


## A reconciliation index for delayed household debt in imperfect competition markets<sup>1</sup>

### Aksak rekabet piyasalarında gecikmiş hanehalkı borçları için Helalleşme (uzlaşma) endeksi

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### Abstract

This study examines how the delays in household debt relationships can be managed in terms of social and economic justice. To achieve this goal, a new measurement tool, the "Reconciliation Index," has been developed. The content of the index was created based on the opinions of 26 experts and includes the following internal factors: (Consumer Price Index, Deflator, Minimum Wage Increase, Housing Price Index) and External Factors: (Price of Gold (per gram), Real Effective Exchange Rate, Oil Prices). Thus, the index provides a normative framework aimed at ethical consensus and a fair balance between the parties. The Reconciliation Index is based not only on economic indicators but also on social policy principles, including social consensus, consumer rights, and fairness in income distribution. In this respect, the study offers a new approach that considers the ethical, moral, and social dimensions of debt relations, contributing to the strengthening of social integration and economic security. The Reconciliation Index's adaptability to different countries' conditions enables the study to be pioneering in this respect.

**Keywords:** Imperfect Competition, Justice, Reconciliation Index

**Jel Codes:** C51, D11, D63, P46

### Öz

Bu çalışma, hane halkı borç ilişkilerinde gecikmelerin sosyal ve ekonomik adalet açısından nasıl yönetilebileceğini incelemektedir. Bu amaçla, "Helalleşme Endeksi" adı verilen yeni bir ölçüm aracı geliştirilmiştir. Endeksin içeriği, 26 uzmanın görüşleri alınarak oluşturulmuş ve paranın değer kaybı hesabında, İçsel Faktörler: (Tüketici Fiyat Endeksi, Deflatör, Asgari Ücret Artışı, Konut Fiyat Endeksi) ve Dışsal Faktörler: (Gram Altın Fiyatı, Reel Efektif Döviz Kuru, Petrol Fiyatları) gibi ekonomik göstergeler dikkate alınarak hesaplanmıştır. Böylece endeks, etik temelli uzlaşmayı ve taraflar arasında adil bir denge kurulmasını amaçlayan normatif bir çerçeve sunmaktadır. Helalleşme Endeksi, yalnızca ekonomik göstergelere değil; aynı zamanda sosyal politika açısından toplumsal uzlaşma, tüketici hakları ve gelir dağılımında adalet ilkelerine de dayanmaktadır. Bu yönüyle çalışma, borç ilişkilerinde etik, vicdani ve toplumsal boyutları dikkate alan yeni bir yaklaşım sunmakta; sosyal bütünleşme ve ekonomik güvenliğin güçlendirilmesine katkıda bulunmaktadır. Helalleşme Endeksi'nin farklı ülke koşullarına uyarlanabilmesi, çalışmanın öncü bir nitelik taşımasına imkân vermektedir.

**Anahtar Kelimeler:** Adalet, Aksak Rekabet, Helalleşme Endeksi

**Jel Kodları:** C51, D11, D63, P46

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## Introduction

In economics, the market refers to the environment in which buyers and sellers exchange goods and services, and the ideal type of market is a perfectly competitive market. Perfect competition markets are based on the assumptions of atomism, mobility, homogeneity, and transparency. However, such markets are rare in real life, and deviations from perfect competition conditions are commonly observed; this situation is called imperfect competition. In imperfect competition markets, buyers or sellers can influence prices, which may lead to various injustices. Yet, for social harmony to be achieved, individuals must not pursue unjust gains. In such unfair situations, the state must intervene when necessary to protect the functioning of the economy. This is because the classical economic model's assumption that markets balance themselves according to supply and demand conditions does not always hold. Therefore, one of the state's primary objectives is to establish an economic order based on the flawless functioning of markets (Alp & Karakaş, 2008:215; Ökde & Demez, 2023:164; Öztürk & Bayraktar, 2009:75-76).

In mainstream economic theory, it is assumed that consumers behave rationally to maximise utility and firms behave rationally to maximise profit, and this assumption is a fundamental element of neoclassical economics. However, in imperfectly competitive markets, factors such as economic crises, failed policies, asymmetric information, adverse selection, transaction costs, price manipulation, and monopolistic market power often make it impossible for actors to behave perfectly rationally. Additionally, the rational decision-making process does not always ensure mutual consent and fair conditions, which can lead to market imbalance (Kamber, 2018:170, 172, 175, 176).

However, social justice and economic stability can only be achieved if individuals do not acquire each other's property by unjust means. In this context, the sustainability of financial and moral order depends on people respecting each other's rights (Sabitoğlu, 2024). If this situation cannot be achieved, for example, price manipulations, speculative fluctuations in foreign exchange, commodities, and securities that are akin to gambling, and differences in purchasing power between economies can lead to a loss of trust among individuals. In addition, inflation and deflator data may not always fully reflect the real financial fluctuations in the markets (Eğilmez, 2024; Özpolat, 2023:217-218). Where prices are not ethical and fair, individuals may obtain unjust gains (Selvi and Cavlak 2022:364). These differences can affect people's financial decisions, undermine trust, and make it difficult to find fair repayment solutions in borrowing and lending processes.

After humans began living in communities, they developed various forms of exchange. In these relationships, one party performs a certain act, while the other party generally pays in cash or goods; the parties take care to ensure that the relationship is fair and that no rights are transferred to the other party. In this context, the parties mutually waive each other's "residual" rights. In societies where Islamic culture is prevalent, this mutual waiver process is referred to as "reconciliation," and upon its realisation, the relevant right ceases to exist. On the other hand, while individuals live their lives according to different belief systems, they require the other party's acceptance of the price they believe they owe, i.e., consent and approval, within the framework of the religious, human, moral, ethical, and commercial rules that form the basis of their culture. This process can also be considered a type of reconciliation (Namlı, 2025; Polat, 2023). In the 20th-century global world, where economic interests are relatively prominent and capitalism and liberalism are dominant elements, the main reckoning is between individuals. However, not every legal right is halal, and what is important is not only reckoning but also reconciliation (Alatlı, 2015).

The most important question that emerges here is: What investment instruments can compensate for the loss of purchasing power and maintain purchasing power in inflationary environments? For example, can a portfolio consisting of alternative investment instruments contribute to ensuring fairness in economic relations by determining the loss of value of money as accurately as possible? There are two main reasons why these questions emerge. The first is the decline in the purchasing power of money during delays in debt repayments. The second is the returns that the creditor could obtain from effective investment instruments with the cash they would have if the debt were paid on time (Diler, 2020:370-372). In addition, the creditor may face negative consequences, such as being unable to fulfil their obligations, becoming unable to pay their debts, being forced to liquidate their assets, or going bankrupt due to economic imbalance.

Providing convenience to the borrower in repaying the debt and not demanding excess is a humane and conscientious approach; however, situations such as the borrower avoiding repayment while having the means to do so, investing their financial resources in different investment instruments, or the purchasing power of money decreasing by the time they can repay the debt, negatively affect the

creditor's economic rights, such as the inability to benefit from their property (El-Menî, 2008:244). Therefore, a more objective and transparent solution, closer to justice for both the debtor and the creditor, can be developed for debt repayments. The concept of the "reconciliation index", which is the subject of our article, can serve as a reference for finding solutions to problems (Baysal, 2024:69-70).

This study aims to ensure that delays in household debt repayments in imperfectly competitive markets are managed fairly. In this context, expert opinions are sought to accurately measure the loss of purchasing power. Especially in countries with high inflation, a definitive solution to this problem has not yet been developed, and there are no studies in the literature that directly focus on this issue. In this context, the article aims to fill an important gap.

