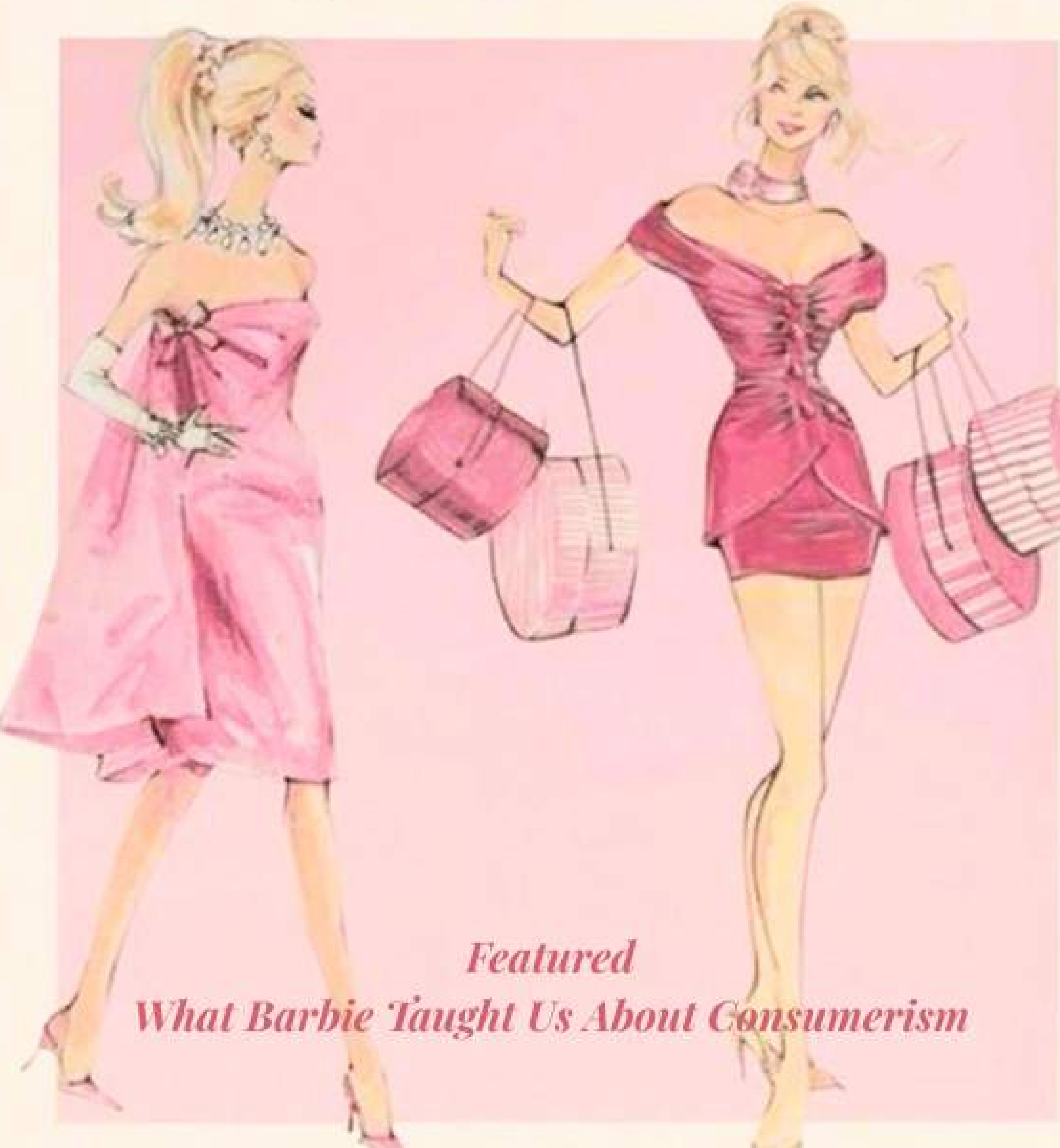
Volume 6

Arthik पत्र

Pink, Profits, and Perspectives: Stories of Consumerism and Economics



Featured

What Barbie Taught Us About Consumerism

Faculty Coordinator's Note

Dear Students, Faculty, and Esteemed Readers,

It is with immense pride and joy that I write this note as the Faculty Coordinator for this year's edition of the Economics magazine Arthikपत्र by the Economics Society of USME EcoTech of our college magazine. This publication is more than just a collection of articles; it reflects the opinions, aspirations, and hard work of our students and participants who have contributed to the content for this edition of Arthikपत्र.

Behind every page is dedication, brainstorming, and meticulous editing, all driven by a collective passion for excellence. I extend my heartfelt gratitude to the editorial team, the contributors, and everyone who worked to bring this magazine to life. I am immensely proud to announce the release of the Fifth edition of the Economics magazine Arthikपत्र. May this edition entertain and enlighten you, ignite new ideas, and foster a sense of community among us all.

Dr. Puneet Kumar Arora
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Editor's Note

Each year, we begin with a question: what stories are worth telling? The answer is never simple, but it always leads us to the intersections where ideas meet real life. This edition is built on those intersections—welcome to Arthik Patra 6.0!

Economics is everywhere: hidden in your Spotify playlist, your weekend binge-watch, and your Instagram algorithm. This year's edition captures exactly that spirit — finding economics in the familiar and making sense of how it quietly shapes our world.

From decoding the economics of pop culture and the future of AI, to unpacking the chaos of global trade wars and questioning whether sustainable finance can truly walk the talk , this edition goes beyond numbers. We aim to connect the dots and show how those numbers influence your everyday life.

On a personal note, I must acknowledge someone who made this edition possible. I still remember meeting Lamya Khan in the very first month of college. This edition of Arthik Patra wouldn't have seen the light of day without her stepping in as Deputy Editor-in-Chief at the last minute. Lamya Khan, I owe Arthik Patra 6.0 to you.

With that, from concept to creation, we present Arthik Patra 6.0.

Catch you inside,
Anushree Choudhury
Editor-in-Chief, ArthikPatra 2024-25
USME, Delhi Technological University

What's Inside

editorials

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What Barbie Taught Us About Consumerism

By: Neha Verma

When Barbie threw open the plastic doors of her picture-perfect Dreamhouse and sashayed her way into the real world in Greta Gerwig's 2023 film, her purse was heavy not only with the treasure troves of pink lipsticks and existential questions, but also with the weight of over six decades of consumerist culture. From her origins as a metaphor for manufactured magnificence to her reinvention as an emblem of empowerment and inclusivity, Barbie has mirrored and moulded the desires of generations. But away from all the flashy lights and glitter lies a thin correlation between glamour and economics: how brands sell not just products, but identities. Barbie teaches us that in the vast marketplace of modern capitalism, self-worth, gender roles, and even rebellion can be commodified.

The Birth of a Brand: A Doll for the Dream

Barbie put on her fancy stilettos and wrapped herself up in a box for the very first time in 1959, debuting under bright spotlights and camera flashes. She was more than just a toy. She was a coup de maitre—a marketing masterstroke. Introduced by Mattel, an American multinational toy manufacturing company, she shattered the norms of a traditional doll into smithereens, setting the post-war market ablaze. Barbie was not a baby to be cared for, but a woman. to be emulated. Her shiny, blonde hair, perfect figure, and gaudy accessories projected a lifestyle that was every little girl's dream. Barbie tapped into the booming demand and rising suburban affluence and established a place for herself. In a world where television was emerging as a major advertising tool, Barbie. became an icon not just in playrooms, but in the economic psyche of a growing middle class.

Aspiration and Identity: The Economics of Becoming

Barbie, although a mere toy in the eyes of the industry, was anything but that for the demographic she was targeted towards. Her modus operandi lay in the identity she promised to millions of little girls. They weren't just playing house with a doll; they were playing with a possible self. Through an endless wardrobe of sparkly gowns, hundreds of careers, and huge sets of Dreamhouses, Barbie bestowed upon them a pathway to an idealised adulthood. This revolves around the idea of identity economics—the theory by George Akerlof and Rachel Kranton that people make economic choices based not just on rational needs, but on how those choices align with

their perceived identity. In Erich Fromm's words, "To have is to be." Capitalism shifts the focus from being to owning, and Barbie, in essence, did not sell a simple product but a persona, supporting this thinking.

Brand Loyalty and Early Imprinting

Barbie escaped the clutches of becoming a passing phase through targeted marketing. The brand was embedded in early childhood, ensuring long-term attachment in the masses. Emotional and nostalgia appeals were exploited by Mattel for the same, the results of which were proven to be incredibly fruitful because Barbie still stands strong—and not just among young girls, but also among adult women who seek comfort in reminiscing

they have shared with her, be it through toys, movies, or shows. Studies in marketing psychology reveal how early brand exposure builds lifelong loyalty. Barbie was nurturing future consumers who would prefer her over her competitors into adulthood, influencing decisions from fashion to lifestyle.

Conspicuous Consumption and Veblen's Dreamhouse

Thorstein Veblen's concept of conspicuous consumption finds a perfect match in Barbie's world. He gave The Theory of the Leisure Class: Buying to Signal Status. The Dreamhouse, roseate sports cars, and perpetually expanding wardrobe became status symbols, reinforcing the idea that consumption equates to value. As children vied for the latest model of Barbie or the rarest limited-edition outfit, the doll became a conduit for social competition, subtly instilling capitalist ideals of purchasing, acquisition and comparison.

From Plastic to Progressive: Repackaging Empowerment

In recent years, Barbie's image of a flawless blonde diva has been restyled and transformed into something real, imperfectly perfect and achievable. Mattel has attempted to align the brand with contemporary values of diversity and empowerment with the release of more unconventional Barbies. All sorts of body types, skin tones, and career options have been inculcated in the company's endeavours to achieve inclusivity. Black Barbies, such as Barbie "Brooklyn" Roberts, were released to honour Black History Month, as well as to establish the cornerstones of its new initiative. While commendable on the surface, critics argue that this is an example of "commodity feminism"—where feminist ideals are repackaged and sold back to consumers as something 'revolutionary'. As Sarah Banet-Weiser points out, empowerment itself becomes a product to be bought, often underpinning the very capitalist structure it aims to challenge.

The Barbie Movie: A Case of Meta-Consumerism

Greta Gerwig's popular creation, *Barbie* (2023), brilliantly walks the tightrope between critique and celebration. It raises a question on the contradictions of Barbie's legacy—her part in promoting narrow beauty standards while also inspiring an entire generation of girls, urging them to fight against the patriarchal norms that forced them to play the role of a housewife alone. But even as the film satirises mass consumption, it actively participates in it. Branded merchandise, fashion collaborations, and viral marketing campaigns across the world turned the film into a mega-commercial event. There is hardly anyone who does not know of its success. This is consumerism at its peak, where even critique is consumed, commodified, and sold back to us as entertainment. Jean Baudrillard's idea of hyperreality, where symbols replace reality

—slots itself into this analysis perfectly. Barbie, a commodity to be bought and sold, represents womanhood more than real women who advocate for the same causes.

Conclusion: Barbie as a Mirror of the Market

Barbie, in her many forms, tells us much about ourselves. She reveals how deeply consumption is tied to identity, how marketing can shape dreams, and how capitalism is adept at absorbing critique and turning it into profit. As we venture through a world defined by branding and self-presentation, Barbie reminds us that in the economy of modern life, even self-expression is up for sale. Perhaps, in understanding Barbie and the variety of layers to her, we understand a little more about the rose-coloured glasses through which consumerism views us all.

The Invisible Heist

How Monetary Policy Rewards the Rich and Burdens the Rest

By: Archi Garg, Tanisha Raj and Ritika Tuli

Urban towers glass and gleam, Rural homes chase a broken dream. Policy's coin flips high and fast, But who holds tails—the poor—at last?

This heist is happening all around us — from the tech parks of Bengaluru to the drought-ridden farms of Bihar, from Delhi's polished boardrooms to the crowded chawls of Mumbai. And the most unsettling part? It's all perfectly legal. In fact, it's often celebrated as prudent economic stewardship. But look closer, and you'll see how modern monetary policy — under the guise of macroeconomic stability — deepens divides rather than bridging them.

The Foundations of an Unequal System

The roots of this issue can be traced back to classic economic theories. Adam Smith's "invisible hand" envisioned a system where individual self-interest would lead to collective prosperity. This hand was meant to guide markets toward equilibrium, ensuring that personal gain results in societal benefit. Yet, the hand we witness today seems to push wealth upward, bypassing the working class.

The Reserve Bank of India (RBI), like many central banks worldwide, uses interest rates and liquidity adjustments as its main tools to control the economy. When the economy slows, it slashes interest rates to spur investment and spending. This makes borrowing cheaper for businesses and investors, intending to stimulate growth.

However, this approach inflates asset prices — stocks, real estate, and bonds — benefiting those who already own them. For the wealthy, this is a windfall; for the working class, it is an unyielding squeeze.

Monetary Policy and the Asset Inflation Paradox

To understand the mechanism of this invisible heist, it's critical to grasp the dynamics of monetary policy and asset inflation. When central banks lower interest rates or inject liquidity into the economy, money floods the financial system. Ideally, this encourages businesses to borrow, invest, and hire more workers. But in reality, much of this new money flows into financial markets rather than Main Street.

Take the Indian stock market, for example. During the COVID-19 pandemic, as the RBI cut rates and pumped liquidity, the benchmark Nifty 50 index surged to record highs. The richest Indians saw their wealth multiply as their equity holdings swelled. Real estate prices also skyrocketed in metros like Mumbai, Bengaluru, and Delhi, fueled by cheap credit and speculative buying.

Meanwhile, the majority, especially those dependent on wages rather than assets, did not benefit. Wage growth remained stagnant, and inflation eroded the purchasing power of salaried workers. The informal sector — which employs over 80% of India's workforce — suffered immensely during the pandemic, with millions losing their livelihoods and falling deeper into poverty.

John Maynard Keynes, the father of Keynesian economics, argued that during economic downturns, governments and central banks must stimulate demand through public spending and monetary easing. This strategy was widely adopted during the COVID-19 pandemic. India injected massive liquidity and cut interest rates. Yet, while the stock markets soared and luxury housing boomed, the informal sector faced devastating job losses.

A Tale of Two Indias: The Human Cost

Sunita, a 35-year-old woman from a small village in Uttar Pradesh. Before the pandemic, she worked as a daily wage labourer, earning just enough to feed her family. When the lockdown struck, her work vanished overnight. Despite the government's liquidity measures and rate cuts, Sunita saw no relief. Prices of essential grains and vegetables soared, making basic sustenance a daily struggle. Her family's meagre savings were rapidly depleted, and debt became an unwelcome companion.

In stark contrast, Rajesh, a software engineer in Bengaluru, watched his investment portfolio swell as the stock market surged. His real estate property appreciated sharply. While Sunita worried about feeding her children, Rajesh celebrated the doubling of his wealth. This disparity is not just economic; it's deeply social, creating two Indias growing further apart.

Sunita's story echoes the silent struggles of millions across rural and urban India. The monetary policies that pumped the markets and saved corporations failed to translate into tangible benefits for those who needed them most.

A 2021 report from the Centre for Monitoring Indian Economy (CMIE) noted that over 10 million jobs were lost during the first wave alone. The informal workers, daily wage earners, small vendors, and migrant labourers bore the brunt, with little to no direct benefit from monetary easing.

This disconnect raises a critical question: Is monetary policy alone sufficient to ensure equitable growth? The evidence suggests not.

One of the most persistent myths in economic policy is the idea of trickle-down economics — the belief that benefits given to the wealthy will eventually trickle down to everyone else. India's 2019 corporate tax cut, which reduced rates from 30% to 22%, is a prime example.

According to The Hindu BusinessLine (2023), corporate profits did increase post-tax cut, but private investment and job creation did not follow suit. The wealthy gained, while workers waited. Instead of new factories, more jobs, or higher wages, much of the increased profit was hoarded or distributed as dividends to shareholders — many of whom are already rich.

This phenomenon reflects a structural problem: the wealthy hold assets that appreciate with loose monetary policy and tax breaks. The poor rely on wages, which remain stagnant or decline in real terms. Inflation, often a side effect of monetary stimulus, erodes these wages further.

Inflation, Debt, and the Middle-Class Squeeze

Inflation is a stealthy thief. While asset owners enjoy rising values, the poor and middle classes face rising prices for food, fuel, housing, and healthcare. When inflation rises, the RBI tightens policy by increasing interest rates to control prices. This leads to costlier loans for businesses and consumers, reducing demand and slowing growth.

But it also deepens hardship for those reliant on credit to cover basic expenses. A 2023 RBI report showed that household debt had climbed to 43% of GDP — a record high. At the same time, household savings rates hit a 50-year low, leaving families vulnerable to shocks. In 2024, Indian households grappled with soaring prices as inflation strained budgets and reduced purchasing power. High inflation rates cut into savings and curbed discretionary spending. The Reserve Bank of India (RBI) focused on aligning headline consumer price inflation (CPI) to its 4% target, as CPI inflation averaged 6% for four years. It's no surprise, then, that families began tightening their thalis, with fewer outings, fewer pizzas, and more dal-chawal dinners.

Take Ramesh, a middle-class teacher in Pune. With rising prices and stagnant salary increments, he took on a personal loan at a high interest rate to cover his children's education fees. As rates rose, his EMIs increased, forcing him to cut back on essentials. His story is repeated in millions of homes where debt replaces security, and dreams of upward mobility fade.

The disparities extend even to basic needs. A recent study published in the Indian Journal of Agricultural Economics found that food consumption inequality in rural India worsens during expansionary monetary policy phases. Liquidity intended to boost the economy often fuels food inflation — hurting the poor disproportionately. Rural households, especially small and marginal farmers, face rising input costs and erratic market prices. At the same time, wage labourers in villages see limited gains. Food inflation squeezes budgets, reduces nutrition, and deepens rural poverty.

