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Ariel Fuchs, Hila Fuchs, Eliran Roffe. Small Amount Fallacy -Its Psychological Causes, Their Cumulative Destructive Effect, and the Mathematical Solution. ECONOMICS, MANAGEMENT & BUSINESS 2023 - CONTEMPORARY ISSUES, INSIGHTS AND NEW CHALLENGES., Faculty of Management and Business, University of Presov, Sep 2023, Starý Smokovec, Slovakia. pp.1047-1055. <hal-04750685v2>

**HAL Id: hal-04750685**

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**HAL Id: hal-04750685**

**<https://hal.science/hal-04750685v1>**

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# Small Amount Fallacy - Its Psychological Causes, Their Cumulative Destructive Effect, and the Mathematical Solution

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## Abstract

**Research background:** Behavioral economics and psychology have long explored human decision-making in financial contexts, particularly how individuals manage their expenses.

**Purpose of the article:** This article aims to introduce and explore the "Small Amount Fallacy," shedding light on how people often assess spending based on income proportion rather than actual value. It delves into cognitive biases like Diminishing Sensitivity and Loss Aversion, establishes a theoretical framework linking the fallacy to mathematical analogies, emphasizes its implications for personal finance and policy, and suggests avenues for future research to enhance financial decision-making.

**Methods:** Our approach is theoretical and concept-focused, involving an extensive literature review to build a robust theoretical framework rooted in Prospect Theory and mathematical analogies like the Geometric Point. While not collecting empirical data, we aim to provide a foundation for future research and practical applications, including behavioral interventions to reshape spending habits.

**Findings & value added:** The study uncovers a strong correlation between the mathematical concept of a point and the economic concept of small amounts of money, showcasing how these seemingly insignificant transactions cumulate into significant financial consequences. Understanding this transformation can positively influence financial outcomes and contribute to economic growth by recognizing the cumulative impact of small amounts.

**Keywords:** behavioral economics, small expenses, small amount fallacy, diminishing sensitivity, loss aversion, prospect theory

**JEL classification:** A12, C01, C02, C60, D14, D31

## 1. Introduction

Consider a scenario where a person earning a substantial income deliberates over purchasing a five-dollar cup of coffee. From a purely rational perspective, this expense might appear negligible when juxtaposed with their annual earnings of thousands of dollars. However, as this paper will elucidate, the small amount fallacy leads individuals to perceive such minor expenditures through a distorted lens. Understanding human decision-making in financial contexts has been a central focus of behavioral economics and psychology. Researchers have long been intrigued by how individuals perceive and manage their finances. This area of inquiry has led us to the emergence of the "small amount fallacy" concept suggested in this paper. Here, we will suggest calling the situation where people buy stuff under the assumption, based on the proportion to their income, that what they buy does not cost anything - the "small amount fallacy". We assume this fallacy can lead to detrimental financial consequences and a distorted perception of one's purchasing power. It can result in individuals needing to spend more time and underestimating the true financial impact of their purchases. The "small amount fallacy" concept introduces a cognitive phenomenon wherein individuals evaluate expenses based on their proportion to income rather than their absolute value.

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This leads to a tendency to perceive small expenditures as inconsequential despite their cumulative impact.

Behavioral economics has revealed that individuals often deviate from the rational economic model, making decisions influenced by cognitive biases and emotional factors. Cognitive biases have increasingly explained these deviations (Geiger, 2017). These theories and concepts collectively offer a framework for understanding the cognitive biases and decision-making processes that underlie the "small amount fallacy." They illuminate why individuals may judge their spending based on the proportion to their income rather than the absolute value and how these perceptions can impact financial behavior. Researchers have investigated cognitive biases that affect financial decision-making, such as confirmation bias, anchoring, and the availability heuristic. These biases can lead individuals to make suboptimal financial choices.

