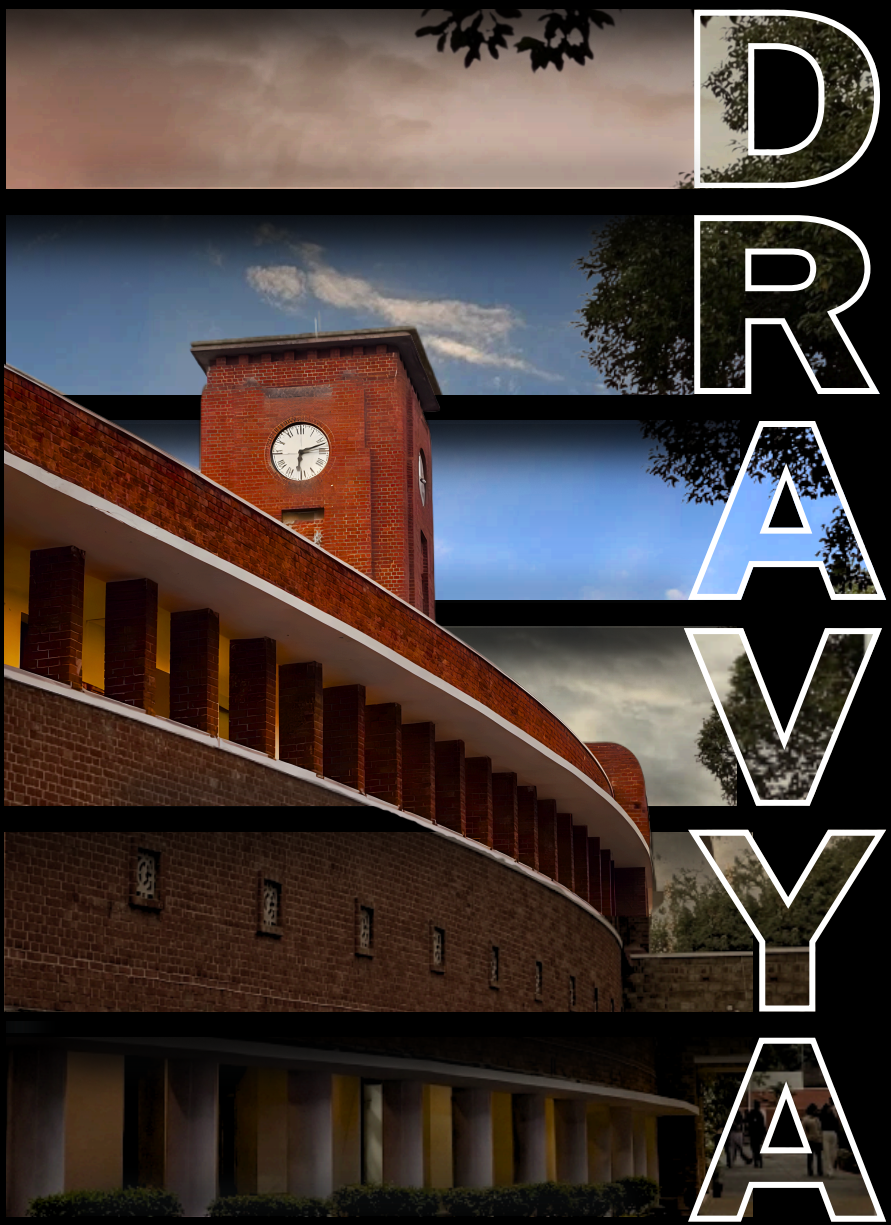
DSTREET

2025 EDITION



DRAVYA

ANNUAL BUSINESS & INVESTMENT JOURNAL

VOLUME IV

TIMELINE

Tracing the journey of our society

29th – 30th April 2025 – Bullzire'25

Bullzire'25, D Street SRCC's flagship stock market festival, brought together finance enthusiasts for an immersive and high energy experience. Spanning two days, the event featured dynamic competitions, interactive simulations, and engaging sessions designed to test participants' analytical thinking and market acumen. With active participation and a spirit of competition, Bullzire'25 fostered learning, collaboration, and a deeper understanding of real world financial markets.

30th April 2025 – Dravya 3.0 Launch

In a moment of great pride and anticipation, Dravya 3.0 was officially unveiled by Sundararaman Ramamurthy, MD & CEO of BSE, marking a significant milestone in D Street SRCC's journey of financial thought leadership. The launch brought together students, faculty, and industry enthusiasts to celebrate months of dedicated research and collaboration. This edition continued to uphold Dravya's legacy of delivering insightful analysis, offering readers a deeper understanding of evolving financial landscapes and investment perspectives.

15th May 2025 – Cabinet Recruitment

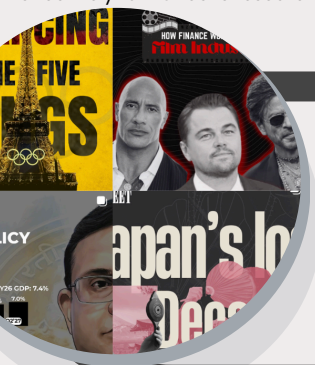
The cabinet recruitment process marked a significant step in shaping the leadership for the upcoming year. Based on commitment, contribution, and vision, deserving members were entrusted with key roles to drive D Street forward. The newly appointed team brings with it fresh ideas, strong leadership, and a shared determination to elevate the society's impact and outreach.

24th September 2025 – Recruitment Drive

D Street SRCC's recruitment drive witnessed an enthusiastic response from students eager to explore the world of finance. Through a rigorous and engaging selection process, aspiring candidates were evaluated on their analytical thinking, financial awareness, and problem solving abilities. The drive successfully inducted a talented cohort of individuals ready to embark on their journey into the dynamic realm of finance.

26th September – 1st October 2025 – Research Bootcamp

The Research Bootcamp provided an immersive learning experience for newly inducted members, equipping them with essential financial and analytical skills. Through interactive sessions, practical assignments, and guided mentorship, participants were introduced to key concepts such as equity research, valuation techniques, and market analysis. The bootcamp laid a strong foundation, preparing members to contribute effectively to D Street's research driven initiatives.



New Initiatives – Expanding Thought Leadership

In its continued pursuit of making finance more accessible and engaging, D Street SRCC introduced a series of new content driven initiatives. The launch of Street Digest, a fortnightly newsletter, provided readers with concise and insightful updates on markets, economy, and global developments. Alongside this, the society strengthened its digital presence through its Blogs and Research Articles, offering regularly published insights, opinions, and in depth financial analysis. These initiatives reflect D Street's commitment to extending its impact beyond events, creating a dynamic ecosystem for financial awareness and intellectual exchange.

Live Projects & Industry Engagement

The Live Projects vertical served as a crucial bridge between academic learning and real world application, strengthening D Street's industry connect. Through collaborations with organizations such as Tata 1mg, Bullspree, Appreciate, Walford LLP, and FundCapita, members engaged in hands on projects across domains including market research, financial analysis, and strategic problem solving. Guided by industry professionals, participants gained practical exposure and developed a deeper understanding of real time business challenges, reinforcing D Street's commitment to experiential learning and professional readiness.

12 March 2026 - Podcast Launch – Vantage

Expanding its footprint beyond traditional research and publications, D Street SRCC launched its official podcast, Vantage, creating a platform for insightful conversations with leaders in business, investing, and entrepreneurship. Featuring distinguished guests such as Sasha Mirchandani and Vinod Keni, the podcast offers listeners unique perspectives, real world experiences, and valuable industry insights. Vantage reflects D Street's commitment to making finance more accessible, engaging, and impactful for a wider audience.

WORDS FROM THE PRINCIPAL

MS. SIMRIT KAUR

It is with immense pleasure and pride that I extend my heartfelt greetings to each one of you on this special occasion—the 13th anniversary of D-Street, the pioneering society at Shri Ram College of Commerce. As a premier institution of Commerce and Economics, our college has consistently pursued excellence in both academia and extracurricular activities. D-Street, SRCC, has been a shining example of our commitment to fostering a holistic learning environment. The society has not only produced outstanding academic scholars but has also carved a niche for itself in the realm of practical financial knowledge. Under the exceptional leadership of Dr. Anil Kumar, the Convenor of D-Street, our students have tirelessly worked to deepen their understanding of financial markets. The society's journey has been marked by numerous milestones, including the successful organisation of events such as 'Bullzire' and the initiation of groundbreaking projects like Shri Ram Trading Challenge. These initiatives have played a crucial role in bridging the gap between theoretical concepts and real-world applications. Today, on the 13th anniversary of D-Street, I am thrilled to congratulate the entire team on the launch of the third edition of 'Dravya'—The Annual Business and Investment Journal. As the first stock marketoriented society in the University of Delhi, D-Street continues to set the bar high with 'Dravya,' showcasing research papers, articles, and reviews in diverse fields, including Business, Investments, Financial Markets, Policy, Economics, Geopolitics, and Global Economy. May this edition of 'Dravya' stand as a testament to the unwavering dedication and passion of the D-Street team. I am confident that it will not only uphold the rich tradition of disseminating financial knowledge but will also inspire future generations of scholars and practitioners. May the society continue to scale new heights and contribute significantly to the world of finance.

WORDS FROM THE

TEACHER IN CHARGE

MR. ANIL KUMAR

As the teacher in charge of D-Street, it is with great pleasure and excitement that I extend my heartfelt congratulations on the occasion of the third edition of 'Dravya' – The Annual Investment and Business Journal. This marks yet another significant milestone in the journey of our esteemed society, and I take this opportunity to reflect on the remarkable strides we have made together. Economic globalization has presented both challenges and opportunities, and amidst this intricate landscape, the emergence of stock markets in developing countries, notably in India, has been a transformative phenomenon. D-Street, the largest stock market-oriented society in the University of Delhi, has embraced the challenge of equipping undergraduates with the skills required to navigate this dynamic financial landscape. Through premium speakers' sessions by industry leaders, organising the prestigious Bullzire festival, and publishing insightful materials, D-Street has consistently worked towards spreading stock market literacy among students. With the yearly publication of 'Dravya,' our Annual Investment and Business Journal, D-Street has added a new dimension to its commitment. This journal aims to publish research articles and review articles in the fields of investments in the financial markets, providing a platform for scholarly discourse and intellectual exploration. I applaud the students of DStreet for their initiative and dedication in taking this venture forward. Your commitment to top-notch research work is commendable, and I am confident that this edition of 'Dravya' will once again showcase the intellectual prowess of our students and make Shri Ram College of Commerce proud in every way possible. As we embark on this exciting journey of the third edition of 'Dravya,' I encourage the students to continue their outstanding research efforts and contribute to making this edition even more enriching and impactful. Wishing you all the success in this endeavour.

WORDS FROM THE

EDITOR IN CHIEF

Santusht Chowdhry

There is something uniquely humbling about contributing to a body of work that precedes you and will outlast you. As I pen my note for Dravya 4.0, I am reminded that this journey as Editor in Chief has been less about a title, and more about stewardship of ideas, of people, and of a legacy that D Street has built with unwavering conviction. Dravya, to me, has always been more than a journal. It is an intellectual archive of our times, a space where curiosity meets discipline, and where complex financial narratives are distilled into insight that is both accessible and meaningful. As the flagship finance and investment publication of our college, its significance lies not just in what it presents, but in the standard it sets. Each edition is an opportunity to challenge convention, to interrogate evolving market realities, and to contribute thoughtfully to the larger discourse on finance. Working on Dravya 4.0 has been an experience defined by intensity, intent, and immense learning. It has required a constant balancing of vision with detail, of creativity with rigour. In the process, I have come to deeply value the art of listening, the discipline of refinement, and the responsibility that comes with shaping narratives that others will engage with and learn from. This role has undoubtedly altered the way I approach both leadership and learning. It has made me more deliberate, more discerning, and far more appreciative of collaborative excellence.This edition stands as a culmination of sustained effort and shared ambition. From exploring shifting economic paradigms to unpacking nuanced investment strategies, every piece in Dravya 4.0 reflects the intellectual sincerity and diligence of its contributors. It is a product of countless hours of ideation, debate, iteration, and perseverance, brought together by a team that consistently chose excellence over convenience.I extend my heartfelt gratitude to every individual who contributed to bringing this edition to life. To our research analysts and designers, thank you for your relentless pursuit of depth and clarity. To the larger D Street fraternity, your energy and belief in this vision continue to inspire. I am also sincerely thankful to our faculty mentors and industry experts, whose guidance has anchored us throughout this journey.To our readers, you remain at the core of everything we do. Your engagement encourages us to think sharper, question deeper, and strive harder with every edition we undertake. Dravya 4.0, in many ways, is both a milestone and a moment of reflection. It captures where we stand today, while quietly pointing toward where we can go next. I hope it not only informs, but also inspires, sparking conversations, ideas, and aspirations that extend far beyond these pages. Here is to continuity, to evolution, and to carrying forward a legacy with both pride and purpose.

WORDS FROM THE

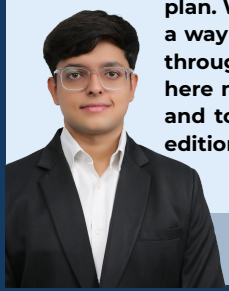
EDITOR IN CHIEF

Abhiniti Mittra

As I sit down to write this note for Dravya 4.0, I find myself reflecting on the remarkable journey that has brought us here. When I first stepped into the role of Editor in Chief at D Street SRCC, I knew it would be both challenging and deeply rewarding. Yet, nothing could have fully prepared me for the scale of learning, collaboration, and growth that has shaped this edition. Dravya, as the flagship financial and investment journal of D Street, has always stood for rigorous research, thoughtful insight, and meaningful analysis. With every edition, our goal has been to push boundaries, explore the ever evolving financial landscape, and create content that resonates with both market enthusiasts and industry professionals. Dravya 4.0 continues that legacy. It represents months of dedication, countless discussions, and a shared vision to deliver a publication that is both informative and thought provoking. This edition explores some of the most significant financial trends, market dynamics, and investment strategies shaping the world today. From in depth analyses of economic policies to emerging investment opportunities, Dravya 4.0 reflects the commitment and intellectual rigor of our entire team. The process has been truly transformative. Working closely with contributors, refining ideas, and upholding the highest editorial standards has not only strengthened my leadership abilities but also deepened my understanding of the financial world. I am immensely grateful to our exceptional editorial team, the research analysts, designers, and every member of D Street who dedicated their time and effort to bring this edition to life. Your passion and commitment have been the driving force behind Dravya 4.0. I would also like to extend my sincere thanks to our faculty mentors and industry experts for their invaluable guidance. To our readers, your support continues to inspire us to learn, grow, and deliver better with each edition. I hope Dravya 4.0 sparks curiosity, encourages exploration, and adds value to your understanding of finance.

Looking ahead, we remain committed to evolving alongside the dynamic world of finance, continuously raising our standards of analysis and storytelling. Dravya will strive to not only reflect change but anticipate it, fostering informed perspectives among its readers. As we move forward, we hope to build a stronger intellectual community that engages, questions, and contributes meaningfully to the discourse shaping the future of global finance.
Here is to many more editions and to our continued pursuit of financial excellence.

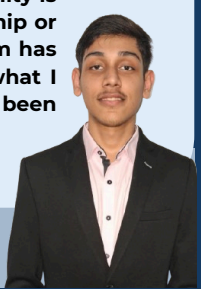
WORDS FROM THE CABINET



D Street came into my life at a point when I was still figuring out what I wanted from college, and it answered that question before I had finished asking it. From my very first event as a junior member to eventually leading the society as President, every step in between taught me something I could not have learned inside a classroom. The society gave me my first real experience of what it means to take ownership, to make decisions that affect people you genuinely care about, and to show up even when things are not going according to plan. What I will carry forward from D Street is not just a set of skills but a way of thinking. Finance became less of a subject and more of a lens through which I started looking at everything around me. The people here made that shift happen. To every member who trusted this team, and to everyone who has been a part of this society across any of its editions, thank you. This one is for all of you.

Parikshit Sharma
(President)

I did not expect D Street to change me as much as it did. I joined because finance interested me, and I stayed because the people here pushed me to be better in ways I had not anticipated. There is a particular kind of growth that only happens when you are working on something that genuinely matters to you alongside people who hold themselves to a high standard. That is what this society has been for me throughout my time here. Serving as Vice President has been one of the most stretching experiences of my life at SRCC. The responsibility is real, the stakes feel real, and the lessons are ones that no internship or course could have replicated. I am deeply proud of what this team has built together, and deeply grateful to D Street for showing me what I am capable of when I stop holding back. To everyone who has been part of this journey with me, I hope you feel the same way.



Mehul Kumar Lunawat
(Vice President)

WORDS FROM THE CABINET

Before D Street, I thought I understood what hard work looked like. Then I joined, and I realised I had only seen a version of it. The society operates at a pace and intensity that forces you to grow quickly, whether you feel ready or not. I learned to be more organised, more decisive, and more patient, sometimes all three in the same afternoon. The role of Chief Secretary taught me that the work nobody sees is often the work that holds everything together. What I will miss most is not any particular event or achievement but the everyday moments. The planning sessions that ran too long, the last-minute pivots that somehow worked out, the quiet satisfaction of watching something come together after weeks of effort. D Street gave me those moments, and they have shaped the kind of person I want to be long after college. To this team and this society, thank you for everything.

Pratham Grover
(Chief Secretary)

Finance had always fascinated me, but D Street turned that fascination into something more rigorous. The society pushed me to go beyond surface-level analysis, to ask why a trend is happening rather than just noting that it is, and to develop an intellectual honesty about my own understanding that I did not have when I first joined. Research here is not a task you complete and submit. It is a habit of thinking that slowly rewires how you process the world around you.

As Research Director, I tried to pass on what this society had given me, the insistence on going deeper, the patience to sit with a question until a real answer emerged, and the humility to change your view when the evidence asks you to. Whether I succeeded is for my team to say, but I gave it everything I had. D Street has been one of the great privileges of my time at SRCC, and I am grateful for every bit of it.

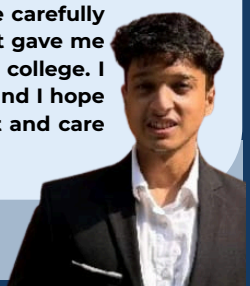
Vagish Jain
(Research Director)

WORDS FROM THE CABINET

When I first joined D Street, I had no idea how much this society would shape the way I think. I came in with enthusiasm and left with something more useful: discipline. The kind of discipline that makes you go back to a piece of research and ask whether it is actually good, not just good enough. That standard got into my head somewhere along the way, and I am grateful it did. Leading research this year meant holding that standard for a whole team, which was a different kind of challenge. It meant trusting people, giving feedback that was honest but not discouraging, and creating an environment where curiosity was taken seriously. I do not know how well I managed all of that, but I know the team gave everything they had, and that is something I will always be proud of. D Street has been a remarkable part of my life at SRCC. I could not have asked for a better place to grow.

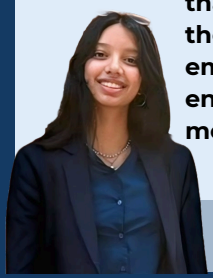
Aakarsh Kakkar
(Research Director)

I fall short of words when I try to describe what D Street has meant to me. It gave me the opportunity to turn a genuine interest in finance into something I actively worked at every single day. The two years I have spent in this society have been filled with more learning than I can neatly summarise, from conducting research sessions and building reports to collaborating with some of the most driven people I have ever had the chance to work with. Every moment spent on research for this society has added something to me, not just as someone who understands finance better, but as a person who thinks more carefully and communicates more clearly. D Street gave me that, and it gave me friendships and memories that I will carry with me long after college. I owe a significant part of my personal growth to this society, and I hope the work we have done as a team this year reflects the effort and care that went into it.



Siddharth Mittal
(Research Director)

WORDS FROM THE CABINET



D-Street has always been defined by the mindset it fosters, curiosity, initiative, and the drive to look beyond the obvious. It is a space where learning goes beyond concepts to questioning ideas and building meaningful perspectives. I take great pride in being part of this journey alongside such driven individuals, which has been both inspiring and rewarding. With this edition of Dravya, we present insights that reflect the evolving nature of finance and the depth of thought within our community. Each contribution embodies intent and effort, and I hope this edition encourages you to think critically, stay curious, and engage more meaningfully with the world of finance.

Eshana Jaswal
(Chief Coordinator)

Dravya 2025 reflects work that does not rely on volume but on substance. In a time where creating content is easy, this journal focuses on those that are deliberately thought through and worth engaging with. Bringing together perspectives from professionals, students and emerging voices, this edition is shaped by analysis, intent and relevance. Each contribution aims to add to a more nuanced understanding of business and investment today, rather than just adding to the noise. We hope this edition encourages sharper thinking, better questions and a more thoughtful approach to how we engage with ideas.

Rehan Chhura
(Chief Coordinator)

WORDS FROM THE CABINET

Among my experiences at SRCC, my journey with D-Street has been the most transformative. I began as a member of the PR and Tech department, where initial curiosity soon turned into a meaningful learning experience in a collaborative environment. In my next tenure, I had the privilege of serving as Director of PR and Tech, a role that helped me grow beyond the domain and develop leadership, coordination, and responsibility.

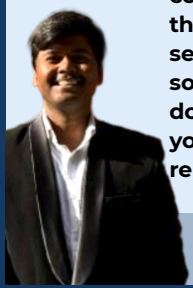
One of the most memorable parts of this journey was working on Bullzire. The long hours of planning and execution were demanding yet rewarding, and it was during this time that we built lasting friendships. D-Street has also shaped my interest in finance and investments. As we present Dravya 4.0, I hope readers appreciate the passion and effort behind this publication.

Kush Agrawal
(PR & Tech Director)

Joining D Street was one of the better decisions I made in college, and that is something I say with the benefit of knowing how it turned out. When I first came in, I had a broad interest in finance and a vague sense that I wanted to do something meaningful with my time at SRCC. This society gave that vague sense a direction. The work here is real, the people are serious about it, and the environment pushes you to show up fully rather than coast along. My time handling PR and Tech taught me that communication is as important as content. You can have the most thoughtful work in the world, but if it does not reach people or does not land the way it was intended to, something has been lost. That lesson has changed how I approach almost everything now. D Street gave me a lot, but that particular shift in thinking might be the thing I am most grateful for.

Nihal Saini
(PR & Tech Director)

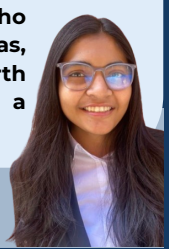
WORDS FROM THE CABINET



I came into D Street as someone who understood finance in theory. The society taught me to understand it in practice, through the conversations it facilitated, the people it introduced me to, and the responsibilities it placed on me before I felt entirely ready for them. Being stretched beyond your comfort zone is uncomfortable in the moment, but looking back, those were always the moments I grew the most.Heading corporate communications meant being the bridge between D Street and the wider professional world, and I took that responsibility seriously. Every interaction was a chance to demonstrate what this society stands for, and I always tried to do it justice. SRCC opens doors, but it is what you do with those opportunities that defines your time here. D Street gave me the tools, the mindset, and the relationships to make the most of mine.

Aaditya Kumar Yadav
(Corporate Communications Director)

D Street has been one of the most defining parts of my time at SRCC, and I do not think I fully understood that until I started thinking about what it actually gave me. It gave me confidence, the kind that does not come from being told you are good at something but from actually doing difficult things and watching yourself handle them. Working in corporate communications taught me to represent something larger than myself with care and intention. D Street's reputation is built on years of consistent, excellent work, and being trusted to carry that reputation into external spaces was something I never took lightly. I am grateful to every senior who built what I inherited, to every peer who made this year what it was, and to every junior who reminded me why this society is worth putting everything into. Thank you for making this such a meaningful journey.



Ridhi Maheshwari
(Corporate Communications Director)

MEET THE TEAM

Santusht Chowdhry
(Editor-In-Chief)

Abhiniti Mittra
(Editor-In-Chief)

Mehul Kumar Lunawat
(Vice President)

Rehan Chhura
(Chief Coordinator)

Kush Agarwal
(PR & TECH Director)

Aakarsh Kakkar
(Research Director)

LEFT TO RIGHT STANDING

Tarush Gupta Mahak Choudhary Priyansh Sachan Aashmita Devesh Singh Devanshi Aastha Raj

LEFT TO RIGHT SITTING

Rachit Joshi Akshay Manuja Shubham Kumar Aakarsh Sinha Piyush Kartik

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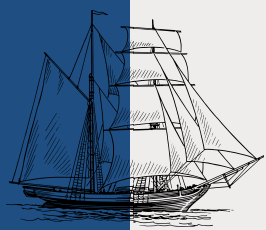
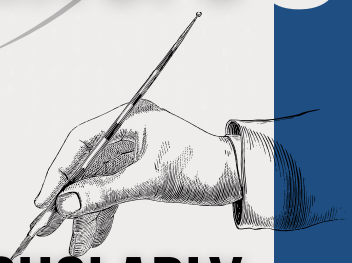
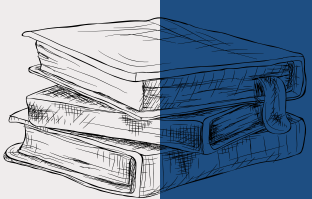
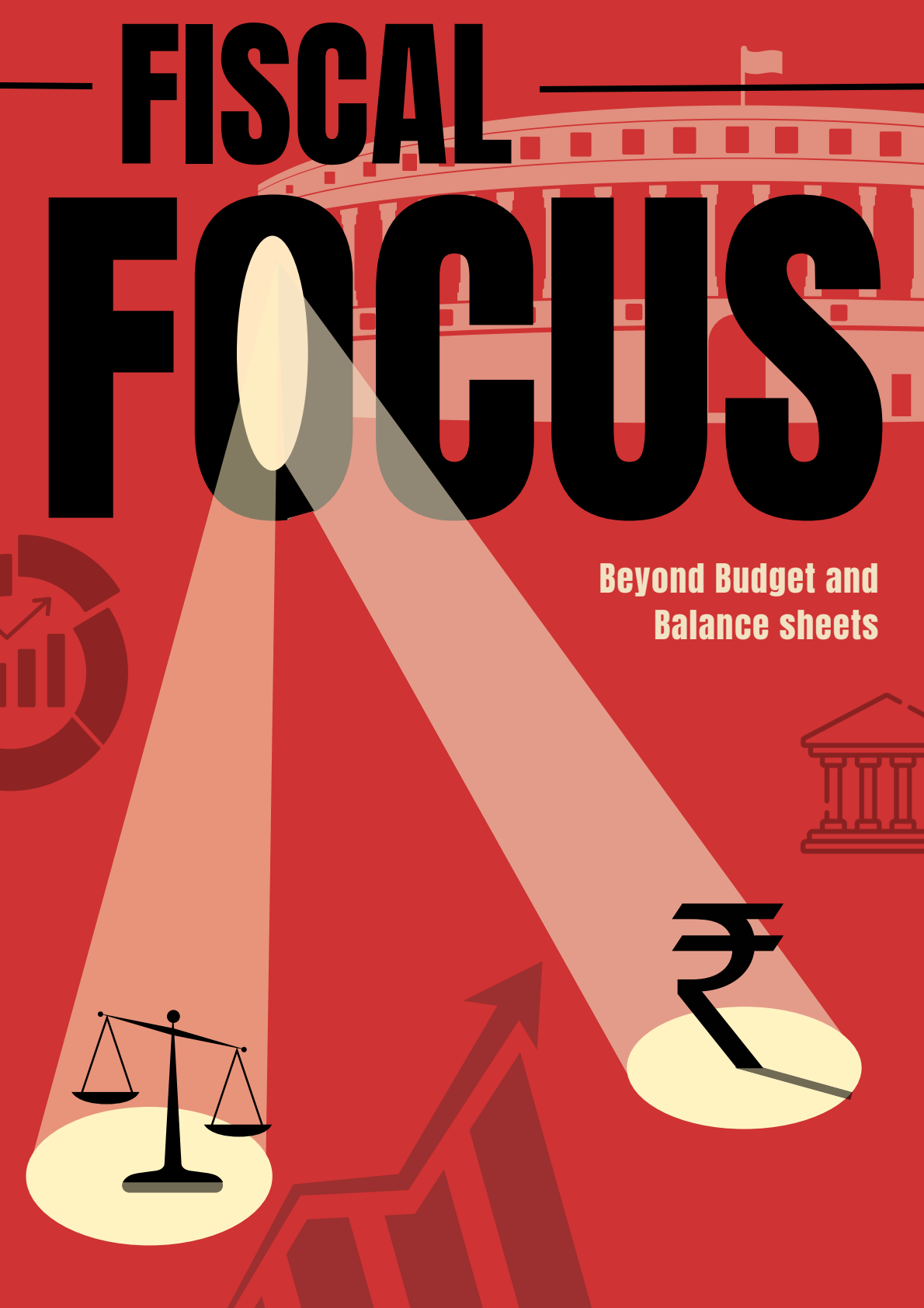






FISCAL FOCUS

Beyond Budget and Balance sheets



INDIA'S CAPITAL EXPENDITURE PUSH: REEVALUATING THE STRATEGY BEFORE UNION BUDGET 2026

BY: MOHAMMAD AARISH

ABSTRACT

Over the past five Union Budgets, India has made capital expenditure the centrepiece of its fiscal strategy. From highways and railways to defence manufacturing and digital public infrastructure, the government has consistently argued that higher public capital spending crowds in private investment, raises long-term growth potential and improves productivity. Yet, with fiscal deficits remaining elevated, state finances under strain and private investment still uneven, the effectiveness of this strategy deserves closer scrutiny.

CAPITAL EXPENDITURE PUSH

If there is one phrase that keeps popping up every time the Union Finance Minister addresses Parliament, it is "capital expenditure". In Budget after Budget, the message has been consistent: India will spend its way into sustainable growth. Capital expenditure, unlike revenue spending, is supposed to create, assets, raise productivity and generate returns over decades rather than years.

In economics lectures, we are taught that not all government spending is equal. A rupee spent on salaries has a very different long-term impact compared to a rupee spent on highways or power transmission. India's policymakers appear to have internalised this distinction deeply. Central government capital expenditure rose from ₹4.4 lakh crore in FY2020 to ₹11.1 lakh crore in FY2025, nearly a 2.5x increase in 5 years[1].

The obvious question, however, is whether this is smart fiscal engineering or simply postponing difficult choices around subsidies, welfare rationalisation and tax reform.

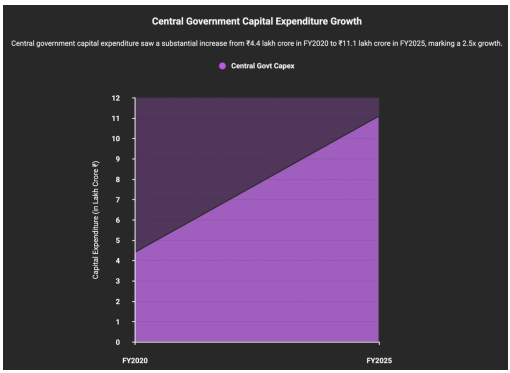
In macroeconomics lectures, we often discuss the fiscal multiplier, which measures how much output increases for every rupee of government spending. Empirical studies for India suggest that capital expenditure multipliers (2–2.5x) are significantly higher than those for revenue expenditure (0.8–1.2x)[2].The reasoning is intuitive. A new highway travel time and improves supply chain efficiency. Over time, this

encourages factories, warehouses and services to set up nearby, amplifying the initial impact. This is what policymakers mean when they talk about "crowding in" private investment.

However, theory also warns us about crowding out. If government borrowing pushes up interest rates, private investment can suffer. In India's case, the Reserve Bank of India has so far managed liquidity conditions carefully, ensuring that increased government borrowing does not sharply spike bond yields[3]. This delicate coordination between fiscal and monetary authorities has been one of the underappreciated success factors of the capex push.

But where has the Indian government been investing? A closer look at expenditure composition reveals clear priorities. Roads and highways account for nearly 25% of central capex, followed by railways, defence capital outlays, and urban infrastructure[4].

The National Infrastructure Pipeline, launched earlier, has started translating from PowerPoint slides into physical assets. India now constructs over 30 kilometres of highways per day, compared to around 12 kilometres a decade ago[5]. Railways has seen record allocations, with investments in dedicated freight corridors aimed at reducing logistics costs from 14% of GDP to closer to 8%, a level comparable with developed economies[6]. From a classroom perspective, this fits neatly into the concept of supply-side stimulus. Rather than boosting consumption demand temporarily, the government



is attempting to expand the economy's productive capacity.

However, one point often glossed over in headline discussions is that nearly 60% of public capital expenditure in India is undertaken by state governments. Recognising this, the Centre introduced interest-free, 50-year loans to states for capex, amounting to ₹1.3 lakh crore annually in recent Budgets[7].

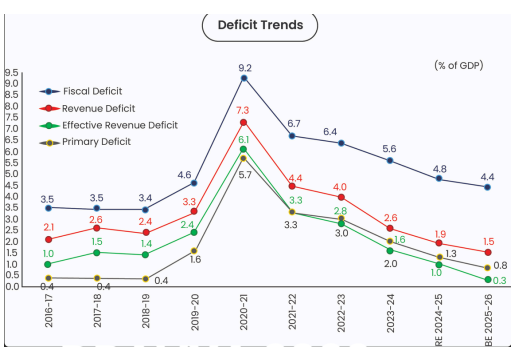
This is a clever policy design. It nudges fiscally constrained states to invest without immediately worsening their debt servicing burden. However, the outcomes have been uneven. Wealthier states with stronger administrative capacity have utilised these funds efficiently, while poorer states struggle with project execution and land acquisition bottlenecks.

This raises a deeper question we debated in public policy classes at IIFT: Is fiscal decentralisation meaningful if execution capacity remains unequal? Throwing money at states without parallel investments in governance reforms risks widening regional disparities rather than reducing them. The government's core argument is that public capex will revive private investment. But

data offers a mixed verdict. Corporate balance sheets are healthier than a decade ago, with lower leverage and improved profitability[8]. Yet, private sector capital formation as a share ofGDP has not returned to its mid-2000s peak.

One explanation is global uncertainty. Trump-era trade uncertainties, post-pandemic supply chain disruptions, geopolitical tensions, etc. have made firms cautious. Another explanation, more structural, is that infrastructure alone does not guarantee investment. Land reforms, contract enforcement and regulatory certainty matter just as much.

In one of our strategy discussions, a professor put it bluntly: "No company invests just because a road exists. It invests because it sees predictable demand and policy stability." That insight neatly captures the limitation of a capex-only growth strategy. India's fiscal deficit remains near 5% of GDP, even after post-pandemic consolidation[9]. Public debt is hovering close to 82% of GDP, raising concerns about long-term sustainability. Supporters argue that as long as growth exceeds the interest rate on government debt, the debt ratio will stabilise. Critics counter that this



assumption is risky in a world of volatile global capital flows. From a conservative fiscal lens, one could argue that India is betting heavily on future growth to justify present borrowing. If growth disappoints, fiscal space for future shocks, whether climate-related or geopolitical, could be severely constrained.

Perhaps the most under-discussed aspect is spending quality. A poorly designed highway or an underutilised airport adds little economic value despite high headline expenditure. This ties back to a core public finance lesson: efficiency matters as much as scale. Without rigorous project appraisal, transparent procurement and post-completion audits, capital expenditure risks becoming politically attractive but economically inefficient.

Are we ignoring revenue reforms? One criticism of the capex obsession is that it diverts attention from politically difficult reforms. Tax buoyancy has improved post-GST, but structural issues remain. Direct tax compliance is still narrow and subsidies continue to distort incentives in agriculture and energy.

A more balanced fiscal strategy would pair capital expenditure with gradual subsidy rationalisation and tax base widening. Otherwise, capex risks becoming the fiscal equivalent of skipping leg day while obsessing over biceps. Looking ahead, three priorities stand out. First, strengthen state capacity through technical assistance and governance reforms rather than only financial transfers. Second, complement infrastructure

spending with land labour and judicial reforms to unlock private investment. Third, institutionalise outcome-based budgeting so that success is measured not by money spent but by economic impact delivered.

If India gets these right, capital expenditure can indeed become a powerful growth lever rather than a fiscal crutch.

CONCLUSION

India's capital expenditure-led fiscal strategy is neither a silver bullet nor a reckless gamble. It is a calculated bet grounded in sound economic theory but vulnerable to execution risks and political economy constraints. As students of business, the real lesson lies in recognising that fiscal policy works best when numbers, institutions and incentives align. Infrastructure can pave roads, but only reforms can pave the way for sustainable growth.

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CASE STUDY: THE VALIDITY OF PUBLIC DEBT THRESHOLDS IN DIVERGENT ECONOMIC SYSTEMS

BY: INIYAN SIVAKUMAR

ABSTRACT

This case study examines the empirical validity of "public debt thresholds" - specific debt-to-GDP ratios beyond which economic growth is hypothesized to decline. Through a comparative analysis of the United States, India, and various Eurozone nations, the study evaluates whether a universal 90% threshold, as popularized by Reinhart and Rogoff, holds true across different monetary and institutional frameworks. By analyzing historical debt crises, such as the Greek default, alongside the high-debt stability of Japan and the U.S., this paper argues that thresholds are not absolute. Instead, they are contingent upon currency sovereignty, interest rate differentials (r-g), and institutional quality. The findings suggest that for emerging markets like India, thresholds are lower and more sensitive to capital flight, whereas reserve-currency nations operate under a "soft" inflationary constraint rather than a "hard" numerical one.

1. INTRODUCTION

In the wake of the 2008 financial crisis and the 2020 global pandemic, sovereign debt levels have reached heights not seen since the Napoleonic Wars. The central question for global policymakers is whether there exists a "point of no return." In 2010, the "90% threshold" became the most influential number in economics, driving austerity measures across Europe. However, as the U.S. debt crossed 100% and Japan soared past 250% without immediate catastrophe, the theory of a universal threshold was called into question.

This case study analyzes the divergent experiences of the U.S., India, and Europe to determine if thresholds are a reality or a statistical myth.

2. LITERATURE REVIEW: THE EVOLUTION OF THE THRESHOLD THEORY

The "Threshold Hypothesis" gained prominence through Reinhart and Rogoff (2010), who studied 44

countries over 200 years. Their study claimed that for debt levels above 90%, median growth rates fell by one percent, and average growth fell even more.

2.1 THE CRITIQUE OF "ONE-SIZE-FITS-ALL"

Herndon, Ash, and Pollin (2014) famously replicated the Reinhart-Rogoff study and found that when coding errors were removed and data weighting was adjusted, the average GDP growth for countries with debt-to-GDP ratios over 90% was actually 2.2%, not the -0.1% originally reported.

The Methodological Impact of Herndon, Ash, and Pollin (2014)

- The intervention by Herndon, Ash, and Pollin (HAP) serves as the primary technical pivot for this case study.
- The "Equal Weighting" Fallacy: HAP demonstrated that Reinhart and Rogoff treated one year of 90%+ debt in the UK (which saw consistent growth) with the same weight as one year in Belgium (which saw a contraction). By weighting all "debt-year" observations equally regardless of the duration of the high-debt period, the original study artificially created the appearance of a "cliff-edge" drop in growth.

Contextual Relevancy: For this case study, HAP's findings support the argument that high debt is often a symptom of slow growth (low tax tax receipts) rather than the cause of it. This shift in causality is vital when analyzing why the U.S. and India can maintain high debt levels without entering the "stagnation trap" predicted by earlier models.

The HAP critique essentially moved the goalposts of the debt debate from "How much debt is too much?" to "Under what conditions does debt become a problem?"

By disproving the 90% threshold as a mathematical constant, HAP cleared the way for the Institutional Quality and Currency Sovereignty arguments used in our analysis of the US and India. It suggests that if a "threshold" exists, it is a moving target shaped by a nation's specific economic architecture rather than a universal law of nature.

2.2 COUNTRY-SPECIFIC THRESHOLD STUDIES

The World Bank (2010): Suggested a threshold of 77% for developed nations.

Caner, Grennes, and Koehler-Geib (2010): Identified a 64% threshold for emerging markets.

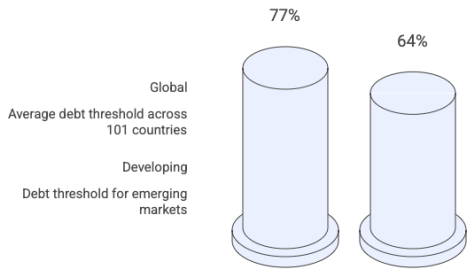
<u>The Caner, Grennes, and Koehler-Geib (2010) Contribution</u>

While the HAP critique dismantled the 90% "cliff," the study by Caner, Grennes, and Koehler-Geib (CGK), published by the World Bank, introduced the concept of asymmetric thresholds. Their research is particularly relevant to this case study because it utilizes a "Threshhold

Least Squares" (TLS) model to identify the point where debt begins to exert a permanent drag on growth.

- The 64% Turning Point: Using a sample of 101 countries, CGK found that the threshold for the entire sample was 77%. However, when they isolated developing countries, the threshold dropped significantly to 64%. This finding provides the empirical basis for our analysis of India, suggesting that emerging markets have a lower "carrying capacity" for debt due to thinner financial markets and higher risk premiums.

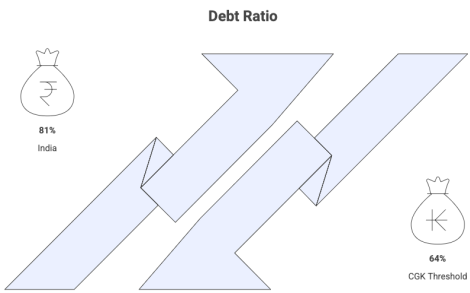
Debt Thresholds for Global and Developing Countries



- The "Growth Penalty": The study estimated that for every percentage point of debt-to-GDP above the threshold, annual real GDP growth loses 0.0174 percentage points. While this seems small, the cumulative effect over a decade represents a significant loss in national wealth.
- Capital Accumulation vs. Productivity: CGK argued that the primary channel of the debt threshold is not just interest rates, but a reduction in Total Factor Productivity (TFP). High debt creates an environment of "fiscal dominance" where the government's need to fund itself overrides the private sector's need for credit, a point we explore in the "Crowding Out" section of the India case study.

"If Reinhart and Rogoff provided the initial hypothesis and Herndon et al. provided the skepticism, Caner, Grennes, and Koehler-Geib (2010) provided the necessary nuance by demonstrating that the debt-growth relationship is fundamentally dictated by a country's level of economic development."

"The lower 64% threshold identified by CGK for emerging economies serves as a critical benchmark for evaluating India's current 81% debt ratio, suggesting that while a crisis may not be imminent, the 'growth penalty' phase may have already begun."



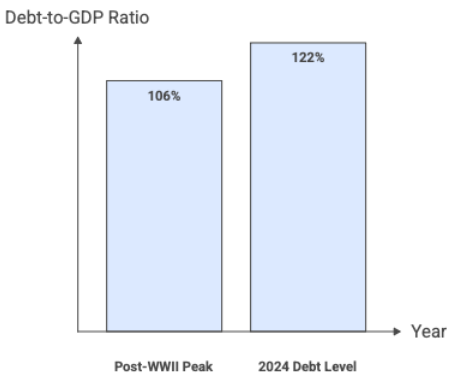
By incorporating MMT, this case study demonstrates that a "threshold" is not a universal constant but a legal and institutional variable. For a country with its own currency, the threshold is Inflation. For a country without its own currency, the threshold is Solvency. This distinction explains why India, while not a global reserve currency issuer, gains stability by borrowing in Rupees, thus moving itself further up

the "Sovereignty Scale" and away from the dangerous thresholds faced by foreign-currency borrowers. By incorporating MMT, this case study demonstrates that a "threshold" is not a universal constant but a legal and institutional variable. For a country with its own currency, the threshold is Inflation. For a country without its own currency, the threshold is Solvency. This distinction explains why India, while not a global reserve currency issuer, gains stability by borrowing in Rupees, thus moving itself further up the "Sovereignty Scale" and away from the dangerous thresholds faced by foreign-currency borrowers.

3. CASE STUDY ANALYSIS

3.1 THE UNITED STATES: DEBT WITHOUT A CEILING?

The United States serves as the primary anomaly in the debt-threshold debate. As of 2024, the U.S. federal debt-to-GDP ratio reached 122%, surpassing its post-World War II peak of 106% (CBO, 2025). Under the classical 90% threshold, the U.S. should be in a state of terminal stagnation. Instead, it has maintained robust, albeit debt-fueled, growth.



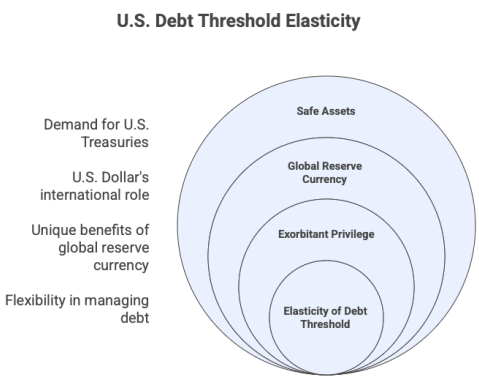
3.1.1 THE BLANCHARD R < G FRAMEWORK

A cornerstone of the modern U.S. debt defense is Olivier Blanchard's (2019) thesis on low interest rates. Blanchard argues that the fiscal cost of debt is determined by the differential between the real interest rate (r) and the real GDP growth rate (g).

- The "Zero Fiscal Cost" Hypothesis: In the U.S., r has historically remained below g. When r < g, the government can effectively "roll over" its debt - issuing new debt to pay off the old - without ever having to raise taxes to pay it back.
- Welfare Implications: Blanchard suggests that even if high debt reduces capital accumulation, the welfare costs are negligible if the safe rate of return (Treasury yield) is lower than the economy's growth rate. This implies that the U.S. "threshold" is not a fixed percentage of GDP, but a moving target dictated by the r - g gap.

3.1.2 EXORBITANT PRIVILEGE AND STRUCTURAL LIQUIDITY

The "elasticity" of the U.S. debt threshold is further reinforced by what Barry Eichengreen (2011) famously termed "Exorbitant Privilege." Because the U.S. Dollar serves as the global reserve currency, there is an insatiable, structural demand for U.S. Treasuries as "safe assets. " Seigniorage Rents: The U.S. earns "rents" by issuing currency that other nations must hold to facilitate trade. Recent studies estimate that this status increases the U.S. debt capacity by approximately 22-30% of GDP compared to other developed



nations (Choi et al., 2024).

- The Safe Haven Effect: During global crises (e.g., the 2020 pandemic or 2022 geopolitical shifts), capital flows into the U.S., actually lowering borrowing costs at the very moment the government needs to spend the most. This "anti-fragility" makes a traditional threshold breach nearly impossible through market mechanisms alone.

3.1.3 THE TRUE CONSTRAINT: INFLATION VS. SOLVENCY

If a numerical threshold does not exist for the U.S., what does? This study argues that the U.S. faces a "Fiscal-Monetary Tipping Point" rather than a debt ratio limit.

- **The Inflation Boundary:** For a sovereign issuer, the threshold is reached when the money supply outstrips the economy's productive capacity. The spike in U.S. inflation to 9% in 2022 served as a "soft threshold," forcing the Federal Reserve to raise rates and narrowing the r < g gap.
- **Political Risk and the Debt Ceiling:** Unlike other nations, the U.S. threshold is often self-imposed. The legislative "Debt Ceiling" (raised to $41.1 trillion in July 2025) creates artificial crises that affect market confidence. The real risk is not insolvency, but "political default" or the gradual erosion of the dollar's status due to policy uncertainty (Ajovalasit et al., 2025).

3.2 INDIA: HIGH GROWTH VS. FISCAL PRUDENCE

India represents a sophisticated departure from the "Emerging Market Debt Trap" narrative. While the classical 60% debt-to-GDP limit is often cited as a safety benchmark for developing nations, India's persistent growth at debt levels exceeding 81% suggests a more resilient fiscal architecture.

3.2.1 IMMUNITY TO "ORIGINAL SIN" AND CURRENCY MISMATCH

The primary differentiator for India, in contrast to Eurozone members like Greece or emerging peers like Argentina, is its immunity to what Eichengreen and Hausmann term "Original Sin"—the inability of a country to borrow abroad in its own currency. The Structural Shield: Over 96% of India's sovereign debt is denominated in Indian Rupees (INR) and held internally by domestic institutions (RBI, 2025).

- Comparison with Eurozone: Unlike Italy or Spain, which use a common currency they cannot

maintains full monetary sovereignty. If a Eurozone nation faces a liquidity crisis, it is at the mercy of the European Central Bank (ECB). India, conversely, manages liquidity through the Reserve Bank of India (RBI), ensuring that the government never faces a "hard" insolvency event in domestic currency.

3.2.2 THE GROWTH-INTEREST DIFFERENTIAL (G - R)

Comparison with the US: While the US relies on r < g via suppressed interest rates (the "Safe Haven" effect), India achieves a positive differential through sheer economic expansion. This allows India to run a "Primary Deficit" while still seeing its debt-to-GDP ratio stabilize—a luxury seldom available to stagnant Eurozone economies where g often hovers near zero.

3.2.3 THE BAL (2025) THRESHOLD AND THE "CROWDING OUT" REALITY

Bal (2025) provides the most granular data for this study. By identifying a growth-maximizing threshold of 61% to 64%, the study suggests that while India is "stable" at 81%, it is not "optimal."

- Financial Repression: India's threshold is governed by the Statutory Liquidity Ratio (SLR), which mandates that domestic banks hold a significant portion of their assets in government bonds.
- Analysis of Crowding Out: When the government exceeds the 64% mark, it effectively siphons off credit that would otherwise go to the private sector. In contrast to the US, where global capital flows fill the gap, India's private sector faces higher interest rates because the domestic "loanable funds" are being consumed by sovereign needs.

3.2.4 COMPARATIVE VULNERABILITY: CAPITAL FLOWS AND "TAPER TANTRUMS"

Despite its strengths, India's threshold is "softer" than the US because it lacks reserve currency status.

- The Foreign Investor Limit: While external debt is low, foreign portfolio investors (FPIs) in Indian government bonds are sensitive to fiscal slippage. This creates an "External Threshold"—not of solvency, but of exchange rate stability.

India as the "Middle Path"

India's case study reveals a middle path between the US and the Eurozone.

It avoids the Eurozone's "Insolvency Cliff" through monetary sovereignty and domestic borrowing, yet it lacks the "Bottomless Ceiling" of the US due to its reliance on a non-reserve currency. The Bal (2025) threshold of 64% acts as a "speed limit" rather than a "brick wall"; exceeding it does not lead to default, but to a slow erosion of private sector competitiveness—a nuance that is vital for modern fiscal policy in emerging giants.

3.3 THE EUROZONE: THE "HARD" THRESHOLD OF 60%

The Eurozone provides the most critical empirical evidence for the existence of "hard" debt thresholds. Unlike the United States or India, Eurozone member states operate under a unique constraint: they are users of a currency, not issuers. This structural arrangement transforms public debt from a manageable

macroeconomic variable into a potential solvency trap.

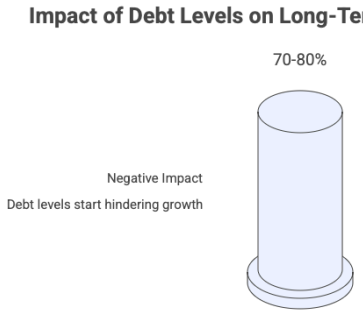
3.3.1 THE ABSENCE OF MONETARY SOVEREIGNTY AND THE "DEATH SPIRAL"

The defining characteristic of the Eurozone is the decoupling of fiscal and monetary policy.
The Solvency Constraint: Nations like Greece, Italy, and Spain borrow in Euros, a currency controlled by the European Central Bank (ECB). Consequently, they lack the "lender of last resort" facility that the Fed provides the US or the RBI provides India.

- The Greek Example: In 2010, when Greece's debt-to-GDP reached approximately 146%, market participants realized the Greek government could not print money to prevent default. This triggered a "sudden stop" in capital flows.
- Comparison with the US: While the US can rely on the "Safe Haven" effect to lower rates during a crisis, Eurozone members face Pro-cyclicality: as their debt rises, risk premiums surge, making the debt even harder to service—a phenomenon rarely seen in reserve-currency nations.

3.3.2 THE CHECHERITA-WESTPHAL AND ROTHER (2012) STUDY

A pivotal study for this case study is Checherita-Westphal and Rother (2012), which utilized a non-linear panel data model for 12 Euro area countries over 40 years.
The 70–80% Turning Point: Their research identified a robust "inverted U-shape" relationship, where debt levels between 70% and 80% of GDP began to exert a statistically significant negative impact on long-term growth.



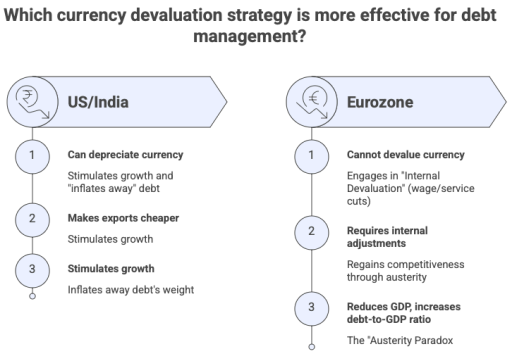
- Channels of Impact: Unlike the US, where debt impacts growth primarily through future inflation expectations, in the Eurozone, the impact is felt through private saving rates and public investment. High debt levels in Europe lead to "Ricardian Equivalence" on steroids: citizens anticipate massive tax hikes, leading to a collapse in internal consumption.

3.3.3 INTERNAL DEVALUATION VS. CURRENCY ADJUSTMENT

A critical disadvantage for Eurozone members is the inability to devalue.
The US/India Advantage: If the US or India faces a debt crisis, their currencies (USD or INR) can depreciate, making their exports cheaper and stimulating growth to "inflate away" the debt's weight.

- The Eurozone Trap: Eurozone members must engage in "Internal Devaluation"—cutting wages and public services to regain competitiveness. This directly reduces GDP (the denominator in the debt ratio), causing the debt-to-GDP ratio to rise even as

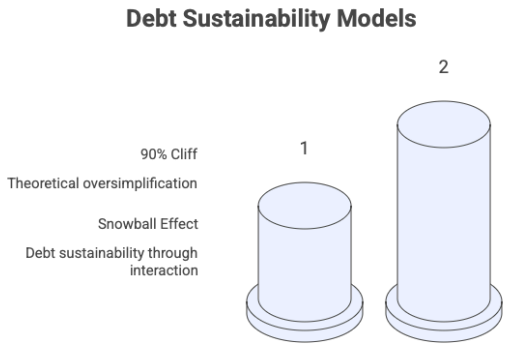
spending is cut—the "Austerity Paradox."



The Vulnerability of Currency Users: The Eurozone case study demonstrates that thresholds are not merely about the quantity of debt, but the nature of the currency. The 70-80% threshold found by Checherita-Westphal and Rother exists because these nations lack the monetary "safety valve" enjoyed by the US and India. For the Eurozone, the threshold is a Solvency Limit; for the US, it is an Inflation Limit; and for India, it is a Crowding Out Limit

4. RESULTS AND DISCUSSION: THE "SNOWBALL" VS. THE "CLIFF"

The results of this case study indicate that the empirical evidence gathered across the United States, India, and the Eurozone suggests that the "90% Cliff"—the idea that an economy falls into immediate ruin upon hitting a specific ratio—is a theoretical oversimplification. Instead, the data supports a "Snowball Effect" model, where debt sustainability is a product of the interaction between interest rates, growth, and institutional trust.



