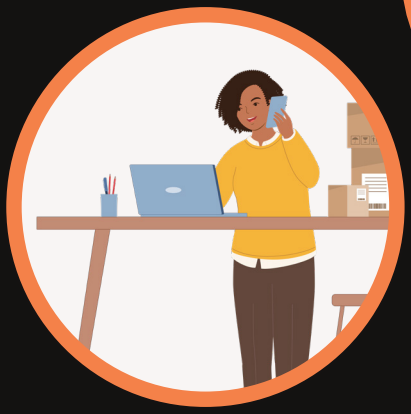
INSIGHTS REPORT

Behavioral sciences to smooth MSEs' income volatility in Colombia







strive

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Acknowledgments

This report was produced with support from the MasterCard Center for Inclusive Growth as part of the MasterCard Strive initiative in Colombia. Its contents do not necessarily reflect the views and policies of Mastercard's Center for Inclusive Growth.

This document was prepared by: Hans Frech La Rosa, Emma Martínez Daniel, Toni Castro-Cosío, Shaila Güereca Guzmán and Daniela Jimenez Lara.

We are also grateful for the support from Fundación Capital and ANIF Centro de Estudios Económicos in the review of this report.

List of Abbreviations

MSEs	Micro and small enterprises
MSMEs	Micro, small and medium enterprises
SMEs	Small and medium enterprises
COP	Colombian pesos
GDP	Gross domestic product
SFD	Small Firm Diaries
FSP	Financial service providers

Executive Summary

Micro and small enterprises (MSEs) are the backbone of the Colombian economy, driving growth and employment, while also facing unique challenges. Primary among them is income volatility, which threatens their stability, growth and even existence. **MSEs experience intense monthly expense (57%) and revenue (52%) fluctuations, with operating margins varying by as much as 100%** (Eplee et al., 2023). The resulting financial constraints are further compounded by MSEs' behavioral responses to volatility, which are shaped by the cognitive biases and perceived frictions that surround the formal financial system in Colombia.

1. Only 11% of micro firms in Colombia use checking accounts and 89% report not using any technology in their business. This reluctance is partially due to a strong precedent for cash and behavioral inertia.
2. Beyond structural exclusion and marginalization from formal capital and credit systems, MSEs are further burdened by complexities within systems, a mistrust for financial institutions and inflexible options. Consequently, they struggle to access the right forms of credit.
3. Where saving is possible, biases, difficulties in mental accounting and perceived lack of control over the future reduce the likelihood that MSEs direct funds to savings. Income volatility further aggravates their capacity to establish and maintain savings habits.

The consequences of income volatility for MSEs extend beyond business, bleeding into individuals' personal finances and psychological state. Severe fluctuations result in unstable pay for employees. High levels of informal employment leave employees unprotected. Income volatility is also known to induce a scarcity mindset, reducing individuals' capacity to make forward-looking business decisions. The intense focus on income caused by scarcity also reduces owners' capacity to allocate cognitive resources to personal matters. In fact, income volatility has even been found to impact physical wellbeing.

In this context, there is an opportunity to leverage behavioral insights to design better financial products and services. Solutions that rise to meet the psychological needs surrounding financial decisions can mitigate and reduce the detrimental effects of income volatility on MSE stability, growth, financial wellbeing and resilience.



Make participation easier by reducing the physical and cognitive effort required to enter formal financing processes.

- Defaults maintain all options for the users while pre-selecting one. This provides an implicit recommendation, can indicate the social norm and can funnel inactive users to the most financially healthy option.
- Automating behaviors or requirements can reduce calculation errors and users' responsibility of repeating actions, increasing the longevity of healthy financial habits.
- Reducing frictions in products and processes can motivate healthy financial habits among MSEs.



Maximize and prioritize flexibility among financial product and service options.

- Flexibility can be built into products and services in an ongoing manner (e.g. flexible rates based on monthly income) or more statically (see example below).
- For example, allowing credit borrowers to choose their monthly repayment date during the onboarding process can increase repayment rates and reduce default rates. Individuals who are able to match their repayment date with their most liquid days of the month, show increased repayment consistency, on-time payment and automated repayment rates.



Encourage MSEs to partition and keep separate their business and personal finances.

- Businesses report higher success rates when their business and personal finances are kept separately.
- This is difficult for MSEs because volatile incomes increase the likelihood that they will need to flexibly rearrange their savings to cover either personal or business costs.
- However, assigning purpose to partitioned savings (e.g. naming savings pockets) reduces the likelihood those savings will be taken out and put toward another use.



Provide an indicator to track success or benefits of saving and encourage users to set financial goals ahead of the moment of action.

- When someone is close to completing a financial goal, it can be motivational to highlight how close they are to meeting that goal.
- Providing consistent and salient reminders of progress (e.g. calendars, progress bars) can help hold users accountable to their own goals.
- Setting ones' own financial goals both increases the likelihood they will prioritize their financial future and increases feelings of individual responsibility.

Introduction

Given its behavioral and financial resilience implications, helping MSEs manage their income volatility is a core objective of the Strive Colombia initiative supported by the Mastercard Center for Inclusive Growth. This report is a starting point to understand this challenge more profoundly. It seeks to uncover behaviorally informed opportunities for financial, digital and data solutions that mitigate the consequences of income volatility and support MSEs' financial resilience and growth.

Micro and small enterprises (MSEs) contribute significantly to the Colombian economy, labor market and growth. They account for 99% of Colombian businesses (OECD, 2022), 72% of jobs, and are said to both diversify national and international markets, and stimulate business development and innovation (Flórez Guzmán et al., 2019). They contribute substantially to - and have been found to have significant impacts on - economic growth and GDP (BBVA Research, 2024; Wheat & Farrell, 2017). Despite their cumulative value and potential, MSEs operate under uniquely challenging financial circumstances and are often undervalued in financial markets.

MSEs are particularly vulnerable to income volatility. Due to small operating margins and unpredictable expenses, high fluctuations in income significantly impact their revenue and stability. Moreover, mitigating techniques - where offered - are more costly or difficult to access, accumulate and maintain. This negatively impacts the financial resilience and wellbeing of MSEs.

Alongside direct impacts to business health and sustainability, income volatility has been found to influence financial decisions and behaviors. Building on a growing body of evidence, studies in the behavioral sciences uncover how different environmental, physical and psychological elements influence decision-making and behaviors. Preferences can be inconsistent (Tversky et al., 1990), the expectations or actions of others influence how an individual behaves (Allcott, 2011) and choices are dependent on how options are presented (Thaler et al., 2013). Behavior is based on perceptions of the world, surroundings, and circumstances. This ultimately leads to subjective decisions (Kahneman & Tversky, 1979) that often defy economic expectations.
As a result, behavioral science can be an effective tool. By understanding the influences of income volatility on financial behavior and wellbeing, it can unveil opportunities and mitigation techniques to support MSEs. More specifically, understanding the behavioral biases and environments that drive decision making for MSEs illuminate new ways to support their financial resilience, wellbeing and growth.

This lens could have an important impact on the financial resilience of MSEs. Their dynamic nature often forces adaptation and innovation, inviting growth as a potential positive externality. The road is complicated, but not impossible. Among MSMEs in India, for example, researchers found that effective liquidity management was powerful enough to drive growth even amid volatile conditions (Mohanty & Mehrotra, 2018).

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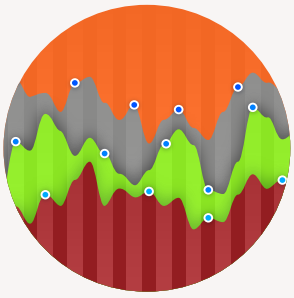
Where Are We Now?

Measuring Income Volatility

Generally defined as "fluctuations in earnings away from a general trend" (West et al., 2020, p. 5), income volatility affects people at all levels of income. This unpredictable variation in a person or business's income over time, coupled with fluctuating expenses, destabilizes both personal and financial circumstances. Volatility status (or severity) is determined by how much earnings fluctuate from period to period (weeks, months, years, etc.). High income volatility indicates more drastic swings in income, further complicating the tasks of financial planning and resource allocation.

Income volatility is measured by identifying how much an entity's income diverges from its average in a given period. At the household level, studies mostly examine annual and monthly incomes (Maag et al., 2017), calculating volatility as an absolute or relative change between time periods and with different levels of standardization (Hardy & Ziliak, 2013; Maag et al., 2017; Prause et al., 2009). At the business level, studies on income volatility also consider incurred expenses (Key et al., 2018) and payroll-specific volatility (Wheat & Farrell, 2017). They tend to prioritize the relative effect of income volatility and accounting for expenses and income fluctuations.

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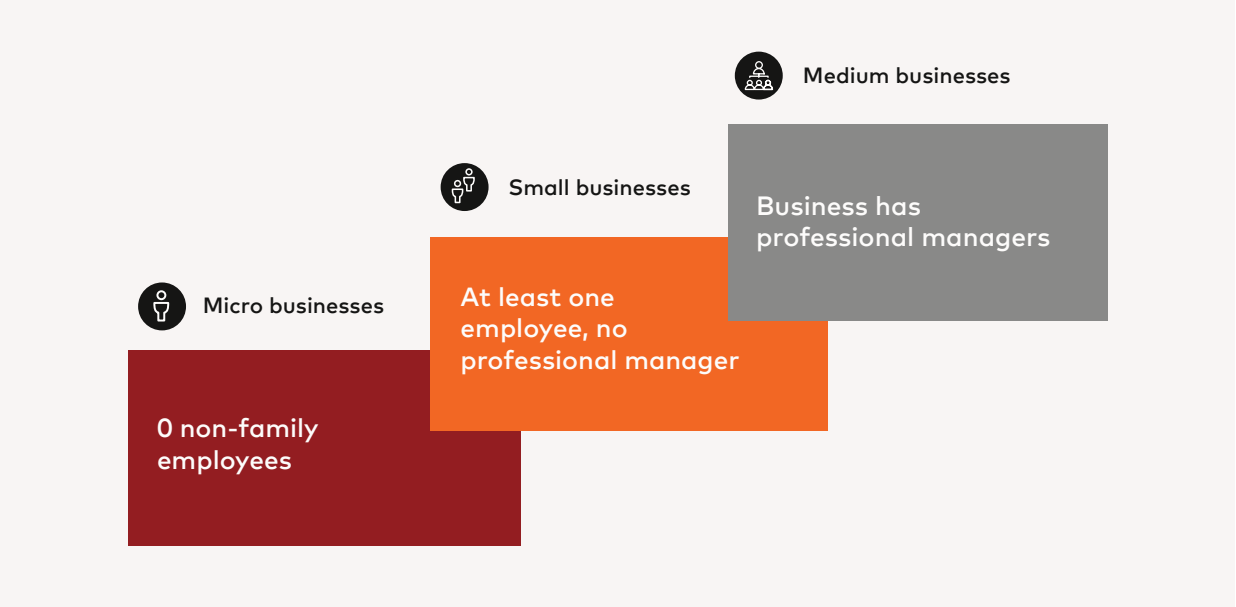
In Colombia, one of the most important recent efforts to understand income volatility in small businesses was carried out by the Small Firm Diaries (SFD) Project. This initiative interviewed 122 small businesses weekly between May 2021 and May 2022 to understand their financial

dynamics, challenges and coping strategies. Their measurement considered three assessment indicators: revenues (income), expenses (costs) and operating margins (revenue minus expenses). To quantify the volatility, they calculated month-to-month ratios between the standard deviation and the mean of each indicator. Larger ratios indicated greater volatility.