Behavioral economists aimed to challenge neo-classicists by examining alternative psychological processes that validated their counter-findings of irrational economic choices (Glimcher et al., 2009). Neuroeconomics works toward an integrated account of economic decision-making. Neuroeconomic research studies what occurs within the brain when an individual makes financial decisions. It is an interdisciplinary field, and it combines research from neuroscience, experimental and behavioral economics, and cognitive and social psychology that seeks to explain human decision-making, the ability to process multiple alternatives and to follow through on a plan of action. It studies how neuroscientific discoveries can guide models of economics (Glimcher & Fehr, 2013). Heuristics are cognitive strategies derived from previous experiences with similar problems. These strategies depend on using readily accessible, though loosely applicable, information to control problem-solving (Pearl, 1984). When an individual applies a heuristic in practice, it performs as expected but can create systematic errors (Sunstein, 2005). Heuristics cognitive strategies can be used when individuals can accept choices that are "good enough" for their purposes, although they could be optimized (Kahneman & Frederick, 2002). The evolution of heuristics cognitive processes is routed in risk situations without information; under uncertainty, heuristics can achieve higher accuracy with lower effort (Gigerenzer et al., 2011). We assume that spending a low amount of money daily is proceeding in a heuristic cognitive process that changes the small amount to "no amount".

### **1.1. Prospect Theory's Diminishing Sensitivity**

The term "small amount fallacy" may not have been formally coined in prior research, but the underlying cognitive processes have been observed and studied. Previous literature has touched upon the idea that people sometimes overlook the cumulative impact of small expenses relative to their income. The connection between the "small amount fallacy" and Prospect Theory's loss aversion and Diminishing Sensitivity has not been explicitly explored in existing research. This paper has the potential to contribute to this gap by formalizing and examining this concept. Prospect Theory is a foundational concept in behavioral economics. It provides insights into how individuals make decisions involving risk and uncertainty.

The notion we suggest in this paper is based on the "Prospect Theory" developed by Tversky and Kahneman (1992). The Prospect Theory explains how people make decisions involving risk and uncertainty. The first part of the Prospect Theory is the Diminishing Sensitivity, which posits that the emotional impact of gains and losses diminishes as they increase in magnitude. On the other hand, the Sensitivity to the nominal amount of money decreases because it assumes that the emotional impact of nominal gains and losses decreases as the amounts increase. This means that a small expenditure may be perceived as less important or influential at a certain moment than a larger one because it disappears within the overall financial movements.

Diminishing Sensitivity posits that the emotional impact of gains and losses diminishes as they increase in magnitude (Kahneman & Tversky, 1991). As wealth accumulates, people tend to become less sensitive to incremental changes in their financial situation. This can lead to decisions prioritizing short-term gains or losses over long-term consequences. On the other hand, the Sensitivity to the nominal amount of money decreases because it assumes that the emotional impact of nominal gains and losses decreases as the amounts increase. This means that a small expenditure may be perceived as less important or influential at a certain moment than a larger one because it disappears within the overall financial movements. Diminishing Sensitivity states that the emotional impact of gains and losses diminishes as they increase in size. Thus, the Sensitivity to the nominal amount of money as the amount increases. This means that a small expense may, at a given moment, be perceived as less important or influential than a

larger expense because it disappears within the overall financial movements. This is compared to the emotional impact of the positive experience, which has presence and power. Studies show that the emotional impact is getting smaller with repetition, but it is still much more present than the reduction in the nominal value of the expenditure. Those Small expenses, being nominal in value, may be overlooked as they appear less emotionally significant.

## **1.2. Prospect Theory's Loss Aversion**

Loss Aversion, a key concept from Prospect Theory, posits that individuals are more averse to losses than they are motivated by equivalent gains. This cognitive bias leads people to strongly avoid losses, even when they seem small in absolute terms. Loss Aversion (Schmidt & Zank, 2005; Abdellaoui et al., 2007) refers to how outcomes are interpreted as gains and losses where losses are more sensitive in people's responses than equivalent gains acquired. Kahneman and Tversky (1992) have suggested that losses can be twice as powerful, psychologically, as gains. When defined in terms of the utility function shape as in the Cumulative Prospect Theory (CPT), losses have a steeper utility than gains, thus being more "painful" than the satisfaction from a comparable gain. When spending decisions on small amounts, the perceived loss is so small, for example - the cost of a coffee, that although people double lose Sensitivity to gain sensitivity, the price of the coffee is so small that when you mentally double it, it still does not overshadow by the perceived gain - the enjoyment of the coffee. This leads people to pay more attention to the cumulative gain impact of these perceived small expenditures.

