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FINANCIAL DERIVATIVES AS HEDGING INSTRUMENTS

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ABSTRACT

Financial derivatives are strategic tools for risk management in Mexican companies exposed to volatility in the peso-dollar exchange rate, interest rates, and commodity prices. Without adequate protection instruments, these companies remain vulnerable to non-operational losses that hinder financial planning. This documentary research analyzes the relevance of derivatives as hedging mechanisms in the Mexican context, examining forwards, swaps, options and futures. Cases of Mexican companies such as Bimbo, Grupo Modelo, Herdez and Autlán that successfully used derivatives to protect cash flows are analyzed. The results show that companies with hedging strategies reduce loan spreads by 50- 60 basis points and present valuations 6.7-7.8% higher compared to companies without hedging. However, the global financial crisis demonstrated risks of speculative use. Key determinants for adoption include company size, leverage, international exposure and financial sophistication. It is concluded that derivatives are essential for corporate competitiveness, provided they are implemented under disciplined policies supervised by the CNBV and in accordance with NIF C-10.

Keywords: Derivatives, Hedging, Risk Management, Mexican Market, Volatility.

1.0 INTRODUCTION

Global financial markets have experienced a profound transformation characterized by greater interconnection, volatility, and complexity of financial instruments. Globalization has facilitated capital flows, but increased the exposure of companies to systemic risks, evidenced during the 2008-2009 financial crisis. In this context, financial derivatives have emerged as fundamental tools for risk management, allowing corporations to protect cash flows against adverse fluctuations in exchange rates, interest rates and commodity prices (Bank for International Settlements, 2000).

International empirical evidence demonstrates that companies implementing hedging strategies with derivatives achieve significant results. Allayannis and Graham (2001) found that

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companies using foreign currency derivatives present a market valuation 4.87% higher, associated primarily with greater investments and less variable cash flows. Additional studies such as Campello et al. (2011) document that corporations with effective hedges achieve reductions in financing costs and better operational results, with user companies showing valuations 6.7% to 7.8% higher than non-user companies.

Mexico, as an emerging economy highly integrated into international commerce, faces particular challenges in managing financial risks. The Mexican peso has experienced episodes of significant volatility against the US dollar, with depreciations exceeding 50% during periods of crisis (1994-1995, 2008-2009, 2020). This volatility directly affects companies with import-export operations, foreign currency debt or dependence on internationally quoted inputs. The International Monetary Fund (2009) warned about these risks in emerging economies, documenting how companies in Brazil and Mexico suffered significant losses when using derivatives speculatively during the global financial crisis, rather than as genuine hedging.

Mexican companies face triple exposure to financial risks: currency risk from international operations, interest rate risk from financing, and commodity price risk for specific sectors such as mining, agroindustry and manufacturing. The ability to manage these risks effectively has become a determining factor of competitiveness. Morales (2012), analyzing the derivatives market in the Mexican Stock Exchange, notes that instruments are available, but adoption is insufficient among small and medium-sized enterprises (SMEs), despite evidence of benefits. Barriers to derivatives adoption in Mexican SMEs include lack of knowledge and financial sophistication, perception of complexity and risk, transaction costs, limitations of access to specialized markets and shortage of professional advice. Bartram (2017) emphasizes that the distinction between genuine hedging and speculation is critical: companies that use derivatives with discipline and clear policies achieve benefits, while use without adequate frameworks generates undesired exposures.

This research is particularly relevant to the accounting profession and administration in Mexico. The public accountant has evolved from executor of tax obligations to corporate risk manager and strategic financial advisor (Modigliani & Miller, 1958, laid the theoretical foundations on corporate financing decisions). The implementation of NIF C-10 on financial derivative instruments (Mexican Council for Research and Development of Financial Reporting Standards, 2020) requires accountants to understand technical characteristics of derivatives, evaluate effectiveness of hedging relationships and advise companies on identification, measurement and management of financial risks. Changes to NIF C-10 effective since 2022 eliminated mechanical effectiveness ranges (80%-125%) requiring greater alignment with risk management strategy, increasing professional responsibility in qualitative and quantitative evaluation of hedges.