The MSE Financial Landscape In Colombia

There are multiple classification systems for micro and small businesses in Colombia. Each system serves different legal, statistical or research purposes, offering different perspectives on business segmentation (see Appendix A). One legal classification[1], for example, categorizes businesses according to their annual income from ordinary activities. Another classification[2] defines businesses based on the number of employees. For the purposes of this research, this report accepts the definition established by the Small Firm Diaries (SFD) research initiative. SFD classifies business size (see Figure 1) based on the employment of non-family and professional managers.

Figure 1: Small Firm Diaries business size classifications



Source: The Small Firm Diaries, Financial Access Initiative NYU Wagner, 2024.

**Professional managers are those responsible solely for managing employees*

The business landscape in Colombia is diverse, and micro and small businesses are abundant. 97.9% of the 1.6 million companies that registered in Colombian Chambers of Commerce in 2023 were micro (91.8%) or small (6.1%) businesses (Superintendencia Financiera de Colombia

& Banca de las Oportunidades, 2023). An employment breakdown reveals that microenterprises employ 62% of the Colombian workforce and small businesses employ 10% (BBVA Research, 2024). The stimulus of the labor market and market diversification (among other factors) has also been found to contribute significantly to economic growth (BBVA Research, 2024; Wheat & Farrell, 2017).

MSEs contribute significantly to sustainable development goals globally and domestically. Colombian MSEs account for over 72% of Colombian jobs (BBVA Research, 2024). This type of business "has the capacity to generate high rates of employment, stop the concentration of big capital flows, diversify the national and international markets, strengthen the supply chain, innovate, and stimulate and guarantee a constant business development" (Flórez Guzmán et al., 2019). Despite individually being virtually inconsequential, their collective contributions are important for the wellbeing of the Colombian economy.

Over 5 million micro businesses operate across Colombia, about 64% of which are 5+ years old (DANE, 2024b, 2024c). 64.5% are owned by men, and 84% were established by a singular owner (see Appendix B; EMICRON, 2024). Women are decision-makers in close to 50% of commerce and service firms, though the same representation in other sectors is lower (e.g. about 25% in the construction sector) and a high proportion of firms, particularly in industry and commerce, are family-owned (ANIF, 2024). About 56% concentrate their activities in the commerce of vehicles and motorcycles, agriculture, and transportation (Appendix C) and operate their businesses from a variety of locations (Appendix C) but mainly from home or door-to-door (DANE, 2024b). The diversity of sectors and locations in which they operate may well be an important factor to consider when understanding how income volatility affects their financial wellbeing.

Objectives and challenges faced by MSEs

With such economic importance, MSEs should be at the center of policies, programs, and products that aim to foster development and reduce poverty and inequality. However, financial organizations and service providers haven't yet closed the gap between MSEs' needs and their solutions. In Latin America, 10% of the largest companies receive an average of 69% of the region's private investment, which contributes to 75% of the financing needs of small and medium-sized businesses not being met (OECD et al., 2023). Such a disparity hinders growth and potential, even when "the region's many informal, low-productivity micro, small, and medium-sized enterprises (MSMEs) coexist with technology-based and fast-growing start-ups" (OECD et al., 2023, p. 31).

Given their unique makeup and circumstances, it is unsurprising that MSEs have objectives and success metrics that differ from those of a larger business. For one, their primary focus is not always growth or expansion (Eplee et al., 2023). Instead, they often aspire to stability that provides peace of mind and the ability to make longer-term plans (Del Río Chivardi et al., 2022). 60% of Colombian firms report putting money aside rather than contracting formal risk

management tools (e.g. insurance) to protect themselves against emergencies or unexpected shocks. While research doesn't concretely confirm the main motives behind this preference, we hypothesize it is due to a combination of factors including context (e.g. design or availability of product) and psychological barriers. In doing so, they unintentionally prolong their vulnerability to income fluctuations (Financial Access Initiative, 2024).

Small firms also often rely on working capital[3] to fund day-to-day needs. 66% of firms in the SFD study reported they would dedicate a loan to large purchases of raw materials. 82% of rural microbusinesses indicate that, once past the initial launching phase, their primary financing need is working capital, consistent with the need to manage operational costs and mitigate income volatility (USAID, n.d.). Despite this, only 36% of SFD firms reported having an active loan (Eplee et al., 2023).

This may be due, in part, to the stark pattern that seems to arise between business age and size with firms' access to credit in Colombia. Of the businesses registered with Chambers of Commerce, about 55% of those 10+ years old have access to at least one credit product, as compared to 30% of businesses between 5-10 years old, 13% of businesses between 2-5 years old, and only 2% of businesses less than 2 years old (Banca de las Oportunidades, 2024). Firm size also reveals a pattern with credit and financial product access. As of mid-2024, while 94% and 59% of small businesses have access to at least 1 financial product or credit product respectively, microbusinesses have significantly reduced access. A reported 65% of microfirms have access to at least one financial product and only 15% have access to at least one credit product (Banca de las Oportunidades, 2024).

The role of formalization

Perhaps adding to the difficulties in accessing credit are the low rates of formalization among micro and small businesses in Colombia. Though MSEs account for 72% of jobs in the country, 85% of micro and 30% of small firm employment is informal (BBVA Research, 2024). This might be partially attributed to the significant challenges in navigating the formalization process.

Formalization is a threshold of business registration with the Colombian government. Formality [or informality] reveals itself as a complex spectrum with varying degrees of compliance across multiple regulatory dimensions and is not universally defined (see Appendix D). Some, like the regulatory framework, consider a business formal when they have complied with several regulatory requirements (Consejo Nacional de Política Económica y Social et al., 2019). Others, like the Small Firm Diaries' classification, consider a firm formal once it has obtained at least its tax registration. This report adopts the SFD approach to formality. There is, however, a separate and encouraged process of registering with local Chambers of Commerce (CoC). Local CoCs can serve as important intermediaries between businesses and private and public resources. Registration at this level can provide firms access to business development tools, legal services, and some tax benefits (Eplee et al., 2023).

Understandably, there is confusion between Colombian business owners' understanding of formality and the legal requirements (Eplee et al., 2023) Businesses often consider themselves formal after completing certain steps, not realizing they fall short of full regulatory compliance. This confusion and complexity, alongside the fear of consequences that may accompany formal registration, are two of the main motivators for MSEs to retain their informal status.

This, of course, results in a prevalence of informal businesses that produce informal job opportunities and actively contribute to business and individual instability. Inherently, informal jobs lack social protections and increase pay uncertainty for employees, in addition to a lack of legal protection for both employees and the employer. The practice perpetuates inequality and instability and stunts intergenerational mobility (OECD et al., 2023). The gap may even be expanding. Reportedly, fewer micro businesses than SMEs renewed their formal registration in 2023 (ANIF, 2024) suggesting either a low interest or a low capacity for smaller Colombian firms to formalize or maintain formalization.

In part, this could be due to less access to formal credit and higher susceptibility to informal (and often predatory) alternatives. 87% of microbusinesses in rural areas of Colombia lean heavily on informal sourcing in the initial stages of mounting a business. 64% are backed by personal or family savings and 7% by loans from relatives, a far cry from the 13% that access formal funding sources to launch (USAID, n.d.). Informal credit options tend to have shorter payment terms and higher interest rates than formal credits, and their ties to illegal activities can result in violent collection tendencies (Posada et al., 2025). Entrance into informal financing options often negatively impacts financial (Anvari-Clark & Ansong, 2022) and mental wellbeing (Prause et al., 2009).



Income Volatility and MSEs in Colombia

Regardless of industry, sector, or size, business income and expenses vary depending on context and circumstance. This challenge tends to be more pressing for MSEs, as volatility in the face of smaller size and less resources is more likely to put their very survival at stake. When costs exceed revenue, businesses need access to liquidity in order to keep their business afloat.

MSEs indicate a strong preference for liquidity to come from capital reserves. Even though formal risk management tools can allow business investment alongside shock management, it is the less preferred mitigation technique. A majority prefer to build capital reserves over contracting formal tools. In doing so, they unintentionally prolong their vulnerability to income fluctuations (Eplee et al., 2023).

Despite a preference for this management technique, capital reserves are not easy for MSEs to build or maintain. Their creation most often requires surpluses to both grow and sustain, leaving firms with little choice but to turn to other mitigation measures. Some mitigation techniques are more predictable, like seasonal adjustments to labor and inventory or the diversification of products and services (Mohanty & Mehrotra, 2018). Predictable methods allow for both businesses and employees to plan around potential consequences.

Less foreseeable mitigation techniques highlight the fragility of informal employment. Without enough income to cover expenses, employees are not always assured of timely - or any - compensation. Over the course of the studied year (2021-2022), the Small Firm Diaries found that only 21% of observed workers received a salary for 8 or more months. This, however, is not for lack of care on the part of businesses. The same study found that these small firms often *prioritize* payments to employees, though they make up a larger percentage of monthly expenses (Eplee et al., 2023). This just further underscores the difficulties that businesses face with significant income fluctuations and the reverberating consequences volatility has on employees. This happens in spite of high payroll volatility[4], which is known to destabilize cash flows (Wheat & Farrell, 2017).

In fact, small firms' in Colombia seem to face monthly revenue fluctuations of 52% (Eplee et al., 2023). In any given month, they can expect their income to increase or decrease by 52% of

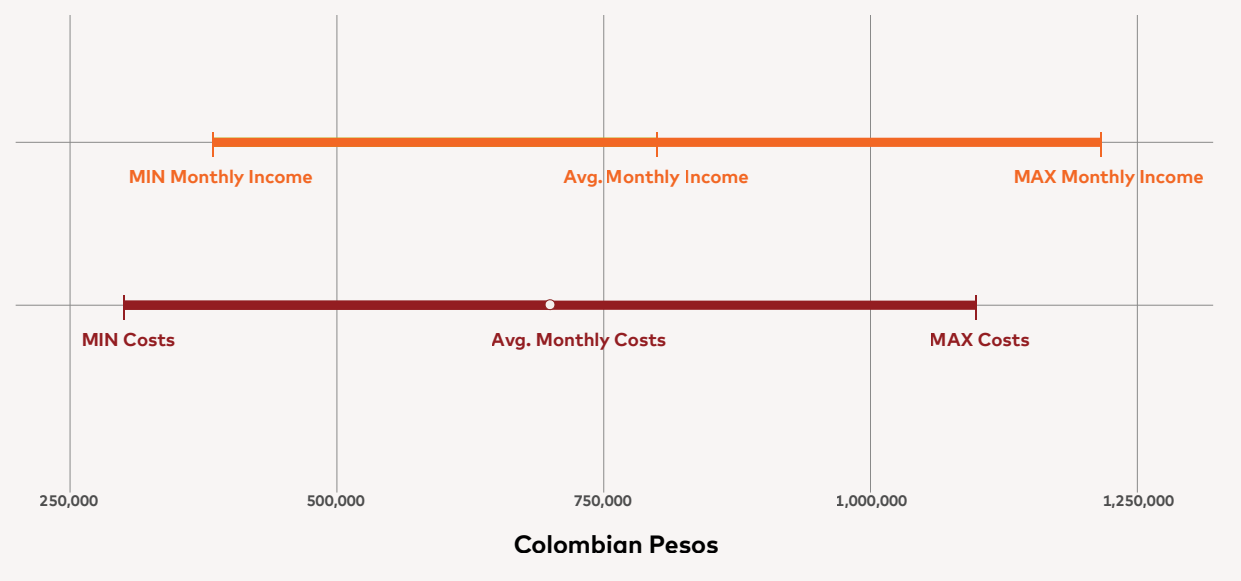
their average monthly revenue. Monthly expenses were found to fluctuate by 57% and operating margins by 100%. These findings underscore an astronomical obstacle for small businesses and their wellbeing.