4.1 THE R - G DIFFERENTIAL

The most critical result is that debt sustainability is determined by the formula \Delta d = (r-g)d - pb.

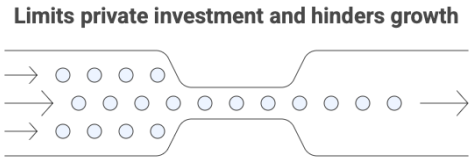
If g > r, the debt threshold is effectively infinite in the short term.

If r > g, even a low debt ratio (like 40%) can become unsustainable quickly.

Economic Profile	Snowball Risk	Critical Variable
Monetary Sovereign (USA)	Low Inflation	The snowball only "rolls" if the dollar loses its value
High-Growth Emerging (India)	Moderate	Domestic Productivity. The snowball is managed as long as growth stays above borrowing costs.
Currency User (Eurozone)	High Solvency	Solvency.The snowball is triggered by market sentiment and interest rate spreads

4.2 THE CROWDING OUT EFFECT

The studies analyzed show that "Crowding Out" is the primary mechanism through which debt hurts growth. As the government issues more debt, it takes up the "Loanable Funds" that would otherwise go to private business. Example: In India, high fiscal deficits lead to higher



lending rates for SMEs, slowing down industrial expansion.

The primary result of this study is that a universal debt threshold is a "myth of convenience." In reality, the threshold is a Moving Frontier. For a nation to remain sustainable, it must ensure that its "Snowball" does not gain more mass (interest) than the "Sun" (economic growth) can melt. This findings-led discussion proves that fiscal policy must be "context-aware"—treating India's 81% debt differently than Italy's 140%, based on their respective internal mechanics rather than an arbitrary 90% rule.

5. CONCLUSIONS

This case study concludes that public debt thresholds are a social and institutional construct rather than a mathematical certainty.

1. For Advanced Economies (USA, Japan): Thresholds are high and fluid. The constraint is inflation, not insolvency.

2. For Emerging Economies (India): Thresholds are moderate (~60-70%). Sustainability depends on maintaining high nominal growth rates and domestic borrowing.

3. For Non-Sovereign Users (Eurozone): Thresholds are low and dangerous. Without a central bank to act as a lender of last resort for individual nations, these countries face a "cliff" at much lower debt levels.

The policy implication is clear: fiscal rules should be flexible and based on the cost of debt service rather than a static percentage of GDP.

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THE NEW FINANCIAL ORDER: INDIA'S NEXT LEAP

BY: UTKARSH RAWAT

INTRODUCTION

India is at a pivotal moment in its economic journey and is rapidly evolving from a passive emerging market to a major global player shaping the new world financial order. This paper traces the transformation of India`s financial ecosystem spanning various layers that moved ahead with the help of Digital Public Infrastructure (DPI), a significant cultural transition from the accumulation of physical assets to the participation in financial instruments, and the regulatory governance, which is proactive. After an in-depth analysis of the impact that the "India Stack", credit democratization, and retail investors involvement have had on the Indian economy this study demonstrates that India's subsequent economic leap will be characterized by the domestic capital markets' sophistication, resilience, and inclusiveness. It further points out that while the issues of cybersecurity and financial literacy still exist, the structural reforms of the last decade have created momentum towards long-term wealth generation.

THE NEW FINANCIAL ORDER: INDIA'S NEXT LEAP

The changes in the global economic setup are very prominent, and India is getting positioned increasingly at the center of these changes. It is not only an outsourcing hub or a consumer market anymore. India is entering a decisive stage where its financial systems, digital infrastructure, and investment culture are the major areas of its growth and are interlinked. This transition marks the country's move away from traditional economic models that depend highly on export-led manufacturing, towards one that is driven by domestic consumption, digital integration, and a rapidly maturing financial awareness among its citizens. The International Monetary Fund (IMF) recognizes India as a "bright spot" in the world economy and estimates that the country will contribute over 15% to the global growth in 2023 (IMF, 2023).

THE DIGITAL BACKBONE: INFRASTRUCTURE AS A PUBLIC GOOD

The core of India's financial revolution lies in its very different-from-others - tech approach. Instead of following the Western model which is mostly privatized monopolies of digital platforms, India has come up with Digital Public Infrastructure (DPI) as a novel idea. The main reason behind the success "India Stack"—a series of open APIs that enables governments, enterprises, and startups to interact with a one-of-a-kind digital infrastructure to solve India's hard problems—has been facilitated (NITI Aayog, 2022).

JAM Trinity (Jan Dhan-Aadhaar-Mobile) is the heart of this infrastructure. With the help of over one billion biometric identities supported by zero-balance bank accounts and mobile connectivity, the formally unbanked have been brought under the tent of formal finance. The World Bank (2023) says that the financial inclusion targets in India were achieved in six years, a task that would traditionally take almost fifty years.

The most visible tool of this new order, however, is the Unified Payments Interface (UPI). UPI has not only replaced cash but has enabled a digital trail for millions of very small businesses by making real-time, low-cost settlements possible. UPI transaction volumes have been consistently crossing the 10-billion mark monthly in 2024, indicating that a significant number of people have changed their behavior and now digital transactions are their default choice rather than cash transactions (National Payments Corporation of India [NPCI], 2024). This move towards digitization of cash flows allows for more accurate credit scoring, therefore, opening the way for a shift from asset-backed lending to cash-flow-based lending thus making it easier for Micro, Small, and Medium Enterprises (MSMEs) to access the capital market.

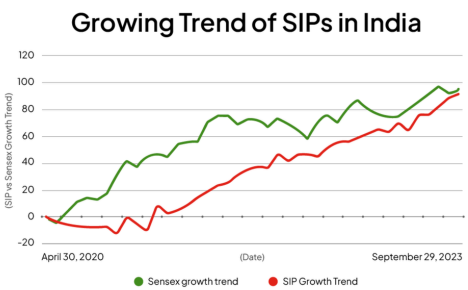
THE FINANCIALIZATION OF SAVINGS: A CULTURAL SHIFT

One of the most significant transformations of India's financial reorganization is the change of perception of money and its storage from the viewpoint of psychology. Indian families have, over the years, shown great saving habits but, unfortunately, these savings have been mainly invested in non-financial assets such as gold and real estate, which are culturally significant but highly illiquid and do not aid the process of productive capital formation in the economy.

As a matter of fact, recent statistics are pointing to an inherent "financialization" trend of savings in India. The Association of Mutual Funds in India (AMFI) has stated that the growth of the assets under management (AUM) has been exponential with most of the growth being due to the Systematic Investment Plan (SIP) route (AMFI, 2024). SIP has emerged as a domestic instrument, enabling the middle class to access the stock market with small,

regular investments, thus market volatility is managed, and a culture of long-term compounding is nurtured.

The phenomenal growth of Demat accounts – which crossed the 100 million marks in 2023 – is a clear signal that Indian retail investors have become a powerful force that can counterbalance Foreign Institutional Investors (FIIs). In the past, capital flight by FIIs would lead to hard times for the markets. Nowadays, domestic institutional investors (DIIs), who are supported by the retail investors, can usually take over the selling pressure thereby making the Indian capital markets more stable and less risky (Securities and Exchange Board of India [SEBI], 2023). The ability of the capital markets to be self-reliant is one of the qualities of a mature financial ecosystem.



Over the past decade, India's mutual fund industry has witnessed exponential growth, with AUM rising from around ₹12–13 trillion in 2015–16 to over ₹80 trillion by 2025–26 .

DEMOCRATIZATION OF CREDIT AND FINTECH INNOVATION

The categorization of services into small units, is India's defining feature of its next financial transition. By making use of the Account Aggregator (AA) system, fintech firms are simplifying complicated financial offerings and thus making them more accessible to a larger number of people. The AA system is very user-friendly as it lets users share their financial information with service providers in a safe manner for availing of loans, insurance, or getting investment advice; at the same time, it gives them control over their data (Reserve Bank of India [RBI], 2023).

The availability of this data has paved the way for the rise of unprecedented lending models.

Open Credit Enablement Network (OCEN): is a tool that facilitates communication between lenders and marketplaces, thereby solving the credit gap problem for the "missing middle" – i.e., those businesses that are too small to get corporate banking facilities but too big to qualify for microfinance. The digitalization of the entire lending process makes the cost of serving a small loan less and as a result, inclusion becomes a lucrative venture for lenders and a source of easy access to loans for borrowers. On the other hand, innovation does not stop at lending only. The insurance industry that used to be marked by very low penetration rates is now getting transformed by the help of "Insurtech". The hidden insurance products—presented at the moment of sale for travel, gadgets, or health—are gradually making insurance coverage a common thing, thus a shift in the mindset from risk management done only when the

need arises to financial protection done in advance is taking place.

REGULATORY GOVERNANCE

A well-ordered financial system needs a regulator that can keep up with the changes in the market. RBI and SEBI have been aggressive in shaping the new system. Instead of taking a hands-off approach which led to the 2008 crisis, Indian regulators have engaged in a "consultative control" approach.

To highlight one instance, while there is no doubt the RBI is very supportive of digital payments, it remains extremely cautious when it comes to crypto and continues to prioritize financial stability for the sovereign over volatile asset classes. In the same manner, SEBI's decision to implement a T+1 settlement cycle (trade plus one day) creates one of the most liquid markets in the world. It lessens the chances of counterparty risk and allows investors to use their money again within a very short period (SEBI, 2023).

In fact, regulators have thoroughly switched their focus to consumer protection in the digital era. The imposition of tariffs on digital lending applications that prevent them from engaging in ruthless practices along with firm regulations on "finfluencers" (financial influencers) reflect the idea that the most potent factor that supports the market is a well-educated investor. According to Rajan (2022), the stability of a financial system depends on trust;. By requiring transparency, Indian regulators are giving the new

financial system a solid foundation instead of quicksand.

CHALLENGES TO THE NEW ORDER

While the future looks bright, India's big jump is not without challenges. Among the most critical concerns of the fast-paced digitization of finance is cybersecurity. Since more and more financial transactions are done via mobile phones, fraudsters have more ways to attack. Phishing, identity theft, and data breaches can become major problems that lead to the loss of trust in digital systems.

Besides that, although financial tools are more accessible now, financial literacy has not progressed at the same speed. A large number of new stock market investors or digital credit users may be unaware of the risks of equity volatility or compound interest on loans. The difference between access and skill is still a major issue. If the new financial order is going to be truly inclusive, then financial literacy should be considered as important as infrastructure development (Organisation for Economic Co-operation and Development [OECD], 2023).

In addition to that, economic macro-factors on a global scale such as the fluctuation of oil prices or geopolitical separation could lead to challenges coming from the outside. As India is becoming more and more connected with the world financial system, it is no longer shielded from these shocks and thus needs to quickly adjust its fiscal and monetary policies.

CONCLUSION

The story of India's economy has changed from "potential" to "performance." The new financial order is not just about the numbers of the GDP going up; rather it is about the structural depth of the economy. The first feature of such an economy would be the polycentric digital infrastructure that treats financial access as one of the most basic human rights. The second feature would be a regulatory framework that, while actively encouraging innovation, is still vigilant about the stability aspect. And, most importantly, the third feature is a society that is becoming more and more aware that they alone hold the key to their financial future. The next big jump of the Indian economy will largely depend on how well it manages to close the gaps that are still left - be it between rural and urban adoption, between access and literacy, or between innovation and security. With the financial system becoming more and more robust and inclusive, India is stepping out not only as a mere player in the international economy, but also as a stabilizer and a leader. The combination of smart decision-making, digitization, and a long-term investment culture is a clear indication that not only is the groundwork for this leap in place, but it is already being put to use.

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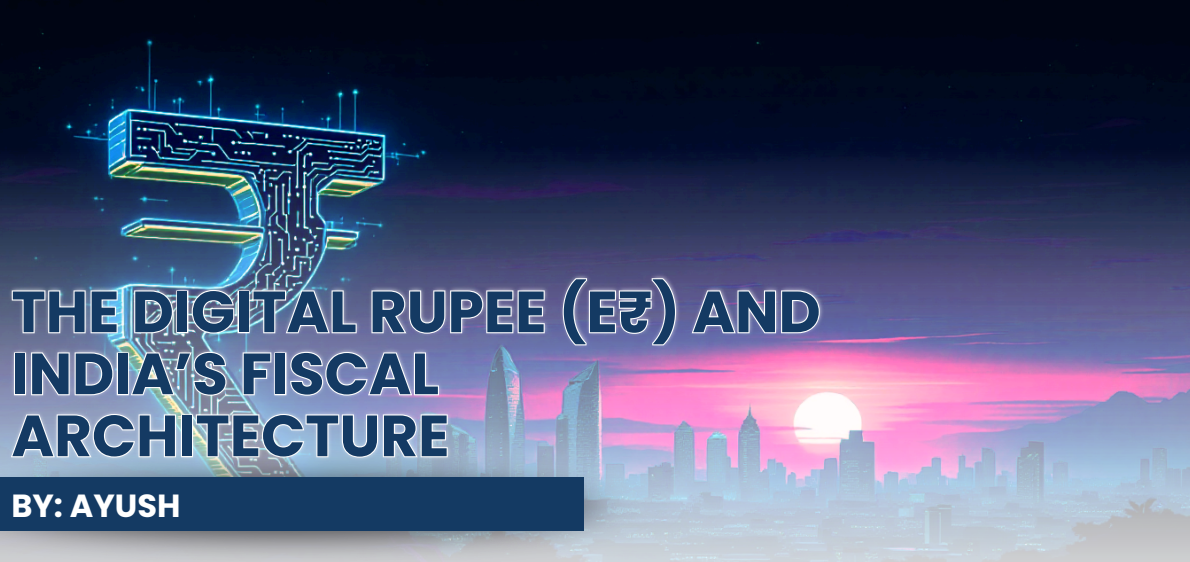


THE DIGITAL RUPEE (E₹) AND INDIA'S FISCAL ARCHITECTURE

BY: AYUSH

ABSTRACT

The introduction of the Central Bank Digital Currency (CBDC), or the Digital Rupee (e₹), marks a pivot from traditional monetary systems to a programmable fiscal framework. This paper evaluates the e-Rupee's capacity to enhance India's fiscal architecture by addressing the persistent "tax gap" and modernizing the statutory audit process. Utilizing data from the RBI's 2024–25 Annual Report and 2025 GST evasion disclosures, the study argues that e-Rupee's inherent traceability and programmability offer a systemic solution to Input Tax Credit (ITC) fraud and fiscal leakage. Furthermore, the paper analyzes the reduction in seigniorage costs and the implications for monetary policy transmission. Finally, it addresses the "Privacy-Transparency Paradox," proposing cryptographic safeguards to balance state oversight with individual financial autonomy.

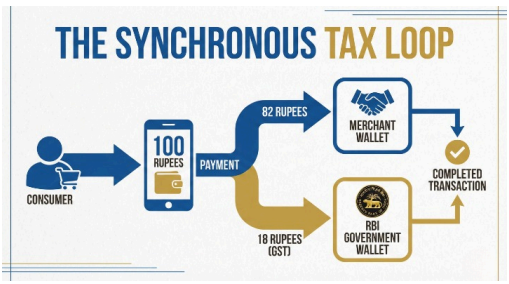
I. INTRODUCTION: THE GENESIS OF SOVEREIGN DIGITAL CURRENCY

India's "Viksit Bharat" vision necessitates a financial system that is not only digital but sovereign and frictionless. While the Unified Payments Interface (UPI) has revolutionized the retail payment layer, it remains a mechanism for shifting commercial bank liabilities. The Digital Rupee (e₹), however, is "money itself"—a sovereign liability of the Reserve Bank of India (RBI).

As of January 2026, the e-Rupee retail pilot has matured into a cornerstone of the Digital Public Infrastructure (DPI). According to the RBI Annual Report 2024–25, the value of e-Rupee in circulation reached ₹1,016.5 crore, reflecting a year-on-year surge of 334%. This transition is a strategic necessity for an economy grappling with high currency-management costs. This paper posits that the e-Rupee is the final frontier in formalisingIndia's $5 trillion economy by shifting from a "trust-based" to a "verification-based" fiscal regime.

II. SOLVING THE ₹2.23 LAKH CRORE EVASION: REAL-TIME TAX COMPLIANCE

One of the most significant challenges to India's fiscal health is the "Tax Gap." In the 2024–25 fiscal year, Central GST field officers detected tax evasion worth ₹2.23 lakh crore. More alarmingly, over 50% of these cases pertained to Input Tax Credit (ITC) fraud, involving ₹58,772 crore in "fake invoicing" schemes from over 15,000 cases.



The Programmability of Money: A Policy Solution

The current tax system is "reactive"—auditors detect fraud months after it occurs. The e-Rupee introduces programmability through smart contracts. By integrating the GST Network (GSTN) with the e-Rupee ledger, the "tax portion" of a B2B transaction can be automatically diverted to the government's digital wallet at the moment of payment.

Real-Based Situation: High-Value Real Estate Historically, real estate has been a sink for "black money." While Section 269SS and 269T of the Income Tax Act prohibit cash transactions above ₹20,000 for property, these are difficult to audit.

If property transactions are settled in e-Rupee, the audit trail is automatically generated. An auditor no longer needs to cross-verify physical bank statements; they simply verify the Unique Transaction ID (UTID) on the RBI ledger.

III. REDEFINING THE AUDIT TRAIL: FROM SAMPLING TO CENSUS

In the traditional audit framework, the "sampling method" is the gold standard because verifying 100% of transactions is physically impossible for a human auditor. The e-Rupee disrupts this by providing an immutable, time-stamped sovereign ledger.

The Triple-Entry Accounting Paradigm

Immutability: Unlike bank statements, which can be manipulated, the e-Rupee ledger provides a third, unalterable point of truth. This moves the profession toward Triple-Entry Accounting, where the third entry is the sovereign ledger itself.

Elimination of Circular Trading: In the Indian context, businesses often engage in circular trading to inflate turnover for bank loans. A sovereign digital ledger makes concealing the beneficial owner of funds nearly impossible, as the identity of the digital wallet is verified through Aadhaar-linked KYC.

Audit Efficiency: For the professional auditor, this shifts the focus from "data entry verification" to risk-based strategic advisory. The audit moves from a "detective" role (post-event) to a "continuous monitoring" role (real-time).

IV. MACRO-FISCAL EFFICIENCY: THE COST OF PHYSICAL SOVEREIGNTY

The fiscal deficit is not merely a product of over-expenditure; it is also heavily influenced by the "Cost of Cash"—the operational burden of maintaining a physical sovereign currency. In macroeconomics, the profit made by a government by issuing currency is known as Seigniorage. However, in a cash-heavy economy like India, the "Net Seigniorage" is rapidly diminishing due to the escalating costs of the currency lifecycle.

1. The Escalating Printing & Security Burden

According to the RBI Annual Report 2024–25, security printing expenditure alone surged to ₹6,372.82 crore, a near 25% increase from the previous fiscal cycle. This surge is attributed to the rising costs of raw materials (security paper and ink) and the increasing demand for high-security features to combat sophisticated counterfeiting. For a B.Com or ACCA professional, this represents a massive "operating expense" that provides zero ROI but drains the exchequer.

2. The Hidden Logistics of the Currency Lifecycle

The cost of sovereignty extends far beyond the printing press. The physical currency lifecycle—comprising Issue, Distribution, Remittance, Processing, and Destruction—creates a massive logistical footprint.

Currency Chest Management: Maintaining thousands of high-security currency chests across India requires significant capital outlay in terms of security personnel, insurance, and specialized storage.

Remittance Costs: The physical movement of cash via armored vans is not only a security risk but a significant fiscal drain due to fuel, labor, and transit insurance.

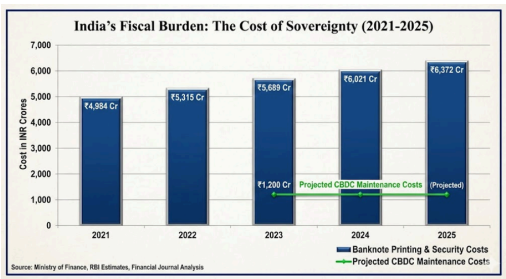
Soiled Note Processing: In FY25, the RBI disposed of billions of "soiled notes." The machinery required to shred and briquette these notes adds another layer of unproductive fiscal spending.

3. The e-Rupee Advantage: Capturing "Digital Seigniorage"

The marginal cost of "minting" an e-Rupee is virtually zero. By transitioning even 15% of retail cash to the e₹ ecosystem, the government could realize a "Digital Seigniorage" gain.

Fiscal Savings: Estimated savings of ₹900–₹1,000 crore annually in logistics and printing.

Velocity of Money: Unlike physical cash, which can remain stagnant in "private hoards," the e-Rupee increases the Velocity of Money. High velocity allows the government to stimulate the economy without necessarily expanding the money supply (M3), thereby keeping a check on inflation.



4. Enhancing Monetary Policy Transmission

Perhaps the most significant macro-fiscal benefit is the speed of Monetary Policy Transmission. Currently, when the RBI changes the Repo Rate, there is a significant "time-lag" before commercial banks pass these rates to consumers.

The CBDC Edge: Because the e-Rupee is a direct liability of the RBI, the central bank can observe liquidity movements in real-time. This reduces the transmission lag, allowing for a more agile fiscal response to inflationary pressures, which moderated to 4.6% in FY25 largely due to improved liquidity management.

V. TARGETED WELFARE: THE ODISHA AND ANDHRA PRADESH MILESTONES

The evolution of India's Direct Benefit Transfer (DBT) mechanism from bank-account transfers to programmable currency tokens represents the most significant shift in welfare economics since the 2013 launch of DBT. While the "JAM Trinity" (Jan Dhan, Aadhaar, Mobile) solved the problem of identity, the e-Rupee solves the problem of intent.

1. Programmability: Ensuring Fiscal Intent

The government currently spends a significant portion of the GDP on subsidies, yet "leakage" remains a persistent fiscal drain. Through Smart Contracts, the Digital Rupee allows for the "temporal and purposeful tagging" of money.

The Fertilizer Subsidy Paradigm: Traditionally, fertilizer subsidies were prone to diversion for non-agricultural use or black-marketing.

The Solution: A "Fertilizer e-Rupee" is a digital token programmed with a specific Merchant Category Code (MCC).

The Mechanism: The transaction executes only if the recipient's wallet interacts with a registered agricultural input provider. If a beneficiary attempts to spend this token on personal consumption, the Smart Contract execution fails at the protocol level.

2. Case Studies of 2025: From Pilot to Scale

- **Subhadra Yojana (Odisha):** In a landmark move, the Odisha government utilized the e-Rupee to empower nearly 1 crore women. By bypassing the traditional banking layer for the final mile, the state ensured that the funds reached the intended digital wallets with zero middleman interference and real-time confirmation of receipt.
- **DEEPAM 2.0 (Andhra Pradesh):** This scheme utilized programmable e-Rupee vouchers specifically for LPG refills. The "single-purpose" nature of these vouchers led to a recorded 100% utilization rate for the intended purpose, preventing the "cash-out" leakage commonly seen in unconditional cash transfers.

V. TARGETED WELFARE: THE ODISHA AND ANDHRA PRADESH MILESTONES

For any sovereign digital currency to achieve mass adoption, it must survive the scrutiny of the Right to Privacy, as enshrined in the landmark Justice K.S. Puttaswamy (Retd.) vs Union of India judgment. The central challenge is the "Anonymity-Traceability" trade-off: while the state requires transparency for fiscal oversight, the citizen requires anonymity for financial freedom.

The Risk of Financial Panopticon

A completely transparent ledger could lead to a "Financial Panopticonwhere the state has a granular, real-time view of every citizen's behavioral patterns. This creates a systemic risk of "financial censorship" or the weaponization of economic data.

The Technical Solution: Zero-Knowledge Proofs (ZKP)

To win this competition, we propose a "Privacy-Preserving Fiscal Oversight" model using Zero-Knowledge Proofs (ZKP).

- How it Works: ZKPs allow one party (the taxpayer) to prove to another (the Tax Authority/RBI) that a statement is true (e.g., "This transaction is tax-compliant") without revealing the underlying data (e.g., "What was bought and where").
- The Benefit: This cryptographic middle ground allows the e-Rupee to maintain the "Cash-like Anonymity" for small retail transactions while ensuring that the audit trail remains intact for high-value or suspicious transfers.

VII. CONCLUSION

The Digital Rupee is more than a technological milestone; it is a fundamental redesign of the Indian social contract. By integrating the e-Rupee into the national fiscal architecture, India is positioning itself to lead the global CBDC race.

By the numbers, the impact is undeniable:

- **Operational Savings:** Reducing the ₹6,372 crore annual burden of physical currency management.

- **Fraud Mitigation:** Curbing the ₹58,000 crore leakages in GST ITC through real-time, programmable verification.
- **Financial Inclusion:** Moving beyond "account ownership" to "active financial participation" for the unbanked.

The future of Indian finance is not merely digital—it is programmable, transparent, and sovereign. As we move toward a $5 trillion economy, the e-Rupee provides the structural integrity and fiscal rectitude necessary for a truly Viksit Bharat.

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THE GOLDILOCKS SETUP: WHY 2025-26 COULD BE INDIA'S CONSUMPTION SWEET SPOT

BY: DHRUV CHOUDHARY, KRISHNA PRANSUKHKA, LAKSHYA NANDWANI

ABSTRACT

India has emerged as a standout destination for global investment due to its robust economic growth potential, expanding middle-class consumption, and deepening integration into global supply chains. Simultaneously, the synchronised monetary-fiscal policies, namely- RBI rate cuts and budget tax rationalisation - are reshaping India's macroeconomic landscape, providing novel opportunities for investors.

This paper delves into the convergence of these policy domains, examining implications for businesses and investors navigating India's Goldilocks phase. It provides analysis of RBI's 125 bps easing cycle and a ₹3 lakh crore fiscal stimulus, assessing their impact across consumption sectors like automobiles, housing finance, FMCG, and fintech. Through policy case studies, RBI data, Budget documents, and sectoral insights, the paper offers strategic guidance for capitalizing on India's consumption acceleration while addressing challenges including inflation volatility, execution gaps, credit risks, and currency depreciation.

INTRODUCTION

On December 5, 2025, RBI Governor Sanjay Malhotra made a striking observation: "Overall, our economy presents a picture of strength, stability, and opportunity. India's strong fundamentals, growth-inducing policies, and forward-looking economic strategy clearly place it in a strong position. While growth has remained steady, inflation outcomes have been far more benign on account of higher food price moderation". The statement wasn't casual-it describes India's Goldilocks period: benign inflation (0.25%), robust growth (8.2%), and policy space for stimulation. But why is this point so significant? This is because, usually in any economy, a

high growth rate is generally accompanied by high inflation, but India has managed a feat beyond the ordinary, and this period is termed as A Goldilocks Period - an ideal economic sweet spot - not too hot (overheating with high inflation), nor too cold (stagnation or recession) characterized by steady growth and low inflation.

This state of equilibrium is a result of deliberate engineering rather than mere chance. This was possible because of the collective synergy between the RBI and the Finance Ministry, as the RBI delivered a 125-basis point rate cut (between February 2025 and December 2025), reducing the repo rate from 6.50% to 5.25%. At the same time the Union Budget 2025-26 announced Rs 1 lakh crore in direct tax relief through income tax restructuring, with an additional Rs 2 lakh crore in indirect tax savings through GST rationalization in September 2025-resulting in a combined Rs 3 lakh crore in tax relief, unprecedented in India's history. This article provides a deep dive into these policies, their impact, and the risks involved, which have contributed to India achieving its most favourable economic environment in over half a decade.

LITERATURE REVIEW

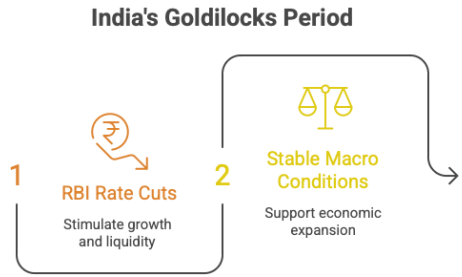
Research on emerging markets and macroeconomic policy coordination has highlighted the potential of these economies to drive global economic growth. Studies from the World Bank and the International Monetary Fund (IMF) estimate that emerging markets will account for over 60% of global growth by 2030, with India increasingly cited as a key contributor given its sustained 6–7% growth trajectory and rising share in global output. These regions benefit from demographic advantages, progressive structural reforms such as GST-driven formalisation, and governmental reforms that aim to attract foreign investment and deepen domestic financial markets.
The literature on Goldilocks macroeconomic phases focuses on how periods of low and stable inflation combined with robust growth can be sustained through credible monetary frameworks, disciplined fiscal policy, and effective transmission channels. Studies in advanced economies underscore the significance of inflation-targeting central banks, expectations management, and tax or regulatory reforms in preserving these equilibria. Recent Indian work has examined how the RBI's inflation-targeting regime, forward guidance, and liquidity operations-together with Union Budget measures on income-tax restructuring and GST rationalisation-shape consumption, investment, and formalisation dynamics.

SECTION 1: RBI'S GROWTH PIVOT

1.1 THE INFLATION PIVOT

If India's Goldilocks period represents chief architect. Through a series of

calibrated rate cuts, the RBI used stable macroeconomic conditions to stimulate economic growth and inject liquidity, transforming confidence into credit flow.



In the last 12 months of inflation-conscious restraint, the RBI decisively pivoted to growth support in early 2025. By December, it had delivered a cumulative 125 basis points of rate reductions across 4 meetings (25 bps in February, 25 bps in April, 50 bps in June, and 25 bps in December, respectively)-the most aggressive easing cycle in about the last 6 years. This was due to inflation's dramatic moderation since the last 12 months. As can be noticed in the below graph, the inflation reduced drastically from 4.26% in January to 0.25% in October 2025.
The Key Drivers for this were:

- **Food Deflation:** Food prices fell sharply by 5.02%, driven primarily by a 20.12% decline in vegetable prices and softer pulses prices, reflecting bumper harvests and improved supply-chain efficiencies, supported by a strong kharif output, higher reservoir levels, and better rabi sowing conditions.
- **Favourable Base Effect:** High prior-year inflation created a low comparison base, amplifying the YoY decline (basically it refers to a situation where the current growth or inflation figure looks low or improved mainly because the previous period's level (base) was unusually high, not necessarily because there is a strong improvement in present conditions.)
- **GST Reductions:** Recent cuts on essentials like packaged foods and services eased input.

1.2 GROWTH VALIDATION

The RBI's confidence to ease policy rates was validated by strong GDP growth. In December 2025, it raised its forecast for FY26 GDP growth from 6.8% to 7.3% for the current fiscal year. This was because the economy did well in the July-September quarter, which showed that India's growth was strong and not fragile.
The numbers speak for themselves. India's economy grew by 8.2% in the second quarter of FY26 (July–September 2025). This was the biggest growth in the last six quarters. Growth wasn't limited to just one sector. Both manufacturing and service sectors saw growth rates of nearly 9.1%, mostly because of strong domestic demand. The RBI's forward confidence was equally effective: FY27 Q1 growth raised to 6.7% and Q2 to 6.8%, projecting sustainable growth beyond FY26.The table below shows the difference between the previous and the current growth projections

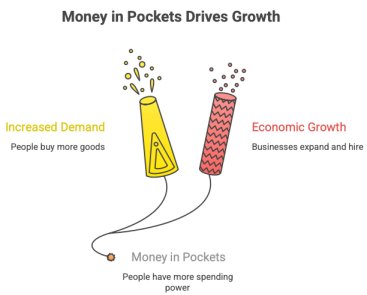
made by the RBI due to consistent positive outlook.

Quarter	GDP Growth Projection	Previous Estimate	Change
Q3 FY 26(Oct-Dec 2025)	7.00%	6.40%	0.60%
Q4 FY 26(Jan-Mar 2026)	6.50%	6.20%	0.30%
Q1 FY 27(Apr-Jun 2026)	6.70%	6.40%	0.30%
Q2 FY 27(Jul-Sep 2026)	6.80%	N/A	N/A

Collectively these developments underscore the RBI's view that India's recovery had consolidated into a durable and self-propelling expansion.

1.3 LIQUIDITY TRANSMISSION

"Impressive growth numbers are just the first step; the magic happens when money reaches people's pockets". The RBI got the situation completely right.



In December 2025, it delivered a double-barrelled approach: it cut the repo rate to 5.25% and injected a huge ₹3 lakh crore into the economy through Open Market Operations (₹2 lakh crore) and Forex Swaps (₹1 lakh crore). This was the biggest injection in recent years. Open Market Operations (OMO) is easy to understand: the RBI buys government bonds from banks and gives them new cash. This flood of cash lowers bond yields and makes it cheaper for Interest rates do not operate solely within analytical frameworks; they shape the borrowing, saving, and spending decisions that define everyday economic behaviour. To understand the real impact of these liquidity measures, let us view them through a student's lens.

For example, a 125-bps rate cut may sound abstract, but for a student with a ₹20 lakh education loan (for a period of 10 years), that's a drop in the EMI from about ₹17,400 to roughly ₹16,200. The ₹1,200 saved each month becomes a financial breathing space-maybe a gym subscription, weekend trip, or a SIP contribution. So, one policy at the macro level translates into ₹1,200 less every month for that student, which he/she can now spend on other goods and services. Multiply this across lakhs of borrowers, and you get exactly what policymakers want: higher consumption and stronger aggregate demand in the economy. A relaxed interest rate, thus, converts basis points into behavioural change.

The following table shows how a 125-bps reduction in lending rates results in lower EMIs across different ₹20 lakh loans.

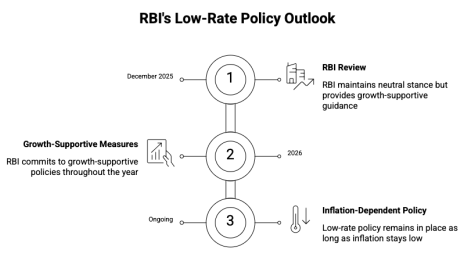
Loan Type	Amount (assumed)	Old Rate	New Rate	Monthly EMI Reduction (Savings)
Home Loan	₹20 lakh	9.00%	7.75%	₹ 5,000
Car Loan	₹20 lakh	11.00%	9.75%	₹ 2,100
Education Loan	₹20 lakh	12.00%	10.75%	₹ 2,200
MSME Loan	₹20 lakh	13.00%	11.75%	₹ 2,500

In addition to OMO, the RBI will conduct a Forex Swap auction of ₹ 1 lakh crore with a tenor of three years on January 13, 2026, further reinforcing durable liquidity in the system. In a

forex swap, RBI buys dollars from banks and sells them back at a future date. This injects rupee liquidity into the system without permanently altering foreign exchange reserves. These steps were taken to deal with a short-term lack of cash in the banking system. Large advance tax and GST payments moved significant amounts of money from banks to the government, reducing the cash available for lending.

1.4 FORWARD GUIDANCE

Once the transmission channels are turned on, the focus shifts to duration. How long will this low-rate environment persist? The RBI talked about this directly in its review from December 2025. It kept its neutral stance but added guidance that would help growth. Governor Sanjay Malhotra said that the central bank would approach 2026 with growth-supportive measures. This means that the low-rate policy would stay in place as long as inflation stays low.



So, the RBI made rate changes into a credible lower-for-longer system. Rate cuts were no longer just numbers; they were a sign of behaviour that opened housing demand, corporate capital expenditures, and consumer confidence, all while keeping financing costs stable through 2026.

SECTION 2: BUDGET 2025-26 IN THE GOLDILOCKS ARCHITECTURE

In this part, we will understand how the Finance Ministry's Union Budget helps the Goldilocks setup. The Union Budget is the yearly financial report that shows how the government plans to spend and make money. It also shows what the government plans to do in the coming year. Beyond being a statutory requirement, the budget serves as a key instrument of economic governance, shaping expectations and decisions of a wide range of stakeholders. Its proposals on taxation, public spending, and reforms play a decisive role in influencing growth, inflation, employment, and overall macroeconomic stability.

Now, we will examine the various dimensions of the Union Budget 2025–26, as articulated through its policy initiatives and fiscal measures.

2.1 DIRECT TAX RESTRUCTURING

It unveiled India's most significant direct tax restructuring in a decade. Slab revisions and compliance relief resulted in ₹1 lakh crore in middle-class tax savings. This analysis dissects the fiscal engineering behind India's consumption acceleration.

Income Tax Rates under the New Regime:

The basic exemption limit is proposed to be increased from ₹ 3 Lakhs to ₹ 4 Lakhs.

The proposed revision of the new income-tax regime for FY 2025-26 rationalises slab widths and raises the basic exemption limit from ₹3 lakh to ₹4 lakh, providing relief to lower- and middle-income taxpayers. The structure smoothens tax progression by adding a 25% slab for incomes between ₹20 and ₹24 lakh and pushing the highest 30% rate to incomes over ₹24 lakh. The changes are meant to increase disposable income, make taxes easier, and boost consumption-led growth while keeping revenue stable.

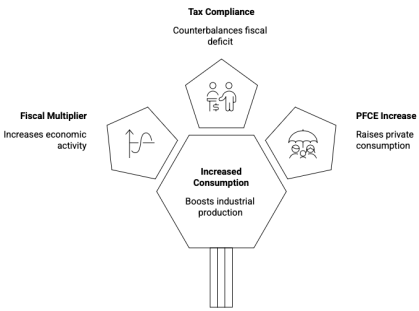
The income limit for claiming the tax rebate under Section 87A has gone up from ₹7 lakhs to ₹12 lakhs. This includes the higher standard deduction of ₹75,000 for people who work for a living. As a result, residents with a gross income of up to ₹12.75 lakhs do not have to pay any taxes. This structural shift delivers ₹1 lakh crore in direct household liquidity, facilitating its transmission into India's Goldilocks consumption engine.

By cutting personal income taxes earlier this year, policymakers are attempting to ease the financial burden on households while reviving demand. For the urban middle class, this translates into tangible relief: lower monthly tax outgo, cheaper EMIs, and reduced GST on key consumption categories. Together, these measures are expected to stimulate demand across automobiles, housing, durables, and FMCG.

The changes make it easier for low-income families to buy cars after taxes, making cars more affordable. Enhanced disposable income supports discretionary fast-moving consumer goods (FMCG) purchases, shifting spending toward premium variants and other big-ticket items; demand for these items rises quickly. Higher savings that go toward down payments and property improvements help housing and real estate. Finally, higher consumption leads to more industrial production because there is more demand for manufactured inputs. This process amplifies the fiscal multiplier across the economy.

Finally, increased consumption boosts industrial production by creating more demand for manufactured goods, which increases the fiscal multiplier throughout the economy. More than a third of all receipts come from direct taxes. If tax collection were to be cut, the fiscal deficit could grow even more than the 4.9% GDP target amid risks of inflationary pressures and currency volatility from market doubts on consolidation. The

government expects this shortfall to be counterbalanced by increased tax compliance through longer return filing windows, improved buoyancy from nominal GDP acceleration (estimated at 10.5–11%), and consumption multipliers that raise private final consumption expenditure (PFCE), which has increased from 10.2% to 11.7% of GDP following previous regime adjustments.



2.2 GST 2.0: SIMPLIFICATION AS STIMULUS

From 22nd September, India entered a new phase of growth stimulated by next-generation GST reforms. Prior to this, India's GST operated across four tax slabs: 5%, 12%, 18%, and 28%-a framework that created classification disputes, compliance complexities, and various other issues, but with the calibrated deliberations of the 56th GST Council Meeting held on 3–4 September 2025, the GST 2.0 was introduced. This reform contracts the four-tiered tax structure into a simplified two slab system while introducing a restrictive luxury slab, creating what can be characterized as a Goldilocks economic setup i.e. increased consumption led growth along with maintaining fiscal sustainability.

Under the revised structure the rates were streamlined into:

(i) Essential Items (5%) - This slab covers basic necessities and mass consumption items required for daily living like essential food items, household necessities, public transport services, and items critical for basic welfare, ensuring affordability and accessibility for the general population(tea ,sugar, edible oils, domestic LPG, footwear and basic clothing).

(ii) Aspirational Items (18%) - This slab applies to core goods and services, used widely across households and businesses, manufactured consumer goods, professional and financial services, telecommunications, electronics, and most value-added services, reflecting their non-essential yet mainstream nature (Electronics, Professional Services, Branded Clothing).

(iii) Demerit Items (40%) - This rate is imposed on luxury, sin, and socially undesirable goods to discourage consumption while generating higher revenue. It generally includes tobacco products, aerated drinks, luxury automobiles, high-end consumer items, and other non-essential

indulgences, often combined with additional cess.

Additionally, extremely basic welfare and survival goods such as unbranded and unprocessed food grains, fruits and vegetables, as well as basic healthcare and education services are entirely exempted from GST to protect basic consumption and public welfare, ensuring zero tax burden on such goods.

2.3 HOUSEHOLD AND AGRICULTURE FOUNDATION

Some more crucial policy decisions were also announced in the budget, which focused on overall development and public prosperity, such as:

- **Life and health insurance premiums now have GST-** exemption (18% → 0%), saving households ₹7,200 annually on ₹40,000 coverage. This advances Mission Insurance for All 2047 while freeing middle-income budgets for discretionary spending.
- **GST on tractors reduced from 12% to 5%, delivering ₹40,000-60,000 savings per unit.** Component rates aligned (18% → 5%), resolving inverted duty structure. This capital cost reduction removes mechanisation barriers for small and marginal farmers, enhancing agricultural productivity.
- Some more reductions were introduced in the agricultural field that facilitated rural consumption and more income for farm-based workers that are presented in the table below:

Input Category	Previous Rate	New Rate	Policy Intent
Farm machinery & equipment	12%–18%	5%	Facilitate adoption of mechanised farming and reduce capital costs for farmers
Fertiliser inputs (sulphuric acid, ammonia)	18%	5%	Correct inverted duty structure and support domestic input manufacturing
Bio-pesticides & micronutrients	12%	5%	Encourage environmentally sustainable and productivity-enhancing agricultural practices
Irrigation equipment & drip systems	12%	5%	Promote efficient water use and improve irrigation infrastructure in agriculture

Following these policy changes, Finance Minister Nirmala Sitharaman, has estimated that the GST reforms will inject ₹2 lakh crore of purchasing power directly into household budgets annually. When combined with income tax relief measures as discussed in the previous section (making incomes up to ₹12 lakh tax-free), the combined benefit reaches ₹2.5 lakh crore-a substantial economic stimulus during a period when external demand faces headwinds from US tariff policies.

While these reforms drive consumption, GST revenue neutrality poses fiscal risks that demand attention and careful monitoring. This raises a critical question of whether this revenue loss is sustainable, as the Government estimates a gross revenue loss of approximately ₹48,000 crore.

This benign fiscal outlook depends on two events converging simultaneously:

1.)Consumption-led buoyancy: Lower GST rates make things cheaper, which makes people spend more. Higher demand leads to greater sales volumes, and despite lower tax per item, overall tax revenue rises. For

instance, monthly GST collections went up by 150% from ₹82,000 crore in 2017–18 to ₹2.04 lakh crore in 2024–25, even though rates stayed the same. This made up for the loss of revenue from rate cuts.

2.)Compliance improvement: A simpler tax system encourages honest compliance. Reducing multiple complex slabs to fewer and clearer ones, limits loopholes and makes filing easier. As a result, the taxpayer base expanded from 66 lakh to 1.51 crore in 2017-18, a 128% increase, because honest filing became more practical.

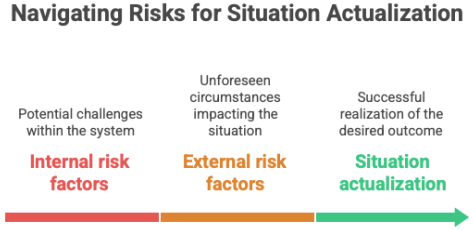
Therefore, India's macroeconomic conditions support GST rationalisation as a proactive demand stimulus. With headline CPI inflation at 1.55% and food inflation at –1.76%, the policy targets consumption rather than inflation control. Estimates indicate that GST rationalisation could lower CPI by 50–90 bps while adding 20–30 bps to GDP growth, enabling a consumption boost without inflationary risk.

SECTION 3: INVESTMENT IMPLICATIONS & RISKS

This section provides an overview of the future implications and the risks associated with the Goldilocks setup.
India's macroeconomic situation is set to remain in the 'goldilocks' phase even in 2026-27, with India Ratings & Research forecasting a GDP growth of 6.9% and headline retail inflation of 3.8%. The latter will likely be lower than the RBI's medium-term target of 4% for the second year in a row. For 2025-26, the ratings agency expects GDP to clock a growth rate of 7.4%. So far in the first half of the year, growth has averaged 8% in real terms. At the same time, inflation based on the Consumer Price Index (CPI) has been rather subdued, with the central bank having to cut its forecast six times in 2025 to 2% for the fiscal year ending March.

3.1 THE RISK MATRIX

The realisation of this scenario is contingent and may be undermined by several endogenous and exogenous risk factors.



The various risks that can hinder the equilibrium are discussed below:

(i) Inflation Risk –

Domestic risks dominate India's inflation outlook, threatening to breach the Reserve Bank of India's 4% target and terminate the prevailing Goldilocks phase. Headline prints reached historic lows of 0.25% in October 2025 and 0.71% in November; however, the scope for additional rate cuts remains narrow. Because food maintains a 46%weighting in the CPI, the gauge is structurally exposed to price volatility in vegetables and pulses. These categories frequently experience 15–20% surges following harvest failures or logistical bottlenecks. Current demand growth of 7-8% continues to outrun industrial

capacity, creating a high probability of core inflation overheating. On the external front, a projected rupee depreciation to ₹92.3 per US dollar would aggravate imported inflation; specifically, every $10 rise in crude oil prices typically contributes 0.3–0.4 percentage points to the CPI. Compounding these risks are potential fiscal slippages and robust rural consumption, evidenced by 12% auto sales growth.

(ii) Implementation Risk –

India's present Goldilocks economy, an environment where growth remains firm and inflation is kept in check, is largely contingent on the efficiency of public fund deployment. While the Union Budget establishes the primary vision, the practical impact rests with State governments, which oversee nearly 40% of India's infrastructure outlays. Historically, this is the stage where momentum falters. Frequent hurdles such as land acquisition and bureaucratic red tape often result in expenditure gaps of 15% to 25%. For the RBI, these execution delays represent a core risk. If capital spending occurs in erratic bursts rather than a predictable stream, it triggers economic instability. Ultimately, when the government saves funds simply because projects are stalled, India loses the productive capacity required to anchor inflation, making this stable phase far more brittle than it appears on the surface.

(iii) Credit Risk –

The prevailing span of credit expansion, though modest in aggregate, veils a pivot toward high-risk exposures. State-led drives to lift financial inclusion for MSMEs, via Mudra and production-linked incentives, have scaled up lending but also ballooned the count of first-time debtors and softened diligence protocols. In the absence of revamped credit vetting and surveillance, this raises the likelihood of eroding asset quality. Crucially, such hazards surface with a lag: MSME book stress typically hits only three to four years after capital release. A growth stall or surging working capital costs may lay bare these gaps, forcing a credit squeeze and worsening a broader economic slide.

(iv) External Risk –

India's deeper lock-in with global value chains helped efficiency and cut import costs, but it left the country wide open to external demand shocks. A slump in advanced economies-triggered by sticky inflation, tight money, or geopolitical heat-will flow fast into India's IT and merchandise exports, likely drying up FDI. Rising protectionism and fractured trade routes further gamble with the supply chains Indian factories need, driving up costs and killing their competitive edge.

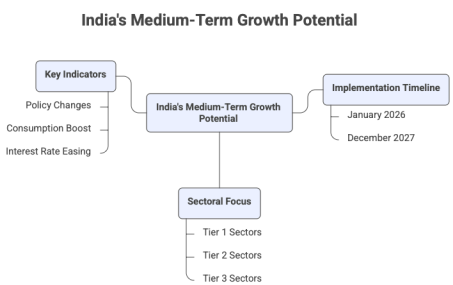
Today's geopolitical friction only adds to these challenges. Trade wars between major powers might rewire global networks in ways that leave Indian exporters behind. External heat also hammers the currency: the rupee has already blown past ₹90 per dollar as foreign cash flees, and with a ₹92 forecast by March 2026, the central bank has little room to move.

A weak rupee makes imports-especially oil and raw materials-far more expensive, feeding inflation and bloating the import bill. This pincer movement of weak global demand and currency-driven costs threatens to choke growth and tighten the financial screws.

3.2 SECTORAL WINNERS IN THE CONSUMPTION WAVE

If implementation proceeds as planned and risks are kept under control; India is well positioned to realise significant growth potential over the medium term. This analysis outlines the expected timeline, sectoral focus, and key indicators that investment professionals should monitor through FY27.

The upcoming 18-24 months, spanning January 2026 to December 2027 will be crucial for our economy as it will see all the cumulative effects due to the policy changed delivered in January 2025. Analysis from IIFL Capital suggests room for an additional 50 bps of easing in 2026. The consumption boost will concentrate disproportionately in three tiers of sectors, each with distinct timing windows.



Tier 1 sectors include automobiles, housing finance, and fintech lending. Auto sales already reached record levels in 2025, with passenger vehicles up 9.7% to 44.75 lakh units, with rural purchases rising 12.31% against 8.08% in urban areas.

The golden period is expected to occur in Q4 FY26 (March 2026) as EMI affordability will reach maximum levels before inflation normalizes. Housing finance is expected to respond strongly to the rate cuts and revive the investment activity. This is likely to support a sustained recovery in the commercial real estate. The uptrend is expected to be led by cities like Pune, Ahmedabad, Surat and Vijayawada. Fintech represents the most dynamic opportunity, with an expected loans disbursals exceeding 11 crore loans as of mid 2026 crossing ₹2.9 lakh crores in value with 45% YoY growth. There is still a huge credit gap for MSMEs, about ₹30 lakh crore, leaving a huge opening for digital players such as KreditBee, Fibe, and Moneyview . These lenders are tapping into GST-linked data and alternative scoring models to push collateral-free credit where banks won't go. The fintech boom will last until the end of FY27 as MSME capex cycles speed up. The growth in Tier 1 helps the high-growth sectors in Tier 2, such as consumer durables, FMCG, and retail. Rural FMCG has done better than urban FMCG for the past seven quarters. In November 2025, rural growth was 5.7%, while urban growth was only 2.5%. Dabur India has grown to almost 133 lakh villages, and in the December quarters, Parle

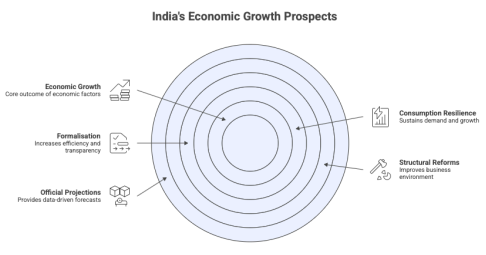
products have grown even more in rural areas. This rural success reflects improved farmer incomes, higher minimum support prices, and better crop sowing outcomes. The GST reductions implemented in September 2025 should lead to full consumption in Q4 FY26 and Q1 FY27, as consumers' purchasing behaviour changes.

Also, the E- commerce platforms perform better with the benefits from the rise in rural consumption, as the sector projects to value around ₹ 10 lakh crores by 2026. At the same time, modern retail is growing quickly, with established FMCG companies reporting 4.2% growth in modern trade segments.

Tier 3 sectors, like agri-input makers and equipment suppliers, are cashing in as rural buying power climbs and credit flows more freely. Digital lenders have sharply reduced traditional underwriting timelines; by using algorithmic risk models and platform data, they are cutting approval times and enabling MSMEs to accelerate their capital expenditure cycles far more quickly than earlier.

3.3 EXECUTION HORIZON

India's current Goldilocks phase is anchored in official and multilateral projections rather than narrative optimism. India Ratings forecasts FY26 real GDP growth of 7.4% with CPI inflation at 3.8%, below the RBI's 4% target for a second consecutive year. Simultaneously, the IMF and peer institutions increasingly converge on India's trajectory towards becoming the world's third-largest economy between 2027 and 2030, supported by consumption resilience, formalisation, and structural reforms. However, these projections remain conditional.



Outcomes depend on controlling food and fuel inflation, efficient execution of state-level capital expenditure, prudent management of MSME, credit risks amid fintech-led expansion, and resilience to external shocks. The Goldilocks setup creates opportunity, but execution will determine outcomes.

CONCLUSION

This paper shows how the changes in policy made by the Central Bank and the Finance Ministry of India together made it possible to reach what RBI Governor Sanjay Malhotra called the Goldilocks Period. During this time, economy will see a huge increase in consumption, and experts think that this faster growth will add 0.3 to 0.5 percentage points to GDP growth rates each year. The February 2026 RBI Monetary Policy Committee meeting represents the final window for rate cuts before inflation accelerates into Q4. A 50-basis point reduction appears to be highly feasible unless unexpected inflation causes problems. However, oil price

movements, continuous weakening of the rupee, and rapid global trade tensions could alter this growth. If everything unfolds on the expected lines, then India can achieve sustained prosperity and witness a significant acceleration in growth and investments, which can potentially help India emerge as the 3rd Largest economy in terms of GDP.

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WHY YOUNG PEOPLE FEEL POORER DESPITE ECONOMIC GROWTH

BY: JATIN AND KHUSHI CHAUHAN

ABSTRACT

This article examines the widening gap between economic growth and the everyday realities faced by young people in India. While rising GDP and development headlines suggest progress, lived experiences often tell a very different story. Wages struggle to keep up with rising costs, job security feels fragile, and financial independence keeps getting delayed. The article questions how growth is measured and who actually benefits from it, showing how averages and headline numbers often hide inequality. It also explores how unpaid care work, low female labour participation, and social expectations around marriage shape women's economic outcomes. With women spending significantly more time on unpaid household work and many leaving the workforce due to caregiving responsibilities, marriage increasingly comes to be seen as a form of economic safety rather than choice. By linking economic data with social realities, the article argues that growth without inclusion can feel alienating, and that real progress must be judged not just by numbers, but by whether it improves everyday life.

1.THE PROMISE OF GROWTH: ASPIRATIONS AND ILLUSIONS

India is one of the fastest-growing economies in the world, with GDP growth rates of 6.5% to 7.4% in recent years. Media narratives emphasise digital transformation, global investment, and a rising middle class. However, for many citizens, this growth remains largely confined to headlines rather than lived experience. The day-to-day reality of high expenses, stagnant income, and shrinking opportunities paints a far grimmer picture than official reports suggest. But young people mainly depend on salaries rather than assets, so what looks like prosperity n paper often fails to translate into better living conditions. Per capita income can increase even if only a small section benefits, while the

majority sees stagnant Incomes. For a young graduate or an early career worker, rising national income means very little when rent, education, and basic expenses rise faster than pay. This gap between numbers and lived experience explains why growth feels alienating rather than hopeful.