Why Do These Policies Persist?

You might ask — if these policies worsen inequality, why do they continue? The answer is complex. First, policymakers often focus on aggregate indicators like GDP growth, inflation rates, and the stock market performance. These measures obscure distributional effects. A booming stock market is seen as a sign of economic health, even if millions face joblessness.

Second, powerful interest groups — corporations, financiers, and wealthy investors — exert influence over policy decisions, often lobbying for measures that protect their interests.

Third, there is a deep faith in market efficiency and the self-correcting nature of economies. The belief is that short-term pain will lead to long-term gain for all. But the evidence suggests otherwise, especially for marginalised groups.

Lastly, monetary policy is technical and opaque. The language of central bankers is full of jargon that alienates the general public, reducing accountability and debate.

Conclusion: Making Noise Against the Invisible Heist

The next time a policymaker touts growth or inflation control, ask: who benefits? The Invisible Heist thrives on silence and complexity. It's time to make noise.

India stands at a crossroads. It can choose a future where economic growth lifts all boats, or one where the gap between the haves and have-nots only widens.

Recognising that monetary policy is not neutral but political, social, and deeply human is the first step toward an economy that works for everyone — not just the privileged few.

For every policy that seeks to mend, Let inclusion be the truest end. May Bharat rise not just in chart, But in each home and beating heart.

The Passion Economy

By: Manav

Aamir Khan's 3 Idiots, which embraced knowledge building, creativity and following the path towards your passion, was a legendary movie that's still fresh in the memory of our generation. But the need and importance of adhering to one's passion and wants as a common and acceptable idea in India is still a far-fetched dream. The 'society' still grapples with the vision that income, power and the new one, being busy, are some of the traits of a 'successful' and passionate individual, where hobbies and interests, which could have brought more happiness and self-satisfaction to the one, take a back seat. Although Rancho's character was to some extent extraordinary, there's a mass of Farhan, Raj,u and yes, Chatur still breeding. But is this visionary passion economy achievable? Can we ignore the societal vision of career and take up our journey? And how will it impact the economy?

Creativity, as it is defined, is the ability to make or produce new things using skill or imagination, and with many other characteristics, it's also nurtured in school. Since its independence, India has emphasised a lot on primary schooling and the need to scale up enrollment, given the meagre literacy rate at that time. With considerable efforts, we achieved a commendable enrollment rate and have lifted the literacy levels of millions of Indians. But what the policy makers didn't cater to was the point that school was not merely a formal setup of producing employable beings (which wasn't also achieved), but rather a juncture of creativity and interest building. The foundation of both of which is built at that very age and time. School stressed a lot on language and facts, and we were unable to cultivate new ideas and thoughts; the much-talked-about nature of teachers in those schools added to the hindrance.

Education has three broad goals: learning, growth and sorting, but our system paid a lot of heed to the third, ignoring the former. It soon turned out how critical that mismanagement was to the cost. This somehow impacted our societal vision, career understanding and way of life. The lack of diversity in the curriculum and the inability to build interests led to some major implicit biases that can be readily seen around. Vocational education, which missed a spot in schools, led to a decline in labour proficiency for the manufacturing sector, and a lack of importance drawn towards sports and fitness has led to India's poor performance at the Olympics, but these were some structural issues which were quite explicit. But a much larger implicit was the impact on the mindset of individuals. These were burdening education without learning the misunderstanding of education as a means to an end, wanting a steady and passive life, being risk-averse and having a shrewd mentality and bagging misdirected goals.

A recent study showed that the youngsters are the most stressed age group in the country, the age where learning, creativity and interest building are at their peak. The youngsters are still grappling with societal understandings of their interests, moulding themselves accordingly rather than trying to give it a mould. The public sector is the biggest employer in the country, which is not much debatable given the size of the country and the need to ensure services for all. But the dire state of public institutions has a lot to do with the lack of interest. A government job has been a symbol of prestige, and the reasons are quite obvious, given the stability and permanence.

in income and ob, but that is not what we're here to talk about, what's more concerning is that public institutions and the most unproductive. The reason is obvious: people prefer this sector for the benefits and, maybe, some implicit motivation of service, but that is not what breeds creativity. Creativity needs passion, and the latter needs interest. Every year, millions of youngsters sit for examinations for various government positions with a mix of interests. These exams are a combination of many major domains and are not subject-specific very often, so it is very common to find individuals plunging into sectors they are not quite interested in, but rather the tag of a government job. And this is a major reason for the inadequacy of the public sector, people are not drifting into the fields they are interested in or familiar with. Subject specifications are not given due attention, given the massive amount of money required to conduct field-specific exams. Interests take time to build, and freedom of thinking and independent ideas are their basis, which is the empty quarter of our system.

Mere subsistence is an act of animals; creativity, passion that sets us apart. Making our system more interest-oriented and giving people the ability to delve into their interest areas, or level first to find their interests. It will have a dramatic impact on the overall economy and its productivity. It may look utopian to think of an economy where everyone do, es what they love to do or where their interest lies, given the various challenges, such as this understanding. A major challenge is that it's not possible to provide every sector or field with equal importance and attention, given the needs of our economy, which further leads to a split of interests. Also, it is not easy to accommodate major interest groups and equally spread them, given some fields such as sports, public service, science and tech being crowded, whereas others, such as writing, journalism seen as boring and void, not being able to appeal. But the vision is not about accommodation or equalisation, it is about freedom and interest building. It doesn't say that an artist should be compensated equal to a public servant, but rather that an artist should be an artist and that she should be provided with the environment to foster her interest and should not be seen as a failed academic. It may look economically absurd to prefer fields that yield less for the individual monetarily, and this idea is more about self-satisfaction and the creation of a society that values interest-building rather than mere subsistence.

Neuroeconomics

The Brain Science Behind Every Rupee You Spend

By: Sai Neha Upadrasta

Introduction

Behind every rupee spent lies a reason, and behind every reason a heartbeat with a brain. Have you ever wondered why your brain lights up during a sale or why a ₹400 coffee doesn't seem expensive after having a rough day? Behind every financial decision, from impulse small buys to long-term investments, lies an intricate interaction of neurons, emotions and cognitive biases. Welcome to neuroeconomics, where your brain, not your budget, takes centre stage.

Traditional economics told us, consumers are rational, always weighing between costs and benefits. But, neuroeconomics challenges this by proving that our financial decisions are deeply affected by emotions, hormones and even past trauma. It reveals our innate tendency towards instant gratification, fear of missing out and emotional spending.

In a nation which is seeing rapid financial digitisation and rising consumerism, it is important to understand the why behind the buy. This editorial explores the brain science behind every rupee you spend, and what that means to your wallet in the modern economy.

What is Neuroeconomics?

Neuroeconomics is an emerging interdisciplinary field that merges neuroscience, economics and psychology to explore the how and why behind human financial behaviour. It is an intersection of behavioural economics and cognitive neuroscience, deepening our understanding the irrational, emotional and subconscious aspects of economic decision-making.

While behavioural economics explains what people tend to do—like overspending, procrastinating on saving and falling for sunk cost fallacies—neuroeconomics delves deeper and focuses on why we behave in that way and what happens inside our brain when we make financial decisions.

At its core, neuroeconomics tries to answer questions like:

- Why do we value instant rewards more than long-term gains?
- What drives us to impulse buying?
- How do fear, trust, and social cues affect investment decisions?

Using tools like fMRI (functional magnetic resonance imaging) and EEG (electroencephalography), researchers observe which parts of the brain light up and activate during different financial decisions.

For instance:

- The amygdala, associated with emotions like fear, might trigger panic selling during a stock market dip.
- The nucleus accumbens, linked to pleasure, is stimulated when we see a discount notification or anticipate a gain, driving impulse buying.
- The prefrontal cortex, associated with logic and reasoning, helps override impulses and supports delayed gratification.
- Studies also show there is a spike in dopamine levels, even when there is an anticipation of rewards, not just when

receiving them.

- Research also reveals that the experience of financial loss triggers the brain in the same way that physical pain does.

The above examples explain that the financial decisions we make are not purely logical. They are also shaped by how our brain naturally reacts to uncertainty, stress and pleasures. We often avoid changes, stick to defaults and fear losses more than we value gains—not because it rationally makes sense, but that is how our brain is wired. This field of economics helps us understand how much of what we consider a personal choice is deeply and subconsciously rooted.

How the Brain Makes Financial Decisions?
When given a financial option, the brain first evaluates risks and rewards. According to a study by the California Institute of Technology, when people anticipate a financial gain, there is increased activity in the brain in the area of motivation and rewards. This explains why consumers often chase flash sales and follow stock market trends—depicting that a potential gain gives more excitement than the actual gain itself.

Interestingly, the brain overweighs potential losses, a phenomenon called loss aversion. According to Nobel Laureate Daniel Kahneman, potential losses are psychologically twice as powerful as equivalent gains. Behaviours like refusing to sell a declining stock or insuring against minor risks justify this.

The journal Science, in one of its studies, highlighted that financial stress reduces one's cognitive capability by 13 IQ points, compromising one's ability to make rational decisions. This explains why people with a fixed income also struggle with long-term planning, although they are aware of better financial choices. The brain defaults to inaction when overwhelmed.

A study by MIT's Sloan School of Management showed that consumers experiencing "choice overload"—too many options in investment and insurance products—are 10% more likely to opt out of making a choice, overall.

Emotional responses also play a key role: fear, excitement, and trust either motivate or hinder decision-making.

- **Fear** may trigger purchase avoidance or panic selling
- **Excitement** can lead to impulsive purchases and chasing trends

"Social proof" is also a factor that influences financial decisions. A study in the journal Nature Neuroscience found that people are 25% more likely to invest in a stock when told others are investing in it—even when provided with identical financial data. This proves that peer pressure on the brain subtly overrides independent analysis.

Logical reasoning, a mental activity driven by the brain's prefrontal cortex, takes over weighing trade-offs and long-term outcomes. However, this cognitive function can be suppressed by fatigue, stress or information overload, reducing one's ability to resist temptation during flash sales or risky bets.

To sum up:
Financial decisions may appear simple—spending, saving or investing. But the brain engages in a complex and layered process. This process includes emotions, memories, stress, instincts, logic, social influence and past traumas—often leading to choices that defy the classic economic theory of rational behaviour.

Neuroeconomic research shows that ultimately, our brain doesn't just calculate. It feels, reacts, adapts and sometimes misfires in ways that deeply shape our financial decisions.

Neuroeconomics in Action: Real-World Case Studies

- ***The Rise and Fall of Dogecoin – Emotion Over Logic***

Dogecoin, initially created as a meme in 2013, saw an unprecedented surge in 2021. Backed by Elon Musk, it jumped over 15000% in value in just a few months, driven largely by retail investors on platforms like Reddit and X (formerly Twitter).

In 2022, the University of Chicago Booth School of Business, in a behavioural analysis, found that social media-induced excitement caused an abnormal spike in nucleus accumbens activity when participants were shown tweets about Dogecoin's price rise. Anticipation of potential gain triggered dopamine release, similar to gambling behaviour.

Despite no fundamental value behind Dogecoin, millions invested—driven not by rational analysis but by herd behaviour, FOMO (fear of missing out) and reward anticipation. When the bubble burst, panic set in, triggering loss aversion, eventually forcing millions to sell it off at steep losses.

This case exemplifies how dopamine-driven reward anticipation and social validation override logical financial reasoning, revealing the brain's emotional pathways influencing high-risk financial decisions.

- ***Amazon's Lightning Deals – The Power of Scarcity and Urgency***

Amazon's Lightning Deals offer limited-time discounts with visible countdown timers and stock count. These tactics create a sense of scarcity and urgency, prompting consumers to quickly buy during such sales.

Research shows that these cues trigger activation in the brain's anterior cingulate cortex (ACC), which is responsible for conflict and decision-making under pressure. This activation stresses and narrows consumers' attention, making them more likely to act impulsively to avoid missing out.

Additionally, time constraints reduce activity in the prefrontal cortex, responsible for self-control and reasoning, leading to less thoughtful purchases.
Amazon's strategy shows how scarcity and urgency influence brain regions linked to decision stress, eventually forcing customers to act fast over careful evaluation—a clear example of neuroeconomic principles in marketing.

Neuroeconomics in the Indian Landscape

In India, monetary decisions are more emotional than we'd like to admit. With UPI apps just a tap away, payments have low friction, reinforcing the brain's preference for instant gratification. This ease has led to impulse buying, as the RBI report (2022) showed a 55% surge in small-value transactions, especially after the COVID pandemic.

Flash sales on shopping platforms like Flipkart and Meesho exploit consumers with scarcity and urgency cues, leading to instinctive buying over thoughtful valuation

And then the newest trend—"Finfluencers". Whether it's a trending crypto or a new-age mutual fund, social media trust can outweigh solid research. One reel or a post, and someone's in. Not because it's the best choice, but because everyone else is doing it. At the same time, things like insurance and retirement plans are pushed aside. Why? Because long-term feels heavy, and there's a perception that one should always think about the present first, then the future. Studies by SEBI and NITI Aayog suggest it's not about awareness, but fear of loss, decision fatigue, and mental overload. This makes people pause—or do nothing at all.

From small towns to big cities, Indians are making money moves every day. Whether confidently making a QR code payment in a rural bazar or hesitating before making a long-term investment, the Indian brain is constantly balancing risk with emotions. Neuroeconomics helps decode these patterns—making finance not just digital and smarter, but more relatable and inclusive.

The Road Ahead: Why Neuroeconomics Matters More Than Ever

In the end, money is more than a math. It's a memory, emotion, instinct and influence. Neuroeconomics doesn't just explain how one must spend, save and invest; it explores the invisible forces behind every decision—a silent tug of fear, the thrill of risk, the comfort of routine, and the power of social cues.

As neuroscience continues to shed light on the hidden architecture of the mind and economies get more intertwined with psychology, one truth becomes clear:
Understanding the brain isn't just for doctors and scientists; it is essential for spenders, savers, policymakers, and everyone who deals with money—every human.
It helps not just decode the financial markets, but human nature itself.

By understanding the neuroeconomic principles that influence our fears, impulses and rewards, we can navigate the landscape of our financial choices with awareness and empathy.

In a world flooded with options, overwhelmed with noise, perhaps the smartest move we can make is not to think harder, but to understand how we think.

Behind every rupee spent lies a reason.
And behind every reason, a heartbeat with a brain.

The Algorithmic Edge

Behaviour, Finance, and the Market Matrix

By: Bisman Singh Anand, Shreshth Khatri

1. **Introduction**

Behaviour is caused by reasons. Reaction and reflection are expressive parts of behaviour. Apart from reasons, several other factors determine behaviour. Beliefs, assumptions, values, environment, relationships, culture, and conditions are some of such factors.

2. Conceptual Framework

2.1. Finance as a Core Construct

Finance is the lifeblood of any business. The crude material for finance is money. Money, through its transactional value and merit of circulation, changes hands and serves the interests of the person holding it. Money is the fuel of any business, determining the speed and scope, size, and shape of any entity, enterprise, or institution. Money, in its broader form, is termed as finance.

2.2. The Functional Role of Markets

Markets are the places and spaces that provide opportunities for buyers and sellers to transact by managing the demand and supply of goods and services. Money is one commodity being bought and sold in the market. And also as a medium of transaction and exchange for the ease of the buyer and seller.

3. Interdisciplinary Nexus: Behaviour, Finance and Markets

Market, finance, and behaviour enjoy an insightful, interesting, and enigmatic relationship. Their interrelationship opens several windows for exploration, research, and practice. Their interaction culminates in a field of study popularly known as Behavioural Finance. Behavioural Finance is that branch of finance that changes its physical appearance through non-physical actions or invisible forces through cognitive and psychological interventions.

4. The Tangible and Intangible Nature of Money

Money has two faces: physical or tangible and non-physical or intangible. The currency part of the money is tangible, and the value part of the money is intangible. Bertrand Russell, in one of his lectures—The Conflict of Technique and Human Nature—mentions two things that have led to diminished pride in workmanship. The earlier was the invention of currency; the latter was mass production. Currency led to the valuation of an article by its price, which is something not intrinsic, but an abstraction shared with other commodities. Adam Smith's invisible hand came into play with money to travel within and beyond the tangibility and intangibility aspects of money. The difference between the written value of money and the market value of money is the effect of the invisible hand.

5. Market Dynamics and Behavioural Influence

The size and shape of money are manipulated through behavioural interventions that take place in the market. It is almost impossible to predict behaviour. Behaviour is not static but flexible as it changes depending on a piece of information, situation, nature of the relationship, degree of trust, measure of patience, and many other such factors. If the flow of information can be controlled, behaviour can be influenced.

If market forces can be influenced or manipulated, so could influence behaviour, and so the decisions and choices. Though the market is a place to fulfil the needs and aspirations of people, over-presence and over-dependence on the market lead to a situation where we tend to surrender to market forces. The market starts ruling over people and thus controlling behaviour and decisions. We start serving the market more than it serves us.

6. Emotional Framework and Decision-Making in Financial Markets

All decisions, especially in the stock market, are based on emotional value travelling around the notional value. The cost and value proposition are determined by the kind of available information and the trend among the investors. Market conditions are driven by human interventions vis-à-vis the resourcefulness of such individuals who matter. Rationality and irrationality; presumptions and assumptions; agency and ownership; conventions and consolidations; preferences and priorities; hope and optimism; supposition and proposition; holding and releasing; redeeming and realising; overreaction and underreaction, and many more such factors begin to influence the decisions. If one multiplies one's wealth by using one's cognitive faculties and capability to make decisions, one takes ownership of the decision. But when it is done based on the other person's cognition and over-dependence of external forces, the vulnerabilities get exposed and create a condition of the market (or such conditions) leading to the decision.

