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# CHAANAKYA

## SCHOOL OF BUSINESS AND MANAGEMENT

### MBA - FINANCE SPECIALIZATION

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**This issue is presented by team**

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# EDITOR'S NOTE

Greetings Readers!

We are pleased to present the Special Issue of January 2024 of Chanakya, the MBA Finance Students' Association newsletter. This issue is brought to you by **Team Fortuna**, a group of students under the mentorship of **Dr. Nisha Shankar.** The theme of this issue is **"Derivatives and Risk Management,"** a topic that is becoming a reality in today's world. The writers have explored various topics related to Derivatives and Risk Management development, exploring contemporary financial models, the impact of technological advancements, and the importance of sustainable practices. In addition to the articles, this issue also includes a "Creative Corner" section, showcasing students' passion for art and creativity. We hope the newsletter helps readers provide a comprehensive overview of the emerging trends, challenges, and opportunities in infrastructure investment.

Team Chaanakya expresses sincere gratitude to our Dean, Dr. Jain Mathew, and the entire leadership team, the Head of Specialization, Dr. Ramanatha HR, the Faculty Coordinator of Chaanakya, Dr. Nisha Shankar, our expert specialization mentors, and all the contributors for their cooperation and active participation.

Wishing our readers A Happy Reading

Best wishes,
Team Chaanakya

# ALUMNI SPEAK

# OUR DISTINGUISHED SBM ALUMNI
# MR. AKASH ANAND

**Senior Consultant**

**PWC**

**BATCH – 2017-2019**

AKASH ANAND CHAUHAN

KAANCHA

# INTERVIEW WITH MR. AKASH ANAND

**1. Can you discuss a particularly challenging situation you've faced with derivatives and how you navigated it?**

**Answer:** One of the most challenging situations I've encountered in the derivatives market involves the valuation of structured products. These products are inherently complex, often combining various derivative components and tailored to meet specific investment goals. The lack of adequate market data compounds the difficulty of valuing these instruments. To navigate this challenge, we employ a proxy data approach. This involves identifying and using data from similar, more liquid instruments to estimate the value of the structured product. However, even finding suitable proxy data can be challenging. To mitigate this problem, a critical strategy is breaking down the structured product into simpler components with vanilla payoffs. By decomposing the complex structure, we can more easily analyze and understand the individual elements, apply appropriate models, and ultimately derive a more accurate valuation.

**2. In your opinion, what are the most significant innovations in the derivatives market over the past decade?**

**Answer:** While one might expect significant innovations in the derivatives market over the past decade, I would argue that the most impactful development has been the introduction of stringent regulations. These regulations, such as Dodd-Frank in the United States and MiFID II in Europe, have fundamentally altered the landscape of the derivatives market. They have introduced greater transparency, mandated central clearing of certain derivative contracts, and imposed stricter reporting requirements. While these regulatory measures have curtailed the pace of innovation by increasing compliance costs and operational burdens, they have been essential in managing the risks associated with derivatives, a class of financial instruments known for their inherent riskiness. The emphasis on regulatory compliance ensures that innovation in derivatives is balanced with the need for stability and safety in financial markets.

**3. How have these innovations changed the way you approach trading and risk management?**

**Answer:** As a professional in risk management, the evolving regulatory landscape has had a significant impact on our approach to trading and risk management. Each time regulators introduce new norms, it necessitates the development of more sophisticated models to ensure compliance. For quant analysts, this means continuously refining and enhancing our risk models to align with regulatory standards. These models must account for a wide range of factors, from market risk and credit risk to operational and liquidity risks. The rigorous requirements have driven us to adopt more advanced quantitative techniques and leverage cutting-edge technology to accurately model and manage risks. Additionally, the emphasis on transparency and reporting has led to better risk monitoring and more informed decision-making processes, ultimately contributing to a more resilient financial system.

**4. Could you provide insight into how derivative pricing models, like the Black-Scholes model, have evolved, and what are the limitations of these models in today's market?**

**Answer:** Derivative pricing models have significantly evolved since the introduction of the Black-Scholes model. While the Black-Scholes model laid the groundwork for options pricing with its elegant mathematical framework, it has several limitations in real-world applications. For instance, it assumes constant volatility and interest rates, which is rarely the case in actual markets. Additionally, it does not account for the possibility of sudden, large movements in asset prices (jumps), which can occur in turbulent markets.

To address these limitations, we use a variety of alternative models that better capture the complexities of modern financial markets. Models like Geometric Brownian Motion (GBM), the Hull-White One-Factor (HW1F) model, and other stochastic volatility models have been developed to incorporate more realistic assumptions about market behavior. These models are calibrated using current market data to reflect prevailing conditions more accurately. For example, the Hull-White model introduces mean reversion in interest rates, making it more suitable for interest rate derivatives. Despite these advancements, all models have inherent limitations. No model can perfectly predict market movements or capture every nuance of market behavior. Therefore, it is crucial to use a combination of models and continuously update them based on new data and market developments. This multifaceted approach helps mitigate the limitations of individual models and provides a more robust framework for pricing and risk management in today's complex financial environment.

**5. Can you discuss a specific instance where counterparty risk significantly impacted a trade or strategy?**

**Answer:** Counterparty Credit Risk (CCR) became a major issue during the 2008 financial crisis, especially highlighted by Lehman Brothers' collapse. This event exposed the systemic risk from interconnected financial entities and emphasized the need for robust risk management. Post-crisis regulations were strengthened, requiring financial institutions to set aside capital to cover CCR, even for netted exposures. This led to more conservative trading strategies and thorough counterparty evaluations. For example, banks entering interest rate swaps now consider the capital costs of CCR, making trades less attractive. To mitigate this, banks use netting agreements and collateral arrangements. The capital buffer protects against defaults, enhancing financial stability and shifting the focus from profitability to security.

**6.Regulatory changes post-2008 have significantly impacted the derivatives market. How have these changes influenced your strategies and operations?**

**Answer:**Regulatory changes post-2008 have significantly impacted our strategies and operations by requiring us to allocate capital to cover Counterparty Credit Risk (CCR), leading to more conservative trading strategies and comprehensive counterparty evaluations. We now prioritize risk mitigation through netting arrangements, collateral requirements, and enhanced risk management tools, ensuring compliance with stringent regulatory standards while safeguarding financial stability.