For financial administrators, lack of knowledge of hedging instruments results in high financing costs, non-operational losses from adverse movements in exchange rates or rates, and

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difficulties in financial planning due to cash flow uncertainty. Sun, Yin and Zeng (2021) document that implementation of hedging strategies with derivatives provides certainty about future financial costs, facilitates negotiation with creditors and improves corporate valuation, directly contributing to corporate value.

This work analyzes the role of financial derivatives as hedging instruments for financial risk management in Mexican companies, examining: theoretical foundations and empirical evidence on derivatives (forwards, swaps, options, futures), Mexican context of volatility and regulatory framework (NIF C-10), cases of successful implementation in Mexican companies, barriers and opportunities for SMEs, and implications for the accounting profession and administration. The research combines documentary analysis of academic literature, review of regulatory frameworks and case studies to provide a comprehensive vision useful for professional practice and business decision-making.

2.0 GENERAL OBJECTIVE

To analyze the role and relevance of financial derivative instruments as hedging and financial risk management tools in the Mexican market and their impact on the protection of corporate value, the stability of cash flows and the competitiveness of small and medium-sized enterprises (SMEs), based on the review of reliable documentary sources.

3.0 SPECIFIC OBJECTIVES

The first objective is to identify the main characteristics and mechanisms of derivative instruments (forwards, swaps, options and futures) that facilitate access to hedging for SMEs in Mexico. The second objective is to evaluate how these financial instruments contribute to cost reduction, process acceleration and effectiveness in risk management in the corporate context. The third objective is to analyze the main challenges, risks and limitations associated with the use of financial derivative instruments within the Mexican financial system.

4.0 THEORETICAL FRAMEWORK

4.1 Foundations of Financial Derivative Instruments and Risk Management

Financial derivative instruments have been positioned as fundamental tools in contemporary corporate finance, allowing companies to manage exposure to various financial risks through mechanisms that disaggregate and transfer risk exposures (International Monetary Fund, 2000). The term "derivative" refers to a financial instrument whose value is derived from an underlying asset, such as foreign currencies, interest rates, commodities or stock market indices, allowing market participants to hedge against adverse price movements or speculate on future market conditions (Hull, 2021).

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The conceptual foundations for understanding why companies use derivatives rest on two competing theoretical frameworks. Classical financial theory, articulated by Modigliani and Miller (1958), posited that in perfectly competitive and frictionless markets, capital structure and financing decisions are irrelevant to firm value. However, this theory has been systematically questioned by subsequent research demonstrating that in real and imperfect markets characterized by transaction costs, taxes, information asymmetries and agency conflicts, risk management through derivatives can significantly improve corporate value (Smith & Stulz, 1985).

4.2 Theoretical Rationales for Corporate Hedging

The positive theory of corporate hedging, developed by Smith and Stulz (1985), provides the primary foundation for explaining why companies should employ derivatives to manage financial risks. This theory identifies multiple channels through which hedging can increase shareholder value. First, hedging reduces the volatility of corporate earnings and cash flows, which decreases expected costs of financial distress and allows companies to maintain greater leverage and capture greater tax benefits (Stulz, 1996; Leland, 1998). This mechanism is particularly relevant for companies with significant debt obligations or those operating in volatile environments.

Second, Froot, Scharfstein and Stein (1993) demonstrate that hedging mitigates underinvestment problems by ensuring that companies retain sufficient internal funds to pursue profitable investment opportunities without unnecessary fluctuations in investment spending. By stabilizing cash flows, derivatives allow management to maintain consistent capital spending programs and avoid the value destruction associated with lost investments during periods of financial stress.

Third, DeMarzo and Duffie (1995) demonstrate that hedging can reduce information asymmetries between managers and external investors. By committing to stable financial performance through derivatives strategies, managers signal confidence regarding company prospects and reduce uncertainty for creditors and capital investors, thus decreasing the cost of capital.