The following example follows the case of a real micro business in Colombia with data from the EMICRON survey (DANE, 2024a) and applies the fluctuation rates established by SFD (Eplee et al., 2023):

> **A microfirm in commerce and repair of vehicles and motorcycles from Sincelejo, Colombia has an average monthly income of $800,000 (COP) and monthly costs of $700,000 (COP). Considering the 52% fluctuation, on a given month where the income drops up to $384,000 (COP), this micro business will not be able to cover their costs. To that point, given that monthly costs fluctuate by ~57%, in any given month the operating margin can become negative (costs exceed income) and businesses not only cannot cover expenses, but also have nothing to bring home to sustain their families until the next paycheck (see Figure 2). It is also not assured that the next paycheck will cover even next month's expenses and salaries - let alone make up for a previous down month. This downward spiral can sink businesses even after they see positive operating margins. It can take them months to make up for just one month where costs exceeded income.**

In any given month, they can expect their income to increase or decrease by 52% of their average monthly revenue. Monthly expenses were found to fluctuate by 57% and operating margins by 100%. These findings underscore an astronomical obstacle for small businesses and their wellbeing.

Figure 2: Average monthly income and cost fluctuation of a real microfirm in Colombia



Source: EMICRON(2024) & SFD(2023)

Income volatility disproportionately impacts firms with lower incomes and smaller margins in Colombia, including MSEs. The instability and uncertainty not only impacts the stability of the business but also has psychological repercussions that impact behavior and stifle decision-making abilities (West et al., 2020).

Income Volatility Negatively Impacts Financial Wellbeing

Financial resilience describes the capability of businesses to prepare for unexpected financial shocks, manage them when they occur, and recover afterward. Individual characteristics of business owners (e.g. financial literacy) and contextual factors (e.g. access to financial services) contribute to business resilience (Tinta et al., 2022; Sanusi et al., 2023). Alongside financial wellbeing, financial resilience is an indicative measure of business health. It is conditioned by and has significant impacts on the pressures and mental stresses that likely fall on the owner and employees.

Financial wellbeing bridges across objective and subjective measures. Objective approaches focus on financial outcomes (e.g. money saved, ongoing debts) and self-reported financial behaviors (e.g. saving, spending, borrowing). This data can give important insights into some aspects of financial wellbeing (e.g. ability to brace for financial shocks, financial preparedness for the future, etc.). These more quantitative measures can be analyzed more uniformly and provide a greater breadth of information. However, they often overlook personal experience and

- depending on the context - can fail to illuminate the underlying drivers of financial behavior. The alternative approach prioritizes perception of financial position and wellbeing.

Derived from efforts to understand life satisfaction, the subjective approach focuses on how people evaluate their financial situation, which in turn influences decisions and behaviors (Dolan & Metcalfe, 2012). These systems are subject to self-reporting, which, as may be expected, is not always accurate. Research indicates that internal perceptions of financial position only align 40% of the time with external observations of financial wellbeing (Botha et al., 2021). Nevertheless, perceptions establish individuals' personal realities and thus generate the context in which decisions are made and evaluated (Kahneman & Tversky, 1979).

Derived from efforts to understand life satisfaction, the subjective approach focuses on how people evaluate their financial situation, which in turn influences decisions and behaviors *(Dolan & Metcalfe, 2012).*



Evidence suggests that monthly income volatility (Morduch & Schneider, 2017) and financial shocks hurt perceived financial wellbeing (Lusardi et al., 2011, Anvari-Clark & Ansong, 2022). Efforts have focused on understanding and mitigating this with some success. A U.S. study reveals that income shocks decrease subjective financial wellbeing more than expense shocks. Access to liquid assets lessened the negative impact of a shock on subjective financial wellbeing (Bufe et al., 2022). Beyond just mitigating negative effects, another U.S. study found that use of financial products, established saving habits and savings balances predicts an increase in perceived financial wellbeing (Anvari-Clark & Ansong, 2022). This research highlights the importance of financial tools, access and use for the improvement of perceived financial wellbeing, alongside objective financial wellbeing.

The few conducted studies on MSEs' financial wellbeing have focused on the wellbeing of the decision-maker in relation to the financial situation of their business. This is an adjustment that accounts for the fact that MSEs tend to have one owner or manager with an active decision-making role. In 2019, Bhuiyan and Ivlevs studied micro-businesses in Bangladesh to identify the effects of micro-credit uptake on owners' life satisfaction, a key subjective well-being manifestation. **They found that while micro-credit uptake increased wellbeing for female-owned businesses and businesses with larger assets, others experienced a decline in wellbeing brought on by increased worry.**

Income Volatility can have Psychological Consequences for Entrepreneurs

The inherent consequences of income volatility perpetuate instability. The previous chapters touched upon how psychological pressures manifest in financial decision-making under income volatility. It is equally important to consider the more general mental and physical stresses that income volatility produces among businesses and individuals. A 2019 study found evidence that higher rates of income volatility were associated with worse brain integrity and cognitive function midlife (Grasset et al., 2019). The impact of income volatility on quality and longevity of life should be of the highest priority.

Income fluctuations have been known to induce a **scarcity mindset**. When income is (or is perceived to be) a scarce resource, financial concerns direct cognitive resources toward addressing that specific difficulty, reducing cognitive bandwidth to make decisions in other domains (Mani et al., 2013; Mullainathan & Shafir, 2013). Under a scarcity mindset, people are also more likely to consider decisions' economic trade-offs, directing cognitive energy to the most pressing financial challenges (Shah et al., 2015). The focus of efforts on meeting immediate needs could lead to overborrowing (Shah et al., 2012) and more risk-taking (Liang et al., 2021). Moreover, focus on a scarce resource chips away at a person's **limited cognition**. People have finite cognitive resources that, once assigned to a task (a fixed scarcity), cannot be allocated to other parts of the business. This may well contribute to MSE's reporting stability as a business goal overgrowth.

The scarcity mindset extends beyond just business, impacting employees alike. Sayre (2022) suggests that the health consequences of pay volatility are the result of a scarcity induced mindset and a constant rumination over financial instability. Research indicates a business' volatility can put employees at higher risk of financial instability.

Payroll volatility causes insecurity in both employment (Cao & Leung, 2020) and employment-related costs (Wheat & Farrell, 2017). This is exacerbated by the common nature of informal jobs and businesses which, without legal agreements, leave both parties vulnerable to the others' will, decisions, and behavior. For instance, job security is low as employment necessities shift often, and thus employee turnover rates are high. This is a significant mental burden for employees and could pose high training costs for businesses.

Even when small businesses can sustain employment, payroll volatility is linked to more frequent and irregular payment schedules (e.g. daily or weekly rather than bi-weekly or monthly schedules; Eplee et al., 2023). As few as 21% of employees in small businesses in Colombia seem to be receiving a salary for 8 or more months per year (Eplee et al., 2023). Even during consistent months of employment, pay amounts vary. Holding income constant, increasing the frequency with which people are paid increases spending habits (De La Rosa & Tully, 2022). Their research

demonstrates this effect through both real-world spending behavior analysis and a series of laboratory studies. The researchers found that higher payment frequencies increase consumers' spending, whether the payment schedule is imposed or chosen by consumers themselves. Their studies establish that this phenomenon is explained, at least in part, by changes in consumers' subjective wealth perceptions that result from differences in uncertainty about predicting resource availability throughout a period. A higher payment frequency increases the subjective perception of wealth and reduces uncertainty about having enough to cover expenses, resulting in higher spending patterns. Though perhaps scarcity mindset plays a role in this tendency, as spending meets the innate desire to reduce the effects of resource scarcity.

In addition to psychological consequences, the volatility of payroll expenses is an insecurity that impacts physical wellbeing. Higher pay volatility has been found to cause insomnia and poor sleep quality (Sayre, 2022). Both have been associated with poor mental and physical health. On a personal level, whether for an employee or a business owner, this research suggests that the health consequences are the result of scarcity induced mindset and a constant rumination over financial instability caused by unstable income.

The predictability of income also seems to correlate negatively with subjective financial wellbeing. The more unpredictable someone's income, the lower they perceive their financial wellbeing and the less likely they are to overcome a financial shock (Zhang & Sussman, 2024). This is especially problematic given the propensity to miscalculate future expenses[5]. Income volatility further complicates future expense prediction, maintaining unpredictable expenses and jeopardizing subjective financial wellbeing.

These are merely three highly impactful consequences of income volatility on financial, mental and physical health, and wellbeing. The area is understudied and, given the gravity of the implications, should be of high priority for future research and investment into mitigation efforts.



Mitigating Income Volatility Challenges for Colombian MSEs

Helping MSEs manage their income volatility has many financial implications and challenges. This section of the report delves into some of the most important challenges that need to be addressed. It will highlight financial, digital, and behavioral opportunities to support MSEs in Colombia.

The negative consequences of income volatility are particularly damaging for micro and small businesses. Their smaller size and scale exacerbate the vulnerability that comes from lacking the financial reserves that larger firms employ to stay resilient. Globally, studies show that MSEs also have limited access to external financing and over-rely on internal cash flows (Serrasqueiro et al., 2021). When seeking loans, for example, these businesses often encounter higher transaction costs and risk premiums due to their perceived opacity and limited collateral (Beck & Demirguc-Kunt, 2006). These financing constraints not only restrict their ability to weather economic fluctuations but also limit their capacity to pursue growth opportunities. This is a global pattern similarly reflected in Colombia's business ecosystem.

Perception, though not always accurate, can influence behavior and outcomes. The 2022-2023 ANIF (2024) survey report on MSMEs found that 38.1% of the micro businesses, 40.4% of small, and 48.6% of medium businesses perceive their economic situation to have improved in the last year. While the assessment is subjective, the lower perception of economic improvement from the smaller businesses suggests a lower perceived ability to thrive financially from year to year. This could indicate a lower level of perceived resilience (ANIF, 2024), an important characteristic in navigating volatility.

Where businesses perceive they are less equipped to withstand fluctuations in income, targets might change from growth to stability. In fact, SFD researchers found that almost 70% of the studied MSEs aspire to increase financial stability. The two primary income volatility management techniques were (1) seeking working capital to keep expenses constant, and (2) adjusting expenses as much as possible to match their revenues.

The remainder of the report delves more deeply into some of the major financial obstacles and behavioral barriers faced by Colombian MSEs and illustrates opportunities to minimize those effects. The three in-depth analyses will address how individuals and businesses behave financially in the face of income volatility, particularly with respect to:

1. Access to financial accounts, and ability and willingness to adopt technology,
2. Access to capital and credit, and
3. Savings patterns.

Analysis will then highlight behaviorally informed opportunities to combat the less healthy financial behaviors. Following these cases, the report will consider:

- The challenges unique to female MSE owners, and
- The impacts of income volatility on mental and physical wellbeing.