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# STUDENTS CORNER

# THE ENDURING POWER OF DERIVATIVES: A JOURNEY THROUGH TIME

The story of derivatives stretches back 10,000 years, from ancient Babylonian rulers to the medieval era to present-day electronic trading; various derivatives have had a place in humanity's financial history. Based on an agreement around an underlying asset to exchange cash or other commodities within a specified time frame, derivatives are a way to invest and hedge assets without ever needing to possess them. market- Protocol brings derivatives to the blockchain in their most modern form, allowing traders to gain price exposure to on and off-chain assets, such as TSLA stock.

But before traders could use their cryptocurrency to trade stock, Sumerian clay tokens represented commodities; the first futures exchange started as a way to hedge Japanese rice, and American farmers used put options to help pay debts in lousy crop seasons. Though derivatives weren't widely and easily traded until the computer age of the 1970s, their history in finance is rather fascinating. Let's start at the beginning.

**Ancient History**

Thousands of years ago, the seeds of derivatives were sown. In Sumer (8000 BC), clay tokens acted as early forward contracts, promising future delivery of goods by a set date. Fast forward to Mesopotamia (1700s BC), rulers' codes documented trade agreements, with some functioning like futures contracts for grain harvests. These early practices laid the foundation for today's complex derivatives market.

**The Modern Era:** The Rise of Derivatives Exchanges and the Computer Revolution Fast forward to the 19th century, the establishment of the Chicago Board of Trade (CBOT) marked a pivotal moment for derivatives in the modern era. This centralized exchange facilitated the trading of agricultural commodities through forward and futures contracts.


The invention of computers in the 1970s further revolutionized derivatives by enabling sophisticated option pricing and hedging strategies. This period also saw the emergence of the Chicago Board of Options (CBOE), a dedicated platform for options trading. The culmination of this phase arrived in 1992 with the introduction of electronic trading, fostering a globalized derivatives market encompassing not just derivatives but securities and commodities as well.

Transitioning into the contemporary era, marked by the emergence of blockchain technology and the surge of cryptocurrencies, market Protocol introduces a new era – decentralized derivatives trading. This pioneering platform enables traders to utilize ERC20 tokens as collateral to access diverse assets, spanning stocks, bonds, and cryptocurrencies. From ancient clay tokens to cutting-edge blockchain protocols, the evolution of derivatives showcases humanity's ongoing quest for risk management and financial advancement.

This enduring legacy continues to shape today's investment landscape, with market Protocol poised to carve out the next chapter in this captivating narrative.

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# A LOOK AT DERIVATIVE PRODUCTS

Derivatives are financial products whose value correlates with the returns of an underlying asset, index, or rate. In the Financial markets serve multiple purposes, including risk management, speculation, and arbitrage opportunities. Derivative products can take various forms, including:

**Futures Contracts:** These are the agreements to buy or sell an item at a defined future date for a set price. Standardized contracts are exchanged in markets to promote liquidity and transparency. Futures contracts include currencies, commodities, stock indices, and interest rates.

**Options Contracts:** An option contract allows a buyer to purchase (call) or sell (put) the asset at a predetermined price within a certain time . Options offer investors the opportunity to speculate, hedge, and make revenue through option premiums.


**Swaps:** Swaps involve two parties exchanging financial instruments over a predetermined period, with interest rate, currency, and commodity swaps being the most common types. They help businesses manage risks related to fluctuations in interest rates and commodity prices.

**Forwards contracts:** Forwards contracts include purchasing or selling an item at a later date for a fixed amount of money. They mimic futures contracts. Over-the-counter (OTC) forwards differ from exchanges in that they are often customized contracts. They are commonly used for hedging in markets where standardization is not feasible.

**Options on Futures:** Options on Futures are contracts that use the futures contract as the underlying asset. Options on futures provide investors with exposure to futures contracts at a fixed price, reducing downside risk.

**Structured Products:** These are financial instruments that mix derivatives and other assets. Create new investing opportunities using items like stocks and bonds. Structured products can offer higher returns or risk-reduction strategies, depending on market conditions and investor preferences.

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# GLOBAL DERIVATIVES MARKET

**Introduction**

The global derivatives market is a vast and complex financial system that facilitates trading derivative instruments. These contracts are traded either on organized exchanges or over-the-counter (OTC) between counterparties. The market is characterized by its high liquidity and complex risk-reward dynamics.

**Historical Evolution**

The market has thrived to include various financial instruments and underlying assets. Key milestones in the historical evolution of the global derivatives market include:

- The establishment of organized futures exchanges in the late 19th century
- The development of options and swaps in the 1970s and 1980s
- The rise of OTC derivatives trading in the 1990s and 2000s
- The growing usage of derivatives in investing and risk management

**Market structure**

The global derivatives market can be broadly divided into two main segments:

1. **Organized Exchanges:**

Derivatives contracts are traded on centralized, regulated exchanges, such as the CME, ICE and Eurex. These exchanges have standardized contract specifications, centralized clearing, and well-defined trading rules and procedures.

2. **Over-the-Counter (OTC) Markets:**

Derivatives contracts are traded directly between counterparties, often banks, financial institutions, and large corporations. OTC derivatives are customized to meet the specific needs of the parties involved and are less standardized than exchange-traded contracts.

**Clearing and Settlement Mechanism**

Clearing and settlement processes are critical components of the global derivatives market:

**Central Clearing:**

Exchange-traded and OTC derivatives contracts are cleared through central counterparty (CCP) clearing houses. CCPs act as intermediaries between the two counterparties, managing and mitigating counterparty risk through margin requirements, collateral, and risk management practices.

**Settlement:**

Derivatives contracts are settled either physically (delivery of the underlying asset) or financially (cash settlement). The settlement process involves the exchange of the underlying asset or the net cash value between the counterparties, typically through a central clearing system.

**Market dynamics and trends**

1. **Algorithmic Trading:**

Here, trading decisions are made by advanced computer programs, which have become increasingly prevalent in the derivatives market. Algorithmic traders leverage speed, data analysis, and sophisticated trading strategies to capitalize on market opportunities.

1. **High-Frequency Trading (HFT):**

High-frequency trading, a form of algorithmic trading characterized by the use of advanced technologies to execute many orders at high speeds, has also gained a significant presence in the derivatives market.