## **Literature review**

The literature review on the subject will be examined under two main headings: historical context and theological context.

### **Law of obligations and delays in payments in a historical context**

#### **Law of obligations and delays in payments in Mesopotamia**

According to Article 117 of the Code of Hammurabi, people who could not pay their debts faced severe penalties. The debtor or a family member could be enslaved to the creditor for up to 3 years. Additionally, if the debt was not paid, the debtor's property, such as their fields and animals, could be temporarily transferred to the creditor (Genca, 2009:130). However, there were also provisions to protect the debtor in extraordinary circumstances such as drought or climate change. On the other hand, interest rates were capped at 25% in agriculture and 33% in mining to prevent usury from disrupting market equilibrium (Günay, 2015:49).

#### **Law of obligations and delays in payments in Ancient Greece**

In ancient Greece, lending money at interest was quite common, and there were various legal regulations for individuals who could not repay their debts. These legal regulations required free individuals to repay their debts through labour, which led to the emergence of a new form of labour-based slavery. On the other hand, Greek philosophers such as Plato and Aristotle considered interest to be a form of unjust gain that did not involve labour. (Günay, 2015:51).

A study by Sina (2016) states that individuals unable to pay their debts could be enslaved in Ancient Greece, but emphasises that Solon's reforms put an end to this practice. The study examines in detail how debt disputes were handled in court and the legal processes governing interest rates and debt repayment. In civil law cases, arbitrators (diaitetai) played an important role in resolving disputes over debts and contracts. In contrast, debt cases requiring quick resolution were handled by officials (eisagogeis) who initiated the proceedings. (Sina, 2016:419,422,431,435).

#### **Law of obligations and delays in payments in Rome**

Roman law developed over a long period, from 753 BC to 565 AD. Over time, the idea of responsibility changed: in the early days, strict liability prevailed, but later, fault-based liability became more important. Debt relationships were mostly set up through contracts, but people who couldn't pay their debts faced serious penalties. The nexum, Rome's oldest debt system, was a regulation requiring the debtor to submit to the creditor's authority to repay the debt through labour. During this period, debtors who could not fulfil their obligations were held personally liable and could be subjected to practices such as enslavement, seizure of property, or imprisonment. However, as Roman law evolved, these harsh practices were softened; they were abolished as contrary to human rights, and the principle of liability based solely on property was adopted. In the post-classical period, the debtor's liability was largely based on the principle of fault. It was determined by investigating whether they were at fault in the event of non-performance of the debt. In some contracts, a surety condition was required to secure the debt. On the other hand, while the debtor is not held liable if he cannot perform his obligation due to force majeure, his liability continues in cases of negligence, intent, failure to exercise due care, or concealment of assets from creditors. Furthermore, if a person has unjustly enriched himself as a result of the debt relationship, this situation is considered unjust enrichment, and the injured party has the right to claim compensation in the amount of such enrichment. These fundamental principles established by Roman Law have served as an important source in the formation of modern debt law systems (Sütken, 2003:1, 3, 10, 11, 13, 21, 27, 36, 72, 73, 76, 79, 80, 95). In Rome, as in the examples of the ancient Greek sophists Plato and Aristotle, the famous Roman public lawyer Cicero rejected usury and interest as unjust gains because they disrupted social balance (Günay, 2015).

### **Law of obligations and delays in payments in the Ottoman Empire**

In Ottoman law, debt (*karz*) relationships were regulated by Islamic law within the framework of the concept of "*karz-ı hasen*," meaning interest-free, voluntary assistance. Debt transactions were generally carried out using commodities such as gold, silver, and money; to establish the contract, the parties' declarations of offer and acceptance, and the delivery of the goods were required. These transactions were secured through written documents, witness statements, pledges, and guarantees. While a maturity condition could be imposed on the debt relationship, it was not considered legally binding, and the debt was always deemed due immediately. If the debtor lacks the means to pay, it is recommended that the impoverished debtor be granted a grace period; no other penalties or procedures are foreseen. However, if the debtor has the means to pay but delays payment, this is considered oppression, and the creditor has the right to apply to the judge to collect the debt. Since interest (*ribâ*) is strictly prohibited, it is not permissible to charge any additional amount due to a delay in repayment. Determining the value at which the debt should be settled in the event of an increase or decrease in the value of the loaned item after the contract is signed is a matter of particular importance in the context of inflation and interest rate debates; however, it remains a subject of disagreement. Even within the Hanafi school of thought, there are differing opinions on this matter. While Abu Hanifa and Imam Muhammad advocate the return of the same item, Abu Yusuf argues that the debt should be paid based on the item's value on the day of delivery, and this opinion has gained wider acceptance within the school. (Çetinkaya, 2015: 288,289,291,292,295,296,301).

In a study by Türkmenođlu (2022), monetary foundations, an institution unique to the Ottoman period, are examined with respect to their religious legitimacy, operating mechanisms, and economic functions. The prohibition of interest in Islam led to the search for alternative solutions to meet financial needs in Ottoman society. In this context, money foundations were structured in accordance with the principles of interest-free finance. They emerged as a unique and functional financial institution that brought together religious sensitivities and economic needs (Türkmenođlu, 2022:298,299,312).

### **Law of obligations and delays in payments in the Mecelle-i Ahkâm-ı Adliye**

During the modernisation of the Ottoman Empire's legal system, there was no consensus for a long time on whether Western law should be adopted or whether existing Islamic law should be codified. Eventually, the idea of creating a national law was adopted in 1855. As a result of reforms carried out between 1869 and 1876, the Mecelle-i Ahkâm-ı Adliye was prepared and implemented. The Mecelle, which presents the jurisprudential rulings of the Hanafi school of thought within a modern systematic framework, is recognised as the first and only written civil code in the history of Islamic law. This work, consisting of a total of 1,851 articles, is based solely on the jurisprudence of the Hanafi school of thought. No provisions from other schools of thought were adopted, as choices were made between the different opinions within the school of thought in accordance with the needs of the period (Ceylan, 2021; Ekinçi, 2019).

In Islamic law, it is fundamental that a debtor experiencing financial difficulties be granted a reasonable period to pay. However, if a debtor has the means to pay but refuses to do so, this behaviour is considered oppression. In such cases, it is accepted that coercive enforcement measures may be taken. In this context, some Islamic jurists argue that compelling the debtor to fulfil their obligations and, if necessary, imprisoning them is legitimate. On the other hand, a compensation claim is a legal remedy that compensates the creditor for losses incurred when the debt is not fulfilled at all or properly. In Islamic law, compensation for damages resulting from the debtor's negligent behaviour is accepted, and Hanafi jurists stipulate that, in cases of poor performance, the price must be refunded and damage compensated (Kaya, 1998).

### **Law of obligations (1926-present)**

Article 77 of the Turkish Code of Obligations No. 6098 addresses unjust enrichment. According to this article, a person who has become enriched at the expense of another without just cause is obliged to return the enrichment obtained. Articles 112 and 118 of the Code regulate the legal consequences and penalties arising from the non-performance of a debt. If the debtor fails to perform the debt despite being able to do so, the creditor may demand performance and enforce it through court proceedings. In cases of defective performance or default, the creditor has the right to claim compensation. Additionally, provided that it is explicitly agreed upon in the contract, if the debt is not performed at all or is not performed properly, the creditor may demand both the performance of the debt and the application of the penalty clause (Kesirikliođlu, 2006; Mevzuat Bilgi Sistemi, 2011).