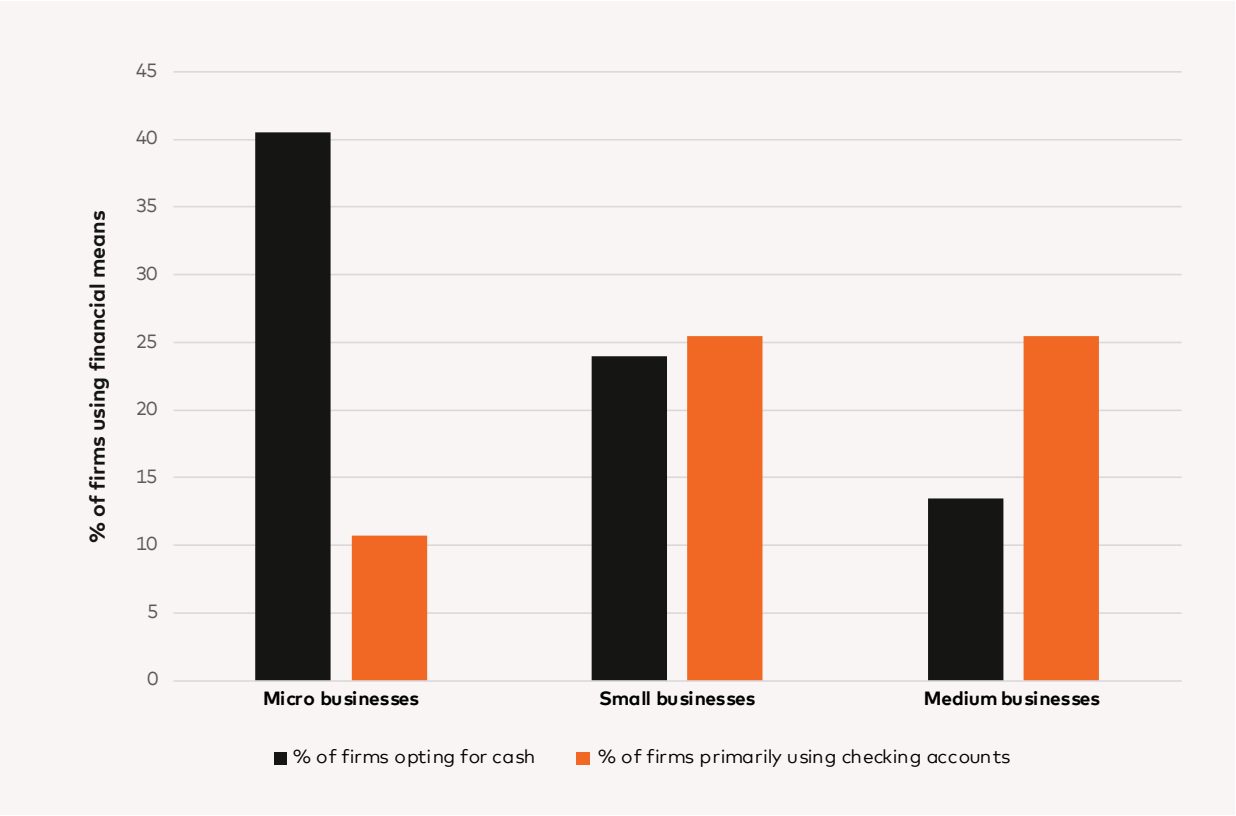
1 Access to Financial Accounts and Technology Adoption

1.1. Data shows that MSEs continue to struggle to adopt financial and digital tools

MSEs in Colombia are proving slow to pick up digital tools and financial account services for the advancement and development of their businesses. Adopting financial accounts is the first step in the financial inclusion journey; and, as evidenced by the Mastercard Center for Inclusive Growth's Strive Initiative, adopting technologies and digitizing business activities can go a long way in enhancing financial resilience and promoting MSEs' growth.

For micro businesses in Colombia, both for incoming and outgoing expenses, cash is still king. At least 40% of micro businesses primarily use cash as the main instrument for financial transactions, compared to only 13.5% of medium sized firms (ANIF, 2024). It is consequently unsurprising that microenterprises don't engage heavily with checking accounts (Figure 3). Only 10.75% of microenterprises recorded checking accounts as the primary financial instrument in their business, down from 25.5% of small businesses and 44.5% of medium sized firms. Among micro businesses, the retail sector leans the most heavily on cash (51%), followed by services, the industrial sector, and construction (ANIF, 2024).

Figure 3: Firm preference for financial transactions by size



Financial transactions with employees further stray from financial accounts. Across firms of all sizes, even those with bank accounts tend to pay employees in cash due to employee preferences (Eplee et al., 2023).

Technology adoption seems even more stunted for smaller firms. The EMICRON survey found that 88.8% of micro-businesses in Colombia do not capitalize on technology to develop their businesses (DANE, 2024b). Similarly, ANIF (2024) highlights that limited access to capital constrains the investment capacities of Colombian MSEs. Micro and small businesses report lower investment capacity (51.8% and 56.55% respectively) compared to medium-sized firms at almost 70%. Micro businesses allocate between 9% and 15% and small businesses dedicate between 11% and 18% of their total investments to technology (ANIF, 2024).

In general, most business investments were allocated to acquiring equipment, software and technology, though firm size did influence investment. 36% of micro-, 40% of small- and over 50% of medium-sized businesses reporting investment in equipment. 21.5% of micro and 35.5% of small firms reported using accounting software to manage their finances. Astonishingly, 55.8% of micro businesses did not use internet service for their business in 2023.

1.2. A behavioral perspective: Breaking away from traditional methods proves challenging because of adoption friction

While accessing financial accounts and adopting technologies can be highly beneficial to businesses in their financial inclusion journey, people are averse to change. Instead, they prefer to stick to the **status quo** and conserve their current situation (Godefroid et al., 2023). Maintaining the status quo can also reduce - or be perceived to reduce - frictions required in making a change.

Friction is anything that acts as a logistical barrier to completing or carrying out behavior. Where possible, it is human nature to avoid tasks or actions that carry friction. Complexity, difficulty, effort and time investments are some of the primary obstacles that disincentivize behavior (Hreha, 2023). Shifting from cash-based financial management to the use of financial accounts involves overcoming uncertainty and complexity. Likewise, incurring the costs of - and the training to - introduce technology into the business model illuminates an undesirable effort and cost for the user. Maintenance of - rather than change to - digital accounts or tools lacks these frictions.

Additionally, people are prone to miscalculation for the future. In fact, the **expense prediction bias** reveals that people systematically fail to forecast (and most often dramatically underpredict) their future expenses and the likelihood of facing financial shortfalls. Research suggests that people tend to misestimate their future expenses, approximately by 15% and especially expenses in the distant future (Berman et al., 2014). This happens because people use typical and frequent expenses as a reference for future prediction, leaving behind infrequent expenses such as emergencies or special occasions (Howard et al., 2022).

Availability bias is a contributing factor to this miscalculation. It describes the phenomenon that things that come to mind more easily tend to be perceived as more important or more likely to occur (Tversky & Kahneman, 1973). Financial forecasts tend to focus on typical and recurring expenses, (Howard et al., 2022), misremembering or forgetting to include less routine - but potentially significant - costs. This might contribute to an increase in the number and severity of financial challenges for MSEs, requiring extra effort to sustain a business.

1.3. How can FSPs and other stakeholders behaviorally support MSEs' financial account and technology adoption?

1. **Make it easy to adopt financial and digital tools, but pre-selecting the best options for MSEs.** Setting a choice default involves pre-selecting an option on behalf of a user that facilitates their path to a financially healthy behavior, while maintaining the user's agency at all times to opt out or make a different choice. In case of inaction, the default is applied. A study in Mexico found defaults to improve the adoption of financial tools among low-income households. Applying a default that funnels government cash transfers into savings accounts rather than via cash agents increased the likelihood that low-income households engaged with savings accounts and financial tools (Masino & Niño-Zarazúa, 2020).

2. **Automate financial calculations and behaviors to simplify their decision making.**Technology in and of itself presents great opportunities for financial access, wellbeing and growth. Automating financial requirements and behaviors has the opportunity to reduce human calculation errors. An accounting system that can, for example, track costs, transactions, and expenses, could both allow cognitive effort to be reallocated to other parts of the business and improve mitigation efforts. Behavioral sciences evidence has proven that solutions that automate complex decisions and behaviors have the largest impact on behavior change (Beshears & Kosowsky, 2020) Additionally, tools that forecast income and expenses could reduce required effort, time commitments, and expense errors.
3. **Leverage trends in consumer behavior to prioritize digital tool adoption.** By understanding the payment methods and tools used by consumers, MSEs can be guided to optimize which technology to adopt. A recent study assessed the adoption of point-of-sale technology[6] in corner stores in Mexico in relation to debit card rollout from the cash-transfer programs. Overall, for localities inside the rollout, corner stores increased point-of-sale adoption by 18% and increased their sales and profits by 6% and 19%, respectively (Higgins, 2024). Taking into consideration the demand for such technology from the client base is an important piece of assessing what technologies can support MSEs. Just as credit cards, digital wallets or debit cards can support consumption patterns, choosing the right tools to adopt can help MSEs with financial inclusion and growth.
4. **Introduce financial and digital tools progressively, rather than all at once.** The adoption of technology, however, is a stand-alone challenge with ample points of opportunity. A recent study by Mastercard and Nubank (2024) found that progressive adoption of financial products and features (including accounts) predicted the use of financial products and measures of financial health. Thus, a slow, incremental introduction of technology adoption and use might be more sustainable in the long run. This could include, for example:

    - Leveraging entry-level products like debit/prepaid cards and real-time payments to ease the transition away from cash-only,
    - Encouraging and facilitating digital payment acceptance among business owners who operate near low-income populations, and
    - Low-cost installations and solutions such as tap-on-phone and QR codes.

These suggestions - and their systematic introduction - seek to ease the technology and financial tool transition. Despite the efficiency benefits of bank services and digitization, the transition can be painful and full of friction for MSEs. Easing processes increase the likelihood that people complete a desired behavior (Moleskis, 2022). Slow and systematic introduction can ease users into the process, simplify the procedure, and extend the learning curve to encourage participation with digital and financial tools.

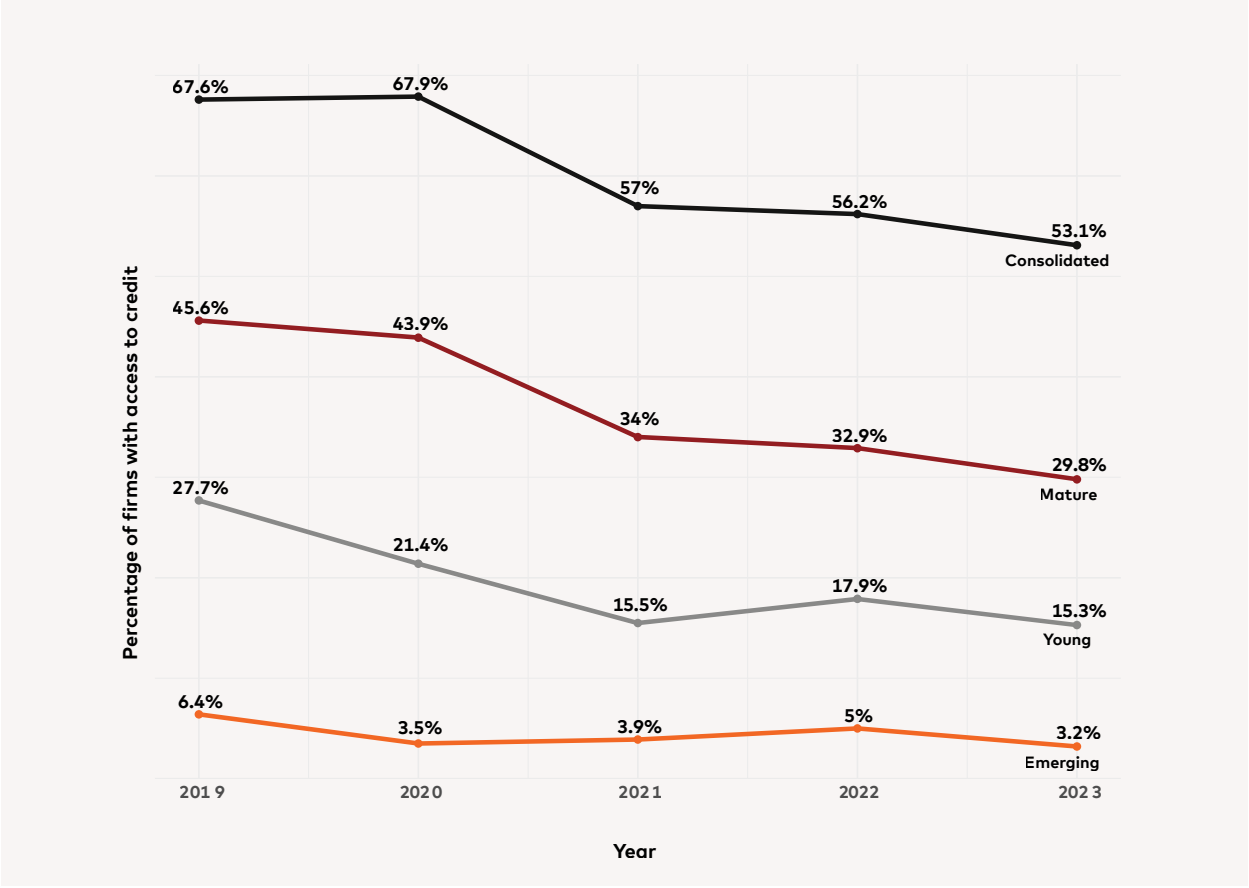
2 Access to Capital and Credit

2.1 Smaller businesses have less access to capital and credit in the Colombian financial sector, turning to informal options where necessary

Access to credit can provide significant benefits to businesses. Used effectively, credit can mitigate the effects of volatility, especially for firms with fewer alternative financing sources. It can significantly lower the probability of bankruptcy and market exit. Credit access is also known to enhance advertising and product/sector diversification, two mechanisms that further contribute to strengthening business stability (Chen et al., 2022).