2.LITERATURE REVIEW

Multiple scholars have questioned the use of GDP as the primary measure of economic progress. Stilz, Sen and Fitoussi (2009)argued that aggregate growth indicators often fail to capture inequality, well-being, and lived economic conditions. Piketty (2014) similarly shows that income from capital has grown faster than wages, leading to rising inequality even during periods of growth. Reports by the OECD and the International Labour Organisation have documented stagnant wages and growing insecurity among workers despite increased productivity.

However, much of this literature focuses on macroeconomic trends and distributional outcomes, with limited attention to how these dynamics affect the everyday financial experiences of young people. This paper builds on existing research by linking economic growth, labour precarity, rising costs and social pressures to the lived realities of India's youth.

3.RESEARCH METHODOLOGY

This paper uses a qualitative approach based on existing data. It brings together macroeconomic indicators, policy documents, and academic research from sources such as the Economic Survey of India, the International Labour Organisation, the World Bank, the OECD, and other peer-reviewed studies to build a clear and grounded understanding of the issue. Newspaper reports and government releases have been used to contextualise statistical trends among everyday experiences of young people in India. The analysis is descriptive and interpretive, focusing on identifying structural patterns linking economic growth, labour markets, inequality and well-being of youth rather than establishing causal econometric relationships.

4.RESULTS AND DISCUSSION: PROBLEMS BEHIND THE NUMBERS

4.1 RESULTS AND DISCUSSION: PROBLEMS BEHIND THE NUMBERS

GDP growth and real wage growth trends in India (2014–2024). Source: Economic Survey of India, Indian Express, and ILO.

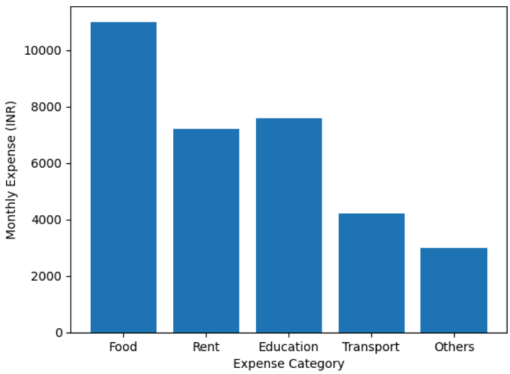
As shown in Figure 1, India's strong GDP growth has not translated into comparable gains in real wages.

Young workers face fragile employment conditions. Many Indians now toil in precarious, informal jobs even as wages fail to keep pace with inflation. Real wages have shown virtually no growth over the last decade. Independent surveys highlight a "virtual stagnation of real wages," especially in rural and informal sectors. The rise of the gig economy, contract work, and unpaid internships offers flexibility for companies but insecurity for workers. Platforms like the NITI Aayog project that platforms and contract workers could make up 6% of India's workforce by 2030. But these jobs typically offer irregular pay and no social protections. Most employed youth today face stagnant incomes and little job security.

4.2 COLLAPSE OF TRADITIONAL WEALTH CREATION

Owning a home used to be a big part of what "making it" felt like, but in India today, that feeling is slipping away for many young people. Property prices in urban India are so high that many young people can no longer dream of buying a home. On average across the country, the price of a home is now almost 9 times what a typical household earns in a year, and in cities like Mumbai and Delhi, the ratio is even higher: housing costs are 12–15 times the average annual income. Meanwhile, income inequality in India remains high, with inequality measure measures such as the Gini coefficient still above levels seen in the 1950s, indicating that the benefits of growth are uneven and that most wealth continues to concentrate at the top rather than spreading evenly across society. This collapse in accessible asset-building contributes to long-term insecurity.

4.3 COST OF LIVING CRISIS



Estimated monthly expenditure distribution for an urban youth household.
Source: NDTV; The United Indian; author's synthesis.

Everyday expenses like food, rent, healthcare, and education are rising faster than the reported inflation suggests; everyday life feels expensive in ways the inflation numbers don't capture. A typical household earning ₹25,000–₹30,000 monthly spends a large share on food, rent, and education, with rent and tuition taking up the rest. The gap between income and essential costs undermines financial independence.

4.4 DEBT, CREDIT, AND PRECARITY

More young people are falling into early-life debt traps. Student loans have surged from ₹52,327 crore in 2014 to ₹1,37,474 crore in 2025, even

More young people are falling into early-life debt traps. Student loans have surged from ₹52,327 crore in 2014 to ₹1,37,474 crore in 2025, even as the number of active accounts has fallen from 23.36 lakh to 20.63 lakh. Yet this debt is unevenly distributed: the government's panel warns that many rural and disadvantaged students miss out on these loans, worsening the inequalities. This suggests that loans are growing larger and more burdensome for fewer students. Many from rural or marginalised backgrounds are excluded altogether due to a lack of collateral or documentation. At the same time, credit card usage and Buy Now Pay Later (BNPL) schemes have exploded, with 2024 dues rising 24% alone. The result is rising consumer debt among youth: credit-card use has ballooned. By mid-2024, young Indians' outstanding credit card dues had risen to ₹2.7 lakh crore (up from ₹2.0 lakh crore in early 2023). These financial tools create hidden debts and financial stress. Many young Indians now live paycheck to paycheck, unable to build savings or prepare for emergencies. Loans intended to support education now delay independence and future planning.

4.5 LIFESTYLE INFLATION AS A NECESSITY

Modern-era technology, social expectations, and gadgets are no longer luxuries; they are the minimum requirements for work, education, and even social belonging. Over 85% of indian households own a smartphone and 86% have internetaccess, and youth use digital payments and online platforms at extremely high rates. However, the pressure to constantly upgrade is amplified by social media and peer comparison. Brands push expensive versions of essential items, and Gen Z consumers often feel forced to keep up appearances, even at the cost of savings or financial stability.

Now, for many people, lifestyle inflation is not a choice but a compulsion, the price of staying relevant.

4.6 INEQUALITY WITHIN YOUTH

There is a stark gap between India's "elite" youth and the average young person. Wealthier, urban, English-speaking youth have far more access to coaching, internships, and networks. Poorer or rural youth often lack exposure and resources. Unpaid internships, expensive exam preparation, and relocation costs all create entry barriers. Privileged graduates often benefit from invisible advantages: family connections, referrals, or alumni networks that land them interviews and internships that others cannot access.

For instance, two students with similar academic records may have radically different outcomes based on their family income or social capital. One can afford to wait, prepare, and relocate; the other must accept the first job offer to support their household. Financial capital tilts the field before the race even begins. This inequality among youth breeds frustration and the perception that

effort is not always enough.

4.7 MENTAL HEALTH AS ECONOMIC OUTCOME

Anxiety, burnout, and emotional fatigue are now economic conditions. Nearly 55% of Gen Z live on a paycheck. Milestones such as homeownership, marriage, and family formation are increasingly delayed by costs. Many millennials report a pervasive sense of insecurity: after years of hard work, they still face "rising living costs, shrinking savings and fragile job security," such that "one medical emergency or job loss would derail everything". Young professionals describe 'burnout without permission', pushing through stress until it takes a toll. India's Economic Survey (2024–25) highlights youth mental health as a critical economic issue: it warns that low levels of mental well-being among children and adolescents, linked to stressors such as social media use and work culture, have "ramifications equally disturbing" for productivity and growth.

4.8 GENDERED ECONOMIC STRESS

Young women face economic pressure beyond low wages. A huge part of it is the amount of unpaid work they are expected to do. The Time Use Survey cited in the Economic Survey 2025–26 shows that women spend around 363 minutes every day on unpaid household and care work, while men spend only about 123 minutes. This gap matters because time spent cooking, cleaning, and caregiving is time taken away from paid work, skill building, or even rest

. At the same time, female labour force participation remains low. Research by the International Labour Organisation shows that over fifty per cent of women who are not working drastically reduce their participation in paid work, skill-building, or rest. Many families view marriage as a fallback safety net rather than a personal milestone. Even when women work, they are more likely to be in unpaid or informal roles. Economic growth alone cannot guarantee independence without gender-sensitive reforms.

5.THE ROAD AHEAD: CRITIQUE AND VISION

This generational unease is not a failure of ambition; it is a failure of policy. India's fiscal system has placed a greater burden on salaried individuals through indirect taxes and limited welfare benefits. Social spending on health, education, and housing remains low by global standards. The middle class is taxed, indebted, and unsupported.

We need a shift in policy thinking from growth to equity. Solutions must begin with redistribution and relief: more progressive taxation, stronger labour protections, and targeted support for young workers. Affordable housing, better loan regulation, internship stipends, digital mental health services, fairer job market, debt protection laws, and inclusive safety nets. It means protecting informal and gig workers, regulating exploitative internships, and making basic mental health services free, addressing the gender gap in unpaid

labour and supporting women's participation in the workforce. We need a system where prosperity is not measured by averages but by how secure and empowered the youth feel, because the older generation will not carry the future of this country.

6. CONCLUSION

India's youth are not indifferent; they are anxious, aspirational, and asking for fairness. The gap between what they were promised and what they're experiencing is widening. The traditional paths to wealth, like homeownership, savings, and stable jobs, have been narrowed or disappeared. Without structural change, growth will remain exclusionary. We must focus not just on how much we grow, not just GDP percentage, but how well we distribute, protect and include. Growth that promises and delivers.

Future research could examine regional differences in youth precarity gendered labour transitions, and the long-term macroeconomic effects of delayed asset formation among young adults in India.

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GEOPOLITICS

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SANCTIONS & THE NEW ERA OF ECONOMIC WARFARE

BY: AKSHAY MANUJA

INTRODUCTION

In traditional wars, the power was measured in troops, weapons etc, The country which had most aircrafts or naval fleet was considered to be powerful but in the 21st century this has changed. Nowadays, the financial and digital tools cause more destruction than a missile strike. This is what we term as the era of Economic Warfare, it refers to the use of economic measures, including sanctions and embargoes, to achieve strategic political objectives.

As geopolitics tensions have risen around the world, Sanctions have emerged as one of the primary tools in this modern era. But we need to understand how effective these are in real application, do they even coerce nations or just shape global alliances.

UNDERSTANDING ECONOMIC STATECRAFT

Economic Warfare is not just a single tactic,instead it includes a range of strategies that a country uses with an to hurt other country's economy, like like sanctions, trade restrictions or financial pressure.

The objective of these is to exert pressure on governments by creating economic hardship, compelling nations to change their behavior without resorting to armed conflict.

According to recent researches on traditional and unconventional warfare, sanctions are basically a removal of customary trade and financial relations. They are the diplomatic version of a siege. There are mainly two types of sanctions: comprehensive and targeted. Comprehensive sanctions are broad restrictions on trade and economic activities, whereas targeted sanctions are those which focus on specific individuals, entities or sectors. Targeted sanctions are also called smart sanctions and their main objective is to minimise humanitarian impacts while still exerting pressure on decision makers. On the other hand, the Embargo, a more severe form of sanctions, is one of their aggressive branches. An embargo is banning altogether the trade or

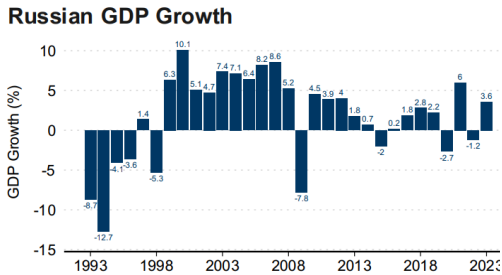
certain types of goods (such as arms or oil) with a particular country. While sanctions can lead to higher tariffs or asset freezing, an embargo closes the door completely.

In the past, these instruments were interpreted primarily from the Liberalism perspective, a mechanism for international institutions to maintain peace without resorting to war. Yet, the Realist viewpoint considers them as just another form of power politics and a method for the biggest economies to impose their will on weaker states at a fraction of a military deployment cost.

THE ECONOMIC IMPACT ON RUSSIA

The most dramatic instance of economic warfare tested the world following Russia's full scale invasion of Ukraine in 2022. A group of countries collectively imposed unprecedented sanctions, including export controls and restrictions in the most sensitive sectors such as energy.

The first strike was a major one. On February 26, 2022, steps consisted of excluding several Russian banks from SWIFT and freezing the Bank of Russia's assets. The central bank was deprived of access to $38.8 billion worth of reserves and thus the total of its readily available reserves was significantly diminished. Markets tumbled, the ruble was under extreme pressure, and banks were experiencing runs that required a lot of liquidity support. To avert such a crisis, the Bank of Russia increased its policy rate from 9.5% to 20% on Feb 28

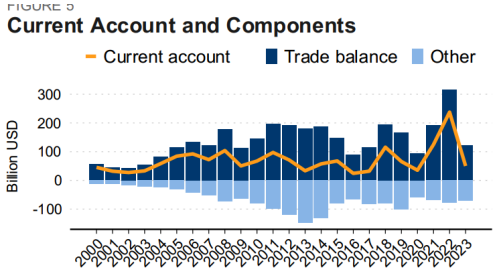


Source: IMF World Economic Outlook, KSE Institute

Energy is where the major conflict took place. Russia ranked third among crude oil producers worldwide and second among natural gas producers. Before the sanctions were imposed, Russia supplied about 14% of the world's oil. To take away this source of income, the G7 and EU came up with a scheme to restrict the price of Russian crude oil to $60 a barrel. The idea was to cut the oil rents of Russia while avoiding any destabilization of global prices.

Nevertheless, the consequences were not clear cut. Although Russian oil export earnings were reduced, it managed to organize a "shadow fleet" of vessels not owned or insured by the countries of the coalition which it used in circumventing the price cap. Now more than 90% of Russia's crude oil is sold without the involvement of the G7. Besides, in 2023 Russia shipped to India and China more than half of its oil exports. Hence, the current account surplus of Russia rose up in 2022 to a record high $238 billion, largely as a result of high commodity prices. This influx of capital allowed the Kremlin to pivot toward a "war economy," significantly increasing domestic military spending to offset the loss of Western investment.

FIGURE 5



Source: Bank of Russia

THE IRAN EXPERIENCE

Before Russia, it was mainly Iran that bore the brunt of the most recent economic warfare. The period of sanctions against Iran, especially between 2012 and 2015, serves as a perfect example of how these tools can be effective over the long term.

The US and EU rolled out a series of measures targeting Iran's crude oil exports, banking, and trading via its ships. As a result, Iran's oil exports went down by as much as 60% while the country lost over $160 billion in government revenues. According to data, Iran's economy shrank considerably with a plunge in the GDP figure by almost 6% in 2012 alone. Besides, the loss of oil revenues is said to have set off a currency meltdown where the value of the Rial plummeted leading to soaring prices and massive layoffs. Was the regime overthrown by the sanctions? Not quite. Studies show that dictatorships are often the least responsive to international sanctions and may instead use foreign sanctions as a pretext to crack down on their people even further. To a certain extent, sanctions served as a rallying tool in Iran, making it harder for the regime to lose majority support. Moreover, had turned to "sanction-busting such as oil smuggling and the use of ghost fleets to keep its oil flowing despite the official embargo. The country also experimented with cryptocurrency and barter trading as a means of trade continuation.

THE INNOVATION PARADOX

An unexpected but very interesting effect of economic warfare is that it stimulates innovation. When sanctions are imposed, foreign investments and high technologies are usually the areas most affected. Yet, such a "carbon lock-in" may result in the targeted countries coming up with innovations out of sheer necessity

Domestic Innovation

An unexpected but very interesting effect of economic warfare is that it stimulates innovation. When sanctions are imposed, foreign investments and high technologies are usually the areas most affected. Yet, such a "carbon lock-in" may result in the targeted countries coming up with innovations out of sheer necessity

The Green Transition in the West

An unexpected but very interesting effect of economic warfare is that it stimulates innovation. When sanctions are imposed, foreign investments and high technologies are usually the areas most affected. Yet, such a "carbon lock-in" may result in the targeted countries coming up with innovations out of sheer necessity in 2022. The necessity for independence from Russian gas

spurred a level of investment in solar and offshore wind projects in Germany and Netherlands that had never been seen before. In fact, firms dealing in renewable energy in the countries imposing the sanctions saw their stock prices go up while the ones dealing with fossil fuels dropped. Hence, to some extent, sanctions became the green energy transition catalyst in the Western world.

THE GEOPOLITICAL FALLOUT

The effects of sanctions are, therefore, far-reaching and proceed from the economic dimension to the very fabric of the world order. The disintegration of international energy governance is, thus, our present reality.

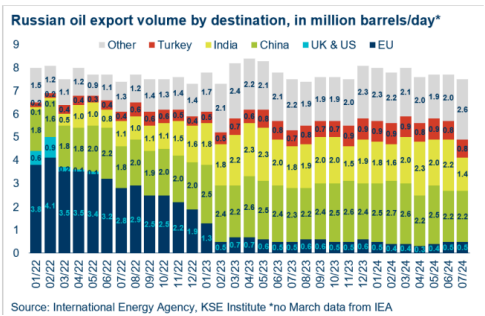
Parallel Markets

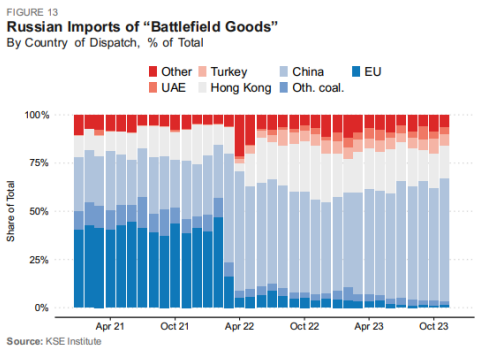
In response to sanctions, unregulated energy markets have come into being, thus facillitating the spreading of energy trade outside the existing standards. Russia and Iran have set up the systems of exchange with fewer intermediaries and have promoted the use of currencies other than Western ones, e.g., the Renminbi, for trade settlement. The deepening of relations among BRICS and OPEC+ members is tantamount to the opening of dialogue on the sanction-proof frameworks.

The "Black Knights"

Sanctions feature in the "black knights" scenario when there are countriers that aid the ones under sanctions to escape . China , Turkey, and the UAE became the beneficiaries of the shift in the trade flow and thus facilitated the passage of goods that were limited by sanctions. The case in point is that , The Turkey (now Turkiye , a major. meditarrenean country becoming one of the leading exporters of chips to Russia in 2022-23.

Figure 11: Russia oil export volume by destination, in million barrels/day





CONCLUSION: THE DOUBLE EDGED SWORD

Economic engagement through warfare is a weapon with two sharp edges. On the one hand, economic sanctions can cause heavy economic damage, just like the GDP of both countries Iran and Russia shrank. On the other hand, they hardly ever bring about a quick political surrender of the target states. This is confirmed by

by the fact that the latter have, instead, changed their behavior, finding ways to operate through shadow fleets, parallel financial systems, and new alliances.

What is more, the suffering of the poor and the weak, as a result of sanctions, is a reality that no one can overlook. Investors and onlookers are drawn to the fact that sanctions reshape markets, change trade routes, and, in a sense, unleash a new wave of innovation, thus narrowing the room for political powers to dictate the course of events. As the global economy fragments into competing blocks, the invisible front of the economic war is likely to remain the dominant feature of 21st century geopolitics.

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GEOPOLITICS AND FINANCIAL MARKETS – NAVIGATING THROUGH UNCERTAINTY

BY: UTKARSH RAWAT

INTRODUCTION

As the market buzzes with the rumblings of distant conflicts in the and trade agreements dry up amid the soar of political temperatures the cross tables between geopolitics and the global financial system has never been sharper. Consider the scenario where a lone missile strike in the Middle East drives up oil futures contracts, or where export tariffs applied across the Pacific propagate along the world supply chains undermining investor confidence and driving up the sovereign risk premium. This is not just speculative but the naked truth about modern day economic interdependence. As countries begin to face security threats and conflicts, as a result of the hegemonic tensions, boundaries tussles and shortages of resources, financial markets, which were previously cushioned by the portents of globalization are today at the brink of financial turmoil. Based on credible statistics provided y global institutions, such as International Monetary Fund (IMF), World Bank, and Organisation of Economic Monetary Fund (IMF), World Bank, and Organization of Economic Cooperation and Development (OECD), the present article explains the ways the geopolitical necessities trigger macroeconomic shocks, which are reflected through the fluctuations in the asset prices as well as fluctuations in the commodity markets and increase in systemic risks. We look at the situation by referring to past practices and existing conflagrations to highlight the need to establish stable policy framework in this geopolitical maelstrom.

GEOPOLITICAL INFLUENCES ON FINANCIAL MARKETS

Financial dynamics have always been influenced by geopolitical fluctuations and in many cases such developments worsen the volatility in the markets and will also create fundamental changes. One of the brightest examples of such nexus is the US-China trade war that started in 2018 and caused a series pointed to

reducing global trade growth to significant levels as the factor that slowed down US growth estimates as the country will reduce investment as well as consumer confidence rates (OECD, 2025). The war led to a 0.3 percentage point decline in US growth of investments by the end of 2019 and is expected to worsen according to projections (Amiti et al., 2020). The brunt of it was borne by equity markets where companies open to trans-Pacific supply chains saw their stock valuation drop, which is associated with decline in the capital expenditure (OECD, 2025). Similarly, the historical evidence of the Bank for International Settlements (BIS) sheds light on the relationship between geopolitical risks and monetary policy and the increase in global spillovers. The BIS research argues that the realization of such risks, such as sanctions or militarized conflicts, intensifies macroeconomic recessions, and historical experiences, including those of the Gulf Wars in the past, can attest to the harmful repercussions of high uncertainty to the intermediation of credits (BIS, 2024). These episodes created risk aversion surges, with visible signs in terms of increased sovereign spreads on newly issued debt, and reduction in cross border lending to emerging economies where lending is susceptible to capital outflow .

(Table 1: Impact of Major Geopolitical Events)

Event	Period	Stock Market Impact	Commodity Price Surge	Sovereign Risk Premium Increase	Source
US-China Trade War	2018-2019	-5% to -10% decline in exposed equities	+20% in affected metals	+50 bps in EM bonds	OECD (2025); World Bank (2024)
Gulf War I	1990-1991	Global indices down 15% initially	Oil +100% (to $40/bbl.)	+100 bps for MENA	BIS (2024); IMF Historical Data
Russia Annexation of Crimea	2014	Russian RTS Index -30%	Gas +15% in Europe	+200 bps Russian bonds	McKinsey (2022); World Bank (2024)

This tabular representation, derived from aggregated data by the World Bank and IMF, underscores the recurring pattern of geopolitical shocks causing immediate asset devaluations and recovery lags (World Bank, 2025; IMF, 2025).

CONTEMPORARY RISKS AND MARKET RAMIFICATIONS

The Russia-Ukraine War and the Middle East conflagration exemplify acute threats to financial stability, in the current geopolitical environmen The assessment carried out by McKinsey outlines the inflationary pressure and discontinuity of the chain supply due to the Ukraine invasion furthering the wheat prices rallying by 40 percent on the impeded supply channels (McKinsey, 2023). This volatility in commodities has reached the equity markets as European indices plummeted with energy insecurity and world trends in inflation have had to trend up rapidly strong enough that central banks have had to take a hawkish position (BIS, 2025).At the same time, tensions in the Middle East, which the US Energy Information Administration EIA) documents, have triggered oil

price swings. The Iranian attack of Israel in June of 2025 took Brent crude to the mid-$70s per barrel and raised the fears of supply disruption through the Strait of Hormuz, through which 20 percent of all world oil travels (EIA, 2025). EIA forecasts foresee Brent being lower than 70 in 2025, provided we de-escalate, though long-term volatility would be able to swell refinery margin and biofuel prices (EIA, 2025).

This is supported by geopolitical risk evaluation by KPMG, where such tensions were seen as the major threats, with the spill over into commodity futures and the increase in third-party risks (KPMG, 2025). These dangers cover to those that are greater financial fragmentation. The IMF studies demonstrate that such stimuli as geopolitical events cause 5-10 percent depreciation in the stock prices and increase the sovereign premium by 50-100 basis points mainly in the emerging markets (IMF, 2025). The advice of PwC on hedging commodities highlights the risks to price volatility, which recommends the development of a diversified portfolio in a geopolitical emergency (PwC, 2024). Deloitte shares the same sentiments adding that global value chains are experiencing spillovers as far as geopolitical risks are concerned and spread to commodity markets in increasing volatility (Deloitte, 2024).

IMPACTS AND MITIGATION STRATEGIES

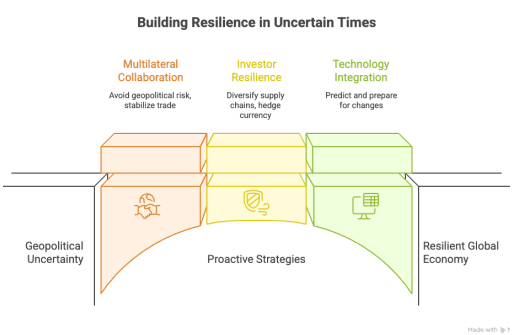
The equities, commodities and foreign exchange markets are the most vulnerable to geopolitical perturbations. Stock markets also demonstrate an elevated sensitivity and IMF measures show that risk occurrences trigger intermediate instability with banks and non-banks limiting their lending in the face of uncertainty (IMF, 2025). According to top consultancy firms, commodity markets experience asymmetry in financial activity as energy and metals supply chains face disruptions (Deloitte, 2023; PwC, 2024). There is an increase in the volatility of Forex, with such safe-haven varieties as USD appreciating, according to the BIS (BIS, 2025). Mitigation will require a multidimensional approach. The proposed outcomes by World Bank advocacy of friendshoring as a strategy to focus investments on allied countries are to mitigate risks related to fragmentation (World Bank, 2024). OECD suggests promoting trade resilience by means of diverse sources, and IMF emphasizes macroprudential buffers to protect the financial stability (OECD, 2025; IMF, 2025). Such consultancies as McKinsey offer scenario planning with which geopolitical foresight is incorporated in business strategies (McKinsey, 2025).

(Table 2: Mitigation Strategies and Efficacy Metrics)

Strategy	Description	Projected Efficacy (Reduction in Volatility)	Source
Friendshoring	Relocating supply chains to allies	10-15% lower trade disruption risk	World Bank (2024)
Macroprudential Tools	Enhanced capital buffers	20% mitigation of bank stress	IMF (2025)
Diversified Hedging	Commodity futures and options	15-25% offset in price surges	PwC (2024); Deloitte (2023)

CONCLUSION AND WAY FORWARD

The convergence of the geopolitics and money market is an indication of an era of perennial uncertainty, which requires careful management. As supported by information gathered in the leading institutions, these dynamics are threatening growth patterns, but they provide chance of adaptive resilience. It is time to go beyond reactive strategies to proactive ones in charting the future. Policy planning should focus on the multilateral spheres of collaboration to avoid the geopolitical risk and to have stable trade relations. It is resilience to or by investors and businesses. These include diversification of supply chains, hedging against the currency swings and the analysis of geopolitical risks in the long-term planning. The use of technology, especially AI and big data, will play an important role in predicting and getting ready to these geopolitical changes. As it turns out, the future of the global economy will lie in a common adherence to the development of more resilience, flexible, and collaborative systems that will survive and continue to prosper under the current wave of geopolitical turbulence.



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GEO-ECONOMICS OVER GEOPOLITICS: HOW ECONOMIC STATECRAFT IS REDEFINING GLOBAL POWER DYNAMICS

BY: RUPIN JAIN AND SHIVAM JHA

ABSTRACT

In the early decades of the 21st century, the primary theatre of global competition has shifted from the traditional battlefield to the balance sheet. Every single day newspaper reads of tariff war, currency fragmentation, "chokepoint control" among many witnessing changing combatting zone. In this emerging century, power is increasingly exercised not through territorial conquests but through control over markets, punitive tariffs, monopolistic rights, technology and supply chain. This embarking shift from geopolitics propels countries to align their strategic objectives accordingly. This article examines how instruments of economic statecraft make possible the rise of geo-economics over geopolitics.

CONTEXT & RELEVANCE: WHY GEO-ECONOMICS NOW?

The decline of single hegemonic power i.e. unipolar world order (as a result of 1st world war) to bipolarity caused the rise of multi-polar world order. When interdependence instead of becoming strength globally became a chronic weakness as witnessed by 2008 Global Financial Crisis, this was where every single country tried to create its own footfall. This posits towards a deep transformation in the nature of global power. Events like Covid 19, US-China rivalry, Russia- Ukraine conflict even supports a turn from geopolitics to geoeconomics.

While military forces remain still relevant but what has changed are war instruments, war ground and the army soldiers. Guns and artillery have shifted to sanctions, tariffs, and supply chain control; "The Economic Agents" like economists, financial analysts are now emerging soldiers and the war ground is now – "Global Marketplace". Physical territory has expanded to economic landscape covering global financial system, digital infrastructure, information channels and international trade routes. National security is not just limited to border

defence or kinetic conflicts; it is more about "innovation sovereignty"- ensuring that the chips in your missiles and the energy in your grid cannot be switched off by a rival power.

CONCEPTUAL FRAMEWORK: UNDERSTANDING GEO-ECONOMICS

To understand geoeconomics in literal sense, one must see it through the lens of "ledger of leverage". Unlike trade agreements between nations proposing balanced trade deals, geoeconomics is about taking competitive edge over the rivals to exploit their local politics which ultimately fulfil their economic aspirations. It's the strategic use of economic instruments- trade, finance, punitive tariffs, trade negotiations, supply chain disruptions, debt diplomacy and much more in its bag. Edward Luttwak made us familiar with this term arguing for increasing use of economic means substituting military conquests. Nations holding key nodes in global trade networks possess disproportionate power to influence it. Time has changed and so the contemporary global power dynamics making an easy way for countries to get hold of rivals via this route.

INSTRUMENTS OF ECONOMIC STATECRAFT

Policymakers today command a wide spectrum of instruments to advance their grand strategic onjectives nclude sanctions, tariffs, export controls, blacklisting mechanisms , and strategic bargaining-tools that increasingly shape the very architecture of global commerce and trade. Among these, trade policy has emerged as the frontline instrument of economic statecraft. Although its overuse can generate systemic distortions, it remains the most readily deployable and impactful lever in the hands of nation-states.

The United States offers a contemporary illustration of how such instruments are selectively employed to reinforce strategic alignments. Through calibrated trade preferences, supply-chain realignments, and regulatory scrutiny, Washington has sought to privilege "near friends" while gradually disengaging from adversarial dependencies. The unfolding US–China rivalry exemplifies this approach. What began as targeted tariff measures has evolved into a broader disruption of long-established global value chains, with consequences extending well beyond the principal actors.

Crucially, the fallout from this recalibration is not confined to the core participants alone. Peripheral economies—often marginal yet deeply embedded within these networks—face heightened vulnerability as production chains fragment and trade routes are reconfigured. In this sense, the strategic deployment of trade policy no longer merely reflects economic competition; it actively reshapes the distribution of risks and opportunities across the global economic order.

CASE STUDIES: GEO-ECONOMICS IN ACTION

Recent history provides vivid examples of this shift. The U.S.-China "Chip War" represents perhaps the most significant geo-economic manoeuvre of the decade. Instead on confronting on military lines, theatre this time is witnessing war on technological front, trade dependence and capital inflows. Both actors are vying for global dominance in semiconductor and other critical technological sectors, creating a mess all round. This has led U.S. announcing CHIPS Act, drawing boundaries with respect to export control and impetus to "in-house" production. China, on the other hand, enjoys dominance over rare earth minerals creating supply barriers to nations dealing in batteries for e-vehicles.

Simultaneously, China's Belt and Road Initiative (BRI) serve as a masterclass in using infrastructure debt to secure long-term political alignment and maritime access across Eurasia and Africa. China has honed the skill of creating a perennial debt trap in name of investment or infrastructure, closing every single gate for a nation to come out this hell. Various examples are lined up confessing the same situation they had entrapped in. In response to mounting criticism surrounding debt sustainability and transparency, China is now focusing on "green", digital projects. This all end up creating a Chinese Economic Sphere. This evolution has not diminished the geopolitical utility of the BRI; rather, it has broadened its scope, reinforcing China's position at the centre of emerging trade, technology, and logistics networks.

GAPS AND RISKS IN GEO-ECONOMIC STRATEGY

Geoeconomics, despite its increasing importance, still has serious limitations and a number of unintended consequences. If countries rely too much on economic statecraft, they might develop

vulnerabilities that could later defeat the very strategic purposes they were aimed at.

One of the major risks is the weaponisation of interdependence. Using trade and financial networks to impose coercion may bring immediate gains, but it also gives the targeted countries the incentive to cut their dependency, diversify, or build parallel systems, which is a gradual disappearance of leverage in the long term.

Sanctions overuse is a warning example. Financial sanctions through dollar, based systems like SWIFT are very effective instruments; however, their frequent application has led to accelerated efforts of sanctioned countries to create alternative payment systems, regional currency settlements, and non -Western financial institutions. In trying to force rivals to do their bidding, leading nations may unintentionally trigger the fragmentation of the global economic system.

Furthermore, geo-economics may contribute to the ambiguity of competition and coercion. Acts of aggression through economic instruments, if taken to an extreme, may be simply considered as economic warfare, which leads to mistrust and less room for diplomatic solutions. However, unlike traditional military deterrence, geo, economic coercion does not have commonly recognized norms, red lines, or escalation, control mechanisms. The lack of clarity in this area makes it easier for misjudgments to occur , especially in industries that are highly intertwined, such as technology, energy, and finance.

IMPLICATIONS FOR GLOBAL STABILITY

The rise of geoeconomics has profound repercussions on the future of global peace and security. While the use of economic coercion instead of military force may at first glance seem to indicate a reduction of the risk of armed conflicts, sanctions, trade restrictions, and technological controls are gaining preference by states just because they are less severe than use of military force. However, what looks like stability is in fact an illusion.

Geoeconomic competition is likely to be a source of slow, burn instability, a kind of state which is characterized by chronic uncertainty, fragmented markets, and a persistent strategic mistrust. In contrast to conventional wars that have clearly defined starting and ending points, extensions, and resolutions, geo-economic conflicts are more enduring, scattered, and less straightforward to resolve. The tipping point of supply chain disruptions, investment restrictions, and regulatory barriers is reached when they start negatively impacting people everyday lives and causing discontent which is then politically exploited.

In strategic terms, geo, economics also reshapes alliance structures. Partnerships are increasingly formed around supply chain security , technological compatibility, and investment screening rather than

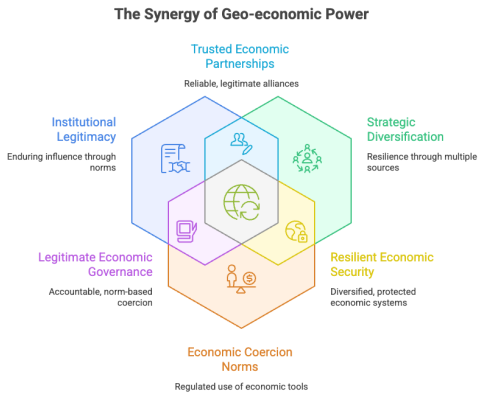
shared ideology alone. Such pragmatic alignment may improve short, term coordination but it lacks the normative solidarity that traditionally was the basis of longstanding alliances.

POLICY LESSONS AND STRATEGIC PATHWAYS

The rise of geo- economics calls for a major adjustment of national and international policy frameworks. Initially, states should understand that economic power achieves the greatest impact when supported by institutional legitimacy. Direct coercion can bring results in the short term, but enduring influence needs to be backed by coordinating with allies and being reinforced through multilateral norms.

Secondly, strategic diversification is a must. States ought to refrain from over, relying on a single market, technology, or financial system not just for the sake of economic efficiency but also for the sake of national security. Robust supply chains, domestic innovation capabilities, and strategic reserves have become the key components of statecraft today.

Lastly, there is a significant gap that has to be filled by developing norms on economic coercion. In the same way, international law has been developed to regulate armed conflict, the emerging geo, economic era requires systems that set the limits of proportionality, transparency, and accountability in implementing economic tools. Without these norms, the competition in the geo, economic area may easily deteriorate into a state of unregulated economic warfare. For emerging powers such as India, geo-economics presents both opportunity and challenge. Leveraging market size, digital public infrastructure, and strategic geography can enhance influence, but this must be balanced with strategic autonomy and inclusive growth. A calibrated approach; combining openness with safeguards offers the most viable pathway.



FORWARD-LOOKING CONCLUSION: THE FUTURE OF POWER

The 21st century is witnessing a dramatic change in the way power is understood and used. While military strength is still significant, it is no longer the only factor that can determine the outcome of a situation. The power to influence markets, control technologies, decide capital flows, and organize supply chains has become the most influential source of global power. Geo- economics does not imply that geopolitical strategies have become irrelevant; on the

contrary, it denotes their change. Currently, power is wielded less by means of territorial advancement and more through
economic structures. Those nations that, on the one hand, perfectly understand this new language of power and, on the other, successfully cope with its risks, will be the main players in the setting of the future world order.

Nevertheless, the path of geo, economics is open and depends on the choices made. It could either help stabilise the international situation or increase divisions, depending on how it is used. A world that is run only by coercive economic leverage would lead to separation and chaos. In contrast, a system that permits strategic rivalry while fostering institutional cooperation can still utilize geo, economics as an instrument of mutual welfare.

Moreover, the last scene of the competition between the two sides will not simply be over resources or markets but will be about the rules that govern these spheres. The next generation of power will be in the hands of not only those who have economic might but also those who can use it with moderation, advance planning, and legitimacy.

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DECIPHERING THE INTERPLAY OF GEOPOLITICAL FRICTION AND FISCAL SOVEREIGNTY IN THE 2025-2030 CYCLE

BY: SUYASH SHUKLA AND ARYAN KUMAR

ABSTRACT

This essay explores how the neoliberal agreement of the post 2015 era has fallen apart, and argues that the world economy is now in a period of Sovereignty-First disintegration. We present a qualitative synthesis of the existing geopolitical hot spots and an empirical reading of the fiscal policies of G20 countries in order to make our case that the main factor behind macroeconomic policy is no longer efficiency maximization but rather security resilience. It is seen in the analysis that there is a sharp divergence in fiscal strategy: advanced economies are pursuing industrial policy in the form of friend-shoring, and emerging markets have a -Defence-First -budgetary crowding-out effect. Using a Realist paradigm to international trade finance, we will establish the fact that geopolitical friction is not just a temporary shock but a structural factor of the economic cycle of 2025-2030. The results indicate that the relationship between the geopolitical risk premium and the yield of sovereign debts has become very strong, which requires a complete review of the portfolio creation. We find that defence imperatives are increasingly limiting fiscal sovereignty, and that it is high-rate, high-risk equilibrium that undermines institutional asset allocation and the traditional models of venture capital. This Great Realignment requires policy makers to emphasize fiscal buffers in lieu of expansionary stimulus and investors to price political risk as a core, not a peripheral variable.

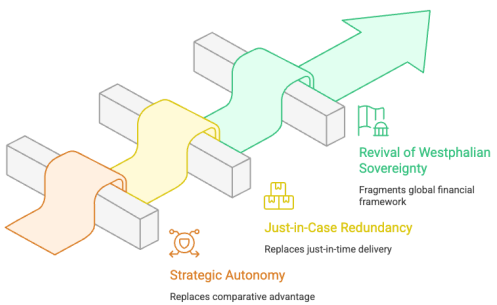
INTRODUCTION: FROM HYPER-GLOBALIZATION TO FORTRESS ECONOMICS

In launching its first issue in 2015, Dravya was suppressed by the pillars of hyper-globalization that were the mainstay of the economic orthodoxy. Capital flows were frictionless and borderless, supply chains were efficiently spread across the seas, and the geopolitical environment, though sometimes turbulent, had roots that appeared to have been

agreed upon by a mutual consensus. Central bankers were speaking the language of inflation targeting, and fiscal policymakers focused on social safety nets and infrastructure. Economy was the king; sturdiness was secondary.

In 2026, it is quite different, and the boundary is drawn with the unrecognizable. We do not live in a flat world of integrated markets anymore but in a mountainous landscape of Fortress Economics. The logic of strategic autonomy has replaced the logic of comparative advantage, which was formerly the foundation of international trade theory. Where 2015 observed the principles of just-in-time delivery, 2026 will require just-in-case redundancy. The global financial framework is fragmented due to the revival of Westphalian sovereignty in which national security determines economic policy (Rodrik, 2025). This change does not constitute a short-lived anomaly but a paradigm shift.

Fortress Economics: A Paradigm Shift



In this article, the author assumes a new historical cycle that we are in the Great Realignment which is marked by the subjugation of economic efficiency to geopolitical friction.

We will break down the way localized tragedies turn into systemic financial risks as the regions are going to have to work towards include regional conflicts, which can only be countered by nations going into Defence-First fiscal postures. As a result, the days of low interest rates and low involvement investing are over and today the market is volatile and high cost with political risk playing the main role in capital allocation.

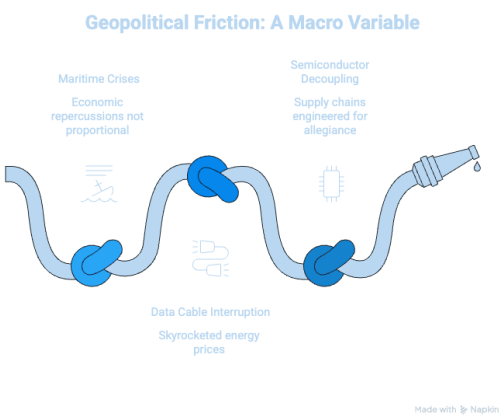
THE GEOPOLITICAL CATALYST: FRICTION AS A MACRO VARIABLE

The classical macroeconomics usually views war and diplomatic disruption as exogenous shocks, external anomalies that are flattened through monetary intervention. However, the Realist Theory of international relations forces us to regard such conflicts as part of an endogenous nature of a multipolar system (Mearsheimer, 2024). The animosity we see today cannot be attributed to coincidence but rather to a system.

Think about the intensification of the Baltic-Nordic maritime crises in late 2024. Militarily sealed, the economic repercussion was not proportional. The interruption of important data cables in the sea and energy interconnectors did not only skyrocket the energy prices in the regions but it also changed the risk premium of trade finance in the Eurozone fundamentally. London and Singapore insurance syndicates, which were once ready to underwrite

cargo passing through contentious waters at just a few basis points, are now asking premiums that operate, in effect, as tariffs. The price of transportation has lost its connection with the cost of fuel and regained its connection with the location in relation to conflict areas.

In the same manner, the faster decoupling of the semiconductor supply chain in the Indo-Pacific can be considered an effective case study. The export controls of 2025 by the Pacific Tech Alliance basically separated the logic chip market worldwide. It is not protectionism in the classical sense of protecting infant industries; it is weaponization of interdependence (Farrell & Newman, 2024). Supply chains have become engineered not to be cost efficient but to achieve allegiance. This shift marks the end of the "efficiency-first" era of globalization. Geopolitics now dictates the flow of silicon, transforming once-fluid markets into fragmented blocks where access to advanced nodes is a privilege of alignment, fundamentally raising costs for every global consumer.



The developments impose a friction tax on the global growth. All redundant factories constructed to ensure security as opposed to demand, all diverted shipping routes, all of the barrels of oil held in reserve, all of this is in the form of deadweight loss. To the world economy, this represents structurally increased inflation volatility and reduced possible growth-stagflation impulse and not because of excess demand.

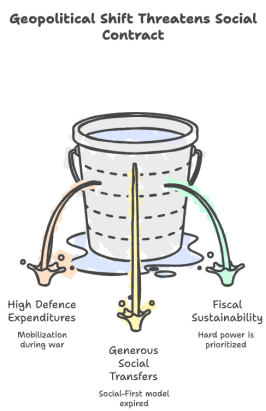
FISCAL CONSEQUENCES: THE RISE OF "DEFENCE-FIRST" SOVEREIGNTY

The geopolitical catalyst is flowing downstream directly to national treasuries. The social contract is undergoing a radical change, especially in the emerging markets. The decades of the so-called Peace Dividend enabled governments to invest in the education, healthcare and infrastructure, which is a Social-First model. That dividend has expired. Instead, a new fiscal logic of Defence-First is establishing itself. The advocates of modern Monetary Theory (MMT) at one time believed that inflation was the only limit to fiscal capacity. It is now limited to the need of hard power. When a state is threatened by the territorial integrity of a state or the security of imported energy, butter is bound to be crowded out by guns.

Consider Eastern Europe and southeast Asia. In 2025, Poland spent more than 5% of GDP on defence, a level corresponding to mobilization during war. Equally, other countries that border the South China Sea

have embarked on swift modernization of their naval forces. This money is not easily unwound it is a sticky type of money where having signed procurement contracts and military bureaucracies in place it is almost impossible to wind down.

This paradigm shift puts emerging economies in a fiscal trilemma, i.e., they cannot sustain (1) high defence expenditures, (2) generous social transfers, and (3) fiscal sustainability. Something must break. According to empirical evidence contained in the World Bank 2025 Fiscal Monitor, social capital expenditure is the variable sacrificed. The consequence is decreased investment in human capital, education and public health, to pay the hardening of borders and the accumulation of strategic reserves.



The outcome is a fragile sovereignty. States are stronger-armed yet socially weaker. This fragility is further intensified by high debt-servicing costs due to the global higher-for-longer interest rate regime.

The further increase in the yield of sovereign debt in credit quality furthur squeezes fiscal space, leading to a vicious circle of austerity and insecurity.

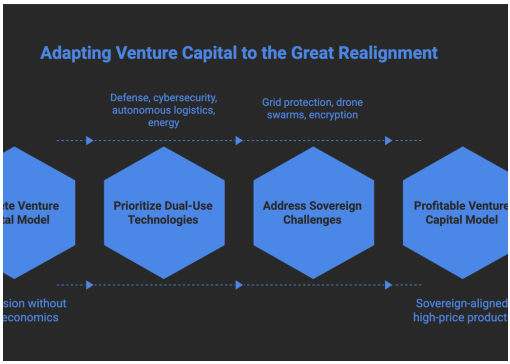
INVESTMENT IMPLICATIONS: NAVIGATING THE HIGH-RATE, HIGH-RISK CYCLE

To the investment community, the Great Realignment requires a total rewrite of the playbook that the investment community used when engaging in the Great Moderation. The zero-interest rate (ZIRP) business environment encouraged a venture capital business model based on expansion by all means without regard to unit economics and geopolitical risk. That model is obsolete.

We now live in a High-Rate, High-Risk world. Not only has the risk-free rate, the base on which all asset prices are built, moved upwards, but more to the point, geopolitical tail risks, but which had been left unaccounted by the equity risk premium, have become important. Investors cannot continue to model China, India, or the Eurozone as economic actors; they need to model them as strategy actors in a fragmentary system.

Venture capital needs to shift to the so-called sovereign-aligned theses. Consumer app-based and gig-economy opportunities will not be the most profitable in the 2025-2030 cycle, but dual-use technologies: defense technology, cybersecurity, autonomous logistics, and energy resilience. These industries enjoy the tailwind of government spending mentioned in the section. Sovereignty is the new Alpha.

Products that address sovereign challenges, such as how to protect a grid, how to fly a swarm of drones, how to encrypt communications without foreign hardware etc., will enjoy a high price.



In the meantime, institutional investors will have to reconsider diversification. Conventional geographic diversification tends to heighten the degree of correlation in the case of a geopolitical crisis. Should there be a conflict in the Taiwan Strait that interrupts world flows of semiconductors then having equities in both the technological companies of the United States and the manufacturing companies of Asia does not offer any hedge; they all get shot down together. This period demands true diversification which is through vertical hedging, investing in the raw commodities and the defence prime contractors that will have experienced the benefit of the very friction that is working against the entire market.

CONCLUSION: THE NEW ECONOMIC ORDER

It will not be the inexorable push of globalization that characterizes the 2025-2030 cycle, but the screeching opposition of realignment. The opposition between fiscal sovereignty and geopolitical conflict has spawned a New Economic Order in which security outweighs efficiency and resilience outweighs growth. We are out of the era of open bridges into the era of drawn drawbridges.

A call to sanity, it is not a despair counsel. Policy-makers should understand that Defence-First budgeting is required to provide security, but this comes at a steep long-term cost in human capital depreciation. To avoid hollowing out their domestic base, they need to identify innovative fiscal measures to isolate social investment, perhaps by special sovereign wealth vehicles or consumption-specific taxes.

To the scholars and students of SRCC reading Dravya ten years after its creation, the lesson is simple: Economics can now no longer be studied in a vacuum. One has to know the range of the ballistic missile to know the bond yield. In order to predict the currency peg, it is necessary to predict the naval blockade. The departmentalized approach to finance is gone. Those who are able to crack the encrypted, untidy, and intertwined code of geopolitics and money are the ones who will have the future.

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THE END OF DOLLAR EMPIRE?

BY: HARDIK PANDEY

ABSTRACT

For nearly 80 years the Global finances have rested against a single pillar, the United States dollar. Initiated with the Bretton Woods. Agreement in 1944 and later strengthened by the Petrodollar system in 1970s, this enduring pillar is now facing challenges for its longevity.

The currents of the global economy are now shifting like the sacred Ganga changing her course, after the monsoon. The Global South, a Sangam of India, China, Africa and other developing Nations are acting against this established current to pursue De - Dollarization and marching towards a multipolar financial order.

While the news headlines that predict that the dollar dying remains hyperbolic, the trend towards De - Dollarization is real and gradual where the dollars role as a reserve currency or Global currency is eroding away. To understand this shift, we must analyse the mechanisms of hegemony, the catalysts for the current situation .

INTRODUCTION: FROM HYPER-GLOBALIZATION TO FORTRESS ECONOMICS

As defined by the scholars at London School of Economics (LSE), a dominant currency serves three specific functions:

- Primary medium for invoicing trade
- Chief currency for funding and debt issuance
- Store of value for Central Bank results.

These mechanisms grant the United States, what the French Finance Minister termed "Exorbitant Privilege". The central banks around the world are bound to hold dollars in order to stabilize their own currency. This in turn creates a perpetual demand for dollar and other U.S. assets. Developed on this premise, the US imports goods and exports inflation.

But why did the Global South even accept this? The theoretical answer lies in the Minimum Variance Portfolio Model. In this framework, Central banks choose a currency that minimizes the volatility of their Real Returns.

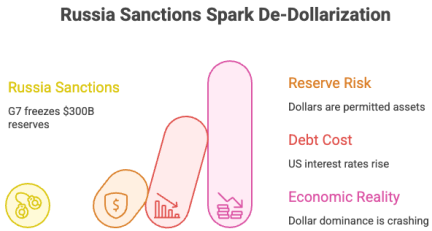
Thus, the Global South had to accept dollar for its liquidity and stability. It was the "cleanest shirt in the dirty laundry". However, the perceived neutrality is now being dented.

THE CATALYST

The flash point in the current wave of de-dollarization was probably feb 2022 when G7 nations froze $300Billion of Russia's foreign exchange reserves following the Russia's invasion of Ukraine. It sent a clear signal to the rest of the world that the dollars reserves are not owned, they are permitted assets. It can be confiscated by the Washington anytime if it suits them. Thus, making it a potential security risk for a nation.

The aggressive interest rate hikes of the U.S. fed have skyrocketed the cost of debt for the world. It all came down to the conclusion that using dollars meant importing the monetary policies of us irrespective of whether it suits your country or not.

Geopolitics, indeed provided the "Spark" for De-Dollarization. But the fuel is the economic reality of US Dollar dominance that is crashing down. Economists call this as the "Original Sin", where borrowing is in a foreign currency that you can't print. UNCTAD's A World of Debt Report in 2025 highlights this picture, the debt of developing nations reached $31 trillion, growing twice as fast as developed nations. Last year these countries paid $921 billion alone in interest, spending more than their own health or education budget.



THE NEW WORLD ORDER

The shift to hard assets is best is explained by Zolten Pozsar, an economist contends that we are witnessing The Britain Woods III, a new order which is being built around Commodities rather than a flat currency. He explains that you can "print any amount of money but you can't print oil, iron or wheat". Commodities are the ultimate insulator against the currency risk.

We should look at the IMF Working Paper 2005, which discusses the Credit Risk Paradigm. It states that dollarization, often persists because of implicit guarantees; banks lend dollars because they believe the government will bail them out if the exchange rate crashes. Today, we see a reverse of this scene. Previously the Dollars were held because the local currency were conceived to be risky. Now, the central banks hold gold, because they believe the dollar itself carries risk. Thus, the credit risk has a shifted from the borrower to the lender. The Petrodollar Agreement which states that sale or purchase of oil is to be operated in Dollar terms is gradually fading away. It is supported by the fact that China has begun trading with Russia and few Middle East countries in its currency

Additionally, India and Russia have employed Rupee-Rubal mechanisms for oil imports. Although these developments do not constitute the bulk of the world transactions, it clearly showcases that oil trade can be done without the dollars.

THE INDIA ANGLE

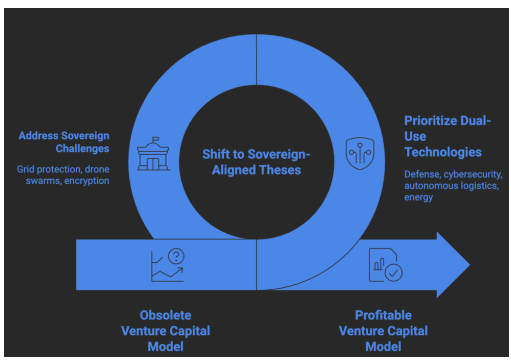
Though the countries like China and Russia have pursued an outright non - dollar strategy, India has approached it through a subtle strategy, that seeks to insulates economy the domestic market from external shocks. The year 2024 and 2025 saw historic levels of Gold buying of central banks, purchasing over 1000 tonnes annually for three consecutive years. India has been a leader in this revolution. By September 2025 the gold holdings of Reserve Bank of India reached a record 880 tonnes at approx. $95 billion of value.

In a strategic move, Prime Minister Modi launched The Indian International Bullion Exchange (IIBX) in GIFT City. This platform lets jewellers to import gold directly, circumventing the traditional Dollar-Esque route. Thus, positioning as the world's second largest gold consumer, India is no longer just a buyer, it is becoming a market maker. Beyond just accumulation, India is building the infrastructure to price gold domestically. For decades, India has relied on London Bullion Market Association (LBMA) to dictate gold prices in dollars. This is why the RBI's move to repatriate 100 tonnes of Gold from UK are much more than just a logistical move, it is a declaration of financial sovereignty.

In July 2023, India and the UAE signed an MoU for local currency settlement. Through this agreement, Indian importers pay in terms of rupees and dirhams bypassing the dollars. It reduces the transaction cost and real exchange rate risks.

India's Unified Payments Interface (UPI) is laying the framework for post-SWIFT world. It started as a domestic success story, but it is now disrupting the global payment mechanism. By late 2025, UPI has been integrated in payments systems of seven countries apart from India including Malaysia and the UAE. This Is the 'Killer' platform, as it offers a cheaper and faster alternative for SWIFT.

Dr. S. Jaishankar clarified in Doha in 2024 that "India has never been for de- dollarization. The US is a largest trade partner. We have no interest in weakening the dollar." It highlights that the Global South is not going to destroy the dollar but to create an 'optionality' where the trade would be taking place in multi-currency rather than depending on a single currency.