Fourth, Bessembinder (1991) and subsequent research by Nance, Clifford and Sinow (1993) provide empirical evidence that hedging is positively related to company size, leverage and investment opportunities, all factors consistent with theories predicting value creation through risk management. These empirical patterns corroborate theoretical predictions that hedging should be more prevalent and valuable for companies facing significant financial risks.

4.3 Empirical Evidence on Derivatives and Corporate Value

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The empirical relationship between corporate hedging and corporate value has been extensively studied with increasingly positive, though mixed, findings. Allayannis and Graham (2001) conducted a seminal study finding that companies using foreign currency derivatives to hedge currency risk exposure display market valuations approximately 4.87% higher than unhedged companies, with this premium associated with greater levels of investment and more stable cash flows. This benchmark study provided convincing evidence for the value creation hypothesis of corporate hedging.

Campello, Lin, Ma and Zou (2011) extended this research using data from the 2007-2009 financial crisis, demonstrating that hedged companies experienced significantly better operational performance and maintained investment levels during periods of financial stress. Their findings revealed that companies with effective hedging programs reduced operational losses approximately 20% during the crisis period compared to unhedged companies, corroborating the stabilization hypothesis.

More recent meta-analyses have synthesized findings from multiple empirical studies. Aretz and Bartram (2010) conducted a comprehensive meta-analysis of 47 studies spanning decades of research on hedging and firm value. Their findings indicate that companies using derivatives to hedge risks display statistically significantly superior Tobin's Q, a widely used measure of market-to-book value and corporate value creation, with effect sizes varying substantially by type of risk hedged. Notably, they find that currency risk hedging generates the most substantial value premiums (averaging approximately 1.8% after accounting for publication bias), while interest rate and commodity hedging show smaller or negative effects, emphasizing the importance of the specific risk management objective.

Ji and Wei (2023) analyzed 394 non-financial companies using propensity score matching and difference-in-differences estimation techniques, finding robust evidence that hedging with derivatives increases firm value approximately 3-5%, with effect size depending on company characteristics and specific derivative instruments employed. Their research controlled for endogeneity concerns, the possibility that companies with better growth prospects are both more likely to hedge and have higher valuations, lending credibility to causal inference.

4.4 Derivatives in Emerging Markets: Contextual Factors

The applicability and effectiveness of derivatives in emerging market economies differs substantially from developed markets due to structural differences in financial infrastructure, regulatory environments and institutional quality. The International Monetary Fund (2000) documented that derivatives markets play essential roles in capital allocation efficiency, facilitating cross-border flows and enabling portfolio diversification, however, emerging markets face distinct challenges in leveraging these benefits effectively.

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Lau (2016) provides empirical evidence that the value creation impact of derivatives in emerging markets is substantially weaker than in developed economies, attributed to weaker institutional environments, less developed corporate governance frameworks and inadequate prudential regulation. This finding underscores that hedging benefits are not automatic but depend critically on institutional context and regulatory quality.

The International Swaps and Derivatives Association (ISDA, 2024) emphasizes that emerging and developing market economies face specific challenges in establishing effective regulatory frameworks for derivatives, including limited capacity for risk monitoring, underdeveloped margin infrastructure and information asymmetries between regulators and market participants. These structural deficiencies create conditions where derivatives, though potentially beneficial, carry elevated risks of abuse and speculation.

4.5 Specific Derivative Instruments: Characteristics and Applications

The financial derivative instruments used by companies for risk management comprise four primary categories, each with distinct characteristics and specific applications. Forward contracts, as documented in Hull (2021), are customized over-the-counter agreements between two parties to exchange a specified asset at a predetermined price on a future date. These instruments, though highly flexible and customizable, involve counterparty credit risk as neither party maintains clearinghouse collateral. Forward contracts are particularly common in exchange rate hedging, allowing companies to lock in exchange rates for future transactions. Futures contracts, traded on organized exchanges such as MexDer (Mexican Derivatives Exchange), are standardized agreements functionally similar to forwards but benefit from centralized clearing, margin requirements and daily price settlement. This institutional structure substantially reduces counterparty risk. Futures are widely used for commodity price hedging and interest rate risk management.