With several positive effects, the nuances of credit access are substantive on the road to financial resilience and wellbeing. Business age in Colombia affects access to credit. Emerging businesses (0-2 years old), which account for 28% of all businesses registered in Colombian CoCs (see Appendix B, for % of firms by age), have the lowest access to credit by far (Figure 4; (Superintendencia Financiera de Colombia & Banca de las Oportunidades, 2023).

Figure 4: Percentage of firms registered with a Colombian CoC with access to credit by business age



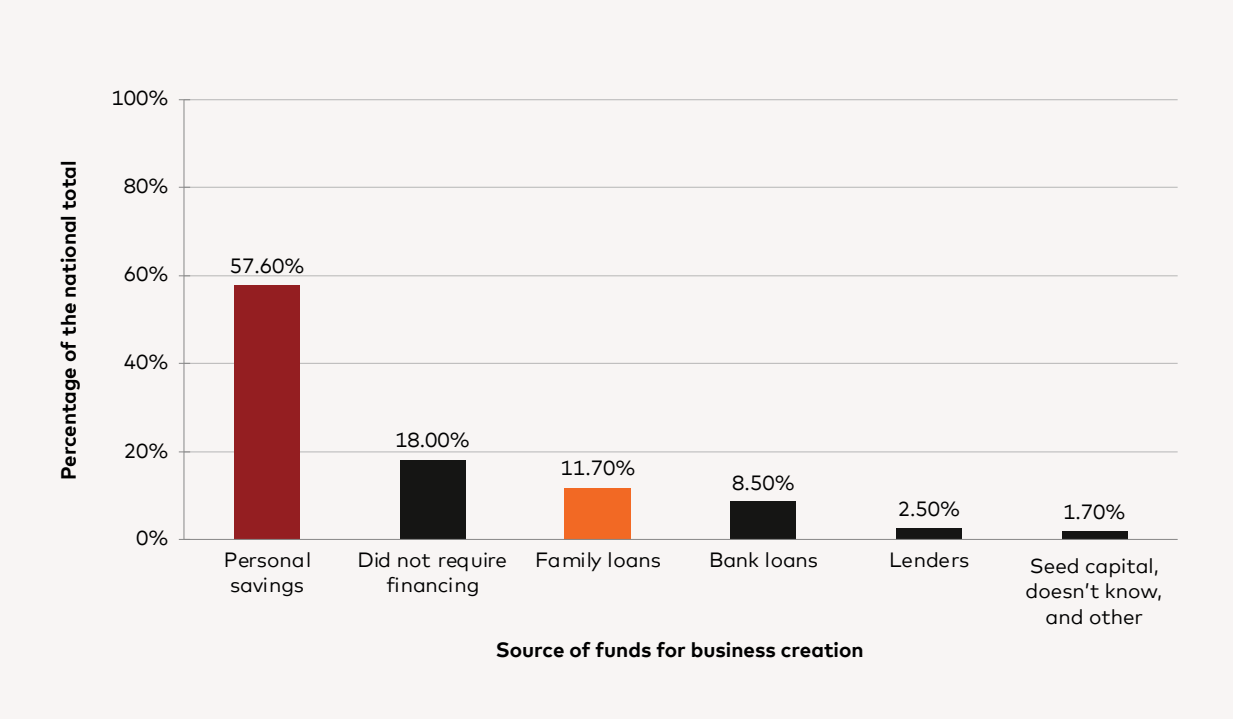
Source: Superintendencia Financiera de Colombia & Banca de las Oportunidades (2023)

Business size is also found to be indicative of reliance on, acceptance to, and applications for credit among Colombian firms. From 2022-2023, 24% of medium, 22.1% of small, and 14.6% of micro businesses reported banks as their main source of financing to start operations (ANIF, 2024). The drop in reliance on credit from micro businesses is particularly consequential given that these businesses represent a vast majority of Colombian firms. Perhaps somewhat influencing the lower reliance on credit from micro businesses is the fact that they are 10% less likely (at a rate of 74%) than medium-sized firms (at a rate of 84%) to have their credit applications approved (ANIF, 2024).[7] Widening this gap is the difference in applications among firm sizes. While 33% of medium-sized firms report having applied for a loan, only a combined 24% of micro and small firms reported applying for credit (ANIF, 2024).

Where businesses don't rely on formal financing for support, they turn to more informal options, such as personal financing. Recent reports indicate that around 51% of micro and 40% of small Colombian businesses rely on their own resources to start or grow their businesses (ANIF, 2024). Medium-sized businesses, which are more likely to have the access and means to use more formal systems, report applying personal resources in 36% of cases. This disparity in resourcing based on firm size is a trend that has remained consistent since at least 2019 (DANE, 2020) and, in all likelihood, is a pattern that stretches further back.

Familial support is another popular informal measure. 42% of micro and 38% of small businesses reported leaning on family when they needed liquid funds, making it the most common source of financial support among Colombian MSEs (ANIF, 2024). 64% of rural micro firms report family or personal savings as their primary financial resource in the initial stages (USAID, n.d.). Micro businesses[8] reveal that they predominantly rely on personal savings and family loans before considering bank loans (see figure 5; DANE, 2024). Such dependence is risky since informal sourcing measures can carry high interest rates and short repayment terms, lack the contractual guarantees inherent to formal financing and damage familial relationships - threatening critical support systems.

Figure 5: Distribution of microfirms by primary source of funds for business establishment in 2023



Source: DANE, Microbusiness Survey (EMICRON) 2023.

The 2024 ANIF survey indicated that the application process and negative perceptions of the financial system were the most commonly reported reasons for not applying for formal credit.

2.2 A behavioral perspective: A lack of trust and necessary flexibility further deter MSEs from seeking formal capital and credit options

The 2024 ANIF survey indicated that the application process and negative perceptions of the financial system were the most commonly reported reasons for not applying for formal credit. For MSEs, personal and business perceptions of financial systems are inextricably interconnected, as business decisions are made by individuals or a very small group with personal stakes involved. MSEs financing and survival often necessitate shifts from personal to business and back.

Mistrust in a system, the suspicion, cynicism or lack of confidence in said system (McNight & Chervany, 2001), can heavily influence behavior (Weir, 2013). People with mistrustful attitudes are characterized by indecision (Lenard, 2008) and are more likely to avoid interactions with the systems of which they are skeptical. López & Malagón's (2024) research highlights the negative perception of the financial sector in Colombia, the impact of which can be significant.

Perception, colored by experience and circumstance, is how people navigate the world. It is through this lens that individuals interpret reality and make decisions (Kahneman & Tversky, 1979; J. Taylor, 2019). The perception that specialized knowledge is required to understand and properly utilize financial products is a major barrier to formal sourcing (López & Malagón, 2024). It can exclude entrants based solely on the belief that the system is not for them. In fact, surveyed businesses report a lack of desire to interact with the financial system (ANIF, 2024). Unsurprisingly then, formal credit options are not considered attractive for business leverage. The damage of a perceived lack of information transparency (whether real or not) is further aggravated by the complexities of formal financing processes.

Friction[9] in the credit process is also a deterrent. Accessing - or attempting to access - credit is an involved process. The significant time investments and attention required with no guarantee of approval (López & Malagón, 2024) alongside high financial costs and perceptions that excessive documentation would be required (ANIF, 2024), discourage businesses from seeking formal financing. This friction serves as a boosted deterrent for MSEs given that their credit application approval rates are lower than those of their larger competitors. With such obstacles, the easier route - by far - becomes turning to informal options.

In order to sustain, MSEs in Colombia need to be nimble - to cushion the effects of fluctuations and financial shocks. **Lack of flexibility** among credit options is a large deterrent for MSEs. High income volatility makes it difficult to commit to substantial fixed amounts due in a short time[10] (López & Malagón, 2024). This is due to two common occurrences for MSEs, (1) the business failing to earn enough income to cover expenses and/or (2) a lack of alignment between repayment terms and financial business dynamics (i.e. the payment is due before the income comes in). Both significantly impact their ability to stick to their financial commitments. Research even indicates that as little as a 7-day gap between paying expenses and receiving income can decrease the likelihood of a business fulfilling its financial commitments (Dahan & Nisan, 2020). Given the risks associated with inflexibility, MSEs exhibit a greater interest in products that are transparent from the outset about loan amounts and interest rates, preferring fixed and foreseeable rates.

2.3 Where can FSPs and stakeholders improve MSEs' behavioral capital and credit capacity?

Credit offers companies a cushion during a given expense-income gap, and potentially increases the sustainability of firms meeting their financial commitments. Identifying methods to invite MSEs into the world of credit is especially important as they generally operate with lower margins and greater volatility.

1. **Maximize flexible design among credit options.** A previous CAH study with a Mexican Fintech found that giving small business owners the flexibility to choose their payment dates increased their perceived likelihood of making payments on time (Center for Advanced Hindsight, 2024). It offered the opportunity for users to match their payment date with the

day their income was expected, effectively eliminating the gap that contributed to missed payments. Flexibility could span financial processes, as well. In addition to offering flexibility at the onset, flexibility on the back end - such as excusing a first missed or late payment - could build trust and improve retention and repayment rates in financial spaces. Research has shown that adding "emergency reserves" to behavioral goals (such as repaying a loan) can help sustain motivation and goal completion, even after deviating from the goal (Sharif & Shu, 2021).