2. **Emerging Trends: ESG Derivatives**

Attention to environmental, social, and governance (ESG) considerations has led to the development of ESG-related derivatives designed to facilitate the management and transfer of ESG-related risks and opportunities.

**SAISHREE B**
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# ROLE OF PUBLIC INFRASTRUCTURAL INVESTMENTS IN DEVELOPMENT


The derivatives market is a crucial part of the global financial system, where contracts called derivatives are traded. These derivatives derive value from underlying assets, tangible assets like stocks, bonds, or commodities, or even intangible assets like interest rates or market indices.

**Hedgers: The Guardians of Stability**

Hedgers, the risk-averse stock market traders, are the backbone of the derivatives market. Their primary objective is to protect their investment portfolio from price swings and market risk. They achieve this by entering the derivatives market with the opposite position, shifting the risk to those willing to take it. However, this strategy comes at a cost, as they must pay the risk-taker more for the available hedging.

Margin Traders: The Leverage Enthusiasts

Margin trading is a crucial aspect of the derivatives market. It refers to the minimum amount you must deposit with the broker to trade derivatives. This margin is used to record daily gains and losses in response to changes in the market.

It allows traders to maintain a sizable outstanding position and provides leverage in the derivatives market.

**Arbitrageurs: The Market Equalizers**

Arbitrageurs, with their keen eye for low-risk flaws in the market, demonstrate their expertise and knowledge. They showcase their strategic skills by often simultaneously buying low-priced stocks in one market and selling them in another for a higher price. This skilful manoeuvre, however, is only possible if the same asset is quoted in multiple markets at different prices, showcasing their ability to identify and exploit market inefficiencies.

**Speculators: The Market Adventurers**

Speculators in the derivatives market, the market adventurers, take calculated risks to make profits, differing from hedgers. If their bets are successful, they can reap substantial benefits by taking the opposite position to hedgers. For example, if you buy a put option to protect against a stock price decline, the speculator benefits if the stock price doesn't decline and you don't exercise your put option, adding a sense of thrill and excitement to their role in the market.

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# HOW IS THE DERIVATIVES MARKET BOOSTING THE ECONOMY

The derivatives market, encompassing instruments like futures, options, and swaps, plays a crucial role in modern financial systems. Its impact on the economy is multifaceted, offering benefits that extend from individual investors to large-scale corporations and even national economies. Here's an exploration of how the derivatives market boosts economic activity:

**Risk Management and Hedging**

One of the primary functions of derivatives is to provide a mechanism for risk management. Businesses and investors use derivatives to hedge against price volatility in various markets. For instance, a farmer can use futures contracts to lock in the price of their crops, ensuring stable income regardless of market fluctuations. This ability to manage risk helps businesses plan and invest more confidently, fostering economic stability and growth.

**Price Discovery**

Derivatives markets contribute significantly to the process of price discovery. The prices of derivative instruments reflect the collective expectations of market participants about future movements in the prices of underlying assets. This information is valuable for producers, consumers, and investors, helping them make informed decisions. Improved price discovery leads to more efficient allocation of resources, promoting overall economic efficiency.

**Liquidity Enhancement**

Derivatives add liquidity to financial markets. The presence of derivatives allows for the rapid buying and selling of large amounts of assets without causing significant price disruptions. Enhanced liquidity facilitates smoother transactions and reduces the cost of trading, benefiting all market participants. This, in turn, attracts more participants to the market, further increasing liquidity and economic activity.

**Encouraging Investment and Innovation**

By providing tools for risk management and liquidity, derivatives markets encourage investment and innovation. Businesses can undertake new projects and investments without fearing adverse price movements. For example, a company can hedge against currency risk when expanding internationally, or a start-up can secure stable input costs using futures contracts. This environment of reduced uncertainty fosters innovation and growth, as firms are more likely to invest in new technologies and markets.

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KAANCHA

# BEST PERFORMING DERIVATIVES

Unveiling the Market Movers

The ever-evolving derivatives market can be a treasure trove for savvy investors, but identifying the top performers can be a challenge. The Indian derivatives market is buzzing with activity, and certain contracts are leading the charge,

Equity options are gaining significant traction in the Indian stock market, driven by a combination of market conditions and investor behaviors. The increased market volatility, influenced by global economic uncertainties, domestic reforms, and political events, has created fertile ground for options trading. This volatility provides opportunities for substantial gains through strategic options trading, attracting a wide range of investors.

Carbon futures are trending due to increasing global efforts to combat climate change. As countries and companies commit to reducing carbon emissions to meet climate targets, the demand for carbon futures has surged. These futures contracts allow parties to buy or sell carbon emission allowances at predetermined prices, providing a way to manage carbon-related risks and comply with regulations.

Credit default swaps have been considered lucrative because they offer potentially high returns relative to the initial investment. If the issuer of the debt defaults, the investor holding the CDS receives compensation equivalent to the face value of the debt. However, it's essential to note that while they can provide significant returns, they also carry substantial risks, including counterparty risk and market volatility. Catastrophe bonds, or Cat bonds, have been increasingly trending in the financial world due to their innovative approach to managing catastrophic risks. These bonds serve as a means for insurance and reinsurance companies to transfer the financial impact of extreme events. Additionally, the increasing sophistication of financial markets and risk modeling techniques has made catastrophe bonds more accessible and attractive to investors. Institutional investors, such as pension funds, hedge funds, and asset managers, are drawn to the high yields offered by these bonds, which are typically uncorrelated with traditional financial markets.


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# ROLE OF DERIVATIVES IN 2008 FINANCIAL CRISIS



## INTRODUCTION

The 2008 financial crisis, often referred to as the Great Recession, was one of the most severe economic downturns since the Great Depression. A key factor in this crisis was the misuse and mismanagement of financial derivatives.

In the years leading up to the 2008 crisis, the derivatives market grew exponentially. Financial institutions and investors heavily relied on complex derivatives such as mortgage-backed securities (MBS) and collateralized debt obligations (CDOs).

## MORTGAGE-BACKED SECURITIES AND COLLATERALIZED DEBT OBLIGATIONS

MBS and CDOs offered high returns during the housing boom as banks bundled mortgage loans, including risky subprime ones, into securities, assuming diversified risk. When housing prices fell and defaults increased, these securities plummeted in value, despite high credit ratings misleading investors. Credit default swaps (CDS), insurance against defaults, were used for hedging but also speculation. Companies like AIG sold large amounts of CDS without adequate reserves, leading to massive losses and a government bailout when defaults surged.