In the context of the "small amount fallacy" notion, we suggest that Prospect Theory's "Loss Aversion" concept can change how people look at small amounts using the mathematical analogy suggested here to "small amount fallacy" notion. We assume that when people acknowledge this analog, "loss aversion" will move the economic decision from spending a small amount of money. Because the attention will move from the small cost of each small expense to the destructive accumulation of that little money to very big money, debts, loans, and then consolidation of loans. By recognizing the similarity between the fallacy of small amounts and the numerical value of a geometrical point, individuals can grasp that these seemingly insignificant expenses can accumulate over time, resulting in substantial financial implications. Once people understand and embrace this analogy, their loss aversion tendencies will motivate them to make wiser financial decisions.

## **1.3 Mental Accounting**

Mental accounting, developed by Richard Thaler, helps explain how people categorize and evaluate economic outcomes using concepts like prospect theory and transactional utility theory. This process involves creating mental accounts for managing spending and resources and influencing buyer decisions and reactions to financial outcomes. Mental accounting is a self-control strategy, with people allocating money to accounts for savings or expenses. This approach can lead to loss aversion and cognitive biases affecting consumer rationality. Understanding mental accounting sheds light on resource-based decision-making and reactions to similar outcomes (Zhang & Sussman, 2018; Chen et al., 2013).

In mental accounting theory, framing effects shape how individuals subjectively perceive transactions, affecting the utility they expect (Cartwright, 2018). This concept is intertwined with prospect theory, frequently utilized by mental accounting researchers to analyze the value function (Thaler, 1985). In prospect theory, the value function is concave for gains, promoting risk aversion due to diminishing marginal utility as gains accumulate. Conversely, it is convex for losses, encouraging risk-seeking behavior to avoid the more detrimental impact of losses compared to equivalent gains. This highlights the concept of loss aversion, where people prioritize avoiding losses over seeking gains (Thaler, 1985; Cartwright, 2018).

## **1.4 The Suggested Mathematical Analogy**

The parallels between mathematics and economics stem from both fields' logical consistency and abstraction. Mathematics provides a framework of well-defined principles and concepts that can be universally applied. We can leverage this logical consistency to apply mathematical reasoning to economic situations by drawing parallels between scenarios (Karlin, 2003). Mathematical abstraction distills specific details into general concepts, as in economics. Applying mathematical reasoning to economics has yielded successful economic models. These models use mathematical techniques and principles to represent and analyze complex economic systems. Incorporating mathematical concepts

enhances analytical power and captures intricate economic dynamics. The accuracy of these models validates the parallels between mathematics and economics, enabling systematic analysis and policy recommendations (Sun, 2022).

Economic theories and models based on mathematical concepts have been tested against real-world data, providing accurate explanations and predictions. It underscores the practical importance of logical reasoning derived from mathematics in understanding and analyzing economic phenomena (Karlin, 2003). The suggested analogy between the suggested Small Amount Fallacy and the numerical value of the geometric point emphasizes the importance of recognizing the collective influence of seemingly small expenses in shaping an individual's overall financial landscape. To illustrate it, the geometric point in mathematics, where a point has no dimensions, is integral to the structure of geometric shapes. Similarly, while seemingly insignificant in isolation, small expenses are crucial in an individual's financial landscape. In personal finance and economic decision-making, individuals often encounter a peculiar cognitive phenomenon, which we propose to term Small Amount Fallacy, that affects how they perceive and handle seemingly inconsequential expenditures in the grand scheme of their financial landscape. This phenomenon revolves around the propensity of individuals to make cognitive judgments about their spending based on the proportion of a cost to their income rather than its absolute value. As the geometric point has no dimension in personal finance and spending behavior, we can draw a parallel to the absence of the perceived economic dimension of the Small Amount Fallacy. Moreover, just as a point contributes to the geometry it defines, small expenditures play a vital role in shaping an individual's overall financial landscape, although seemingly devoid of significance in isolation. These small expenses, like points, may be individually imperceptible but collectively define Geometrical shapes, as these small expenses can define one's financial situation.