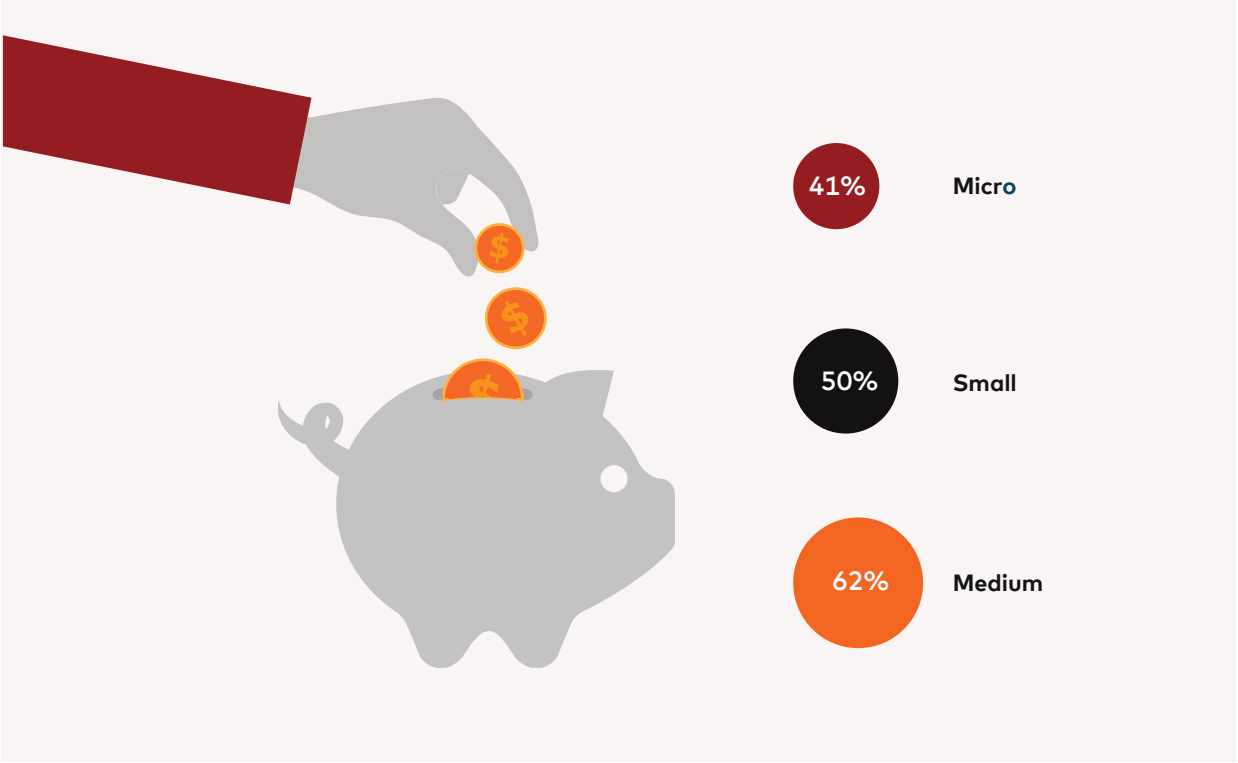
2. **Increase the number of financially inclusive policies and credit solutions, ensuring they are aligned more closely to the dynamics and contexts of MSEs.** Research on government policies aimed at improving financial access and support during economic downturns shows that they are effective in helping MSEs navigate volatile periods more effectively (Serrasqueiro et al., 2021). Expanding the offerings of products and services tailored to MSEs' unique circumstances could invite them into the sector and assist them in navigating the complex financial market.
3. **Promote agency by providing actionable insights and steps businesses can take to improve their financial standing or resilience.** This may reduce the lack of control consequent to income volatility (Peetz et al., 2021) and, in addition to policy adjustment, cost-effectively empower businesses and owners. **Decision aids** that help users guide their own journeys are also an effective tool in encouraging positive financial behavior. They might introduce nudges[11] or timely reminders through product design to facilitate healthy financial behavior. Researchers in 2024 found that reminding customers about their scheduled payments on the due dates reduced both incurred penalties and payment delays (Afonso et al., 2024).
4. **Reduce the cognitive effort needed to apply for - and successfully - use capital and credit products by providing defaults.** Setting defaults[12] provides priority within a set of options. Easing the decision making process by indicating an option that might best serve the user can reserve decision-makers energy to then be allocated to other parts of the business. It can expand their capacity to complete complex credit processes and bring longer-term financial benefits. Moreover, defaults can funnel inactive users to the most financially secure path. They are particularly successful in facilitating financial behaviors when they operate through endorsement and endowment; the default choice is perceived to be endorsed by a trusted source and to be already owned by the user (Jachimowicz et al., 2019). Thus, defaults help reduce choice paralysis while still affording users agency in their financial and credit futures.

3 Building Savings

3.1 MSE report difficulties with saving

Savings are another key aspect of navigating income volatility. Many micro and small businesses report saving in some capacity (ANIF, 2024; Eplee et al., 2023), but business size influences the capacity to save. Studies suggest size correlates negatively with saving. ANIF (2024) found that while 62% of medium-sized firms report saving, only 50% of small firms and 41% of micro firms report the same. Of the firms that didn't report saving, 74.8% attributed it to a lack of sufficient income to save (ANIF, 2024). This difficulty contributes to the cyclical nature of firm instability.

Figure 6: What percentage of Colombian firms by size report saving money?



Source: ANIF (2024)

3.2 A behavioral perspective: The mental aspects that compound structural barriers to MSE saving

Despite the knowledge that consistent savings promote the financial wellbeing of low-income households (Anvari-Clark & Ansong, 2022), the practice is particularly challenging in the face

of income volatility. The process is more complex than might be initially believed, requiring forethought into where to save, how much, how often, and for what purposes.

People who experience income volatility feel less control of their financial situation (Peetz et al., 2021). The perception of low control over future outcomes (a **low internal locus of control**) has been associated with under-saving behaviors (Cobb-Clark et al., 2016). Moreover, the **present bias**, a consistent preference for short-term benefits even with the knowledge that benefits in the longer term would be greater (O'Donoghue & Rabin, 1999), is exacerbated by income volatility. Aggravated by the perceived lack of control, this proclivity leads to **financially impatient** behaviors. People experiencing income volatility consistently prioritize spending in pursuit of smaller immediate rewards over saving today for larger rewards in the longer term. This, unsurprisingly, creates difficulty in saving and investing for the future. These savings obstacles remained prevalent regardless of income level (West et al., 2020).

A 2024 study by Zhang and Sussman found that when income is **predictable**, people save more and are more confident in their ability to cover emergencies. The more unpredictable someone's income, the less they save. This, alongside the systematic failure to accurately forecast future expenses[13], compounds the damage to financial wellbeing. The systematic inability to accurately predict future expenses (Berman et al., 2014) may be an attributing factor to a lack of savings within MSEs in Colombia, and the propensity not to save adequately worsens the damage of miscalculated expenses.

Mental accounting describes how individuals track, evaluate, and organize financial activities and can influence financial decision-making (Thaler, 1999). The physical division of individual and business finances impacts how people conceptualize their earnings and savings. It has been shown to increase self-control and can act as a budgeting mechanism, increasing savings (Soman & Cheema, 2011). However, because of the nature of microenterprises, microentrepreneurs often can't afford to create a clear separation between personal and business finances. Their businesses and personal needs rely on the ability to shift funds to meet the needs of both the firm and their households. Thus, they avoid financial products without flexible allocations (López & Malagón, 2024).

3.3 How can FSPs and other stakeholders behaviorally support MSEs to encourage savings?

1. **Reduce the complexity of saving products and services as much as possible by removing any components or steps that are not absolutely critical and providing decision aids throughout the process.** Setting defaults[14] is a simplification method shown to improve savings rates (Beshears et al., 2006). For example, defaulting savings enrollment features to opt-out rather than opt-in systems increases savings (Carroll et al., 2009). Research on 401(k) s, which are retirement savings accounts used in the United States that allow employees to contribute a portion of their wages, indicate automatic enrollment can impact savings

patterns, even when the economic features of the plan remain unchanged. When users are automatically enrolled in monthly savings, 401(k) contributions are significantly higher than when contributions are made manually (Madrian & Shea, 2001). The automatic process not only removes the need to remember to save, but also allows users to avoid cost considerations, reducing cognitive dissonance[15] and regret (McKenzie, 2013). A collaborative study with CAH and Chilean Fintech Gliber revealed that creating a savings pocket by default in independent workers' accounts increased the likelihood of using it (CAH, 2024). Defaults are especially successful at:

- Increasing participation rates where people aren't required to engage in a process,
- Reducing the cognitive load of engaging with financial decisions, and
- Increasing savings in settings where financial literacy is low, as it allows for participation in savings activity without a complex understanding of the information (Carroll et al., 2009).

2. **Design products that prompt users to think through their savings goals and prioritize the future.** Introducing active choice at the point of a selection provides no automatically selected option, but instead requires users to make an intentional decision to progress (Carroll et al., 2009). With no neutral or procrastination options offered, the active engagement with the decision makes it more likely that a user will think critically about their savings goals while making a decision. It can also raise the probability that a given choice will be tailored to an individual's financial situation (Carroll et al., 2009). Literature suggests that active choice may lead to longer-term adherence to a given choice because the engaged choice increases perceived responsibility for the decision (Keller et al., 2011). As a defense against the preference to procrastinate, active decisions have also been shown to reduce decision-making time when they are a required step in the process (Carroll et al., 2009). The active choice approach is particularly successful when:

   - Decisions are part of a mandatory process,
   - People understand the importance of saving and have access to education resources to understand their options,
   - Savings options are heterogeneous so that people can tailor their choices to their circumstances, and
   - When procrastination rates are high - as the active choice requires immediate decision-making (Carroll et al., 2009).

3. **Encourage users to partition their savings or income to support savings behavior and maintenance.** Research suggests that the separation of individual and business finances into multiple accounts or partitions (e.g. pockets) can increase savings (Soman & Cheema, 2011). Businesses even report improvement in revenues when household and business finances

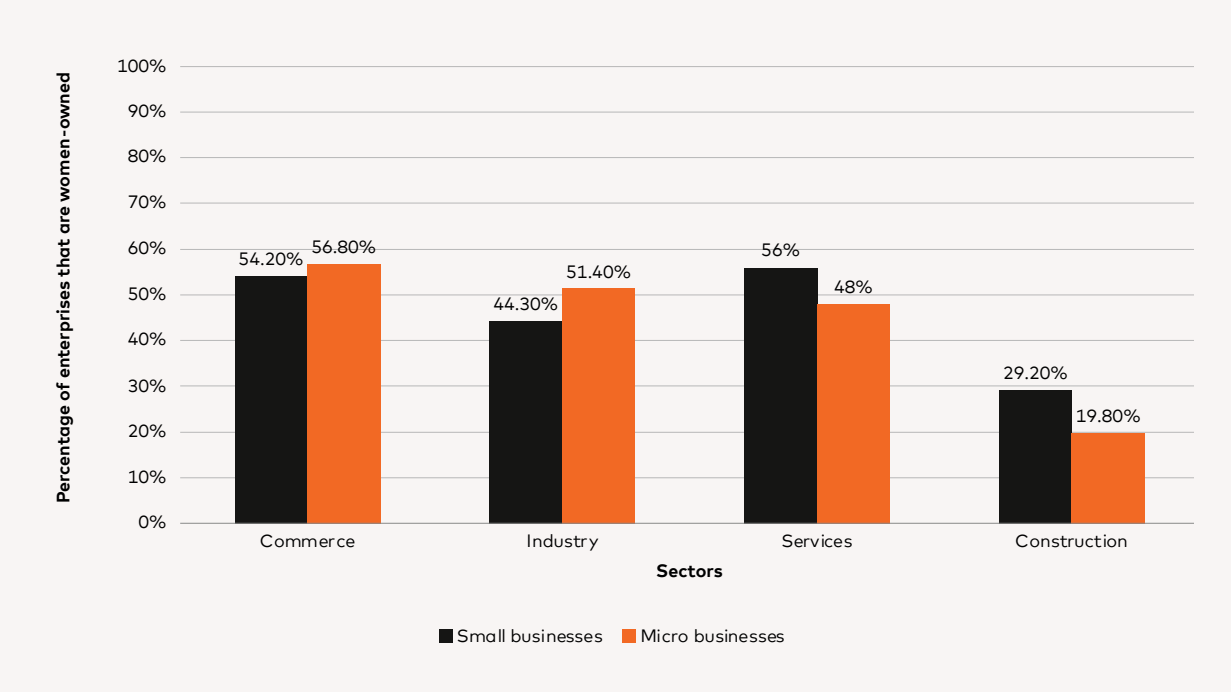
are kept separate (Drexler et al., 2014). This leverages the above principle known as mental accounting[16]. Given MSEs' realities of low and volatile income, flexibility to shift finances fluidly from household to business and back is important. Introducing products and services that encourage, support, and provide frictionless paths to the finance division, through wallets, accounts or other methods is highly important. However, ensuring that those offerings include flexible and frictionless transfer between accounts is the only way to meet MSEs at their unique needs in order to encourage account division.