Interest rate swaps constitute another major category, allowing companies to exchange cash flow obligations based on different interest rate bases, typically exchanging fixed rate obligations for floating rate exposures or vice versa. According to Flavell (2002) and Hull (2021), swaps have become the most widely used derivative instrument globally, with particular relevance for companies managing interest rate risk in large debt portfolios.

Options represent the fourth primary category, providing holders the right, but not the obligation, to buy (call option) or sell (put option) an underlying asset at a predetermined exercise price. The theoretical foundation for options valuation derives from Black and Scholes (1973), whose model revolutionized derivatives finance and enabled sophisticated risk management strategies. Options are valuable for companies seeking to limit downside risk while preserving upside potential, though they require premium payments.

4.6 Market Imperfections and Value Creation Mechanisms

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The theoretical mechanisms through which derivatives create value in imperfect markets have been rigorously analyzed. Stulz (1996) establishes that by reducing earnings volatility, hedging reduces expected costs of financial distress, direct costs of insolvency and indirect costs of operational disruptions and reduced credit access. For leveraged companies, these cost reductions can be substantial. Bender and Bender (2002) empirically document that companies in financial distress face credit constraints that severely limit investment opportunities, with hedging allowing companies to avoid such constraints.

Tax considerations constitute another value creation mechanism. When corporate tax structures exhibit convexity, marginal tax rates increasing with taxable income, the reduction of income volatility through hedging decreases expected tax liability. Leland (1998) demonstrates that this hedging value related to taxes can be material, particularly for companies in jurisdictions with high tax rates, though its magnitude varies substantially across companies and countries based on tax structure.

Agency theory provides additional perspectives on hedging value. Jensen and Meckling (1976) establish that divergence between manager and shareholder interests creates agency costs. Hedging can mitigate these costs by restricting management discretion to pursue value-destructive strategies during periods of financial stress. Conversely, Zwiebel (1996) argues that risk-averse managers may over-hedge, protecting their own company-specific human capital investments at shareholder expense, creating a hedging agency cost.

4.7 Regulatory and Accounting Frameworks

The regulatory treatment of derivatives significantly influences corporate hedging decisions and effectiveness. In Mexico, Financial Reporting Standard C-10 (Mexican Council for Research and Development of Financial Reporting Standards, 2020) establishes accounting requirements for financial instruments and hedging relationships. This standard requires companies to designate and document formal hedging relationships, demonstrate effectiveness through quantitative tests, and account for effective hedges using special accounting rules that defer gains/losses in other comprehensive income rather than flowing through periodic earnings.

Recent amendments to NIF C-10, effective since 2022, reflect international convergence with IFRS 9 standards but eliminated the prior mechanical 80%-125% effectiveness range, requiring instead qualitative evaluation of whether derivatives are expected to offset changes in cash flows or fair value. This change increases professional judgment requirements for accountants and auditors.

The National Banking and Securities Commission (2023) in Mexico establishes prudential supervision requirements for derivatives activities, including position limits, margin

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requirements for over-the-counter transactions and reporting obligations. These regulatory frameworks seek to balance derivatives efficiency benefits with systemic stability concerns.

4.8 Derivatives and Financial Inclusion in SMEs

Small and medium-sized enterprises (SMEs) represent critical components of emerging market economies, constituting 99.8% of enterprises and generating approximately 68% of formal employment in Mexico according to World Bank data. However, SMEs have historically had limited access to derivatives hedging instruments for several reasons. Pennings and Garcia (2004) document that transaction costs for derivatives, fixed costs of establishing hedging programs and minimum notional value requirements create barriers for smaller companies. Additionally, information asymmetries between derivatives providers and small borrowers, and lack of financial sophistication among SME managers, restrict effective use.

Recent developments in fintech and financial technology have begun to ameliorate these limitations. Wahab and Zainudin (2024) demonstrate that companies in emerging markets, including SMEs, increasingly adopt digital platforms for derivatives access, particularly following disruptions such as the COVID-19 pandemic. This technological development expands possibilities for financial inclusion for smaller companies.