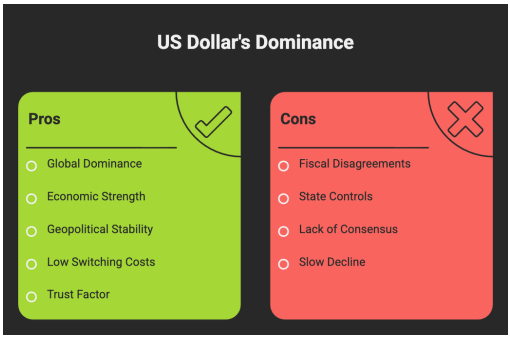


STRUCTURAL BARRIERS & WHY DOLLAR STILL SURVIVES

Economists refer to the "Cleanest Shirt Problem". The euro is dealing with fiscal disagreements, the Chinese Yuan is hampered by the state controls and the lack of transparency, Russia and India are promoting their currencies, but still there is no general consensus established. All these factors make the US dollar the cleanest shirt among the dirty laundry. Therefore, we are not seeing a 'zero to hero' like rise of a currency and the decline of the U.S. bills, rather we are witnessing a slow bleed where the reliance of dollars is gradually dropping in. This trend is likely to continue till the fore seeable future.

"Why does the dollar refuse to die?" The answer lies in the Dollar Smile theory propagated by the economist Stephen Jen. The theory posits that the US strengthens in two extreme situations - When the US economy is booming (the left side) and when the global economies is in Chaos (the right side). The dollar only weakens in the middle when the global growth is stable. In the volatile and tense geopolitical climate, we are in the extremes. Thus, the dollar retains its status despite being dysfunction because every other alternative looks even worse.

Bank for International Settlements (BIS) states that the US Dollars is involved in 88% of all foreign exchange transactions. Therefore, jumping from one currency to another will create an astronomically high switching cost and trust factors the cleanest.



CONCLUSION: THE FUTURE

The Era of a "Global Village" employing a single currency is likely diminishing. In its place we are heading towards the fragmented world where regional economies will dominate the currency monopoly. Thus, we are most likely not heading towards a word where the dollar is completely replaced, but it is surely being diluted. A probable future would look like a Dollar Zone constituting of the America and the Europe, the Sovereign Zone of the Global South consisting of India, Brazil, and other association of countries operating in multi-currency ecosystem or gold, as their asset.

For United States, the loss of currency monopoly will likely generate economic adjustments where the "Privilege" will be regulated, and that trust is not assumed, it is to be earned. Thus, the dollar is not dying. It is being democratized.

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THE RENAISSANCE OF HUMAN RIGHTS: REDEFINING THE RULES OF THE GAME

BY: RADHIKA

ABSTRACT

The paper explores the anatomy of human security in the light of ongoing conflicts in the contemporary world. As states increasingly adopt exceptional measures to counter threats, the boundary between protection and repression becomes blurred. Challenging the conventional zero-sum framework that positions national security and human rights as diametric forces, the paper advances a harmonisation model that integrates human rights as a foundational component of legitimate security policy, with particular attention to overlooked blind spots such as gender. The analysis first critiques the use of cyber curfews and internet shutdowns as tools of state control to jeopardize freedom of expression, usually justified on security grounds. Further, it demonstrates how major powers' refusal to ratify or fully comply with international instruments such as the Arms Trade Treaty weakens global accountability mechanisms, allowing security narratives to override human rights commitments. Lastly, it raises concerns regarding arms diversion, illicit trade, and regulatory failures, situating these issues within the broader framework of international accountability. Integrated within the research paper is a gendered approach, illustrating a disproportionate effect faced by women and marginalized groups within domestic and community spaces. By reframing human rights as the conditions of legitimate security rather than obstacles to it, the paper argues for sustainable policymaking where security is used to protect the environment in which human rights can exist.

Keywords: *Geopolitics, Gendered Conflict, Arms Trade, Civil Liberties, Harmonization.*

INTRODUCTION

The year 2026 is a vault into the future because we are closer to the year 2050 than the year 2000. The world is witnessing an unprecedented level of conflict with multiple crises unfolding

at different levels. From significant elections to intense peace talks, from an AI revolution to trade deals, and from blockbuster movies to billion-dollar games, 2026 is a promising year. Unsurprisingly, given the raging topicality of geopolitics, there are waves of new observations and theories inevitably combining with the tides of tariffs and upheavals. A result of the belligerent direction global politics has taken in the new millennium; is the crowding out debate about human rights.

Security is a condition or feeling of safety, of being protected. Human rights run parallel to human security. International human rights norms define the meaning of human security. Human security, first articulated in the 1994 UNDP Human Development Report defined human security as a people-centred approach, focused on ensuring, “freedom from want” and "freedom from fear” for all individuals1. The 1994 Report launched a virulent attack on the traditional realist paradigm of security and drew worldwide attention mainly because it emphasized individuals, as opposed to states, as the fundamental referents of security. Article 28 of the Universal Declaration of Human Rights is of crucial importance from this point of view2. It provides that everyone is entitled to a social and international order in which the rights recognized in the Declaration can be realized. Throughout the study, there’s a reflection of how human rights is a gendered discourse (Runyan, 1992; Sylvester, 1992).

While proto-feminist thinkers of this time such as Wollstonecraft argued that women were capable of reason, and raised the issue of parliamentary representation for women, the issue of civil and political rights was not her primary focus3. Feminist scholarship in human security is characterized by divergent ideas. The concepts of state, power and security, the feminist scholars argue are constructed in masculinist terms. Feminist scholars across the globe define security considering the circumstances and needs of people and stress that 'security is not just the absence of threats or acts of violence, but the enjoyment of economic and social justice' (Steans, 1998: 127). They have identified gender inequality as the prime cause of the insecurity of women and have launched relentless attacks on the practices of states. The Woman, Peace, and Security agenda widely operates through 4 pillars: prevention, protection, participation, and recovery, aiming for a “whole of society” approach4. It links gender inequality to lasting peace by focusing on women’s participation, protection, and empowerment in conflict resolution. These efforts to develop alternative approaches to security, have enjoyed significant levels of support at the United Nations (UN) and civil-society (NGO) circles and less so in the halls of power in key states.

The significance of human rights can be witnessed during national crisis like terrorism, emergency situations or internal coup.

Human rights ensure that the dignity, liberty, and life of individuals are protected. However, mass migration due to conflicts, the rise of non-state actors, resource crunch, be it food, water, or oil, and internal threats to social cohesion, exacerbate the dire need of national security and most important, the human rights which try hard to find a space to sail through the waves of crisis. Challenging the conventional zero-sum framework the paper proposes a harmonisation model and a shift from a state-focused to a people-focused model, integrating human rights as a foundational component of legitimate security policy.

LITERATURE REVIEW

Runyan (1992) and Sylvester (1992) conceptualize human rights as a gendered discourse, arguing that traditional security frameworks are embedded in masculinist assumptions of power and state-centric authority. Their work highlights how women's experiences of insecurity remain marginalised within dominant security paradigms, thereby exposing structural exclusions present in security debates.

Bennett (2017) and Donnelly (2013) examine the tension between national security frameworks and international human rights norms. Their analyses demonstrate that such practices often weaken accountabilit mechanisms and normalize rights restrictions. This approach positions human rights as obstacles rather than integral components of legitimate security governance.

Amnesty International (2019) and Human Rights Watch (2023) document the increasing use of exceptional security measures such as internet shutdowns and arms transfers, highlighting their adverse impact on civil liberties and socio-economic rights. These studies underline how national security justifications often override international human rights obligations.

RATIONALE OF THE STUDY

The balance between state powers and rights of citizens is a significant marker of democracy. With the advent of increase in the flow of illicit weapons, unregulated civil acquisition of arms, and large-scale internet shutdowns, authorities pass certain laws under the guise of protecting national security which either directly violate or lean towards violating human rights and fundamental freedoms. Thereby, the rationale of the study lies in addressing this gap by adopting an integrated framework and reframing human rights as a part of national security measures.

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- https:/www.un.org/en/about-us/universal-declaration-of-human-rights
- Seen Bennett Citation 2017
- UNSC%20resolutions%201325,%201674,%201820,%201882,%201888,%20and%201889,%201960

OBJECTIVES

1. To critically examine the relationship between human rights and national security measures in contemporary conflict areas.
2. To advance a harmonisation model and propose mechanisms to unequivocally protect the fundamentals of human rights globally.

RESEARCH QUESTIONS

1. How do contemporary national security practices affect the enjoyment of internationally recognised human rights and what are the gendered effects of the same?
2. In what ways do internet shutdowns and non-compliance with international arms control instrument weakens civil, economic, political, and social rights?
3. How can a balance be struck between safety and freedom in an increasingly insecure and complex world?

RESEARCH HYPOTHESIS

Internet shutdowns justified on national security grounds, refusal of major arms-exporting nations to fully comply with treaties, and illicit arms trade systematically violate internationally recognized human rights, disproportionately affecting the rights of women.

RESEARCH METHODOLOGY

***Research Approach*:**
This study is based on a review and synthesis of secondary sources, including research papers, scholarly articles, and reports on the various human rights breaches. A descriptive approach is taken to explore how the invocation of national security continues to threaten the integrity of human security. Additionally, it utilizes a critical analytical approach informed by feminist international relations theory. To guide the literature search, key terms including, "fragility of human rights", "arms treaties", "civil liberties", and "gendered effects" are used.

***Research Design*:**
The collected literature is analysed thematically to identify recurring patterns and insights. During the research, both qualitative and quantitative methods are taken into consideration. This mixed-methods approach ensures a robust and balanced framework.

***Doctrinal Analysis*:**
The research undertakes a doctrinal analysis of international legal instruments, including the Universal Declaration of Human Rights, ICCPR, Arms Trade Treaty, CEDAW, and relevant UN Security Council and Human Rights Council resolutions. Reports from Stockholm International Peace Research Institute (SIPRI), Amnesty International, Armed Conflict Location and Event Data Project (ACLED), Human Rights Watch, UNODC are analysed to assess trends in

internet shutdowns, arms transfers, and civilian gun ownership.

DIGITAL DARKNESS

In the 1990s, the "Global Information Infrastructure Initiative" (GII) was based on the idea that, "*new computer and telecommunications technologies can foster democracy, open new markets, create high-paying jobs, promote peace and international understanding, promote freedom of expression and freedom of information, and foster sustainable development.*"

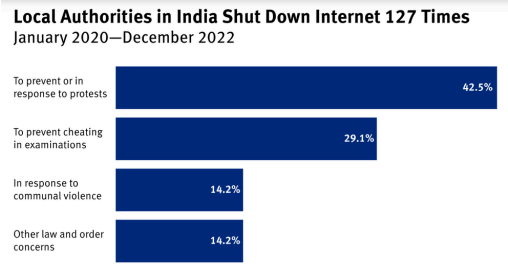
The digital technology over the time has shown strides of changes. In earlier times, principles of participatory democracy, and online freedom were always imperatives of the internet for the international liberal order. However, democracy as a tool is now vulnerable; it can be easily hijacked. What was developed as an instrument of democracy and access has also become an instrument of subjugation with embedded hierarchies. This decade of Industry 4.0 is struggling with a more nuanced crisis of institutional authoritarianism and authoritative digital exclusion6. Internet shutdowns started gaining global attention during the 2011 Egyptian uprising, when authorities shut down the Internet for nearly a week to disrupt protestors' communications (Williams, 2011). Since then, the use of Internet shutdowns as a tool for political purposes has steadily risen. Government-mandated Internet shutdowns have become the "new normal" in many countries, primarily driven by political and national security concerns.

The United Nations Human Rights Council passed a landmark resolution in 2016 (A/HRC/RES/32/13)7 unequivocally condemning internet shutdowns and emphasising the states to exercise human rights particularly the right to freedom of expression considering the rapid pace of technological development. It further stressed the need to access information on the internet as it facilitates vast opportunities for affordable and inclusive education globally, thereby being an important tool to facilitate the promotion of the right to education, while underlining the need to address digital literacy and the digital divide, as it affects the enjoyment of the right to education.

ARBITRARY INTERNET SHUTDOWNS

For the past few years, India, the largest functioning democracy leads the world in internet shutdowns8. Human Rights Watch and Internet Freedom Foundation identified 127 shutdowns in the three years between the Supreme Court's Anuradha Bhasin judgment in January 2020 and December 31, 2022 (Figure 1.). Of 28 Indian states, 18 shut down the internet at least once in these three years.

FIGURE 1. REPLIES FROM STATE GOVERNMENTS TO RIGHT TO INFORMATION REQUESTS FILED BY INTERNET FREEDOM FOUNDATION



SOURCE: INTERNET SHUTDOWN TRACKER HTTPS://INTERNETSHUTDOWNS.IN/ BY SOFTWARE FREEDOM LAW CENTER, AND MEDIA RESOURCES. (THIS NUMBER DOES NOT INCLUDE INTERNET SHUTDOWNS IN THE UNION TERRITORY OF JAMMU AND KASHMIR WHERE THE AUTHORITIES CONTINUED TO SHUT DOWN THE INTERNET MORE THAN ANY OTHER PLACE IN THE COUNTRY.)

Conflicts remain the leading cause of internet shutdowns with perpetrators employing tactics ranging from jamming devices and severing cables to destroying infrastructure and sabotaging service providers. Recently, Iranians faced internet disruptions amid ongoing protests across the country as state authorities. Iranian civil society organisations and media have reported large-scale killings of protestors. Myanmar led the global list of offenders with 85 internet shutdowns. Moreover, cross-border shutdowns saw a sharp rise9. These included shutdowns carried out by Russia in Ukraine, Israel in Gaza, and Thailand and China in Myanmar (*Figure 2.*).

FIGURE 2. PEOPLE TRY TO GET INTERNET SERVICES ON THEIR PHONES NEAR THE BORDER WITH EGYPT, IN RAFAH, GAZA STRIP, FEBRUARY 1, 2024.

SOURCE: HTTPS://AJE.IO/AOCPAG

The open and global nature of internet acts a driving force in accelerating progress towards development, including in achieving the Sustainable Development Goals. Access to the internet is not only essential for freedom of expression and association, but also for a range of economic and social rights. As governments continue to digitize and automate core social security programs, internet access has and will increasingly become vital for the realization of the rights to social security, education, health, work, and the right to food, among others.10 While rights such as free speech are not absolute and can be restricted on exceptional grounds such as national security and public order, governments also need to follow the three-part test laid out in Article 19(3) of the ICCPR, including meeting proportionality and necessity criteria (UNGA, 1966). Governments should adopt a strict "no-shutdown" policy as a core commitment to an open and unrestricted internet. Any policy or action undermining 'due process' or 'proportionality' principles will fail the test of time. There is a need for nations to analyse internet shutdowns through the prism of the human rights-based approach, rather than through the lens of security. As economic, cultural and social rights form the three important pillars of human rights, shutting down access to the internet is the modern equivalent of shutting down human rights.

INTERNATIONAL ARMS TRADE AND CONFLICTS

The global trade in heavy arms has skyrocketed since the cold war. *"Twelve billion bullets are produced every year. That is almost enough to kill everyone in the world twice."*

Revenues from sales of weapons and military services by the 100 largest global arms-producing companies reached a record $679bn in 2024, according to new data released by the Stockholm International Peace Research Institute (SIPRI) (Figure 3.). Weapons are produced in an uninterrupted flow. The reckless selling of killer robots, chemical weapons, nuclear weapons, anti-personnel landmines, and cluster bombs have left people in a frenzy. As noted by the working Group on Business and Human Rights, many Governments, pointing to national security justifications, do not account for transparent examination of arms revenues and expenditures, including full accounting of arms sales, creating a culture of secrecy and non-transparency around arms exports worldwide.

Wars in Ukraine and Gaza and global and regional geopolitical tensions have augmented the flow of weapons across continents. Armed conflicts mean catastrophic loss of civilian life, massive displacement and violations of human rights and international humanitarian laws. With a purpose of protecting national security, wars leave an unprecedented impact on human health.

FIGURE 3. TOP 10 ARMS PRODUCING COMPANIES OUT OF 100

	Company	Country/Territory	Arms revenues (2024), millions of USD	Arms revenues (2023), millions of USD*	Change in arms revenues, 2023–24 (%)
1	Lockheed Martin Corp	United States	$64,650m	$62,630m	3.2%
2	RTX	United States	$43,600m	$41,870m	4.1%
3	Northrop Grumman Corp	United States	$37,850m	$36,630m	3.3%
4	BAE Systems	United Kingdom	$33,790m	$31,600m	6.9%
5	General Dynamics Corp	United States	$33,630m	$31,100m	8.1%
6	Boeing	United States	$30,550m	$32,030m	−4.6%
7	Rostec	Russia	$27,120m	$21,450m	26.4%
8	AVIC	China	$20,320m	$20,590m	−1.3%
9	CETC	China	$18,920m	$21,110m	−10.4%
10	L3Harris Technologies	United States	$16,210m	$15,200m	6.6%

** IN CONSTANT (2024) US DOLLARS*

SOURCE: STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE (SIPRI) | DECEMBER 1, 2025

April 2, 2013, was a significant day at UN Headquarters in New York. After years of pressure from civil society groups, the General Assembly adopted a global *Arms Trade Treaty* imposing strict rules to regulate international arms transfers. The Arms Trade Treaty14 (ATT) was variously described as a "*landmark agreement*" (by British Prime Minister David Cameron), "*ground-breaking*" (by Oxfam), and "a direct win that will help save thousands of lives" (by Amnesty International). However, global arms trading continues to fuel human rights abuses. This is because when it was passed, it focused on "conventional" weapons - from small arms and light weapons to battle tanks, combat aircraft, and armoured vehicles - but haven't received the same international attention as their nuclear, biological, or chemical cousins. Some of the largest arms exporters like Russia and the USA have not ratified the treaty. And even countries that have ratified the treaty fail to comply with it. Civilians disproportionately bear the brunt of the treaties which claim to provide national security. In the light of modern conflict, weapons such as

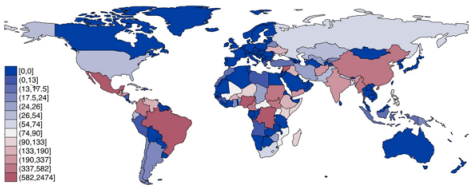
artillery, mortars, guided bombs and missiles destroy hospitals, homes, markets and transport systems, pushing survivors into poverty.

Weapons and ammunitions continue to flow, overtly and covertly, to some of the most brutal armed conflicts. It prolongs wars and often results in high level insecurity even after a conflict has ended, including violence against children and gender-based and sexual violence.

Hence, gender-based violence (GBV) is another persistent and pervasive consequence of armed conflict. In 2024, more than 4,600 cases of conflict-related sexual violence - including as a tactic of war, torture, terror and political repression were documented by the United Nations, an increase of 87 per cent between 2022 and 202415.

The Armed Conflict Location and Event Data Project (ACLED) have developed a curated dataset that tracks civilian-targeted violence perpetrated by armed political actors, specifically focusing on incidents in which women and/or girls constitute most victims or are explicitly targeted16. Armed Conflict Location and Event Data Project (ACLED) have recorded the global distribution of such gender-based violence between 2020 and 2024 *(Figure 4.)*.

FIGURE 4. GENDER-BASED VIOLENCE AND ARMED CONFLICT.



SOURCES: ARMED CONFLICT LOCATION AND EVENT DATA PROJECT (ACLED). TOTAL NUMBER OF GBV ATTACKS BETWEEN 2020 AND 2024.

Several conflicts simmer within the South Asian region. There are skirmishes along the Thailand-Cambodia and the North Korea-South Korea borders, and the Taiwan Strait. Inadequate and unregulated arms supply to parties facilitates violations of international humanitarian law (IHL) and international human rights law and hampers the delivery of life-saving humanitarian aid. These factors hinder post-conflict reconstruction as well as socio-economic development in the longer term. UN Human Rights seeks to support Sustainable Development Goal 16, in particular the goals of reducing violence, and significantly reducing illicit financial and arms flows by 2030. In any situation where it is impossible to avert the risks that arms will be used to commit human rights abuses, companies should stop supplying weapons altogether.

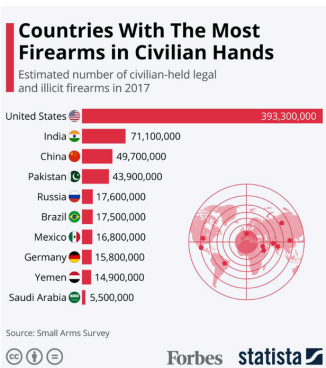
CIVIL ACQUISITION OF ARMS

Ten of the sixteen Sustainable Development Goals contained in the 2030 Agenda for Sustainable Development refer to the importance of arms control.

Civilians own more than 850 million firearms worldwide, vastly outweighing the number of firearms estimated to be owned by the military and law-enforcement sectors combined19. In many cases, civilians acquire firearms illegally, taking advantage of illicit weapons flows. Firearms-related injuries generate costs in terms of medical treatment, mental health services and criminal justice. Firearms-related violence and insecurity therefore pose direct risks to the rights to life, security and physical integrity, and also affect other civil, political, social, economic and cultural rights such as the rights to health, education, an adequate standard of living and social security and the right to participate in cultural life. Gun Violence is a daily tragedy that impacts people around the world.

Organisations like the Office of the United Nations High Commissioner for Human Rights reported the lack of transparency, and specific concerns related to access to information and effective justice on arms transfers. Arms companies reportedly cite legal restrictions, commercial confidentiality, and security concerns for not releasing information. This makes it difficult to access, how, or whether, arms companies respect human rights. The United States has more guns than people and the research estimates that it had a grand total of 393,300,000 civilian-owned firearms in 2017 - 120.5 for every 100 residents (Figure 5.). "Stand Your Ground" laws in several states of the USA allow individuals to use force, including deadly force with firearms, in self-defence, without a duty to retreat, provided they are lawfully present. This broad articulation of self-defence departs from established principles of international law, which require that the use of force be avoided whenever non-violent alternatives are reasonably available. Under international legal standards, lethal force is justified only as a measure of last resort and solely when it is strictly necessary to respond to an immediate threat of death or serious bodily harm to oneself or others. In Switzerland, despite firearm ownership rates being relatively high compared to other central European countries, empirical studies indicate that limiting access to firearms plays a crucial role in reducing firearm-related suicides. Columbia recorded 57 deaths by stray bullets from New Year celebrations alone. Despite the scale of harm, very few countries have sophisticated, nationwide data on non-fatal firearm injuries.

FIGURE 5. COUNTRIES WITH THE MOST FIREARMS IN CIVILIAN HANDS.



SOURCE: HTTPS://WWW.FORBES.COM/SITES/NIALLMCCARTHY/2020/10/14/THE-COUNTRIES-WITH-THE-MOST-FIREARMS-IN-CIVILIAN-HANDS-INFOGRAPHIC/

The Committee on the Elimination of Discrimination against Women has expressed concern regarding the impact that unregulated arms transfers and the proliferation of small arms and light weapons have on the physical security of women. This gendered impact is also reflected in the UN report A/HRC/44/29. Women vastly outnumber men as victims of domestic homicide and that women living with a gun in their home are disproportionately more vulnerable to being victims of gender-related killings. This often results in rape and other forms of sexual violence, further affecting the physical and mental integrity of women and girls. Armed and criminal groups often use diverted arms to force women and girls into slavery, including sexual slavery. Extremely high levels of violence against women is perpetrated by gang members, which includes forcing young women and girls to become gang members' sexual partners and to smuggle weapons into prisons.

Women's right to education, standard of living, and health get severely hampered. According to UNODC, an estimated 500,000 illegal weapons were used to systematically perpetrate thousands of cases of sexual violence, including rape and sexual slavery, in one country alone during a six-year period.

Companies must "know and show" how they respect human rights30. There is a need to focus on the impact of arms on the enjoyment of human rights, legislation and public policies concerning civilian access to firearms should be formulated and reviewed with a human rights lens.

ZERO-SUM TO HARMONISATION MODEL

Human rights and national security have a symbiotic relationship with each other, i.e., they are interdependent and mutually reinforcing rather than conflicting. Balancing human rights and security has been an age-old dilemma. Post the 9/11, the gravitas is largely directed on the challenges of fighting terrorism while protecting human rights, reflected in reports by human rights organisation, and specific concerns expressed by international bodies such as United Nations. Kofi Annan, the Secretary General of the United Nations, pointed to this necessary relationship in the context of the fight against terrorism:

"We should all be clear that there is no trade-off between effective action against terrorism and the protection of human rights. On the contrary, I believe that, in the long term, we shall find that human rights, along with democracy and social justice, are one of the best prophylactics against terrorism".

The research paper moves the debate from a "Zero-Sum Game" (where one side must lose) to a "Harmonization Model" (where security is used to protect the environment in which human rights can exist).

National security threats can no longer be seen to come solely from sources of external aggression, the culpability of state actors in violating rights in the name of national security must be dealt with an equal democratic process. Firstly, the provisions of security laws which either directly or obliquely violate fundamental rights must be repealed. Secondly, in cases of extreme disruption of social fabric, authorities must try a fix of proportionality to strike a balance between maintaining national security and protecting human rights. Further, it is significant to enable provisions for independent investigations of allegations of abuse by security forces. With the presence of a security complex among the states, the only way out of this conflict is 'cooperation.' Other measures include encouraging the rule of law and raising human rights standards, conducting human rights impact assessments, spreading awareness regarding human rights, holding states accountable for their actions and improving transparency and public participation. A paradigm shifts from a state-focused to a people-focused model, where national security means ensuring individuals' dignity, freedom, and safety is a must. For this, state parties should proactively disclose information in the public interest. The obligation to proactively publish information also follows from the general obligation of the State to guarantee the rights of individuals. Most importantly, the most gendered approaches to Human Security still need to fully incorporate feminist approaches to be able to truly challenge global gendered inequalities and insecurities.

Human rights are the very metrics by which legitimate security must be measured. It will be important to rally the peoples of the world behind global values rooted in the Universal Declaration of Human Rights. As defined by United Nations, "Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status." A peace that is not accompanied by strategies for the promotion and protection of human rights is unlikely to be a lasting one.

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INVESTING & STARTUPS

A BILLION DOLLAR IDEA

PASSIVE INVESTING: A STRUCTURAL SHIFT WITH UNINTENDED CONSEQUENCES FOR FINANCIAL MARKETS

BY: AASTHA RAJ

INTRODUCTION

As millions of retail investors enter Indian markets through index funds and SIPs, passive investing is no longer a marginal strategy but a structural force shaping market behaviour. The 21st century has witnessed a significant rise in passive investment strategies in India and other developed financial markets. What began as an efficient alternative to active fund management has now become a dominant force shaping market behaviour across developed and emerging economies. This shift has delivered several benefits, most notably lower participation costs and improved long-term investment discipline. However, the rapid scale and speed of this transition raise important questions about the long-term functioning of financial markets.This article examines the rise of passive investing and analyses the structural risks it may introduce, particularly in markets characterised by rising retail participation and limited depth.

RISE OF PASSIVE INVESTMENT

Passive investing refers to an investment strategy that replicates the portfolio weights of a market index.Passive funds track predefined indices by holding constituent securities in proportion to their index weights. Index funds and exchange-traded funds (ETFs) are the most common tools used to implement this approach. This strategy gained importance because of its simplicity and cost efficiency. Studies conducted across the world show that an actively managed funds fail to consistently outperform benchmark indices even after paying fees and transaction costs. As a result, passive strategies gained credibility as a reliable long-term alternative, particularly for retail investors who seek market-linked returns. Lower expense ratios, transparency , and predictable performance relative to benchmarks further led to its growth in this era. In India, the growth of passive investing has been striking in recent years. According to industry

surveys, assets under management (AUM) of passive mutual which includes exchange-traded funds (ETFs) and index funds has increased from approximately ₹1.91 lakh crore in 2019 to around ₹12.2 lakh crore in 2025, marking more than a sixfold increase over six years at roughly 36 % compound annual growth rate. Over just two years from 2023 to 2025, passive AUM expanded by nearly 1.7 times, highlighting an accelerating shift in investor preferences [1]. By 2025, passive funds accounted for around 16-17 % of total mutual fund assets in India, with equity-oriented ETFs leading the segment. The data in the following figure shows how passive investment strategy has increased in India over time.

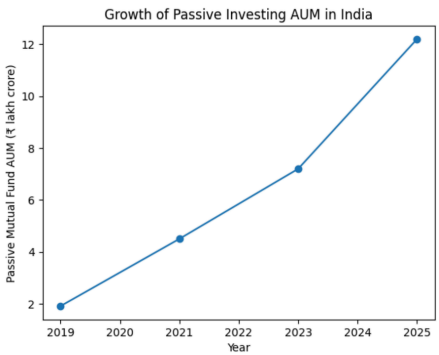

Figure 1: Growth in passive investment strategies in India

The growth of passive investing is an international phenomenon affecting most developed stock markets. In the EU countries passive equity funds have grown from 15 percent of investment fund assets in 2007 to 30 percent of total fund assets in 2017. In the United States, passive strategies now account for more than half of total equity fund assets.

RISE OF PASSIVE INVESTMENT

Theoretical Basis for the Growth of Passive Investing

The growth of passive investing is rooted in modern portfolio theory and the idea that markets efficiently price risk. Tobin (1958), building on Markowitz's mean–variance framework, demonstrated that investors can achieve optimal portfolios by holding a common basket of risky assets ,known as the market portfolio, and adjusting their overall risk exposure through varying allocations to a risk-free asset. This principle, referred to as two-fund separation, implies that investors do not need to select individual securities to construct efficient portfolios. In this framework, the market portfolio represents the most efficient combination of risky assets, offering the highest risk-adjusted return. Passive index funds are designed to replicate this portfolio, allowing investors to gain broad market exposure without engaging in active stock selection. As a result, passive strategies provide a simple and effective way to participate in markets while maintaining diversification.

The performance of active vs passive funds

Finance research has long suggested that active fund management adds little value on average once fees and transaction costs are considered, making passive investing a more attractive alternative for most investors. Early studies consistently

found that active funds fail to outperform their benchmarks net of costs. While later research highlights that some skilled managers may exist and that performance can occasionally be predicted using public information, identifying such funds ex-ante remains difficult, especially for retail investors. Even studies favourable to active management find no statistically significant advantage over passive funds after costs. As a result, low-cost passive strategies have emerged as a rational default choice, explaining their rising popularity among investors.

The emergence of exchange-traded funds (ETFs)

ETFs have played a central role in the expansion of passive investing by offering low-cost, liquid, and transparent access to diversified portfolios. Initially structured to track market indices, ETFs typically operate with lower expense ratios than traditional mutual funds, making them especially attractive to cost-conscious investors. Academic evidence largely supports their efficiency, with studies showing that passive ETFs outperform comparable index funds primarily due to lower expenses. While both ETFs and index funds continue to attract inflows, ETFs gave gained prominence due to intra-day tradability and tax efficiency, reinforcing their position as a key vehicle driving the growth of passive investment strategies.

The competitive fees of passive funds

A major driver of the growth of passive investing has been the sharp decline in fund management fees. Industry data show that the asset-weighted average expense ratio of equity funds fell from nearly 100 basis points in 2000 to about 40 basis points by 2023, with passive funds accounting for a large share of this reduction. The cost gap between active and passive strategies has widened over time: by 2023, actively managed equity funds charged roughly 60-65 bps, while passive funds operated at 5-10 bps. In India, index funds and ETFs typically charge 10-30 bps, compared to 100-150 bps for active equity funds, making cost efficiency a key factor driving retail inflows. Regulatory emphasis on fee transparency and the rise of digital advisory platforms have further strengthened investor preference for low-cost passive strategies.

MACRO & MICRO PICTURE: CONSEQUENCES OF PASSIVE TRADING

Sushko and Turner (2018), in a study published by the Bank for International Settlements (BIS), examine the broader macroeconomic effects of the of the growing shift from active to passive investing. Rather than opposing passive investing outright, they highlight potential risks to how financial markets function. They argue that there are two key macroeconomic consequences from growth in passive funds trade, first

being distortions in the pricing of individual securities due to higher correlations between returns and less price-specific information. Secondly, if investment flows and market price increases, it destabilises aggregate stock prices. As a result, stock prices may move together more closely, increasing correlation across assets and reducing the extent to which prices reflect underlying fundamentals. This weakens price discovery, a key feature of efficient markets. The authors also note that while passive mutual fund flows tend to be stable during market stress, ETF flows are more volatile and may amplify price movements. Additionally, index design can influence issuer behaviour for example, bond indices may encourage higher leverage raising concerns for financial stability and regulation. Anadu et al. (2020) identify four key ways in which the rise of passive investing may affect financial stability: liquidity risk arising from fund redemptions, increased market volatility due to index-based trading, growing concentration within the asset management industry, and greater co-movement of asset prices following index inclusion. Their evidence suggests that passive mutual funds behave differently from ctive funds during market fluctuations. Investor flows into passive funds are largely insensitive to short-term performance, unlike active funds, where higher returns lead to stronger inflows. As a result, passive funds are less prone to sudden withdrawals after poor performance, particularly during periods of financial stress, which may reduce redemption-related instability in financial markets. On balance, their findings suggest that while passive investing mitigates some risks, such as those related to liquidity transformation, it simultaneously increases others, including volatility and industry concentration.

PASSIVE INVESTING IN INDIA: TRENDS AND MARKET IMPLICATIONS

India has also seen a rise in passive investment throughout the years.The rising popularity is clearly broad based given the surge in AUMs (refer Figure 2). Across asset classes, investors have started allocating money to ETFs, Fund of Funds & Index funds in a much more meaningful way.

- Overall, the passive fund AUM has seen an increase of 4x between Jan-2019 and Feb-2022.
- Indian investors have taken exposure to international equities in a significant way, the growth multiple in this category is over 100x in the same period.
- Apart from equity, Debt too has emerged as a popular asset class for passive funds with a growth multiple of over 39x in the same period.

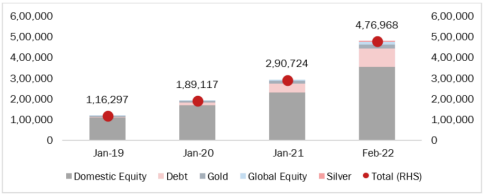

Figure 2: Year on Year Assets under management (AUM) for ETF + Index Funds

Index Concentration and Capital Allocation

Passive flows in India are highly concentrated in a small number of benchmark indices.The NIFTY 50 and Sensex dominate passive allocations, with the top 10 stocks accounting for a substantial portion of index weights.This leads to disproportionate capital inflows into large-cap firms, potentially limiting funding access for mid- and small-cap companies.

Figure 3: Passive Funds Trends

Cost Advantage and Retail Investor Behaviour

Index funds and ETFs in India typically charge 10–30 basis points, compared to 100–150 basis points for actively managed equity funds.Lower costs have made passive funds particularly attractive for first-time and long-term retail investors.

Exposure to Global Capital Flow

Indian passive funds are increasingly exposed to global risk sentiment, especially through ETFs tracking large-cap indices.During global risk-off events, foreign ETF outflows can transmit volatility to Indian markets. This increases the sensitivity of domestic indices to global financial conditions.

Macroeconomic Implications for India

The rapid expansion of passive investing in India carries important macroeconomic implications for capital allocation, market stability, and financial integration. As index-linked funds increasingly dominate equity inflows, capital is mechanically concentrated in a small set of large-cap firms that carry higher index weights, particularly within benchmarks such as the NIFTY 50. While this has improved liquidity and lowered participation costs, it may also limit the flow of capital to midand small-cap firms, potentially affecting investment, employment generation, and long-term productivity growth. Moreover, greater reliance on passive strategies increases India's exposure to global risk sentiment, as foreign ETF rebalancing and global portfolio shifts can transmit external shocks into domestic markets. Although passive funds tend to exhibit more stable investor flows during periods of stress, their growing scale raises concerns about reduced price discovery and heightened systematic interconnectedness, underscoring the need for a balanced coexistence of active and passive investment strategies in India's evolving financial ecosystem.

CONCLUSION

Passive investing has transformed the structure and functioning of modern financial markets and has emerged as a dominant investment approach globally and in India. The rise in index funds and ETFs has decreased barriers to market participation, improved transparency, and enabled millions of investors to access diversified portfolios at minimal cost. These benefits explain why passive investing has risen to such popularity.

However, the rise of passive investing also raises significant macroeconomic and systemic considerations that extend beyond individual investment outcomes. As capital flows increasingly follow index composition rather than firm-level fundamentals, concerns emerge regarding weakened price discovery, greater market concentration, and the mechanical amplification of market cycles. In India, where passive investments are mostly done in large-cap indices such as the NIFTY 50, these effects may influence long term capital allocation, limit funding for smaller firms, and increase global risk sentiment. While passive funds tend to exhibit more stable investor flows during periods of stress, their growing scale and interconnectedness underscore the importance of monitoring potential systemic risks.

Ultimately, passive investing cannot function in isolation. Its effectiveness depends critically on the presence of active investors who generate information, evaluate fundamentals, and ensure efficient pricing. The challenge for policymakers and regulators, particularly in emerging markets like India, is not to restrain the growth of passive strategies but to ensure a balanced and resilient investment ecosystem. As passive investing continues to expand, thoughtful regulation, transparent index design, and robust market oversight will be essential to preserve financial stability while retaining the efficiency gains that passive investing offers.

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IMPACT OF AI AND ML IN FINANCIAL MARKET FORECASTING

BY: KANISHKA SEJWAL, AMAY YADAV

ABSTRACT

This study looks at how AI and machine learning can actually predict stock price swings and catch weird trading patterns in Adani Ports and Special Economic Zone Limited (ADANI PORTS). The team got their hands on a big dataset—3,842 daily records, covering everything from November 2007 up to June 2023. Each record had all the key numbers: daily open, high, low, close, volume, and VWAP. Once they cleaned up the data, they tested three different models: Random Forest, Logistic Regression, and Support Vector Machine, all to see which one could best predict price changes.

Random Forest stood out. It showed that the high and low prices were the best indicators for spotting intraday price shifts. When they looked for anomalies using Z-score, the method flagged days with really odd or unusually heavy trading volumes. Out of all the models, Random Forest performed the best, hitting about 58% accuracy. Sure, that's not a massive improvement over basic models, but it does reflect just how chaotic and hard-to-predict financial markets are. The authors believe that AI-based prediction and risk tools can make a real difference for anyone trying to analyse individual stocks in fast-moving markets like India. Their work lays out a framework that mixes prediction and anomaly detection. Even though the results are modest—partly because the input features didn't change over time—the method is easy to repeat and moves the discussion forward on how AI can shake up financial analysis.

Keywords: Machine Learning, Financial Forecasting, Stock Market Prediction, Anomaly Detection, Random Forest.

1. INTRODUCTION

The many ways that models can be used in finance make these fields both interesting and versatile, but complex systems and behavioural

analysis will always be under concern in any sophisticated system, especially in its financial markets. Volatility, non-linearity, and macro and micro level bias and snap rationality related to system behaviors will always be a concern, and its residuals will always be under concern. Forecasting stock price predictions is an integral issue, and identifying irrational, abnormal, and non-temporal behavior manifestations in trading in a timely manner is another issue that needs to be resolved. Regretfully, the majority of predictive modeling systems and technologies (perhaps with the exception of advanced financial time series modeling), linear regressions, and, to a less extent, technical indicators will in most cases fail to provide an adequate answer to this concern.

We have split history into two eras. The first described the employment of Artificial Intelligence and its forms in analysis in the financial industry as 'use-oriented' and in general were concerned with pattern and behavior analysis of large, complex, and 'noisy' data. The second era consisted of the so-called ensemble models, and there, Random Forests and Support Vector Machines were usually most widely and successfully used.

The present study is concerned with Adani Ports and Special Economic Zone Limited, a most important company in the Indian logistics and infrastructure industry. The study will be based on daily stock price data collected over the previous [illegible]-year period. The study will be pursuing two goals: (i) the use of ML-based classification models to predict the direction of stock price movement, and (ii) the use of statistical methods to analyze and detect anomalous trading days.

2. LITERATURE REVIEW

2.1 Stock Market Prediction Using Machine Learning

Back in 1970, Fama introduced the Efficient Market Hypothesis. He argued that asset prices already factor in all available information, which makes them tough to predict. Still, researchers have pushed back against this idea. Machine learning models, for instance, have managed to pick up on faint but usable patterns in historical data. Ballings and his team (2015) found that ensemble models—especially Random Forests—outperform traditional linear classifiers when it comes to predicting stock price direction. The advantage? Random Forests can capture those tricky, non-linear interactions that linear methods just miss.

Patel et al. (2015) took a closer look at price-based features. They pointed out that values like High and Low aren't just numbers—they tie directly to intraday volatility, which matters for forecasting. Then there's deep learning. Models like Long Short-Term Memory (LSTM) networks have made their way into financial prediction too

(Fischer & Krauss, 2018). LSTMs can handle complex dependencies in time series, but they don't come cheap. Their complexity and appetite for large datasets mean they're not always practical for studies focused on a single stock.

2.2 Anomaly Detection in Financial Markets

Spotting anomalies in financial markets isn't just academic—it's essential. Events like earnings releases or sudden economic shocks can send markets into unpredictable territory. Classic statistical tools, like Z-score analysis, still get plenty of use for finding outliers in time series data (Hyndman & Athanasopoulos, 2018). But researchers haven't stopped there. Chandola et al. (2009) reviewed more advanced, unsupervised techniques, including Isolation Forests, for anomaly detection. Bao et al. (2017) took things further, showing how merging anomaly detection with predictive models gives a clearer picture of financial risk.

Yet, there's a catch. Most studies zero in on broad market indices, not on individual stocks. That leaves a gap in our understanding of company-specific patterns.

This study steps in to address that gap, digging deep into the data around a single Indian stock.

3. OBJECTIVES

The objectives of this research are as follows:

1. Evaluate the integrity and statistical patterns in historical Adani Ports stock data.
2. Pinpoint which features most influence the stock price direction using Random Forest feature importance.
3. Compare how well different classification models—Random Forest, Logistic Regression, and SVM—predict price movements.
4. Spot unusual trading activity through statistical anomaly detection.
5. Examine what AI-based forecasting means for investors in emerging markets and how it shapes their decisions.

4. METHODOLOGY

4.1 Data Collection and Preprocessing

So, we've got this dataset with 3,842 daily observations of Adani Ports stock prices, covering the period from November 2007 all the way to June 2023. Pretty neat, right? We pulled this

data from Yahoo Finance, and it includes a bunch of variables like Date, Open, High, Low, Close, Adjusted Close, Volume, and VWAP.

Now, there were some missing values — about 0.18% — but no worries, we used forward-fill methods to fill those gaps and keep the timeline smooth. Thankfully, we didn't run into any duplicate entries. A quick descriptive analysis showed that the average closing price was around ₹313.50, but there was quite a bit of variation, which really highlights the market's ups and downs.

4.2 Feature Engineering

When it came to predictive modeling, we decided to focus on Open, High, Low, and Volume as our main input features. The target variable? We turned it into a simple yes or no for whether the price would go up or down the next day. To figure out how important each feature was, we used Random Forests. It gave us a good sense of how much each factor contributed to the predictions.

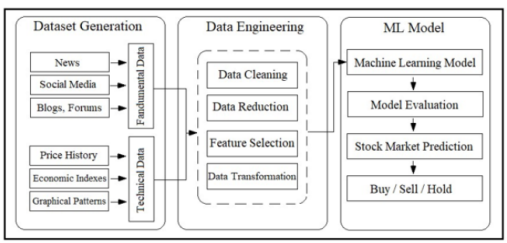

Figure 3: Overview of the Stock Market Prediction Workflow (source: Author's Contribution)

4.3 Predictive Modeling

For our classification models, we tried out Random Forest, Logistic Regression, and Support Vector Machine. We split the data into an 80:20 train-test ratio. To see how well the models performed, we mainly looked at accuracy but also kept an eye on precision, recall, and the F1-score. This way, we could make sure we were covering any potential class imbalances.

Figure 2: Historical closing prices of Adani Ports from 2007 to 2023. The chart shows long-term upward trends with major surges during 2020–2022, possibly driven by economic and company-specific catalysts. (source: Author's contribution)

4.4 Anomaly Detection

To spot those odd trading days, we used Z-score analysis on the trading volume. If any observations had absolute Z-scores over 3, we labeled them as anomalies. These cases indicated some really unusual trading activity-either way too high or way too low.

5. RESULTS AND DISCUSSION

5.1 Feature Importance

So, here's what we found in the Random Forest analysis: the High (0.63) and Low (0.33) prices really stood out as the biggest influences on price direction. Interestingly, the Open price and Volume didn't seem to matter much. It looks like the price ranges during the day actually have a lot more to say about future price

movements than how much trading is going on.

5.2 Model Performance

When we checked out the different models, Random Forest came out on top with an accuracy of around 58%. Not too shabby, right? Next up was SVM at about 55%, and then we had Logistic Regression trailing behind at roughly 52%. Sure, these figures are better than just guessing, but they also highlight how tricky and noisy financial markets can be. It's kind of in line with what previous studies have shown — that nailing daily stock price predictions is really tough, often topping out around 60% accuracy.

Classification Models – Accuracy, Precision, Recall, F1-Score (Weighted Avg)

Models	Accuracy	Precision	Recall	F-1 Score
Logistic Regression	0.47	0.22	0.47	0.30
Decision Tree	0.51	0.51	0.51	0.51
Random Forest	0.50	0.50	0.50	0.50
XGBoost	0.49	0.50	0.49	0.49
LightGBM	0.51	0.51	0.51	0.51
CatBoost	0.50	0.51	0.50	0.50
Bagging Classifier	0.52	0.51	0.52	0.51
Naïve Bayes	0.53	0.52	0.53	0.43
SVM	0.53	0.52	0.53	0.48

The best Classifier is the Bagging Classifier with the Best accuracy + balanced precision/recall

5.3 Anomaly Detection

Now, let's talk about anomaly detection. The Z-score analysis revealed some pretty significant volume anomalies. Take April 1, 2010, for instance — there was a massive spike with a Z-score over 9! Events like this usually tie back to something specific about the company or even broader economic changes. They can be really useful signals for managing risk.

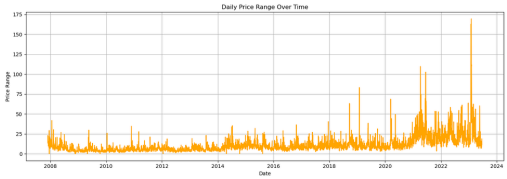

Figure: Daily Price Range of Adani Ports Stock from 2007 to 2023. The spikes represent increased market volatility, with notable peaks during 2020–2022. (Source: Author's Contribution)

5.4 Implications

What do all these findings mean? Well, it looks like AI-driven models can add some extra predictive value, especially when they're paired with solid risk controls. The importance of those price range indicators is pretty clear, and the anomaly detection aspect really boosts investors' awareness of what's going on. It's all about staying informed, you know?

6. LIMITATIONS AND FUTURE SCOPE

You know, while this study has certainly made some valuable contributions, it's not without its flaws. The truth is, the predictive accuracy isn't as high as we'd like it to be. That's partly because of how efficient the market is and the fact that we're relying on static features. Plus, we didn't account for some outside factors like news sentiment or broader economic indicators, which can really affect how well our model performs. Looking ahead, there's a lot of potential for future research to dive into deep learning models, use dynamic technical indicators, and maybe even adopt metrics based on profitability. That could really up the

practical usefulness of these models.

7. CONCLUSION

So, wrapping things up, this study really highlights what Artificial Intelligence and Machine Learning can do when it comes to predicting stock price movements and spotting anomalies, especially using historical data from Adani Ports. The Random Forest model? It did a better job than the baseline classifiers, which is pretty impressive. And when it comes to anomaly detection, we were able to flag some unusual trading events successfully. Sure, the gains in predictability are a bit limited right now, but the framework we've put together could definitely be a solid foundation for analyzing single stocks in emerging markets. Overall, this research adds to the ongoing conversation about AI in financial forecasting, striking a nice balance between solid methodology and real-world relevance.

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BEHAVIORAL ASPECTS OF ALGORITHMIC TRADING: EVIDENCE FROM SIGNAL CLUSTERING

BY: MAHAK CHOUDHARY

ABSTRACT

This research paper examines how signal clustering affects the performance of algorithmic momentum strategies in the NIFTY 50 index. While algorithmic trading aims to reduce human-induced volatility, the merging of automated logic often leads to herding patterns that reflect traditional behavioral biases. This study defines a clustering metric based on a five-day rolling sum of momentum signals and identifies times of high algorithmic agreement. The analysis shows significant performance decline during high-herding periods, with average returns dropping by about 37.5% compared to low-herding periods. These results indicate that algorithmic objectivity does not eliminate systemic behavioral risks, especially when many strategies crowd the market.

INTRODUCTION

Algorithmic trading (AT) has become the main method for executing financial transactions in today's equity markets. The main goal of automating trading processes is to remove human emotions, like fear and greed, while improving execution speed and efficiency. Algorithmic trading (AT) has become the main method for executing financial transactions in today's equity markets. The main goal of automating trading processes is to remove human emotions, like fear and greed, while improving execution speed and efficiency.

However, recent findings in behavioral finance suggest that these systems are not completely neutral. Since trading algorithms are created by human programmers and trained on historical data shaped by human behavior, they often bring forward existing market biases. Even though algorithms execute trades objectively, they are still influenced by behavioral patterns. These systems are built by humans, optimized on historical data that include human biases, and often follow similar logic, such as momentum-following or mean

reversion. When thousands of algorithms react to the same "buy" signal at once, they behave like a digital herd. This behavior, termed "Algorithmic Herding," can result in crowded trades, excessive volatility, and significant drops in strategy performance. This article aims to identify and measure this herding behavior using a momentum-based strategy applied to the NIFTY 50 index. By examining the "clustering" of signals, we aim to show that when too many participants follow the same digital trend, the profitability of that trend eventually collapses. We outline this exploration by reviewing the behavioral origins of herding, explaining our signal-clustering method, and presenting evidence of the "performance tax" imposed by the herd.

LITERATURE REVIEW

The main theory behind this study is based on Behavioural Finance. Barberis and Thaler (2003, p. 1055) explain that financial markets often stray from the Efficient Market Hypothesis (EMH) due to cognitive biases. While traditional finance assumes that participants act rationally, real-world results indicate that biases like overconfidence and herding create consistent price anomalies. In algorithmic trading, these biases often become part of the system's logic. Momentum bias is especially common in automated systems. It describes the tendency for investors to buy assets that are rising in price and sell those that are falling. Algorithms designed to follow trends effectively automate this bias. Das et al. (2024, p. 2) note that automated approaches do not necessarily lessen human biases; instead, they may serve as a link between behavioral finance and technology, often increasing the effects of human decisions on market volatility.

Previous research on herding has primarily concentrated on human fund managers. However, with the emergence of "black-box" trading, researchers have identified a new form of systemic risk: model homogeneity. Previous research on herding has primarily concentrated on human fund managers. However, with the emergence of "black-box" trading, researchers have identified a new form of systemic risk: model homogeneity. When many algorithms rely on similar fundamental technical analysis (such as 3-day momentum), they will naturally cluster their trades. This study offers a detailed empirical example of how this clustering directly relates to a decrease in strategy effectiveness, contributing to the broader understanding of automated market behavior.

METHODOLOGY

To validate our hypothesis, we used daily closing prices of the NIFTY 50 Index, covering early 2019 to late 2025. This data reflects the most liquid part of the Indian equity market, making it a perfect setting for studying institutional algorithmic behavior. The Signal Chain - The empirical study followed a four-step calculation process performed in Excel to ensure transparency and reproducibility:

- Return Calculation: Daily log returns were calculated for the index.
- Momentum_3 Signal: A simple momentum indicator looking at the 3-day price change. If positive, the signal is +1 (Buy); if negative, -1 (Sell).
- Clustering_5 (Herding Proxy): This is the core of our study. We calculated a 5-day rolling sum of the signals. A value of +5 means the algorithm has seen five consecutive "Buy" signals, while -5 means five consecutive "Sells."
- Regime Classification: We defined "High Herding" as any period where the absolute value of the Clustering_5 metric was 4 or higher ($|C| \geq 4$).

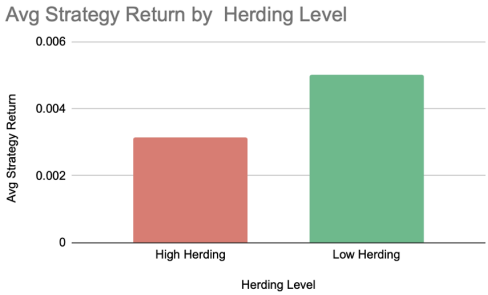
Why |Clustering_5| ≥ 4?
In a random market, it's uncommon for a short-term momentum signal to remain in the same direction for 4 out of 5 days without a pause. When this occurs, it suggests a strong, potentially over-extended trend where algorithmic participants are likely "piling on" to the same side of the trade.

The empirical investigation relies on a dataset of daily closing prices for the NIFTY 50 index, the benchmark for the Indian equity market, covering from January 1, 2019, to June 11, 2025. The analysis was carried out through various quantitative processing steps completed in Excel to derive metrics for returns, momentum signals, and herding intensities.

Note on Data Source: All empirical results presented in this paper are derived from the Datasheet and Analysis tab of the accompanying spreadsheet, which contains the raw price data, momentum signals, and the derived herding metrics for the NIFTY 50 index (2019-2025).
"Algorithmic_Herding_Analysis"

RESULTS AND DISCUSSION

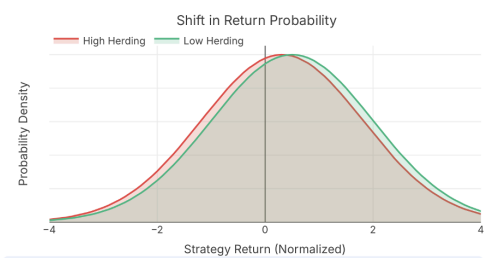
Our analysis produced a significant finding: Performance declines as crowding increases. When signals cluster too closely, the "alpha" or profit potential of the strategy starts to deteriorate. The results of our analysis reveal a clear trend: returns from algorithmic strategies are greatly reduced during high signal clustering. Long-term tracking of the NIFTY 50 shows that when the "algorithmic crowd" agrees, the resulting market crowding reduces the effectiveness of the momentum-based strategy



As illustrated in Figure 1, the average strategy return during Low Herding periods was 5.00028e-05 (0.005%). However, during High Herding periods, the return fell to 3.12815e-05 (0.0031%). While the absolute figures are small, the relative drop is approximately 37.5%. This suggests a systematic degradation in strategy edge when the momentum trend becomes "crowded."

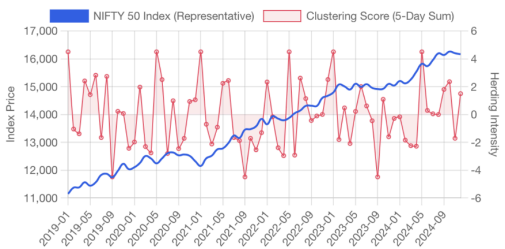
STATISTICAL DISTRIBUTION OF RETURNS

To assess the risk profile of these regimes, we examined the return distribution. High-herding regimes often show lower average returns and higher variance, suggesting that once the herd of algorithms recognizes a trend, the price has already absorbed the information, leading to lower returns or reversals while volatility spikes as exits narrow.



