

## AN EMPIRICAL ANALYSIS ON APPLICATION OF FINANCIAL DERIVATIVES AS HEDGING STRATEGY AMONG INDIAN I.T. FIRMS

Harsh Nayak<sup>1</sup>, Neha Rajak<sup>1</sup>, Manoj Sharma<sup>2</sup> and Nitin Kisan Deshmane<sup>1\*</sup>

<sup>1</sup>*Mulshi Institute of Business Management, Pune, India*

<sup>2</sup>*International School of Business and Media, Pune*

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**Abstract:** This study investigates the application of financial derivatives as hedging strategies by Indian IT firms. It explores the types and extent of derivative usage, factors influencing hedging decisions, and the effectiveness of these strategies in mitigating financial risks. The research focuses on the top 3 IT companies (TCS, Wipro, and Infosys) for the financial year 2022-2023. The findings reveal the prevalent derivative instruments used for hedging by Indian IT firms and identify key factors influencing their decisions to hedge. The research also analyzes the impact of hedging on financial performance and risk exposure. This project contributes to the existing literature on corporate hedging practices by providing empirical evidence on the determinants of hedging behavior within the Indian IT sector. It offers valuable insights for investors, analysts, and policymakers by highlighting how Indian IT firms manage foreign exchange risk and other financial exposures using derivative instruments. The study also identifies potential limitations associated with derivative usage and suggests directions for future research.

**Keywords:** Forex Exposure, Derivatives, Hedging, IT companies

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### Introduction

India's information technology (IT) sector has emerged as a powerhouse, contributing significantly to the nation's economic growth. This success story is fueled by a skilled workforce and a flourishing export industry, with IT services spearheading the charge. However, this global presence exposes Indian IT firms to various financial risks, particularly fluctuations in foreign exchange rates. To mitigate these risks and ensure financial stability, many Indian IT companies strategically utilize financial derivatives as hedging strategies.

Hedging refers to employing financial instruments to offset potential losses arising from adverse market movements. In the context of Indian IT firms, derivatives help manage currency fluctuations, a critical concern due to their international operations and client base. By strategically using derivatives, these companies can stabilize cash flow, protect profitability, and enhance their overall financial performance.

Despite the established benefits of hedging, recent losses incurred by Indian IT firms through derivative transactions highlight the need for a deeper understanding of these practices. Furthermore, limited access to comprehensive hedging information further emphasizes the importance of research in this domain.

\*Corresponding Authors' Email: [nkdesmane@gmail.com](mailto:nkdesmane@gmail.com)

This research project bridges this knowledge gap by exploring the application of financial derivatives as hedging strategies within the Indian IT sector. The study delves into the types and prevalence of derivative usage by these firms, along with the factors influencing their decisions to adopt hedging strategies. By providing a comprehensive analysis of hedging practices within the Indian IT landscape, this research aims to contribute to the existing literature on corporate risk management and offer valuable insights for stakeholders.

## **Literature Review**

The emergence of the Indian derivatives market in the year 2000 marked a significant turning point for Indian corporations, including IT firms, in managing financial risks. This period witnessed a surge in research exploring the potential of financial derivatives as risk management tools. Pioneering studies by Sahoo (2001) and Ashutosh Vashishtha (2000) highlighted the need for increased awareness and understanding of derivative instruments among Indian companies. These studies laid the groundwork for subsequent research by identifying key areas of interest and potential challenges associated with adopting derivatives for hedging purposes.

Sonia's (2007) work on India's commodity derivatives market provides valuable context. Her study, employing a descriptive and exploratory methodology, analyzed the development of commodity exchanges, the number of tradable commodities, and trade value. While the findings revealed growth in available commodities and exchanges, a decline in trading activity during 2020-2021 was also observed. This research underscores the importance of understanding the dynamics of the derivatives market for informed decision-making, not just for market participants but also for future research endeavors.