4. **Provide a tracking system or other consistent indicator of the success and benefits of saving.** This strategy addresses both financial impatience and present bias and plays both on salience and completion bias.[17] For the latter, evidence indicates that proximity to a goal increases the effort put into reaching that goal, and the likelihood of completion (Kivetz et al., 2006). When someone is close to completing a savings goal, it can be motivational to highlight how close they are to completing their goal. A study using goal-tracking calendars found that they help small businesses save, allowing users to see the fruits of their efforts (Grohmann et al., 2020). Calendars or trackers can also help hold users accountable to their own goals. Setting savings goals ahead of receiving income can improve saving behavior. In 2004, Thaler and Benartzi discovered that having people choose a savings contribution for their income in advance of a pay raise significantly increased amounts saved over 3+ years (Thaler & Benartzi, 2004). They also make the benefits of foregoing immediate rewards for greater rewards in the future more salient.
5. **Call attention to information or consequences that might otherwise be discounted, missed or easily forgotten in the decision-making moment.** This can help combat the obstacles presented by the salience bias. The salience bias explains the tendency for people to focus on the information present and prevalent to them - and the tendency to ignore information that is less attention-grabbing (S. E. Taylor & Fiske, 1975; Tversky & Kahneman, 1973). Among other interventions, this could include providing real-time feedback (Tiefenbeck et al., 2016), adjusting formats or colors to focus attention on given information (Castelo et al., 2015), or reminders at the decision-making moment (Wicaksono et al., 2019). In fact, a 2018 study found that SMS reminders were able to help small businesses save (Abebe et al., 2018) by focusing attention on the need to act at the most opportune moment.

4 Understanding Women-Owned MSEs

Women play a crucial role in the global economy, including in Colombian micro and small businesses. Across all sectors (see figure 6), 44% of micro and 45.9% of small businesses are owned or led by women (ANIF, 2024).

Figure 7: Percentage of women-owned businesses by industry



Source: ANIF (2024)

Despite an active presence, female owners in Colombia face gender-specific challenges. Social and cultural barriers negatively impact women's abilities to succeed in the workforce, in managerial positions, and as employees.

Structural barriers are prevalent. Colombian women are more likely than their male counterparts to hold informal jobs, employment in lower-paying sectors, and in the care economy (Estudio Experimental de Género, 2024). These disadvantages continue to penalize women even in the face of technological advances, innovation, and financial support.

Financial access is often based on history but fails to account for these structural and systematic challenges. For example, credit scoring algorithms, which are based on traditional variables, often penalize women's lower history in the credit market. Female business owners in

Colombia report needing loans slightly more frequently than their male counterparts, and the market interest rates offered to women for productive credits are higher than those offered to men (ANIF, 2024). This presents an especially urgent challenge since micro businesses are both the sector where most capital is needed, and where women stand out as sole decision-makers.

Despite these setbacks, women owners in Colombia are already signaling their ability to handle the challenges presented by income volatility. Research shows that Colombian women have more structured approaches to running their businesses than their male counterparts. Their firms appear to have greater levels of formalization, higher median levels of formal financial integration, and greater adoption of strategic marketing and research (Eplee et al., 2023). Female firm owners in the Small Firms Diaries study were 9% more likely to separate their finances than male firm owners, with 85% of women allocating separate business accounts. As previously detailed, these strategies of formalization, partitioning accounts, and market research are known to mitigate the negative impacts of income volatility.

Beyond systemic and societal disadvantages, these patterns highlight the resilience and determination of female owners. A unique opportunity exists to design services and tools that target their strengths and dissolve ingrained barriers, affording them the ability to both propel their businesses and exponentially grow their already substantial contributions to the Colombian economy.



Call to Action

Likely the most pressing, the aforementioned consequences of income volatility on physical and mental health and wellbeing should be a top priority for ongoing research. Compiling this report has additionally highlighted some areas that might benefit from additional collaboration efforts between research and industry organizations.

Design financial products and services with MSEs, income volatility and resulting behavior patterns in mind (for more details and specific action steps, see report chapters). Financial service providers are uniquely positioned to alleviate significant frictions that bar MSEs from participating in the formal financial scene in Colombia. While the process is not quick or linear, understanding how users behave and why they make certain decisions can significantly alter the design process and improve the efficacy of products and services rendered. Care and time should be taken to understand the intricacies - especially the context and circumstances - of the users, to ensure the audience is being met with characteristics that best fit their needs and priorities. Among the more universal benefits to MSEs are the opportunity to simplify products and services, introduce flexibility, forgiveness and adaptability, and automate some of the financial decisions that can help them manage income volatility.

Continuously evaluate and adjust solutions to (1) ensure they are succeeding in improving MSEs' financial circumstances without infringing on personal agency and (2) mitigate negative externalities. Not all strategies are going to work as immediately expected. Contextual, personal and individual characteristics factor heavily into behavioral preferences and subsequent actions, and the efficacy of a given solution can fluctuate or decline over time. Regular monitoring ensures unforeseen consequences - negative or not - are accounted for and all users are appropriately protected.

Research should continue to contribute to MSE-specific financial barriers and circumstances, including the psychological mechanisms caused by and perpetuating income volatility cycles. Some areas that would benefit from specific research include (but are not limited to):

- Financial wellbeing measurement tools for MSEs. Current offerings are unsaturated and validated metrics could help future research - especially quantitative research - have a stronger base to build upon.
- Demographic differences in financial wellbeing and measurement.
- Further investigation of the barriers preventing MSEs from accessing financial products and services, particularly in the face of income volatility.

- The influence and impact that different financial and design solutions can have on MSEs ability to manage income volatility. This research might also highlight short-comings among some strategies that can guide and improve future application.
- The impact of income volatility on payroll expense variation. Both for businesses and individuals, a better understanding of how businesses prioritize and cope with payroll expense variation in the face of income volatility in addition to how it directly impacts individuals, households and the labor market could add significant value to the field. Consideration of the differences in impact across formal and informal organizations would also be valuable.
- Finally, while seemingly well documented in the U.S., identifying financial behaviors or circumstances that positively or negatively influence subjective financial wellbeing in other countries and cultures could further substantiate or add nuance to existing research.

While the focus here has been on how to mitigate the effects of income volatility on MSEs from the perspective of psychological barriers and opportunities, they are not the only ways forward. This report has touched on many structural barriers, as they directly impact the mental blocks in decision-making. However, we have also uncovered many opportunities to continue understanding and supporting MSEs, including (but not limited to) lengthy processes that MSEs cannot afford to wait out, systems that disproportionately assign risk in credit scoring and credit card use - which can ease repayment pressures worsened by income volatility. Nevertheless, it is likely that their integration alongside behavioral solutions would maximize financial resilience and wellbeing for MSEs.



Conclusion

MSEs are abundant in the Colombian business landscape. Consequential to the economy and employing a majority of the domestic labor market, their financial wellbeing is important for economic stability and growth. Yet dramatic income fluctuations challenge their financial and non-financial decisions, negatively impacting their financial health. This report illuminates the psychological consequences of income volatility that affect financial behavior and highlights behavioral opportunities to mitigate and support MSEs' financial wellbeing and resilience.

Formalization remains a significant hurdle for Colombian MSEs. Many operate informally, partially due to the complexities of the formalization process and perceived burdens of compliance. Clearly outlining and streamlining regulatory requirements, and providing support in registration and re-registration can facilitate the transition towards formalization, improving access to financial services for MSEs and fostering long-term business stability.

Current technological and financial landscapes present both challenges and opportunities for MSEs. Hesitance to adopt digital and financial tools is widespread, despite their potential to improve business operations. Behavioral inertia, consumer preferences, expense miscalculation, and limited digital and financial literacy impede the transition toward technology-driven and formal financial solutions. Encouraging gradual and structured adoption of digital financial services could help make financial tools more accessible and user-friendly.

Whether confounding circumstances or exclusion criteria, smaller firms in Colombia have inferior access to capital and credit. Tailored products and policy interventions are important to bridge this gap. Flexible financial products, such as customized credit solutions with adjustable repayment schedules, can allow MSEs to better accommodate the fluctuating cash flows. Leveraging decision aids, could be decisive in advancing MSEs' wellbeing. Simplifying processes as much as possible will also help to increase engagement with formal institutions and reshape perceptions. Whether in line with reality or not, perceptions establish the individual realities in which financial decisions are made.

Ultimately, the future of Colombia's MSE financial resilience and wellbeing hinges on concerted effort from policymakers, financial institutions, and financial product and service offerings. Addressing structural barriers, leveraging behavioral insights, and fostering enabling environments invites MSEs to shift their targets from stability to growth. The improvements will not only increase personal and business wellbeing, but also drive broader economic development, job creation, and social equity in Colombia.

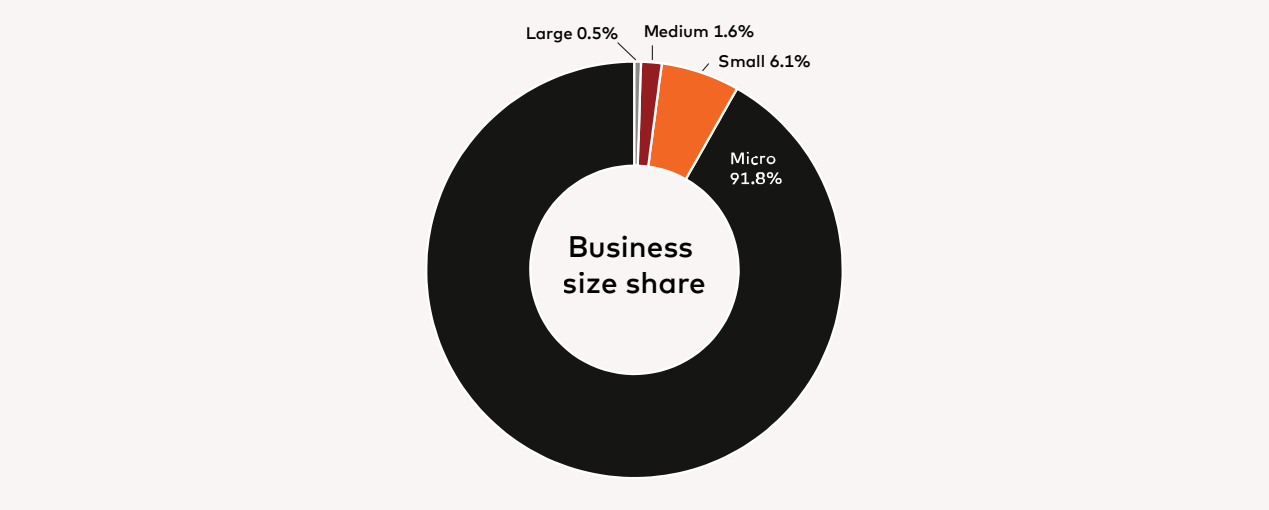
Appendix A: Differences in defining business size in Colombia

Table 1: Comparison of business classification criteria in Colombia

Business size	Law 1450: based on annual revenue (UVT)	Small Firm Diaries	DANE
Micro	Manufacturing: ≤ 23,563 UVT Services: ≤ 32,988 UVT Commerce: ≤ 44,769 UVT	Businesses with no non-family employees	Up to 10 employees
Small	Manufacturing: > 23,563 and ≤ 204,995 UVT Services: > 32,988 and ≤ 131,951 UVT Commerce: > 44,769 and ≤ 431,196 UVT	Businesses with at least 1 employee but no professional managers	11 to 50 employees
Medium	Manufacturing: > 204,995 and ≤ 1,736,565 UVT Services: > 131,951 and ≤ 483,034 UVT Commerce: > 431,196 and ≤ 1,736,565 UVT	Businesses large enough to have professional managers	51 to 200 employees

Appendix B: Micro business landscape in Colombia

Figure 8: Share of businesses by size in Colombia



Source: Banca de Oportunidades 2023

In 2023, 1.6 million companies were registered across Colombia's 57 chambers of commerce; of these, 91.8% were micro businesses. This highlights the critical role they play in Colombia's economy, and the need for policies and resources to support their growth and sustainability.