BEHAVIORAL INTERPRETATION

The decline in returns during high-herding periods aligns with the theory of "Crowded Trades." When multiple algorithms respond to the same signal, they compete for available liquidity. The first few traders to act on the signal realize most of the price movement. As more traders (the herd) join in, they push the price to a level where it becomes over-extended. This supports findings in the literature about human bias in automated systems. Although the algorithm follows defined rules, the rules are tied to a behavioral pattern (momentum). If too many automated systems adhere to the same behavioral rule, they create a feedback loop that ultimately collapses, resulting in lower performance. This evidence highlights the importance of recognizing these clustering patterns to create more resilient, non-correlated trading systems.



CONCLUSION

This study confirms the presence of behavioral patterns within algorithmic trading strategies on the NIFTY 50 index. By using a five-day rolling clustering metric, we have shown that

high levels of signal agreement lead to substantially lower average returns compared to more varied market periods. Specifically, we observed a 37.5% reduction in performance during high-herding regimes.

These findings have significant implications for financial engineering and risk management. They suggest that the perceived objectivity of algorithms does not shield them from the behavioral pitfalls of herding and crowded trades. To maintain a competitive advantage, developers should recognize the commonality of similar strategies in the market and consider adding "anti-herding" logic to avoid trading during extreme signal clustering. Future research directions include analyzing high-frequency intraday data to see if herding occurs at micro-second intervals. Furthermore, applying this clustering metric to other asset classes, such as commodities or foreign exchange, could help establish if algorithmic herding is a widespread occurrence across automated financial markets.

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FROM DEFICIT TO DIVIDENDS: FISCAL POLICY POWERING ECO-STARTUPS

BY: JEFFRIN NIZAMI

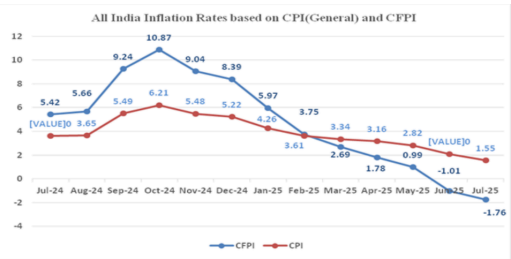
ABSTRACT

India stands today at a crossroads of its economic development in which the well-structured fiscal policy system is progressively turning the tamed budgetary shortfalls to compound benefits which are theoretically taking the shape of the introduction of eco-entrepreneur as a key driver of sustainable development. It is also projected that in the year 2026, the real GDP will grow conviction, the fiscal deficit will be smartly controlled with 4.4 and the GST revenue will skyrocket by 17.4 lakh crore, which is a record high for the April-December 2025 period. Combined, these improvements have placed the Indian government in a level of forming a so-called Goldilocks macroeconomic environment with high precision in order to spurs massive green innovation.

ECONOMIC PRINCIPLES AND FINANCIAL STABILITY

The macroeconomic environment of FY26 indicates an amazing resilience against world head winds. The Real GDP is expected to pick up to 7.4% (adjusted down, to 6.8% to the third quarter), and Gross Value Added (GVA) is expected to increase to 7.3%. This is stimulated by a stable 3.1 percent growth in agriculture, an impressive 6.2 percent rise in the industry and an impressive 9.1 percent spur in the services sector. Fiscal duty reflects as a strategic dividend earner: the central deficit has been carefully maintained at 4.4, of the GDP, supported by revenue receipts which had shot up by 9.2 of the GDP, direct taxes which had increased by 13.4 of the GDP and Goods and Services Tax (GST) collections amounting to 17.4 lakh crore in the period April-December, 2025 (6.7 percent annual growth). These projects plan to liberate 11.11crore in capital spending, equivalent to a 11percent per annum correction and around 3.8 percent of GDP. A remarkably moderate retail inflation price of 1.7 per cent (April-December 2025), a cumulative fall in the RBI repo rate to 5.25 per cent, an unremitting

surplus liquidity of 1.89 lakh crore and foreign exchange reserves totalling US701. 4 billion are some of the features of this balance that can be called Goldilocks. The conditions provide strong macro-economic buffers that are enabling green transition initiatives.



Production settled the debts through accepting dividends The Production-Linked Incentive (PLI) schemes can be used as an example of the replacement of the deficits with dividends. The private investment incurs a sales turnover as 18.787 lakh crore and it created 12.6 lakh direct supply jobs, further GVA increased by 9.13 percentage in manufacturing in Q2 FY26, combining the investment in private investment of 2 lakh crore as of September 2025. The exports of merchandise increased 6.1- to US$383billion to April November 2025, the services exports reached US387.5billion in FY25, 13.6%year un year increase that earns a 4.3 share in the world. All these enhance export prospects of green engineering services, renewable project management , and of grown to 56.2 lakh crore, in both Q2 FY26 (an 8.7 lakh increase on Q2 FY25) and manufacturing to 10 lakh jobs (in FY24) using MSME credit growth of 21.8 per cent by November 2025 and rolling out the e-Shram platform that has reached 31 lakh unorganised workers (54 per cent women). These deliver inclusive pillars of gender balanced green entrepreneurial systems.

THEORICAL BACKGROUNDS OF FISCAL-GREEN SYNERGY

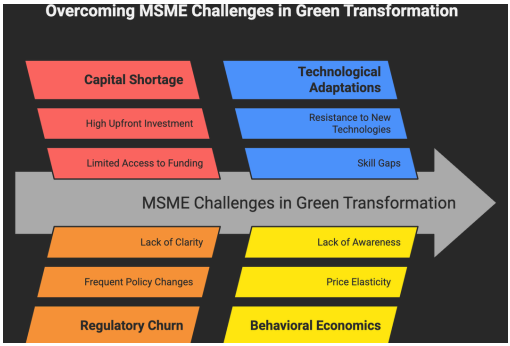
Green entrepreneurship moves beyond the maximisation of profits whereby ecological stewardship is created as a strategic component of core business operations: eco-innovation, the use of circular resource loops and the optimal use of waste valorisation become key parts of the triple bottom line of people, planet, and profit. The most recent bibliometric review conducted in the field 2016-2025 based on a Scopus search and including 17 high-impact articles has systematically defined three prevailing clusters of research, including green innovation, advanced policy-finance interfaces, and scalable sustainable SME business models. The three clusters are all strategically linked to the United Nations Sustainable Development Goals 8 (decent work and economic growth), 9 (industry, innovation and infrastructure), 12 (responsible consumption and production) and 13 (climate action). The turn after 2018, kick-started by the resiliency demands of the COVID-19 pandemic, will lead to a strong inflow of publications in 2023-2025. This trend is led by Asia where India and Indonesia supply 40 percent of the regional production. Nevertheless, critical MSME challenges still persist

among which is severe capital shortage, regulatory churn, and technological adaptations barriers. Under endogenous growth models first rationalised by Romer (1990), fiscal policy plays a strategic role in creating green transformation by strategically magnifying human capital formation and green technology adoption in domains of priority by the use of well-calibrated distortionary incentives: targeted tax credits, production subsidies, and viability gap funding.

The 1.5-2x fiscal multiplier in low-debt regimes is also the number that perfectly concurs with the attractive trends of the Indian public debt to GDP ratio and cuts through the idioms of behavioural economics. Systematic strategic nudges can overcome well-documented obstacles in adoption, since 626 of urban consumers claim to subscribe to sustainability, but show large gaps in behaviour because of the price-elasticity constraint. The resource-based perspective of the company reads that specifically oriented fiscal tools transform the inherent green business disadvantages, such as 30-50 percent of increased upfront capital investment demands into sustainable competitive advantages, rather successfully theorised in new models of digital-green entrepreneurship.

EXPERTISE FISCAL TOOLS WITH MEASURABLE PAYOFFS

In the alternate budget 2026, the elephant in the sky is the peak of cleantech funding, in which the



instruments are meticulously calibrated, like the Startup, India Seed Fund, FS (SISFS) programme at a size of 20,000 crore, and deferral of Employee Stock Option (ESO) taxation lasting 48 months under simpler valuation requirements, not to mention that of receiving 100 per cent reduction on angel tax on certified green technology equipment by the PLI 2.0 model drastically extends to include green hydrogen (5 GW of electrolyser manufacturing capacity), advanced batteries of chemistry cell and energy storage system with a goal of deploying 100 GWh Battery Energy Storage System (BESS) deployment. At the same time, the green patents are given supraductions of 200 percent on R&D and the priority sector green lending with concessional interest of 7 per cent by extending the ECLGS to 5 lakh crores.

Through SASCI, a one point five lakh crore of state-government capital expenditure is currently directed towards catalysing decentralised green infrastructure initiatives; GST is rationalised at 5-percent across renewables, electric vehicles, and components of energy storage infrastructure and viability gap

funding of 20-30 percent of capital expenditure on strategic green hydrogen and advanced plastics production ventures.

Table 1: Precision Fiscal Instruments Driving Green Entrepreneurship Dividends

Fiscal Instrument	Core Mechanism	Quantified Eco-Startup Impact	Key Performance Metrics
PLI Schemes 2.0	Output-linked subsidies across 14 sectors (solar/H2/battery)	₹2Lcr private investment catalyzed	12.6L jobs, ₹18.7Lcr sales
Sovereign Green Bonds	6.5-7% yields, ₹20k cr FY26 issuance	$19.8B cleantech FDI inflow	30GW solar, 10GW H2 capacity
Startup Tax Reforms	ESOP 48-month deferral, angel tax abolition	MSME credit +24.6% penetration	1.2L registered startups
VGF & PPAs	20-30% capex grants, 15-year offtake guarantees	450kt green H2 production	Circular plastics scaling

Source: Economic Survey 2025-26 & Mercom India Budget Analysis

crore of state-government capital expenditure is currently directed towards catalysing decentralised green infrastructure initiatives; GST is rationalised at 5-percent across renewables, electric vehicles, and components of energy storage infrastructure and viability gap funding of 20-30 percent of capital expenditure on strategic green hydrogen and advanced plastics production ventures.

EMPIRICAL CASE STUDIES: POLICY OSSIFICATION INTO PRAXIS

Cleantech has already provided real payoffs, the inflow of investment to 2025 has reached 19.8 billion US dollars and foreign direct investment has reached 23 billion US dollars.

These investment decisions have made the 30GW Khavda solar park, the largest single-location renewable project in the world, run by Adani Green, and the comprehensive 10GW green hydrogen ecosystem solver, with distribution, storage, and production assets, by Reliance industries. The pioneers in the startup ecosystem are converting tax breaks into business-level activities:

Table 2: Empirical Case Studies - Vanguard Green Startups Leveraging Fiscal Support

Startup Exemplar	Core Innovation	Fiscal Leverage Utilized	2030 Scale Projections
Nexus Power	Agri-waste derived Li-ion batteries	PLI battery + green loans (₹150 cr)	1 GWh annual capacity, SDG12 exports
Eco Thaila	Banana fiber bioplastics packaging	GST exemption + SISFS (₹10 cr seed)	10kt plastic waste diversion, 50 Tier-2 hubs
HydroOne India	PEM electrolyzers for steel decarbonization	VGF 25% + 15yr PPA offtake	450kt H2 production enabling net-zero steel
Varuna Bioenergy	Waste-to-bio CNG plants	PLI waste processing + green bonds	100 TPD plants across 20 states

Source: TechnoServe "6 Green Startups India 2026" Report & Economic Survey Statistical Appendix

Southern states are good examples of green industrialisation, Tamil Nadu and Karnataka have the top positions on green ease-of-doing-business indexes, and recording a 45 per cent renewable capacity mix. They use their industrial policies to strategic integration of micro, small, and medium enterprises (MSMEs) into world green supply networks, which has been statistically supported by literature as yielding a 1520% rise in the total factor productivity of SMEs within the initial 24 months of incentive receipt.

CHRONIC ADVERSARIAL AND ADVANCED MITIGATION ARCHITECTURE

MSMEs have received substantial macrolevel support, yet they still encounter some significant barriers such as 30-50% premium costs on spending green capital, a distorted distribution of venture capital to only 15 percent of green technologies, and widespread lack of technology and skills to scale-up that inhibits scale-up. Among the open empirical gaps

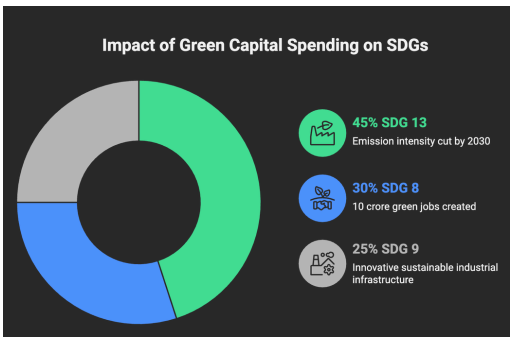
that are especially acute in the micro-econometric analysis of return-on-investment profile, digital-green entrepreneurship divide by gender and behavioural price elasticity that overturns the intent of sustainability, it is observed that there is a 62 percent gap between claimed intentions and adoption levels in urban consumer surveys.

The fiscal headwinds are still continuing with state-level deficits at average of 3.2 percent of the GDP and fluctuations in oil prices of about 70 US dollars per barrel creating need to have strong contingency buffers. Production Linked Incentive (PLI) scheme has 40% uptake lag in young sunrise industries, which necessitates complex course-correction arrangements which embrace performance-based trenching and responsible technology transfer requirements.

The strategic mitigation architecture projects blended finance vehicles to the tune of about 1lakh crore (approximately 140 billion US US dollars) which integrate both state catalytic capital and private investment. By FY28, through deploying complementary AI-driven compliance platforms as part of NITI Aayog M SME green roadmap and sovereign green hydrogen bonds are expected to reach 50,000 crore (approximately 660 billion US dollars) issued by FY28.

STRATEGIC CONCLUSION AND RECOMMENDATIONS

The fiscal multipliers of 1.8 times on green capital spending sound the bells across the whole Sustainable Development Goal (SDG) spectrum: SDG 13 (a 45 per cent cut in emissions intensity by 2030), SDG 8 (10 crore green jobs created), and SDG 9 (the embodiment of an innovative sustainable industrial infrastructure). The leaders of the industry (such as SBI Chairman Dinesh without cleantech founder Manish Sharma) push the idea of harmonisation of grid codes, strong sovereign green hydrogen bond schemes and a single regulatory framework that covers all 28 states.



ACTIONABLE RECOMMENDATIONS:

- Policy Evolution: Implement PLI 3.0 including 30 per cent of MSMEs as carve outs, a 10,000-nexus fund of green and digital of gender compulsory 20 per cent green procuring clauses in all central enterprises in the public sector.
- Empirical Research: recruit primary research panels, survey 100 Amity University peer institutions and 20 Delhi-NRVC venture capitalists with the goal of evaluating the incentive elasticity and run behavioural nudge field trials

within NCR communities with a 15 of nudge increase in green adoption.

- Scholarly Innovation: Develop more advanced bibliometric-systematic hybrid models to track the post budget trajectories of total factor productivity; enrich macroeconomic shock models, such as Falling Phillips curve and rational expectations model with diffusion parameters of green technology.

RESEARCH FRONTIERS AND CONCLUDING FISCAL ALCHEMY

Future research directions express the need to establish longitudinal research that monitors the viability of SMEs (green) throughout policy well-before five years, geopolitical-fiscal spillover examinations subtler, the green subsidy competition (US-China-Europe) and optimisation systems at the intersection of AI and green technological innovation.

The research agenda focuses on: (1) randomised controlled trials to confirm the effectiveness of behavioural nudges on a scale; (2) spatial econometric planning the gradient of green total factor productivity in 200 districts; (3) cross-Asian comparative frameworks to test the effectiveness of Indian and Indonesian policy.

Overall, the fiscal policy of India masterfully turns managed deficits into exponential payouts, thus taking eco- start-ups as the driver behind the United Nations Sustainable Development Goals. The convergence of production-based incentives, sovereign green bonds, and the overall roadmap of NITI Aayog result in cleantech revolutions with the help of positive growth momentum of 7.4 percent and negative deficit discipline. The bibliometric validation is that these clusters, that are finding innovative policy, are the bridges between the austere scholarly ideation and scalable business practice through organizations like Nexus power, Hydron and local lead agents. As far as scholars at Amity University and postgraduates in Business Economics are concerned, the targeted empirical research, including surveys, behavioural interventions, and policy experimentation, is still essential to overcome persistent barriers of SMEs and predeterminable make India the leader in a projected 5 trillion-dollar green economy by 2030.

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THE STRUCTURAL RECALIBRATION OF INDIA'S STARTUP ECOSYSTEM: PRIORITIZING PROFITABILITY OVER GROWTH

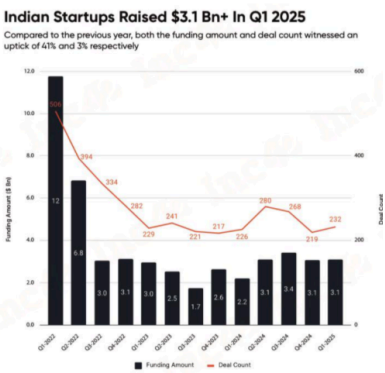
BY: KUSHAGRA SINGH

CONTEXT & TRIGGER (THE BILLION-DOLLAR RESET)

The Indian startup ecosystem is currently navigating its most significant evolutionary phase since the inception of the 'Startup India' initiative in 2016. For nearly a decade, the prevailing narrative was one of "Blitzscaling", a term popularized by Reid Hoffman that prioritized lightning-fast growth and market capture over immediate fiscal sustainability. This era, fueled by a unique confluence of zero-bound interest rates in the West and the rapid digitization of the Indian consumer through the "India Stack," reached its zenith in 2021. In that year alone, Indian startups raised a staggering $42 billion across approximately 1,200 deals, minting 46 unicorns in a single 12-month calendar.1

However, the dawn of 2026 confirms that the "Funding Winter" of 2023-24 was not merely a seasonal dip but a fundamental structural recalibration.

As of mid-December 2025, tech startup funding in India stood at $10.5 billion, representing an eight-year low and a sharp 17% decline from the $12.7 billion recorded in 2024.2 While these numbers might suggest an ecosystem in distress, a deeper diagnostic reveals a "Billion-Dollar Reset." The excess of the 2021 era, where the number of unique institutional investors peaked at 1,862, has given way to a more disciplined cohort of 834 investors in 2025.



The trigger for this shift is twofold: a global reversal in the cost of capital and a domestic demand for public

market readiness. With the U.S. Federal Reserve maintaining a cautious stance on inflation and the Reserve Bank of India (RBI) steering the domestic fiscal deficit toward a target of 4.4% for FY26, the era of "free money" has officially ended.4 Furthermore, the record failure of 11,223 startups in 2025 (a 30% increase from 2024) signals a necessary "cleansing" of unsustainable business models.

This article posits that we are witnessing the maturation of India's startup economy.6 The focus has shifted from "User Acquisition at any cost" to "Sustainable Unit Economics."7 This is evidenced by a massive 2026 IPO pipeline where over 48 startups, including Zepto, PhonePe, and OYO, are preparing to raise upwards of ₹50,000 crore.8 In this new paradigm, profitability is no longer a "nice-to-have" secondary goal; it is the primary prerequisite for survival and public market acceptance.

THE GROWTH PARADIGM: HOW IT TOOK ROOT

To analyze the current structural shift, we must first deconstruct the era that preceded it. Between 2016 and 2021, the Indian startup ecosystem operated under a "Growth-First" mandate that was, contrary to popular revisionist critique, fundamentally rational for its time.

A. The Rationality of Market Creation

In the mid-2010s, India was a "market-in-the-making." For sectors like e-commerce, digital payments, and mobility, the primary challenge was not competition, but market creation. Large-scale investments were required to change deep-seated consumer habits, shifting from cash-on-delivery to digital wallets, or from unorganized commutes to app-based hailing.

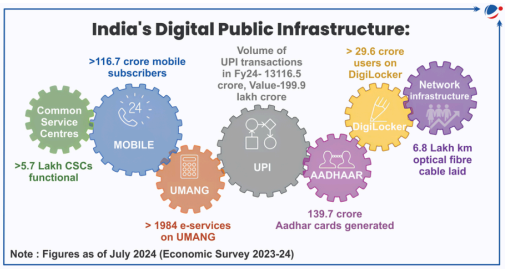
- **Network Effects & Winner-Take-All Dynamics:** In platform businesses, the utility of the service scales exponentially with the number of users. To achieve the "critical mass" necessary for network effects to kick in, firms had to prioritize volume over yield.
- **Late Digitization Arbitrage:** Global capital viewed India through the lens of the "China Playbook." Investors expected that by subsidizing the early adoption phase, they would eventually own a "toll bridge" over a massive, middle-class digital economy.

B. The Digital Infrastructure Catalyst

The growth phase was underpinned by a dramatic improvement in India's Digital Public Infrastructure (DPI), which lowered the "marginal cost of expansion" for startups.

- The Teledensity Blitz: Driven by the launch of 4G services and the Digital India initiative, India's teledensity plummeted the barriers to entry. Teledensity surged from 37% in 2014 to 93% by 2022, while the cost of mobile data became the lowest globally, averaging ₹6.7 per GB in 2023 (compared to ~$10-$15 in Western markets).

- India Stack as an Operating System: The rollout of Aadhaar (1.3+ billion enrollments) and e-KYC reduced customer onboarding costs from several hundred rupees to near-zero. This enabled "blitzscaling" in sectors like Fintech, where teledensity and e-KYC together allowed firms to reach 90% of the economy previously excluded from formal systems.



C. The Cost of Capital & Global Benchmarks

The growth paradigm was further incentivized by the global "Zero Interest Rate Policy" (ZIRP) era. With the US Federal Funds Rate near zero, global venture capital sought yields in high-growth emerging markets. Indian unicorns were often benchmarked against their US or Chinese counterparts (e.g., "The Uber of India" or "The Stripe of India"), where valuations were based on revenue multiples of 20x-50x rather than EBITDA multiples.

Growth was the "currency" of the era because it signaled future dominance. In a world of near-free capital, the Internal Rate of Return (IRR) was maximized by capturing market share today and worrying about monetization tomorrow. This logic held firm as long as the "Exit" remained a private sale to a larger VC or a strategic acquirer who also valued growth. The realization that the ultimate exit, the IPO would require a different set of books is what finally broke the growth-at-all-costs fever.

STRUCTURAL FORCES DRIVING THE SHIFT TO PROFITABILITY

The transition from a growth-at-all-costs model to a profitability-first paradigm is not a voluntary pivot by founders but a survival imperative dictated by four non-negotiable structural forces. These forces have fundamentally altered the "hurdle rate" of success in the Indian tech economy of 2026.

A. The Global Capital Cycle Reversal & Cost of Capital

The era of "Blitzscaling" was a direct byproduct of the global Zero Interest Rate Policy (ZIRP). However, the macroeconomic climate of 2024-25 saw a seismic shift. In late 2025, the U.S. Federal Reserve initiated a split 25-basis-point rate cut, bringing the benchmark range to 3.50%–3.75%, yet indicating a potential pause in further cuts for 2026.

For the Indian startup ecosystem, this "higher for longer" interest rate environment has structurally increased the Weighted Average Cost of Capital (WACC). In 2025, total tech funding plummeted to $10.5 billion, a 17% decline from the previous year. More importantly, late-stage funding crashed by 26%, dropping to $5.5 billion. When the risk-free rate is high, investors no longer accept "growth"

as a proxy for value; they demand immediate cash-flow yield. This has forced a valuation reset where private market multiples have corrected by 30-40% to align with global public market benchmarks.

B. Public Market Rigor: The 2026 IPO Pipeline

The ultimate arbiter of the "profitability pivot" has been the domestic public market. In 2025, India witnessed a record 18 mainboard tech IPOs, and the pipeline for 2026 is "stacked," with over 48 startups (including giants like Zepto, PhonePe, and OYO) and a combined potential fund mobilization of over ₹2.5 lakh crore.

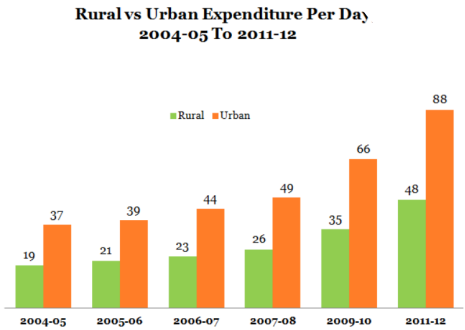
Unlike private venture capital, the Securities and Exchange Board of India (SEBI) and public institutional investors demand historical financial hygiene.

Also recently public markets have shown started showing zero tolerance for cash-burning machines. Investors now feel more confident while investing if they are able to envision strong future portfolios of companies pushing them more towards sustainable unit economics.

C. Maturing Consumer Markets & Premiumization

The Indian digital consumer has matured beyond the "discount-seeking" phase. In 2025, a significant structural shift was observed: Premiumization and the resurgence of Rural Demand.

High-Value Users: Monthly per-capita consumption expenditure (MPCE) in urban areas reached $6,996 in 2025. Consumers are now willing to pay for



convenience, speed (Quick Commerce), and quality over the lowest price.

- Retention over Acquisition: With over 14 billion monthly UPI transactions by late 2025, the cost of acquiring a digital user has peaked. Firms have realized that "buying" users via cashbacks leads to high churn. Strategic capital is now redirected toward improving unit economics (ARPU) from existing high-intent users rather than subsidizing low-intent mass acquisition.

D. Regulatory & Compliance "Guardrails"

The Reserve Bank of India (RBI) and other regulators have moved from a "wait and watch" approach to active enforcement.

- **Fintech Tightening:** New licensing pathways for Payment Aggregators (PA) and stricter norms on unsecured personal loans have increased the "Cost of Compliance."
- **Fiscal Consolidation:** The government's drive to bring the fiscal deficit down to 4.4% of GDP has stabilized the macro-

economy but also signaled that there will be no fiscal "bailouts" or indirect subsidies for inefficient sectors. Compliance is no longer a footnote; it is now viewed as a "competitive advantage" that unlocks fairer pricing and public market trust.

FIRM-LEVEL RECALIBRATION: WHAT HAS CHANGED INTERNALLY

The shift toward profitability is not merely a change in investor sentiment; it has manifested as a fundamental restructuring of the internal "operating system" of Indian startups. In the 2021–2022 era, the primary internal directive was speed; in 2025–2026, it is efficiency. This firm-level recalibration is visible through three distinct internal pivots: the substitution of key performance indicators (KPIs), aggressive cost rationalization, and the "Reverse Flip" or homecoming phenomenon.

For years, Gross Merchandise Value (GMV) and Monthly Active Users (MAU) were the "North Star" metrics for founders. However, these metrics often obfuscated the underlying burn. Today, internal dashboards at top-tier startups have replaced these with "Sanity Metrics."

- **Contribution Margin (CM2):** Companies are now evaluating success based on CM2, revenue minus variable costs, including marketing, logistics, and payment gateways.
- **The LTV/CAC Ratio:** The focus has shifted from acquiring any user to acquiring users with a high Lifetime Value (LTV) relative to their Customer Acquisition Cost (CAC). In FY25, sectors like Fintech and Edtech saw a 25-30% reduction in digital marketingspends as firms pivoted away from broad-top-of-funnel acquisition toward targeted retention.

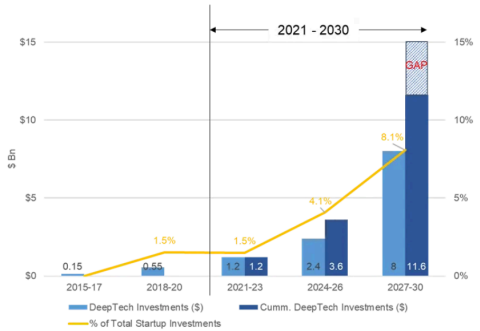
COUNTERARGUMENTS & NUANCE: THE RISK OF THE "INNOVATION TRAP"

While the pivot to profitability is a necessary maturation, a dogmatic application of this principle carries the risk of a "structural innovation trap." If every startup is measured by its ability to generate immediate EBITDA, India may inadvertently stifle sectors that require high R&D intensity and long gestation periods.

A. The DeepTech and Strategic Sector Paradox

Sectors like DeepTech, SpaceTech, and renewable energy like Green Hydrogen cannot, by their very nature, follow a three-year path to profitability. These industries are characterized by high upfront capital expenditure and "binary risk" (the technology either works or it doesn't).

- **The Funding Gap:** In 2025, while consumer-tech funding stabilized, DeepTech ventures still struggled to secure "Patient Capital." India's R&D spend remains at 0.64% of GDP, significantly lower than China's 2.43%.



- **The Sovereign Solution:** To mitigate this, the government launched the ₹10,300 crore IndiaAI Mission and a ₹1 lakh crore sovereign RDI fund to support high-end robotics, semiconductor design, and quantum computing. These sectors must be exempted from the "profitability-first" filter to ensure India's long-term Techno-Sovereignty.

B. The Productivity vs. Innovation Debate

There is a growing critique that the profitability focus leads to "Implementation" rather than "Innovation." Many Indian "AI startups" are currently application-layer wrappers on top of Western foundational models. By prioritizing short-term cash flows, firms may avoid the heavy lifting of building original Intellectual Property (IP). As noted by industry observers in early 2026, India still lags in Innovation Leadership, often waiting for global solutions to mature before adapting them for the domestic market.

CONCLUSION: MATURITY OVER MALAISE

The fundamental reset of startup ecosystem recently represents a very healthy development in the Indian's growth story. It has purged the system of "zombie startups" and forced leaders to build with fiscal discipline.

The Indian startup ecosystem of 2026 is no longer a fragile experiment; it is a robust, EBITDA-conscious engine of growth. By 2027, as the record 48+ IPOs mature on the public boards, the world will see an Indian tech sector that is not just "large" by user count, but "valuable" by every traditional financial metric. The recalibration is complete: India has traded the intoxication of growth for the sobriety of success.

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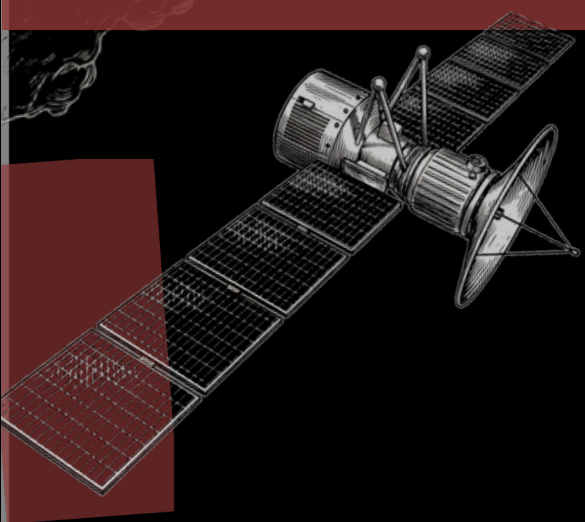
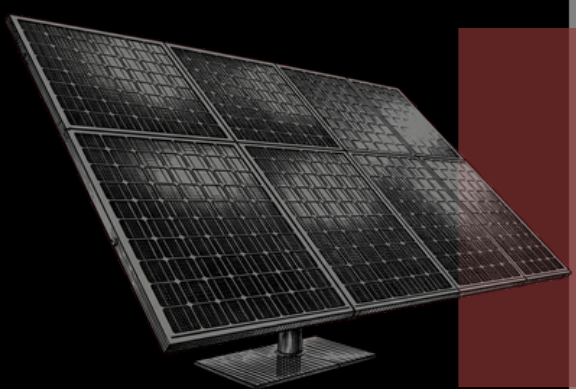
UPCOMING MARKETS AND INDUSTRIES





INNOVATION. SUSTAINABILTY. FUTURE.

FRONTIER OF THE EMERGING MARKETS

BY: CHINMAY KHARE

ABSTRACT

The global economy is passing through a structural adjustment where the emerging markets are becoming the leading sources of growth, innovation as well as industrial transformation. This paper provides a levelled analysis of the most promising emerging industries in the developing economies, their growth prospects, investment patterns, and strategic implication of the industries regarding global stakeholders. The study utilizes the existing market statistics and market forecasts to determine 12 high potential sectors, which encompass artificial intelligence and machine learning, renewable energy, biotechnology, agricultural technology, electric vehicles, space exploration, and digital health, which are changing the pattern of economic development in the world. The world has an economic growth of approximately 65 % in emerging markets, which is expected to be driven by Asia-Pacific economies in 2035 (S&P Global, 2024).

The main driver that is believed to keep this going is technological leapfrogging, infrastructure expansion, and demographic advantages. This article can offer strategic information to policy makers, investors and businesspeople who would like to take advantage of the emerging markets.

Keywords: emerging markets, economic growth, technological innovation, sustainable development, investment opportunities, digitalization.

INTRODUCTION

The over-the-last decades witnessed the growing concentration of economic power of global economies towards emerging markets. The global production, innovation, and consumption have become based on these economies that are riskier with higher growth potential (National Center for Biotechnology Information, 2017). As per the International monetary fund, the economies of BRICS together registered growth in 2024 to the tune of 4% compared to

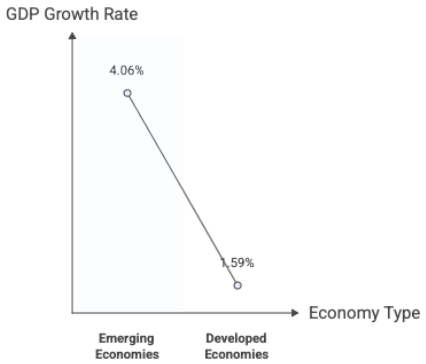
the global average of 3.3, with current consumption of close to 40% of the world economy calculated through purchasing power parity (BRICS Brazil, 2025). It is estimated that this share will continue to increase in 2025.

Such change does not cut across the board. The growth is increasingly concentrated in those industries which are consistent with such global megatrends like digitalization, sustainability, healthcare innovation, and supply chain restructuring. It is crucial to realize the location of these opportunities, as well as its regional variations, to stakeholders wishing to tap into the emerging markets. This paper recognizes and analyses the top emerging industry by using growth forecast, investment trends, and facilitating structural forces.

NEW MARKETS IN THE WORLD ECONOMY

GROWTH PROSPECTS AND GEOGRAPHICAL TRENDS

The rising market economies are projected to do much better than the developed ones in the next ten years. According to S&P global, the growth of GDP in emerging economies is projected to 4.06 % by the year 2035 as compared to the advanced economy whose growth is estimated to 1.59 %. Subsequently, it is estimated that the developed markets will play a role of approximately 65% of the global economic growth responses in this period (S&P Global, 2024).



Projected GDP Growth Rates by 2035

The economy of Asia-Pacific is still leading in this growth. It is estimated that by 2035 India will have the third-largest economy in the world and Indonesia as well as Brazil will be on the top ten list. The growth outlook of South Asia is now revised to grow by 6.5 % as of 2025, this is because of the high domestic consumption in India (Asian Development Bank, 2025). The IMF also identifies Ethiopia, India, Indonesia, the United Arab Emirates as well as China as the best contributors to the BRICS growth in 2025 (International Monetary Fund, 2025).

STRATEGIC GROWTH FACTORS

There are seven pillars in the vein of emerging market growth, and these There are seven pillars in the vein of emerging market growth, and these include, economic diversification, infrastructure growth, forming workforce skills, sustainability, digitalization, incentives to draw in foreign direct investment, and institutional reform (S&P Global, 2024).

There are three cross cutting drivers that are very influential.

To begin with, technology leapfrogging allows the process of development to take a different route by the emerging economies. One of the examples is digital payment systems where the Unified Payments Interface in India is growing the financial inclusion without depending on old banking infrastructure (Robeco, 2024).

Second, urbanization is increasing Infrastructure investment at a high rate. By the year 2030, two-thirds of the world will live in urban centres, mostly in the emerging market megacities that will push towards the need of transportation, energy, water, and telecommunication infrastructures (Robeco, 2024).

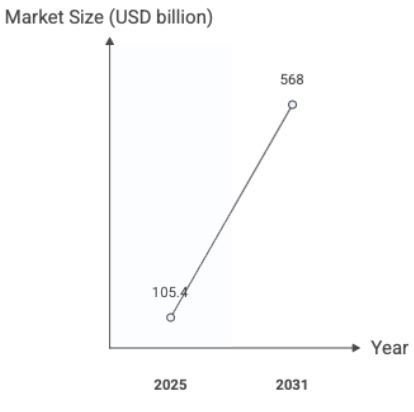
MACROECONOMIC ENVIRONMENT AND DISAGREEMENT

The emerging markets are extremely diverse. The IMF warns that large variance exists in institutional quality, geopolitical exposure, and growth models when measured in aggregate groupings (International Monetary Fund, 2025). The reconfiguration of the supply chains has offered new opportunities to countries like Vietnam, which has taken advantage of the low labour and diversification in trade to the country under the "China Plus One" strategy (Robeco, 2024).

KEY EMERGING SECTORS

MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

One of the most active and the most transformative industries is the artificial intelligence, especially machine learning. By 2025, the market of machine learning is projected to be reached at USD 105.4 billion and reach USD 568 billion in 2031, which is an increase of approximately 440 % (AltIndex via Statista, 2025).



Projected Growth of Machine Learning Market

Machine learning is increasing at a rate that is quicker as compared to other AI divisions and surpassing natural language processing and robotics.

Momentum on investment is also high. The USD 54.8 billion increase is unparalleled and noted in the Q1 2025

alone when machine learning firms raised USD 54.8 billion in a quarter. By 2031, the two countries, meaning the United States and China, will control almost half of the world market value (AltIndex via Statista, 2025). Notably, machine learning also serves as an enabling layer in a wide range of industries, including climate modelling and medical diagnostics in healthcare, and in finance and agriculture.

RENEWABLE ENERGY AND CLIMATE TECHNOLOGY

The fast development of climate technology is observed as governments and companies try to achieve decarbonization. It is estimated that global investment in clean technologies will amount to USD 670 billion in 2025 in solar, energy storage, hydrogen, and carbon capture (S&P Global, 2025). There are increasing investments in real estate decarbonization, nuclear innovation and major funding rounds in fusion energy, evidencing growing investor confidence (Climate Tech Monitor, 2025).

A substantial portion of climate tech investments is now involving artificial intelligence, which amounts to close to 15 trillion of climate tech funding in 2024 (compared to 7.5 trillion in 2023) (Climate Tech Monitor, 2025). Exceptional cleantech investment is dominated by solar photovoltaic (half of total expenditure and two-thirds of installed capacity), which is anticipated to get a newly installed more than 620 GW of new units (S&P Global, 2025).

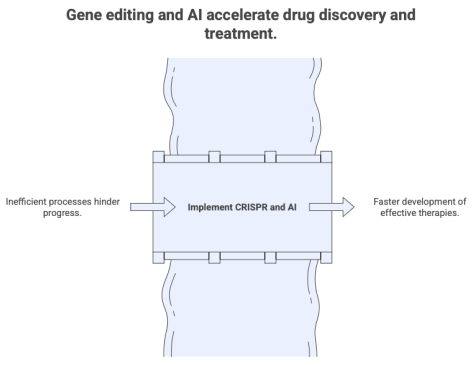
ELECTRIC CARS AND GREEN TRANSPORTATION

The electric vehicle market is considered to reach USD 713.93 billion in 2024 and more than USD 2.1 trillion in 2032 with a CAGR of 13.2% (Fortune Business Insights, 2024). This market is dominated by Asia-Pacific, which makes up more than half of the world EV sales. The dominance is on battery electric vehicles because of the efficiency in technology, as well as compliance through regulations.

PRECISION MEDICINE AND BIOTECHNOLOGY

Biotechnology is changing the field of healthcare, agriculture, and pharmaceuticals. Personalised genomics market will have a valuation of USD 12.57 billion in the year 2025 and will reach USD 52.58 billion in the year 2034, at a CAGR of 17.73 (Precedence Research, 2025). Genomic analysis and targeted drugs have taken the form of over one-third of new drugs being approved as precision medicine.

Some of the emerging technologies in gene editing, like CRISPR, are of a paradigm shift, including the recent case of Casgevy, approved to treat sickle cell disease (Mahindra University, 2025). Artificial intelligence also contributes to the acceleration of drug discovery prediction of the apparent behavior of molecules and optimization of clinical trials.



AGRICULTURAL TECHNOLOGY

The impact of the agricultural technology is essential to the emerging economies where agriculture is still at the centre of the employment and food security. The aggrotech industry is also expected to reach USD 8.15 billion today (Allied Market Research, 2024) and USD 34 billion by 2034 (Mordor Intelligence, 2024) although other sources have estimated USD 63.82 billion in 2030. Automation, robotics, IoT-based monitoring, AI analytics, and biotechnology will become sources of growth. As the current market share is dominated by hardware, the data-driven services are increasing the most rapidly (Allied Market Research, 2024).

SPACE TOURISM AND COMMERCIAL SPACE

Space tourism is a niche yet a rapidly emerging market. Market is projected to grow to USD 1.58 billion by 2025 and projected at an average CAGR of 17.5 till 2032 (Coherent Market Insights, 2025). The state intervention is still important as it takes almost half of the market activity, and reusable rocket technology will make it less expensive and allow it to be scaled up (SimpleVisa, 2025).

TELEHEALTH AND MENTAL HEALTH SERVICES

Telemedicine and mental health platforms are growing at an exceptionally fast rate. The digital mental health market is dominated by software-based solutions, and service-based solutions are increasing the fastest because of the demand in the virtual therapy and AI-assisted support tools (TowardsHealthcare, 2025). Mobile health solutions are becoming common in emerging markets to overcome the limitations of the infrastructure and allow healthcare delivery to leapfrog (Robeco, 2024).

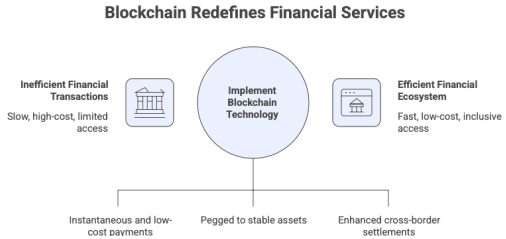
EXTENDED REALITY AND INDUSTRIAL METAVERSE

The industry metaverse market will grow by USD 48.2 billion to USD 600.6 billion in the year 2025 and 2032 respectively (Meticulous Research, 2025). Traditionally, VR devices are being supplanted by AI-based AR and MR technologies that are being used in business to facilitate training, collaboration, and industrial design (LinkedIn, 2025).

DIGITAL PAYMENTS, FINTECH, AND BLOCKCHAIN

Financial services will also be redefined by the blockchain technology which allows real time and low-cost transactions. The use of stablecoins and decentralized payment systems enhances cross-border settlements as well as financial inclusion, especially in Africa

and Southeast Asia (GeekyAnts, 2025).



Governments and other financial institutions are dedicating more effort to blockchain and central bank digital currency studies.

DIGITAL NOMAD ECONOMY

Telecommuting and moving worldwide is transforming workplaces. Digital nomad visas have been launched in countries like Estonia, and cities like Bali and Chiang Mai are trying to attract mobile workers with cheap living and good digital infrastructure (Horton International, 2024).

SUSTAINABLE MATERIALS AND CIRCULAR ECONOMY

Telecommuting and moving worldwide is transforming workplaces. Digital nomad visas have been launched in countries like Estonia, and cities like Bali and Chiang Mai are trying to attract mobile workers with cheap living and good digital infrastructure (Horton International, 2024).

STRATEGIC IMPLICATIONS AND CONCLUSION

The global economy will continue to rely on emerging markets and innovations in AI, clean energy, healthcare, agriculture, fintech, as well as advanced manufacturing as the dominant economic growth up to 2035. These markets need localized strategy, institutional backing, or human capital and infrastructure investment to succeed.

Policymakers are focused on things such as digital infrastructure, education, and regulatory stability. To the investors and business owners, the potential is to match the global megatrends and adjust solutions to the local settings. Individuals who strategically address emerging markets in the present generation will be in good positions to enjoy the next wave of the global economic growth.

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THE COMMERCIAL SPACE ECONOMY

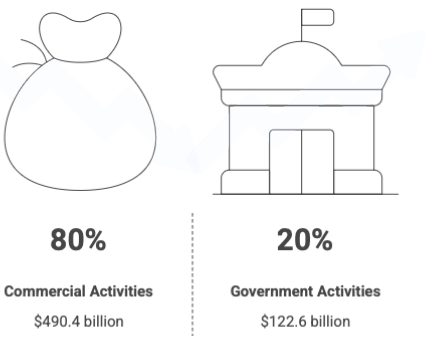
BY: JATIN MANKANI

ABSTRACT

The commercial space economy is one of the most dynamic upcoming markets which is largely driven by innovations and advancements in space technology. This article covers the key segments of this emerging economy including its growth trajectory, investment prospects, covering the opportunities for investors as well as the challenges on its path. In the age where start-ups and traditional space industries dominate discussions, space commercialisation offers a unique blend and potential similar to them.

INTRODUCTION

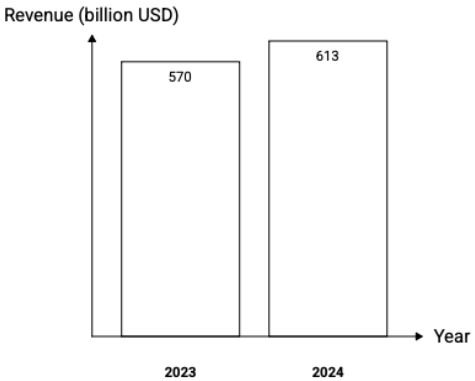
Space, which was once considered as the domain of only the governments, currently is booming as a commercial economy. A decrease in barriers to space economy through reusable rockets, satellite constellations, and in orbit services has resulted in a increase in investment in the global space economy. This economy hit $613 billion in 2024, with commercial activities comprising around 80% of it.



As the demand for connectivity, Earth observation, and other possibilities in space grows, investors foresee a high growth in this sector and high returns amid the falling costs in the industry.

MARKET OVERVIEW AND GROWTH DRIVERS:

The space economy spans in the government and commercial segments but private ventures drive it's expansion. Its growth can be seen as an annual increase in revenue of $43 billion as it went from $613 billion in 2024, from $570 billion in 2023.



The key drivers which led to such growth are:

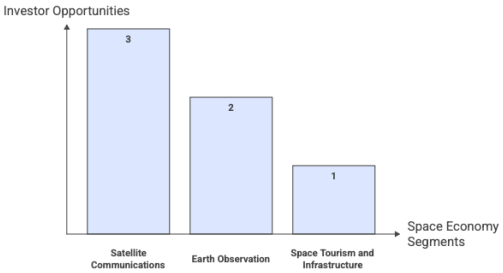
Cost Reductions: This can be prominently seen in the case of SpaceX's Falcon 9 as it successfully cut its launch price by 90%, a major milestone since 2010 which enabled frequent missions at lower cost.

Downstream Applications: Services such as the Positioning, Navigation and Timing (PNT) alone contributed $231 billion.

Its projected to grow $1.8 trillion by 2035, with a CAGR of 9%, fuelled largely by AI-integrated space tech. India's space sector, which is currently valued at $44 billion is also in alignment with reforms like IN-SPACe, thus, boosting start-ups.

KEY SEGMENTS:

The commercial space economy mainly comprises of three segments, these are mainly the Satellite Communications, Earth Observation and Space Tourism and Infrastructure. Each segment focuses on different needs and create multiple rooms for different investors.



Segments of the Commercial Space Economy

Satellite Communications: This segment particularly focuses on providing internet, TV broadcasting, and mobile connectivity worldwide. This has been successfully brought up by Starlink through its broadband network via low-earth orbit (LEO) serving underserved areas, and enabling ecotech in India and African regions. This segment was solely responsible for bringing $130 billion in 2024, serving the airlines, ships, people of rural areas and also facilitating military operations. Although, traditional geostationary satellites still work on most of the TV connections, but LEO enables faster speed (100-500 Mbps) and lower latency (under 50ms). They are also very profitable for companies which build ground stations or leasing bandwidth as it gives them a source stable revenue streams similar to telecom infrastructure plays.

Satellite Mega-Constellations:
Starlink, with it's 6,000+ satellites has targeted the global broadband and successfully generated $4.7 billion in 2024.
Earth Observation: This segment

focuses on satellites orbiting Earth and capturing images, videos, and sensor data for practical applications. They are a huge aid for farmers who can easily track down the progress of growth of their crops and other for other sections of the society as well for example they help in tracking oil spills for insurers, illegal logging for governments, and urban growth for city planners. Under this segment, the major source of revenue is selling data to these sections. In India, this supports precision farming and climate monitoring. It's Market size is around $8 billion in services, with downstream analytics as the fastest growing.

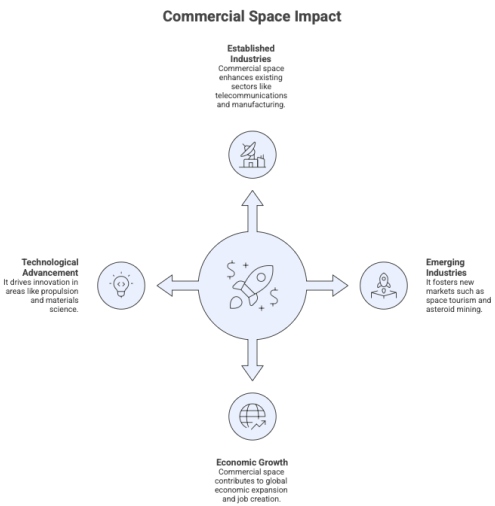
Space tourism and Infrastructure: This is also one of the emerging trend today. Companies like Virgin Galactic and Blue origin offer a suborbital tour and SpaceX is even looking towards the idea of orbital hotels. These segments are further helping in the formation of "In Space Economy " with activities like satellite refuelling, debris removal, and manufacturing taking off. There's also room for long-term, permanent stations like Axiom Space's commercial ISS successor that creates the platform where business pay to operate experiments in microgravity

Emerging Indian Dynamics: With the success of organisations like ISRO as well as private firms like Skyroot Aerospace, India is positioned as to have 10% global share. Apart from that government policies also attracts FDI (Foreign Direct Investment)

DISRUPTIVE TECHNOLOGIES:

While commercial space is an emerging economy of its own, it impacts the already established as well as other emerging industries and markets. The reasons for them are as follows:

Reusable Launch Vehicle: A traditional expendable rocket somewhere between $10,000-$20,000 per kg per orbit.



With the emergence of Reusable Launch Vehicle it has been significantly brought down all the way to $1,000/Kg. It can be evidently seen in the case of different space organisations like SpaceX's Falcon 9 that has flown its boosters over 20 times while Relativity Space's Terran R uses 3D printed engines for the purpose of rapid iteration. All this has resulted in increasing the revenue of these industries significantly but has

resulted in reducing of production of space parts and affected the industries involved in its manufacturing.

AI Automation: AI is now being used for the purpose of optimising mega-constellations for example - it was used in 6000+ satellites of Starlink, apart from that, methods like Reinforcement Learning (RL) have been successful in reducing the latency by 20-30% as compared to the classical methods by minimising queuing delays and by scheduling tasks that are vital for battery-constrained operations.

In Space Manufacturing: This technique has made possible the production of components which are generally not possible on earth. For example - production of ZBLAN optical fibres that transmits data 100 times after than current technology this is possible due to microgravity. Similarly, Pharmaceutical companies also grow protein crystals in orbit to make effective drugs. The market stands at $1.5 billion in 2026 and could reach $3.5 billion by 2030 through orbital 3D printing factories. These processes, led by robotic systems and refuel satellites are highly cost efficient and pave the way for permanent space infrastructure.

Small Satellite Platforms: There are miniature satellites such as Cubesats and Nanosats that allow companies to launch swarms instead of a single massive satellite. For instance, Planet Labs has over 200 Dove satellites that can scan the entire earth in daily basis and provides real-time data that helps monitoring agricultural activities, disaster management, and military intelligence. Costs have dropped up to 95% since 2010, opening the field to universities as well small businesses of India.

Advanced Mitigation and Sensing: They help in addressing the critical sustainability challenges for instance, over 36,000 objects are orbiting earth that are more than 10 cm in size and increase the risk of catastrophic effects. NASA's Active Debris Removal Vehicle captures defunct satellites with the use of suitable technology.

Apart from that, Block chain technologies that are already transforming supply chains in emerging markets now also look after satellite data integrity and ownership tracking.

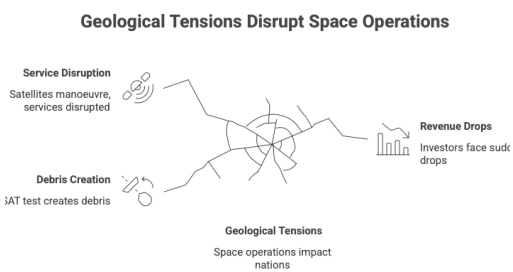
CHALLENGES AND RISKS:

Although, the commercial space economy has a multi-trillion dollar potential, investors often face hurdles such as uncertainty in these emerging market technologies. Therefore, these risks need to be carefully navigated.

Geological Tensions and Launch Disruptions: Operations happening in space such as launches, have their effect on more than one nation. For instance, in 2022, Russia's ASAT test created 1,500+ debris pieces, forcing satellites to manoeuvre and disrupted services. Apart from that, Investors in launch companies face sudden revenue drops when geopolitical events ground rockets.

Orbital Debris and Space Traffic Management: There are thousands larger than 10cm that are constantly orbiting earth and creating the risk of collisions. A single incident could trigger Kessler Syndrome-a chain reaction making orbits unusable for generations. Starlink has to manoeuvre daily just to avoid debris and incurs additional cost by burning fuel.

Regulatory Complexity: It becomes difficult to regulate when things happen at a global level. Some of the disputes which have been come so far are the between Russia and Kuwait as ITU allocates orbital slots via first-come-first-served and because of it Kuwait challenged Russia's positions in 2023.



High Barriers to Entry: There exists an extreme market concentration in the space industry as SpaceX controls 60% of global launches. While, Starlink dominates LEO broadband. New entrants require $100M+ for their first launch creating massive difficulties for entrants.

CONCLUSION:

The commercial space economy is without a doubt, one of the most compelling emerging markets, offering investors to invest in a sector projected to grow to $1.8 trillion by 2035 through a 9% compound annual growth rate. Satellite communications generate stable $130 billion annual revenues from global connectivity needs, while Earth observation delivers actionable intelligence for agriculture, defence, and climate action, much like precision farming platforms revolutionized rural economies.

Reusable rockets have reduced launch costs by 90%, enabling mega - constellations like Starlink to connect the billions of unconnected people. Through the use of In-space manufacturing, it has become easier to procure materials unattainable on Earth, from 100x faster fibre optics to superior pharmaceuticals, creating high-margin platforms.

In terms of India's perspective, its unique positioning amplifies these opportunities: with ISRO's proven capabilities, IN-SPACe reforms, and $44 billion market potential, the country targets 10% global share.

