35

Bakos, T., Szőke, B., Tóth, E. I., Malatyinszki, Sz., Dávid, L. D. (2024). The Impact of The Financial Culture of Small and Medium-Sized Enterprises and Budgetary Bodies on Financial Planning, JOURNAL OF ECOHUMANISM 3 : 8 pp. 8629-8639. , 11 p. (2024)

Bihari, M & Pokol, B. (2009): Political science - Politics and the modern state. Parties and ideologies (in Hungarian). Knowledge of Generations, ISBN: 9789631967852, pp 112

Caballero, R.J., Farhi, E. & Gourinchas, P.O. (2008) An Equilibrium Model of "Global Imbalances" and Low Interest Rates American Economic Review 98(1), pp 358-393 https://escholarship.org/uc/item/7xc0g8mm (Access: 03.01.2024)

Cassel, G. (2018) The Nature and Necessity of Interest (Reprint Edition). Forgotten Books, ISBN: 978-1330469590, pp158-171

CXXXIX Act on the Hungarian National Bank (in Hungarian) 2013. https://mkogy.jogtar.hu/jogszabaly?docid=a1300139.TV (Access: 12.12.2023)

Dávid, L., & Szűcs, C. (2009). Building of networking, clusters and regions for tourism in the Carpathian Basin via information and communication technologies. NETCOM - NETWORKS AND COMMUNICATIONS STUDIES, 23(1–2), 63–74.

Dávid, L., Baros, Z., Patkós, C., & Anja, T. (2012). Lake Tourism and Global Climate Change: an integrative approach based on Finnish and Hungarian case-studies. CARPATHIAN JOURNAL OF EARTH AND ENVIRONMENTAL SCIENCES, 7(1), 121–136.

Deaton, A (1992) Understanding Consumption. Clarendon Press, Oxford, ISBN: 9780198288244, p256

Eucken, W. (1934) Kapitaltheoretische Unterschungen, Verlag Gustav Fischer, pp 194

Friedman, M. (2008) Milton Friedman on Economics: Selected Papers. University of Chicago Press Journals, 2008 ISBN: 978-0226263496 pp 180

Hammurabi (2015) The Code of Hammurabi CreateSpace Independent Publishing Platform, ISBN: 978-1519649522, pp 60

Harsanyi, J.C. (1968) Games with Incomplete Information Played by 'Bayesian' Players, I-III. Coast III. The Basic Probability Distribution of the Game. Management Science, 14(7), pp. 486–502. www.jstor.org/stable/2628894 (Access: 17.12.2023)

Heller, F. (1945) The history of economic theory (in Hungarian), Transdanubia Pécs University Publishing House and Printing RT, ISBN: 9789639345362, pp 602

Holy Bible Old and New Testament (2023) (quoted points) Jesus Book, ISBN: 979-8862828528 pp 817

Jenei, Sz., Módos-Szalai, Sz, Fruzsina, L., Sylvia, M., Varga, E., & József, P. (2024). The workforce challenges of disabled people in Hungary and Slovakia during the COVID-19 pandemic. Alter, 18(3), 23–49.

Keynes, J. M. (2016) The General Theory of Employment, Interest, and Money, First Harvest/Harcourt, London, ISBN: 978-0156347112, pp 416

Köműves, Z., Nagy, M. Z., & Szabó, S. (2021). A vezetési stílus vizsgálata munkavállalói szemüvegen keresztül. ÚJ MUNKAÜGYI SZEMLE, 2(3), 34–45.

Kőmüves, Z., Poór, J., & Karácsony, P. (2022). Vezetői motiváció a munkaerő-megtartás szolgálatában, különös tekintettel a dél-dunántúli régió kis- és középvállalkozásaira. MARKETING ÉS MENEDZSMENT, 56(2), 72–82. http://doi.org/10.15170/MM.2022.56.02.07

Kőmüves, Z., Hollósy-Vadász, G., & Szabó, S. (2021). Pályakezdők a munkaerőpiacon. TUDÁSMENEDZSMENT, 22(2), 158–173. http://doi.org/10.15170/TM.2021.22.2.10

Kőműves, Z., Szabó, S., Szabó-Szentgróti, G., & Hollósy-Vadász, G. (2022). Munkaerő-gazdálkodási körkép a dél-dunántúli régióban a pandémia idején. MODERN GEOGRÁFIA, 17(3), 13–27. http://doi.org/10.15170/MG.2022.17.03.02

Krekó, J., Balogh, Cs., Lehmann, K., Mátrai, R., Pulai Gy., Vonnák, B. (2013) International experiences and domestic possibilities of using non-conventional central bank instruments. MNB Occasional Papers, 100, ISSN 1585-5678, pp 56 https://www.mnb.hu/letoltes/op100.pdf (Access: 23.12.2023)