## ROLE OF CREDIT DEFAULT SWAPS

Credit default swaps (CDS) are insurance contracts against borrower defaults. Financial institutions used CDS to hedge against the risk of default on mortgage-backed securities (MBS) and collateralized debt obligations (CDOs). However, CDS also became speculative tools. Companies like AIG sold large amounts of CDS without sufficient reserves for potential payouts. When the housing market collapsed, defaults surged, leading to massive CDS payouts. AIG faced enormous losses and required a bailout by the U.S. government.

## THE SYSTEMIC RISK

The extensive use of derivatives created a web of interconnections among financial institutions, spreading the risk throughout the financial system. When the underlying mortgages started to fail, it led to a cascade of losses, triggering a credit crunch and a loss of confidence in financial markets. Banks became unwilling to lend, leading to a severe liquidity crisis.

## CONCLUSION

Derivatives are essential for managing financial risk, but their misuse and lack of regulation contributed to the 2008 financial crisis. The crisis underscored the need for transparency and oversight in the derivatives market. These lessons have since guided financial reforms to reduce systemic risk and enhance market stability.


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# EFFECT OF COVID ON THE DERIVATIVES MARKET

The global derivatives market has been significantly impacted by the COVID-19 pandemic, which has presented both opportunities and challenges. Despite the economic uncertainty, the pandemic has also spurred innovation and development in this sector.

One of the most noticeable effects of the pandemic was the sharp increase in trading volumes for futures and options. As markets grew more volatile, investors and institutions turned to derivatives to manage risk and take advantage of price swings. This rise in trading activity highlighted the crucial role of derivatives in providing liquidity and managing financial risk during crises. The peak of this activity occurred in the early stages of the pandemic when the future of the virus and its economic impact were most uncertain.

The performance of various derivatives during the pandemic varied widely. Futures tied to foreign markets saw significant volatility, reflecting the differing economic impacts of COVID-19 across regions. While some markets were heavily affected, others showed greater resilience. This highlights the importance of diversifying investments geographically to manage risk.

The pandemic also forced the derivatives market to quickly adapt to remote work, which posed significant challenges. However, the market's ability to adjust and continue operations demonstrated its flexibility and the essential role of technology in modern finance. This shift has increased confidence in the market's resilience.

Additionally, the pandemic led to a reassessment of risk management practices within the derivatives market. The extreme market conditions highlighted the need for strong risk assessment frameworks to handle such unprecedented events. Since then, both market participants and regulators have pushed for improved methods to handle impending disruptions in an effort to preserve the stability and resilience of the financial system.

The economic disruptions caused by COVID-19 also brought greater attention to the interconnectedness of different asset markets. Research has shown that shocks in one sector can affect others, illustrating the "contagious effects" between various asset markets and commodity futures.

In conclusion, the COVID-19 pandemic has had a transformative impact on the derivatives market, driving increased trading volumes, highlighting operational challenges, and prompting significant advancements in risk management practices. The insights gained from this crisis will be crucial in forming a future financial system that is more resilient and effective as the market changes.


**GREESHMA POTHEN**
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# VALUATION OF CONTINGENT CLAIMS: BSM MODEL



**Introduction**

Louis Bachelier published the first known mathematically rigorous option valuation model in 1900. By the late 1960s, there were several published quantitative option models. Fischer Black, Myron Scholes, and Robert Merton introduced the BSM model in 1973 in two published papers, one by Black and Scholes and the other by Merton. The innovation of the BSM model is essentially the no-arbitrage approach but applied with a continuous time process, which is equivalent to a binomial model in which the length of the time step essentially approaches zero.

**Assumptions of the BSM Model**

- The underlying follows a statistical process called geometric Brownian motion.
- Geometric Brownian motion implies continuous prices, meaning that the price of underlying instrument does not jump from one value to another; rather, it moves smoothly from value to value.
- The underlying instrument is liquid, meaning that it can be easily bought and sold.
- Continuous trading is available, meaning that in the strictest sense one must be able to trade at every instant.
- Short selling of the underlying instrument with full use of the proceeds is permitted.
- There are no market frictions, such as transaction costs, regulatory constraints, or taxes.
- No arbitrage opportunities are available in the marketplace.
- The options are European style, meaning that early exercise is not allowed.
- The continuously compounded risk-free interest rate is known and constant; borrowing and lending is allowed at the risk-free rate.
- The volatility of the return on the underlying is known and constant.

**Simple BSM Model: Components**

The BSM model for stocks can be expressed as

$$c = SN(d_1) - Xe^{-rT}N(d_2)$$

and

$$p = Xe^{-rT}N(-d_2) - SN(-d_1)$$

where

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

N(x) denotes the standard normal cumulative distribution function, which is the probability of obtaining a value of less than x based on a standard normal distribution. In this context, x will have the value of d1 or d2. N(x) reflects the likelihood of observing values less than x from a random sample of observations taken from the standard normal distribution.

**BSM Model: Carry Benefits**

Carry benefits include dividends for stock options, foreign interest rates for currency options, and coupon payments for bond options. For other underlying instruments, there are carry costs that can easily be treated as negative carry benefits, such as storage and insurance costs for agricultural products. Because the BSM model is established in continuous time, it is common to model these carry benefits as a continuous yield, denoted generically here as $\gamma$.

The carry benefit-adjusted BSM model is

$$c = Se^{-\gamma T}N(d_1) - Xe^{-rT}N(d_2)$$

and

$$p = Xe^{-rT}N(-d_2) - Se^{-\gamma T}N(-d_1)$$

where

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + \left(r - \gamma + \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

**Black Option Valuation Model**

In 1976, Fischer Black introduced a modified version of the BSM model approach that is applicable to options on underlying instruments that are costless to carry, such as options on futures contracts—for example, equity index futures—and options on forward contracts.

Black proposed the following model for European-style futures options:

$$c = e^{-rT}[F_0(T)N(d_1) - XN(d_2)]$$

and

$$p = e^{-rT}[XN(-d_2) - F_0(T)N(-d_1)]$$

where

$$d_1 = \frac{\ln\left(\frac{F_0(T)}{X}\right) + \left(\frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

F0(T) denotes the futures price at Time 0 that expires at Time T, and σ denotes the volatility related to the futures price. Swaptions A swap option or swaption is simply an option on a swap. It gives the holder the right, but not the obligation, to enter a swap at the pre-agreed swap rate—the exercise rate. Interest rate swaps can be either receive fixed, pay floating or receive floating, pay fixed. A payer swaption is an option on a swap to pay fixed, receive floating. A receiver swaption is an option on a swap to receive fixed, pay floating.