According to Article 122 of the Law, if the creditor has suffered damages that cannot be compensated by default interest and the debtor cannot prove that he/she was not at fault in causing such damages,

the debtor shall be held liable for the damages in question. This type of damage is referred to as "additional damage." In its decisions numbered 2024/3534 E. and 2025/15 K., the 6th Civil Chamber of the Supreme Court stated that the creditor may claim from the debtor the damage caused by inflation resulting from the failure to pay the debt on time, which exceeds the default interest. The decision establishes that the creditor's damages are not limited to default interest alone and that additional damages are also included in the scope of compensation ("Yargıtay'dan emsal karar", 2025).

### **The modern approach**

The literature on current studies in Contract Theory (especially incomplete contracts), Behavioural Finance (debtor behaviour), and Financial Indexing is presented below.

Wilkie (1981) provides a comprehensive statistical analysis of price index behaviour in the United Kingdom to reveal uncertainties in long-term inflation forecasts. The study discusses the potential benefits of attributing financial instruments to the price index, particularly government bonds, life insurance contracts, and pension fund payments. The author suggests that such indexing can improve economic stability and confidence in the management of long-term contracts, and that it contributes to the literature on this subject.

Anderson (1999), in his analysis of Brazil, reveals that weak institutional structures and economic instability directly affect the design of financial contracts, and that, under these circumstances, firms prefer flexible, self-enforcing contractual mechanisms rather than traditional, restrictive provisions. The study shows that the form of financial contracts in developing countries is determined not only by the economic but also by the institutional environment; it shows that firms can develop effective financial arrangements in innovative ways despite high inflation and legal inadequacies. These findings support Smith and Warner's costly contract hypothesis and are based on the work of North (1990) and La Porta et al. (1997), in line with corporate economics approaches, which emphasise that financial innovations are not based on strong corporate structures but on the capacity to adapt.

Dërmaku et al. (2025) examined the legal and economic effects of late payment interest in business transactions in Kosovo. In the study, the uncertainty regarding whether late payment interest is compensation, punishment, or both, and the discrepancies in calculating it across different legal frameworks were discussed. In the qualitative legal analysis, Kosovo's Law on Commercial Transactions for Late Payments (05/L-110) and the Law on Debt Relations (04/L-077) were evaluated, and comparisons were made with the European Union directives. The findings show that although late payment interest is officially compensation, it also carries a punitive character due to the fixed 8% rate added above the reference rate. It is emphasised that this hybrid model leads to inequalities, especially in inflation-based old debts, and weakens legal certainty. The study stated that Kosovo's flawless responsibility model protects creditors but can create an overload on debtors. It proposed that interest rates be indexed to economic indicators for compensation and explicitly punitive purposes to increase fairness. This study offers important implications for legal reform, financial stability, and international cohesion.

The General Assembly of the Constitutional Court (AYM), in its decision No. 2024/41763 of July 8 2025, determined that the interest rates applied in the receivables cases of private law persons could not protect the real value of the receivables in an environment of high inflation and that this resulted in a violation of the right to property and the right to effective application. The Court emphasised that receivables depreciated because the annual interest rates determined under Law No. 3095 on the Law on the interest rate, and the interest rate of Temerrut, remained below the inflation rate. In an example case, the court proceedings filed against the bank by a citizen who bought a house under construction with a housing loan in 2010, despite the payment of the house, were considered a violation of rights by the AYM and the Turkish Parliament was instructed to make legal arrangements for 6 months to eliminate the depreciation of the debt due to inflation. In the reason for the decision, it was stated that the late collection of the receivable did not prevent the loss of value due to inflation in terms of the creditor, and in terms of the debtor, it led to the payment of the debt below its real value; thus, it was stated that similar applications were aimed to be solved with a structural approach. This decision provides an important example in the literature regarding the applicability of legal regulations and pilot decision-making mechanisms to protect the real value of receivables in an environment of high inflation (Gökçe, 2025; T.C. Anayasa Mahkemesi, 2025).

## **Law of obligations and delays in payments in a theological context**

### **Law of obligations and delays in payments in Judaism**

The issue of lending in Jewish law has been subject to various interpretations throughout history. Today, Jewish thought continues to prohibit interest within the community, but, in line with Maimonides' views, it considers charging interest to non-Jews to be a legitimate practice for preserving Jewish identity and ensuring economic autonomy. Additionally, in a historical context, Jews have considered it legitimate to compensate for financial losses through interest (Faslı, 2021:22-28).

According to the Jewish sacred text, the Talmud, the issues of lending and repayment were discussed in detail during the first to fourth centuries. According to the Talmud, if debts are not paid on time, the lender may resort to various methods to compensate for the loss. If the debtor is unable to pay the debt, they may make additional payments to compensate for the losses caused by the delay. The Talmud states that, in addition to the interest calculated on the loan to a foreigner, there is also deferred interest. The debtor may borrow from another source to make the payment and, after fully settling the debt, may offer the creditor a "gift." This gift is given to compensate for the opportunity cost incurred by the creditor's inability to use the money, and the Talmud deems this practice legitimate (Akalın, 2016: 370, 371, 372).

### **Law of obligations and delays in payments in Christianity**

In Christian law, the situation of a debtor failing to pay their debt on time is approached from different angles, including its moral, legal, and religious dimensions. According to the teachings of the New Testament, a true Christian is expected not to demand even the principal amount from the person to whom they have lent money and to show tolerance and understanding towards debtors who are unable to pay their debts. However, in practice, the state intervenes in the debt collection process within the framework of legal regulations; at the end of certain periods, the creditor can resort to legal action to compel the debtor to pay through enforcement proceedings (Akalın, 2010:1,2,5,7,8,9,12).

In medieval Europe, Thomas Aquinas, one of the leading thinkers of the Catholic Church, categorically rejected the practice of interest, considering it contrary to morality, natural law, and justice, regardless of religious, ethnic, or economic differences. He opposed the view that Jews could only charge interest to foreigners, basing his stance on the teachings of the Torah and the Bible, Aristotle's views, and the distinction between the use of goods in Roman law. According to him, since money is, by its nature, a commodity that is consumed through use, demanding a usage fee in exchange for lending it constitutes interest, which is deemed unlawful, unjust, and sinful. However, Aquinas, who considered it legitimate to charge a usage fee for lending durable goods, also accepted the profit obtained from the productive use of money as a legitimate claim by the capital owner (Samur, 2022:164,165,188).

### **Law of obligations and delays in payments in Islam**

In Islamic law, debt is considered both an individual and a social responsibility. The Prophet Muhammad (peace be upon him) emphasised the necessity of paying debts on time and encouraged leniency toward debtors experiencing financial difficulties. In hadith literature, it is stated that Allah will help those who borrow with the intention of repaying, while those who borrow with bad intentions will have their wealth become barren. Additionally, failure to repay debt on time is considered a form of oppression, and it is emphasised that those with the financial means should not delay repayment (Diyanet Haber, 2024).