7. Heuristics and Behavioural Biases

While making appropriate decisions, many times heuristics are used. Heuristics is the process by which humans use mental shortcuts to arrive at decisions. These shortcuts are practically the biases that decision-makers use. These could be representativeness bias, availability bias, anchoring bias, herding bias, or overconfidence bias. These influence all kinds of life decisions, forming perceptions, judging others, making or breaking relationships, appointing or disappointing employees, buying products or using services, and/or buying or selling stocks. Investors, while choosing stocks, often use these shortcuts because of the convenience. Kahneman and Tversky gave us Prospect Theory in the late 1970s, which posited that investors value gains and losses differently ahey giving more importance to perceived gains as against perceived losses when choosing to invest in different types of stocks. The force to make a decision is based on the presentation part of it. It is known as frame dependence, and the biases that get operated on could be the disposition effect and loss or regret aversion.

8. Scholarly Engagement and Literature Context

The literature on behavioural economics and finance is blessed with voluminous research on this evolving phenomenon. Different dimensions of finance, behaviour, and markets are explored in order to defend the importance of money and wealth to make societies peaceful and happy. The non-physical (valuation) part of money is gaining prominence over the physical part. Yes, finance is the lifeblood of business, and money is the means to lead a happy, peaceful, and comfortable life.

9. Conclusion

The last half-century has multiplied global and individual wealth across regions. The number of billionaires is increasing, and so are the conflicts and confrontations. Though weekly working hours are getting reduced, the work-family conflict is on the rise, and firms are busy devising ways to balance work-life. Technology has become a catalyst. To facilitate decision-making at individual, institutional, national, and global levels. I only wish that it does not wire us in a way that we become puppets in the hands of technology and the market, that human becomes a machine, and we begin to prioritise the concerns of the machine more than those of humans.

Niall Ferguson, in his celebrated book, The Ascent of Money, begins with—Bread, cash, dosh, dough, loot, lucre, moolah, readies, thewherewithal: call it what you like, money matters. I read somewhere—God made man, man made money, and the money made the man mad.

In the given times and conditions, may I have the liberty to say—

Men make machines, machines manipulate markets, the market makes money, and money begins to manipulate men through machines and markets.

Congestion Tax

Should It Be the New Normal?

By: Kumar Gaurav

Let's face it—getting stuck in traffic has become a part of everyday life in big cities. Whether it's honking cars, inching forward during peak hours, or watching the clock nervously as you're late again, congestion has a grip on urban living. To tackle this, many cities are boldly turning to a congestion tax.

It's not a new idea, but it's gaining ground as a long-term solution. So, should it become the new normal?

What's a Congestion Tax?

At its core, a congestion tax means charging vehicles a fee to enter certain high-traffic zones during busy hours. The goal? Discourage unnecessary driving, reduce traffic jams, and nudge people toward public transport or carpooling. Cities like London, Stockholm, and Singapore have already done it, and the results are encouraging.

Why Are Cities Doing This?

- Stockholm saw traffic drop by 20–30% after introducing the tax to clear the roads.
- To clean the air: With fewer cars, air quality improved dramatically.
- To fund better transport: The money collected is often reinvested in buses, trains, and cycling infrastructure.

It's about creating smoother, greener, and more efficient cities.

New York's Big Step

In a bold step toward rethinking urban mobility, New York City is gearing up to become the first in the U.S. to implement congestion pricing. The idea is simple—but powerful: charge vehicles for entering the busiest parts of Manhattan, especially below 60th Street, during peak hours.

Why? Because traffic had gotten so bad that cars were crawling at speeds of under 7 miles per hour, slower than a bicycle. Add to that a struggling subway system and rising pollution levels, and something had to give.

Once the plan kicks in, drivers could pay up to $15 to enter the congestion zone during rush hour. While that might sound steep, the benefits are hard to ignore:

- A projected 15–20% drop in traffic
- Nearly $1 billion a year in new funding for the subway and bus systems
- Cleaner air, safer streets, and more space for people, not just vehicles

So how's the city pulling this off? Through a smart, tech-enabled setup using automated toll gantries, license plate readers, and real-time pricing that adjusts based on congestion levels. No toll booths, no stopping—just a seamless system designed to change behaviour.

The plan didn't just appear overnight. It took years of environmental reviews, public hearings, and community consultations. Exemptions were built in for essential services and low-income residents, making sure the system stays fair.

For a city that's always in motion—and always honking—this marks a turning point. It's not just about traffic; it's about making New York healthier, faster, and more livable. And if it works here, don't be surprised if other cities soon follow.

Bangalore's Traffic Mess: Can a Congestion Tax Help?

Now let's talk closer to home. If there's one city in India that's practically defined by traffic, it's Bangalore. The so-called "Silicon Valley of India" is also infamous for its never-ending jams.

Here's the reality:

- Peak-hour speeds can dip to 18 km/h—that's slower than a bicycle.
- Productivity is taking a hit as commutes get longer and more stressful.
- Emissions from idling vehicles are making air quality worse.

So, could a congestion tax work here?
Possibly yes—if done right

.

If carefully implemented:

- It could reduce traffic at major bottlenecks like Silk Board or Outer Ring Road.
- Revenue from the tax could help improve metro lines, BMTC services, and last-mile connectivity.
- People might finally consider leaving their cars behind and exploring other options.

But let's be real—there are challenges. Not everyone has access to reliable public transport. The tech infrastructure needs to be solid. And yes, there will be pushback.
Still, Bangalore is reaching a breaking point. Something has to change, and congestion pricing might just be the push the city needs.

So, Should It Be the New Normal?

There's no perfect solution, but here's the case for normalising the congestion tax:

- It's better for the environment.
- It encourages smarter commuting.
- It generates funds for better public services.
- And, most importantly, it makes cities more livable for everyone.

It's not just about paying to drive—it's about rethinking how we use our roads and who gets to move freely in our cities.

But What About the Concerns?

Of course, there are valid worries:

- Will it hurt low-income drivers? Possibly, but tiered pricing or exemptions can help.
- Is it expensive to set up? Sure, but cities usually recover costs quickly.
- Will people hate it? Maybe at first, but in London and Stockholm, public support grew once they saw real improvements.

Final Thoughts

Traffic isn't just an inconvenience anymore—it's a drag on productivity, the environment, and quality of life. A congestion tax isn't a magic bullet, but it's a proven, practical step toward cleaner, faster, and fairer cities.
If cities like New York can do it—and if a traffic-ridden place like Bangalore is even thinking about it—it might be time to stop asking if we need congestion pricing and start asking how to make it work best for everyone.

articles

02

The Hidden Psychology of Your Wallet

By: Hrishita Panda

Have you ever promised yourself that you'd start saving money once your salary came in—but by the end of the month, you're wondering where it all went? You're not alone. While financial literacy teaches us what to do with money, behavioural economics and psychology explain why we often fail to follow through. In a world full of budgeting tools and saving apps, it turns out our mind is usually the biggest obstacle.

This article explores how certain psychological biases and behavioural patterns cause irrational money decisions, especially when it comes to saving, and how understanding them can pave the way to better financial choices.

1. Present Bias: The Pull of Instant Gratification

Have you ever found it hard to save money, even when you know it's the smart thing to do? You're not alone. One reason is something called present bias—a psychological habit where our brains give more value to immediate rewards than to future benefits.

Let's take a simple example. Imagine you have ₹300. You could save it for your future, or spend it on a fancy coffee today. That coffee feels fun and rewarding right now, while saving feels... boring or pointless. After all, the future feels so far away. Right?

This is how present bias works. It tricks us into thinking what we want now is more important than what we might need later. Even when we know saving is better in the long run, we often choose the short-term.

But here's the good news: once you understand this bias, you can work around it. Little steps like automatic savings or rewarding yourself for goals can make a big difference. Saving doesn't have to feel like a sacrifice—it can be a smart and satisfying habit!

2. Hyperbolic Discounting: The 'I'll Start Tomorrow' Trap

Let's say you promise yourself: "I'll start saving money next month." Sounds reasonable, right? But then next month comes... and you say the same thing again. This cycle keeps repeating.

Why does this happen? It's because of something called hyperbolic discounting—a fancy term for a common habit: we often choose smaller, quicker rewards now instead of waiting for bigger rewards later.

This is closely linked to present bias, where the present moment feels more important than the future. So instead of saving ₹500 today, you spend it on something fun. And next month? You repeat the same behaviour. But when next month arrives, the cycle repeats. The result? Procrastination in financial planning and minimal savings.

Over time, this pattern holds us back from building real financial security. The good news? Once you understand this mental trap, you can start making small changes—like setting reminders or automating savings—that help you stay on track.

- **Jan Dhan Yojana** helped millions of Indians open bank accounts—an amazing step toward financial inclusion. But here's the catch: many of these accounts stay unused. Why? Because people often don't know how or why to use them. There's a lack of financial awareness, and not enough behavioural nudges (like reminders or small rewards) to encourage saving.
- **UPI and digital wallets**, spending has become super easy. One tap, and your money is gone! These apps make it frictionless to spend, especially in small amounts that don't feel like a big deal. But when it comes to saving? There's no similar push.
- Traditionally, Indians saved through **gold and real estate.** These were seen as safe, long-term assets. But today's younger generation often skips these, seeing them as outdated or out of reach. As a result, many don't build the same habits of disciplined saving or investing.

7. Nudging Better Financial Behaviour

Sometimes, people want to save—but just don't get around to it. That's where behavioural economists bring in the idea of "nudges." A nudge is a small, smart change in how choices are presented, which gently guides people to make better financial decisions—without forcing them.

Here are a few powerful examples that are working in India:

- **Default savings enrollment**: Many people are automatically signed up for schemes like EPF (Employees' Provident Fund) or NPS (National Pension System). Since opting out takes extra effort, most stick with it—so they end up saving without even thinking about it.
- **Fintech apps** like Jar or NiyoX are using clever tricks to make saving feel effortless.

For example, they round up your purchases and save the extra change. Buy something for ₹93? The app rounds it to ₹100 and saves the ₹7. These small amounts add up—turning savings into a daily habit.

- Tools like **visual goal tracking**, gentle reminders, and gamification (like rewards or progress bars) help make saving feel more fun and real. When people can see their goals grow or get a reward for progress, they're more motivated to keep going.

These small nudges may seem simple, but they have a big impact—making saving feel less like a chore and more like a natural, rewarding part of everyday life.

Conclusion

Saving money is not just a financial decision—it's a psychological one. While awareness and financial education are important, understanding the behavioural and emotional factors behind money decisions is key to meaningful change.

Once we recognise the mental traps—like present bias, loss aversion, and emotional spending—we can create strategies that work with our psychology, not against it. Whether through nudges, digital tools, or mindful habits, the path to better savings starts with understanding the human mind.

The Onion Odyssey

A Comprehensive Report on The Onion Price Rise in India

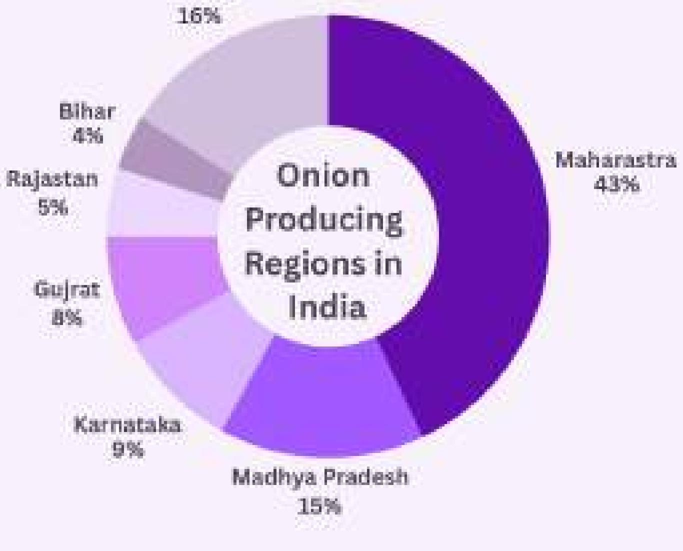
By: Honey Jagdish Dhanecha

Introduction

In the last week of October 2023, onion prices shot up by an alarming rate of almost 60% which was a grave concern for the government and consumers. While a few months ago, the prices of onions were about Rs. 30-35 per kg, the prices suddenly shot up to as high as Rs. 70-75 per kg due to several factors. This significant hike in onion prices isn't solely due to a single cause, and one requires a multi-faceted approach to understand the gap and imbalance in demand and supply of onions, resulting in a shortage and price rise for onions.

(i) Delay in Cultivation and Rising Demand:

Onion is cultivated twice yearly — once during the Rabi and once during the Kharif seasons. However, unfavourable weather conditions, such as inadequate rainfall in the prominent onion-producing regions like Maharashtra, Gujarat, Bihar, Rajasthan and Andhra Pradesh, resulted in lower cultivation and late crop arrival, causing a supply crunch. At the same time, the demand for onions rose remarkably due to the festive season in India, causing a shortage in the economy.



(ii)Rising Exports by Indian Farmers:

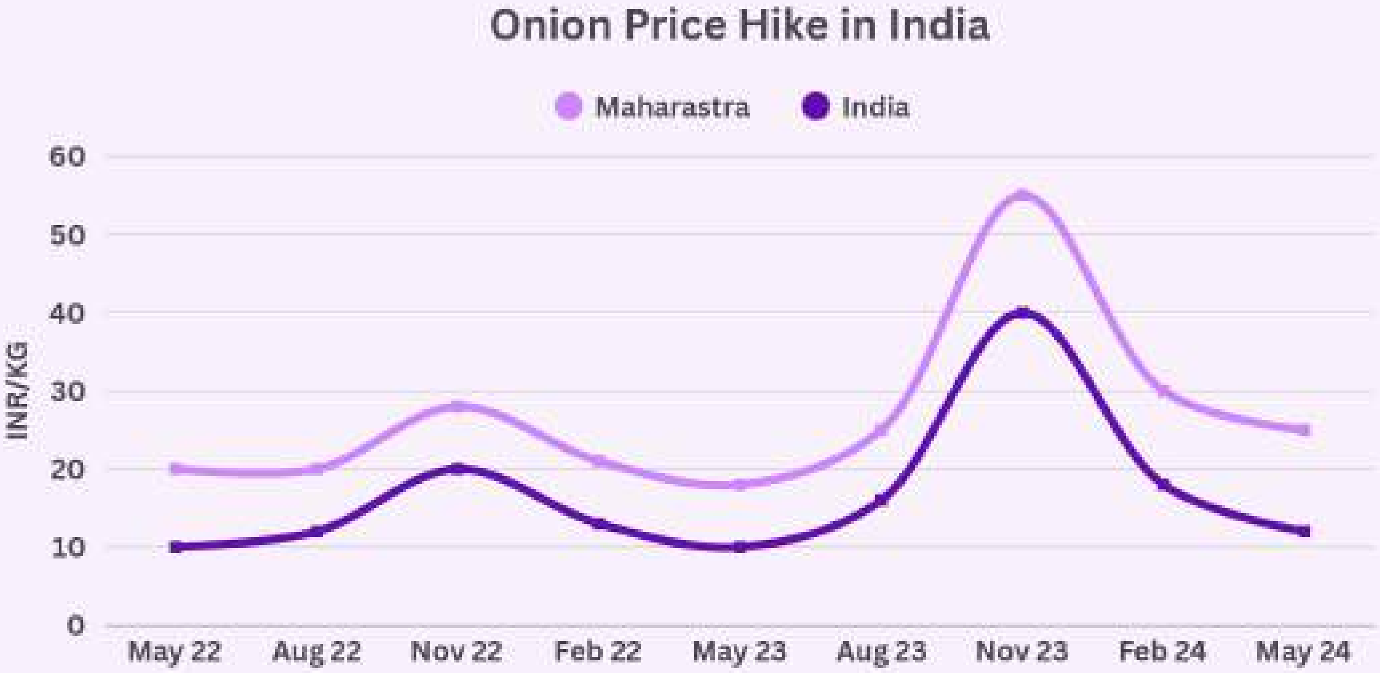
Another key reason for the price hike can be accounted for by the excess exports of onions to Bangladesh, as Indian farmers prefer to sell their produce in international markets to earn more profits, and this has further exacerbated the price hike for onions.

Analysis of Demand for Onions in India

The elasticity of demand measures how much the quantity demanded responds to a change in the price of the commodity. The elasticity of demand for onions in India varies based on factors such as price, availability, consumer preferences, and weather conditions. Usually, onions tend to have an inelastic demand as they are considered to be a staple food of India, because even if the price changes significantly, people would still consume them as they are essential for cooking. Moreover, onions don't have any close substitutes, and hence, the demand curve doesn't drastically shift over time as well. India witnesses the festive season throughout the country around October-November, which has also resulted in a surge in the demand for onions countrywide. Due to unsupportive weather conditions and rising exports to neighbouring countries, the domestic supply of onions was drastically and adversely impacted, as it was not able to meet the rising demands in the Indian market. This imbalance amongst the "invisible hands" of the market caused the massive price rise for onions in 2023.