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# HEDGING AS A TOOL

In the dynamic world of finance, managing risk is crucial for preserving investment value and ensuring steady returns. One powerful strategy employed by investors and corporations alike is hedging. Hedging uses derivatives to mitigate potential losses, providing a safety net against market volatility.

Hedging acts as a form of financial insurance. It doesn't eliminate risks but reduces their impact. Investors can counterbalance potential losses in their primary investments by taking positions in derivatives such as options, futures, or swaps. For example, a business with significant foreign operations might use currency futures to stabilize cash flows against exchange rate fluctuations.

**Key Derivative Instruments for Hedging**

**Futures Contracts:** These are agreements to buy or sell assets at a future date for a price agreed upon today. They are widely used to hedge against commodity price changes, interest rate movements, and currency fluctuations.

**Options:** These contracts give the right, but not the obligation, to buy or sell an asset at a set price within a specified period. Options provide flexibility and are commonly used to hedge equity positions.

**Swaps:** These involve exchanging cash flows or financial instruments. For instance, interest rate swaps can help manage exposure to interest rate variability, which is crucial for companies with significant debt.

**Real-World Application:** An Airline Company

Consider an airline company concerned about the volatility of fuel prices, which constitute a significant portion of its operating expenses. To manage this risk, the airline can enter into futures contracts for jet fuel by securing prices, protecting against price spikes, maintaining financial stability, and mitigating losses.

Using futures contracts, the airline mitigates the risk of fluctuating fuel prices, ensuring more stable operational costs and safeguarding its profitability against adverse market movements.

**Potential Risks and Costs**

Despite its benefits, hedging comes with risks and costs. A critical risk is that the hedge might limit potential gains if the market moves favorably. Additionally, derivatives are complex and require careful management to avoid unforeseen consequences. Transaction costs can also be significant, especially for frequent hedging activities.

Hedging is an essential tool in the arsenal of risk management strategies In an unpredictable financial landscape, hedging provides a critical strategy for managing risk and securing financial stability.

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# RISK MANAGEMENT IN DERIVATIVES: ESSENTIAL STRATEGIES FOR FINANCIAL STABILITY

Derivatives are financial products whose value is generated from underlying assets like stocks, bonds, commodities, or interest rates. They are a crucial part of modern finance. They offer numerous benefits, including increased liquidity, opportunities for speculation, and protection against market swings. However, due to their inherent leverage and risk, effective risk management strategies are needed to safeguard the financial system's stability.

**Understanding Derivative Risks**

Market Risk: the potential for losses because of unfavourable changes in the underlying asset's price. For example, a large decline in stock prices can result in large losses on equity derivatives.

Credit Risk: The risk that a counterparty will default on their contractual obligations, leading to financial loss. This risk is especially pertinent in over the counter (OTC) derivatives markets where there is no central clearinghouse. Credit risk can be managed through collateral agreements and credit default swaps.

Liquidity Risk: The risk arising when a derivative cannot be traded quickly enough in the market to prevent a loss or to make the required profit. Illiquid markets can aggravate losses during turbulent times.

Operational Risk: This encompasses the risks of failures in internal processes, people, and systems. Operational errors, fraud, and system failures can lead to significant financial losses.

Legal and Regulatory Risk: The risk of financial loss due to changes in laws and regulations or from legal disputes. This is particularly relevant in different jurisdictions with varying regulatory frameworks.

**Strategies for Effective Risk Management**

Hedging: A primary strategy involves using derivatives to hedge against potential losses in an underlying asset. For example, a company might use futures contracts to lock in prices for raw materials, thereby stabilizing costs and protecting against price volatility.

Diversification: By diversifying their portfolio across different types of derivatives and underlying assets, investors can reduce the impact of adverse price movements in any single asset.

Credit Risk Mitigation: This can be achieved through careful counterparty selection, setting credit limits, and using credit derivatives like Credit Default Swaps (CDS) to transfer risk.

Stress Testing and Scenario Analysis: Financial institutions perform stress tests to evaluate how their portfolios would perform under extreme market conditions. Scenario analysis helps in understanding potential losses in various hypothetical situations.

Robust Operational Controls: Implementing strong internal controls, regular audits, and using advanced technology systems can minimize operational risks. Ensuring that employees are well-trained and adhering to stringent protocols is equally important.

**Conclusion**

Derivatives are dynamic and complex, so a thorough risk management system is required. Market players can manage the risks associated with trading derivatives by utilizing techniques including hedging, diversification, and stringent stress testing, as well as by upholding strong operational controls and regulatory compliance. Efficient risk management contributes to the general well-being of the financial system by improving market stability and guarding against possible losses.

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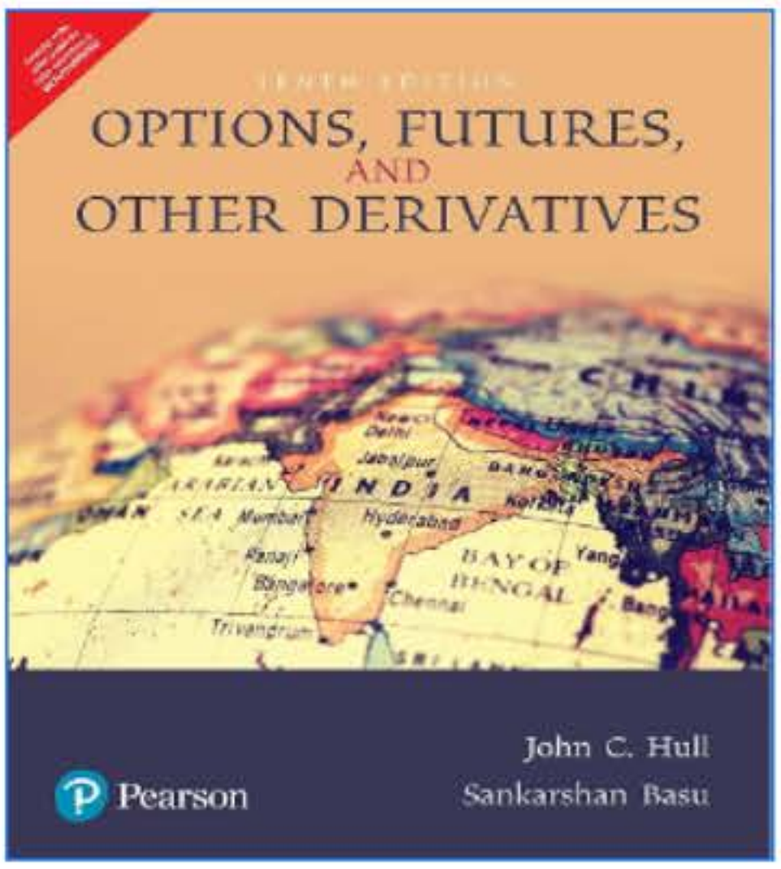
# OPTIONS, FUTURES, AND OTHER DERIVATIVES BY JOHN C. HULL