In the Islamic financial system, delay penalties are applied as a deterrent against debtors who deliberately delay payments, but their legitimacy is controversial given the prohibition on interest. While classical fiqh generally argues that the borrowed item must be returned in kind, the Hanafi school of thought has adopted the view of Imam Abu Yusuf that the value of the money on the day of payment should be taken as the basis; this approach has formed the basis for contemporary discussions aimed at compensating the creditor for losses due to inflation. Although lending in Islamic law is based on the principles of mutual aid and social solidarity, borrowing without the intention to repay is strongly condemned, and delaying repayment despite having the means to do so is considered oppression. There are differing opinions among Islamic scholars regarding late payment penalties, with some considering them illegitimate. In contrast, scholars such as Ibn Taymiyyah and Ibn Qayyim have defended the compensation of losses. Contemporary fiqh councils have stated that such penalties should not be considered interest and that the proceeds should be transferred to charitable institutions. Some institutions, such as the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI), do not consider it permissible to impose penalties on debtors who have the means to pay. In contrast, authorities such as the Islamic Fiqh Academy and the Presidency of Religious Affairs of Turkey

consider it permissible to compensate for inflation differences and mitigate losses arising from delays under certain conditions. In practice, Islamic banks aim to ensure payment discipline among debtors through methods such as the value method, the deprived profit share model, and donation-based financial penalties. In this context, providing relief to debtors who are unable to pay is adopted as a fundamental principle in line with Islamic ethics (Dereci, 2020:132-141).

El-Menî (2008) states that individuals who have the financial capacity to pay their debts but fail to do so may be punished, as this constitutes oppression and extortion. In this context, it is emphasised that the debtor must compensate the creditor for the material loss and lost benefits incurred. Delaying payment despite having the financial means to do so is considered a transgression and punishable behaviour; penalties such as monetary compensation, the sale of property, and damage to commercial reputation have been proposed. It is stated that compensation must be paid directly to the creditor and that this practice should not be confused with the interest charged during the pre-Islamic period. On the other hand, it has been argued that debtors who lack the means to pay should be given a grace period, and that this approach is consistent with the principles of justice and fairness (El-Menî, 2008:244-260, 267-278).

Varelci (2023) evaluated whether inflation differences can be added to debts within the framework of Islamic law and revealed that there are different approaches among the schools of thought on this issue. Although inflation differences are mostly rejected, some opinions allow for loss sharing, amicable settlement, and termination of the contract. Today, however, views have emerged that deviate from classical approaches depending on economic conditions, requiring the inflation differential to be stipulated at the beginning of the contract or to be added at the time of payment. Nevertheless, it is emphasised that the difficulties in accurately calculating inflation do not render such discrepancies religiously binding, and that mutual consent between the parties is sufficient in such cases. On the other hand, approaches that suggest drafting contracts in alternative currencies that are not affected by inflation or are less affected by it are also noteworthy in the literature (Varelci, 2023:217, 218, 225, 235).

## **Reconciliation index**

### **Definition**

The Reconciliation Index can be considered a conceptual framework for assessing financial and moral settlements in light of historical, economic, and sociological dynamics. This index can be shaped by taking economic justice into account in cases of past debts and commercial enrichment that could not be fulfilled on time. At the same time, it can offer a perspective on social reconciliation, ethical financial practices, and the functioning of justice mechanisms. The Reconciliation Index can analyse not only the fulfilment of material obligations but also the potential effects of economic systems on trust-building and social peace through an interdisciplinary approach.

### **The need for a reconciliation index**

While justice, conscience, and ethical values are decisive factors in building social peace and trust among individuals, processes for redressing past injustices are generally based on subjective assessments. This situation increases the need for an objective measurement tool. The Reconciliation Index is an approach that systematically analyses individuals' and societies' attitudes toward confronting the past, establishing justice, and achieving reconciliation, and offers solutions. For example, let us consider the following cases and their proposed solutions.

**Case Study 1.** Person A paid half of the price of an apartment purchased from a construction company in advance and agreed to pay the remaining amount after delivery. However, the condo sustained moderate to severe damage due to an earthquake that occurred during construction. The seller company proposed to Person A either an 80% refund under the contract terms or continuing the contract on the condition that Person A cover the reinforcement costs. However, under the Turkish Code of Obligations, the contractor is obligated to take necessary technical and structural precautions within the scope of the duty of loyalty and care. Given that other buildings in the same area remained undamaged, the contractor's liability is legally contestable. In this situation, how would you have structured the contract terms at the outset to prevent financial loss?

To prevent financial loss and ensure fairness between the parties in such disputes, contracts should include provisions that detail force majeure situations and include technical, financial, and ethical safeguards. This situation minimises Person A's economic loss, while the reconciliation index can provide a fair solution in such cases.

**Case Study 2.** Person A purchased a female sheep suitable for breeding from Person B with the intention of paying for it a month later; however, due to financial difficulties, Person A was unable to make the payment on time. Three years later, Person A's economic situation improved, and Person A declared their intention to pay the debt. During this process, Person B suffered a twofold financial loss: the loss of the money's value and the loss of the sheep's breeding potential.

To prevent losses from delays in debt relationships and ensure fairness in similar situations, contracts should include compensation mechanisms to be activated in the event of delays. In this context, it may be recommended that the debt be recalculated and paid not only at its nominal value but also at market conditions prevailing at the time of payment (e.g., gold, inflation, or an animal value index). Such regulations contribute to establishing ethical and economic justice within the reconciliation index and strengthen social trust in debt relationships.

**Case Study 3.** Person A paid a deposit equal to one month's rent as required by the contract for an apartment rented from Person B for five years. At the end of the lease term, Person A requested the return of the deposit from Person B.

To prevent either party from suffering financial loss and to maintain economic balance, the refund amount should be calculated not only based on the nominal value but also considering the inflation effect and potential investment returns over the period. Such an approach preserves the real value of the money and provides a fair basis for resolving the dispute between the parties.

In line with the examples provided above, the development of a "Reconciliation Index" could be considered a regulatory mechanism based on mutual consent between the parties, aimed at achieving greater fairness.

In this regard, data from economic units can be analysed using specific weighting methods to create the Reconciliation Index. This index can serve as a systematic solution to reduce the injustices caused by payment delays in debt relationships.

Two fundamental situations emerge for individuals or institutions that are late in fulfilling their obligations under a debt or contract:

1- From a financial perspective, demonstrating understanding towards individuals or institutions that are disadvantaged and struggling to pay their debts can be evaluated within the framework of social solidarity, ethical responsibility, and moral obligations. In this context, restructuring, deferring, or waiving a portion of the debt is a humane and conscientious approach.

2- From the perspective of individuals or institutions that generate commercial profits, in cases where the delay in fulfilling a debt or obligation provides an economic advantage to the relevant party, this delay can be characterised as a moral violation of rights and even extortion. The intentional postponement of payments leads to the loss of rights for the other party and the unjust enrichment of the debtor. To prevent such situations and ensure a fair solution, it is crucial to achieve reconciliation through mechanisms such as the Reconciliation Index.

In this context, the need for the Reconciliation Index is clear to regulate economic relations between individuals and institutions within the framework of ethical principles and to ensure social justice.

### **The endogenous and exogenous factors to be considered in the index calculation**

When debts are indexed to a specific value, it should be accepted as a fundamental principle that the parties adhere to the terms agreed upon at the outset of the contract. In compensating for damages arising from late payment of debts, the aim should be solely to remedy actual damages and losses; in this process, the principles of justice and fairness must be strictly observed. In this context, the Reconciliation Index aims to produce fair and conscientious solutions based on mutual consent and declaration between individuals involved in the debt relationship, rather than seeking the highest returns seen in investment funds. The index is based on survey results informed by expert opinions, balancing human and legal responsibilities, and emphasising that parties with valid excuses should not be subject to unfair obligations.

The factors that can be considered in the index calculation can be classified as follows:

Endogenous Factors: Consumer Price Index (CPI), Deflator, Minimum Wage Increase, Housing Price Index.