Analysis of the Supply of Onions in India

Each crop, vegetable, and fruit are grown in a



particular season. They have a specific season when their seeds are sown, and when the crops get ready, they are harvested. For that, the sowing and harvesting season for onions is Kharif and Rabi. Also, the sowing and harvesting period (months) differ from state to state. Kharif crops are grown at the beginning of the rainy season, and Rabi crops are planted at the end of the monsoon season and at the beginning of the winter season. There are around five types of onions that were cultivated during this period. The average rainfall that onion crops require to produce is 750 to 1000 mm, and onions can be grown in all soil types. The supply of onions is typically less elastic in nature. In 2023, India received minimal. rainfall, so the quality and quantity of the onions had deteriorated. The minimum precipitation required is 750mm, which was also not there, leading to low-quality production of onions in India. Farmers faced many problems, as this hampered their earnings, leading to a shortage in the supply of onions. Due to the deficiency in the collection of onions, the price rose very high. There was an increased number of exports of onions to Bangladesh, as farmers anticipated earning more profits through the export of onions. It is estimated that in the fiscal year 2023, fresh onions worth over 8 billion INR were exported from India to Bangladesh. This further caused a deficit in domestic supply, due to which there was a sudden

surge in onion prices.

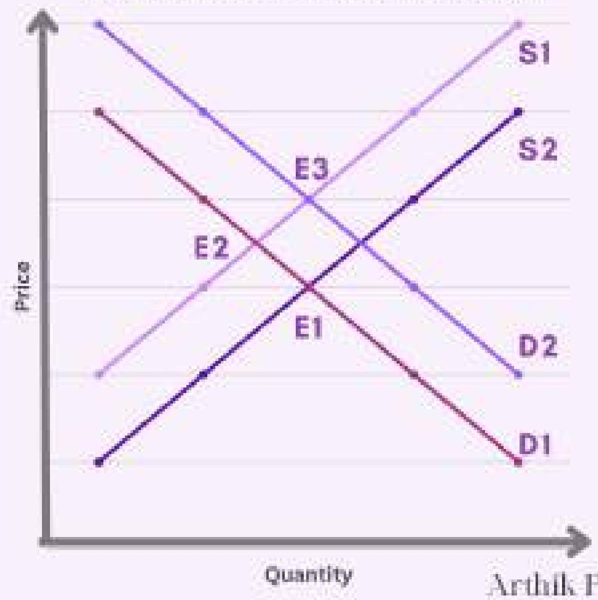
The figure demonstrates the supply-demand curve of onions in Indian markets. Onions are a prevalent ingredient in Indian cooking, widely used by households, restaurants, and the food industry, and it has no substitutes where consumers can shift themselves. In the above figure, the X-axis shows the Quantity of onions, and the Y-axis shows the price. D1 indicates the initial demand curve, and S1 represents the initial supply curve. E1 is the equilibrium price of the market, which is the normal price of onions, i.e. Rs 30-35/Kg in 2023, but because of several factors other than price, such as the rising demand for onions during the festive season, i.e. October & November, there are no other substitutes. The demand curve (D2) shifted to the right, which indicates that demand for onions has increased.

But on the other hand, the supply curve (S1) had shifted to the left, which was due to the impact of delayed cultivation because of uneven weather conditions, large-scale exports, and unavailability of onions, which reduced less supply in the market. High demand, along with supply-side shock, hurt prices, leading to cost-push inflation in the prices of onions in India. At the new equilibrium point (E3), the price of onions shot up to as high as Rs 70-75 /Kg. To control this situation, the government took control of it and took various initiatives, such as releasing several tons of onions from the emergency buffer stock, and another reform was imposing a 40% tax on the export of onions to reduce the shortage of onions. Hence, as the equilibrium prices increased, the quantity of onions supplied also increased because of such reforms. If the government of India wants to take long-term initiatives, they must be aimed at increasing the productivity of onions in India in an upward direction. This will lead to a change in the existing balance to a higher balance quantity and a lower price.

Conclusion

The report covers the underlying reasons behind the surge in onion prices, including the impact of large-scale exports, delayed cultivation, and the rising demand for onions during the festive season. This report provides a clear understanding of the current onion market issue by analysing the various factors that have contributed to the price hike. The government has taken effective measures to address the issue of rising onion prices and stock scarcity. One such reform by the government is imposing a 40 per cent tax on export duties to curb the exports of onions and meet domestic demands. Another reform was introducing a price floor known as the minimum export price (MEP) of $800 per ton, which roughly accounted for Rs. 67 per kg and made the onion trade unviable in the countries where exports took place. The government released a buffer stock of 5 lakh tons of onion for a subsidised rate of Rs. 25 per kg, leading suppliers to reduce their prices to sell the excess supply. The government also planned to get an additional 2 lakh tons of onions for future stock. The efforts put in by the government have ensured that the consumers are not burdened with extremely high prices, and the market will have an adequate supply of onions in the future.

Theory of Demand and Supply



The Economics of Space Exploration

By: Ishika Arun

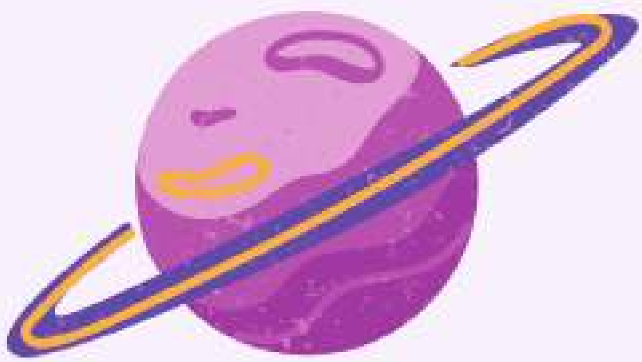
Introduction

In recent years, space exploration—once the exclusive purview of state space organisations like NASA and Roscosmos—has undergone a dramatic change. Private businesses like Virgin Galactic, Blue Origin, and SpaceX have transformed the space industry and turned it into a rapidly expanding sector with enormous economic potential. In addition to offering significant investment opportunities, the growth of commercial space projects promises to increase human presence beyond Earth. The economic effects of space exploration are examined in this study, along with how the private sector stimulates investment and innovation and how the sector may influence international trade and finance in the ensuing decades.

Private-Sector Involvement in Space Exploration

The involvement of private-sector enterprises has brought about a paradigm shift in the economic landscape of space exploration. Private businesses are fostering innovation and competition in satellite communications, space technologies, and space tourism, in contrast to established space organisations that mostly depend on government financing.

In addition to lowering the price of sending cargo into orbit, businesses like SpaceX, which Elon Musk started in 2002, have also made space trips more affordable by introducing reusable rockets. The feasibility of private-public collaborations in space exploration has been proven by SpaceX's successful flight to the International Space Station.



Station (ISS) and its partnership with NASA (SpaceX, 2020).

Other businesses, like Blue Origin and Rocket Lab, have advanced space exploration and travel significantly, in addition to SpaceX. Jeff Bezos launched Blue Origin with the goal of creating technology for space tourism and reusable rockets that will allow for the settlement of space. Under Richard Branson's direction, Virgin Galactic specialises in suborbital space travel and offers a singular investment opportunity to people and businesses with an interest in the space industry.

In addition to lowering the cost of space exploration, these private endeavours are establishing whole new sectors of the economy that had little to no commercial promise before.

Investment Opportunities in Space Exploration

Today, space exploration is a rapidly expanding industry with a wide range of investment options, not merely a government-funded project. These opportunities fall into several important categories:

1. Satellite Communications

Satellite communications is one of the most profitable space investment options. The growing need for advanced technologies like the Internet of Things (IoT) and internet access in rural locations has led to a boom in the demand for communication satellites worldwide. Large constellations of low Earth orbit (LEO) satellites are being deployed by companies like OneWeb and SpaceX (through their Starlink program) to give worldwide internet connectivity. By 2025, the worldwide satellite industry is expected to have grown to a size of over $500 billion (MarketsandMarkets, 2020).

2. Space Tourism

Although still in its infancy, space tourism has significant economic potential. Private citizen commercial space flight is being pioneered by companies such as Virgin Galactic and Blue Origin. The market for space tourism is anticipated to expand quickly as rocket technologies become more accessible and reasonably priced. According to analysts, the industry for space tourism may grow to $3 billion by 2030 (Space.com, 2020). In addition to generating direct income from ticket sales, this new market may help boost related sectors like travel, insurance, and hospitality.

3. Asteroid Mining

One of the most futuristic yet exciting prospects in space research is the possibility of asteroid mining. Platinum, gold, and rare earth metals are among the valuable materials found on asteroids that are essential for the production of cutting-edge electronics and renewable energy technology. The prospect of mining asteroids is being investigated by firms such as Planetary Resources and Deep Space Industries. Even though asteroid mining technology is still in its early stages, it has enormous economic potential, especially. When Earth's mineral supplies become more limited (Riddle, 2020).

4. Space Manufacturing

Manufacturing in space is another exciting area for investment. Businesses are investigating the possibility of producing goods in space that would be impractical or more economical to create in Earth's gravity as the cost of space travel continues to drop. For instance, manufacturing in space might make it possible to produce premium medications or semiconductor parts that require unique circumstances in microgravity. 3D printing technology is already being developed for use in space by businesses like Made In Space. In the upcoming decades, the space manufacturing sector is expected to expand quickly, providing long-term investment prospects (Made In Space, 2020).

5. Space Infrastructure

The demand for infrastructure, including space stations, lunar bases, and other facilities, will increase as space exploration becomes more widespread. For space exploration missions to be sustainable, investments in space infrastructure are essential. Collaborations between public and private organisations to build this infrastructure have been sparked by the growing interest in establishing a permanent human presence on the Moon and Mars. For businesses involved in shipping, materials science, and construction, this field offers significant business prospects.

Global Business and Financial Implications

Beyond chances for direct investment, space exploration has significant economic potential.

The following are some ways that the expanding space industry could change international business and finance:

1. Global Economic Growth

The space sector could make a substantial contribution to the world's gross domestic product. By 2040, the space industry might be valued at more than $1 trillion, according to PwC research (PwC, 2020). Through the development of new industries, the creation of jobs, and the stimulation of demand for goods and services, the expansion of commercial space activities will support economic growth. Technological developments from space exploration may help boost output and efficiency in other sectors, including logistics, agriculture, and telecommunications.

2. International Collaboration

More international cooperation is being fostered by the expansion of the space industry. Former space race rival nations are now working together on cooperative space programs and missions. For instance, NASA and the European Space Agency (ESA) collaborate on a number of initiatives, such as the Artemis mission, which aims to send humans back to the Moon. This international cooperation might improve diplomatic connections, promote peace, and open doors for multinational companies operating in the space industry.

3. Financial Innovation

Financial innovation is being propelled by the space industry as well. To draw money to the industry, new financial products including space bonds and space-related investment vehicles are being created. New investment opportunities have been made possible by the rise of space entrepreneurs and venture capital organizations that specialize in space technology. Additionally, investors can now have exposure to the quickly expanding space industry through the emergence of space-focused exchange-traded funds (ETFs) and equities of private businesses like SpaceX and Blue Origin.

4. The Impact on Traditional Industries

Traditional industries will be impacted by the growing commercialisation of space exploration. For instance, the travel and hotel sectors may change as a result of the space tourism business. The telecom sector may change as a result of the commercialisation of satellite communications, which would increase competition and drive down consumer prices. Additionally, new supply chains for essential resources could be created by breakthroughs like asteroid mining, which could upend the global mining sector.

Challenges and Risks

Even while space exploration offers a wealth of benefits, several hazards and obstacles could prevent the sector from expanding:

1. Technological and Safety Risks

The development of reusable rockets, space travel, and life support systems presents both technological and safety issues, making space exploration an intrinsically dangerous endeavour. Investment in the industry may be hampered by the possibility of mission failure due to technical problems, human mistakes, or outside influences like space debris.

2. Regulatory and Legal Issues

Complex legal and regulatory issues are brought up by the quick commercialisation of space exploration. Clear legislation and international collaboration are needed to address issues including space resource ownership, space debris control, and space militarisation. Conflicts over territorial claims and space resources could become more likely in the absence of appropriate regulation.

3. Market Uncertainty

The market is very unclear, and the space business is still in its infancy. Even while there is a lot of room for expansion; it is yet unknown how profitable various space endeavours will be. Navigating this unpredictability and figuring out which markets and technologies will yield the biggest profits are challenges for investors.

Conclusion

Space exploration presents one of the most exciting and economically promising frontiers in the modern world. The global space economy is expanding due to several factors, including the growing participation of private companies, the creation of cutting-edge space technologies, and the expanding range of investment opportunities in industries like satellite communications, space tourism, asteroid mining, and space manufacturing.

The industry might have a big impact on financial markets, international business, and economic expansion as it expands. To fully achieve the potential of space exploration, however, the risks and difficulties related to market uncertainty, regulation, and technological innovation must be properly controlled.

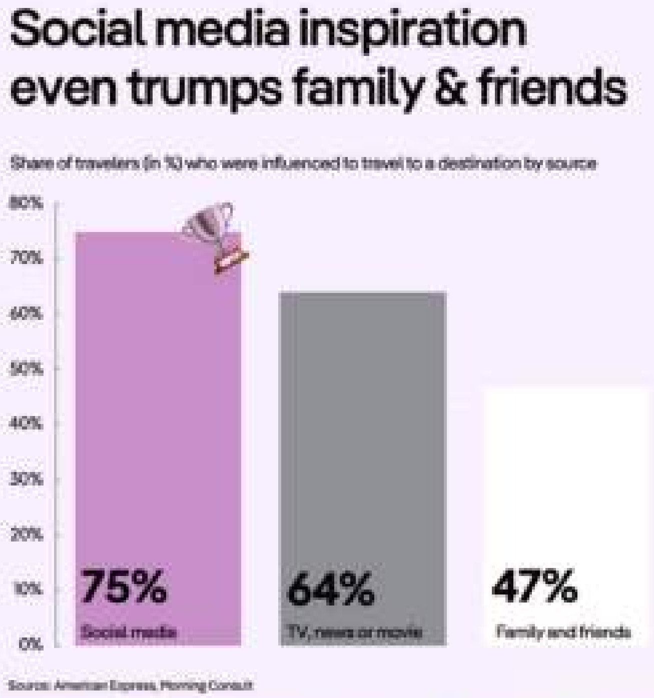
Moana to Manali:

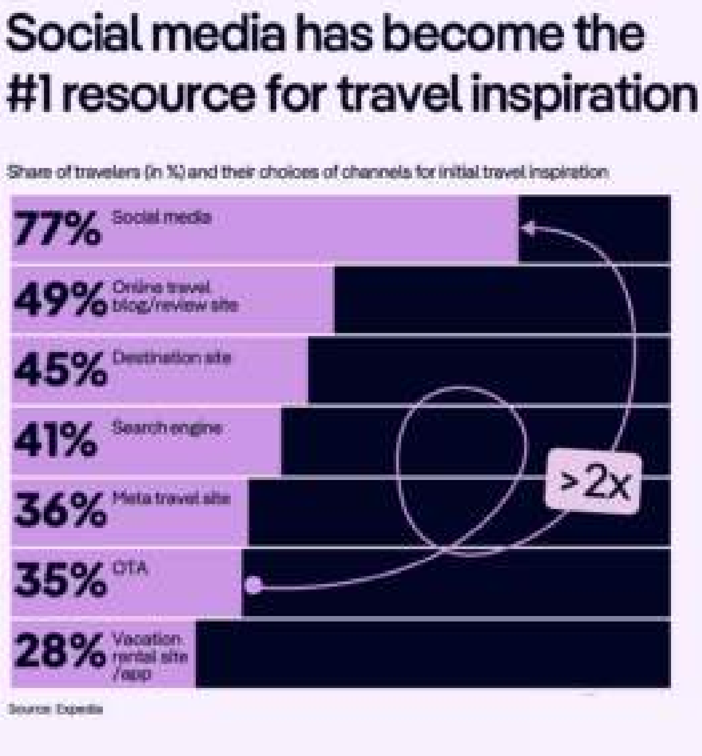
How Stories Shape Our Travels

By: Lamya Khan

Let's go on a friend's getaway to Manali. Or maybe a spiritual family trip to Rishikesh? How about a solo escape to Pondicherry? I am just sitting in my room, sipping coffee, when these thoughts suddenly flood my mind. But where does this constant urge to travel come from? Is it simply that everyday life begins to feel monotonous? Or is there something deeper, perhaps the desire to explore new cultures, reinvent ourselves, or chase the emotions we see on screen?

Perhaps I want to feel like Moana, sailing into the unknown, or maybe it is because I've just finished watching Yeh Jawaani Hai Deewani and now crave a Himalayan adventure. One thing is certain: the content we consume and the media we engage with profoundly shape our travel desires. In today's world, global tourism is not just about destinations; it is about the stories we see, the influencers we follow, and the visuals we scroll past. Social media has transformed travel from a personal experience into a shared, even performative, aspiration.





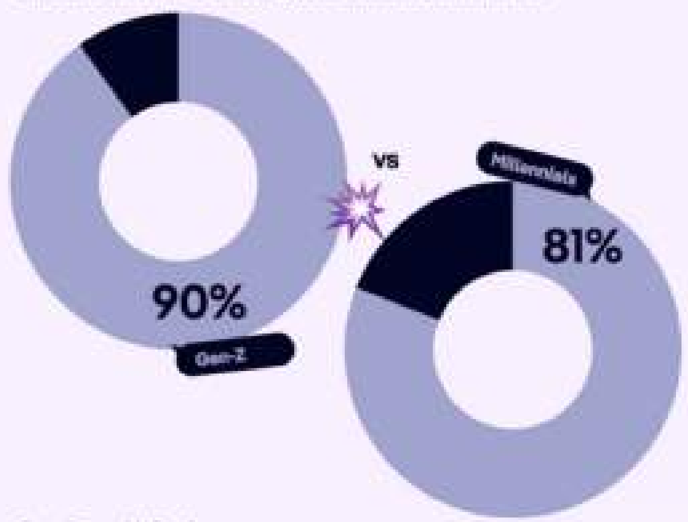
A recent study by Expedia Group, surveying thousands of travellers across seven global markets, found that 77% now turn to social media before planning a trip, beating even search engines. Think about that, instead of typing into Google, many of us are scrolling through reels, vlogs, or Instagram posts to decide our next getaway. The American Express Global Travel Trends Report goes even further, revealing that three out of four travellers have chosen a destination after seeing it on social media, outranking even the age-old advice of family and friends. These numbers make one thing clear: digital content does not just nudge our choices; it sets the stage for our adventures, shaping not just where we go but also how we picture the journey and even the emotions we long to feel when we get there.