Figure 9: Ownership of micro businesses in Colombia by ownership



Source: EMICRON (2023)

The large majority of micro businesses were created solely by the owner, suggesting individual initiative over partnerships.

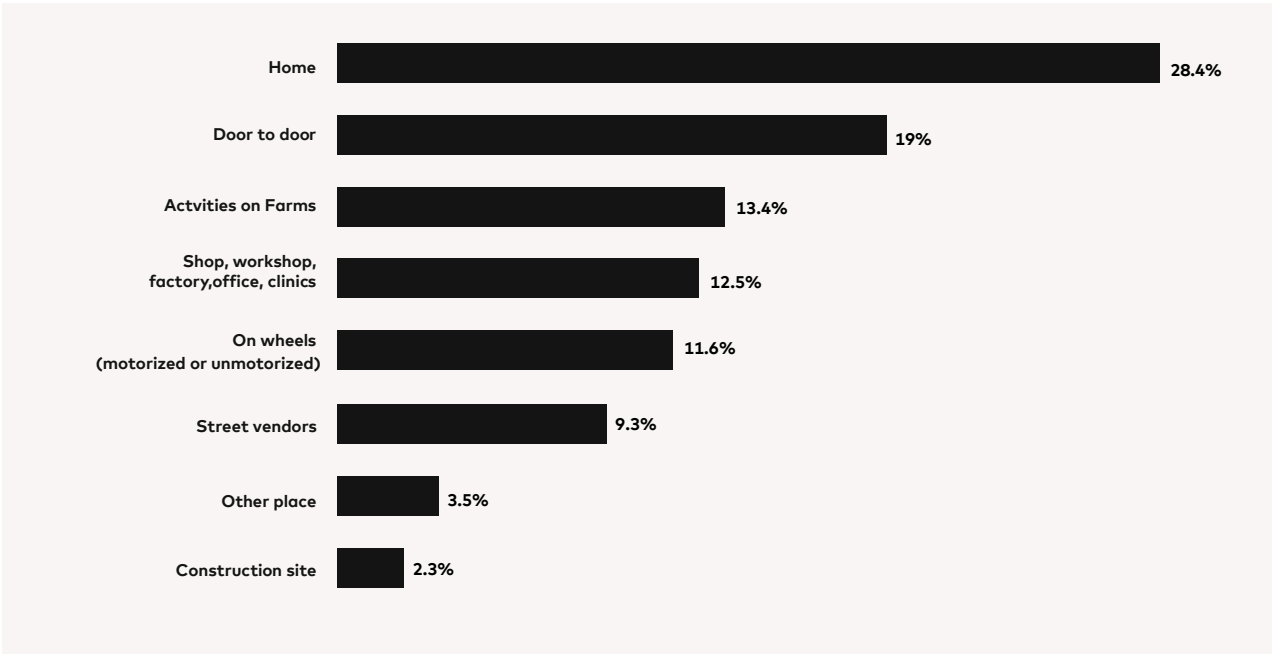
Figure 10: Development stages of all businesses registered in Colombian chambers of commerce



Source: Banca de las Oportunidades (2023)

Appendix C: Economic Activity in Microfirms in Colombia

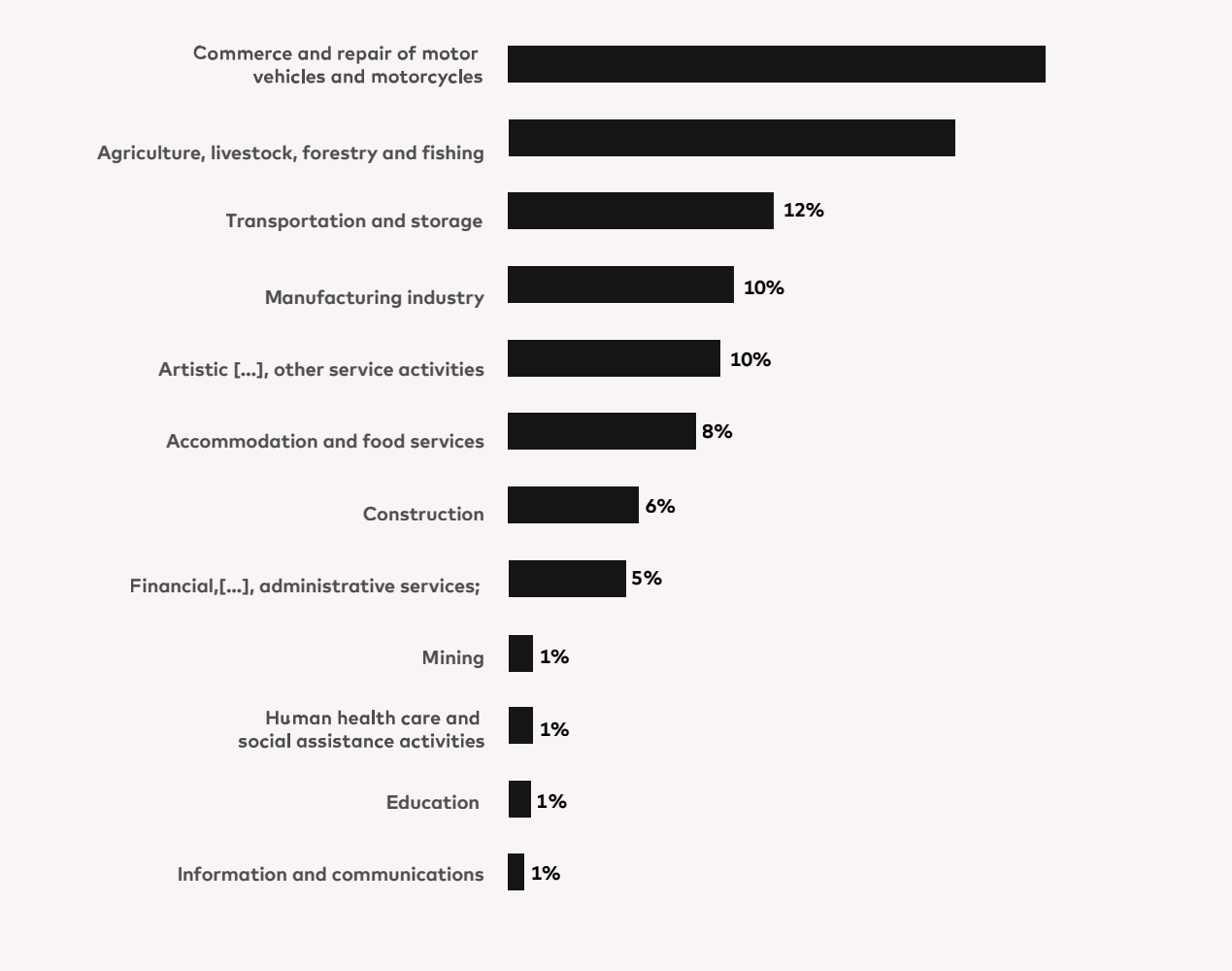
Figure 11: Economic activities of micro businesses in Colombia in 2023



Source: EMICRON (2023)

Half of Colombia's micro businesses are concentrated in three key economic activities: commerce and motor vehicle repair, agri-food, and transportation. This concentration provides financial institutions with valuable insights for tailoring their products to better meet the needs of these sectors.

Figure 12: Operating locations of micro businesses in Colombia



Source: EMICRON (2023)

Nearly 50% of micro businesses in Colombia operate from home or through door-to-door sales, putting them at risk of mixing household and business finances. Maintaining this separation is crucial for running successful businesses.

Appendix D: Formality

Table 2: Formality evaluated by the 2023 Micro business Survey

Dimension	Definition	Micro businesses in 2023
Business formality	Related to the legal existence of the business, including business registration requirements.	76.2% did not have a Unique Tax Registry (RUT). 89.5% reported not being registered with the Chamber of Commerce.
Formality of inputs and production factors	Includes compliance with labor requirements such as health, pension, and occupational risk insurance.	87.4% owners did not make monthly contributions to the Contributory Health Regime or a pension fund.
Production formality	Refers to compliance with regulations in the production and commercialization of goods and services.	74.1% registered with the Chamber of Commerce had requested or renewed their registration.
Tax Formality	Related to the obligation to declare and pay taxes.	65.5% did not have any record-keeping system for their accounts.

Source: (Consejo Nacional de Política Económica y Social et al., 2019)

The survey evaluated the formality level of micro businesses (those up to 10 employees) across the four listed key dimensions. Is worth noting that, using the Small Firm Diaries definition (which this report also adopts) 76.20% lack tax registration and thus would not be considered a formal business.

Endnotes

1. Law 1450 of 2011, updated by Decree 957 of 2019 (Departamento Administrativo de la Función Pública, 2019).
2. In this classification, micro businesses consist of up to 10 employees, small businesses have 11 to 50 employees, medium-sized businesses have 51 to 200 employees, and large businesses employ more than 200 workers (DANE, 2020).
3. Working capital is liquidity to operate or make small/short-term business investments.
4. Due to employee turnover, changes in work hours, wage adjustments, economic conditions, seasonal employment, etc.
5. Expense prediction bias is the systematic failure to forecast (often underpredicting) future expenses and the probability of facing a financial shock. Research indicates people tend to misestimate their future expenses by 15% (Berman et al., 2014). This is especially true for expenses in the distant future.
6. Point-of-sale technology is technology that businesses use to process purchase transactions e.g. card readers or card machines
7. Small firms have credit applications approved at a rate of 80% (ANIF, 2024).
8. The 2023 Micro businesses survey classifies micro businesses as an economic unit with a maximum of 9 occupied persons (DANE, 2024b).
9. Friction is anything that acts as a logistical barrier to completing or carrying out behavior. Where possible, people avoid tasks or actions that carry friction. Complexity, difficulty, effort and time investment requirements are frictions that disincentivize behavior (Thaler, 2018).
10. Individuals expressing this opinion indicated a preference for repaying debts as quickly as possible, but being hindered by the volatility of their cash flow. However, when sales increase, debt repayment becomes a priority, allowing debts to be cleared within months, not exceeding a year.
11. A nudge is "any aspect of choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing any incentives" (Thaler & Sunstein, 2021, p. 8).
12. Setting a default involves pre-selecting an option on behalf of a user that facilitates their path to a financially healthy goal, while maintaining the users' agency at all times to opt-out or make a different choice. In case of inaction, the default is applied.
13. Expense prediction bias, see page 14 for more detailed description
14. Employing defaults is one opportunity to encourage use of financial accounts. Setting a choice default involves pre-selecting an option on behalf of a user that facilitates their path to a financially healthy goal, while maintaining the users' agency at all times to opt-out or make a different choice. In case of inaction, the default is applied.
15. Cognitive dissonance is a discomfort or mental tension that arises when an individuals' beliefs, attitudes or behaviors contradict each other.
16. Mental accounting dips into the physical behaviors - describes how individuals track, evaluate and organize financial activities and can influence financial decision-making (Thaler, 1999)
17. This is also known as the goal gradient theory

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