In mathematics, points collectively form lines, lines collectively form shapes, and shapes collectively form structures. Similarly, small expenses, when collectively accumulated over time, contribute to an individual's overall debts, and accumulated debts collectively define the individual negative economic landscape. While a single coffee purchase may seem trivial to an individual who earns much more in a month than that coffee's price, a series of such expenses in a day can accumulate to a much higher amount in a single day.

While a coffee purchase, for example, may seem trivial to a person earning much more in a month, a series of such expenses can add up to a much higher amount in a single day. Whenever a purchase is made for an amount smaller than the amount the individual defines as a real expense, the individual will not have a sense of money each time. So, the amount defined as lower than that minimum threshold can be the basis for purchases several times a day without the individual having a sense of money or the same warning that a large, unplanned expense is being made. However, the problem worsens because this expense can be made several times a day, several times a month. If the person spends three times a day during each day an expense lower than the minimum threshold, then it is possible to reach 90 such expenses in one month. Let us say that spending 5 dollars for a person who earns 5000 dollars is considered to lack a dangerous economic dimension; he can reach 90 times this amount "under the radar of danger". In the case of the example, it adds up to almost 10% of the monthly salary, which could be a serious blow to the monthly budget. So, just as points are crucial for defining geometric structures, small expenses play a structural role in an individual's financial life. They contribute to the overall budget, financial goals, and long-term well-being.

Furthermore, recognizing the significance of these small expenses may be essential for financial decision-making. In this way, the Geometrical Point Analogy underscores the importance of acknowledging the role of small expenses in shaping an individual's financial landscape. While they may appear minuscule, their cumulative impact can have profound implications for financial well-being, akin to how points collectively define the geometry of shapes and structures.

### **1.5 From Concept of Zero to Geometric Progression**

In mathematics, zero is a fundamental concept representing absence or zero value. "Zero's null-like nature... on the one hand, it is a bona fide cardinal number, yet on the other, it is linked to ideas of nothingness and non-being" (Barton, 2020, p. 3823). It is often represented as a point on a number line. As a mathematical point, zero is unique as it marks the origin or starting point from which numerical values are measured in both positive and negative directions. "Mathematically, a concept of zero plays a significant role in our natural, integer, and real numbers theories. For instance, when considering an algebraic structure (e.g., a group) under addition, zero often serves as the identity element (since for any

number  $n$ ,  $n+0=n$ )" (ibid.). When we consider the concept of zero as a point, in terms of accumulation, it is transformed from a point to a line. This transformation occurs through the process of repeated accumulation. Let us examine this transformation in more detail. "Philosophically, our understanding of zero is tied up with classical questions concerning the status of non-being" (ibid.). Zero can be a mathematical point on a number line separating positive and negative values. As a point, it has neither magnitude nor direction.

As Barton, 2020 (p. 3823) states, "We will examine the epistemology and metaphysics of zero concerning the cardinal number zero, whereby cardinal numbers we mean those numbers that correspond to responses to questions of the form "How many  $\Phi$ ?" where  $\Phi$  is some descriptor of a collection of discrete individuals. We will use the term "collection" in this paper to talk about any collection-like reference to objects, for example, we could be referring singularly to a (semi) set of some objects, plurally to those objects considered together". The concept of zero begins to change through repeated accumulation to a collection of  $\Phi$ . Accumulation refers to the gradual addition or aggregation of quantities over time. In mathematics, accumulation can be thought of as repeatedly adding small steps to a starting point. As these steps accumulate, the point representing zero gradually becomes a line. This line represents the accumulation of values over time. Each incremental addition helps to lengthen the line, creating a continuous representation of accumulation. The line that emerges from the accumulation process represents the evolving quantity that results from repeated additions. It shows the evolution from zero, the non-existence of a quantity, to a continuous and measurable range of values. This transformation illustrates the importance of repeated accumulation in mathematics. This concept of transforming zero into a line through repeated accumulation can be applied to various mathematical contexts, such as infinitesimal calculus, where integration involves the accumulation of infinitesimally small increments to determine the total value. Like the Adding Up Pieces model (Ely, 2017).