Exogenous Factors: Gram Gold Price, Real Effective Exchange Rate (REK), Oil Prices.



## Method and findings

### Methodology

The study was carried out in accordance with the decision No. 6 of the Ethics Board of Iskenderun Technical University dated 03.03.2025. This article aims to develop the "Reconciliation Index" formula that accounts for the loss of purchasing power arising from delays in debt repayments in imperfectly competitive markets. The expert opinion survey method (Hofer, 1986) was used to develop the index formula. The reason for consulting experts in this study is that they can combine theoretical knowledge with practical application and experience. In this study, the 26 experts were selected through convenience sampling from the researchers' existing communication network. This non-probability sampling method was chosen because it is cost-effective and saves time (Golzar et al., 2022). Additionally, confidence in the benefits provided by this sampling method is maintained (Mullinix et al., 2015). The information about the experts who participated in the survey is presented in the table below.

**Table 1:** Experts' Educational Backgrounds

Educational Status	University	Master's Degree	Doctorate+
Frequencies	4	6	16

Of the 26 experts, 4 (15.38%) have a university degree, 6 (23.08%) have a master's degree, and 16 (61.54%) have a doctorate or higher degree.

**Table 2:** Expertise Field Information

Field of Expertise	Economics	Finance Economics	Finance	Portfolio Management	Other
Frequencies	11	3	6	2	4

Of the 26 experts, 11 (42.3%) are specialists in economics, 3 (11.5%) in finance, and 6 (23.1%) in both economics and finance. In addition, 2 participants (7.7%) are specialists in portfolio management. The field of expertise for four participants is listed as "other."

**Table 3:** Information on the Institutions Where Experts Work

Institution	University	Chamber of Commerce and Industry	Bank	Other
Frequencies	12	1	3	10

In addition, 12 of the experts (46.2%) work at universities and 3 (11.5%) work at banks. Furthermore, the distribution percentages of areas of expertise and institutions where they work, according to their educational background, are given below.

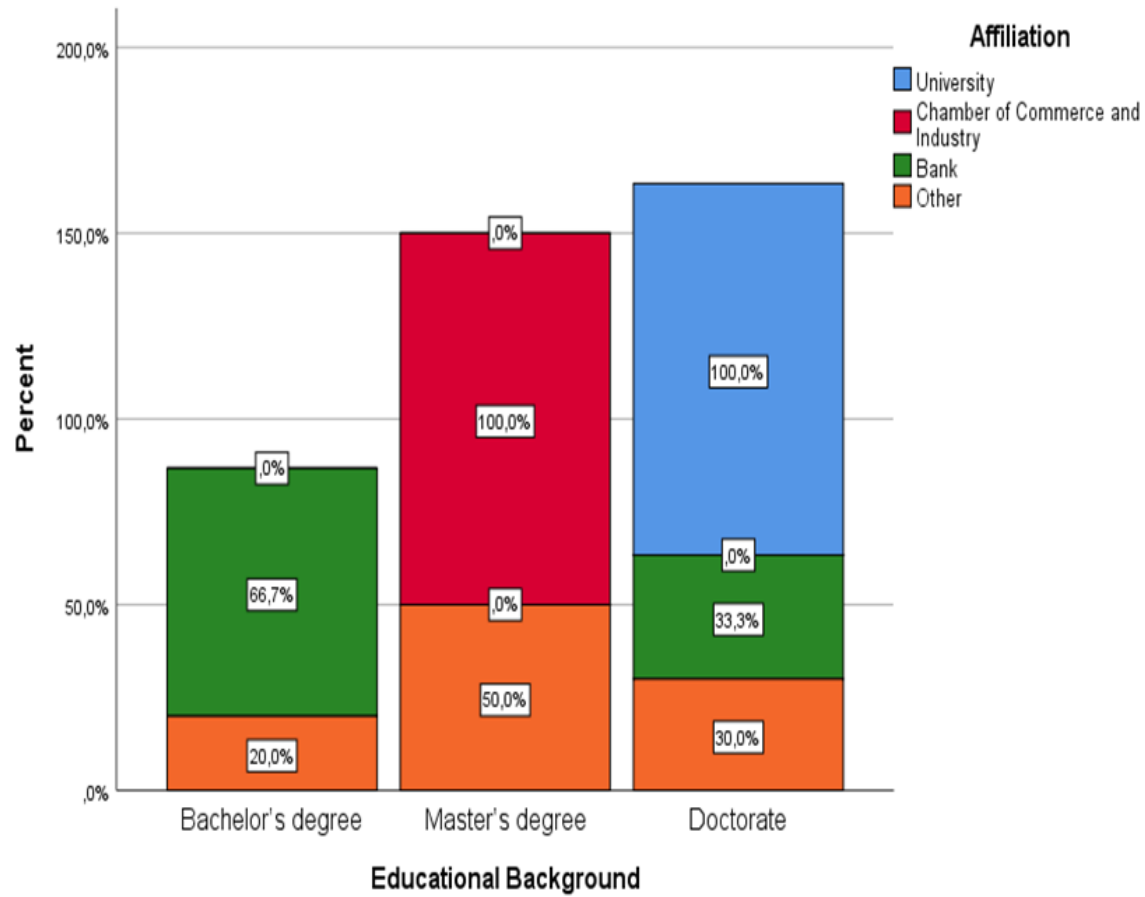


Figure 1: Distribution Rates (Percentages) of Employment Areas According to Educational Status

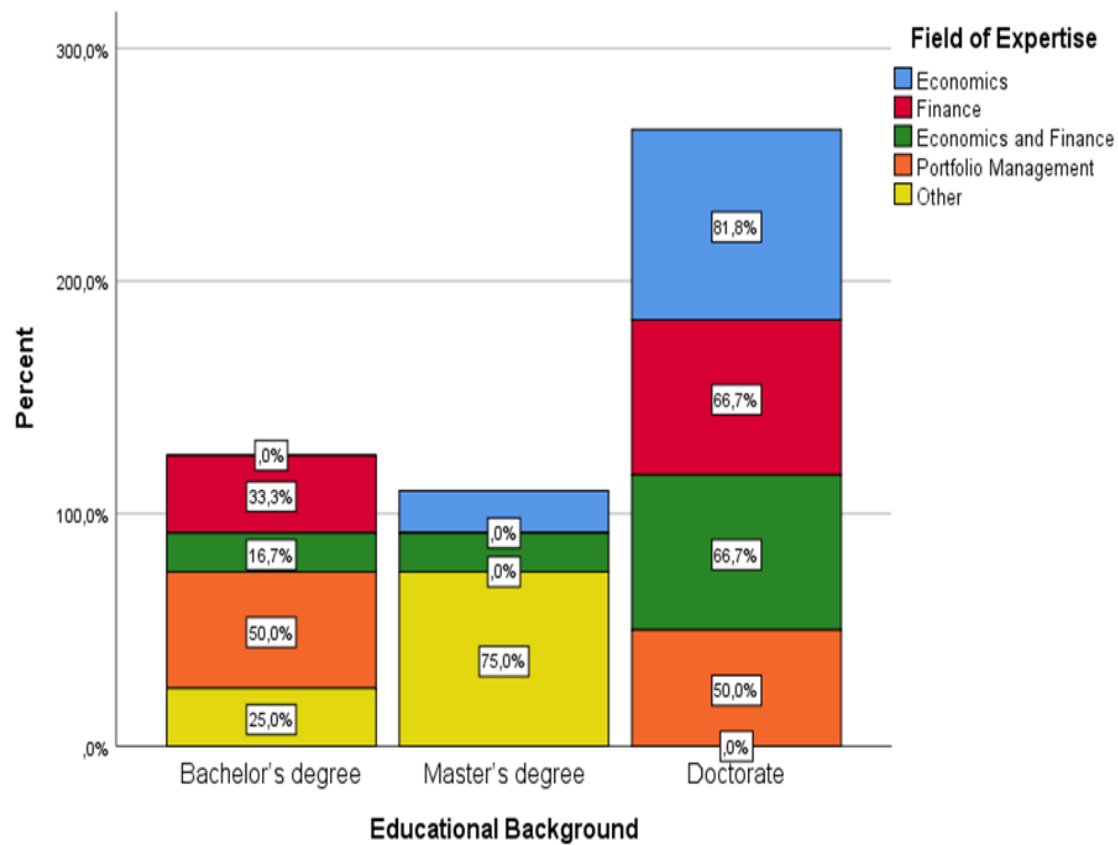


Figure 2: Distribution Rates (Percentages) of Areas of Expertise According to Educational Status