Lentner Cs. (2015) The Structural Outline of the Development and Consolidation of Retail Foreign Currency Lending, Public Finance Quarterly, 60(3) pp 297-311 http://real.mtak.hu/36554/1/a_lentnercs_2015_3.pdf (Access: 25.12.2023)

Luther, M. (2004) Works of Martin Luther (online), God Rules, https://godrules.net/library/luther/NEW1luther_a0.htm (Access: 02.01.2024)

Madarász, A & Novák, Zs. (2018) Level of interest rates in the light of the changing interest rate policy in Hungary between 1924 and 2015-How did the central bank base rate get to its historic low levels? Financial and Economics Revciew, 14(4), pp. 87–107.

Mezey, B. & Gosztonyi G. (eds.) (2020): Hungarian constitutional history (in Hungarian). Osiris Publishing House, ISBN: 9789632763279, p 560.

Miháffy, B. (trans.) (2018) Kurán - The Holy Quran (in Hungarian), EDHI International Foundation Inc. http://mek.oszk.hu/06500/06534/06534.pdf (Access: 12.08.2023) pp57-58

Módosné Szalai, S., & Jenei, S. (2021). Cégkultúra, vezetői személyiség, HR szervezet és a vállalati CSR tevékenység: I. Elméleti alapok. OPUS ET EDUCATIO: MUNKA ÉS NEVELÉS, 8(2), 197–206. http://doi.org/10.3311/ope.440

Módosné, S. S., Botond, G. K., Arnold, T., Norbert, G., Dhruv, P. S., Lóránt, D. D., & Szonja, J. (2025). NUTS2 regions of the Visegrad countries during the Covid-19 pandemic and recovery. REGIONAL STATISTICS, 15(3), 1–21. http://doi.org/10.15196/RS150302

Molnár, E. (2010) Books of the Talmud (reprint, in Hungarian), Garai Irodalmi és Nyomdai Rt http://mek.oszk.hu/13800/13804/pdf/13804_6.pdf. ISBN: 9789633290446 pp 25 (Access: 12.12.2023)

Mádl, P., & Annus, I. (2017). Trend eller tradition. In Brücken für Europa (pp. 53–69). http://doi.org/10.5771/9783845281452-53

Mádl, P., & Annus, I. (2019). A svéd irodalom magyarországi fogadtatása – a kezdetektől 1900-ig. Budapest: Argumentum Kiadó. http://doi.org/10.21862/978-963-446-807-3

Muellbauer, J. & Lattimore, R. (1999): The Consumption Function: A Theoretical and Empirical Overview. in Handbook of Applied Econometrics. Macroeconomics. Wiley-Blackwell, Oxford, ISBN: 978-0631215585, pp 482

Nee, V. (2005). New Institutionalism, economic and sociological. In Smelser, N. and Swedberg, R, Handbook for Economic Sociology, Princeton: Princeton University Press. ISBN: 9780691121260 pp. 3-71.

Ogutu, H., El, A. Y., & Dávid, L. D. (2023). Current Trends in Sustainable Organization Management: A Bibliometric Analysis. OECONOMIA COPERNICANA, 14(1), 11–45. http://doi.org/10.24136/oc.2023.001

Orosz, I. (2018) János Kálvin and the freedom of interest collection (in Hungarian), Új Nézőpont, 5(1) pp5-16

Robson, J. M. (2017) Collected Works of John Stuart Mill: Xi. Essays on Philosophy and the Classics, Routledge, ISBN 9781138096929, pp 1251

Schmoller, G. (1900) Grundriss der allgemeinen Volkswirtschaftslehre. II. vol. Duncker & Humblot, pp 502

Scott, S. P. (2001) The Civil Law: Including the Twelve Tables, the Institutes of Gaius, the Rules of Ulpian, the Opinions of Paulus, the Enactments of Justinian, and the Constitutions, The Lawbook Exchange, Ltd., Volume IV 32. Title (1) par.

Senior, N., W. (2002) An Outline of the Science of Political Economy. University Press of the Pacific, ISBN: 978-1410203854, pp. 260

Tacitus (2003) The Annals, Book VI, point 16 Penguin Classics ISBN 978-0140440607, pp 464

Yarovenko, H., Vasilyeva, T., Ustinovichius, L., & Remsei, S. (2024). Illicit practices: Experience of developed countries. Journal of International Studies, 17(2), 146–177. https://doi.org/10.14254/2071-8330.2024/17-2/8

Zelles, T., Bilinovics-Sipos, J., & Remsei, S. (2024). Literature Review: Understanding the role of reporting. In Economic and Social Development: 111th International Scientific Conference on Economic and Social Development – "Navigating into the Future: The new Employee Experience" (pp. 99–107).