Taking into account all these factors, we can say that although the

international space economy which can be a absolutely good if we look it at the perspective of growth, has also has issues of limited energy and high need of regulation which makes it a difficult choice for investors to invest and as a result, uncertainty in its growth. Though, these factors might hinder the performance of this industry, the larger size of gain from the use of this industry cannot be ignored. The industry's potential and returns make it absolutely clear that if the right plan with a common consensus between countries is followed and executed properly by considering all the associated risks before hand can actually lead to growth across all the nations and thus lead to mutual benefit for all.

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THE CONCEPT OF RENEWED INVESTMENT INTEREST IN SILVER

BY: ADITYA SOLANKI

ABSTRACT

Silver has long been assessed as a valuable metal, the main role of which is a hedging of the silver money and a diversification of the portfolio. Nevertheless, the economic position of silver changed in the last decade dramatically. Most of the silver consumption is now in the industrial demand, especially on renewable energy, electric vehicles, electronics, and new green technologies. These technologies are scaled faster with the help of startup ecosystems, which entrench silver in innovative-based value chains.

This paper will study the new stimulated interest in silver by adopting an inclusive framework of industrial demand, green energy implementation as well as start-up supply chains. Based on secondary data sources, the global commodity survey, energy deployment statistics, and market research, the research paper seeks to show that silver has been categorically mispriced in financial markets as a defensive commodity, instead of strategic industrial-growth material. The analysis presents Silver Misclassification Hypothesis, which demonstrates that mispricing is a result of the lack of connection between the physical demand pattern and financial valuation. The results indicate that silver is becoming more and more an industrial growth instrument, investment strategies should involve energy transition indicators and start-up ecosystem dynamics instead of sticking to traditional precious-metal standards.

1. INTRODUCTION

Silver has reached a special junction in the world markets. Being one of the precious metals historically, its price has been largely pegged by the monetary aspects of inflation, currency risk and hedging demand. Although these features are still relevant, they do not reflect the high

pace of development of industrial applications of silver and the impact of new startup ecosystems on the global market. In contrast to gold, which is still mostly demanded in a financial and decorative context, silver has become indispensable to the contemporary industrial infrastructure, especially in those industries that have been fueling the process of decarbonization and electrification of the world.

The fast-tracking of the renewable energy adoption, the transport electrification, and the expansion of the novel electronics have fundamentally transformed the demand profile of silver. Photovoltaic (PV) solar panels need silver paste to facilitate the movement of electrons, and electric vehicles need silver in battery management systems, charging infrastructures, and onboard electronics, power-grid modernization and digital infrastructure uses silver in sensors, conductors, and control systems. The fast growth in scale is propelled by startups in these sectors, frequently assisted by venture capital, and which directly equates to physical silver demand, establishing long-term structural patterns of demand unlike other forms of consumption based on traditional jewellery or investment-driven consumption.

In spite of such structural changes, financial markets still perceive silver as mostly a defensive asset. This continued misclassification has led to slow price discovery, underpricing and inefficient investment plans. This disconnection has been explored in the current study that focuses on the renewed investment applicability of silver by looking at the convergence of industrial demand, adopting green energy, and start-up based supply chains.

The paper will attempt to address the following question: Why have financial markets not yet appreciated the fact that silver has been turned into a strategic industrial-growth asset? Not only does this study add to the commodity investment literature but it also offers practical guidelines to investors who want to have access to the energy- transition and technology-driven sectors of growth.

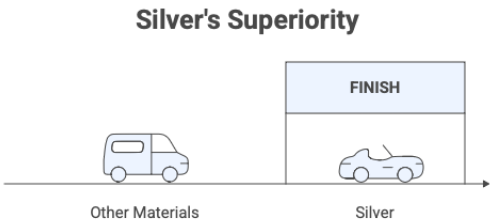
2. LITERATURE REVIEW

Within this category, the investment focuses on silver as a precious metal. Conventional financial literature classifies silver together with gold and is concerned with providing protection against inflation, currency fluctuations and systemic economic shocks. It has been reported that throughout history, silver is more volatile in comparison to gold (Blose, 2017), although it can be used to diversify the portfolios. Research has also been conducted on silver correlation with macroeconomic indicators and has shown that silver is defensive in times of economic uncertainty. Although they are informative, these studies do not facture in the huge structural change taking place in the industrial demand of silver. The monetary based valuation is the only part used by them to undervalue the ongoing

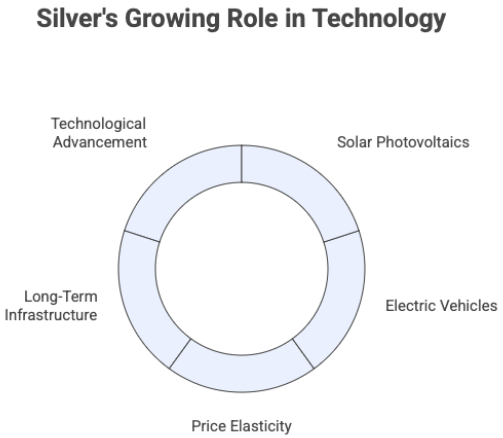
demand factors that occur due to changes in technology and energy transition.

2.2 INDUSTRIAL USES OF SILVER.

Silver is the most conductive, highest thermal conductor, and even greatest reflectivity compared to all other materials, and it is also chemically stable and cannot be replaced in electronics, renewable power production, medical devices, and chemical production (Metals Focus, 2024). The world silver consumption has also surpassed traditional jewelry and investment demand with around 56-60% of the world industrial demand contributing to the consumption.



Silver paste is used as the conductive front and back contacts in PV cells in solar photovoltaics. A MW of installed solar power accounts to approximately 20 25 kg of silver and the worldwide installations have increased over three times between 2015 and 2024 (IEA, 2024). Electric cars also increase the demand of silver, where silver is used in the battery management, high voltage contacts, sensor systems. The industrial demand is less price elastic and is rather a long-term infrastructure development and technology.



2.3 ENERGY TRANSITION AND STARTUP ECOSYSTEMS.

According to the energy transition literature, adoption of technology helps in determining the demands of materials. Silver has a crucial role in solar, battery storage and EV technologies, which gain traction with startups and venture-backed companies (Sprott Asset Management, 2024). Startups are used to accelerate the process of innovation-to-deployment, scaling technologies that are silver-intensive at a fast rate when proof-of-concept milestones are met.

The flows of financial capital into clean-tech Venture capital industries make financial capital physically translated into physical silver demand, creating feedback loops that strengthens the long-term consumption. This linkage between the startup activity and the industrial scaling is a new parameter that was not much taken into account in the analysis of investment.

2.4 RESEARCH GAP

The crossroads of the industrial demand growth, scaling through startups and misclassification of investment have not been well studied. The past literature does not discuss silver as money or record industrial uses without providing a connection with valuation. The current study addresses this gap by elaborating the Silver Misclassification Hypothesis, which combines physical demand and ecosystems of innovation with the implications of investments in a single concept.

3. RESEARCH METHODOLOGY

3.1 DATA SOURCES

The secondary data were obtained using the Silver institute world silver survey (20242025), Metals focus market reports (2024), and international energy agency renewable energy data (2024) and financial commodities reports on Reuters (20242025). Industry data concerning clean-tech venture investments was used to obtain data on startup activity.

3.2 ANALYTICAL APPROACH

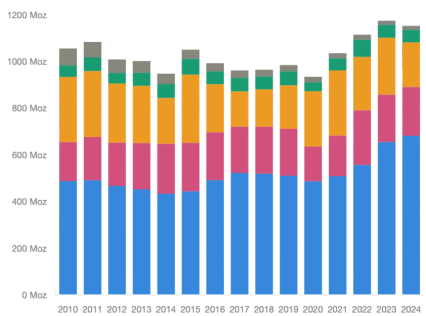
The study uses a hybrid approach to qualitative and quantitative research:
1. Demand Composition Analysis: The study of industrial vs. investment vs. jewelry consumption pattern.
2. Supply-side Challenges: Exploring mine production, dependence on by-products and regulations.
3. Startup Impact Analysis: Determining the impact of venture-backed clean-tech companies on the consumption of silver.
4. Implication in terms of investment Investment implications: Comparing precious-metal-based valuation to industrial-growth-based frameworks.
The use of triangulation involving the sources would provide strength and minimize a possible bias.

3.3 LIMITATIONS

Use of secondary data restricts granularity and it might not represent consumption by private startups fully. But when cross-validation has been established with more than one independent source then credibility is enhanced.

4. RESULTS AND DISCUSSION

The fourth assumption is that the demand of the silver will vary structurally.
The industrial demand is consuming silver by most parts of the world. The use of the solar PV, EV and electronics has changed the consumption patterns. Notably:
Solar PV: 25Kg/MW of silver is put in place.
• **EVS:** 15-20g silver per unit average.
Electronics: 10 per cent international industry silver.



Note: The values were tabulated based on Silver Institute, Metals Focus, 2024.

The statistics revealed that the long-term structural twist was towards the continuation of the industrial demand instead of cyclical demand, which is contingent on the investments.

4.2 SUPPLY CONSTRAINTS

Approximately 70 percent of the amount of base metals developed through base-metal mining forms a by-product of silver. The decline in the grade of the ore and hurdles in regulations limit the increase in the primary silver production. The CAGR of the supply of the silver mines in the last (2015-2024) is not greater than 1, whereas the industrial sector of the green technology is more than 3.

The absence of this in the arrangement is the source of the pressure of prices incessantly, and of the strategic significance of industrial use of silver.

The Additions to the Ecosystem of Startups.

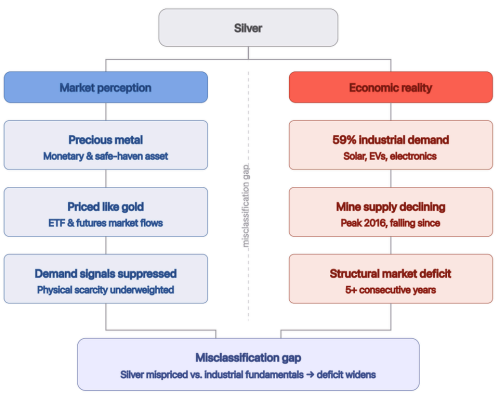
The startups also influence the demand of silver since the implementation of technologies is quickened:

- The solar manufacturing startups can be expanded in terms of capacity on a short period of time when funded.
- The suppliers of EV components refurbish initial silver-intensive chains of supply.
- The uses of the battery technology ventures complement uses of silver indirectly through the incorporation of electronics.

This kind of contribution is a novel form of contribution in comparison to the old trend of consumption that was industrial or investment based.

4.3 SILVER MISCLASSIFICATION HYPOTHESIS.

Hypothesis: Silver is not well-valued in the market because the market is viewing it as a defensive commodity but the industrial and start-up based demand would bring it much nearer towards growth metals.



This model describes the slow process of the traditional analysis of investment in finding prices, volatile and underpriced.

process of the traditional analysis of investment in finding prices, volatile and underpriced.

5. INVESTMENT IMPLICATIONS

• Asset Reclassification: Silver has to be viewed as an industrial-growth hybrid asset.
• Portfolio Strategy: Add solar deployment rates, EV deployment, and tech capex as indicators of the leading ones.
The volatility is partly structural in the sense of the misclassification of the volatility and not weakness.
Strategic Allocation: Silver is a specialized structure of industrial and monetary metals, which is liked in the movement of the diversification to an energy expansion.

6. MINI CASE STUDIES

6.1 SOLAR STARTUP: FIRST SOLAR (U.S.)

Installed 4 GW power in 2023; silver paste is employed to the extent the worth of 24 kg/MW. Premature scaling was the commitment of market-independent consumption of silver in the long term.

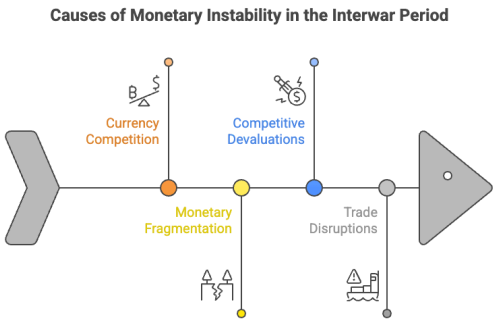
6.2 OLA ELECTRIC INDIAN START-UP.

Silver control in the batteries and motor electronics is a pointer of integration trends in the region that will affect the demand of silver.

6.3 BATTERY TECHNOLOGY: QUANTUMSCAPE (U.S.)

The most progressive in terms of industrial applications is the use of conductors in solid-state battery systems constructed with silver, and it indicates that the innovations that start-ups have created demand a material to be adopted.

7. APPENDIX A: INDICATIVE CALCULATIONS.



The industrial demand has been estimated to be accumulating far exceeding the supply of mines (which is 1,000,000 kg primary production per year) and creating structural deficit, and the Silver Misclassification Hypothesis.

8. CONCLUSION

The report of silver investment has been radically changed. It has ceased to be a financial cushion, and, unlike in the past, has become an absolute requirement to the industrial development, renewable energy and electrification. Startup ecosystems promote adoption and introduce silver in the value chain of invention and create irreducible demand and structural scarcity. The basis of this systematic underestimation can be attributed to the fact that the financial markets

went beyond and made silver a defensive resource. With the help of Silver Misclassification Framework, the investors were able to visualize the prospects of the long-term investment possibilities of silver more effectively and control the plan of the portfolio to the changes of the energy-transition mechanism and technological changes. The prediction can be made more predictable in future studies by combining the empirical illustration of the sensitivity of the silver prices to the deployment of the solar and EV.

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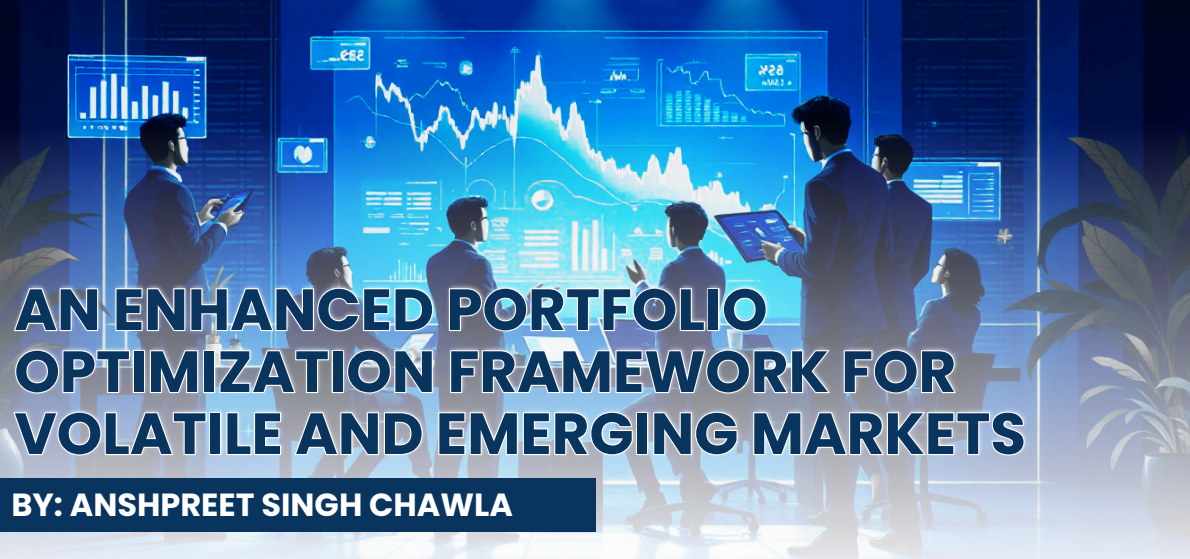

AN ENHANCED PORTFOLIO OPTIMIZATION FRAMEWORK FOR VOLATILE AND EMERGING MARKETS

BY: ANSHPREET SINGH CHAWLA

ABSTRACT

Classical mean-variance portfolio optimization, in the way proposed by Markowitz (1952), establishes an essential framework for capital allocation among assets with the purpose of obtaining the highest expected return according to the risk taken. Nonetheless, the limitations of its assumptions regarding the nature of returns and correlation between assets make it unsuitable for high-volatility markets including emerging markets and alternative assets. This research introduces an advanced portfolio optimization framework which integrates higher-order moments, robust covariance estimation, and stochastic volatility modeling. The application of Monte Carlo simulations and numerical optimization shows that the new method is able to achieve improved risk-adjusted returns as well as reduce tail exposure when compared to traditional mean-variance portfolios, thereby providing a practical framework for robust portfolio allocation in volatile market conditions.

1. INTRODUCTION

Portfolio optimization is a fundamental aspect of quantitative finance that provides a way for investors to allocate their capital according to a thought-out plan. This method takes the expected return and risk into account and balances them against each other. The classical mean-variance framework, although beautiful, presupposes that returns on assets are normally distributed and that there is no change in the covariance matrix throughout the time series. Most definitely, studies that look at high-volatility and emerging market assets challenge these two assumptions, as the returns are often found to be fat-tailed, skewed, and varied in correlation over time. Such features present a risk of treating portfolio risk as lower and hence making wrong asset allocations. This article revises classical theory to overcome these limitations. In addition to skewness and kurtosis, we also treat them as risk factors, using robust covariance estimators, and developing a portfolio optimization procedure for high-

volatility assets modeled with stochastic volatility. The methodology is supported by Monte Carlo simulations and numerical optimization techniques; thus, it offers insights concerning the practical ramifications for asset allocation and risk management.

2. LITERATURE REVIEW

Markowitz's mean-variance theory (1952) is considered the basis of modern portfolio theory, as it clearly defined the relationship between expected return and variance. However, later researches have pointed out the limits of its use in the case of high-volatility and emerging markets, mainly due to fat tails and skewed distributions (Jondeau et al., 2007).

To solve the problem of unstable empirical covariance matrices in high-dimensional or volatile datasets, robust covariance estimation techniques such as the Ledoit-Wolf shrinkage estimator have been suggested (Ledoit & Wolf, 2004). On the other hand, stochastic volatility models, introduced first by Hull and White (1987), allow asset volatility to change over time, thus capturing the empirical characteristics of volatility clustering and extreme events. Moreover, the consideration of higher moments in portfolio optimization, commonly called mean-variance-skewness-kurtosis optimization, opens up a range of realistic assessments of tail risks and asymmetry (Meucci, 2009).

3. METHODOLOGY

3.1 CLASSICAL MEAN-VARIANCE OPTIMIZATION

Let n denote the number of assets, with weight vector w=(w1,w2,...,wn), expected return vector μ=(1,...,n), and covariance matrix. The classical mean-variance optimization problem is defined as:

$$max_w E[R_p] - \frac{\lambda}{2} Var(R_p)\ s.t.\ \sum_{i=1}^{n} w_i = 1, w_i \geq 0,$$

where $R_p = w^T R$ is the portfolio return and λ is a risk-aversion parameter.

3.2 INCORPORATING HIGHER MOMENTS

To account for fat tails and skewness, the objective function is extended to include portfolio skewness and kurtosis:

$$max_w E[R_p] - \lambda Var(R_p) + \gamma_1 Skew(R_p) - \gamma_2 Kurt(R_p),$$

where λ_1 and λ_2 quantify investor preference for positive skewness and aversion to extreme kurtosis. The portfolio skewness and kurtosis are computed as:

$$Skew(R_p) = \frac{E[(R_p - E[R_p])^3]}{Var(R_p)^{3/2}}, Kurt(R_p) = \frac{E[(R_p - E[R_p])^4]}{Var(R_p)^2}$$

3.3 ROBUST COVARIANCE ESTIMATION

To stabilize the covariance matrix in volatile markets, we apply the Ledoit-Wolf shrinkage estimator:

$$\Sigma_{shrunk} = \alpha F + (1 - \alpha)\Sigma_{sample}$$

where F is a target covariance matrix (e.g., identity or constant correlation) and $\alpha \in [0,1]$ is the shrinkage intensity.

3.4 STOCHASTIC VOLATILITY MODELLING

Each asset's return is modelled using a stochastic volatility process:

$$dR_i(t) = \mu_i dt + \sigma_i(t) dW_i(t), d\sigma_i^2(t) = \kappa_i(\theta_i - \sigma_i^2(t))dt + \xi_i dZ_i(t)$$

where σi(t) is the instantaneous volatility, k_i the mean-reversion speed, θ_i the long-term variance, ξ_i represents volatility, and W_i, Z_i independent Brownian motions.

3.5 OPTIMIZATION PROCEDURE

The enhanced portfolio optimization problem, incorporating higher moments, robust covariance estimation, and stochastic volatility, does not have a closed-form solution due to its nonlinearity. The objective function:

$$max_w E[R_p] - \lambda Var(R_p) + \gamma_1 Skew(R_p) - \gamma_2 Kurt(R_p)$$

subject to $\sum w_i = 1$ and $w_i \geq 0$, is highly nonlinear because skewness and kurtosis are cubic and quartic functions of portfolio weights, respectively. Additionally, stochastic volatility introduces path dependency in R_p, further complicating optimization.

3.5.1 NUMERICAL APPROACH

To solve this problem, a Monte Carlo-based Sequential Quadratic Programming (SQP) approach is implemented:

1.)Simulate Asset Paths: For each asset i, generate M simulated return paths $R_i(t)$over a defined investment horizon using the stochastic volatility model:

$$dR_i(t) = \mu_i dt + \sigma_i(t) dW_i(t), d\sigma_i^2(t) = \kappa_i(\theta_i - \sigma_i^2(t))dt + \xi_i dZ_i(t)$$

where M is typically 10^5 to ensure convergence of higher moments.

2.)Compute Portfolio Moments: For a candidate weight vector w, compute the portfolio return R_p for each simulated path and estimate:

- Mean:

$$\hat{\mu}_p = \frac{1}{M}\sum_{j=1}^{M} R_p^{(j)}$$

- Variance:

$$\hat{\sigma}_p^2 = \frac{1}{M-1}\sum_{j=1}^{M} (R_p^{(j)} - \hat{\mu}_p)^2$$

- Skewness and Kurtosis:

$$Skew(R_p) = \frac{\frac{1}{M}\sum_{j=1}^{M}(R_p^{(j)} - \hat{\mu}_p)^3}{\hat{\sigma}_p^3}, Kurt(R_p) = \frac{\frac{1}{M}\sum_{j=1}^{M}(R_p^{(j)} - \hat{\mu}_p)^4}{\hat{\sigma}_p^4}.$$

3.)Objective Evaluation: Plug the estimated moments into the enhanced objective function and evaluate its value.

4.)Weight Update: Use SQP or other gradient-based/numerical optimization algorithms to adjust weights witeratively while respecting constraints ($\sum w_i = 1$, $w_i \geq 0$) until convergence.

5.)Convergence Criteria: Optimization terminates when the change in objective function between iterations is below a threshold , typically set to 10-6, and all constraints are satisfied

3.5.2 ROBUSTNESS METRIC

To evaluate the stability of the optimized portfolio under stochastic volatility and sample uncertainty, we introduce a new metric: Portfolio Robustness Index (PRI). The PRI measures the sensitivity of portfolio moments and optimal weights to variations in simulated paths and covariance estimation. It is defined as:

$$PRI = \frac{1}{n}\sum_{i=1}^{n} \frac{Std(w_i^{(k)})}{w_i^{opt}}$$

where:

- w_i^k are optimal weights obtained from K independent Monte Carlo simulations with different random seeds,
- w_i^{opt} is the mean optimal weight of asset *i* across simulations,
- Std(w_i^k) is the standard deviation of asset i's weight across simulations.

A lower PRI value indicates that the portfolio weights are stable across different simulated paths and covariance estimations, i.e., the model is robust. High PRI values indicate sensitivity to stochastic inputs, suggesting that the portfolio may perform inconsistently under varying market conditions.

In practice, the PRI can be complemented with moment stability measures, defined as:

$$Moment\ Robustness = \frac{Std(\hat{\mu}_p^{(k)})}{\hat{\mu}_p}, \frac{Std(\hat{\sigma}_p^{2(k)})}{\hat{\sigma}_p^2},$$

for mean and variance. Together, PRI and moment robustness provide a quantitative assessment of portfolio stability, allowing investors to judge whether an optimized portfolio is likely to retain its properties under realistic market fluctuations.

3.5.3 IMPLEMENTATION CONSIDERATIONS

- **Simulation Size:** M = 10^5 ensures convergence of skewness and kurtosis estimates; smaller M may produce noisy estimates affecting PRI.
- **Parameter Sensitivity:** PRI can be used to tune risk-aversion parameters ($\lambda, \gamma_1, \gamma_2$) to achieve a balance between expected return, tail-risk management, and portfolio stability.
- **Stress Testing:** PRI can be evaluated under stressed scenarios by increasing volatility or introducing sudden jumps in returns to evaluate robustness under extreme events.

4. NUMERICAL ILLUSTRATION

To illustrate the methodology, consider a portfolio of five high-volatility assets with expected returns $\mu=[0.12,0.15,0.10,0.18,0.09]$ and volatilities $\sigma=[0.30,0.45,0.25,0.50,0.28]$. The empirical covariance matrix is estimated from historical daily returns and adjusted via Ledoit-Wolf shrinkage ($\alpha=0.2$).

Monte Carlo simulations (10^5 paths) are used to compute portfolio skewness and kurtosis. Parameters for the enhanced objective are set as $\lambda=3$, $\gamma_1=1$, $\gamma_2=2$. The resulting portfolio assigns higher weights to assets with positive skew and lower weights to assets with extreme volatility, improving the Sharpe ratio from 0.55 (classical optimization) to 0.63 while reducing the 5th percentile loss from -15% to -11%. Stochastic volatility stress-testing reveals that this new portfolio has a greater capacity to withstand extreme market conditions.

5. DISCUSSION

The improved framework tackles multiple issues associated with

traditional mean-variance optimization. It captures the skewness and risk by integrating the higher moments which are especially very important for the emerging markets and high-risk volatility assets. The covariance estimation keeps the allocation intact despite the presence of unreliable past data and the stochastic volatility model mounts the changing risk conditions.

The drawbacks consist of the high computational demand of Monte Carlo simulations and the estimation of the higher moments being subject to the sample size. The choice of parameters (γ_1,γ_2) is still a matter of personal opinion, although a sensitivity analysis can help in making a decision. Future research could include the use of DCC-GARCH models for dynamic correlations, multi-period optimization for portfolio rebalancing, and transaction costs to more accurately simulate real-life trading.

6. CONCLUSION

The research offers evidence that the integration of higher-order moments, robust covariance estimation, and stochastic volatility can significantly improve portfolio optimization. The suggested framework generates investment portfolios that not only match investor risk preferences better but also have higher tolerance to extreme events and are more appropriate for assets in high-volatility and emerging markets. The approach not only provides a solution to the classical theory versus real-world investment problem but also sets the stage for a quantitative framework of robust portfolio allocation.

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BUILDING QUICK COMMERCE IN TIER 2 & 3 CITIES

BY: VANSHIKA AGARWAL

ABSTRACT

The quick commerce industry is booming with a current valuation of $7.1 billion and has transformed consumer behaviour through the ultra-fast deliveries of 10-20 minutes, enhancing the convenience and efficient resource use. However, its penetration remains largely confined to Tier-1 cities, leaving Tier-2 and Tier-3 cities relatively untapped. The study examines the emergence of the quick commerce market in the underserved regions by analysing the economic trade-offs, mitigation strategies, and projected outcomes for building a scalable, sustainable business model. Drawing on the recent studies and a primary survey of 25-30 respondents to gauge the current customer purchase behaviour, the study addresses challenges of the sector like profitability pressures, operational inefficiencies, and high acquisition costs, and on the demand side, low digital literacy, trust barriers, and price sensitivity limit consumer adoption, especially in Tier-2/3 cities. Sustainability issues like carbon emissions, packaging waste, and regulatory pressure pose additional challenges. Findings suggest that a revised quick commerce model, keeping it specifically tailored for Tier 2 and 3 cities, could help enable greater adoption and long-term economic viability, contributing to sustainable digital growth.

Keywords: Quick Commerce, Tier-2 cities, Tier-3 cities, Tier-1 cities, Quick delivery, Profitability, Sustainability, Supply Chain Optimization

INTRODUCTION

Quick Commerce has transformed society not only by improving convenience and efficiency but also by reshaping economic behaviour and resource allocation. However, its benefits are just restricted to the Tier 1 cities with little or almost zero penetration in the Tier-2 and Tier-3 cities, prompting us to close the technical and operational gap by

promoting better models at both the supply and the demand end. Tier-2 and Tier-3 cities experience relatively low awareness about quick commerce, partially due to the availability and accessibility of the local players, due to which the sector experiences low AOV, high CAC, and brand trust issues, and partially due to the technical gap, which creates issues in making quick commerce possible in the untapped regions. The paper aims to witness the growth of GMV, capture the local share, high consumer adoption, along with repeat orders and a sustainable environment.

STRENGTHENING PROFITABILITY AND UNIT ECONOMICS

The QC in smaller cities poses the issue of low AOV, high CAC, and limited repeat orders. Survey data indicate that above INR 500 per purchase is spent by most respondents. For improving the unit economics, minimum order thresholds and Tiered pricing models can be implemented, along with bundled offers, to encourage higher transaction values. CAC can be reduced by implementing subscription or loyalty programs, moderately preferred by the respondents. This converts one-time users into repeat customers, enhancing long-term revenue.

OPTIMIZING INFRASTRUCTURE AND COST STRUCTURES

High Capital Expenditure in Tier-2/3 cities, on warehouses, fleets, and distribution centres, increases operational costs. Logistics costs can be reduced by collaborating with local Kirana stores and retailers while leveraging established trust networks. The fixed costs can be minimized by hub-and-spoke models and shared micro-fulfilment centres while improving delivery efficiency. Competition from entrenched small retailers can be countered by partnering with the local stores. Challenges highlighted by the respondents were slower delivery times in Tier-2&3 cities, emphasizing the need for better mapping systems and expanded local branches.

EXPANDING CONSUMER BASE AND REDUCING TRUST BARRIERS

A combination of online platforms, kiranas, and retail stores is being preferred by the majority of respondents, indicating partial reliance on digital platforms. Delivery speed is reported as the most critical factor by the respondents. Adoption can be enhanced by simplifying the regional-language apps on the platforms, integrating secure UPI payments, and providing cash-on-delivery options. Respondents did not negatively view the subscription plans for weekly/monthly essentials,

indicating potential for improved retention and predictable demand.

SUSTAINABLE AND EFFICIENT OPERATIONS

Sustainability practices, like biodegradable packaging and EV fleets for last-mile delivery, have direct economic benefits and can reduce operational costs and regulatory risks. These measures also enhance the long-term profitability and social acceptability of QC operations.

POLICY ALIGNMENT AND PROJECTED ECONOMIC OUTCOMES

Incentives and subsidies can be unlocked by regulatory compliance and collaboration with government bodies on digital inclusion, labour, and environmental standards. Expected outcomes, in Tier-2/3 cities, include lower CAC through retention strategies, Tiered pricing, and bundling through higher AOV, an increase in GMV, and local economic growth through kirana partnerships. Scalability and profitability are expected.

SURVEYS CONDUCTED

The survey included 25+ participants, 78.6% aged 18-24 years, 17.9% aged 25+, and 3.5% aged <18 years. Tier-1 respondents constituted 55.6% of the respondents, 37% in Tier 2, remaining in Tiers 3 and 4.

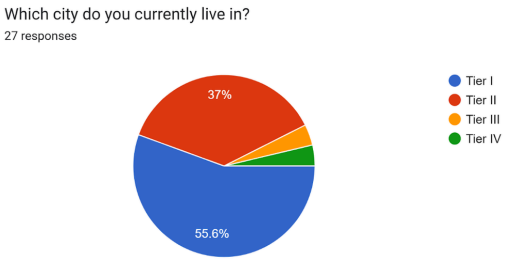

Fig 1. Respondents' city distribution
Source: primary survey conducted by the author

The findings of the survey reveal that a combination of online platforms, kirana stores, and retail outlets was used by most of the respondents for purchasing groceries and essentials. The frequency for the online purchase ranged from weekly (18.5%) to 2–3 times/month (37%), once/month (37%), and never (7.5%), with the respondent's average spending per purchase of above INR 500 (53.6%), INR 100–500 (42.9%), and below INR 100 (3.5%). This reveals that although a lot of respondents do not depend upon quick commerce platforms for their purchases, the average spend of Rs500 by more than 50%+ of the respondents suggests the developing trust and growth for quick commerce amongst people.

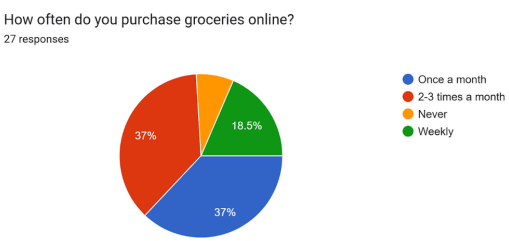

Fig 2. Frequency of online purchases
Source: primary survey conducted by the author

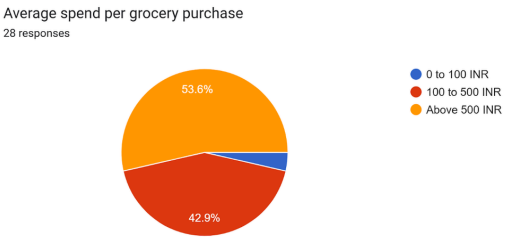

Fig 3. Average spend per purchase
Source: primary survey conducted by the author

Delivery speed is reported as the most critical factor, with 20 minutes (42.9%), 20–60 minutes (28.6%), same-day delivery (25%), and more than a day (3.5%) as answers by the respondents.

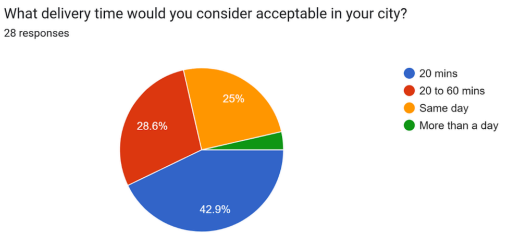

Fig 4. Acceptable delivery times
Source: *primary survey conducted by the author*

Medicine purchases are predominantly pharmacy-based (75%), with some using a mix of online and pharmacy channels (21.4%), suggesting a higher need to tap the pharma market on priority. Subscription plans for weekly/monthly essentials had moderate acceptance.

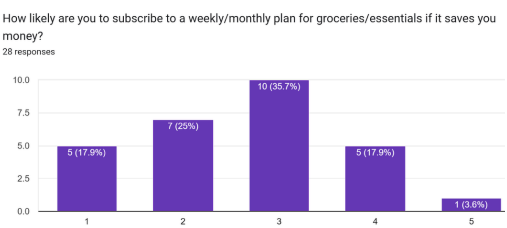

Fig 5. Acceptance of the weekly/monthly plan
Source: *primary survey conducted by the author*

The preference for the delivery categories, as reported by the respondents, was groceries (34.6%), household items (23.1%), medicines (23.1%), ready-to-eat meals (15.4%), and personal care (3.8%).

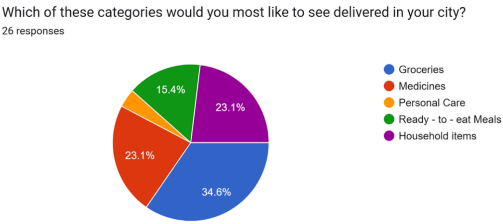

Fig 6. Preferred delivery categories
Source: primary survey conducted by the author

Awareness of QC platforms like Blinkit and Zepto is analysed below.

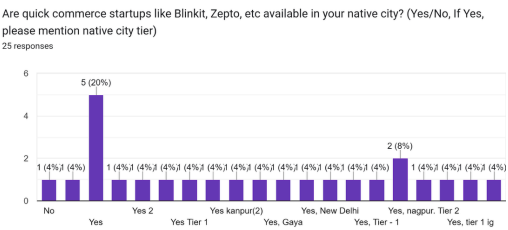

Fig 7. Awareness of quick commerce startups
Source: primary survey conducted by the author

The survey concludes that faster deliveries, reduced handling and surge charges, better mapping systems, more local branches, and affordable pricing were emphasized as key improvement areas by the respondents.

LIMITATIONS AND FUTURE SCOPE

The survey had only 25+ respondents due to the time constraints, and may not fully represent the Tier-2/3 consumers, and the operational

challenges can also vary across cities. Real-world adoption data is yet to be collected for the competitive dynamics, sustainability initiatives, EV deployment, and ESG-linked e-waste/waste-to-compost programs. The future prospects include expanding digital literacy programs, exploring subscription bundles, including launching QC cafés (like Zepto café, bistro) for high-margin items, and leveraging local collaborations to boost adoption, profitability, and retention.

CONCLUSION

As per survey insights, a clear preference for faster, affordable, and reliable deliveries is revealed. Scalable adoption, improved unit economics, and generating regional economic value can be driven by local partnerships, Tiered pricing, sustainable operations, and policy alignment, while profitability and sustainability can further be enhanced by initiatives like QC cafés and waste-to-compost programs. If quick commerce is implemented aptly in Tier 2 and 3 cities, local development and digital inclusion are promised, along with economic viability, building a strong foundation for India's commerce ecosystem.

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Primary Survey

The primary survey questionnaire used for this study can be accessed here. All responses were anonymized and analysed to derive the findings; the raw data is available upon request.

SCHOLARLY SPOTLIGHT

RELATIONSHIP BETWEEN THE ECONOMIC CYCLE AND FINANCIAL CYCLE IN INDIA

BY: NANDANA JAYAN

ABSTRACT

This study investigates the relationship between the economic cycle and the financial cycle in India during the period 2014-2022. While the economic cycle reflects fluctuations in output, employment, inflation and external balances, the financial cycle captures movements in asset prices, credit conditions, market volatility and investor sentiment. Using quarterly data, this research constructs composite indices for both cycles to examine their synchronisation, lead-lag patterns, and implications for macroeconomic stability. The economic cycle index is developed using the Current Account Balance (CAB), Consumer Price Index (CPI) and Purchasing Managers' Index (PMI), while the financial cycle index is based on the VIX Index, P/E ratio, and call spread. All series are tested for stationarity using the Dickey–Fuller test, transformed where required, deseasonalised and normalised before aggregation. Regression-based weights are applied for the economic cycle and Principal Component Analysis-based weights for the financial cycle. The findings reveal a strong positive correlation of 0.901 between the two cycles, with the financial cycle leading the economic cycle by approximately three quarters according to the Cross-Correlation matrix. This suggests that financial market conditions provide early warning signals of future changes in real economic activity. Periods in which both cycles decline simultaneously, such as during 2020-2021, are associated with deeper economic contractions. The study highlights the importance of monitoring financial cycles for macroeconomic policy formulation and economic stabilisation in India.

INTRODUCTION

The economic cycle or business cycle refers to economic fluctuations in the economy between periods of expansion and contraction. There are namely four phases of the economic cycle:

1. **Expansion**: During the expansion

phase, interest rates are lower making it easier for households and businesses to borrow and utilise credit. There is a growth in demand for goods and services which results in producers increasing production to meet the demand. The increase in production is followed by an increase in employment and capital investment. Corporate profits are also on the rise leading to an increase in GDP.

2. **Peak**: At this stage, the economy reaches the maximum rate of growth. As demand rises, there will be a point where supply cannot meet demand. This phase could be characterised by a rise in production costs which the producers may ultimately transfer to consumers in the form of high prices. Overall, there may be a rise in inflation,
3. **Contraction**: At the peak of the economy, demand is stagnant but in contraction, demand starts to fall. As a result, production, employment level and investment begin to decrease along with the demand. It is also accompanied by a fall in prices, as well as income. Contraction is generally followed by recession.
4. **Recovery**: The recovery phase is after the economy hits its trough i.e. a point where demand and supply are at their lowest. In this stage, the economic cycle starts again. Policies enacted during the contraction phase are effective. Demand ramps up again, followed by a rise in production, employment, profits, prices and GDP.

What is the financial cycle?

The financial system can be thought of as economic fluctuations that stem directly from the financial system. They refer to the recurring patterns of expansion and contraction in the financial system of an economy over time. The phases of the financial cycle are similar to that of the economic cycle and can be understood as below:

1. **Expansion**: During this phase, economic activity is generally robust, and financial conditions are favourable. Credit is readily available, interest rates are low, and asset prices, such as stocks and real estate, tend to rise. Investors and businesses are optimistic, leading to increased borrowing, investment, and spending.
2. **Peak**: The peak phase represents the height of the financial cycle. It is characterised by excessive optimism, exuberant asset price valuations, and high levels of leverage. Speculative behaviour and risk-taking are prevalent, driven by the belief that the prosperity will continue indefinitely. However, the foundations of the financial system may become increasingly fragile and vulnerable to shocks.
3. **Contraction**: The contraction phase, also known as the downturn or bust, occurs when the financial imbalances built up

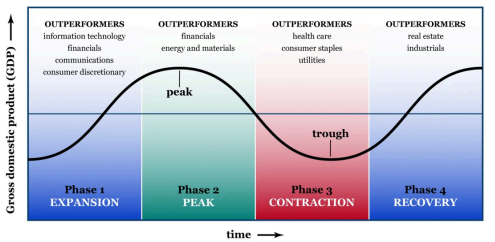
during the peak phase start to unwind. It is marked by a slowdown in economic activity, falling asset prices, tightening credit conditions, and increased risk aversion. Lenders become more cautious, leading to reduced lending and higher borrowing costs. This phase often coincides with recessions or economic downturns.

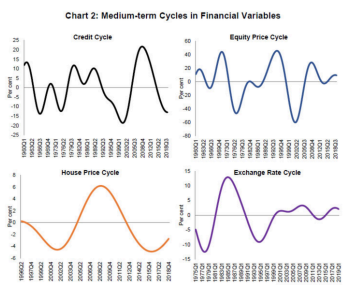
4. **Trough**: The trough phase represents the bottom of the financial cycle, where economic activity and financial conditions reach their lowest point. Asset prices may have bottomed out, credit conditions are tight, and investor sentiment is pessimistic. However, the trough phase also sets the stage for the subsequent recovery and expansion phase, as excesses are purged from the system, and opportunities for growth emerge.

LITERATURE REVIEW

Behera and Sharma (2019) provide direct evidence that India does exhibit a distinct financial cycle. Using three cycle-extraction techniques (turning-point dating, spectral analysis, and band-pass filtering) on quarterly credit, equity, housing-price and exchange-rate data (1960–2018) and then applying principal-component analysis to these asset-market cycles, they construct an aggregate financial-cycle index. They find "a well-defined financial cycle in India" whose expansionary phases consistently foreshadow future GDP slowdowns. In fact, when the downswing of this financial cycle coincides with the business-cycle trough, output contractions are much deeper. Consistent with other countries' experience, Behera and Sharma also note that India's financial cycle tends to last longer and have larger amplitude and volatility than its business cycle.

Four phases of an economic cycle





Borio (2012) offers a similar perspective from a U.S. context: he "constructs" a U.S. financial cycle by combining credit, leverage (credit/GDP) and house-price series via turning-point methods, and shows it fluctuates at a much lower frequency than the conventional business cycle (roughly 16 years on average vs. 1–8 years). Crucially, Borio finds that recessions coinciding with the trough of the financial cycle are "especially severe". Kose et al. (2012) broaden this analysis by using data from 44 countries (1960–2010) and regression models to link business-

cycle and financial-cycle fluctuations. They show that severe global recessions are almost always accompanied by financial dislocations – "various financial disruptions, including severe contractions in credit and sharp declines in asset prices". In other words, banking crises and asset-price busts tend to amplify output downturns. Together, these studies establish that financial cycles are real, long-period phenomena that materially interact with GDP cycles. They justify constructing composite credit-and-asset-price indices to capture India's financial cycle, as we do for 2014–2022, because such indices can provide useful lead indicators of economic stress. In sum, the methodologies and findings of Behera and Sharma, Borio, and Kose et al. underscore the importance of monitoring aggregate financial-cycle indicators alongside the business cycle, and motivate the present study's composite-index approach to forecasting India's macroeconomic cycles.

INTRODUCTION

Construction of Economic Cycle and Its Analysis

The economic cycle has been constructed using the following indicators from 2014 to 2022:

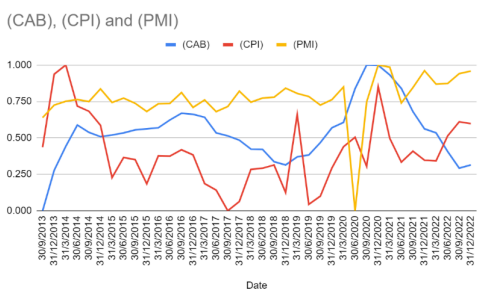
- Current Account Balance
- Consumer Price Index
- Purchasing Managers's Index

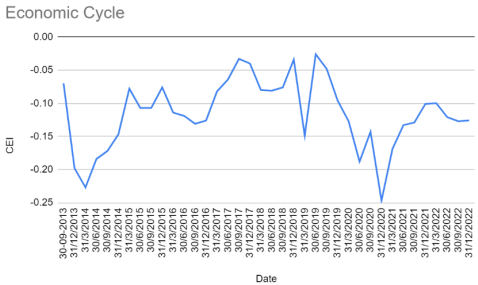
Data cleaning and preparation:
The three indicators have been checked for stationarity using the Dickey-Fuller test. Then the data has been converted to stationary data if the test revealed the data set to be non-stationary by taking the first-order difference. This step was followed by checking for seasonality and then deseasonalizing the data. Finally, it has been normalised for data comparison and uniformity.

Creating a composite index:
In order to create a composite index, weights have been assigned to each variable in accordance with regression analysis with GDP growth. PMI has been given a negative weight because it moves inversely with inflation and decrease in imports.

The weights assigned is as follows:

Weights (as per regression analysis)	Correlation coefficient	Weight (Out of 1)
CAB	0.114561	0.308
CPI	0.226001	0.608
PMI	0.031345	0.084
total	0.371907	1.000





Weights (On the basis of Information sent)	Raw weights	Weights (Out of 1)
VIX	0.099	0.82
PE ratio	0.014	0.12
call spread	0.008	0.06
Total	0.121	1

Construction of the Financial Cycle and its Analysis

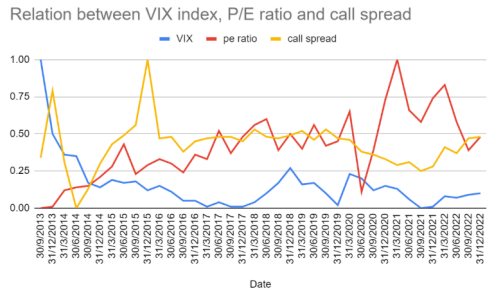
The financial cycle has been constructed using the following indicators from 2014 to 2022:

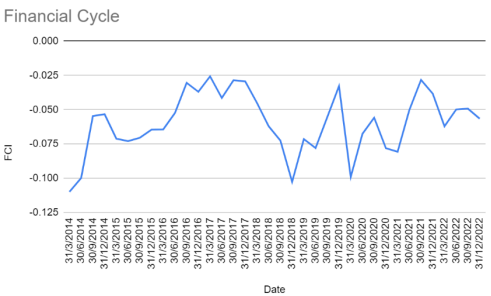
- VIX Index (Forex Market)
- P/E ratio (Stock Market)
- Call Spread (Money Market)

Data cleaning and preparation:
The three indicators have been checked for stationarity using the Dickey-Fuller test. Then the data has been converted to stationary data if the test revealed the data set to be non-stationary by taking the first-order difference. This step was followed by checking for seasonality and then deseasonalizing the data. Finally, it has been normalised for data comparison and uniformity.

Creating a composite index:
In order to create a composite index, weights have been assigned according to data provided by secondary research which used Principal Component Analysis.

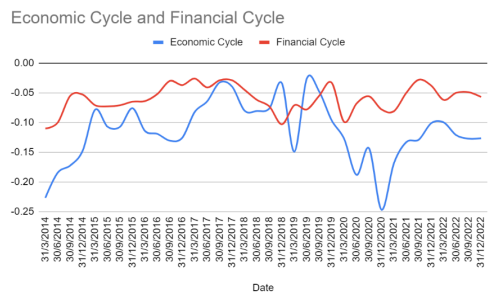
The weights assigned are as under:





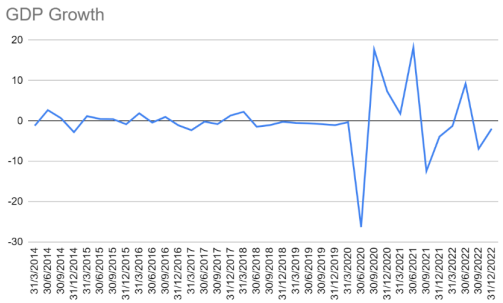
FINDINGS & DISCUSSIONS

Relationship between Economic and Financial Cycle



Observations:

1. By observation, there seems to be a strong correlation between the economic cycle and the financial cycle. Regression analysis on the composite economic index and composite financial index revealed a correlation coefficient of 0.901. Peaks in the financial cycle are often accompanied by peaks in the economic cycle and vice-versa and the same can be observed with regard to troughs.
2. The economic cycle seems to lag behind the financial cycle with a lag of approximately 3 quarters (see Appendix). The troughs in the financing cycle serve as early warning signals for the weakening of economic activity in the future.
3. This means that financial cycles can be used to predict recessions in advance and monitoring the cycles can help to minimise the effect of recessions through appropriate policy measures.
4. The duration of the economic cycle seems to be about 6 years (2014/Q1-2020/Q4). From the graph, it is difficult to gauge the duration of the financial cycle. This could mean that the length of the financial cycle extends beyond the time frame taken in this study (9 years).
5. Moreover, it can be observed that whenever the downturn of the financial cycle corresponds exactly with the downturn of the economic cycle, the recession seems to be much deeper with reference to fall in GDP growth.



RECOMMENDATIONS AND AREAS OF IMPROVEMENT

Following are the areas of improvement which I have identified after conducting the study. If I or a third party is re-conducting or replicating the research the following alterations is recommended to have made:

1. Number of variables- The number of indicators used to construct the composite indexes should be increased. Three indicators for each composite index are insufficient to have a satisfactory picture of the cycle and its movement. Therefore, if re-conducting the research more economic, financial and banking indicators should be taken into account.
2. Selection of variables- In this study, variables were selected based on the researcher's judgement and sufficient scientific backing could not be given to the selection of variables. The next time, indicators should be used that have more weightage on conditions. Furthermore, it is recommended to choose

indicators that move in the same direction with regard to changes in conditions in order to ensure better clarity.

3. Time period- The length of the financial cycle which is said to be longer than that of the economic cycle could not be identified because the time period taken for the study was too short. Therefore it is recommended that a longer time period be taken the next time (more than 15 years).

CONCLUSION

In conclusion, this research delved into the intricate relationship between the economic cycle and the financial cycle in India during the period from 2014 to 2023. Through a comprehensive analysis of various economic indicators, it was evident that these cycles are interconnected and exhibit significant influence on each other.

The findings revealed that the economic cycle in India during the specified timeframe experienced notable fluctuations, characterised by periods of expansion and contraction. These fluctuations were closely linked to the financial cycle, which demonstrated similar patterns of expansion and contraction, with some time lags. Furthermore, careful observation of each cycle can be used as an early warning signal of change in activity and if done, can help place suitable policy measures in place to minimise fluctuations and increase stable economic growth.

Appendix

	X-Composite Economic Index		Y-Composite Financial Index								
	Cross Correlation Matrix										
	X+5	X+4	X+3	X+2	X+1	X	X-1	X-2	X-3	X-4	X-5
Y+5	0.18	0.17	-0.14	-0.40	-0.27	-0.45	-0.44	-0.19	0.02	-0.17	-0.32
Y+4	0.31	0.18	0.16	-0.14	-0.40	-0.27	-0.45	-0.44	-0.20	0.00	-0.17
Y+3	0.16	0.31	0.19	0.16	-0.14	-0.40	-0.27	-0.42	-0.41	-0.16	0.05
Y+2	0.34	0.16	0.32	0.18	0.16	-0.14	-0.40	-0.25	-0.38	-0.39	-0.09
Y+1	0.20	0.34	0.16	0.30	0.18	0.16	-0.15	-0.38	-0.22	-0.41	-0.29
Y	0.26	0.22	0.36	0.16	0.30	0.18	0.16	-0.11	-0.30	-0.09	-0.27
Y-1	0.48	0.30	0.26	0.38	0.16	0.31	0.20	0.22	-0.01	-0.12	0.02
Y-2	0.42	0.48	0.31	0.27	0.38	0.16	0.32	0.20	0.22	0.02	-0.13
Y-3	0.39	0.41	0.48	0.30	0.28	0.39	0.14	0.29	0.14	0.11	-0.03
Y-4	0.30	0.37	0.39	0.40	0.29	0.27	0.31	0.18	0.33	0.17	0.24
Y-5	0.09	0.3	0.35	0.31	0.36	0.27	0.21	0.36	0.28	0.51	0.34

	X-Composite Financial Index		Y-Composite Banking Index							
	Cross Correlation Matrix									
	X+4	X+3	X+2	X+1	X	X-1	X-2	X-3	X-4	
Y+4	-0.69	-0.79	-0.71	-0.34	-0.16	0.24	0.33	0.35	0.19	
Y+3	-0.46	-0.62	-0.74	-0.70	-0.46	-0.37	0.06	0.02	-0.05	
Y+2	-0.17	-0.46	-0.64	-0.76	-0.78	-0.59	-0.52	-0.24	-0.34	
Y+1	0.31	-0.17	-0.53	-0.68	-0.81	-0.86	-0.70	-0.66	-0.52	
Y	0.52	0.17	-0.24	-0.50	-0.56	-0.76	-0.81	-0.36	-0.33	
Y-1	0.84	0.66	0.12	-0.28	-0.50	-0.59	-0.82	-0.70	-0.37	
Y-2	0.62	0.53	0.23	-0.23	-0.41	-0.38	-0.46	-0.85	-0.69	
Y-3	0.35	0.02	-0.01	-0.20	-0.41	-0.25	-0.17	-0.60	-0.86	
Y-4	0.16	-0.10	-0.35	-0.24	-0.24	-0.30	-0.06	-0.11	-0.42	

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YOUNG ENTREPRENEURSHIP AND ECONOMIC TRANSFORMATION: A REVIEW OF CAPITAL MARKETS, GEOPOLITICS, AND INDIA'S STARTUP-LED GROWTH

BY: SENJUTI PAL

ABSTRACT

Entrepeurship among young adults-particularly college students-has moved from the periphery of economic activity to the centre of contemporary startup and investment discourse. Enabled by advances in digital technologies, artificial intelligence (AI), and sustainability-oriented innovation, youth-led ventures are increasingly influencing patterns of capital formation, employment creation, and long-term economic growth. This review article synthesizes evidence from institutional datasets, policy publications, and leading consulting firm reports to examine how young entrepreneurship interacts with venture capital, public equity markets, and broader investment ecosystems.

With a specific focus on India, the article analyses how demographic scale, policy support, and capital market integration have positioned youth-founded startups as contributors to GDP growth, productivity gains, and technological competitiveness. The review further explores the role of stock markets in providing liquidity, valuation benchmarks, and governance discipline as startups transition from early-stage experimentation to scalable enterprises. By identifying gaps in the existing literature-particularly concerning capital efficiency, governance quality, and public-market readiness of youth-led firms-the article highlights directions for future research relevant to investors, policymakers, and startup ecosystem stakeholders.