The index was created based on survey results obtained from experts, taking into account internal factors (CPI, deflator, minimum wage, housing price index) and external factors (gold prices, real effective exchange rate, oil prices). The Reconciliation Index can be updated over time and revised at certain intervals by including new data in the calculation. During updates, the weights may be kept constant or dynamically adjusted based on market conditions and economic indicators.

### Reconciliation index base year

In economic index calculations, the base year serves as the reference point for comparisons with other periods. When selecting the base year, criteria such as financial stability, low and stable inflation rates, stability in foreign exchange and gold prices, representativeness, and data availability are taken into consideration (Eurostat, 2025; Kızılca, 2017:27). When determining the most appropriate base year for Türkiye (2000–2025), we considered the 2001 crisis, the 2008–2009 global financial crisis, the volatility that began in 2013, the 2018 currency shock, and the high inflation of 2021–2022. In this context, the years 2010–2012, during which the global recovery from the crisis took place, with growth relatively stable and inflation relatively low, stand out as the most suitable base years for Turkey. In our study, the base year will be 2011:01 (Eğilmez, 2016; TCMB, 2025; TÜİK, 2025).

### Obtaining weights in the reconciliation index calculation

The experts were asked to rank the importance of factors in determining currency depreciation, and the following average results and standard errors were obtained.

**Table 4:** Average Rank Scores in Determining Currency Depreciation

Variables	Descriptions	Average Rank Score ( $s_j$ )	Standard Error
GP	Gold Price	2,50	0,365
REER	Real Effective Exchange Rate	3,77	0,365
CPI	Consumer Price Index	2,96	0,413
DEF	Deflator	5,19	0,400
MW	Minimum Wage	3,81	0,314
HPI	Housing Price Index	4,96	0,251
BP	Brent Crude Oil Price	5,88	0,361
Other	PPI, SAGP, BIST100, Dollar Exchange Rate	6,92	0,396

From the table above, the standard errors of the means are quite small. This means that the relative variance (coefficient of variation) of the rankings assigned by the experts for the relevant factors is low. In other words, we can say that there is homogeneity among the experts' opinions. However, more information is needed to investigate the agreement among experts. Therefore, (Kendall's Coefficient of Concordance) (Field, 2005) can be used to measure the agreement between rank scores. This coefficient is calculated as the ratio of the variability of the total rankings across the ranked factors to the maximum possible variability, and a small ratio indicates disagreement among experts (Odu, 2019). Kendall's coefficient of concordance, Friedman test statistics and probability values are given in the table below.

**Table 5:** Kendall's Goodness of Fit and Friedman Test Statistics

Test Name	Statistical Value	Probability
Kendall's W	$w = 0,378$	0.000
Friedman	$\chi^2 = 68,731$	0.000

In both tests, the agreement between the rank numbers is statistically significant. Kendall's coefficient of agreement was obtained as 0.378. The agreement among experts is partial; there is no complete agreement. However, we can say that there is a certain consensus on some variables and that this agreement is not accidental. The weights  $w_j, j = 1, 2, \dots, 8$  for the relevant factors are obtained as follows using the average rank scores obtained from the experts' opinions: (Odu, 2019).

$$w_j = \frac{(s_{mak} + 1 - s_j)}{\sum_{i=1}^n (s_{mak} + 1 - s_j)}$$

Here,  $s_{mak}$  is the maximum rank score, which is 8 in this study.  $s_j$  is the average rank score.

In other words,

$$w_{j1} = \frac{(s_{mak} + 1 - s_j)}{\sum_{i=1}^n (s_{mak} + 1 - s_j)} = \frac{(9 - s_j)}{\sum_{i=1}^8 (9 - s_j)}$$

These weights are referred to as the first weight and are listed in the table below.

**Table 6:** First Weights

Variables	Weights ( $w_{j1}$ )
GP	0.181
REER	0.145
CPI	0.168
DEF	0.106
MW	0.144
HPI	0.112
BP	0.087
Other	0.057

Another method for calculating weights is as follows (Odu, 2019).

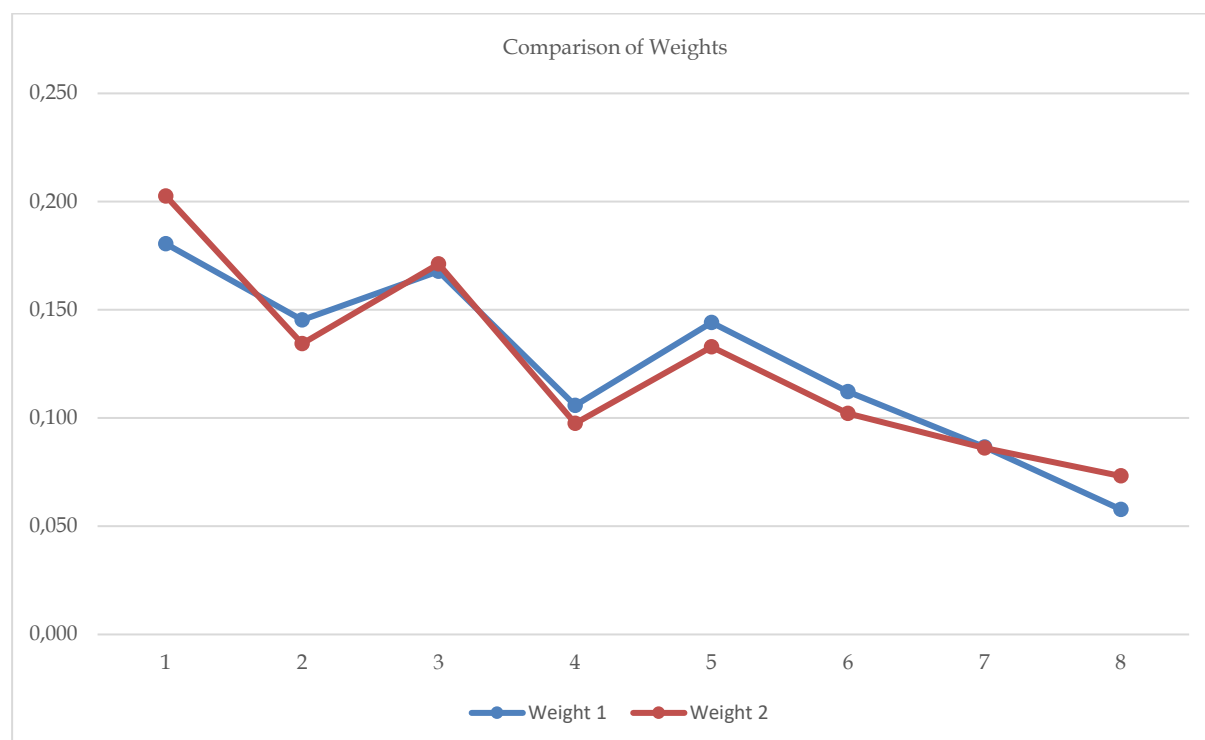
$$w_{j2} = \frac{1/s_j}{\sum_{i=1}^n (1/s_j)}$$

These secondary weights are listed in the table below.