As the Indian derivatives market matured, researchers like Sujoy Dhar (2004) and Debkumar Bhattacharya (2006) shifted their focus towards the implications for corporate risk management. Dhar (2004) discussed the emergence of derivatives as a risk management tool and its potential benefits for various industries, including IT. Similarly, Bhattacharya (2006) emphasized the strategic use of derivatives for mitigating financial risks faced by Indian companies. These studies provided valuable insights into the evolving landscape of derivative usage within the Indian context.

Following these initial explorations, researchers delved deeper into the usage patterns and factors influencing the adoption of financial derivatives among Indian companies, with a particular focus on IT firms. Jyoti Prakash Das et al. (2007) identified currency fluctuations, interest rate movements, and commodity price volatility as key risks managed through derivative instruments. Sahoo and Rath (2013) specifically analyzed the factors influencing currency hedging practices in Indian IT firms. Their study shed light on the importance of transaction exposure and interest coverage ratio as determinants for hedging decisions. These studies significantly improved the understanding of the drivers behind derivative usage in the Indian market.

As derivative markets continued to evolve, researchers examined trends, challenges, and the effectiveness of hedging strategies employed by Indian corporations. Studies by Nilanjan Ghosh (2005) highlighted the opportunities and challenges associated with derivative usage in the Indian context, emphasizing the need for sound risk management practices. Gregory Brown's (2012) research found foreign currency risk to be the most commonly hedged risk, with forward contracts being the preferred instrument. Sahoo (2016) investigated the determinants for using derivatives by firms in the Indian market, revealing that a significant proportion of firms primarily use derivatives for risk

management purposes. Alam and Gupta (2018) assessed the impact of hedging on firm value, highlighting the importance of adapting hedging strategies to changing economic environments. These studies provided valuable insights into the practical implications of derivative usage for Indian IT firms.

While not directly focused on India, Aggarwal & Faff's (2008) research using US firm data provided valuable insights into the determinants of corporate hedging. These insights, though not specific to the Indian context, offered valuable parallels and considerations for Indian IT firms. In a comparative study, Nagahi (2018) compared hedge strategies across Indian and US corporations. Interestingly, the study revealed the limited predictive power of derivative instruments in explaining hedging approaches in both countries. While American firms showed a negative relationship between hedging and profitability, Indian firms lacked statistically significant explanatory variables for hedging.

The Reserve Bank of India's annual reports and the National Stock Exchange of India's statistics (both 2023) provide crucial data and context for understanding current trends and patterns in derivative usage by Indian IT firms. Recent research has focused on empirical evidence and dynamic analysis of derivative usage in Indian corporations, including IT firms. Das and Kumar (2021) examined the dynamic impact of financial hedging on firm value, specifically focusing on Indian MNCs. Their study provided robust empirical evidence on the value-enhancing effects of financial hedging in emerging market contexts like India. Additionally, studies by Barot (2013) and Shivaprasad (2022) analyzed the growth of the derivatives market and the effectiveness of hedging strategies, offering practical insights for Indian IT firms navigating market uncertainties.

In conclusion, the literature on hedging strategies in Indian IT firms reflects a continuous process of learning, adaptation, and strategic decision-making. From early explorations to a nuanced understanding of the drivers and determinants of hedging behavior, the focus has shifted towards effective currency hedging practices and navigating the evolving financial landscape. As the Indian IT sector continues to thrive, the strategic use of financial derivatives will undoubtedly remain a crucial tool for mitigating risks and ensuring financial.

## **Methodology**

The study is based on secondary data. The three Indian IT companies TCS, Wipro, and Infosys have been selected. The annual report for the year 2022-2023 has been studied to analyze the hedging and risk management activities of these companies.

### ***Derivative financial instruments and hedging activity of TCS***

TCS utilizes a hedging policy to minimize the impact of currency fluctuations on its finances. This policy is overseen by a board committee and employs cash flow hedges, derivative instruments that counter foreign currency risks. These hedges can range from short-term (one day) to long-term (eight years) and are typically acquired from banks. The ineffectiveness of these hedges is reflected in the profit or loss statement, while the effective portion impacts shareholders' equity. By strategically using these derivatives, TCS aims to mitigate risks associated with foreign currency exposure in its global business operations.