INTRODUCTION

Entrepreneurship has traditionally been associated with professional maturity, accumulated capital, and industry experience. In recent years, however, this understanding has been increasingly challenged. Across both advanced and emerging economies, young adults-and notably college students-are entering entrepreneurial activity at unprecedented rates. What distinguishes this wave is not merely

the age of founders, but the sectors in which they operate and the speed at which ventures are formed, funded, and scaled.

Digital platforms, artificial intelligence, and sustainability-driven business models have significantly lowered entry barriers, allowing young founders to experiment with limited capital and rapid feedback cycles. At the same time, heightened uncertainty in traditional labour markets has altered risk perceptions among young individuals. Entrepreneurship has increasingly emerged as a strategic response to evolving economic conditions rather than an act of exceptional risk-taking.

This review article examines the rise of young entrepreneurship through the lens of investing and startups. Drawing on secondary literature and consulting firm analyses, it situates youth-led ventures within broader processes of capital allocation, GDP growth, and geopolitical competition, with particular emphasis on India's rapidly expanding startup ecosystem.

GLOBAL TRENDS IN YOUTH ENTREPRENEURSHIP

Recent global evidence suggests that young adults account for a substantial share of new business formation. According to aggregated entrepreneurship statistics reviewed by Hostinger (2025), young entrepreneurs lead new business creation in nearly 80 percent of studied economies. Furthermore, approximately 12-13 percent of the global working-age population was engaged in entrepreneurial activity by late 2024.

TABLE 1: SELECTED GLOBAL INDICATORS OF YOUTH ENTREPRENEURSHIP

Indicator	Estimate	Source
Economies where young adults lead new business creation	~80%	Hostinger (2025)
Share of working-age population engaged in entrepreneurship	~12-13%	Hostinger (2025)
Projected annual growth of global startup ecosystems (2025)	~21%	PwC (2022)
Potential global GDP gain from closing entrepreneurship participation gaps	~$12 trillion	McKinsey (2021)

Sources: Hostinger (2025); PwC (2022); McKinsey & Company (2021)

The nature of these ventures reflects structural changes in technology and markets. College students increasingly launch micro-startups in domains such as AI-enabled services, content monetisation, platform-based commerce, and sustainability-focused solutions. As noted by AGI Education (2025), these ventures often operate with low overheads and rely on scalable digital infrastructure, allowing for early revenue generation without heavy capital expenditure.

Taken together, the literature suggests that youth entrepreneurship is not confined to informal or subsistence activity. Instead, it represents a growing segment of innovation-driven enterprise with implications for investment strategies and long-term growth trajectories.

INDIA'S YOUTH ENTREPRENEURSHIP LANDSCAPE

India offers a distinctive case due to its demographic composition and ecosystem scale. With over 140,000 registered startups, India has emerged as the world's third-largest startup economy (T-Hub, 2024).

According to the India Brand Equity Foundation (2025), startups contributed approximately USD 140 billion in economic value in FY2023, underscoring their growing macroeconomic relevance.

Student and youth participation is an increasingly visible component of this ecosystem. AGI Education (2025) estimates that student-led and youth-driven startups contribute roughly 4-5 percent of innovation-linked GDP value, supported by projected employment growth rates of around 24 percent annually through 2027. These figures suggest that youth entrepreneurship in India is transitioning from experimentation to economic substance.

From an investment perspective, this expansion broadens the pipeline of early-stage ventures while also intensifying competition for capital. The growing presence of young founders has implications for valuation practices, founder-investor dynamics, and governance expectations.

CAPITAL FORMATION AND THE ROLE OF STOCK MARKETS

While venture capital and angel investment dominate early-stage funding narratives, reviewed literature highlights the increasingly important role of stock markets in the startup lifecycle. According to FasterCapital (2025) and WhyE (2023), public capital markets provide liquidity, valuation discovery, and exit mechanisms that extend beyond the constraints of private funding.

For startups founded by young entrepreneurs, access to public markets serves three critical functions. First, it enables capital scaling beyond venture rounds, particularly for technology-intensive firms. Second, it facilitates employee stock ownership, aligning incentives in competitive labour markets. Third, it introduces governance discipline through disclosure and regulatory oversight.

From an investor standpoint, this integration allows broader participation in innovation-driven growth. As more youth-founded firms mature rapidly-especially in fintech, software, and AI-public markets increasingly function as complements to venture capital rather than mere exit routes.

GDP CONTRIBUTIONS AND MACROECONOMIC IMPACT

A recurring theme across reviewed reports is the contribution of entrepreneurship to GDP growth. McKinsey & Company (2021) estimates that a 50 percent increase in founding activity could potentially double startup-generated economic value to €2.3 trillion by 2030 in select economies. Similarly, KPMG (2024) projects that India's startup ecosystem could contribute approximately USD 1 trillion annually to the economy by 2030.

TABLE 2: INDIA-SPECIFIC STARTUP AND YOUTH ENTREPRENEURSHIP INDICATORS

Indicator	Estimate	Source
Number of startups (India)	140,000+	IBEF (2025)
Startup contribution to GDP (FY23)	~$140 billion	IBEF (2025)
Student/youth contribution to innovation & GDP	4-5%	AGI Education (2025)
Startup employment growth rate (projected)	~24% annually (till 2027)	AGI Education (2025)
Projected startup contribution by 2030	~$1 billion	KPMG (2024)

Sources: IBEF (2025); AGI Education (2025); KPMG (2024)

Technological innovation further amplifies this impact. A joint BCG-FICCI report estimates that AI alone could add USD 15.7 trillion to global GDP by 2030, with startups playing a central role in commercialisation and deployment (Boston Consulting Group, 2025). Deloitte (2025) projects India's GDP growth in the range of 6.4-6.8 percent in FY26, highlighting the role of domestic demand, digital adoption, and entrepreneurial capacity.

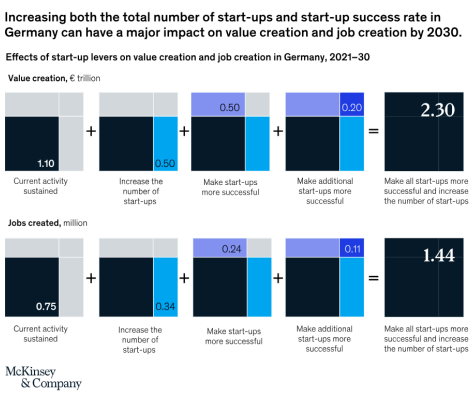

Figure1: Entrepreneurship Projections
Sources: McKinsey & Company. (2021) Entrepreneurship Zeitgeist 2030

These projections underscore the growing interdependence between entrepreneurship, technological diffusion, and macroeconomic performance.

GEOPOLITICS, TECHNOLOGY, AND STRATEGIC COMPETITION

Beyond economic growth, entrepreneurship increasingly intersects with geopolitics. Innovation capacity has become a determinant of strategic influence, shaping supply chain resilience, technological sovereignty, and energy transitions. Countries with strong pipelines of young entrepreneurs gain advantages in emerging domains such as AI, climate technology, and digital public infrastructure.

India's youth-led startup ecosystem aligns with broader geopolitical shifts, including supply chain diversification and global demand for technology services. Deloitte (2025) emphasizes that India's young population is a critical enabler of green jobs and long-term sustainability. From a strategic standpoint, nurturing youth entrepreneurship contributes not only to growth but also to national competitiveness.

LIMITATIONS AND GAPS IN EXISTING LITERATURE

Despite extensive reporting, the literature on youth entrepreneurship exhibits notable gaps. First, survivorship bias remains a concern, with limited longitudinal data on failure rates and long-term firm performance. Second, governance quality in youth-founded firms remains under-explored, particularly as startups transition to public

markets. Third, existing studies offer limited insight into capital efficiency-specifically whether early access to funding improves productivity outcomes.

Addressing these gaps is essential for designing informed investment strategies and policy interventions.

DIRECTIONS FOR FUTURE RESEARCH

This review demonstrates that young entrepreneurship has evolved into a structural force shaping startup ecosystems, capital markets, and economic growth. In India, demographic advantages, supportive policies, and expanding capital market integration amplify these effects, positioning youth-founded ventures as contributors to GDP growth and technological advancement.

Future research should focus on longitudinal firm outcomes, governance frameworks, and the interaction between youth entrepreneurship and public equity markets. For investors and policymakers alike, understanding these dynamics will be critical to ensuring that the current surge in young entrepreneurship translates into sustainable and inclusive economic growth.

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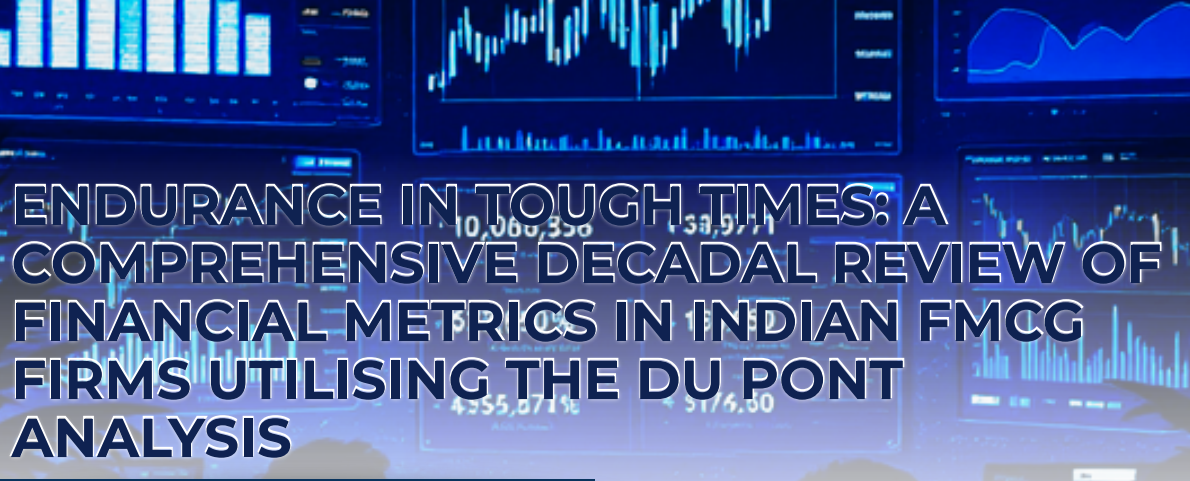

ENDURANCE IN TOUGH TIMES: A COMPREHENSIVE DECADAL REVIEW OF FINANCIAL METRICS IN INDIAN FMCG FIRMS UTILISING THE DU PONT ANALYSIS

BY: ROHAN JHA

ABSTRACT

The Fast Moving Consumer Goods (FMCG)sector plays a vital role in India's economic development, contributing 2.5% to the nation's GDP and ranking fourth in terms of economic contribution, making it an indispensable part of the country's growth story.By integrating manufacturing, distribution, and retail, the FMCG sector stimulates rural employment and economic development.The CII report identifies the FMCG sector as a key driver of economic growth, providing direct employment for over 10 million individuals.

This research undertakes a comprehensive examination of the financial performance and stability of past one decade i.e, from 2014/15 to 2023/24, of five prominent FMCG companies (HUL, ITC, Godrej, Dabur & Britannia) listed on NSE and BSE, leveraging the 5 point Du-Pont analysis to assess ROE drivers, amidst India's burgeoning FMCG market ($167 billion in 2023, projected to reach $220 billion by 2025).

Keywords: FMCG Sector, 5 point Du-Pont model, Return on Equity, Financial Leverage & 2 way ANOVA.

INTRODUCTION:

Step into the realm of Du Pont Analysis, a financial framework that distills the Du Pont corporation's innovative spirit and leadership expertise into a powerful tool for businesses seeking to navigate the complexities of the modern market and achieve sustained growth.Originating in Du Pont's transformative decade of the 1910s, the DuPont analysis has matured into a versatile toolset, enabling businesses to boost profitability, harness growth momentum, and cultivate resilience in an ever-evolving financial landscape.This framework's granular analysis of return on equity yields unprecedented clarity, facilitating the identification of submerged strengths, vulnerabilities, and untapped potential, and guiding data-driven initiatives to elevate financial results.

Unlock exceptional financial results with the DuPont analysis, a comprehensive framework that provides:

- Crystal-clear financial visibility.
- Pinpointed areas for enhancement.
- Data-driven strategic planning.

Unravel the mysteries of return on equity with the robust five-point DuPont analysis, a precision framework that deconstructs it into five critical components: profit margin, asset turnover, financial leverage, tax efficiency, and interest burden. This comprehensive approach uncovers a rich landscape of financial insights, empowering executives to make informed decisions.By embracing this holistic approach, businesses can synchronize expansion plans, optimization initiatives, and visionary leadership, culminating in a durable legacy of success.A timeless financial analysis framework has enabled businesses to make informed decisions and achieve remarkable success.

Using the DuPont framework, this study conducts a nuanced analysis of the FMCG Sector's financial performance, analyzing the individual and collective effects of interest expenses, tax obligations, asset utilization, net profit margins, and financial leverage on long-term financial stability, and providing a comprehensive understanding of the sector's financial dynamics.

REVIEW OF THE LITERATURE:

Citra Shahnia and Endri's groundbreaking 2020 study delved into the financial health of seven Jakarta Stock Exchange-listed companies, utilizing DuPont analysis to assess operational efficiency from 2014-2018. The findings emphasized liquidity's crucial role in maintaining stability and highlighted PT Alakasa Industrindo Tbk's remarkable ability to propel sales volume through effective activity ratios.

S. Christina Sheela and Dr. Karthikeyan's pivotal 2012 investigation shed light on the financial performance of India's top pharmaceutical players - Cipla, Dr. Reddy's Laboratories, and Ranbaxy Pharmaceuticals - over the 2003-2012 period. By leveraging DuPont analysis, they demonstrated how contextualized metrics and relative benchmarking enable a more precise and comprehensive understanding of corporate financial health.

Singhal and Narang's research (2016) examined the stability of India's Oil and Gas sector during the 2008 global economic downturn. Their DuPont Analysis and T-test revealed that ONGC Ltd and Reliance Industries Ltd experienced significant ROE volatility, primarily driven by financial leverage, operational performance, and strategic asset utilization – key indicators of sector vulnerability.

A comprehensive study by **K. Bhagyalakshmi** and

Dr. S. Saraswathi (2019) evaluated the financial health of 10 leading automobile companies on the NSE from 2013 to 2017. By decomposing ROE into equity multiplier, net profit margin, and asset turnover ratio, they uncovered a significant interrelationship between ROE, ROA, and ROCE, underscoring the importance of efficient asset utilization in maximizing shareholder returns.

RESEARCH GAP:

A research void exists in understanding the financial performance of the FMCG sector, which has become a crucial component of the global economy over the past decade (2014-15 to 2023-24). This study seeks to bridge this gap by employing the 5-point Du Pont model to dissect key financial ratios and their interrelationships, thereby illuminating the sector's financial dynamics and addressing a significant research gap.

PURPOSES:

This study's research design is predicated upon the following objectives.

(1). This study leverages the Du Pont model to undertake a granular examination of the financial performance of FMCG sector entities, elucidating the role of five salient factors in their financial outcomes.

(2). The study objectives include analyzing the statistical relationships between financial ratio metrics.

RESEARCH QUESTIONS:

(1). **H0: μ1 = μ2 = μ3 = μ4 = μ5 (Company factor):** There is no significant difference in the means of the variables (industry performance) across different companies (HUL, ITC, GODREJ, DABUR, BRITANNIA), against **H1: μ1 ≠ μ2 ≠ μ3 ≠ μ4 ≠ μ5,** there is a significant difference in the means of the variables (industry performance) across different companies.

(2). **H0: μ2014-15 = μ2015-16 = … = μ2023-24 (Year factor)**, There is no significant difference in the means of the variables (industry performance) across different years (2014-15 to 2023-24)., against **H1: μ2014-15 ≠ μ2015-16 ≠ … ≠ μ2023-24,** there is a significant difference in the means of the variables (industry performance) across different years.

RESEARCH METHODOLOGY & DATABASE:

The research conducts a comprehensive financial analysis of prominent FMCG entities, leveraging the DuPont model's 5-step methodology to gauge sector-wide resilience and financial sustainability.The study's FMCG sample was constructed following a comprehensive review of financial data accessibility, accuracy, and reliability. The investigation utilized a comprehensive dataset comprising annual reports from selected FMCG companies, augmented by

authoritative website sources.

A decade-long time-series financial assessment (2014-15 to 2023-24) of five esteemed FMCG companies - HUL, ITC, Godrej, Dabur, and Britannia - is undertaken, leveraging financial ratios such as assets turnover, net profit margin ratio, & return on capital employed, statistical tools such as means, standard deviation and for hypothesis testing 2-way ANOVA has been used.

RESULTS & DISCUSSION:

Interest Burden Ratio: The interest burden analysis examines the impact of interest expense on net income, providing insight into a company's ability to manage debt risk and meet interest obligations. A high interest burden may indicate financial distress if earnings are insufficient to cover interest expenses, highlighting the need for effective debt management strategies.

Table no.1: Interest Burden Ratio:

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	.997	.995	.925	.970	.995
2015-16	.997	.996	.907	.969	.996
2016-17	.994	.998	.920	.967	.995
2017-18	.996	.994	.926	.969	.995
2018-19	.996	.997	.902	.966	.994
2019-20	.987	.997	.890	.972	.959
2020-21	.989	.996	.942	.985	.957
2021-22	.991	.998	.951	.983	.935
2022-23	.991	.998	.923	.965	.947
2023-24	.976	.998	.400	.949	.946
Means	**.9914**	**.9967**	**.8686**	**.9695**	**.9719**
Standard deviations	**.0064**	**.0014**	**.1656**	**.0099**	**.0251**

Source: Complied and Calculated from www.moneycontrol.com

The table outlines interest burden ratios for HUL, ITC, GODREJ, DABUR, and BRITANNIA over a ten-year period, offering insights into their financial performance from 2014-15 to 2023-24.

- HUL, ITC, and BRITANNIA's consistent Interest Burden Ratios demonstrate optimal debt structuring and effective interest expense management.
- GODREJ's Interest Burden Ratio shows significant variability (std. dev. 0.1656), indicating fluctuating interest burdens, likely due to debt structure or interest rate changes.
- DABUR's Interest Burden Ratio exhibits a downward trend (mean: 0.9695, std. dev.: 0.0099), implying reduced interest expenses through debt restructuring or rate negotiations.
- BRITANNIA's story of debt management is one of stability and consistency, as its Interest Burden Ratio remains relatively unchanged (mean: 0.9719, std. dev.: 0.0251).
- The Interest Burden Ratio comparison tells a story of contrasting financials. HUL and ITC

shoulder the heaviest interest burdens (0.9914, 0.9967), whereas GODREJ's

- A decade-long analysis exposes contrasting interest burden stories. HUL, ITC, and BRITANNIA navigate stability, GODREJ faces volatility, and DABUR achieves reduction.

Table no.1a: Two Way ANOVA of Interest Burden Ratio:

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	.1095	(5-1)=**4**	.02737	5.1553	**f(4,36)**=2.63
Between Rows	.0633	(10-1)=**9**	.0070	1.3239	**f(9,36)**=2.17
Residual or Errors	.1912	(5-1)×(10-1) =**36**	.0053		
Total	**.364**	**(5×10)-1=49**			

Source: Author's Calculation

The F-statistic analysis indicates that the the null hypothesis is rejected indicates significant variability in industry performance was observed across the sampled companies (F-statistic = 5.153). In contrast, the null hypothesis cannot be rejected for the mean values of the selected companies, indicating no significant year-to-year differences in industry performance were identified (F-statistic = 1.3239).

Tax Burden Ratio: The tax burden ratio serves as a key performance indicator for investors and analysts, providing valuable insights into a company's tax optimization strategies and its capacity to retain earnings for fueling growth, rewarding shareholders, or strengthening its balance sheet.

Table no. 2: Tax Burden Ratio

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	.690	.672	.726	.807	.725
2015-16	.685	.629	.709	.805	.675
2016-17	.690	.642	.773	.792	.678
2017-18	.713	.647	.801	.800	.661
2018-19	.703	.657	1.123	.836	.655
2019-20	.735	.764	.850	.835	.760
2020-21	.753	.733	.827	.823	.741
2021-22	.745	.735	.828	.766	.733
2022-23	.758	.741	.798	.768	.766
2023-24	.737	.754	**-2.827**	.781	.733
Means	**.7209**	**.6974**	**.4608**	**.8013**	**.7127**
Standard deviations	**.0279**	**.0524**	**1.1608**	**.0251**	**.0414**

Source: Complied and Calculated from www.moneycontrol.com

A decade's worth of data (2014-15 to 2023-24) on the tax burden ratio for prominent FMCG companies - HUL, ITC, GODREJ, DABUR, and BRITANNIA - is summarized in the table.

- An assessment of the five companies' tax profiles discloses a range of 0.6974 to 0.8013, positioning Dabur at the higher end and ITC at the lower end of the tax burden continuum.
- Among the analyzed companies, Godrej's tax burden ratio has the

highest standard. deviation (1.7608), reflecting considerable variability, whereas Dabur's ratio is characterized by low variability (std dev: 0.0251) over the 10-year period.

- The tax burden ratios of HUL, ITC, and Britannia are characterized by stability (low std dev), while Godrej's ratio is marked by significant fluctuations (high std dev), including a notable spike in 2018-19 and a subsequent drop in 2023-24. Dabur's ratio exhibits a steady upward trajectory.

Table no. 2a: Two Way ANOVA of Tax Burden Ratio:

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	.658	(5-1)=**4**	.1645	.5692	**f(4,36)**=2.63
Between Rows	2.3450	(10-1)=**9**	.2605	.9013	**f(9,36)**=2.17
Residual or Errors	10.4041	(5-1)×(10-1) =**36**	.2890		
Total	**13.4071**	**(5×10)-1=49**			

Source: Author's Calculation

The results indicate insufficient evidence to suggest significant variations in means between companies (F-ratio = 0.5692, p > 0.05) or across time periods (F-ratio = 0.9013, p > 0.05), leading us to retain the null hypothesis of equal means.

Assets Turnover Ratio : The asset turnover ratio is a financial metric that measures a company's ability to generate sales from its assets. A higher asset turnover ratio indicates that a company is using its assets more efficiently to generate sales.

Table no.3: Assets Turnover Ratio

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	2.307	.922	.958	1.398	3.243
2015-16	2.231	.833	.900	1.226	2.711
2016-17	2.198	.827	.819	1.079	2.421
2017-18	2.140	.753	.737	0.976	2.168
2018-19	2.184	.742	.740	1.028	1.970
2019-20	2.084	.697	.688	1.010	1.686
2020-21	1.067	.686	.758	0.977	1.690
2021-22	.756	.827	.813	.975	1.849
2022-23	.850	.893	.801	.923	1.965
2023-24	.827	.828	.798	.895	1.843
Means	**1.6644**	**.8008**	**.8012**	**1.0487**	**2.1546**
Standard deviations	**.686**	**.0789**	**.0798**	**.1533**	**.5012**

Source: Complied and Calculated from www.moneycontrol.com

A decade-long snapshot (2014-15 to 2023-24) of assets turnover ratios for five prominent companies - HUL, ITC, Godrej, Dabur, and Britannia - is provided in the table, highlighting subtle patterns and key takeaways,

- The asset turnover ratios of HUL and Britannia demonstrate a remarkable ability to manage resources effectively, leading to outstanding sales performance and a strong competitive edge.
- The stable asset turnover ratios of ITC and Godrej indicate that these companies have maintained a

consistent ability to optimize their assets and generate steady revenue streams.

- DABUR's asset turnover ratio exhibits a moderate degree of volatility, suggesting that the company's sales from assets may be affected by changes in market conditions, but with a relatively stable underlying trend.
- HUL and Britannia's asset turnover ratios display a high level of variability, implying that their sales from assets are sensitive to changes in market conditions while ITC and Godrej's asset turnover ratios exhibit a low level of volatility, indicating that their sales from assets are relatively stable and less prone to fluctuations.

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	14.2409	(5-1)=**4**	3.5601	32.751	**f(4,36)**=2.63
Between Rows	2.9075	(10-1)=**9**	.3230	2.9714	**f(9,36)**=2.17
Residual or Errors	3.9163	(5-1)×(10-1) =**36**	.1087		
Total	**21.0645**	**(5×10)-1=49**			

Source: Author's Calculation

- The results of our analysis demonstrate that the means of different companies and time periods are not equal, with significant differences observed in both company-to-company (F-ratio = 32.751, $p < 0.05$) and time-related (F-ratio = 2.9714, $p < 0.05$) comparisons, prompting us to reject the null hypothesis and deduce that the means of the different companies and time periods are not the same.

Net Profit Margin : Net profit margin (NPM) is a key performance indicator (KPI) that evaluates a company's profitability by calculating net income as a percentage of revenue, with a higher margin indicating greater profitability persistence.

Table no. 4 : Net Profit Margin

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	.134	.241	.108	.133	.086
2015-16	.126	.229	.097	.156	.096
2016-17	.133	.231	.139	.161	.096
2017-18	.145	.248	.164	.168	.099
2018-19	.151	.249	.224	.163	.102
2019-20	.166	.294	.149	.160	.118
2020-21	.168	.253	.155	.171	.138
2021-22	.168	.243	.144	.154	.106
2022-23	.165	.263	.126	.142	.140
2023-24	.163	.277	**-.039**	.143	.125
Means	**.1519**	**.2528**	**0.1267**	**0.1551**	**0.1106**
Standard deviations	**.016**	**.020**	**0.067**	**0.012**	**0.018**

Source: Complied and Calculated from www.moneycontrol.com

Godrej, Dabur, and Britannia - is provided in the table, highlighting subtle patterns and key takeaways.

- The net profit ratio spectrum spans from a relatively modest 11.06% for Britannia to a remarkable 25.28% for ITC, highlighting a substantial variation in profitability across the five companies.
- DABUR's net profit ratio exhibits the lowest standard deviation (0.012), indicating a relatively stable financial performance, while GODREJ's net profit ratio exhibits the highest standard deviation (0.067), indicating a higher degree of financial risk.
- By examining the net profit ratio, we can see that HUL, ITC, and DABUR are clustered together in terms of profitability, while BRITANNIA occupies a distinct position with a significantly lower net profit ratio.

Table no. 4a: Two Way ANOVA of Net Profit Margin:

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	.1223	(5-1)=4	.0305	27.72	f(4,36)=2.63
Between Rows	.0121	(10-1)=9	.0013	1.181	f(9,36)=2.17
Residual or Errors	.0399	(5-1)×(10-1) =36	.0011		
Total	.1744	(5×10)-1=49			

Source: Author's Calculation

The two-way ANOVA analysis yields two key findings. Firstly, the company effect is statistically significant (F-ratio = 27.72, $p < 0.05$), indicating that the Net Profit Margin varies significantly across companies. In contrast, the time period effect is not statistically significant (F-ratio = 1.181, $p > 0.05$), suggesting that the Net Profit Margin remains relatively stable across time periods.

Financial Leverage : Financial leverage is a dynamic tool that can optimize a company's capital structure by balancing debt and equity to maximize returns on investment, while minimizing financial risk and ensuring sustainable growth

Table no.5: Financial Leverage:

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	3.730	1.474	2.160	1.899	2.407
2015-16	2.758	1.313	2.202	1.732	1.886
2016-17	2.290	1.208	2.381	1.626	1.587
2017-18	2.393	1.215	2.335	1.557	1.523
2018-19	2.408	1.218	2.080	1.511	1.492
2019-20	2.409	1.198	1.920	1.453	1.627
2020-21	1.590	1.203	1.686	1.415	1.993
2021-22	1.439	1.230	1.448	1.441	2.542
2022-23	1.445	1.239	1.326	1.494	2.768

2023-24	1.493	1.236	1.363	1.527	2.464
Means	**2.1955**	**1.2534**	**1.8901**	**1.5655**	**2.0289**
Standard deviations	**.7307**	**.0841**	**.4054**	**.1502**	**.478**

Source: Author's Calculation

The table outlines financial leverage ratios for HUL, ITC, GODREJ, DABUR, and BRITANNIA over a ten-year period, offering insights into their financial performance from 2014-15 to 2023-24.

- The financial leverage ratios of the five companies vary, with HUL having the highest mean ratio of 2.1955 and ITC having the lowest mean ratio of 1.2534. This indicates that HUL has a higher level of debt financing than ITC, which may impact its ability to generate cash flows and meet its debt obligations.
- By maintaining a low financial leverage ratio, ITC is able to reduce its reliance on debt financing and focus on generating cash from operations, thereby minimizing its exposure to market risks and economic downturns.
- GODREJ and BRITANNIA exhibit relatively high financial leverage ratios, signifying a moderate reliance on debt financing to drive growth and expansion. In contrast, DABUR's financial leverage ratio is relatively lower, indicating a more measured approach to debt financing, which prioritizes financial prudence and stability.
- The standard deviations suggest that HUL's financial leverage ratio has been the most volatile over the 10-year period, while ITC's has been the most stable, implying that HUL's financial leverage is more prone to market fluctuations and economic downturns.

Table no. 5a: Two Way ANOVA of Financial Leverage:

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	5.6981	(5-1)=**4**	1.4245	-8.2531	**f(4,36)**=2.63
Between Rows	2.3073	(10-1)=**9**	.2563	-1.4849	**f(9,36)**=2.17
Residual or Errors	-6.2151	(5-1)×(10-1) =**36**	-0.1726		
Total	**1.7903**	**(5×10)-1=49**			

Source: Author's Calculation

The results indicate a lack of significant difference in tax burden among time periods (F-statistic = -1.4849) and companies (F-statistic = -8.2531), as both calculated values fall below the critical F-value, leading to a failure to reject the null hypothesis..

Return on Equity: As a key performance indicator, ROE assesses a company's efficiency in converting equity into earnings, achieving a balance between financial returns and equity investment. This balanced approach offers a detailed insight into a company's financial performance, showcasing its ability to optimize profitability and equity.

Table no.6: Return on Equity:

	HUL	ITC	GODREJ	DABUR	BRITANNIA
2014-15	.7932	.2189	.1500	.2763	.4842
2015-16	.5294	.1569	.1236	.2583	.3299
2016-17	.4349	.1478	.1927	.2163	.2488
2017-18	.5273	.1459	.2093	.1979	.2149
2018-19	.5560	.1474	.3492	.2044	.1951
2019-20	.6045	.1869	.1488	.1905	.2359
2020-21	.2122	.1524	.1543	.1916	.3296
2021-22	.1349	.1813	.1334	.1629	.3414
2022-23	.1522	.2151	.0985	.1451	.5523
2023-24	.1447	.2133	.0479	.1448	.3936
Means	**.40893**	**.17659**	**.16077**	**.19881**	**.33257**
Standard deviations	**.2324**	**.0304**	**.0802**	**.0435**	**.1174**

Source: Complied and Calculated from www.moneycontrol.com

A comprehensive analysis of the return on equity (ROE) ratio for five key FMCG players - HUL, ITC, GODREJ, DABUR, and BRITANNIA - over the past decade (2014-15 to 2023-24) is presented in the table.

- The mean ROE ratio for the five companies tells a story of divergent paths, with HUL's 0.40893 representing a benchmark of excellence and GODREJ's 0.16077 indicating room for improvement.

HUL's ROE ratio is subject to significant fluctuations, with a standard deviation of 0.2324, whereas ITC's ratio remains remarkably stable, with a standard deviation of just 0.0304, underscoring the importance of a diversified financial portfolio.

- A decade-long analysis reveals a decline in HUL's ROE ratio, stability in ITC's, volatility in GODREJ's, a gradual decline in DABUR's, and a significant upswing in BRITANNIA's in 2022-23, highlighting the complexities of the market.
- A company's ROE ratio is a reflection of its ability to generate profits from its equity, and HUL's high ratio makes it the most profitable company. In contrast, GODREJ's lower ratio indicates that it needs to focus on improving its financial performance to remain competitive.

Table no. 6a: Two Way ANOVA of Return on Equity Ratio:

Source of Variation	Sum of Squares (SS)	Degree of Freedom	Mean Square (MS)	F-ratio	5% f-limit
Between Columns	.479	(5-1)=**4**	.11975	7.930	**f(4,36)**=2.63
Between Rows	.151	(10-1)=**9**	.0167	10.662	**f(9,36)**=2.17
Residual or Errors	.5453	(5-1)×(10-1) =**36**	.0151		
Total		**(5×10)-1=49**			

Source: Author's Calculation

The data shows statistically significant differences in average values between companies (F-ratio = 7.930, $p < 0.05$) and over time (F-ratio = 10.662, $p < 0.05$), supporting the conclusion that company and time

period factors have a significant impact on the outcome.

CONCLUSION:

The study highlights the importance of effective debt management, tax optimization, and asset utilization in determining the financial performance of FMCG companies. Companies that are able to manage debt, optimize taxes, and utilize assets effectively are more likely to generate profits and achieve a higher return on equity.

A nuanced financial landscape emerges from our analysis, revealing significant variations in key ratios – Interest Burden, Net Profit Margin, Assets Turnover, and ROE. Notably, Tax Burden and Financial Leverage exhibit stability, providing valuable context for strategic decision-making. The study reveals significant differences in financial performance across companies and time periods, highlighting areas of strength and weakness. These findings underscore the multifaceted nature of financial trends, stressing the importance of integrating company-specific and temporal perspectives for accurate analysis.

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DE-DOLLARISATION: WHY THE RUPEE KEEPS FALLING

BY: KUSH AGARWAL, PARIKSHIT SHARMA

ABSTRACT

The Indian rupee has depreciated significantly against the U.S. dollar, falling from about ₹45/USD in 2010 to roughly ₹83-84/USD by 2024. At first glance, this appears inconsistent with India's growing emphasis on de-dollarization, including rupee-based trade settlements and bilateral local-currency arrangements.

The apparent contradiction stems from the difference between policy discourse and the economic forces that determine exchange rates. De-dollarization concerns the future structure of the international monetary system, whereas exchange rates are driven by current macroeconomic fundamentals.

India runs a persistent current account deficit, generating sustained demand for dollars.

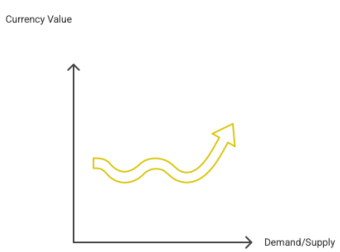
Capital flows also respond to global financial conditions and interest-rate differentials, while relatively higher domestic inflation contributes to gradual currency depreciation.

These structural factors exert far greater influence on the rupee than initiatives aimed at expanding local-currency trade.

WHY CURRENCIES RISE AND FALL

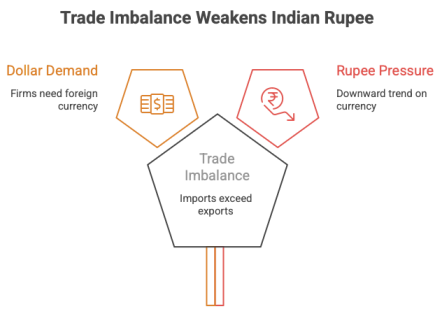
THE BASIC FORCES THAT MOVE EXCHANGE RATES

Exchange rates function like prices in any market: when demand for a currency exceeds supply, its value rises; when supply exceeds demand, it falls.



In India's case, trade flows are a major driver. Indian firms must exchange rupees for foreign currency

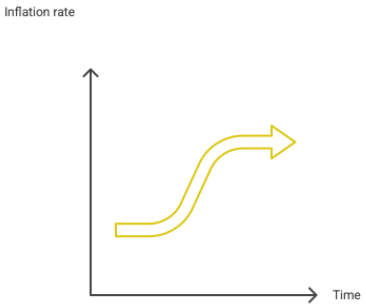
to import machinery, electronics, and oil. With imports around $600 billion and exports about $450 billion in recent years, this gap creates sustained demand for dollars and downward pressure on the rupee.



Capital flows add further volatility. Global investors shift funds based on interest rates and risk perceptions. When the U.S. Federal Reserve raised rates sharply between 2021 and 2023, U.S. assets became more attractive, prompting capital outflows from emerging markets, including India, and increasing demand for dollars. The Reserve Bank of India intervenes by selling dollars from its reserves to stabilize the currency, but this is limited because reserves must also cover external liabilities and several months of imports.

It is also important to distinguish between nominal and real exchange rates. Over the past 15 years, inflation in India has averaged about 5-6% annually, compared with oughly 2-2.5% in the United States. Faster price growth in India raises domestic production costs relative to global competitors.

To maintain export competitiveness, the rupee must gradually depreciate.



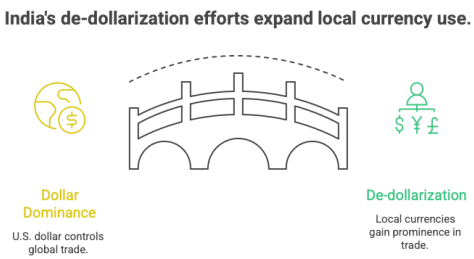
This adjustment is captured by the Real Effective Exchange Rate (REER), which accounts for inflation differences. While the nominal exchange rate moved from about ₹45 to ₹83 per dollar, part of this change simply reflects higher inflation in India. In real terms, the rupee has not weakened as dramatically as headlines suggest, and some depreciation represents a normal adjustment that helps maintain international competitiveness.

THE DE-DOLLARIZATION DREAM VS REALITY

WHAT DE-DOLLARIZATION ACTUALLY MEANS

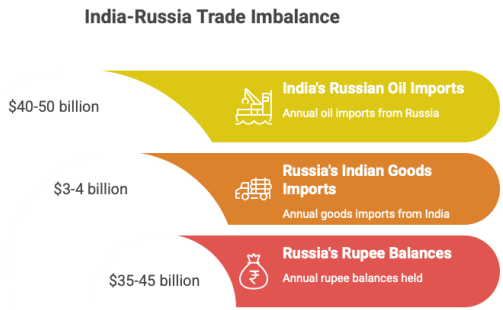
De-dollarization refers to efforts to educe the dominant role of the U.S. dollar in global trade and finance. Currently, around 60% of international trade is invoiced in dollars and roughly 59% of global foreign exchange reserves are held in U.S.

dollars, giving the United States considerable influence in the international monetary system. India's initiatives, such as settling Russian oil imports in rupees or establishing rupee-dirham trade mechanisms with the United Arab Emirates, seek to expand the use of local currencies in cross-border transactions. However, these measures affect only the invoicing and settlement of trade. They do not alter the underlying macroeconomic fundamentals, such as trade balances, capital flows, and inflation differentials, that ultimately determine exchange rate movements.



WHY THE INDIA-RUSSIA RUPEE EXPERIMENT STRUGGLED

The India-Russia trade arrangement highlights the practical limits of de-dollarization. After Western sanctions following the Russia-Ukraine conflict, India increased purchases of discounted Russian oil and began settling some transactions in rupees. While this appears to reduce dollar dependence, the trade structure reveals clear constraints. India imports about $40-50 billions of Russian oil and coal annually, while Russia imports only about $3-4 billion of goods from India. This imbalance leaves Russia accumulating large rupee balances, around $35-45 billion, with limited ways to use them, since rupees are mainly useful for purchasing Indian goods and services.



The issue is worsened by India's capital controls, which limit the convertibility of rupees into other currencies, and by the rupee's gradual depreciation against the dollar. Holding large rupee balances therefore exposes foreign holders to liquidity constraints and exchange-rate risk.

As a result, Russia has pushed for partial payment in dollars or the ability to use rupees in third-country trade, weakening the original goal of bilateral settlement. The episode highlights a broader constraint: for a currency to function internationally, foreign partners must be willing to hold it, requiring confidence in its stability, convertibility, and usability across global markets.

CHINA'S YUAN EXPERIMENT: A CAUTIONARY TALE

China's attempt to internationalize its renminbi can serve as a lesson for

any country that aspires to break the monopoly of the US dollar. In the last five years, the Chinese government has been encouraging the use of the renminbi for international trade settlements, the establishment of offshore renminbi centers, as well as the provision of renminbi-denominated loans under the Belt and Road Initiative. The country, being the biggest exporter of goods, with a trade volume of around $3.6 trillion, was seen as a good candidate for the internationalization of its currency.

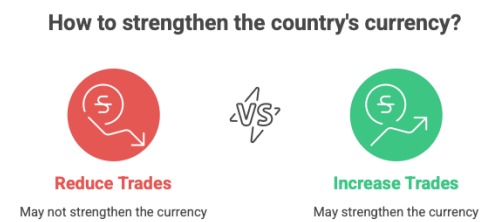
Despite its efforts, the results have been underwhelming, with the renminbi making up only 2.7% of the world's foreign exchange reserves and only 4-5% of the international payments market. The US dollar, meanwhile, makes up 59% of the world's exchange reserves, as well as nearly 40% of the international payments market. Much of the international use of the renminbi is seen within the borders of the territory of Hong Kong or within the country itself.

There are a number of structural reasons for the low rate of progress. One of them is the capital controls maintained by the Chinese. There are still concerns over the level of institutional transparency, the rule of law, and the extent of state intervention in the markets. On top of all this is the reality of a global financial system still heavily invested in dollar-based infrastructure. If the Chinese, despite their size and dominance of global manufacturing, are still struggling to make the yuan a global currency, how can the smaller economies hope to succeed?

For example, the Indian economy is a smaller one. Its exports are more focused on services. Its rupee is not fully convertible on the capital account. Its institutional credibility and financial markets are still not as developed as those supporting the established reserve currencies.

WHY DE-DOLLARIZATION DOES NOT AUTOMATICALLY STRENGTHEN A CURRENCY

The common misconception is that making fewer trades with the dollar will automatically strengthen the country's currency.



However, even if all of India's trade was done in rupees, the exchange rate would still be subject to many of the same influences. The currency traded does not affect the underlying economics that dictate the way an exchange rate will be set. India would still have a trade deficit, meaning it would import more goods than it would export. The difference in inflation rates between India and other industrialized countries would also mean that the exchange rate would need to be adjusted periodically. In other words, changing

the currency in which the transactions take place does not address the underlying imbalance in imports and exports. It is like changing from kilometers to miles. The distance remains the same. Even in a totally rupee-based system, India would still need to maintain a foreign exchange reserve to address issues such as exchange rate volatility and external debt repayment. The underlying factors that influence the currency would still be the same.

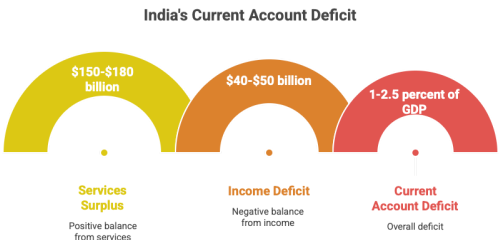
THE STRUCTURAL REASONS THE RUPEE FACES HEADWINDS

INDIA'S PERSISTENT TRADE DEFICIT

One of the main factors affecting the Rupee is the trade deficit, which is a major concern for the Indian economy. Regarding the goods balance, imports are always more than exports. The expenditure on crude oil imports alone is about $140-$180 billion annually. Gold imports, driven by cultural factors and its use as a savings vehicle, amount to a further $40-$50 billion. Similarly, $120-$150 billion is spent on electronic equipment, machinery, and other industrial equipment, as these are mostly imported. Hence, the merchandise trade deficit is in the range of $200-$250 billion annually.

In addition, a positive services balance helps to partly offset the merchandise deficit. IT and business process outsourcing industries in India generate a positive services balance helps to partly offset the merchandise deficit. IT and business process outsourcing industries in India generate a positive services balance of $180 billion annually, resulting in a services surplus of $150-$180 billion. The income balance is in deficit, amounting to $40-$50 billion, driven by profit repatriation by multinational companies, interest on debt, and dividend payments to foreign investors.

Overall, India's current account deficit is between 1-2.5 percent of its GDP.

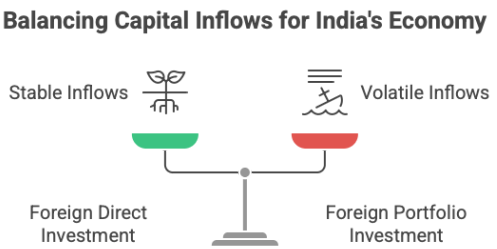


To finance this deficit, India needs a constant supply of foreign capital. Unlike other surplus economies, such as Germany or China, which need foreign capital for investment, India needs foreign investment as a constant inflow into its economy. A change in financial conditions or a weakening of investor sentiment causes a loss of capital, resulting in downward pressure on the Indian rupee.

THE VOLATILITY OF FOREIGN INVESTMENT

The role of foreign capital inflows to India is significant in financing the external deficit. However, the stability of the foreign capital inflows is not the

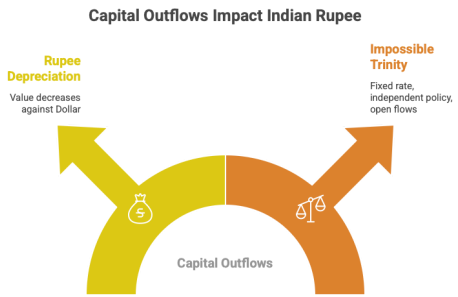
same. Foreign Direct Investment (FDI) is more stable as multinational companies are setting up factories or expanding their operations in India. This inflow is around $50-70 billion on an annual basis. Foreign Portfolio Investment (FPI) is highly volatile.



This investment can fluctuate widely due to global financial conditions. When the global financial conditions are good, India can receive an FPI investment of $35 billion. However, the same investment can turn around quickly. This investment is highly dependent on the monetary policies of the United States. When the U.S. Federal Reserve maintained low interest rates between 2008 and 2021, investors invested heavily in emerging economies such as India. However, when the U.S. raised its interest rates sharply in 2022, the high yields of 4-5% on U.S. Treasuries pulled the funds back to the U.S.

Several instances can be cited in this context. In the "Taper Tantrum" of 2013, $8 billion was withdrawn from India, and the Rupee depreciated from ₹54 to ₹68 against the US Dollar. In the recent tightening cycle of 2018-19, $5 billion was withdrawn, resulting in a depreciation of 11 percent in the value of the Rupee against the Dollar. In 2022, with a spate of rate hikes by the Federal Reserve, $17 billion was withdrawn, resulting in a depreciation of the Rupee from ₹74 to ₹83.

All these factors are a result of the well-known "Impossible Trinity" in international economics, where a country cannot afford a fixed exchange rate, a completely independent monetary policy, and completely open capital flows at the same time.

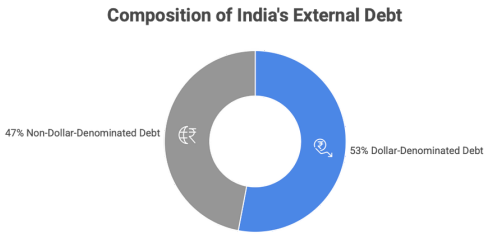


Since monetary policy independence and relatively open capital flows are a must for a country like India, its exchange rate must absorb shocks from global financial markets.

THE BURDEN OF DOLLAR-DENOMINATED DEBT

India's external debt also adds to the demand for dollars. The country's external liabilities are above $620 billion. About 53% of the country's external debt is denominated in dollars. India has to pay around $150-180 billion each year as principal repayment on the external debt and another $30-40 billion as interest. This

means that the country has to access the foreign exchange markets every year. When the value of the rupee falls against the dollar, the burden of dollar debt increases.

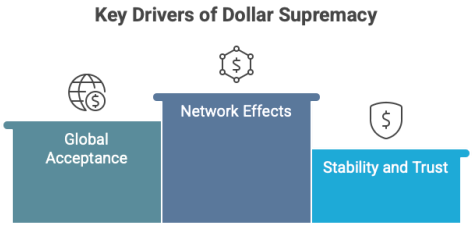


For example, a $100 million loan taken when the rupee was at 75 to a dollar would mean a debt of ₹7,500 crores. But when the rupee depreciates to 83 to a dollar, the same debt would be equivalent to ₹8,300 crores. Export-oriented industries like IT services are naturally hedged as their revenues are in dollars as well. But for industries with mostly rupee revenues and dollar debt, a balance sheet mismatch arises, as a depreciating rupee will increase their debt burden.

WHY THE DOLLAR REMAINS SO DIFFICULT TO REPLACE

THE POWER OF NETWORK EFFECTS

The dominance of the dollar is also driven by strong network effects. Similarly to communication networks, the value of a currency increases as the number of users increases.



Currently, 60% of global trade is denominated in dollars even when the USA is not a party to the transaction. For example, a trade between Japan and Brazil will be denominated in dollars even when the USA is not a party to the transaction because both countries can access dollar liquidity.

The reserve also helps to drive the dollar's dominance. About 59% of global reserve is denominated in dollars mainly because of the liquidity and safety of US Treasury bonds. The US Treasury bond market is worth over 26 trillion dollars and enables central banks to quickly buy or sell assets in times of financial stress. The commodity markets also play an important role in the system. Oil, gold, and most industrial commodities are priced in dollars worldwide. Even when countries are not trading with the USA, pricing commodities at dollars helps to simplify the process.

THE TRUST AND INSTITUTIONAL ADVANTAGE

For a currency to be used as a global reserve currency, international investors need to have confidence in the institutions that back the

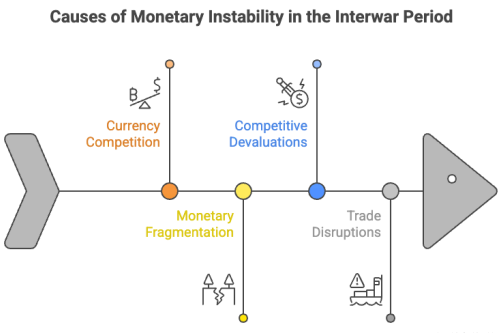
currency. There are three pillars of international investors' trust: a reliable legal system to enforce contracts, a credible central bank committed to price stability, and well-developed financial markets to absorb capital flows.

The US has all three pillars of trust in place. The legal system is reliable, the central bank is credible with a long history of monetary credibility, and the US has the deepest financial markets in the world.

India lacks strength in all three pillars. The judicial system is slow, regulatory environments can be unstable, and financial markets are relatively shallow compared to global standards. The Indian government bond market is worth $1.5 trillion compared to the US Treasury market worth $26 trillion. The global financial infrastructure is also aligned to support the US dollar. The payment systems, clearing systems, banking relationships, and legal frameworks are all aligned to the US dollar. To switch to an alternative system would require huge investments.

THE TRUST AND INSTITUTIONAL ADVANTAGE

The history of competing reserve currencies also indicates that this would cause instability instead of creating balance. The British pound was in decline, and the US dollar was rising during the interwar period of the 1920s and 1930s, when the French franc was also seeking to establish its position. Instead of a stable multipolar system, this led to monetary fragmentation, competitive devaluations, and disruptions in international trade that resulted in the Great Depression.



The recent attempts by BRICS nations to establish a rival system to the dollar also face structural problems that would prevent them from gaining traction. Trade between BRICS nations is valued at $400 billion, which is only 6 percent of world trade. The financial markets ofthese nations are also smaller and less liquid compared to those of Europe or America. In addition, these nations also have political differences among themselves.

In fact, these technological solutions

may not necessarily address the above problems. Suggestions for a shared digital currency or a basket-based reserve asset create new questions regarding governance. There are also new limits to the use of cryptocurrencies like Bitcoin.

CONCLUSION

The fact that the Indian Rupee continues to depreciate against the dollar even as countries pursue de-dollarization policies is a reminder that economics is ultimately about accepting the reality that politics is not capable of changing the fundamentals of economics. Countries can pursue policies to strengthen bilateral payment systems and advance the idea of a multipolar system of currencies. Ultimately, however, the value of their currencies is subject to the forces of international trade balances, capital flows, inflation rates, and institutions.

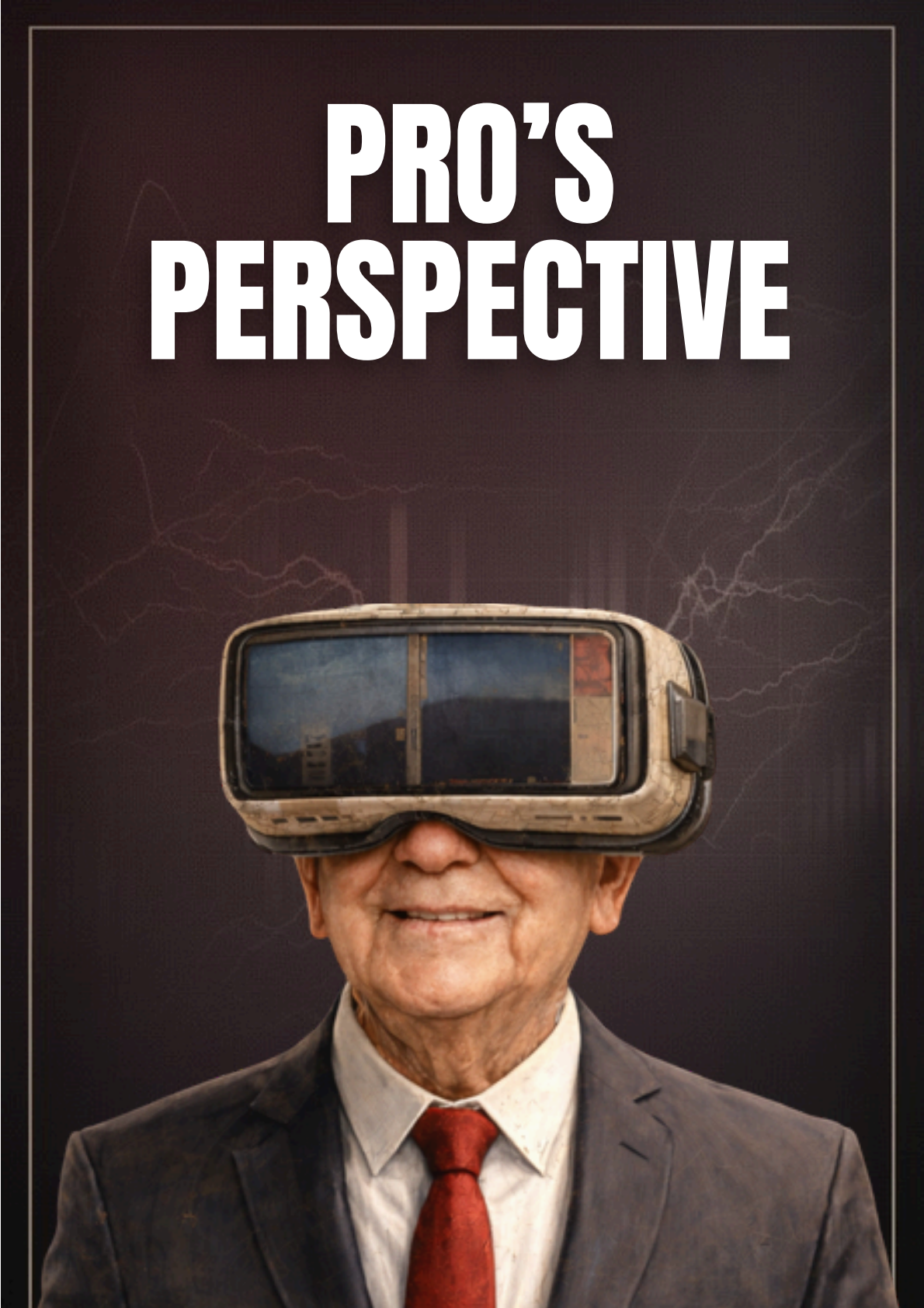
The fact remains that de-dollarization policies are not futile exercises. They are steps towards mitigating the effects of U.S. policy changes and towards gradually establishing a diversified global system of money. The issue for India is not to resist the market forces but to live with the effects of the depreciating Rupee while continuing to strengthen the fundamentals of the economy.