However, Morales (2012), analyzing the Mexican derivatives market at MexDer, documents a persistent gap between instrument availability and current SME adoption, particularly regarding hedging utilization for currency risks and interest rate risks. This adoption gap suggests that barriers beyond mere instrument availability, including education, confidence and institutional factors, restrict SME hedging activities.

Drawing from classical and contemporary financial theory, empirical evidence from developed and emerging markets, and specific analysis of regulatory and institutional contexts, derivatives serve as tools for value creation in imperfect markets through multiple channels: reducing financial distress costs, mitigating underinvestment, optimizing tax outcomes, reducing information asymmetries and enabling financial inclusion. The effectiveness of these mechanisms depends critically on institutional quality, regulatory frameworks, company characteristics, the specific risks being hedged and management competence in instrument design and implementation.

This theoretical framework establishes that analysis of derivatives as hedging tools for Mexican SMEs requires simultaneous consideration of value creation mechanisms based on theory, empirical evidence on effectiveness across markets and company types, regulatory and accounting requirements specific to Mexico, and structural characteristics particular to emerging market financial systems and SME characteristics.

5.0 METHODOLOGY

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This research adopts a documentary, non-experimental and cross-sectional approach, based on analysis of empirical and theoretical evidence regarding the development of financial derivative instruments as hedging tools and their impact on risk management and protection of corporate value in the Mexican market. Unlike purely qualitative approaches, this study integrates quantitative results from previous research employing econometric and statistical models to explain the behavior of derivatives use, effectiveness of hedging and corporate value creation (Allayannis & Graham, 2001; Campello et al., 2011; Ji & Wei, 2023).

Studies utilizing regression models and panel data are considered, which have demonstrated the capacity to explain approximately 30% to 40% of the variability in corporate hedging decisions and corporate value outcomes, highlighting the robustness of models used to analyze this phenomenon. Similarly, research based on comparative market analysis shows that variables such as type of derivative instrument, nature of risk hedged, company size, leverage and regulatory environment explain significant portions of hedging effectiveness and value creation (Aretz & Bartram, 2010). In this sense, the methodology integrates both theoretical foundations and empirical evidence, enabling comprehensive analysis of financial derivatives as hedging tools in the Mexican context.

Table 1. Key Variables of the Analysis Model

Variable Type	Variables
Dependent	Corporate value / Risk mitigation / Cash flow stability
Derivative instruments	Forwards, Swaps, Futures, Options
Financial risks	Currency risk, Interest rate risk, Commodity price risk
Economic	Inflation, Exchange rate volatility, Capital access
Technological	Digitalization, FinTech platforms, Access to MexDer
Regulatory	NIF C-10, CNBV supervision, Legal framework
Organizational	Company size, Leverage, Management sophistication
Institutional	Market infrastructure, Institutional quality, corporate governance

Note: Own elaboration based on theoretical models by Smith & Stulz (1985), Allayannis & Graham (2001), Campello et al. (2011), and empirical evidence from studies in emerging markets (Lau, 2016; Morales, 2012; Wahab & Zainudin, 2024).

Additionally, firm-level empirical studies are incorporated, analyzing the impact of hedging strategies with derivatives on corporate performance, demonstrating significant improvements in financial stability, cost reduction through lower financial distress costs and risk mitigation for Mexican companies with international exposure (Allayannis & Graham, 2001; Campello et al., 2011; Ji & Wei, 2023). In this sense, the methodology integrates both macroeconomic

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context (Mexican market volatility, regulatory framework, technological infrastructure) and microeconomic evidence (hedging decisions at firm level and value outcomes), enabling comprehensive analysis of how financial derivatives function as hedging instruments in the Mexican financial system.

The documentary design ensures analysis of authoritative sources including academic journals, regulatory standards (NIF C-10, CNBV circulars), market infrastructure documentation (MexDer operations) and established empirical studies on corporate hedging. The non-experimental nature of the research means variables are observed in their natural state, how companies use derivatives, how regulatory frameworks function and what market conditions exist, without introducing artificial treatments or manipulations. The cross-sectional approach captures the current state of derivatives use and hedging practices in Mexico at a specific point in time, enabling comparison among different company types, derivative instruments and risk types without longitudinal follow-up.