"Options, Futures, and Other Derivatives" by John C. Hull is a cornerstone in the field of financial derivatives. The 10th edition of the book continues to be an essential resource for students, academics, and professionals, offering comprehensive coverage of the subject.

The book's content is meticulously structured, progressing logically from fundamental concepts to complex topics. The initial chapters cover the basics of derivatives, including options, futures, and swaps, before moving on to more advanced topics like pricing, hedging, and risk management. Hull's clear learning objectives at the beginning of each chapter, followed by summaries and problem sets, reinforce the material and aid in understanding.

Hull's pedagogical approach stands out. He balances technical rigor with accessibility, making the book suitable for readers with varying levels of mathematical expertise. The text includes detailed derivations and proofs for those with a strong mathematical background, while also providing intuitive explanations and practical examples for those less comfortable with advanced math.




The book's relevance is maintained through significant updates in the 10th edition, including new information on central clearing, high-frequency trading, and recent regulatory changes. Hull's discussion on the impact of technological advancements and regulatory shifts is particularly timely and insightful, ensuring readers are equipped with the most current knowledge in the field. One of the strengths of Hull's book is the inclusion of real-world examples like the 2008 financial crisis, case studies, and Excel-based tools that bridge the gap between theory and practice. These features make the complex theoretical aspects more tangible and applicable in real-world scenarios. The supplementary materials, including a solution manual and a companion website, further enhance the learning experience.

While the book's depth and breadth are commendable, some readers may find the extensive coverage overwhelming. It might be challenging to use as a single-semester textbook without careful chapter selection. Additionally, certain sections can be dense, requiring multiple readings for full comprehension.

In conclusion, John C. Hull's "Options, Futures, and Other Derivatives" remains an indispensable guide for mastering the complexities of financial derivatives. Its blend of theoretical foundations, practical applications, and up-to-date content makes it a valuable resource for both academic study and professional reference. Hull's methodical approach and ability to make complex concepts accessible ensure that this book continues to be a definitive text in the field.

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# FINANCE BUZZWORDS

1. **Hedging:** It is a risk management strategy used to reduce or eliminate the risk of price movements in an asset. It involves taking a position in a related security, such as a futures contract, to offset potential losses in another investment.
2. **Futures Contract:** This is a legal agreement to buy or sell a specific quantity of a commodity or financial instrument at a predetermined price at a specified date in the future. Futures contracts are standardized and traded on exchanges.
3. **Options:** Options are derivatives that give the holder the right, but not the obligation, to buy (call option) or sell (put option) an underlying asset at a predetermined price (strike price) before or at the expiration date. They are used for hedging or speculative purposes.
4. **Swap**: A swap is a derivative contract through which two parties exchange financial instruments, typically cash flows. Common types of swaps include interest rate swaps, currency swaps, and commodity swaps.
5. **Credit Default Swap (CDS):** A CDS is a financial derivative that functions like an insurance policy against a borrower's default. The buyer of the CDS makes periodic payments to the seller and, in return, receives a payoff if the borrower defaults on their debt.
6. **Value at Risk (VaR):** VaR is a statistical measure used to assess the risk of loss on a portfolio. It estimates the maximum loss that a portfolio could experience over a specified period with a given confidence level.
7. **Mark-to-Market:** This accounting practice involves recording the value of assets and liabilities at current market prices rather than historical costs. It ensures that financial statements reflect the true value of assets and liabilities.
8. **Delta:** Delta is one of the "Greeks" in options trading, measuring the sensitivity of an option's price to changes in the price of the underlying asset. A delta of 0.5 means that if the underlying asset's price changes by $1, the option's price is expected to change by $0.50.
9. **Leverage:** Leverage involves using borrowed capital or financial derivatives to increase the potential return on investment. While leverage can amplify gains, it also increases the potential for losses.
10. **Counterparty Risk:** This is the risk that the other party in a financial transaction may fail to fulfil their obligations, leading to a financial loss. It is a significant consideration in derivatives trading, especially in over-the-counter (OTC) markets where trades are not standardised or regulated by an exchange.

**NEENA THOMAS**
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AKSHAY AANA CHA

# UNSCRAMBLE!

**1. GGINEDH**

(Hint: A strategy to offset potential losses.)

**2. KSIR TIMIITNOAG**

(Hint: The practice of reducing risk by allocating investments among various financial instruments, industries, and other categories.)

**3. REUUFTS TTONCCAR**

(Hint: Hint: The analysis of financial markets based on historical price movements and patterns.)

**4. CLAINHECT YALNAISS**

(Hint: Building on existing infrastructure)

**5. REVEALEG**

(Hint: The use of borrowed funds to increase the potential return on investment.)

**6. APWS**

(Hint: A type of derivative contract exchanging cash flows)

**7. ALLLOCETAR**

(Hint: Assets used as security for a derivative contract)

**8. DARFOWR OCCARTNT**

(Hint: Agreement to buy/sell an asset at a future date.)