Mathematical induction is a logical reasoning technique used to prove statements about mathematical objects that hold for infinite cases (Telloni & Malara, 2021). In the context of converting zero to a line, mathematical induction can be used to prove the validity of the conversion for each successive increment. Using mathematical induction, we can prove that adding a small increment, starting at zero, results in a new value that extends the line. Continuing this process, each additional addition lengthens the line formed by the accumulation. The logical conclusion from mathematical induction ensures that the transformation from a mathematical point to a line holds for any number of increments (ibid.).

Geometric progression is a sequence of numbers where each term is created by multiplying the previous term by a fixed ratio. The accumulation process can be considered a geometric progression when converting from zero to a line, where each increment is added based on a fixed ratio or proportion. Let us think of the accumulation process as a geometric progression. We can analyze the behavior of the line and determine its length or size based on the number of increments added and the ratio of each increment (Grabner, 1983).

## **1.6 From a Two to Three-Dimensional Forms on Coordinates**

The transformation from a two-dimensional to a three-dimensional form, mathematically and economically, carries significant implications. Mathematically, this transformation involves introducing an additional coordinate, typically denoted as  $Z$ . In three-dimensional space, objects can be represented with depth, height, and volume, enabling the study of spatial relationships and other properties inherent to three-dimensional geometry. In the economic context, the transition emphasizes the critical importance of accumulated money reaching a positive or negative pivotal point.

The transition from a two-dimensional to a three-dimensional financial form represents expanded possibilities, increased complexity, and the potential for financial independence. It emphasizes strategic decision-making, effective risk management, and achieving long-term financial goals. Reaching this critical point signifies personal goal attainment, freedom from financial constraints, and a solid foundation for the future. The three-dimensional representation reflects expanded financial capacity, flexibility, and autonomy. On the negative side, regarding significant expenses as "zero" can lead to reckless spending habits and a lack of financial awareness. Ignoring the cumulative impact of expenditures can result in a positive balance and financial stability. Recognizing the value of even small expenses is crucial for responsible financial management and long-term goal achievement.

## **1.7 The Positive Side - Accumulated Wealth**

Psychological flexibility (Fuchs, 2022) for shifting the attention from the zero cost of something we will gain to the accumulated effect and debt we will find ourselves because of it. Nevertheless, we assume that once people can see it, using the mathematical analogy that examines this so well will give people the power to shift the focus needed for the gain for free to the accumulated deep debt. Moreover, once we manage to do it, we can move their attention from the deep debt to the positive side of the mathematical analogy coordinates - where accumulated wealth is situated. Managing accumulated wealth becomes challenging as the financial form transitions from a line to a more complex shape. Diversifying, risk management, and asset allocation are necessary to maintain and grow financial form. The complexity of accumulation requires informed decisions, considering income fluctuations, spending patterns, interest rates, and investments. Techniques like financial modeling and data analysis help individuals gain insight into their financial form's structure and dynamics. The multidimensional nature of the financial form incorporates time, investments, income sources, and liabilities, enabling long-term planning for financial stability. Transitioning from a simple line to a complex form signifies increased financial decision-making complexity. Evaluating risks and rewards becomes essential, necessitating diversification and understanding the impact of changes. Long-term financial planning becomes crucial for aligning decisions with goals. Preserving and growing wealth requires prudent investment decisions and adapting to market conditions. Recognizing the implications of this transition helps individuals build financial security, seize opportunities, and create a positive impact for future generations through legacy planning and philanthropy.

## **2. Methodology**

Our paper is focused on theoretical analysis and does not involve collecting data but aims to develop a concept with potential implications for future research and behavioral change. Our methodological approach is rooted in theoretical analysis and concept development. We aim to provide a robust theoretical basis for understanding the "Small Amount Fallacy" while highlighting its potential for practical applications and future empirical research. This approach paves the way for a comprehensive exploration of the concept's impact on financial decision-making and its potential to drive positive behavioral changes in personal finance.

This section outlines the methodological approach employed in exploring the "Small Amount Fallacy" concept. Our approach is primarily theoretical and conceptually oriented, aiming to lay the foundation for future empirical research and practical applications related to behavioral economics and personal finance.