**Table 7:** Second Weights

Variables	Weights ( $w_{j2}$ )
GP	0.203
REER	0.134
CPI	0.171
DEF	0.098
MW	0.133
HPI	0.102
BP	0.086
Other	0.073

These two weights are quite close to each other. The combined representation of these weights is given below.



**Figure 3:** Graphs of the First Weight and the Second Weight

Another way to measure the loss of value of money is to consider all relevant factors equally. At this stage, we can use expert opinions to test whether the weights of the pertinent variables are equal. The hypothesis tests are as follows.

$H_0$ : Weights are equal (Average rank scores are equal)

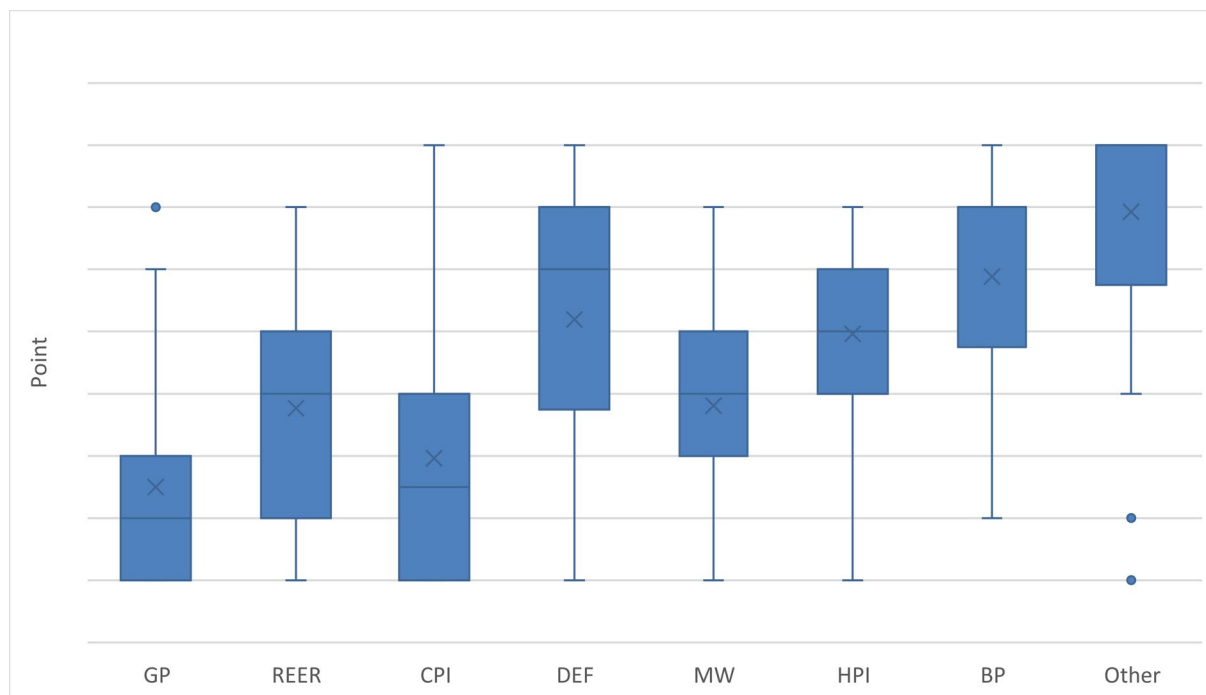
$H_1$ : At least one of the weights is different from the others. (At least one of the average row scores is different from the others.)

To test this hypothesis, it is necessary to assess the normality of the population distributions of the relevant variables to determine which parametric or nonparametric test to use. The normality assumption was tested using the Shapiro-Wilk test, yielding the following results.

**Table 8:** Normality Test Results for Relevant Variables (Shapiro-Wilk)

Variables	Test Statistics	Probability value (p)
GP	0,780	0.000
REER	0,923	0.053
CPI	0,835	0.001
DEF	0,914	0.032
MW	0,948	0.207
HPI	0,864	0.003
BP	0,833	0.001
Other	0,606	0.000

When Table 4 is examined, only the ASU and REK variables are normally distributed in the main group at the 5% significance level. The box-plot graphs for the relevant variables are shown below.