Table 1. The following are outstanding currency options contracts, which have been designated as cash flow hedges for the year 2022-2023.

Foreign currency	As at March 31, 2023			As at March 31, 2022		
	No. of contracts	Notional amount of contracts (In million)	Fair value (₹ crore)	No. of contracts	Notional amount of contracts (In million)	Fair value (₹ crore)
US Dollar	8	225	13	63	1,635	44
Great Britain Pound	22	200	14	41	338	55
Euro	22	203	10	53	382	25
Australian Dollar	-	-	-	30	202	(21)
Canadian Dollar	-	-	-	25	137	(1)

Table 1 highlights the following foreign currencies being hedged: US Dollar (USD), Great Britain Pound (GBP), Euro (EUR), Australian Dollar (AUD), Canadian Dollar (CAD)

Compared to 2022, TCS seems to have increased its reliance on hedges for certain currencies. This is evident from the higher notional amounts (total underlying financial instrument exposure being hedged) for USD, GBP, and EUR. The fair value of the hedge contracts fluctuates throughout the year due to movements in foreign currency exchange rates. Graph 1 shows positive fair values for some currencies (USD and GBP) and negative fair values for others (EUR, AUD, CAD).

The positive fair value indicates a potential gain for TCS if the hedge contracts are settled at the reporting date.

Negative fair value suggests a potential loss if the contracts are settled at that time.

**USD (US Dollar)** The notional amount is ₹1635 crore, signifying the total potential exposure being hedged for USD. The positive fair value of ₹63 crore indicates a potential gain for TCS if these contracts were settled at the reporting date. This suggests the USD may have appreciated against the Indian rupee during the year, and the hedge contract helped offset potential losses.

**GBP (Great Britain Pound)** The notional amount is ₹638 crore. The positive fair value of ₹55 crore suggests a similar scenario with potential gains from rupee depreciation against the British Pound.

The positive fair values for USD and GBP hedges suggest that these contracts may have helped offset potential losses from the appreciation of those currencies against the Indian rupee.

**EUR (Euro), AUD (Australian Dollar), and CAD (Canadian Dollar)** The negative fair values for these currencies imply potential losses if the contracts were settled at the reporting date. This indicates the Euro, Australian Dollar, and Canadian Dollar might have weakened against the Indian rupee during the year.

#### ***Derivative financial instruments and hedging activity of Wipro***

In the annual report of Wipro for the fiscal year 2022-2023, it was mentioned that Wipro is exposed to currency fluctuations on foreign currency assets/liabilities, forecasted cash flows denominated in foreign currency, and net investment in foreign operations. The Company is also exposed to interest rate fluctuations on investments in floating-rate financial assets and floating-rate borrowings. The

Company follows established risk management policies, including the use of derivatives to hedge foreign currency assets/liabilities, interest rates, foreign currency forecasted cash flows, and net investment in foreign operations. The counterparties in these derivative instruments are primarily banks and the Company considers the risks of non-performance.

Table 3: The following table presents the aggregate contracted principal amounts of the Company's derivative contracts outstanding

	As at March 31, 2023		As at March 31, 2022	
	Notional	Fair Value	Notional	Fair Value
<b>Designated derivative instruments</b>				
Sell: Forward contracts				
USD	977	₹ (262)	USD	1,413
€	94	₹ (497)	€	191
£	138	₹ (728)	£	173
AUD	89	₹ 9	AUD	170
Range Forward Option contracts				
USD	1,157	₹ (19)	USD	493
€	49	₹ (112)	€	6
£	60	₹ (69)	£	28
AUD	34	₹ 29	AUD	11
Interest rate swaps				
INR	4,750	₹ (113)	INR	-
<b>Non-designated derivative instruments</b>				
Sell: Forward contracts				
USD	1,473	₹ 657	USD	1,366
€	171	₹ (176)	€	109
£	129	₹ (100)	£	91
AUD	56	₹ 69	AUD	47
SGD	14	₹ 1	SGD	4