And if we zoom in on who is driving this trend, the first group that comes to mind is Gen Z. A study of U.S. travellers shows that 90% of Gen Z use social media for travel inspiration. But they are not alone; 81% of Millennials do the same. Travel FOMO, it seems, has become a generational language, where wanderlust spreads not by word of mouth but by a single post on a screen.

But here is the interesting part, they are not only scrolling for inspiration, they are also spending. Data from KPMG and Statista shows that in 2020, Millennials made up 47% of airline travel expenditures, with Millennials at 44% and Gen Z surging to 37%. In other words, the very generations most influenced by social media are also the ones pouring the most money into travel, reshaping not just how we dream of journeys, but who is powering the industry's future.

Social Media First, not only for digital natives

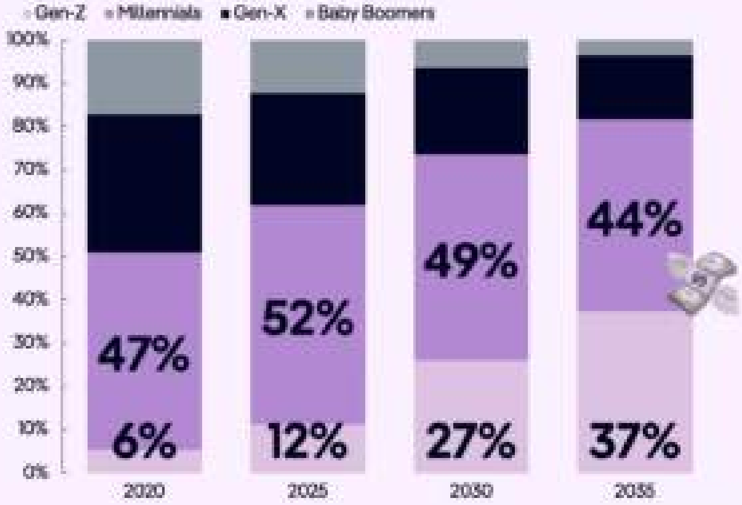
Share of travelers (in the U.S.) using social media for travel inspiration



Source: Phocuswright, Expedia

Millennials & Gen-Z: the biggest travel spenders

Estimated distribution of (airline) travel expenditures by generation, worldwide



Source: KPMG, Statista

What this shows us is simple: travel is no longer just about places, it is about culture, identity, and the digital footprints that guide us. For Gen Z and Millennials especially, the line between inspiration and action is blurring. The trips we dream of today while scrolling might very well be the ones we book tomorrow.

So the next time I find myself daydreaming about Manali, Rishikesh, or Pondicherry with a cup of coffee in hand, I will know it is not just wanderlust whispering to me; it is a mix of stories I have consumed, posts I have scrolled, and a generational shift that is redefining how we all travel. In many ways, our journeys begin long before we pack our bags; they start on our screens.

The Eco-Elite Illusion

How Sustainable Luxury Distorts Environmental Economics

By: Nidhi Goyal

In recent years, "sustainability" has become a trending buzzword on social media across different industries, especially in lifestyle, fashion, beauty and luxury markets. From ethically sourced yarns to vegan beauty products, brands are increasingly showing their commitment towards the planet. However, a green paradox has also emerged within sustainable consumerism. The more ethical and sustainable a product claims to be, the higher the price tag. The word "sustainable" has become a new luxury for the high-income groups. Sustainable luxury goods often function as "Veblen goods", where their desirability increases with price due to their ability to signal status. In doing so, sustainability becomes less of a universal good and more of an exclusive identity marker.

Moreover, in the luxury market, sustainability can also be analysed through the lens of game theory, particularly the "Prisoner's Dilemma". If one brand adopts visible and credible sustainable practices, it gains favour with increasingly eco-conscious consumers. Competitors, observing this shift, face a strategic choice: either follow suit or risk losing market share. In this way, sustainability transitions from a niche differentiator to a strategic necessity, driven less by ethics and more by competitive survival.

This raises a few questions: Can luxury and sustainability coexist in consumer economics? Let's analyse whether sustainable luxury is an economic contradiction or a viable long-term consumer trend and what this means for the broader goals of environmental economics.

We will discuss how overpriced sustainable luxury goods distort the key economic principles like market accessibility, scalability and price signalling. These overpriced green-washed goods do not promote underconsumption within the elite consumer groups, but hamper the true potential of sustainability and do not contribute to an inclusive green economy.

The Illusion of Sustainability

A product is defined as sustainable when environmentally friendly materials are used to produce it. It must involve ethical labour practices and carbon neutrality. Brands like Vivienne Westwood, Gucci, Stella McCartney and LVMH have all learned this definition and have been marketing themselves with this very narrative. For high-end consumer groups, buying these products is not a material happiness or fulfilment of their responsibility towards the environment, but a mere feeling of moral self-satisfaction. The definition of "conspicuous ethical consumption" is being confused with spending not just to signal wealth, but virtue and the same amount of consumption. Moreover, by embedding sustainability in highly priced goods, the industry sends a misleading message that sustainability and environmental responsibility are a luxury, when it should be all about the consumption of just necessities. This illusion undermines the wider movement toward a sustainable future that is accessible and equitable for all.

Price Signal Distortion

In traditional economics, prices serve as signals of value and scarcity. An expensive product often reflects high demand, scarcity of resources and raw materials, and the cost of production. But in the case of sustainable luxury, the high prices are frequently inflated by brand image and exclusivity, rather than genuine environmental and ethical labour costs. This leads to a distortion in market signalling. Since sustainable goods are consistently premium priced, both producers and consumers internalise the idea of sustainability being a luxury. This results in budget-conscious or low-income consumers shying away from green options, for example, preferring mass-produced fast fashion brands. At the same time, potential producers in the sustainable green market will be unwilling to enter this space to avoid competing with existing well-established luxury brands.

Exclusion

Environmentalism, ideally, should be a community-based collective effort. The most troubling impact of overpriced sustainable goods is, however, the exclusion they have created in the market. This exclusion undermines environmental equity. Lower- and middle-income consumers, who continually resort to mass-produced goods, are denied access to the green alternatives, often locked behind high price points. Instead of democratizing sustainability, the current model promotes socioeconomic divides. The result is a two-tiered system: green-washed consumption for the elite and environmentally harmful products for everyone else.

The Scalability Issue

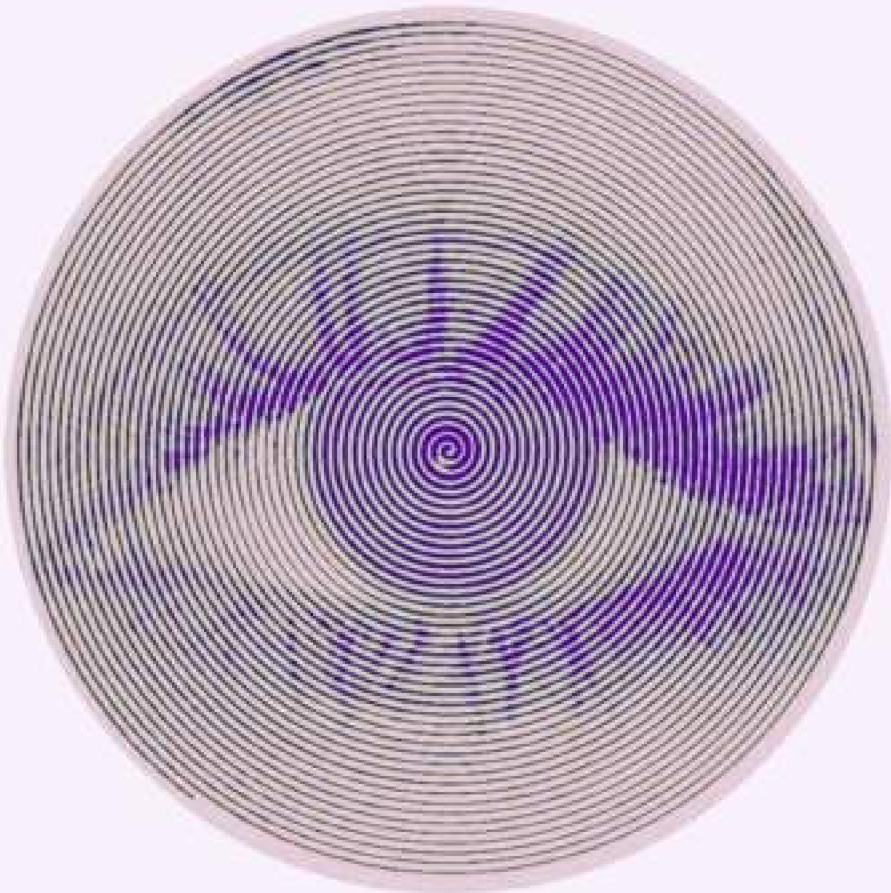
For sustainability to make a real impact, it must be scalable. Ethical production of environmentally friendly goods at a price point and volume that makes it accessible to everyone, but also replaces the traditionally harmful mass production. However, luxury brands have little incentive to scale. Their business model thrives on scarcity and high profit margins, which are highly unethical. This creates a bottleneck situation in the sustainable economy. Sustainability, instead of being an innovation to reduce global environmental footprints, has been reduced to an exclusive feeling. On the other hand, mass production brands often struggle to incorporate sustainability without eroding their profit margins, which results in a fragmented market.

A Step Towards Inclusive Sustainability

So, how do we redirect the consumers to a more economically sound path when it comes to sustainability? Policy interventions by the government are important to subsidise the sustainable materials and technologies that serve mass markets. This will help reduce costs for both producers and consumers. Tax incentives can also encourage the brands to adopt truly sustainable practices without inflating their price points or greenwashing their products. Holding brands accountable with stricter regulations, checks, and certifications of ethics will help in the reduction of greenwashing and misleading marketing claims. Finally, the focus needs to shift to affordability and scalability. Public-private partnerships can accelerate this shift by bringing environmental innovation into mainstream markets, creating sustainable goods that are competitively priced and widely accessible.

This intersection of sustainability and luxury has sparked a fascinating, if troubling, economic trend. While it is encouraging that environmental consciousness has entered the world of high fashion and premium goods, the current model often contradicts the fundamental goals of sustainability itself. By pricing eco-consciousness as a luxury, we risk alienating the majority and stalling the very progress we seek.

True sustainability is not green for the few; it is green for all. And achieving it will require us to rethink not just what we consume, but how we value, price, and produce the goods we depend on. Only then can environmental economics fulfill its promise of balancing human well-being with planetary health, inclusively, equitably, and effectively.



The Echo of Emptiness

Our Consumption Carousel and the Coming Climate Cacophony

By: Senjuti Pal

A relentless rhythm pulses beneath the surface of our modern lives: extraction, production, marketing, consumption, and disposal. A seemingly endless cycle, a carousel spinning faster and faster, fuelled by our insatiable desires. But the music is distorting, the tempo erratic, replaced by the ominous, low-frequency rumble of a world groaning under the weight of our relentless excess. The illusion of endless resources is shattering, revealing the stark reality of a planet pushed to its breaking point.

Imagine a once-majestic mountain range, its peaks capped with eternal snow. Now, it's a skeletal landscape, scarred by the relentless teeth of industrial machinery. The earth's flesh, the very bedrock of our existence, is ripped apart, its raw materials transformed into the latest technological marvel, the fleeting fashion trend, the disposable convenience item. Our lives have become a relentless stream of "new," a ceaseless churn of products designed for obsolescence, not longevity, a symphony of short-lived desires.

The Architect of Artifice: Planned and Perceived Obsolescence

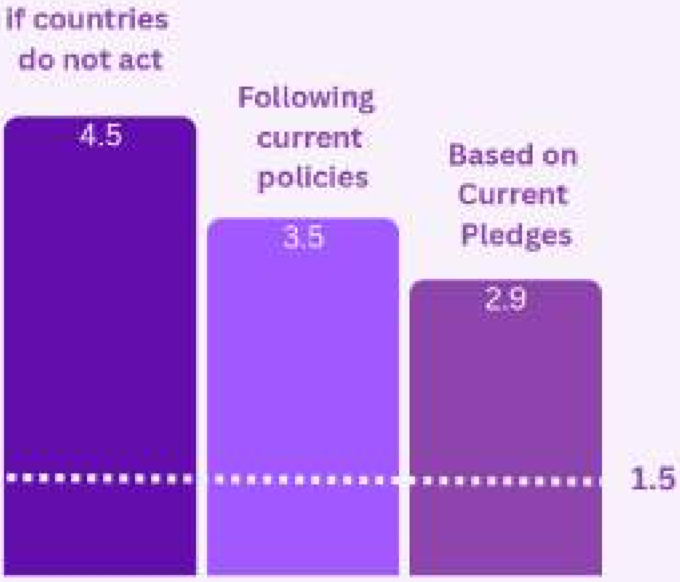
The whispers begin: "Your phone is outdated," "Your appliance is inefficient," "Your clothes are so last season." These are not mere suggestions; they are calculated assaults on our wallets and our planet. Planned obsolescence, a deliberate strategy by manufacturers, ensures that products are designed to fail, to become obsolete within a predetermined timeframe. It's a betrayal of trust, a calculated assault on our resources, a deliberate creation of waste.
Marketing, a master of psychological warfare paints a picture of fulfilment through consumption. We are bombarded with images of perfect lives, attainable only through the acquisition of the latest gadgets, the most stylish clothes, and he most luxurious experiences. We chase fleeting trends, seeking validation in material possessions, believing that "more" equates to "better." This constant yearning for the "new" fuels the consumption carousel, driving us to discard perfectly functional items in pursuit of the illusion of happiness.

The Garbage Glut: A Toxic Legacy Etched in the Earth

The consequences of our insatiable appetite are stark and undeniable. Mountains of discarded electronics, toxic landfills, and oceans choked with plastic are the grim monuments to our consumerism. Each discarded item, a testament to our fleeting desires, leaches toxins into the soil, the water, the air. We breathe in the fumes of our excess, the very air we share now a cocktail of industrial pollutants, a testament to our collective disregard. Our oceans, once vibrant ecosystems teeming with life, are now swirling graveyards of plastic, choking marine life and poisoning the food chain. Microplastics, invisible to the naked eye, infiltrate every corner of the planet, even our bodies.

The Melting Majesty: A World Unravelling at an Alarming Pace

The Arctic, once a pristine expanse of ice, a symbol of stability and resilience, is melting at an alarming rate. Data, stark and uncompromising, paints a chilling picture: by 2100, the iconic icebergs may vanish entirely. This isn't just a loss of breathtaking scenery; it's a catastrophic disruption of the planet's delicate balance. Ice acts as a mirror, reflecting sunlight and heat back into space. Without it, the Earth absorbs more solar radiation, accelerating global warming.



The consequences are already devastatingly apparent. Cold places are experiencing unprecedented heatwaves, shattering historical records. Warm places are seeing freakish cold snaps, disrupting ecosystems and human lives.

The predictability of weather, once a comforting constant, has vanished. We now live in a world of extremes, where droughts parch once-fertile lands, turning them into barren wastelands, and floods inundate coastal cities, displacing millions. The United States, a nation once known for its relatively stable climate, now grapples with a terrifying surge in tornadoes, each one a violent reminder of the planet's growing instability, a testament to the chaotic forces we have unleashed.

The Human Cost: A Silent Suffering Woven into the Fabric of Existence

These changes aren't abstract concepts confined to scientific reports; they are lived realities, etched into the daily struggles of millions. Farmers watch their crops wither and die, their livelihoods destroyed by prolonged droughts. Coastal communities brace for rising sea levels, their homes and ancestral lands threatened by inundation. Families struggle to rebuild their lives after devastating storms, their resilience tested to its limits.

The burden of climate change falls disproportionately on the most vulnerable, those who are least responsible for the crisis and have contributed the least to the problem. We are creating a world where survival itself becomes a luxury, a privilege reserved for the few.

Nature's Resilience: A Glimmer of Hope Amidst the Despair

Yet, amidst the despair, a flicker of hope persists. Nature, despite our relentless assault, retains an astonishing capacity for recovery. The Chernobyl disaster, a stark reminder of humanity's destructive power, left a scarred landscape, a radioactive wasteland. But today, decades later, the region is a thriving wildlife sanctuary, a testament to nature's ability to heal, to reclaim what was lost. Wolves roam freely, deer graze in fields once contaminated, and rare species flourish. This remarkable recovery underscores the inherent resilience of the natural world, its ability to adapt and regenerate even in the face of catastrophic damage.

Our Hubris: The Fatal Flaw in Our Design

But we are not nature. We do not possess that innate ability to self-correct, to heal from our own wounds. We are driven by short-sighted greed, blinded by the illusion of control, believing that technology can solve any problem, that progress is synonymous with consumption. In the last two centuries, we have inflicted damage on a scale unimaginable to previous generations.

We've rewritten the rules of the planet, pushing ecosystems to their breaking point, disrupting the delicate balance that sustains all life.