**Literature Review:** Our methodological approach begins with a comprehensive review of the existing literature in behavioral economics, cognitive psychology, and financial decision-making. We analyze relevant theories and concepts, such as Prospect Theory, Diminishing Sensitivity, and Loss Aversion, to identify gaps and potential connections that can explain the "Small Amount Fallacy."

We synthesize the findings from the literature review to develop a theoretical framework for understanding the "Small Amount Fallacy." This involves integrating concepts from various sources to explain the cognitive biases and psychological mechanisms that underlie this phenomenon.

**Mathematical Modeling:** To illustrate the cumulative impact of small expenses, we construct a mathematical analogy related to the numerical value of the geometric point. This analogy is a theoretical tool to visualize and explain how seemingly trivial expenses can accumulate into significant financial consequences.

**Implications for Behavioral Change:** While our primary focus is on theoretical development, we discuss the practical implications of our conceptual framework. We explore how understanding the "Small Amount Fallacy" can inform financial education programs, policy interventions, and behavioral change initiatives.

**Future Research Directions:** In this methodological approach, we emphasize the importance of our work as a foundation for future empirical research. We suggest that future studies can validate our theoretical framework through data collection and behavioral experiments, ultimately assessing its effectiveness in changing spending habits.

## **3. Results: Small Amount Fallacy Theoretical Framework**

The "small amount fallacy" is a cognitive phenomenon in financial decision-making characterized by individuals making judgments about their spending based on the proportion of a cost to their income rather

than its absolute value. This leads to the tendency to perceive small expenditures as insignificant or negligible, even when cumulatively, they can substantially impact one's financial well-being. This framework seeks to elucidate the concept and its underlying psychological mechanisms.

Theoretical Framework Key Principles:

Individuals tend to evaluate expenses not in absolute terms but concerning their income or financial context. The proportion of an expense to one's income is often more salient than the absolute cost of the expense.

Loss aversion, a concept from Prospect Theory, explains that people are more averse to losses than they are motivated by equivalent gains. This bias can lead individuals to prioritize avoiding small losses, like the cost of a coffee, even when it might seem inconsequential relative to their income. Diminishing Sensitivity posits that the emotional impact of gains and losses diminishes as their magnitude increases. Small expenses may be perceived as less emotionally significant because they disappear within the broader context of financial movements.

The "small amount fallacy" hinges on the cumulative impact of repeated small expenses. While a single small expense may seem trivial, the aggregate effect can be substantial over time. Failure to recognize the cumulative impact of these expenses can result in financial mismanagement, especially when they recur frequently.

Cognitive biases like anchoring and framing can exacerbate the "small amount fallacy." For example, suppose individuals anchor their perceptions of a reasonable coffee price to a high-end coffee shop. In that case, they may be more willing to spend on expensive coffee without realizing the cumulative cost.

The degree of financial literacy and awareness plays a role in how individuals perceive and respond to small expenses. Those with higher financial literacy may be more attuned to the cumulative impact and make more informed decisions.

Cultural and societal factors and personal financial goals can influence the degree to which the "small amount fallacy" affects individuals.

To illustrate the cumulative impact of small expenses, we employ a mathematical analogy linked to the numerical value of the Geometrical Point. This analogy serves as a theoretical tool, providing a visual explanation of how seemingly inconsequential expenses can amass into substantial financial consequences. This mathematical analogy not only helps change the perspective on financial risk but also demonstrates how a lack of dimension can become a tangible reality through persistence and repetition. Moreover, it showcases the potential for economic transformation, illustrating how one can shift from a negative financial reality to a positive one.

#### **4. Discussion: Small Amount Fallacy – Insights and Implications**

The results of our research offer valuable insights into the psychological and behavioral underpinnings of financial decision-making. It underscores the complexity of financial decision-making and the significant role that seemingly insignificant amounts play in shaping individuals' economic outcomes. Addressing the "small amount fallacy" requires a multifaceted approach that combines financial education, awareness-building, and effective visual tools like mathematical modeling. By understanding the psychological mechanisms, we can empower individuals to make more informed and responsible financial decisions, ultimately contributing to improved financial well-being and economic stability. We can draw several significant conclusions and implications by examining the theoretical framework and key principles.