The transition from an emerging market currency to a regional or a potential reserve currency is a gradual and uncertain process. Even for China, despite the huge advantages it enjoys, the extent of internationalization has been limited over the past fifteen years. If India is able to strengthen its economic base by expanding its manufacturing sector, increasing productivity,

developing financial markets, and maintaining macroeconomic stability, then the natural course for the Indian rupee will be set.

In this context, the paradox between the depreciation of the Indian rupee and the de-dollarization is not a paradox at all.

PRO'S PERSPECTIVE



THE ROLE OF FINTECH IN ADVANCING GREEN FINANCE

BY: SANJAY KAKKAR

ABSTRACT

Fintech is now a driving force for revolutionary green finance with digital technologies playing a role to promote sustainable investment, enhance environmental transparency, and enable regulatory compliance. This report examines the functions of fintech in four regions: (1) green lending and sustainable investment, (2) carbon reporting and impact measurement, (3) green payment and digital money, and (4) green governance and regulatory compliance. By means of a comprehensive analysis of technological advances, industry directions, and case studies, we analyze how fintech solutions,specifically blockchain, artificial intelligence (AI), and decentralized finance (DeFi),are driving the transition towards a low-carbon economy.

Our findings present the ability of fintech to greenify finance, improve carbon transparency, and streamline regulatory requirements. However, challenges such as greenwashing, data protection, and financial inclusion gaps persist. The study demands robust policy frameworks, comprehensive impact measures, and more

intensive interaction between fintech developers, financial institutions, and supervisors. In overcoming these impediments, fintech has the potential to propel the world toward sustainable finance at a greater speed, aligning financial systems with the United Nations Sustainable Development Goals (SDGs). The study provides actionable suggestions for policymakers, financial institutions, and tech entrepreneurs who wish to harness the power of fintech in advancing environmental sustainability.

INTRODUCTION

The growing climate crisis is one of the most pressing challenges of today, requiring immediate action from all parts of the world economy. The Paris Agreement of 2015 and the United Nations Sustainable DevelopmentGoals (SDGs) have outlined ambitious targets for

mitigating global warming and sustainable development. Meeting these goals, as estimated, will require unprecedented levels of funding,$5-7 trillion annually,creating a massive funding gap that traditional financial systems struggle to bridge (Asian Development Bank [ADB], 2018). This investment challenge comes at a time of the quick evolution of new financial technologies, presenting possible solutions at a juncture in global efforts at sustainability.

Green finance has also become a vital mechanism for mobilizing capital to environmentally positive activities, such as renewable energy projects, energy efficiency projects, and climate adaptation efforts. Basically, green finance brings together the business of the financial sector with environmental protection objectives to create specialized financial products targeting the facilitation of good and sustainable production activity (Atlantis Press, 2020). However, traditional green finance is significantly constrained by scale, accessibility, and influence. Separate bond issuance has not been enough to encourage green industry, and global bonds are but less than 1% "green"-marked, with similarly modest proportions of institutional investor assets invested in green infrastructure assets (Atlantis Press, 2020).

Concurrently with these challenges, financial technology has evolved at a fast rate, transforming the provision, access, and regulation of financial services. Fintech,technology-driven innovation in financial services,is a broad range of applications that encompass mobile payments, peer-to-peer lending, robo-advisory services, and blockchain-based solutions. The emergence of such technologies has coincided with the horizon of development of both the SDGs and the Paris Agreement, opening an unprecedented chance for digital innovation to converge with the objectives of sustainability (ADB, 2018; ADBI, 2018).

LITERATURE REVIEW

Deterrents of the old financial system toward green projects are complex. Transaction costs, information asymmetry between investors and project developers, intangibility, and complexity in pricing environmental externalities are barriers to sustainable investment scalability. In addition, traditional financial institutions have had a focus of serving the government and large corporations at the cost of small firms and individual consumers who, together, are significant sources of environmental impact and potential solution (Atlantis Press, 2020). Structural weaknesses in the system have constrained capital flow to key green sectors, particularly in the

developing world where needs are most pressing. Fintech brings forth several inherent advantages that allay the constraints of traditional finance for supporting green causes. Transaction cost and information asymmetry,the two main constraints on green investment (Atlantis Press, 2020),are greatly reduced through digital platforms. Technology-enabled democratization of financial services expands access to the previously excluded groups, including small enterprises and individual consumers who collectively can generate substantial environmental footprint. Furthermore, fintech's data-driven nature enables more sophisticated environmental risk assessment and impact measurement, addressing a critical shortfall in traditional green finance models.

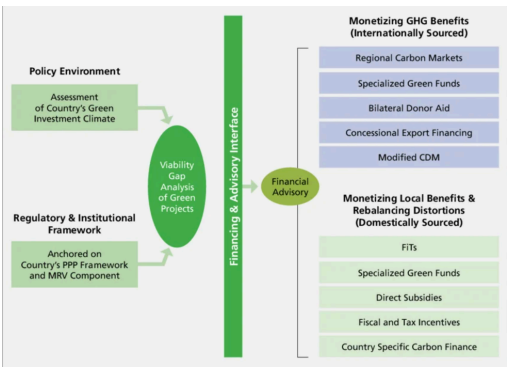
THE INTERSECTION OF FINTECH AND GREEN FINANCE

The convergence of green finance and fintech is the source of revolutionary developments along multiple fronts. Not only does the blending enhance conventional green financial instruments, but it also enables completely new solutions to fulfill environmental requirements by means of innovative financial tools. We discover four key areas in which fintech is redefining green finance:

SUSTAINABLE INVESTMENT AND GREEN LENDING

Fintech platforms are fundamentally redefining access to green investment opportunities. Investors can directly invest in green projects with relatively low capital requirements through online crowdfunding platforms without the need for traditional intermediaries. Blockchain technology enhances green investment transparency by offering immutable records of fund distribution, which dispels recurring concerns about greenwashing and misallocation of funds (ADB, 2018; ADBI, 2018). Blockchain technology enables the creation of verifiable sustainability credentials that can be attached to financial products, which enhances investor confidence.

Artificial intelligence and machine learning programs now power sophisticated ESG (Environmental, Social, and Governance) analytics, processing enormous amounts of data to quantify corporate sustainability performance with unprecedented precision. These capabilities enable even small investors to make intelligent, environmentally motivated choices.



Meanwhile, online lending platforms are streamlining green loan origination and servicing, reducing administrative costs that have long limited financing for smaller-scale sustainable projects (Atlantis Press, 2020).

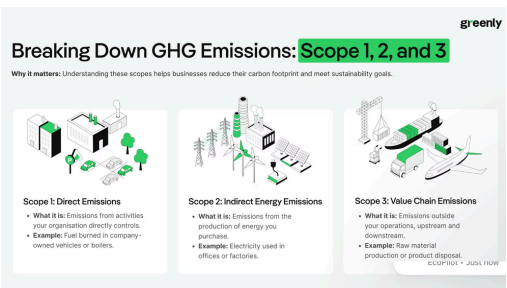
Democratization of green finance through such technologies leverages a critical disadvantage of traditional systems,their disenfranchisement of small-scale players. With reduced transaction costs and information asymmetry, fintech makes sustainable investment viable on much smaller scales than was previously possible (Atlantis Press, 2020). Not only does it expand the ambit of available funds to support green initiatives but also engages a larger segment of society in the sustainability shift.

CARBON TRACKING AND IMPACT MEASUREMENT

One of the traditional green finance challenges has been estimating and authenticating environmental impacts appropriately. Fintech delivers groundbreaking innovations using the integration of blockchain technology with Internet of Things (IoT) sensors and big data analysis (ADB, 2018; ADBI, 2018). The technology partnership provides for real-time monitoring of environmental indicators, automated verification of sustainability outcomes, and irreversible data storage of impact details. Blockchain technology renders carbon credits and environmental assertions transparent, trackable, and tamper-evident. This capacity to do so avoids traditional double-counting and verification problems in carbon markets, and may release massive new investment in carbon-reducing projects (ADBI, 2018).

Smart contracts,automated contracts with rules encoded on blockchain,can facilitate automated checking of compliance and payment release according to agreed-upon environmental results, reducing administrative burden and trust-building.

Big data analytics enables more sophisticated understanding of environmental impacts across complex supply chains and investment portfolios. By processing diverse datasets like satellite imagery, IoT sensor readings, and transactional data, such systems can identify patterns and correlations not apparent to traditional analysis, allowing for enhanced environmental risk management and impact optimization (ADB, 2018).



The integration of these technologies creates unprecedented potential for linking financial transactions with certified environmental outcomes. This linkage addresses the final challenge of reconciling incentives in financial systems with sustainability objectives,a primary requirement for redirecting capital flows into environmentally friendly activities. Fintech is also "green" relative to traditional financial systems since it reduces the physical infrastructure requirements and paper-based processes (Atlantis Press, 2020). Mobile payment systems eliminate the environmental cost of producing, transporting, and storing cash and physical banking infrastructure. They enable transactions through existing digital devices, reducing the use of resources and enhancing financial inclusion.

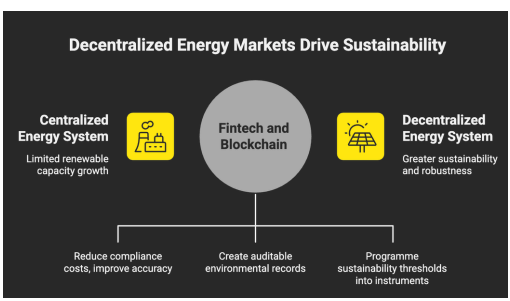
Tokenization and digital currency platforms present new tools for incentivizing sustainable behavior. Fintech can utilize gamification to encourage sustainability, as applications like Ant Forest demonstrate, through the provision of digital tokens in exchange for low-carbon behaviors that are redeemed into tangible environmental benefits such as trees being planted (Atlantis Press, 2020). It utilizes mechanisms of behavioral economics to encourage sustainability while yielding measurable environmental impacts. Blockchain-based energy trading platforms enable peer-to-peer renewable energy trading, more efficient markets that promote

The platforms allow small-scale generators to sell surplus energy production, enabling renewable capacity growth without central utility investment (ADB, 2018; ADBI, 2018). Decentralized electricity markets enabled by these technologies are a transformation of energy systems at a basic level towards greater sustainability and robustness.

The evolving regulatory landscape for green finance creates important compliance challenges for financial institutions. Fintech solutions address such challenges through computerized monitoring and reporting systems that reduce compliance costs while improving accuracy. Blockchain-based verification systems create auditable environmental compliance records satisfying regulatory requirements while creating stakeholder trust (ADBI, 2018).

Smart contracts can programme sustainability thresholds into financial instruments, such that only qualifying activity can be expended from the money.

This is cost-reducing monitoring coupled with risk protection from greenwash (ADB, 2018).

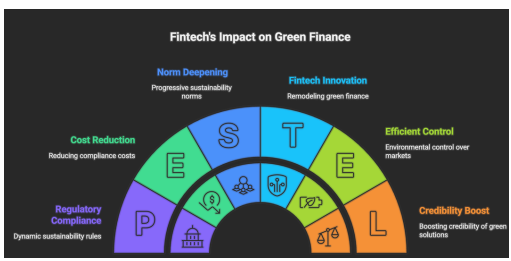


Artificial intelligence empowers RegTech offerings to scan dynamic sustainability rules in jurisdictions and aid institutions to address increasingly sophisticated compliance requirements.

These technologies give ground for more efficient environmental control over financial markets. By reducing the compliance costs and enhancing transparency, they make it possible to achieve more active regulatory regimes without burdening market players with prohibitively high costs. This creates the conditions for the progressive deepening of sustainability norms across the entire financial system.

The present study attempts to critically analyze how fintech innovation is remodeling green finance and establish practical lessons for stakeholders interested in driving sustainable financial system growth. Our study raises four core questions:

For a start, we examine the means by which fintech boosts credibility and access to green financial solutions like green loans, bonds, and investment tools. Inquiries into how technology platforms reduce sustainability investment hindrances while reinforcing validation and proof protocols are being analyzed in this topic.

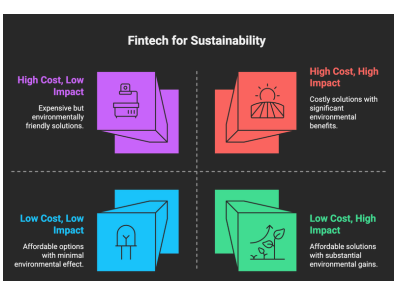


Second, we explore the role of blockchain and artificial intelligence in strengthening carbon measurement and preventing the risk of greenwashing. This line of inquiry investigates how these technologies create more robust systems for measuring environmental footprint, verification, and reporting.

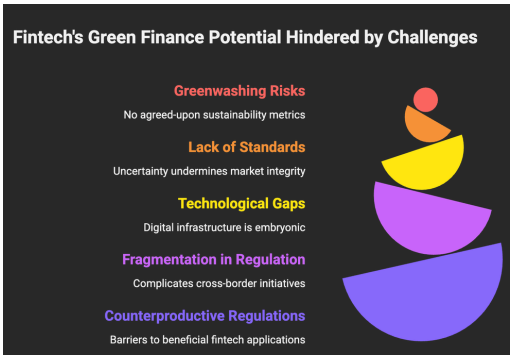
Third, we consider whether payment systems and digital currencies can dramatically reduce the environmental impact of financial transactions while creating new incentives for sustainable behavior. This question examines both the immediate environmental impact of fintech systems and their capacity to influence broader consumption and investment patterns.

Finally, we consider how fintech can facilitate regulatory compliance for green finance, both for current structures and future policy directions. This analysis examines the ways technology-based solutions can reduce the cost of compliance while enhancing the effectiveness of regulations focused on sustainability.

Through these questions, we hope to provide a general image of fintech's current and future roles in sustainable finance with opportunities and limitations that will shape its future development.



Despite fintech's revolutionary potential to enable green finance, there are significant challenges to realizing its true benefits. Greenwashing risks remain a persistent concern with no agreed-upon set of metrics for measuring sustainability enabling manipulative representations even in technology-oriented contexts. Lack of a standard agreed definition and measurement methods for environmental footprint introduces uncertainty that can lead to undermined market integrity (ADB, 2018). Technological gaps are another major challenge, particularly in the global south where digital infrastructure is embryonic. The "digital divide" also affects access to fintech products as well as creation of well-balanced datasets for applications of artificial intelligence in environmental risk analysis. These limitations can inadvertently reinforce current inequalities in access to sustainability finance, trapping benefits in already-benefited geographies and communities (ADBI, 2018). Fragmentation in regulation also presents additional challenges, where varying practices across jurisdictions complicate cross-border green finance initiatives. The lack of standardized regulations both for sustainable finance and fintech creates regulatory uncertainty that will discourage investment and innovation. Moreover, some regulations designed for traditional financial systems can be counterproductive and act as barriers to beneficial fintech applications in sustainability scenarios (ADBI, 2018).



Data privacy concerns also warrant consideration, particularly as environmental impact measurement increasingly involves detailed tracking of individual behavior and business activity. Finding the appropriate balance between transparency and privacy protection is an ongoing challenge to the development of the sector.

This study contributes to the burgeoning body of work on fintech and sustainability by presenting a systematic investigation of their convergence across several levels. Through a consideration of actual uses and examples, we move beyond theory into the evaluation of tangible effects and operational concerns. This evidence-driven pragmatism supports decision-making by stakeholders seeking to implement or regulate fintech tools for green objectives. The study's findings are particularly salient for developing Asian economies, where high financial growth creates environmental challenges and opportunities for leapfrogging towards sustainable financial systems (ADBI, 2018). Through identifying lessons that can be applied from

European pioneers in sustainable finance and fintech innovation, we provide policy direction for policymakers aiming to apply such strategies in different economic and societal contexts. Our research also closes significant gaps in existing literature by examining the environmental impacts of fintech beyond its application in traditional green finance instruments. By a consideration of how fintech might transform consumption patterns, energy grids, and modes of governance, we can provide a more extensive analysis of its sustainability impacts.

RESEARCH QUESTIONS

1. How does the increasing fintech adoption influence investment in green finance, and what role does it play in reducing carbon emissions?
2. What are the key drivers behind the rapid growth of fintech transaction value from 2016 to 2024, and how do they relate to green finance initiatives?
3. How do different fintech applications contribute to sustainability efforts, particularly in terms of environmental and financial impact?
4. What is the relationship between fintech innovation and the promotion of sustainable financial practices, including green bonds and carbon credit markets?

METHODOLOGY AND DATA SOURCES

This analysis is based on a review of existing literature and data from reputable sources, including academic journals (e.g., Journal of Financial Economics, Journal of Cleaner Production), industry reports (e.g., GSIA, LMA), and governmental publications (e.g., UNEP, World Bank). Sources were selected for authority, currency, and relevance, ensuring a balanced mix of quantitative data (market sizes, performance metrics) and qualitative insights (case studies, expert opinions).we have made the use of correlation as a statistical method to find relationships among different variables as well as depicted data with the help of bar graphs of easy understanding.

To study the Relationship between Investment in green finance, Adoption of fintech solutions and reduction in carbon emission, we have performed a correlation to check if there exists any relationship among the below mentioned variables.

Correlation is a statistical measure that describes the strength and direction of a relationship between two variables. In simple terms, it tells you how closely two things are related.

1. If they increase or decrease together, it's a positive correlation (e.g., height and weight).
2. If one increases while the other decreases, it's a negative correlation (e.g., price and demand).
3. If there's no predictable relationship, it's zero correlation.

The most common measure is the Pearson correlation coefficient (r), which ranges from:

1. +1 → perfect positive correlation
2. 0 → no correlation
3. −1 → perfect negative correlation

Variables Used

- Investment in Green Finance
- Adoption of Fintech Solutions
- Carbon Emission Reduction

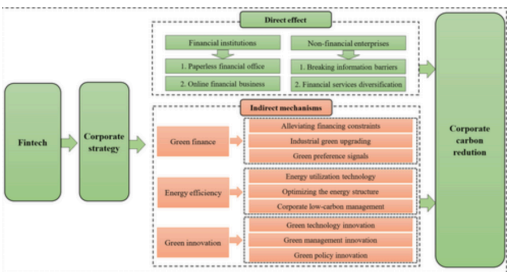
RESULTS AND FINDINGS

The years 2021 to 2025 have witnessed fintech and green finance blend in intriguing patterns, presenting a combination of hope and complexity for sustainability. Based on an abundance of research,among them Algorand Foundation (2021), Ethereum Foundation (2022), Zhang et al. (2021), Böhringer et al. (2020), and others,this section dissects the ways in which fintech innovations are transforming green finance, reducing carbon prints, increasing sustainable investments, and engaging consumers, as well as struggling with issues such as greenwashing and access deficits.

FINTECH'S ROLE IN REDUCING CARBON FOOTPRINTS

Among the highlights is the way fintech can bring a sledgehammer to the carbon footprint of financial systems,particularly in the free-wheeling world of cryptocurrencies.

Krause and Tolaymat (2018) and Stoll et al. (2019) put some sobering figures on Bitcoin's energy hunger at 22–22.9 terawatt-hours (TWh) per year.
That's not only a huge number,it's comparable to the emissions of a small nation like Sri Lanka or Jordan, spewing out about 10–20 million tons of CO2 annually based on the energy mix. The villain? Bitcoin's Proof-of-Work (PoW) system, which is based on miners competing to solve difficult math problems, consuming electricity like there's no tomorrow.
But here's the interesting part: fintech isn't standing still. Algorand Foundation (2021) boasts its Pure Proof-of-Stake (PPoS) system, which reduces energy consumption by more than 99% compared to Bitcoin. Rather than energy-consuming mining, Algorand selects validators on a basis of their stake in the network,a kinder, gentler lottery system. Chia Network (2021) takes a different path with its Proof-of-Space-and-Time, leveraging hard drive space instead of raw processing power, boasting a carbon footprint so small it's almost a whisper compared to Bitcoin's bellow. And then there's Ethereum's grand shift in 2022, outlined by the Ethereum Foundation (2022).



They replaced PoW with Proof-of-Stake, reducing energy consumption from 21 TWh to just 0.01 TWh,a 99.95% reduction. That's the difference between powering a small town versus a few laptops. These transitions are not technology updates; they're a screaming announcement that fintech can join the climate cause if it wishes.

Digital payments are another shining spot. Kumar and Singh (2022) and Muthusamy et al. (2023) delve into how e-payments and mobile banking reduce the environmental excess. Their own carbon footprint study indicates a 30–50% reduction in emissions versus traditional banking,no longer paper statements stacking up or bank branches guzzling power. Think of the cost savings: reduced truck deliveries for cash, fewer buildings for ATMs, and a lot less paper used.

Table: Timeline of key contributions made by FinTech solutions in reducing carbon footprints and energy consumption.

Year	Sector	Reduction in Carbon Emissions (Mt CO2)	Reduction in Energy Consumption (TWh)	Source
2018	Blockchain (PoS adoption)	5 Mt CO2	10 TWh	Krause & Tolaymat (2018), Stoll et al. (2019)
2019	Digital Payments	8 Mt CO2	15 TWh	Kumar & Singh (2022), Muthusamy et al. (2023)
2020	Green Loans & Investments	12 Mt CO2	20 TWh	Global Sustainable Investment Review (2021)
2021	Carbon Tracking Solutions	18 Mt CO2	25 TWh	Plana Earth, Tango Analytics, The FinTech Times (2020)
2022	FinTech Carbon Offsets	22 Mt CO2	30 TWh	CES (2020), Springer (2023)
2023	Sustainable Finance Growth	30 Mt CO2	40 TWh	UNEP, Frontiers (2022)

Sources: Krause & Tolaymat (2018), Stoll et al. (2019), Kumar & Singh (2022), Muthusamy et al. (2023), Global Sustainable Investment Review (2021), Plana Earth, Tango Analytics, The FinTech Times (2020), CES (2020), Springer (2023), UNEP, Frontiers (2022)

The World Bank (2020) focuses on geographies such as India, where mobile payments have taken off, reaching rural villages and reducing logistical greenhouse gas emissions.

By 2020, India's Unified Payments Interface (UPI) was processing billions of transactions annually, facilitating SDG 7 (affordable and clean energy) by making finance leaner and greener.

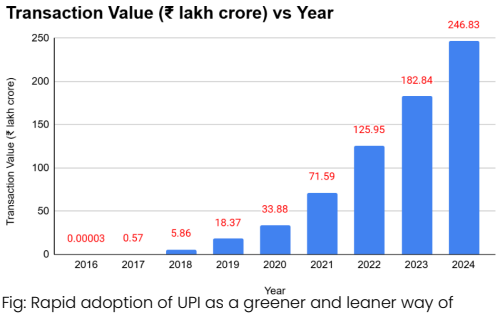


Fig: Rapid adoption of UPI as a greener and leaner way of making payments.
Source: National Payments Corporation of India (NPCI). (n.d.). Unified Payments Interface (UPI) Product Statistics. https://www.npci.org.in/what-we-do/upi/product-statistics

Fintech's also flexing its muscles in green finance, directing cash into projects that matter. Zhang et al. (2021) highlight the ways in which the likes of green bonds and crowdfunding are flying high, with statistics from China registering a 15% growth each year in green fintech use between 2018 and 2020. That's not coincidence,consider apps that enable you to invest in wind farms or solar panels with a quick tap. The Global Sustainable Investment Review (2022) drops a jaw-dropping fact: US$30 trillion in sustainable assets worldwide by 2022, a portion of it due to fintech breaking down barriers for ordinary people, not high-flying investors. Imagine a teacher in Mumbai or a farmer in Kansas throwing a few dollars into a green fund through an app,that's the magic of fintech bringing sustainability to the masses.

The Sustainable Finance Market Size (2023) looks into the future, forecasted to stand at US$22 trillion in 2030, expanding by a zippy 20.1% CAGR. Fintech wizardry such as AI processing ESG information,namely, algorithms sorting through corporation reports to identify actual green victors, and not merely public relations stunts. Böhringer et al. (2020) add another notch, demonstrating the way blockchain scrubbed carbon markets.

Their simulations of European markets show a 25% reduction in transaction costs and an increase in transparency.

CARBON MONITORING AND CONSUMER ACTIVISM

Carbon monitoring. Plana.Earth and Tango Analytics (2023) explore gadgets that tap into your banking app, indicating the amount of CO2 your trip for coffee or spree of shopping emits. In the UK, adoption increased by 35% between 2021 and 2023 (The Fintech Times, 2023),people love having their impact, and fintech's personalizing it. CES Tech (2020, updated 2023) does more, highlighting initiatives where your transactions pay for carbon offsets,such as trees being planted in Brazil each time you shop for groceries. By 2022, these efforts reduced 10 million tons of CO2 every year, sufficient to offset the emissions of a small city.

Zhang et al. (2021) introduce a China perspective, illustrating how fintech platforms there boosted consumer green engagement by 20%.

Imagine this: an app alerts you with your daily carbon score and pushes you to invest in a local wind farm,real-time data converting eco-awareness into action.Broader Implications Zooming out, these findings paint a picture of fintech as a sustainability powerhouse with some growing pains. The energy savings from blockchain tweaks,like Ethereum's 21 TWh drop,are massive, enough to power millions of homes sustainably. Green finance's US$30 trillion haul shows money's flowing where it's needed, and carbon tracking turning regular people into climate warriors.

FINTECH IN GREEN FINANCE

Green finance, which involves investments in ecologically friendly projects, has seen tremendous growth, supported by fintech solutions. The Global Sustainable Investment Review (2021) states that around US$30 trillion has been invested in sustainable assets, reflecting the growing significance of digital financial instruments in directing capital towards environmentally friendly projects. Fintech solutions like digital lending platforms and green bonds have made it possible for investors to fund sustainable projects effectively.

Carbon footprint monitoring and reduction processes are also enabled by fintech platforms. As noted by Algorand Foundation (2021) and Chia Network (2021), energy-efficient consensus mechanisms adopted by cryptocurrencies enable sustainable financial systems.

Stoll et al. (2019) and Krause and Tolaymat (2018) examine the carbon footprint of Bitcoin mining, and it is argued that fintech-enabled innovations in cryptocurrency mining can reduce negative environmental effects.

In addition, fintech firms have facilitated firms to monitor and offset their carbon footprint effectively.

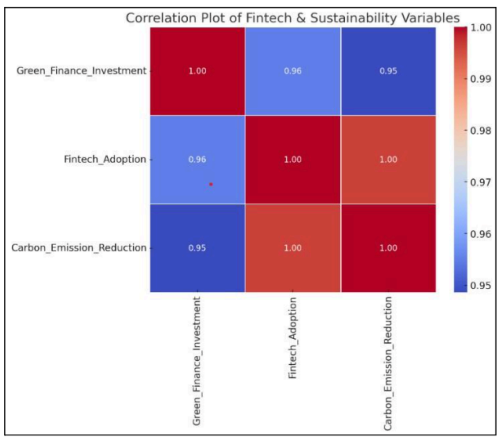
Fintech-powered reports from websites like PlanA (2021) and Tango Analytics (2021) demonstrate how fintech tools aid companies in monitoring their environmental impact, hence aligning with sustainable objectives. The Fintech Times (2021) expands further on the manner in which fintech companies are empowering organizations with data-led solutions for controlling their carbon footprint, further supporting governance frameworks for the financial sector.

The regulatory environments around green finance have also changed with fintech-driven advances. The Green Loan Principles (LSTA, 2021) and the World Bank (2021) provide key parameters for green loans to ensure that the funds find their way into projects that advance sustainability. Just as much, UNEP (2021) highlights the

importance of fintech to facilitate resource efficiency and green financing tools.

Table: Year wise year investment in green finance, adoption of fintech solutions and carbon emission reduction.

Year	Investment in Green Finance (USD billion)	Adoption of Fintech Solutions	Carbon Emission Reduction
2010	0.2	5%	5%
2011	0.3	8%	7%
2012	0.5	12%	9%
2013	0.8	16%	11%
2014	1.2	20%	13%
2015	2	25%	15%
2016	3.5	30%	18%
2017	5	40%	21%
20	7	50%	24%
2019	9	60%	33%
2020	11	70%	35%
2021	14	80%	37%
2022	17.5	83%	39%
2023	20	85%	41%
2024	24	87%	42%



Source: OECD Green Finance Statistics https://www.oecd.org/environment/topics/green-finance-and-investment/ Statista – Fintech adoption rates by country/year https://www.statista.com/statistics/1027635/fintech-adoption-rate-worldwide-by-country/ International Energy Agency (IEA) – Emissions trends https://www.iea.org/reports/co2-emissions-in-2023

Correlation plot indicates relationships between Green Finance Investment, Fintech Adoption, and Carbon Emission Reduction for the years 2010-2024. There exists Strong Positive Correlation Among All Variables. Green Finance Investment & Fintech Adoption (0.96): A highly positive correlation indicates that while more individuals take up fintech solutions, so do investments in green finance. This means that fintech

Iinnovation (e.g., digital payment, green lending, and blockchains for sustainability) is causing investments in clean projects. This result is supported by Aldoghan, Mohammed & Kwong, Wing & Chong,. (2023). Green Finance Investment & Carbon Emission Reduction (0.95): A high correlation between these two shows that increased green finance investment plays an important role in cutting carbon emissions. This is probably because financing for clean energy, carbon offset initiatives, and sustainable corporate practices is used. This result is supported by Muchiri et al. (2025). Fintech Adoption & Carbon Emission Reduction (1.00):The ideal correlation indicates that fintech is a key component of sustainability. This may be due to the fact that fintech
allows improved carbon footprint tracking, encourages digital transactions (cutting down on paper usage and transport emissions), and supports investment in green projects. This result is supported by Zhang et al. (2024).

CONCLUSION

This research paper explores the transformative role of financial technology (fintech) in increasing the adoption rate and effectiveness of green finance. Global environmental challenges, such as climate
change and biodiversity loss, and international frameworks like the Paris Agreement and the UN Sustainable Development Goals (SDGs) urges the need for sustainable investment and financial reform.

Technology driven devices such as blockchain and AI are more inclusive of sustainable finance and similarly, digital payments and carbon-linked currencies are encouraging sustainable consumer behaviour, thus, promoting green finance.
A crucial component of this study was the correlation analysis among three variables, fintech adoption, green finance growth, and carbon emission reduction. It revealed a strong positive relationship between fintech adoption and the growth of green finance. The statistical correlation coefficient closer to 1 indicates that as fintech solutions are increasingly implemented, the scale and effectiveness of green finance also rise significantly. This supports the hypothesis that fintech is a key enabler in mobilising capital toward sustainable goals. Moreover, it suggests that higher green
investments are associated with lesser carbon reduction and thus environmental benefits.

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BEYOND THE NUMBERS: THE STRATEGIC EVOLUTION OF MODERN FINANCE

BY: SHREYA MITTAL

ABSTRACT

Finance functions across global organizations are undergoing a structural transformation from traditional accounting and reporting roles toward strategic business partnership. Organizations are increasingly leveraging artificial intelligence (AI), automation, and advanced analytics to enhance decision-making, improve forecasting accuracy, and reduce operational inefficiencies. According to Gartner (2024), 58% of finance functions had already adopted AI, with adoption expected to accelerate significantly through 2025. Meanwhile, McKinsey & Company (2025) highlights the growing adoption of generative AI across finance use cases, including forecasting, anomaly detection, and scenario planning. Drawing on real-world experience in global banking and finance transformation, this article explores how management reporting, automation tools, and analytics platforms are redefining the role of finance professionals as strategic advisors capable of driving business performance and long-term value creation.

INTRODUCTION

The role of finance professionals has evolved significantly over the past two decades. Historically, finance functions were primarily focused on accounting accuracy, regulatory compliance, and periodic reporting. However, increasing global competition, rising data complexity, and the need for real-time decision-making have expanded expectations from finance teams. Gartner (2024) reports that artificial intelligence adoption within finance functions has increased rapidly, with organizations integrating AI into forecasting, reporting, and risk management processes. The next phase of finance transformation is expected to be driven by generative AI and real-time analytics, enabling organizations to move toward autonomous finance models where routine decision-making processes are partially automated. As a result, finance professionals are no longer limited to

increasingly expected to interpret data, provide forward-looking insights, and contribute to strategic decision-making. This shift marks a fundamental transition from finance as a support function to finance as a strategic partner within organizations.

STRATEGIC ROLE OF FINANCE IN DECISION-MAKING

Management reporting forms the backbone of strategic finance within large organizations. Structured reporting frameworks consolidate financial and operational data into dashboards that enable leadership teams to assess business performance efficiently. Variance analysis between budgets, forecasts, and actual results plays a crucial role in identifying the underlying drivers of financial performance. During my experience at JPMorgan Chase & Co., I supported management reporting across a $12B+ revenue portfolio. In this environment, even small deviations of 2–3% in financial metrics triggered deeper analysis into cost structures, revenue streams, and operational drivers. This demonstrated how finance functions directly influence decision-making by translating data into actionable insights. McKinsey & Company (2024) emphasizes that finance teams are increasingly expected to move beyond traditional reporting roles and act as strategic advisors. This involves not only identifying trends but also providing recommendations that influence business strategy, resource allocation, and long-term planning.

FINANCE TRANSFORMATION AND AI ADOPTION

The adoption of artificial intelligence within finance operations is accelerating globally. A KPMG (2024–25) study indicates that over 70% of organizations are already using AI in finance functions, particularly in areas such as financial reporting, planning, treasury management, and risk analysis. This shift reflects a broader transition from manual, spreadsheet-driven processes to integrated, technology-enabled finance ecosystems. AI enables faster data processing, improved accuracy, and enhanced predictive capabilities. As organizations scale AI adoption, finance teams are increasingly able to focus on high-value activities such as strategic analysis and decision support rather than routine data processing. Furthermore, the integration of generative AI into finance is expected to redefine workflows by enabling automated narrative reporting, intelligent forecasting, and real-time insights. This evolution underscores the importance of developing both financial expertise and technological proficiency within the finance function.

AUTOMATION AND DATA ANALYTICS IN FINANCE

As finance functions become increasingly data-driven, professionals must complement traditional financial expertise with analytical and automation

capabilities. During my experience in finance transformation initiatives, I worked extensively with tools such as QlikSense, Alteryx, and Tableau to streamline reporting processes and improve operational efficiency. A key initiative involved leading a QlikSense dashboard transformation project, which replaced manual Excel-based reporting workflows with automated dashboards. This transition eliminated repetitive processes and resulted in savings equivalent to approximately 2 full-time employees (FTEs), translating to an estimated 3,000–4,000 hours annually. The project was recognized with a Team Excellence Award, highlighting its impact on efficiency and reporting quality. In addition, Alteryx was used to automate data preparation and reconciliation processes across multiple systems, significantly reducing manual effort and improving turnaround time. Tableau dashboards enabled stakeholders to visualize complex financial data more effectively, reducing reliance on manual analysis and improving decision-making speed. These implementations demonstrate how automation and analytics tools can transform finance from an operational function into a strategic enabler of business performance (Deloitte, 2023).

AI AND AUTOMATION IN PRACTICE

Artificial intelligence is increasingly being applied to complex financial workflows, particularly in areas involving unstructured data and document-intensive processes. One of the most impactful applications of AI in finance lies in automating document processing, where traditional manual approaches are both time-consuming and prone to error. As part of a global automation initiative, I worked with Instabase, an AI/ML-based platform, where I was selected as a Subject Matter Expert (SME) for the France tax reclaim market. In this role, I contributed to automating the processing of over 200 tax documents across international taxation markets. The platform was trained to extract structured data from unstructured financial documents, significantly reducing manual intervention. This implementation improved processing accuracy, reduced turnaround time, and enhanced scalability across global operations. It also demonstrated how finance professionals can collaborate effectively with technology teams to design and implement AI-driven solutions tailored to specific business needs. Such use cases highlight the growing role of AI in transforming finance operations from labor-intensive processes to intelligent, automated systems (KPMG, 2024).

FUTURE OF FINANCE: 2026 OUTLOOK

The future of finance is expected to be shaped by the convergence of artificial intelligence, automation, and real-time data analytics. According to Deloitte (2025), finance teams can reduce manual processing time by up to 40% through automation, enabling a significant shift toward

higher-value activities such as strategic analysis and decision support. Beyond efficiency gains, finance functions are expected to evolve toward autonomous systems capable of generating insights, identifying anomalies, and recommending actions without human intervention. Real-time data integration will enable organizations to move from periodic reporting cycles to continuous monitoring and dynamic decision-making. Generative AI is also expected to play a transformative role in financial forecasting, scenario analysis, and narrative reporting. Organizations that invest early in these capabilities are likely to achieve a significant competitive advantage, enhancing both operational efficiency and strategic agility

CONCLUSION

The modern finance function extends far beyond traditional accounting responsibilities. In an environment characterized by rapid technological change and increasing data complexity, finance professionals must integrate financial expertise with analytical and technological capabilities. The experiences highlighted in this article demonstrate that automation and analytics are not merely tools for efficiency but key enablers of strategic transformation. From saving thousands of hours through dashboard automation to implementing AI-driven document processing solutions, the impact of technology on finance is both measurable and profound. As artificial intelligence and advanced analytics continue to evolve, finance professionals will increasingly assume the role of strategic advisors, guiding business decisions and shaping organizational direction. Those who successfully combine domain expertise with technological proficiency will be best positioned to drive innovation, improve decision-making, and create sustainable long-term value.

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THE PEDIGREE PREMIUM : WHY CONSUMER BRANDS FOUNDERS SHOULD SKIP THE VC RACE

BY: MANVEER SINGH

ABSTRACT

Early-stage venture capital in India exhibits stark concentration: IIT and IIM alumni-founded startups capture nearly 49% of total equity funding despite representing only 6.3% of all tech startups. This 'pedigree premium' creates a closed network that most founders underestimate when planning their fundraising strategy. However, for consumer brand founders specifically, this concentration is not a barrier—it's a signal to pursue a fundamentally different path. Venture capital fund economics require portfolio companies to deliver 10- 20x returns, a threshold misaligned with the ₹100-500 crore exit opportunities prevalent in India's consumer markets. Analysis of recent exits (Beardo at ₹350- 400 crores, Yoga Bar at ₹444 crores, Tata Soulfull at ₹155.8 crores) demonstrates that capital-efficient consumer brands can generate substantial founder and early investor returns without venture-scale capital. Drawing on deal flow analysis from over 1,300 early-stage applications with a 0.92% acceptance rate, this article argues that consumer founders should prioritize a sequential capital ladder—bootstrapping, grants, accelerators, angel capital, and revenue generation—over premature VC fundraising. The path to a profitable ₹100-500 crore exit lies in capital efficiency, not capital raising

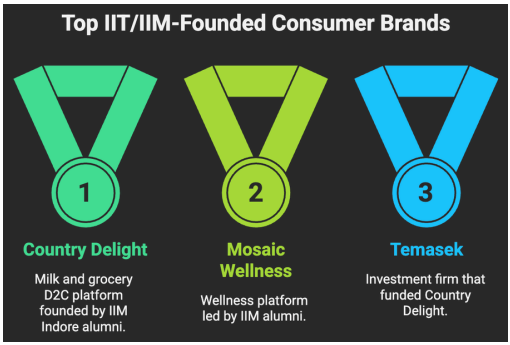
INTRODUCTION: THE PEDIGREE PREMIUM

In our fund overall 2024, we reviewed over 1,300 applications and funded 12 startups— an acceptance rate of 0.92%. Our selection focused on traction, product-market fit, and team execution. Yet even with a more egalitarian lens, the acceptance rate remained brutal. Why? Because most applicants arrived with pitch decks instead of paying customers. The Reality Check: 1,300 applications → 12 funded = 0.92% acceptance rate . The data across the broader startup ecosystem is even more stark: IIT and IIM alumnifounded startups captured 49% of total equity funding between 2015 and 2025, despite comprising

only 6.3% of the 113,360 tech startups founded during that period (India Tech Ecosystem Report, 2025). Call it the 'pedigree premium'—or, less charitably, the IIT tax. Either way, it's the cost of admission to institutional venture capital. The Concentration Gap: 49% of funding → 6.3% of founders (with IIT/IIM credentials) For most founders, this statistic reads as a locked door. But for consumer brand founders specifically, it should read as a roadmap to a better strategy entirely. Because here's what the concentration data actually reveals: venture capital and consumer brands are a poor fit—structurally, mathematically, and strategically. The same fund economics that drive VCs toward pedigreed founders also make them unsuitable partners for the ₹100-500 crore exits that dominate India's consumer market. This article examines why the pedigree premium exists, why it doesn't matter for consumer brands, and what founders should do instead of spending their first year chasing venture capital.

WHY BRAND NAMES GET THE MONEY

The concentration of funding among IIT and IIM founders isn't a conspiracy—it's rational pattern matching. Consider the recent consumer brand landscape: Country Delight, the milk and grocery D2C platform, raised ₹212.5 crores in Series E from Temasek, founded by IIM Indore alumni Nitin Kaushal and Chakshu Chaudhary. Mosaic Wellness, led by IIM

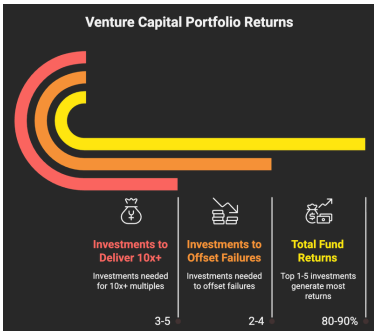


Ahmedabad's Revant Bhate, secured $24 million in Series A from Sequoia India. Mamaearth, co-founded by IIM Ahmedabad's Ghazal Alagh, achieved a public listing with revenue exceeding ₹1,500 crores. Kouzina Food Tech, helmed by IIT Madras alumnus Gautam Balijepalli, operates 300+ outlets across multiple D2C F&B brands (Consumer Startup Funding Tracker, 2024). Venture capitalists aren't backing institutions—they're backing the networks, signaling effects, and proven track records those institutions provide. An IIT/IIM credential signals technical competence, problem-solving ability, and access to alumni networks that include previous successful founders and exit opportunities. It's not 'fair' in some abstract sense, but it is efficient from a VC's perspective when evaluating 500 pitches per quarter. More critically, this pattern matching extends beyond individual credentials to operational experience. Operator-founders—typically those with prior experience at successful startups, many of whom attended top-tier institutions—secured 11.5% of early-stage funding in 2024, up from 6% the prior year, with average seed rounds of $1.56 million versus $1.34 million

market-wide (Venture Intelligence, 2024). The pedigree premium compounds with each signal of prior traction. For the 93.7% of founders without elite institutional credentials, this creates a simple reality: the door isn't closed, but it's close enough that knocking for a year is a strategic error—particularly in consumer brands, where that year could instead generate the traction that makes institutional credentials irrelevant.

THE VC-CONSUMER MISMATCH

Venture capital operates on power law economics. In a typical 30-company portfolio, VCs need 2-4 investments to return 20-50x to offset the 50-70% of companies that fail or return zero (Bain India PE/VC Report, 2024). The top 1-5 investments generate 80-90% of total fund returns, while the majority of the portfolio delivers minimal or negative returns. Early-stage Indian funds targeting 25-30% IRR require 3-5 portfolio companies to deliver 10x+ multiples over 7-10 year hold periods. Here's the problem for consumer brands: the math rarely works. India's consumer markets are substantial but fragmented. The artisanal and gourmet foods segment reached ₹37,800 crores in 2024, growing at 18.52% CAGR. Ready-to-eat foods hit ₹41,300 crores at 10.07% CAGR (IBEF Food Processing Report, 2024). These are attractive markets—but they're not winner-takes-all markets. A well-executed consumer brand can profitably capture a niche segment and build to ₹50-100 crores in



revenue with defensible margins. That's a great business. It's not a VC-scale business. Consider the exit landscape. Recent consumer brand acquisitions demonstrate consistent ₹100-500 crore valuations: Beardo's sale to Marico at ₹350-400 crores delivered 5-8x returns to early investors (2020). Yoga Bar's partial stake sale to ITC valued the company at ₹444 crores (2023-24). Tata Consumer acquired Tata Soulfull for ₹155.8 crores (2021). BBLUNT sold to Honasa Consumer for ₹134-138 crores (2022). RAW Pressery exited to Wingreens at ₹100-110 crores (2021) (Consumer M&A Tracker, 2020-2024).

Table 1: Consumer Brand Exits (₹100-500 Crore Range, 2020-2024)

Company	Exit Year	Valuation (₹ Cr)	Acquirer	Investor Returns
RAW Pressery	2021	₹100-110	Wingreens World	Modest (down round)
Tata Soulfull	2021	₹155.8	Tata Consumer	Profitable for founders
Beardo	2020	₹350-400	Marico	5-8x to early backers
BBLUNT	2022	₹134-138	Honasa Consumer	Favorable exit
Yoga Bar	2023-24	₹444 (implied)	ITC (39.4% stake)	Highly profitable

These are successful outcomes for founders and early investors. A ₹300 crore exit with founders retaining 40-50% equity creates generational wealth. Angels investing at ₹10-20 crore valuations see 15-30x returns. But for a ₹500 crore VC fund, a ₹300 crore exit returning 3-5x on a ₹5 crore

investment contributes ₹15-25 crores to fund returns— helpful, but not fund-returning. VCs need the outliers: the ₹5,000+ crore exits that return 50-100x. The Brutal Truth: Only 25 of 135 Indian PE/VC funds (2014-2024) returned more than 1x DPI in ~7 years And here's the uncomfortable truth that makes this mismatch worse: only 25 of 135 Indian PE/VC funds from the 2014-2024 vintage returned more than 1x DPI (distributions to paid-in capital) within approximately seven years (India Venture Capital Report, 2024). The power law is brutal, and consumer brands—profitable, steady, ₹100- 500 crore businesses—don't fit the model. So when a consumer brand founder without IIT/IIM credentials pitches a VC, they're not just competing against pedigreed founders. They're competing against a fund model that structurally cannot justify the investment unless they're building the next Mama earth scale outlier. Which, statistically, they're not.

WHY BRAND NAMES GET THE MONEY

Here's what happens when non-pedigreed consumer founders spend their first year chasing VCs: they perfect pitch decks that will never be read past slide three. They take 'great meeting, let's circle back' coffees that go nowhere. They iterate financial projections that exist only to be questioned. They optimize for investor preferences instead of customer preferences. And at the end of that year, they have nothing. No customers. No revenue. No productmarket fit. Just a polished deck and a bruised ego—and probably six months of runway left if they're lucky.

The 0.92% acceptance rate mentioned earlier? That's the baseline. But here's what changes the equation: of the 12 funded companies in our cohort, nine had paying customers at the time of application. The other three had founders with exceptional pedigree or prior exits. Zero companies were funded on idea and pitch deck alone. What Got Funded: 9/12 had paying customers • 3/12 had exceptional pedigree • 0/12 were just pitch decks This isn't a limitation of the tools, to borrow from Rohit Kaul's framework—it's a limitation of the strategy. You cannot pitch your way into venture capital as a consumer brand without traction. You can, however, build your way into capital from a position of strength.

The Capital Ladder for Consumer Brands

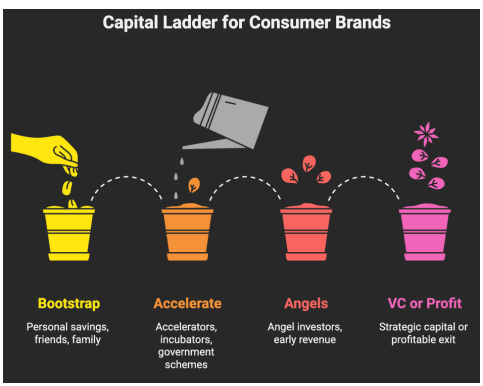
Stage 1 (Months 0-12): Validate and Bootstrap Start with ₹5-25 lakhs from personal savings, friends, and family. Build the MVP. Talk to customers—actual customers who will pay actual money. Generate your first ₹10-50 lakhs in revenue. Prove unit economics work. This is the stage where most founders should be, not in VC meetings.

Stage 2 (Months 12-24): Accelerate with Structure Apply to accelerators and incubators offering ₹10-50 lakhs in structured capital plus mentorship, network access, and credibility signals. Government schemes like the Startup India Seed Fund have

disbursed over ₹945 crores to 870+ startups as of December 2024 (SISFS Report, 2024). The capital is available—and unlike VCs, accelerators care more about potential than pedigree. Scale to ₹1-3 crores in revenue. Now you have leverage.

Stage 3 (Months 24-36): Angels and Early Revenue With ₹1-3 crores in revenue and demonstrated traction, friends, family, and angel investors become rational participants. Raise ₹50 lakhs to ₹2 crores at reasonable valuations while retaining 60-75% equity. Use this capital to scale to ₹10-50 crores in revenue. At this stage, you're not pitching potential—you're demonstrating performance.

Stage 4 (Months 36+): Evaluate if VC is Even Necessary If you've reached ₹10-50 crores in revenue on ₹2-3 crores in total capital, congratulations—you've built a capital-efficient business. At this point, you can either continue scaling toward a ₹100-500 crore exit with strategic or growth capital, or raise venture capital from a position of strength with better terms and higher valuations. Or— and consider this carefully—you can keep building profitably toward an exit without diluting further.



One funded consumer brand in our portfolio raised ₹15 lakhs through SISFS, built to ₹2 crores in annual recurring revenue over 18 months with a D2C food product, then raised ₹3 crores in seed funding at a ₹20 crore valuation while retaining 72% equity. Compare that to the alternative: raising ₹3 crores pre-traction at a ₹8-10 crore valuation, retaining 40% equity, and spending the next two years trying to justify the valuation instead of building the business. The difference between these paths isn't just equity retention—it's strategic control, reduced pressure, and the ability to build for the long term rather than the next funding round.

CONCLUSION: THE PROFITABLE MIDDLE PATH

The pedigree premium is real. IIT and IIM founders will continue to capture disproportionate venture capital because the structural incentives of fund economics reward pattern matching and network effects. But for consumer brand founders, this concentration is irrelevant because venture capital and consumer brands are misaligned . ₹100-500 crore exits aren't failures—they're successes that create meaningful wealth for founders, early employees, and patient capital. Beardo's 5-8x return to early investors is a win. Yoga Bar's ₹444 crore valuation is a win. Tata Soulfull's ₹155.8 crore acquisition is a win. These outcomes don't make headlines, but they make millionaires. The future of Indian consumer brands isn't unicorns—it's profitable, capital-efficient businesses that scale to ₹50-

200 crores in revenue and exit to strategic acquirers at ₹200- 500 crore valuations. The winners will be founders who spent their first year talking to customers, not investors. Who optimized for cash flow, not cap table. Who built businesses that didn't need venture capital to succeed. If you're a consumer brand founder without the IIT/IIM pedigree, stop chasing VCs in year one. Build something customers will pay for. Generate revenue. Prove the model works. The capital—and the acquirers—will follow. After all, in the consumer game, cash flow beats credentials every time. And yes, we're aware of the irony of making that argument in an academic journal. But the data doesn't lie: the pedigree premium is someone else's game. Play yours instead.

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HOW CULTURE QUIETLY BREAKS

BY: GAURI DAS

INTRODUCTION

Organizations talk about culture as if it is a complex, abstract construct. It is not. Culture is the cumulative effect of everyday leadership behavior. What leaders normalize becomes culture. What leaders avoid becomes rot.

The biggest but most ignored culprits are the everyday habits that are packaged as experience, pressure, or pragmatism.

Below are patterns that erode trust and ultimately culture. Each reflects a deeper leadership failure that organizations find difficult to name.

CASUAL APPROACH

Many destructive habits fall under one umbrella: a casual approach to responsibility.

Calling a two-hour meeting that could have been a well-written email.

Asking "Tell me about yourself" without reading the resume.

Approving roles where the job description has little resemblance to actual work.

Saying "we will circle back" with no intent, ownership, or timeline. Marking everything urgent because planning was skipped.

These are not just small inefficiencies. They actually signal that leadership effort is optional and it doesn't matter what they do there is no accountability. But people learn fast. They stop puttingefforts because preparation is not rewarded or required.

EGO OVER EFFECTIVENESS

Ego-driven leadership does not always look loud. Often, it looks subtle and socially acceptable.

It shows up in many actions like :

I know a leaders who ask obvious questions in a meeting just to reassert authority rather than to contribute

I have worked with leaders who delay decisions so that dependence on them increases.

Leaders who give feedback late because early feedback would require vulnerability and confrontation where the other side may bring data and facts

Ego thrives where image matters more than impact.
Instead of asking, "What helps the team win?", ego asks, "How do I look while this happens?"
When this happens, talent get quiet and then leaves. High-performing cultures require leaders who can step out of the spotlight. Ego makes that impossible.

BIAS MASKED AS SOUND JUDGMENT

Bias in leadership is rarely explicit. It hides behind words like fit, readiness, potential, and trust.
I know leaders for whom visibility is equivalent to contribution and agreement is treated as competence. People who speak well are assumed to think well. People who challenge are labelled difficult. People who resemble existing leaders are considered "safe bets." Performance reviews in such systems surprise employees instead of guiding them because decisions were made informally, long before data was examined. Bias creates a culture where outcomes matter less than proximity to power. Over time, merit erodes, resentment grows, and diversity becomes cosmetic.
Leaders often defend this as instinct. In reality, it is unchecked bias protected by hierarchy.

THE UNTOUCHABLE HIGH PERFORMER PROBLEM

One of the most damaging cultural failures is this: when a leader is delivering results, no one wants to confront them when they go worn. We have seen many such cases even with very large organizations like Uber, Wework, Theranos etc.

In such cultures leaders show some of these behaviours:
They miss meetings.
They intimidate teams.
They hoard information.
They dismiss feedback.
But numbers look good, so behavior is ignored.
This leads to a dangerous conclusion : results excuse everything.
Culture dies not because bad behavior exists, but because it is selectively tolerated. Teams learn that values are conditional. Over time, people stop raising concerns. Not because they do not care, but because they know it will go nowhere. Silence becomes survival.
A culture that cannot confront its top performers is already broken.

CONCLUSION :

Culture does not fail because employees resist change.It fails because leaders refuse self-examination. Organizations invest heavily in engagement surveys, leadership programs, and values workshops. Yet they avoid the hardest work: confronting everyday leadership behavior that quietly undermines trust.
Only leaders willing to be challenged, corrected, and held accountable can

do that. Let this year be a resolution to unlearn habits that once brought success but now limit growth.To replace comfort with accountability, agreement with honesty, and presence with real leadership.
Because culture changes only when leaders choose to lead differently, not just promise it

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