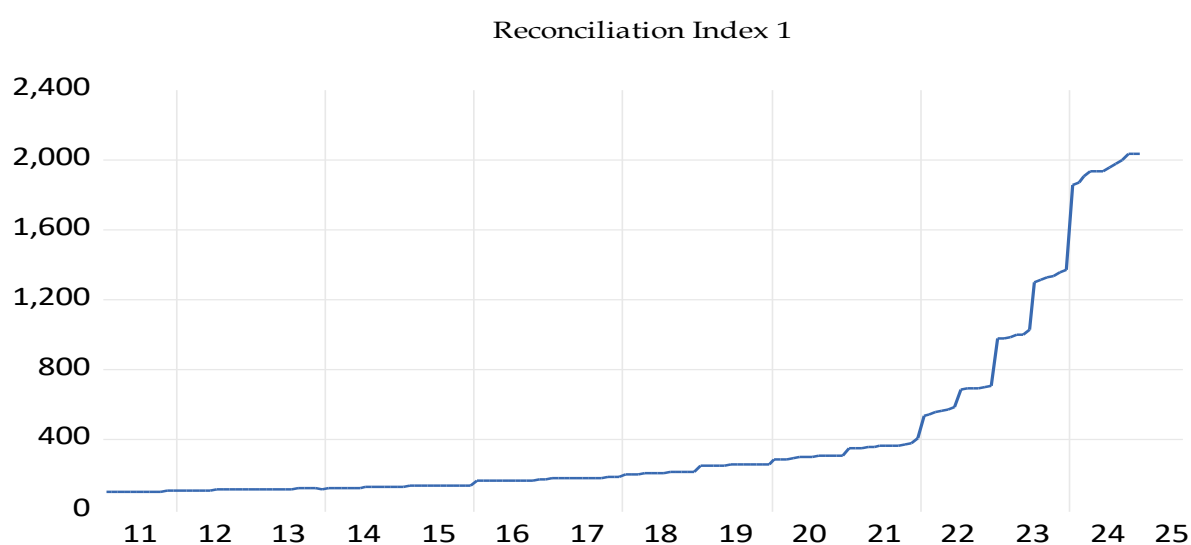


**Figure 4:** Box-Plot Graphs of Relevant Variables

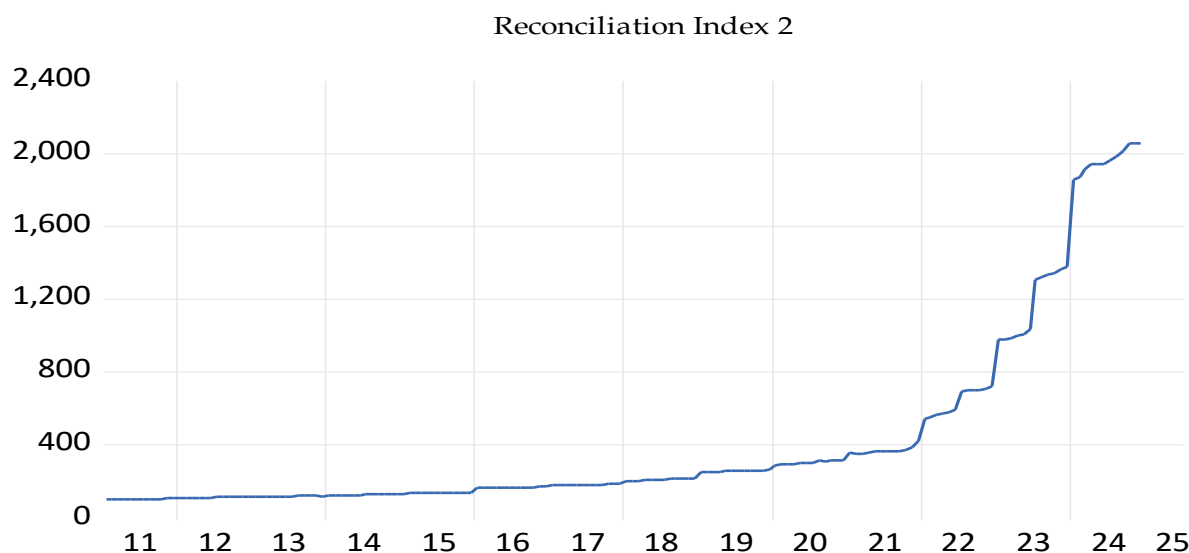
Because not all variables are normally distributed at this stage, the Kruskal-Wallis test was used to assess whether the relevant variables have the same median. The Kruskal-Wallis test statistic was obtained as 78.172. The probability value associated with this test statistic is zero. This means the central positions of the rank numbers differ, and therefore assigning the same weights to the variables would be an error. Consequently, the reconciliation index will be obtained using the weights obtained above. When expert opinions were examined, the average weight of the other variable was found to be nearly seven. Additionally, when asked what the different variable was, the experts voted for the Consumer Price Index (CPI), the Consumer Price Index (CPI), the BIST100, and the dollar exchange rate. Since the other variable was not extensively addressed by the experts and had a high average score (and therefore a low weight), it will be disregarded in the study.

### Reconciliation index values

Reconciliation values were calculated separately for each weight from January 2011 to December 2024. The reconciliation index was adjusted with January 2011 as the base year. The time-series graph of the reconciliation index values for each weight is shown below.



**Figure 5:** Reconciliation Index Values Obtained with the First Weights



**Figure 6:** Reconciliation Index Values Obtained with the Second Weights

When examining both graphs, the stepped structure of the shape is striking. This situation stems from the fact that some sub-component values are calculated on an annual or quarterly basis rather than monthly, and thus reflect the index, revealing that index values for short-term debts have not changed or have changed only slightly. Table 9 provides example scenarios for how the repayment of a debt taken on or due but unpaid at a specific date could be at the end of a particular period, using the reconciliation index.

**Table 9:** Repayment Amounts According to the Reconciliation Index (Reconciliation Index 1) in Sample Scenarios

Borrowing Date	Borrowing Amount	Borrowing Date	Borrowing Amount	Term
June 2014	32700	September 2020	79485,03	6 years 3 months
March 2011	32700	June 2017	59353,59	6 years 3 months
April 2018	1100	August 2023	6968,36	5 years 4 months
December 2011	20400	July 2017	34944,82	5 years 7 months
June 2016	42000	June 2022	144909,21	6 years
January 2013	42000	January 2019	88338,30	6 years
September 2020	20000	January 2024	120233,87	3 years 4 months

When Table 9 is examined, it is seen that the length of the debt period increases the amount to be paid, but it is not the only determining factor. The reconciliation index is stochastically dependent on the debt's start and payment dates. This situation stems from the linear transfer of the stochastic structure of the components of the reconciliation index to the index.

### Limitations of methods

The use of the Kendall Compliance Coefficient to determine consistency between evaluators is considered a methodologically appropriate and reliable approach. However, the study was conducted only in Turkey and lacked a comparative dataset spanning different countries and cultural environments, significantly limiting the generalizability of the findings. Therefore, consideration of diverse geographical and cultural contexts in future research will both enhance the validity of the conclusions and make stronger contributions to the international literature.

### Conclusions and recommendations

This study proposes the development of a conceptual framework, the "Reconciliation Index," to assess the financial and moral dimensions of delays in debt repayments in imperfectly competitive markets, within the context of historical, economic, and sociological dynamics.

The Reconciliation Index is based not only on economic indicators but also on social policy principles such as social consensus, consumer rights, and fairness in income distribution. In this respect, the study offers a new approach that considers the ethical, moral, and social dimensions of debt relations, contributing to the strengthening of social integration and economic security. The Reconciliation Index's adaptability to different countries' conditions enables the study to be pioneering in this respect.

This index can contribute to the analysis of payments promised in the past but not delivered on time, debt relationships, the concept of economic justice, and legal regulations. It is also considered beneficial for establishing trust in monetary systems and supporting social peace, beyond the fulfilment of financial obligations.

There are two basic situations in debt relations. In the first, the restructuring, deferral, or partial waiver of debt for economically disadvantaged individuals or institutions is evaluated in the context of social solidarity and moral responsibility. This approach is also appreciated from a religious perspective because it provides support to those in need. In the second case, debtors derive commercial gain from the debts they have incurred and deliberately delay debt payments. Such behaviour is considered unjust gain and a violation of rights. To prevent such negative outcomes and develop fair solutions, reconciliation mechanisms such as the Reconciliation Index can be established. As a matter of fact, in the decision of the General Assembly of the Constitutional Court dated July 8, 2025, and application number 2024/41763, it was determined that high inflation erodes the real value of the receivables. To resolve this situation, it was decided to enter into legal arrangements with the TBMM within six months to protect the real value of the receivables.

It is suggested that this index be created by taking into account internal factors (Consumer Price Index [CPI], deflator, minimum wage, housing price index) and exogenous factors (gold prices, real effective exchange rate [REER], oil prices) obtained from expert opinions and economic data. In cases of delayed debt payments, using this index as a reference could contribute to the fairer determination of initial payment terms. This approach could reduce disputes arising from debt transactions and promote a more equitable economic system.

As a result, in the event of payment delays in borrowing and lending processes for household consumers in imperfect competitive markets, although it may not always be possible to ensure full justice in repayments, the "Reconciliation Index" approach can be proposed as a fairer solution to mitigate the negative effects of the current system. Therefore, it is recommended that elements of conscience and reconciliation be added as a humanistic approach within the scope of financial literacy.

This study examined how delays in household debt relations can be managed in terms of social and economic justice, and it is recommended that future studies conduct fiqh evaluations of the subject.

#### **Peer-review:**

Externally peer-reviewed

#### **Conflict of interests:**

The authors have no conflict of interest to declare.

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#### **Ethics Committee Approval:**

Ethics committee approval for this study was received from Iskenderun Technical University, No. 1 of the Ethics Committee, on 03/03/2025, document number 6.



**Author Contributions:** Idea/Concept/ Design: **D.B.** Data Collection and/or Processing: **D.B.** Analysis and/or Interpretation: **D.B., N.Ç., E.E** Literature Review: **D.B.** Writing the Article: **D.B.** Critical Review: **D.B., N.Ç., E.E.** Approval: **D.B., N.Ç., E.E.**

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