**9. IFNICATSIEVDOR**

(Hint: Investing in different asset categories to reduce risk)

**10. LANCONOIDIT**

(Hint: A financial contract between two parties where payments are exchanged based on a specific condition or event)

**ANSWERS**

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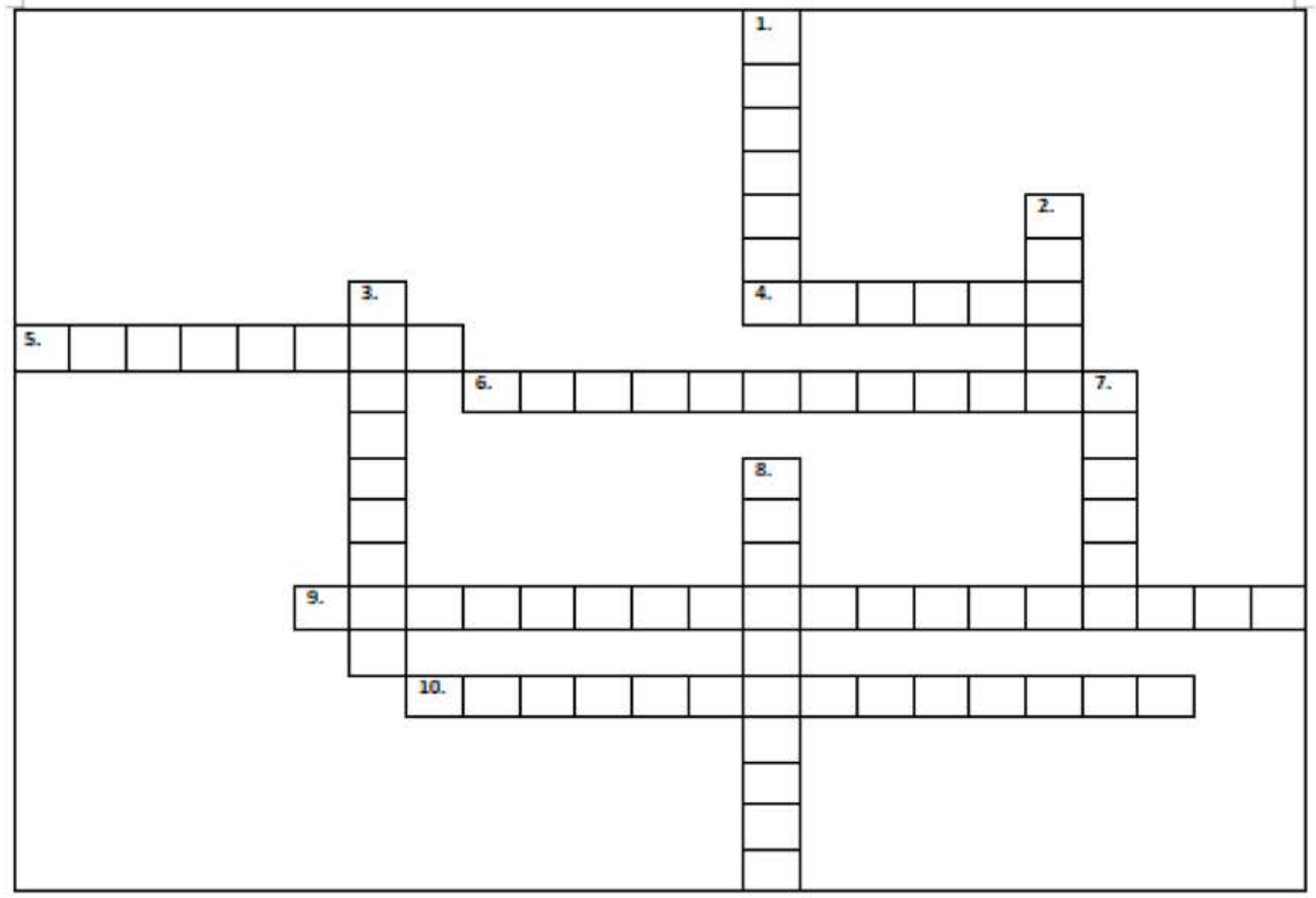
# CROSSWORD PUZZLE




**Across**

**4. A trading strategy involving buying and selling options (or other derivatives) at different strike prices**

**5. Complex strategy combining multiple options for a specific outcome**

**6. This equation, named after its creators, is used to price stock options based on factors like volatility, strike price, and time decay**