Our findings confirm that individuals often assess expenses concerning their income or financial context, not in isolation. This proportionality bias can lead to perceiving small expenses as insignificant, even when they collectively impact financial well-being. This highlights the need for financial education emphasizing absolute value and encouraging a holistic view of expenses.

The observed impact of loss aversion and diminishing sensitivity on the "small amount fallacy" reinforces the idea that people are more inclined to avoid small losses than to pursue equivalent gains. To address this bias, financial literacy programs should focus on building resilience against loss aversion and promoting a more balanced assessment of expenses.

Our research underscores the importance of recognizing the cumulative effect of small expenses over time. The failure to do so can lead to financial mismanagement, especially when these expenses recur frequently. Encouraging individuals to track and consider the long-term implications of their spending habits is crucial.

Cognitive biases like anchoring and framing can exacerbate the "small amount fallacy" by distorting individuals' perceptions of reasonable expenses. Mitigating these biases may involve raising awareness of how they influence spending decisions and encouraging individuals to reconsider their reference points.

The role of financial literacy and awareness in shaping responses to small expenses cannot be overstated. Our findings suggest that those with higher financial literacy may be more attuned to the cumulative impact of small expenses and make more informed decisions. Therefore, investing in financial education programs is pivotal to addressing the "small amount fallacy."

Cultural, societal, and personal factors significantly influence the degree to which individuals succumb to the "small amount fallacy." Tailoring financial education and intervention strategies to consider these influences is essential for their effectiveness.

The mathematical analogy, employing the geometric point concept, is a powerful tool for illustrating the cumulative impact of small expenses. It not only shifts perspectives on financial risk but also demonstrates the potential for economic transformation through persistence and repetition. This visual representation can be incorporated into financial education curricula to enhance understanding and promote responsible financial behavior.

## Conclusions

In Behavioral Economics, individuals often exhibit irrational behaviors and neglect the long-term consequences of their actions (Sunstein, 2013). From a budgetary and economic management perspective, recognizing the significance of seemingly inconsequential amounts and incorporating them into financial planning can enhance financial well-being. The formalization and exploration of the "small amount fallacy" concept represent a novel contribution to the field. This scientific understanding may be one of the most intriguing factors of economic suffering in the developed world. It explains why people all over the developed world have very good salaries but live in debt and suffer every month trying to understand where their money disappears. It can also have practical implications for personal finance, budgeting, financial literacy programs, economic policies, and financial product design, ultimately promoting more informed financial decision-making. Policymakers can benefit from understanding how small amounts impact the economy, especially in initiatives aimed at poverty reduction or income equality. Policies such as microfinance and support for small businesses can leverage these amounts to stimulate economic growth. Financial institutions can offer tailored products like micro-loans and micro-savings accounts to cater to individuals with limited resources, promoting financial inclusion. As proposed in this paper, the formalization and exploration of the "small amount fallacy" concept represent a novel contribution to the field. Prior studies have touched on related cognitive biases and spending behavior but may have yet to address this specific fallacy explicitly. Understanding the "small amount fallacy" can have practical implications for personal finance, budgeting, financial literacy programs, economic policy considerations, and the design of financial products and services. This research aims to promote more informed financial decision-making by shedding light on this cognitive bias. By recognizing the long-term consequences of seemingly insignificant expenses, individuals will be more inclined to prioritize their financial well-being, moving from short-sighted spending habits to informed choices and financial stability.

The study underscores the importance of recognizing the impact of seemingly insignificant amounts in economic contexts, shedding light on debt accumulation dynamics and its implications for economic growth. It emphasizes the importance of continuous additions and their cumulative effects on individual and societal financial outcomes. This study bridges mathematics and economics, offering insights into financial accumulation and its role in shaping economic outcomes. Exploring parallels between mathematical concepts and economic scenarios provides a unique perspective on financial strategies, risk assessment, and long-term planning. The theoretical framework developed through conceptual construction empowers individuals and policymakers to make informed decisions, optimize financial outcomes, and promote economic stability.

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