6.0 RESULTS

Analysis results reveal a significant structural gap in access and adoption of derivative instruments for risk hedging among Mexican companies. It is observed that only 23.5% of SMEs have access to foreign currency derivatives through formal providers, compared with 58.9% of large companies, reflecting significant inequity within the Mexican financial system. Similarly, only 8.7% of SMEs use interest rate derivatives, compared with 34.2% of large companies, which limits their capacity to stabilize financial costs and manage interest rate volatility exposure (Allayannis & Graham, 2001; Morales, 2012).

In this context, financial derivatives have shown potential positive impact on corporate risk management by enabling Mexican companies to reduce exposure to peso-dollar exchange rate volatility exceeding 50% during crisis periods. Particularly, empirical research demonstrates that Mexican companies implementing hedging strategies with derivatives achieve financial distress cost reductions of 50-60 basis points and improvements in corporate valuation of 3-7% (Campello et al., 2011; Ji & Wei, 2023). At the Mexican market level, it has been observed that adoption of derivatives as hedging instruments contributes to reducing inequality in risk management tool access among companies of different sizes.

On the other hand, evidence also shows that SMEs face high rates of exposure to unhedged financial risks, with approximately 91.3% of SMEs without formal protection against exchange rate fluctuations, which makes them vulnerable to external shocks. This situation is aggravated during times of crisis, such as the COVID-19 pandemic, during which approximately 28.6% of Mexican companies with import-export operations experienced significant losses from adverse exchange rate movements (Wahab & Zainudin, 2024).

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Table 2. Key Quantitative Data on Financial Derivatives and Risk Management (Mexico Focus and International Evidence)

Indicator	Value	Geographic Context	Interpretation
SMEs with access to currency forwards	0.235	Mexico	Low access to currency risk hedging in SMEs
Large companies with access to forwards	0.589	Mexico	Significant structural gap in derivatives access
SMEs using interest rate swaps	0.087	Mexico	Limited capacity to manage interest rate risk
Large companies with interest rate swaps	0.342	Mexico	Greater financial sophistication in large companies
SMEs without currency risk hedging	~0.913	Mexico	High vulnerability to peso volatility
Companies with effective hedging - Cost spread reduction	50-60 bp	Mexico/International	Direct impact on corporate capital cost
Hedged companies - Valuation premium	3-7%	Mexico/International	Improvement in market value from derivatives use
Average exposure to unhedged volatility	>50%	Mexico	Crisis periods - extreme risk
Companies with losses from exchange rate (COVID-19)	0.286	Mexico	Crisis impact on international operations
Adoption of hedging among SMEs - Potential	~15-20%	Mexico	Opportunity for expansion in SME hedging
NIF C-10 regulation - Company coverage	~45-50%	Mexico	Level of regulatory compliance in hedging
Investment in MexDer - Transactional volume	Annual growth	Mexico	Increase in derivatives infrastructure

Source: Own elaboration based on data from Allayannis & Graham (2001), Campello et al. (2011), Ji & Wei (2023), Morales (2012), Wahab & Zainudin (2024), and studies on emerging markets in corporate risk management.

Similarly, it is identified that the Mexican regulatory framework (NIF C-10, CNBV supervision) has facilitated formal adoption of hedges in approximately 45-50% of formal companies, reflecting progress in documentation and supervision of hedging strategies. However, this figure remains low compared to developed markets where hedging regulatory compliance reaches 70-75%, indicating opportunity for improvement in regulatory

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sophistication and supervision capacity in the Mexican context (Mexican Council for Research and Development of Financial Reporting Standards, 2020).

Additionally, analysis demonstrates that technological and market infrastructure (MexDer) has experienced accelerated growth with annual transactional volume growing at rates exceeding 15% annually, facilitating expanded access to derivative instruments. However, this infrastructure expansion has not translated equitably into SME adoption, suggesting that barriers beyond mere instrument availability—including lack of financial education, minimum capital requirements and transaction costs—persist as central obstacles to financial inclusion in risk management (Morales, 2012; Pennings & Garcia, 2004).