The Choice Before Us: A Call to Consciousness, a Plea for Transformation

We stand at a critical juncture, a crossroads where the fate of humanity hangs in the balance. We can continue down this path, driven by the insatiable hunger of consumerism, clinging to the illusion of endless growth, or we can choose a different future, one built on sustainability, resilience, and a deep respect for the planet. We must break the cycle of extraction and disposal, embrace a circular economy, and prioritise longevity over fleeting trends.

We must fundamentally re-evaluate our relationship with consumption. Do we need another gadget, another piece of clothing, another fleeting experience? Or can we find fulfilment in simplicity, in connection with nature, in a deep appreciation for the natural world? Can we find joy in experiences rather than possessions? We must embrace a paradigm shift, a transformation of our values and priorities. We must recognise that true wealth lies not in material possessions, but in the health of our planet, the well-being of our communities, and the legacy we leave for future generations.

The Echo of Emptiness

It's the haunting sound of a world depleted, a future mortgaged. It's the sound of our own hearts, hollowed out by the relentless pursuit of material possessions. We must fill that emptiness with something more meaningful: a commitment to sustainability, a dedication to justice, and a profound love for the planet that sustains us.

The choice is ours. Will we continue to chase the echo of emptiness, or will we create a symphony of sustainability, a harmonious future for generations to come? The time for action is not tomorrow, but now. The world is watching, and the future is listening. Let us choose wisely, let us choose life.

The Green Paradox

An Indian Perspective

By: Saurabh Khakhkhar

Introduction

The global challenge of environmental sustainability creates challenges for traditional models of economic growth, particularly for developing countries. While the urgency to shift from fossil fuels is a common sentiment, the complexity and potential economic risks of how this shift occurs abound. One example of an economic risk that may be present in this shift is called the ***"Green Paradox,"*** which presumes certain actions taken to reduce emissions - pollution - by the environmental policy that leads to increased resource extractions in the short run. For developing economies, like India, struggling with poverty alleviation and addressing climate change, it is important to consider this paradox without the accompanying academic talk, because understanding the problem may shed light on ways to alleviate the problem in a future scenario and help secure economic growth and environmental health.

Understanding the Green Paradox

At its core, the Green Paradox is rooted in the economic theory of the intertemporal allocation of a resource, namely Hotelling's Rule. Hotelling's Rule states that in a competitive market, the price of an exhaustible resource should rise at the interest rate (the economic opportunity cost for postponing extraction of the resource, or holding it rather than simply extracting it to invest the revenue). When governments announce future environmental regulations, such as future higher carbon taxes or future bans on fossil fuel consumption, the expected future value of those fossil fuel resources decreases. When faced with lower future returns, resource owners (e.g. coal mine owners, oil companies) may choose to extract and sell their reserves faster today before they become stranded or are worth much less. This faster extraction results in higher emissions today, and thus creates the "paradox." The Green Paradox is an ambiguous economic signal that reveals the responsive behaviour of economic agents to policies that ignore market dynamics and the possibility of strategic behaviour. The Green Paradox is not simply a rebound effect or policy failure; it demonstrates a much deeper and self-reinforcing market reaction to anticipated environmental constraints.

For developing nations, the Green Paradox is particularly powerful and pressing due to their distinct socio-economic structures and historical development. For example, India is a rapidly growing economy with a heavy reliance on fossil fuels to fuel its economy. The right of millions to escape poverty by providing access to energy and improving their quality of life remains the immediate goal of national policymakers. This goal translates into tremendous demand for energy, much of which is currently provided by abundant coal reserves. While signalling a slow phase-out of coal has environmental merit, it also has the potential to provide sufficient encouragement to accelerate coal extraction and consumption in the short term, as coal companies and coal-rich states react to an aggressive phase-out plan by maximising profits (see Slade, 2021). From my perspective, the political economy of regions where coal is produced and consumed is based on a heavy reliance on coal resources development, and regional economies are reliant on coal for jobs and revenues. At this point, the sheer economic rationale for quick extraction - "to get what we can get right now is better than waiting until it is banned or more difficult to extract", is very compelling and might completely obliterate the aims of an environmental agenda.

Moreover, this paradox is amplified by the issues of technology transfer. Often, developing countries do not have either the abilities or resources to ramp up more rapidly than others, even for green technologies (i.e. more advanced solar, wind, battery storage), and they do not have the finances to purchase them at reasonably competitive prices. The universal response for developing countries in the global north to adopt these technologies, with the bulk being fabricated in advanced economies and much of it encumbered with IPRs, are seen as barriers for their adoption in country like India, and where domestic capacity is lacking, the response is adoption of green technologies, with current mechanisms of adaptation being insufficient.

Mobile and green finance are now high-importance categories of global consensus aimed towards a gradual green transition. However, even with climate finance, the funding required to purchase these new technologies and adapt them domestically is still insufficient. In the context of the technology deficit, even where developing countries aspire for a transition, they often have to rely on traditional technologies which are also based on technologies that may be carbon intensive, as there is a lack of more advanced technologies at a cost financial ration; to move nations toward other technologies under these circumstances is not a choice but necessity; especially where alternatives are not sufficiently available at competitive price I think the technologies at the moment are not only ill-defined, but globally we seem to presently have an ill-defined technology transfer structure in place, and Caribbean states, or states with minimal historical contributions to climate change, can certainly be regarded as disproportionately via structural inequities in carrying the costs of climate change mitigation. It can be argued that the result of disproportionate mitigation and green technologies may inadvertently facilitate prolonged dependency, and the paradox is exemplified.

Beyond the technical challenges, the socio-economic considerations of changing the pace of the energy transition (especially for economies impacted by the Green Paradox) are real and require a 'just transition'. The departure from fossil fuels, when it often occurs, may lead to significant job losses in traditional industries if a similarly rapid response is not given. An example of this employment risk is in India, where the coal industry employs millions directly or indirectly, ranging from miners to dock workers to transport contractors. An attempted increase in coal extraction to hedge against future regulations might only preserve coal jobs for the short term, while a sudden and unmanaged transition may disproportionately affect these communities. Although renewable energy jobs can be created rapidly around the world (and offer opportunities in transitioning from fossil fuels), the majority of these will exist in different locations and/or require different skills than those where they are displaced from; thus, a massive gap in displaced workers and emerging opportunities will exist, contributing regional disparities and causing civil unrest.

My analysis suggests that the idea of a 'just transition' is not only a moral issue but an economic imperative to manage social unrest that could hinder climate action.

Without adequate social safety nets, retraining opportunities and other income-shaking alternatives, fossil fuel-dependent communities will face significant economic distress. The irony is that poorly-created policies meant to benefit the planet might, in a moment of irresponsibility, cause instability for vulnerable communities. It is all the more complicated when considering that transition planning for a rural country like India, with its large informal economy and large regional variations, is a huge logistical and financial challenge. A just transition requires meticulous socio-economic policy planning that must occur alongside environmental policy planning, which includes skill development, social security, and diversification of economies that could be impacted by energy transition.

To conclude, the Green Paradox (Sohn et al., 2018) poses a significant economic problem for developing countries. It highlights the importance of recognising that markets react to proposed environmental policies. I believe that for India, the Green Paradox (Sohn et al., 2018) is particularly acute, given the structural links with the country's ultimate development goals, reliance on traditional energy sources, and the formidable. challenges surrounding technology transfer for green technology. The evident socio-economic issues that developing countries grapple with, such as the displacement of jobs and just transitions, complicate and deepen this narrative. I believe that policy prescriptions on the issue of the Green Paradox (Sohn et al., 2018) tend to focus on simplified narratives around either economic improvement or environmental degradation without delving deeply into all the complexities around existing economic and social conditions. Addressing the Green Paradox (Sohn et al., 2018) does not mean discarding environmental goals. Doing this implies an integrated approach, whereby we think creatively and comprehensively about the impacts on market value decisions and time frame for resource owners while distributing access to inclusive technologies, and also thinking through the issues related to socio-economic benefits on the population impacted. Unless developing countries can develop integrated pathways for addressing the Green Paradox (Sohn et al., 2018), they will not be able to negotiate between the competing economic and environmental outcomes and thus will risk increasing the very outcomes they are trying to mitigate.

The BluSmart Controversy

India's EV Poster Child in Trouble

By: Krish Chadha

Context

Launched in January 2019 by Anmol Singh Jaggi, Puneet Singh Jaggi, and Punit K Goyal, BluSmart entered the market as India's first all-electric ride-hailing service. Its founders were vocal about their ambition to "lead the charge in India's EV revolution and set new standards for the mobility sector." BluSmart's model broke away from the conventional gig-economy approach of Uber and Ola by offering fixed fares and salaried driver positions, aiming to provide both price transparency for customers and income stability for drivers.

The company operated on an asset-light model, leasing electric vehicles (EVs) from established automakers such as Mahindra, Tata Motors, and Hyundai. This allowed BluSmart to scale quickly without the upfront costs of vehicle ownership. Additionally, the company invested in building its network of charging stations, a necessary move for supporting an all-electric fleet in India's nascent EV ecosystem.

BluSmart's early promise was evident in its rapid expansion and positive media coverage. The company positioned itself as a socially responsible alternative to traditional ride-hailing, addressing both environmental concerns and the economic vulnerabilities of gig workers. However, the very factors that set BluSmart apart—its capital-intensive infrastructure and commitment to driver welfare—would later contribute to its financial strain.

Financial Performance and Structural Challenges

BluSmart's innovative approach required significant capital investment, not only for its fleet but also for charging infrastructure and operational scaling. The company's revenue grew impressively, from ₹9 crore in 2020-21 to ₹160 crore in 2022-23. Yet, this growth masked deeper issues: losses widened to ₹216 crore in the same period, signalling unsustainable unit economics.

A critical flaw in BluSmart's model was its break-even requirement. Each cab needed to complete nine trips per day to cover costs, but the average was only seven. This shortfall, combined with fixed driver salaries and maintenance expenses, meant that the company was losing money on every ride. The end of the FAME-2 subsidy, which had provided crucial financial support for EV purchases, further strained BluSmart's finances. Without this government backing, the cost of acquiring and operating EVs increased sharply, and BluSmart was forced to absorb these costs without the ability to raise prices in a competitive market.

Operational challenges compounded financial pressures. The company's expansion into multiple cities stretched its resources thin, and the need to maintain a growing fleet and charging network required constant capital infusion. Investors grew wary as losses mounted and profitability remained elusive. Despite its early success, BluSmart's ambitious vision was undermined by the harsh realities of scaling a capital-heavy business in a price-sensitive market.

The SEBI Investigation and Financial Irregularities

BluSmart's troubles deepened in 2025 when the Securities and Exchange Board of India (SEBI) launched an investigation into Gensol Engineering, a key partner and EV lessor. SEBI discovered that funds raised by Gensol for leasing 6,400 EVs to BluSmart had been misappropriated by the Jaggi brothers. Of the ₹640 crore in term loans, at least ₹200 crore was unaccounted for or allegedly siphoned off for personal use, including the purchase of luxury real estate.

These revelations had immediate and severe consequences. The Delhi High Court ordered the seizure and relocation of 129 EVs linked to Gensol and BluSmart across Delhi, Gurugram, and Bengaluru. This legal action not only crippled BluSmart's operational capacity but also destroyed investor and public trust in the company's leadership.

The financial irregularities highlighted systemic weaknesses in governance and oversight, both within BluSmart and among its partners. The misuse of funds intended for business expansion and fleet development revealed a lack of internal controls and raised questions about the effectiveness of regulatory supervision in India's fast-growing startup sector.

Operational Deterioration and Service Quality Decline

The fallout from BluSmart's financial and legal troubles quickly became evident in its day-to-day operations. The company's daily ride volume plummeted by 60%, dropping from a peak of 30,000 to just 12,000 rides. Drivers reported being asked to operate vehicles with worn tires, no spare wheels, and inadequate maintenance support, leading to safety concerns and vehicles being abandoned at parking hubs.

In April 2025, BluSmart suspended all ride bookings and extended the refund window for user wallet balances from six days to 90 days, citing financial constraints. This move signalled a deeper crisis within the company's financial structure and eroded. customer confidence. The operational decline was not just a result of financial mismanagement but also a reflection of the company's inability to maintain service standards amid mounting pressures.

BluSmart's struggles were compounded by negative media coverage and growing scepticism among investors and partners. The company's reputation as a socially responsible innovator was overshadowed by allegations of fraud and mismanagement. As operational challenges mounted, BluSmart's ability to attract new drivers, retain customers, and secure additional funding diminished rapidly.

Strategic Pivot and Partnership Developments

Facing insolvency, BluSmart pivoted to a new strategy: becoming a fleet partner for Uber. The company began migrating its electric fleet to Uber's platform in phases, starting with 700–800 vehicles. This move marked a significant shift from BluSmart's original vision of independent operation and market disruption to a survival strategy focused on leveraging Uber's established customer base and operational infrastructure.

At the same time, BluSmart sought buyers or strategic partners to inject much-needed capital and support its growth. However, the combination of a capital-intensive business model and ongoing financial scandals made the company a risky proposition. Investor appetite waned, and potential partners were deterred by the reputational damage and uncertain prospects for profitability.

The transition to becoming an Uber fleet partner offered a temporary lifeline but underscored the limitations of BluSmart's original model. By relinquishing its independence, BluSmart acknowledged the challenges of sustaining an all-electric ride-hailing service in India's competitive and cost-sensitive market without robust financial backing and operational efficiencies.

Comparative Analysis

BluSmart's trajectory bears striking similarities to that of Byju's, another high-profile Indian startup that experienced rapid growth followed by dramatic decline. Byju's, once valued at $22 billion, became embroiled in legal disputes and financial turmoil after a U.S. judge ruled that it had fraudulently transferred over $500 million to a "sham" hedge fund. The company's main learning app was removed from the Google Play Store due to non-payment to Amazon Web Services, and it now faces insolvency proceedings in India.

Both BluSmart and Byju's highlight the dangers of rapid expansion without strong financial oversight. Their stories illustrate how ambitious startups can falter when growth is prioritised over sustainable business practices and transparent governance. The collapse of these companies serves as a warning to entrepreneurs and investors alike: innovation and market disruption must be balanced with fiscal discipline and accountability.

The parallels between BluSmart and Byju's also underscore the importance of regulatory vigilance and proactive intervention. In both cases, regulatory action came only after significant damage had been done, suggesting a need for more robust oversight mechanisms to protect stakeholders and maintain trust in India's startup ecosystem.

Broader Implications for the Startup Ecosystem

BluSmart's rise and fall offer important lessons for India's burgeoning startup community. Unit economics matter; rapid scaling without a clear path to profitability is unsustainable, especially in capital-intensive sectors like mobility and edtech. Governance and oversight are crucial; strong internal controls and transparent financial practices are essential to prevent mismanagement and maintain investor confidence. Regulatory vigilance is needed; timely and effective regulatory intervention can help detect and address financial irregularities before they escalate into crises. Sustainable growth must be prioritised over hype; startups must balance ambition with realistic assessments of market conditions, operational challenges, and funding requirements.

The BluSmart case also highlights the interconnectedness of startups, investors, and regulatory bodies. When one link in the chain fails—whether due to mismanagement, lack of oversight, or external shocks—the ripple effects can undermine the entire ecosystem.

Conclusion

BluSmart's story is a microcosm of the opportunities and risks facing India's startup sector. Its vision for sustainable, electric mobility was bold and timely, but ultimately undermined by financial imprudence and governance failures. The company's collapse, alongside that of Byju's, serves as a stark reminder that innovation alone is not enough; sustainable growth, fiscal discipline, and transparent leadership are essential for long-term success.

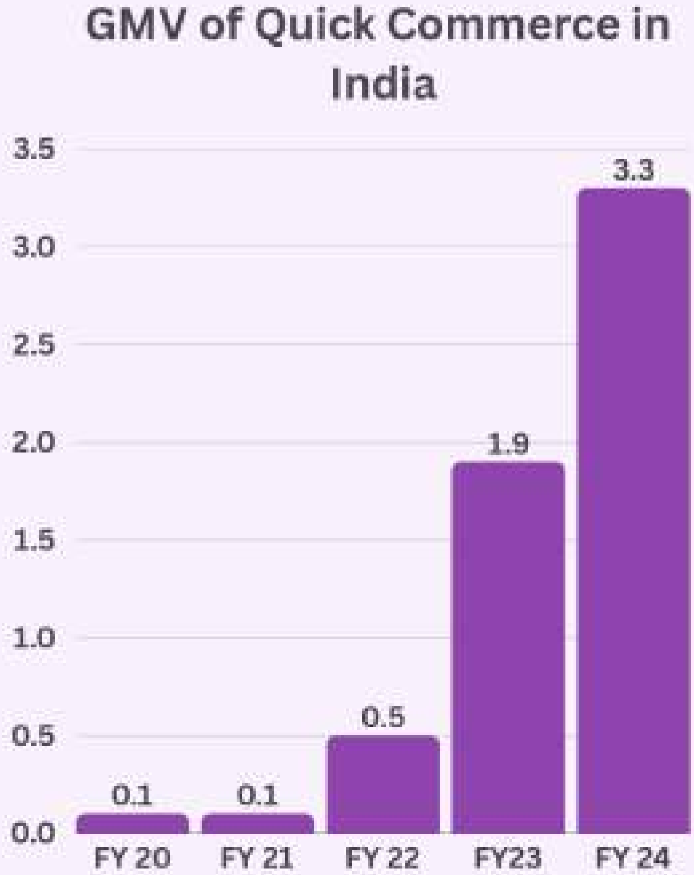
As India continues to nurture its startup ecosystem, the lessons from BluSmart's rise and fall should inform future policies, investment decisions, and entrepreneurial strategies. By prioritising integrity and sustainability, startups can build lasting value and contribute meaningfully to India's economic and social progress.