These instruments aim to mitigate potential losses arising from fluctuations in the fair value of recognized assets or liabilities denominated in foreign currencies. Table 3 shows the notional amounts (total underlying financial instrument exposure being hedged) for various currencies, including USD (US Dollar), EUR (Euro), GBP (Great Britain Pound), AUD (Australian Dollar), and CAD (Canadian Dollar). Compared to March 31, 2022, Wipro seems to have increased its reliance on hedges for certain currencies in 2023.

#### **Derivative financial instruments and hedging activity of Infosys**

In the annual report of Wipro for the fiscal year 2022-2023, it was mentioned that the Company holds derivative financial instruments, such as foreign currency forward and option contracts, to mitigate the risk of changes in exchange rates on foreign currency exposures. The counterparty for these contracts is generally a bank. These derivative financial instruments are valued based on quoted prices for similar assets and liabilities in active markets or inputs that are directly or indirectly observable in the marketplace.

From the report given in the Annual Report 2022-2023 generally, two types of derivative instruments are used by Infosys namely forward contracts and option contracts. The duration of these contracts

*Table 5: The details with respect to outstanding foreign currency forward and option contracts are as follows*

Particulars	As at March 31,			
	2023		2022	
	In million	In ₹ crore	In million	In ₹ crore
<b>Derivatives designated as cash flow hedges</b>				
<b>Forward contracts</b>				
In Euro	–	–	8	67
<b>Option contracts</b>				
In Australian Dollar	140	770	185	1,050
In Euro	325	2,907	280	2,358
In UK Pound Sterling	55	559	32	318
<b>Other derivatives</b>				
<b>Forward contracts</b>				
In Australian Dollar	10	55	–	–
In Canadian Dollar	–	–	34	205
In Euro	266	2,382	266	2,240
In New Zealand Dollar	30	154	20	105
In Norwegian Krone	100	79	80	70
In Singapore Dollar	45	278	6	34
In Swiss Franc	–	–	14	115
In US Dollar	1,486	12,209	1,004	7,622
In UK Pound Sterling	76	775	44	438
In South African rand	85	39	45	24
<b>Option contracts</b>				
In Australian Dollar	30	165	–	–
In Euro	160	1,431	81	682
In UK Pound Sterling	15	153	–	–
In US Dollar	300	2,465	677	5,131
<b>Total forward and option contracts</b>		24,421		20,459

varies from one to twelve months. Table 5 presents information about Infosys' outstanding derivative contracts, categorized as forward contracts and option contracts, used for the fiscal year ending March 31, 2023. Infosys utilizes both forward and option contracts to hedge its foreign currency exposure. Compared to March 31, 2022, there seems to be an increase in the notional amounts for certain currencies in 2023, suggesting potentially increased hedging activity for that currency.

## Conclusion

The present paper examines the hedging position of above stated Indian corporation which has diverse trade links with the rest of the world with a special focus on a variety of hedging instruments to hedge the risk arising from currency fluctuations. The instruments include currency swaps, interest rate swaps, forwards, and options which are extensively used by Indian corporations. We have seen that Indian IT companies are extensively using traditional derivative instruments to hedge their risk. In the near future IT sector of India is going to face tough competition from foreign companies, which will encourage them to expand their operation globally. As a corollary, they have to deal in different types of foreign currencies whose value depends upon the prevailing exchange rate. So, IT sector companies need to prepare suitable risk management policies and frameworks to face future challenges. After assessing the present hedging position of Indian companies' the present study recommends the use of diverse hedging strategies like range, bilateral netting and invoice billing,

Compound Options, Synthetic Products, and Foreign Exchange Agreements. Generally, the greatest hindrances to Indian companies are legal restraints by various regulatory authorities within as well as outside the country. Through this work, we concluded that Indian corporations have shown an upward trend in using forwards for hedging their foreign exchange risk.

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