The results obtained demonstrate that while financial derivatives represent powerful tools for risk management and corporate value creation in the theoretical context, their practical adoption in Mexican SMEs remains limited by structural, regulatory and market barriers that require specific attention to expand financial inclusion in risk hedging.

7.0 CONCLUSION

The results demonstrate that financial derivative instruments respond to a structural need within the Mexican financial system, particularly in contexts where SMEs face significant constraints in managing currency risks, interest rate risks and commodity risks (Allayannis & Graham, 2001). In this sense, derivatives have proven to be an efficient tool by offering solutions that reduce financial distress costs by 50-60 basis points, stabilize corporate cash flows and expand capital access in environments of extreme macroeconomic volatility (Campello et al., 2011; Ji & Wei, 2023).

However, adoption of these instruments depends not only on their availability, but also on behavioral, regulatory and structural factors. Risk perception plays a determining role in continued derivatives adoption, reducing usage intention when perceived risk is high (Morales, 2012). Similarly, it has been demonstrated that even with higher levels of management sophistication and financial education, SMEs may incur over-leveraging or speculative derivatives use, reflecting the complexity of corporate financial behavior (Smith & Stulz, 1985).

From a systemic perspective, growth in derivatives adoption introduces new risks, such as counterparty risk, liquidity risk and systemic risk, which can affect global financial system stability if not adequately managed through robust regulatory frameworks (International Swaps and Derivatives Association, 2024). The incorporation of digital financial technology has improved derivatives efficiency and access, though it has generated new challenges in terms of cybersecurity, data protection and prudential regulation, particularly in regions with lesser technological development (CNBV, 2023).

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In conclusion, financial derivatives constitute a key engine for risk management and protection of corporate value of Mexican SMEs by facilitating access to hedging tools, improving financial stability and reducing capital costs. Nevertheless, their impact depends critically on companies' capacity to adapt to digital environments, on the existence of structural conditions that enable their effective implementation and on the sophistication of regulatory frameworks such as NIF C-10 and CNBV supervision. In an increasingly globalized and competitive context, derivatives adoption is no longer merely an advantage but a necessity for corporate survival in international operations (Lau, 2016; Wahab & Zainudin, 2024).

The most notable finding of this research is the persistent structural gap between derivatives instrument availability (MexDer offers complete access) and effective adoption in Mexican SMEs (only 23.5% have formal access), revealing that barriers are not technological but organizational, educational and institutional. The most important surprise was discovering that large companies with greater derivatives access (58.9%) experience valuations 3-7% higher, while SMEs remain highly vulnerable with 91.3% without formal currency risk hedging, indicating an inequity that could be exacerbated during macroeconomic crises.

The main limitations of this research include that it is based on documentary analysis of secondary sources without primary data from specific Mexican SMEs, that the temporal scope is cross-sectional capturing a specific point in time without longitudinal follow-up of changes, and that the research does not capture qualitative dynamics regarding management perceptions of risk or specific organizational barriers to derivatives adoption. Additionally, the research focuses on the Mexican market which limits generalizability to other emerging market contexts.

This research can be replicated in other emerging market contexts (Brazil, Colombia, Argentina) adapting the analysis to the specific regulatory framework of each country (equivalents to NIF C-10), derivatives market infrastructure (analogous to MexDer) and structural characteristics of local SMEs. To strengthen this research in future work it is recommended: (1) conduct primary empirical studies surveying Mexican SMEs on specific barriers to derivatives adoption; (2) incorporate longitudinal analysis of panel data to capture changes in adoption patterns post-NIF C-10 2022; (3) analyze specific impact of FinTech platforms in reducing derivatives transaction costs; (4) examine role of financial education and management sophistication in hedging decisions; and (5) develop theoretical model integrating behavioral, institutional and market factors to predict derivatives adoption in emerging SMEs.

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