Rise of Quick Commerce in India

By: Shibsundar Das

In just a few years, ultra-fast grocery delivery —often called quick commerce—has exploded in India. Once virtually unheard of, 10–20 minute delivery of staples and essentials is now part of daily life in many cities. According to industry reports, quick-commerce gross merchandise value (GMV) jumped from about $0.5 billion in FY2022 to $3.3 billion by FY2024. One analysis even calls it "India's fastest growing industry segment ever," noting a 24-fold surge in order volume between 2022 and 2025. Homegrown players Blinkit (Zomato), Zepto, and Swiggy Instamart now control most of this booming market. Growth is projected to continue: estimates put India's quick-commerce market at roughly $5 billion by 2025 and nearly $10 billion by 2029.

Projections suggest about $7.1 billion by FY2025.



Blistering Growth Rate: The sector grew roughly 73% year-over-year in FY 2023–24, far above the ~14% growth rate of conventional e-commerce over the same period.
Market Size: One market research firm pegged the industry at $3.05 billion in FY2024, with a CAGR of ~20% to reach ~$13.4 billion by 2032.

What's Driving Demand: Changing Consumer Behaviour?
At the heart of quick commerce's rise is a shift in how Indians shop for everyday goods. Busy urban consumers increasingly expect instant gratification. As Zepto co-founder Aadit Palicha explains, quick commerce is "redefining the way users of all ages shop." Rather than planning big grocery runs, millennials and Gen Z now use these apps for gadgets, gifts and snacks, Gen X for kitchen s

upplies and home essentials, and even older users (boomers) are turning to instant delivery for plants, groceries and other needs. In Palicha's words, the app has become "not just a store, but a problem-solving tool," sparked by pandemic habits and then sticking due to ever-wider assortments.

Observers point out that India's young, internet-connected population is primed for this: widespread smartphones + 24/7 lifestyles + lower patience for waiting. And unlike in many Western markets, India's dense apartment complexes and affordable labour make hyper-fast delivery viable. "A single high-rise complex in Gurugram, for example, can house as many potential customers as an entire town in a less-dense country," notes one analysis, combined with cheap delivery riders.

Swiggy Instamart's leadership highlights the deep pull of convenience: Instamart CEO Amitesh Jha reports that "users across India already recognise the convenience Swiggy provides," and that "enthusiastic demand from smaller towns and cities has been incredibly encouraging." In practice, metro and even tier-2 consumers are increasingly tapping quick-delivery apps for last-minute needs, impulse buys, and premium impulse purchases alike. Even average order values (AOV) have risen; one report shows Blinkit's AOV at ₹625 (~$7.5), up from ₹250 initially.

Major Players and Their Strategies

Several companies race to meet this demand. Zomato's Blinkit (formerly Grofers) was the first mover. Zomato spent about ₹370 crore (≈$45M) to add ~368 new dark stores (micro-warehouses) in six months, bringing Blinkit to ~1,000 dark stores by late 2024. This network, plus Zomato's logistics, lets Blinkit promise 10–20 min delivery. Zomato CEO Deepinder Goyal bluntly calls The Blinkit acquisition is a "survival instinct deal" for Zomato. According to Goyal, quick commerce isn't stealing from mom-and-pop kiranas or even brick-and-mortar retailers (DMart): "Blinkit is eating into Amazon and Flipkart's e-commerce sector", he says. In other words, it's grabbing a share of planned online grocery purchases. Blinkit now claims roughly 41% market share of quick commerce in India.

Zepto (backed by Nexus, Y Combinator, the Glovo cofounder, etc.) is a fast-growing newcomer. Founded in 2020 by two Stanford dropouts (Palicha and Kaivalya Vohra) who started by delivering essentials by bicycle in Mumbai, Zepto now has hundreds of dark stores in ~10 metros. TechCrunch reports Zepto has raised over $1 billion in six months and still holds that cash on the balance sheet. The startup is reportedly valued at around $5B and is eyeing an IPO next year. Zepto emphasises razor-thin execution: its founders stress that what matters is not just the idea of fast delivery, but "who delivers on it flawlessly, day after day". By late 2024, Zepto's run-rate was growing rapidly: internal data cited by TechCrunch projects another 150% growth over the next year.
Zepto is also expanding outside big cities – it says a test in Nashik reached 1,000 orders/day in only 6 weeks (faster than many metro launches), proving "demand is there" in tier-2 India.

Swiggy Instamart (originally a Swiggy grocery arm) rounds out the big three. Swiggy has folded Instamart into its app and rapidly expanded across India – as of late 2024, Instamart was active in 43 cities (adding about 11 new cities in 2 months). Its CEO similarly touts the broad appeal: Instamart delivers everything from milk and bananas to electronics and toys within ~10 minutes. Like Zepto and Blinkit, Swiggy is building dark stores densely in each city.

Other players include Dunzo Daily (Dunzo's grocery arm) and retailers like BigBasket (Tata), But they trail the big three. The quick-commerce space has also attracted heavy VC funding: in 2021–22, Blinkit, Zepto and others raised hundreds of millions to chase growth. One TechCrunch analysis estimated India's quick-commerce startups would do >$6 billion in sales in 2024, foreshadowing the multi-billion GMV industry ahead

India vs. the West: Why It Works Here

Quick commerce has similarly been tried in the U.S. and Europe, but with far less success. In cities like New York and San Francisco, 15-minute grocery apps aggressively expanded in 2020–21 only to burn through cash and retrench or fail. Wired magazine reports Jokr did $1.7M in revenue in early 2021 while incurring $13.6M in losses. Thousands of workers were later laid off at Gorillas, Getir, and others. Harvard business professor Thomas Eisenmann notes the pattern: these startups enjoy initial hype but lack a sustainable value proposition. "It didn't work then, and it's not working now," he says, comparing the new wave to the late-1990s dot-com era (e.g. Kozmo.com). High labour costs, lower urban density, and entrenched alternatives (Instacart, Walmart, supermarkets) made sub-hour delivery uneconomical in the West.

India is different. Commentators point out that population density and labour costs tilt the economics. A recent analysis notes that millions of Indians live in tightly packed apartment blocks: a dark store in such an area can serve as many orders as dozens of rural outlets. Combined with low wages for delivery personnel, that means companies can afford 15-minute drops for just a few rupees. "While this may cost several dollars in the US, the same service can cost mere rupees in India," one report explains. This synergy of demand density and cheap labour is hard to replicate in the U.S. Even at home, analysts stress that quick commerce in India succeeds by piggybacking on already-fast food-delivery infrastructure.

Challenges and the Road Ahead

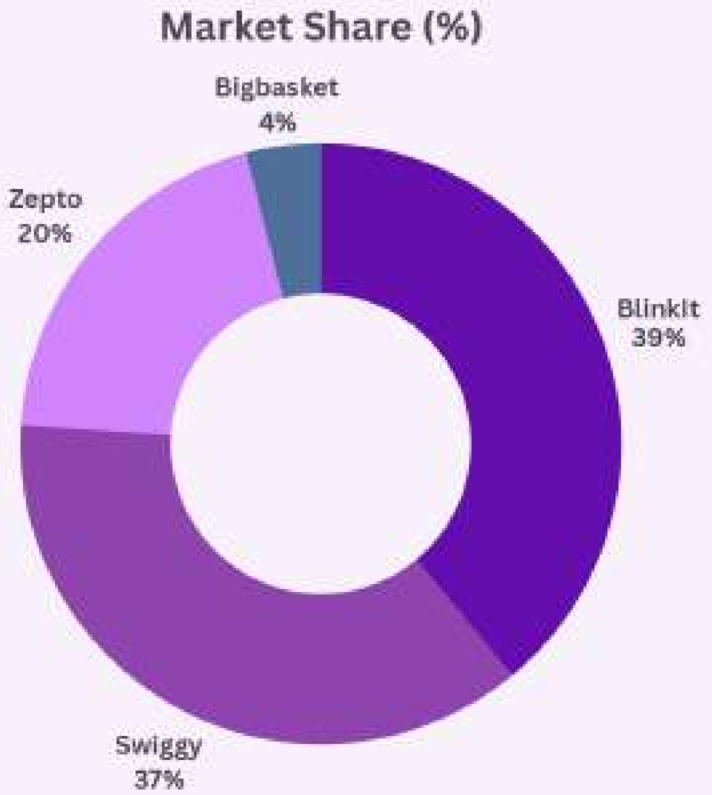
Despite the boom, the industry faces big challenges. Quick commerce is notoriously capital-intensive and margin-thin. Every delivery involves coordinating inventory, riders, and orders, often subsidised heavily to build a habit. Many experts warn that the current pace may slow or consolidate over time. Blume Ventures' report cautions that growth may taper once core cities saturate. Industry voices also point out that fierce competition and cash burn make profitability elusive. As one analyst put it, rapid expansion could hit the overall profit pool: "increased competition will have some impact on the industry profit pool," per a recent report.

Regulatory and ecosystem issues loom too. Quick commerce's proliferation of single-item runs adds traffic and packaging waste, drawing some environmental scrutiny. And deepening alliances with local kiranas or tech will be needed to ensure traditional retailers aren't squeezed out. As Blinkit's Goyal observes, quick-commerce so far hasn't "eaten into" kirana or D-Mart; if it did, there could be pushback.

A recent Citi report projects the top three players to hit a $9 billion run rate by FY2025 and ~$26 billion by FY2028 – roughly a 73% CAGR even from today's elevated base. That growth will likely come from deeper city penetration and moving into adjacent categories (electronics, home goods) via the same networks. Startups like Zepto are gearing up: it plans to go public next year to raise more expansion capital. E-commerce giants are tailoring their offerings (for example, Swiggy merged Instamart into its main app), and even offline retailers are innovating last-mile delivery to keep up.

Conclusion

In short, India's quick-commerce revolution shows little sign of stopping. A culture that once prized scheduled grocery runs is rapidly embracing instant delivery. As Zepto's CEO puts it, the "app becomes not just a store, but a problem-solving tool" for India's impatient consumers. With massive funding, a hungry customer base, and backing from deep-pocketed firms, the leading players are still writing the playbook. Whether this market stays healthy or strains under its own weight, one thing is clear: India has turned quick commerce into a landmark consumption trend – one that global investors are watching closely.



Digital Circular Economy

A Model for Sustainable Economic Growth

By: Bhavesh Raju Adepwar

Abstract*—The accelerating climate crisis and mounting resource constraints have exposed the limitations of traditional linear economic models. This paper explores the emerging concept of the Digital Circular Economy (DCE)—a hybrid framework that integrates circular economy principles with digital technologies to promote sustainable and regenerative growth. The DCE offers a shift from the "take-make-dispose" model to one that emphasises reuse, transparency, and efficiency across the value chain. Through an analysis of key enabling technologies—including IoT, AI, blockchain, and digital twins—this research highlights how digital innovation drives resource optimisation and business model transformation. The paper also examines the economic implications of the DCE, such as employment generation, GDP impact, and investment trends, while addressing significant barriers like technological inequality and policy fragmentation. Strategic recommendations are proposed to scale the DCE globally. Ultimately, the study positions the DCE as not just an environmental necessity but a powerful lever for inclusive and resilient economic development.*

Keywords*—economy, digital, climate, GDP, DCE, etc.*

INTRODUCTION

The global economy is at a critical inflexion point, confronting pressing environmental challenges such as resource depletion, ecological degradation, and climate instability. Traditional economic models rooted in linear thinking—extract, produce, use, and discard—are no longer viable in a world of finite resources. This has led to an increasing focus on sustainable development paradigms that can reconcile economic progress with environmental preservation.

One of the most promising frameworks emerging in recent years is the Digital Circular Economy (DCE). This innovative model marries the foundational principles of the circular economy with cutting-edge digital technologies, offering a transformative approach to how value is created, consumed, and regenerated. It leverages digital tools to facilitate the circular use of materials, improve resource efficiency, and foster innovation in product and service design.

This paper delves into the core concept of the digital circular economy, explores the enabling technologies behind it, examines its economic impacts, and discusses the challenges and policy measures necessary to scale this model globally. It argues that the DCE is not merely an environmental strategy but a robust economic growth model capable of generating employment, enhancing productivity, and securing long-term competitiveness.

CONCEPTUAL FRAMEWORK OF THE DIGITAL CIRCULAR ECONOMY

2.1 Definition and Core Principles

A Digital Circular Economy refers to the integration of circular economy practices with digital innovation to achieve sustainable value creation. It emphasises reducing waste, maximizing reuse, and

- Design for durability, repairability, and upgradability
- Circular business models like product-as-a-service
- Closed-loop systems where materials are perpetually cycled
- Transparency and traceability enabled by digital tools

2.2 Evolution from Linear to Circular

Historically, industrial economies followed a linear model where growth was tied to increased resource consumption. However, the circular model shifts this logic by emphasising regenerative design and the decoupling of growth from resource use. With the rise of digital tools, this transition is no longer abstract; it is actionable and measurable. Real-time data, digital twins, and predictive analytics allow companies to extend product life cycles and design systems that minimise environmental impact while maximising economic return.

DIGITAL TECHNOLOGIES POWERING THE CIRCULAR ECONOMY

3.1 Internet of Things (IoT)

IoT networks connect physical assets to digital systems, allowing constant monitoring and feedback. For example, smart bins in urban environments can alert waste management systems when they are full, optimising collection routes and reducing fuel consumption. In manufacturing, IoT enables predictive maintenance, reducing downtime and extending machine lifespan. These innovations make it easier to identify reuse opportunities and close material loops.

3.2 Artificial Intelligence & Machine Learning

AI and machine learning play a critical role in unlocking efficiencies in circular systems. Algorithms can analyse complex datasets to identify patterns in resource use, predictng maintenance needs, or optimise logistics. In agriculture, AI supports precision farming by tailoring inputs to exact needs, minimising waste. In retail, demand forecasting powered by AI reduces overproduction, one of the key contributors to landfill waste.

3.3 Blockchain for Supply Chain Transparency

Blockchain technology offers decentralised and tamper-proof records, enabling complete transparency in product sourcing, manufacturing, and post-consumer recycling. This is particularly useful in industries like electronics and fashion, where tracking material origin is vital for regulatory compliance and consumer trust. Smart contracts can automate compliance with extended producer responsibility (EPR) regulations, encouraging accountability.

3.4 Digital Twins and Simulation

Digital twins are virtual replicas of physical systems that allow businesses to simulate operations and test improvements in a controlled environment. For instance, a logistics company can simulate circular packaging schemes to assess environmental and economic outcomes before making real-world investments. This lowers barriers to experimentation and supports innovation in circular design.

ECONOMIC IMPLICATIONS OF DIGITAL CIRCULAR ECONOMY

4.1 GDP Growth and New Business Models

The DCE fosters "servitization"—a shift from ownership to access. Companies no longer rely solely on product sales but derive income through usage-based services. For example, Michelin offers tire-as-a-service to commercial fleets, charging per kilometre rather than per unit. This model incentivises durability, innovation, and continuous customer engagement, ultimately.

contributing to stable revenue streams and economic resilience.

4.2 Employment in the Green Tech Sector

The growth of circular digital industries will lead to the emergence of entirely new professions, from eco-software developers to data-driven material scientists. A McKinsey report estimates that circular economy transitions could generate over 2 million new jobs globally by 2035, especially in sectors like recycling, renewable energy, and sustainable product design. Reskilling and education will be critical to harnessing this potential.

4.3 Cost Efficiency for Businesses

Adopting circular principles enables companies to reduce dependency on volatile raw material markets. Products are designed for reuse, disassembly, or remanufacturing, which not only saves costs but also reduces risk exposure to supply chain disruptions. Modular smartphone companies like Fairphone exemplify this by offering easily repairable devices that extend product life and reduce the total cost of ownership.

4.4 Investment and Market Potential

As awareness of environmental, social, and governance (ESG) issues grow, capital is increasingly flowing toward sustainable and circular ventures. Governments and institutional investors alike are prioritising businesses that align with net-zero goals. The global circular economy market is projected to surpass $4.5 trillion by 2030, making it a fertile ground for innovation and capital investment.

CONCLUSION

The Digital Circular Economy represents not just an environmental imperative but an economic opportunity. By leveraging the full spectrum of digital technologies, we can transition toward a regenerative, resilient, and inclusive economic model. The fusion of data and sustainability offers a path to decouple economic growth from environmental harm.

However, realising this vision demands coordinated action across governments, industries, and civil society. With the right policies, infrastructure, and mindset, the DCE can drive the next wave of sustainable economic development— one where prosperity is achieved not at the planet's expense, but in harmony with it.

Digital Rupee Rising

Evaluating India's OBDC Pilot and Its Economic Implications

By: Swati Arya

Introduction

In December 2022, the Reserve Bank of India (RBI) quietly launched the wholesale pilot of the digital rupee (e₹). Ten months later, the experiment reached everyday citizens: beginning in October 2023, select retail users in fifteen cities could pay with e₹ inside the same applications they already used for Unified Payments Interface (UPI) transfers. Although the absolute numbers remain tiny compared with the six-billion-plus UPI transactions processed each month, the pilot signals the next frontier in India's digital-public-infrastructure journey.

Central-bank digital currencies (CBDCs) sit at the intersection of payment innovation, monetary sovereignty and data governance. For an emerging economy like India—already home to the world's fastest-growing real-time payments network—the stakes range from boosting financial inclusion to protecting the rupee's role in cross-border settlement. This article reviews the progress of the digital-rupee pilot, maps its potential benefits and risks and outlines guard-rails that should precede a nationwide roll-out.

What Exactly Is a CBDC?

A CBDC is a liability of the central bank issued in digital form, convertible at par with physical cash and reserves. Unlike privately issued stablecoins or mobile-money balances, a CBDC carries no credit risk for the holder: it is literally digital cash.