**9. Margin call issued when the value of a derivative falls below a minimum**

**10. Unintended consequences arising from interconnected derivative positions.**

**Down**

**1. Agreement to sell an asset at a set price by a certain date**

**2. Reducing the risk of another holding by taking an opposing position**

**3. Unforeseen events that can significantly impact derivative prices**

**7. The predetermined price for buying or selling an underlying asset in a derivative contract**

**8. Complex financial instrument derived from an underlying asset**

**SCAN QR FOR ANSWERS**

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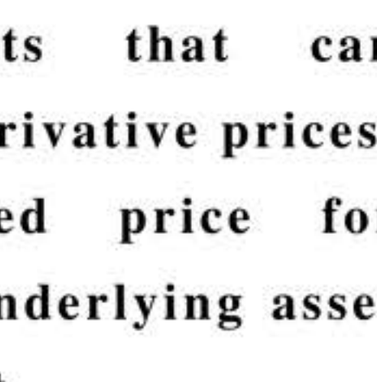
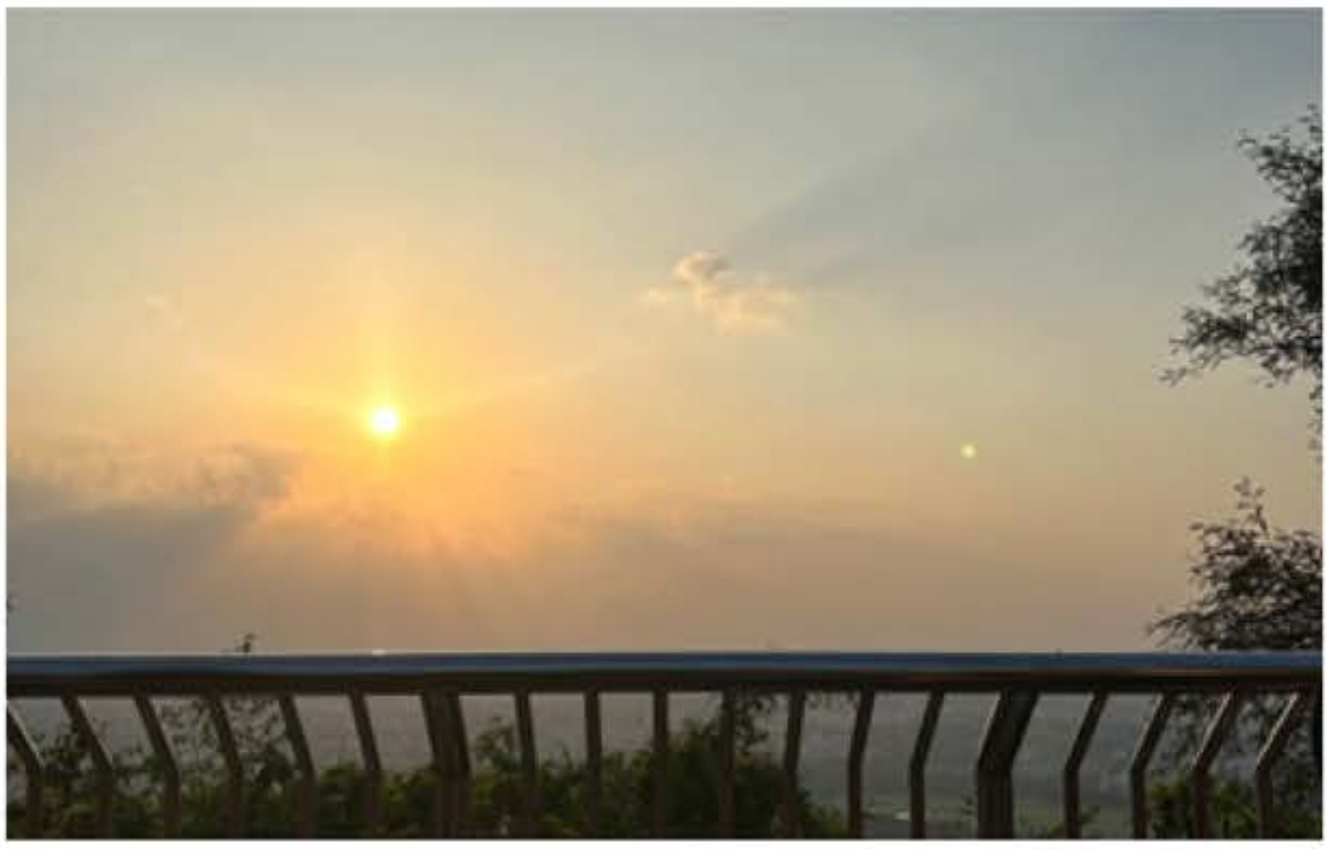
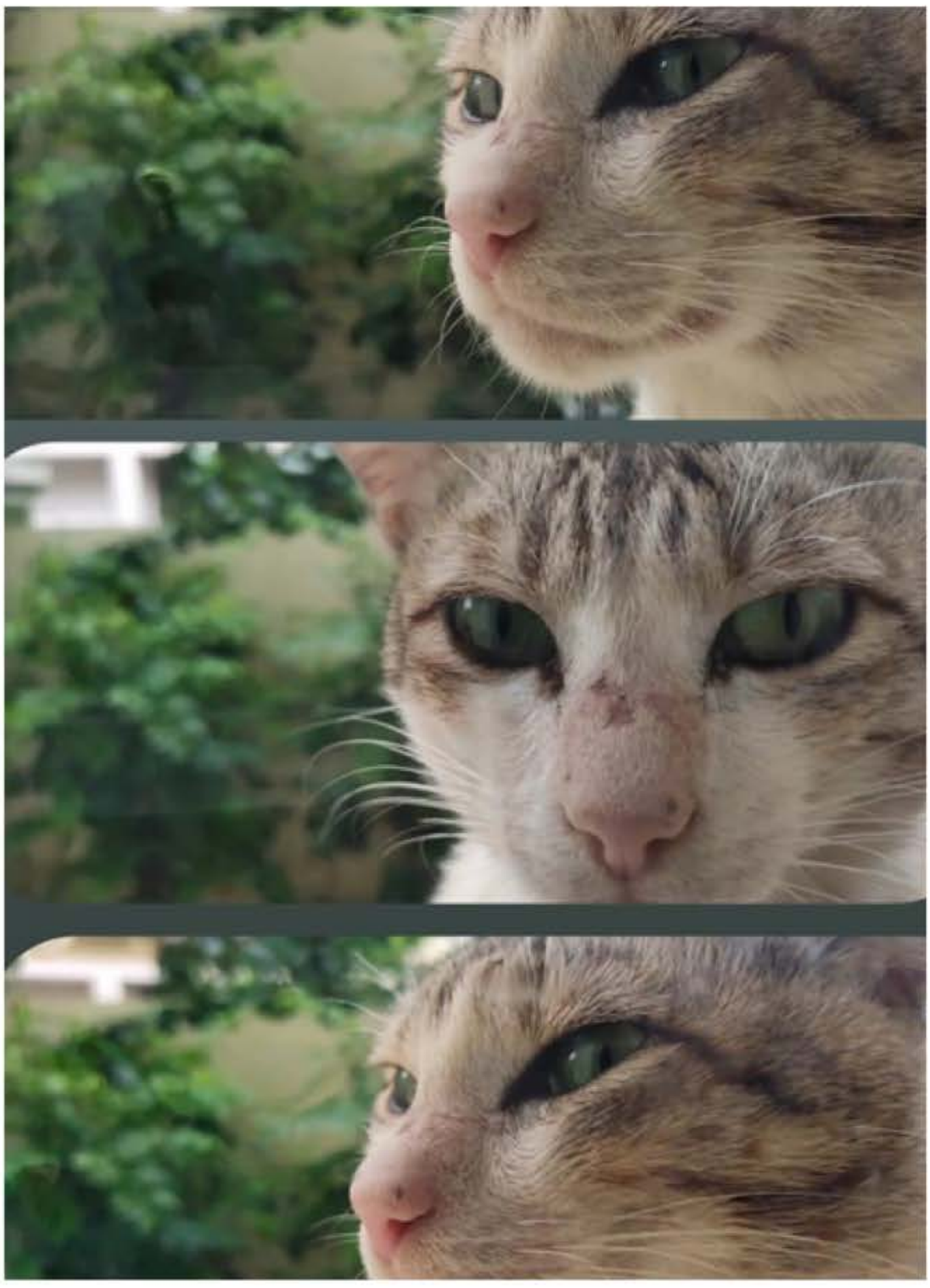


# CREATIVE CORNER

# PHOTOGRAPHY

# PHOTOGRAPHY



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