Potential Economic Benefits

- **Deepening financial inclusion** — Cash dependence remains high in rural India, about 70 % of small-value transactions. An offline-capable CBDC that runs on basic feature phones could become the cheapest rail for last-mile benefit transfers and domestic remittances.
- **Cutting payment costs and leakage** — Merchant-discount-rate-free payments could save shopkeepers roughly ₹ 6,000 crore a year if they displace only ten per cent of today's card volume. Programmable CBDC wallets could ensure that fertiliser or LPG subsidies are spent solely on the intended goods, plugging leakages estimated at 15 % of outlay.
- **Enhancing the monetary-policy toolkit** — Real-time visibility into money velocity will allow the RBI to calibrate liquidity operations more precisely. In an extreme

Pogress So Far

Pilot Phase	Launch Date	Principal Use Cases	Volume (March 2025)
Wholesale	Dec 1, 2022	G-sec settlement	₹18 000 cr cumulative
Retail – Phase I	Dec 1, 2023	P2P & P2M	3.8 million tx; ₹410 cr
Retail – Phase II	Jul 15, 2024	UPI interoperable; offline	11 million tx; ₹1 120 cr

downturn, the central bank could, at least in theory, impose negative rates on large CBDC balances.

Supporting cross-border trade — Bilateral CBDC corridors promise atomic settlement without correspondent banks, trimming costs by up to 60 % in India's US$83 billion annual remittance market

Risks and Challenges

- **Bank disintermediation** — In times of stress, households could shift deposits into CBDC, creating unstable funding for banks and pushing lending rates higher.
-
- **Privacy and surveillance —** Unlike cash, CBDC transactions leave a trail. Civil-society groups want statutory firewalls to prevent warrantless fishing expeditions.

- **Cybersecurity and operational resilience:** A compromise of the core ledger could trigger systemic panic.

- **Digital divide and usability —** A 2024 field study in Odisha found that only 34 % of feature-phone users could complete an offline CBDC transfer unaided.

Policy Recommendations

1. Cap and tier holdings. Limit balances to ₹1 lakh per individual with zero remuneration up to the cap; impose a mild negative rate above it.
2. Legislate privacy by design. Guarantee anonymity for small-value payments and require court orders for higher-value data requests.
3. Integrate seamlessly with UPI. A single QR ensures merchants avoid code fatigue and consumers enjoy continuity of experience.
4. Incentivise rural adoption. Offer a ₹50 cash-back on the first five e₹ transactions in high-cash districts.
5. Pilot a cross-border corridor. Use the MAS sandbox in Singapore to measure remittance savings.

Conclusion

The digital rupee will not replace cash or UPI overnight, but it can add a resilient, sovereign layer to India's already world-class payment stack. If designed with inclusion, privacy, and financial-stability safeguards front and centre, e₹ could accelerate India's march toward a less-cash and more-transparent economy while giving the RBI new levers in an increasingly digital world.

International Context

Country	Retail CBDC Status	Daily Retail Volume (April 2025)
China (e-CNY)	Large-scale pilot (25 cities)	750 million
Nigeria (e-Naira)	Live since Oct 2021	1.4 million
Brazil (DREX)	Pilot; national roll-out 2025	—
Sweden (e-Krona)	Proof-of-concept	—

Digital Public Infrastructure and the Future of Financial Inclusion

By: Tanishka Goel, Rashi Chug

Introduction

India's economic development has always emphasised inclusion. Earlier inclusion programs operated through traditional means, such as establishing bank branches, launching outreach programs to rural areas, and setting up credit-type programs with one form or another of governmental backing. In the last decade, India has systematically transformed its approach to inclusion from physical channels to digital ones—thus leading the way to a new coordinated era of inclusion through Digital Public Infrastructure (DPI). Unlike traditional infrastructure in terms of banks, physical branches and inclusion for an individual, DPI is a transformational and interoperable and open digital ecosystem, not only digital infrastructure, but from the structural level. Additionally, this can be thought of as the 'fundamental' architecture for many financial and governance-related public services in India today.

DPI encompasses several platforms, including but not limited to Aadhaar, UPI, DigiLocker, and Account Aggregator provides a comprehensive structure of empowerment to Indian citizens by making government services accessible, affordable, and transparent. Although DPI has created a national discussion about inclusion, its potential and cascading effects on India's unbanked and under-banked populations are still developing. This article focuses on the role of DPI is playing in advancing the agenda of inclusion, its challenges, and the overall structure for the future.

What is Digital Public Infrastructure (DPI)?

Digital Public Infrastructure is defined as the core digital platforms that allow governments to deliver critical services to their citizens.

DPI, which is similar to the term "public goods", is built on open standards and protocols so that governments, private actors and citizens can interact through trusted and scalable systems. In India, these systems have come together to form what is called the India Stack.

The India Stack is made up of:

- **Aadhaar**: A digital identity that is biometric-based for over 1.3 billion people.
- **Unified Payments Interface (UPI):** A real-time digital payment interface that allows transactions.

- **DigiLocker:** A digital file cabinet that enables people to store official documents, share them and have them verified.
- **Account Aggregator (AA):** A consent-based data-sharing network allowing individuals to share financial data with service providers securely.
- **ONDC (Open Network for Digital Commerce):** A set of protocols to allow small retail operators to participate digitally in commerce.

These tools and technologies are changing India's historic way of delivering financial, governmental and commercial services to its

How Does DPI Ground Financial Inclusion?
Financial Inclusion is simply ensuring individuals can access a service that is affordable and suitable, including financial services such as banking, credit, insurance, and pensions. DPI has accelerated financial inclusion in multiple ways.

1. Simple Onboarding through e-KYC
In the pre-DPI world, the KYC, or now Your Customer, processes were paper-based, tedious, and costly. The Aadhaar-based e-KYC allows banks and fintechs to confirm a customer's identity within minutes, which demonstrates a paradigm shift in customer acquisition capabilities and costs, especially in rural areas.

2. Government Benefits via Direct Transfer
In a move to link Aadhaar to the Jan Dhan accounts, the government has initiated Direct Benefit Transfers. This allows the government to deposit funds directly into a beneficiary's account. The funds are earmarked for direct benefit transfers and will be released for gas, food, pensions, etc., as they are provided to their applicable recipient without an intermediary to put money in their account. Eliminating corruption and lengthy processes.

3. UPI turned digital payments into a utility
UPI turned digital payments into a utility. UPI is simple and can be used by anyone with the most basic smartphone. UPI ensures secure payments and transaction experiences. UPI removes the need for a physical bank and enables a cashless economy. UPI is currently in everyday use for small businesses, gig workers, farmers, vendors, etc. It allows them to participate in the formal economy.

4. Access to Credit
There was also the problem of some people not being able to get loans because they did not have a formal credit history. Using the Account Aggregator framework, people share information about their finances with lenders (for example, savings history, bill payments, UPI transactions) to build an evidence base to support lenders' decisions. This will allow institutions to more easily give credit to new borrowers who are not in the current credit record and have traditionally been excluded.

5. Inclusion in Investments and Insurance
DPI has allowed people to quickly open Demat accounts, apply for mutual funds and buy insurance in a digitally-enabled way. This is particularly important for low-income people who now have access to these products and services if they have access to the internet and have a bank account.

Key Figures Demonstrating DPI Impact
According to The World Bank's Global Findex Report 2021, only 78% of adults in India had a bank account, up from only 35% in 2011, largely due to the JAM Trinity (Jan Dhan, Aadhaar and Mobile) and supportive DPI. In April 2025 alone, there were more than 11 billion UPI transactions, which illustrates the extent of usage and acceptance of DPI.

Following the Jan Dhan account opening, India now has more than 50 crore accounts, with 56 % of accounts in the name of women and 67% of accounts held in rural/semi-urban areas. These characteristics demonstrate how DPI has been able to reach some of India's poorest and marginalised people.

Barriers to Achieving Full Financial Inclusion

While DPI has achieved considerable success, a number of barriers remain that limit its potential for specific segments of the population.

1. Digital Literacy

For many people, particularly in low-income and rural areas, digital literacy is limited by the basic skills necessary to operate mobile applications or online services. Even when people own a smartphone, they may not have the knowledge to use UPI or even their DigiLocker.

2. Gender Divide

Women are far less likely to own a mobile phone and have poor access to the internet. This divides DPI tools from many women and widens the financial exclusion divide.

3. Infrastructure Barriers

Many remote areas still have inconsistent electricity, poor connectivity, and low mobile penetration. Those logistical barriers make it difficult to adopt and use DPI tools.

4. Data privacy and consent

As more personal data is digitised, so are concerns about privacy and unauthorised access to data due to poor consent management systems. India's Digital Personal Data Protection Act intends to help protect the personal data of users, but overall, there is still much more work to do to implement and more work to do to enforce whether India's Digital Personal Data Protection Act and any other structures it aims to create will achieve its stated goals.

5. Language and Access Barriers

Each of the DPI platforms has generally been built so it is primarily seen in English or Hindi, meaning people who speak other languages or may have limited literacy may not find it particularly accessible, let alone useful.

Global Replication and India's Leadership

India's DPI model is now being replicated in countries around Africa, Southeast Asia, and Latin America. The modular nature of India Stack allows other nations to adopt pieces like Aadhaar or UPI without having to replicate the entirety of would not have to replicate all of India Stack.

India's G20 presidency in 2023 was dedicated to the idea of DPI as a global digital public good. Organisations such as the World Bank and, International Monetary Fund, along with countries, are now seeing India as one of the leading case studies for an inclusive digital transformation experience.

For DPI to realise its full potential and to actively include every citizen, India should:

1. **Invest in Digital Literacy:** Include DDPI-focused content in the school curriculum and make community-level targeted training workshops.
2. **Focus on Female Inclusion:** Digital literacy & mobile phone ownership schemes for women in low-income communities.
3. **Broadband Access:** Broadband and mobile spectrum, BharatNet, & 5G in rural areas.
4. **Data Privacy Regulation:** To strengthen the required comprehensive measures to support the DPDPA and consent

mechanisms for all platforms to be easy to understand use.

- **Regional Vernacular Backed Innovation:** Encourage the creation of DPI-enabled services that have strong regional vernacular support.

Conclusion

Digital Public Infrastructure is more than just a platform; it is an opening towards an inclusive economy. It transforms the way citizens relate to the state, access credit, transfer money, and build economic resilience. Although challenges are still ahead, India's DPI framework has already brought millions into the financial fold and put down a marker for the rest of the world to learn from.

To realise its ambitious aspiration of a $5 trillion economy, India must rely on its DPI products while continuing to develop and broaden them to reach every region for access, affordability, and empowerment. DPI can offer technological solutions, but it must also be seen as the building blocks of a more inclusive and equitable society.

Tariffs and Tactics

How Global Brands Localise to Thrive in High-Tariff Regions

By: Abhishek Bhardwaj, Neha Goyal

In an era of resurgent protectionism, multinational companies must adapt with exceptional finesse. India, China and the USA – together accounting for roughly half of projected global GDP growth in 2023–24[1] – also maintain significant trade barriers. Indeed, U.S. trade officials note that India's import regime consists chiefly of "high tariffs" on finished goods[2]. Such tariffs act like modern-day moats around domestic industries, forcing foreign brands to refashion their marketing mix to local tastes and policies. In practice, global firms have become glocalizers: like diplomats learning local protocol, or chameleons changing colour, they must tailor messaging, packaging and pricing to the cultural and regulatory climate. As one analyst notes, protectionist barriers may be "akin to coercion" in the eyes of local consumers[3], spurring a nationwide "go local" ethos. In short, brands must dress for the market they're in: international uniformity must yield to domestic resonance.

India: "Made in India" Narratives and Value Messaging

India's newly assertive trade policy – from "Atmanirbhar Bharat" self-reliance to recent U.S. 27% reciprocal tariffs – has prompted a wholesale narrative shift in marketing. With exporters under pressure, Indian advertisers report an emphatic turn to domestic storytelling. For example, marketing chiefs predict "more 'Made in India' messaging, nationalistic pride, and value-driven storytelling" in campaigns[4]. Media strategist Yasin Hamidani cautions that export-oriented firms will see "reduced competitiveness" abroad, so brands must stress "cost-efficiency [and] domestic storytelling" in home campaigns[5]. Ambika Sharma of Pulp Strategy adds that every rupee of ad spend will be scrutinised for ROI, leading to performance-driven digital tactics[6]. In essence, homegrown pride has become a selling point: promotional materials now often sport "Made in India" badges, and Bollywood or cricket celebrities supplant Western icons in ads.

At the product level, global firms are localising aggressively. Companies like Apple and others have established Indian manufacturing to skirt import duties, but even these "Make in India" strategies face tariff headwinds[1]. Meanwhile, pricing and packaging are being fine-tuned for local sensibilities. A notable case is Starbucks India's introduction of a new 6-ounce "Picco" cup (about ₹2.24 or ~$2.30) and child-friendly milkshakes – offerings unique to India but absent in China, Singapore or the USA[2]. "Excessively large portion sizes are an American phenomenon," notes one retail consultant; Indian consumers prefer smaller, value-oriented servings[3]. Similarly, consumer goods firms widely adopt sachets and minimise packaging in India, allowing premium brands to reach price-sensitive buyers. Significantly, India's ad market remains buoyant: ad spending grew about 11.8% in 2023[4], underscoring how eager international and domestic brands are to

court Indian consumers despite tariffs. In short, India's high-tariff environment has made localisation – from menu tweaks to marketing slogans – a strategic imperative for global players.

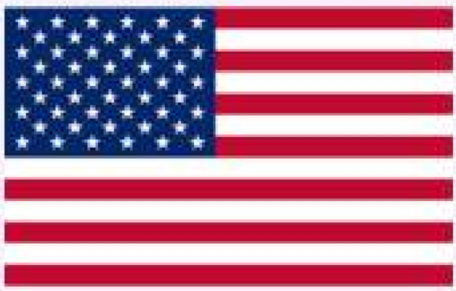
China: Digital Domination and Nationalist Branding

China's combination of high tariff retaliation and a unique digital ecosystem demands a very different approach. In the wake of the US–China trade war, an unmistakable nationalist wave has emerged: analysts report that since 2018, "Chinese consumers by and large have transformed themselves into a patriotic group, preferring to buy goods from Chinese companies"[5]. Boycotts of Nike, H&M and others over geopolitical issues testify to this trend. In response, foreign brands are quick to localise their image. Celebrity endorsements now lean heavily on Chinese stars and KOLs (Key Opinion Leaders) rather than global figures, and many campaigns celebrate Chinese cultural festivals or values. For instance, Coca-Cola and Starbucks frequently unveil Lunar New Year packaging with auspicious colours and symbols, and luxury brands host livestream events on platforms like Tmall Live tailored to Chinese shoppers.

Crucially, China's digital ad economy dwarfs traditional media. eMarketer projects China's digital advertising to hit $143 billion in 2024 (a 12.1% rise), accounting for 85% of all Chinese media spend[1]. This reflects how deeply Chinese consumers are reached via local apps (WeChat, Weibo, Douyin) rather than Facebook or Google. Successful brands craft content specifically for these channels: for example, visually opulent short-form videos on Douyin or interactive mini-games on WeChat. They also adapt product features – KFC's Chinese outlets serve congee and egg tarts, and McDonald's offers regional sauces and the special "Prosperity Burger" each New Year – aligning with local palates. In short, winning in China means "going local" on every front: from supplying goods with necessary Mandarin labels to embedding campaigns in China's nationalistic narrative. The payoff is evident in market share: local firms like Li-Ning and Anta have surged after nationalist backlashes against foreign brands, showing that local affinity can be exploited if global players misstep.

USA: Local Sourcing and Patriotism in Branding

The United States, often viewed as a free-trade bastion, has seen its turn toward protectionism under recent administrations, with tariffs on Chinese and other imports. In this climate, even global brands emphasise "Made in USA" credentials. Consultants advise that companies use explicit domestic cues: permanent packaging labels like "Proudly American" or shelf tags highlighting local sourcing are now common[1]. For example, one CPG playbook suggests digital campaigns stressing "American Made" content, and even redesigning boxes to announce manufacturing origins[2]. This is not mere jingoism: surveys indicate a majority of American shoppers often seek out U.S.-made products when feasible. However, the tenor is nuanced: analysts caution that patriotism alone cannot



compensate for competitive disadvantage. As a 1990s study found, "patriotic verve" only carries weight when quality and price are on par[3].

In the U.S. market, localisation also means catering to local demographics and regulations. Packaging is typically English-dominant, but bilingual labelling (Spanish/English) is growing for Hispanic segments. Digital media strategies exploit the American online landscape: brands use local influencers on Instagram, TikTok and Twitter, and invest in sports and campus sponsorships that resonate nationally. Pricing strategies are also tailored: faced

With tariffs or supply shocks, companies may introduce value packs or coupons. For instance, retailers might offset higher costs with multi-item discounts, as advised in industry guidelines[4]. In essence, marketing in the U.S. blends national identity with local consumer behaviour; global brands must simultaneously affirm their American connections (through sourcing and "authenticity" messaging) and respect the plurality of the market.

Conclusion

In each of these high-tariff arenas, the lesson is clear: global brands cannot rely on a one-size-fits-all playbook. They must craft campaigns as if mastering a new language in each market – adapting imagery, messaging, and even product form to the local tongue. As one industry strategist wryly observes, entering a high-tariff market with unmodified campaigns is like trying to play cricket with baseball rules; without adjustment, one is bound to miss. Brands that succeed are those that become part of the local "fabric" – aligning with national narratives, leveraging domestic supply chains, and absorbing tariff costs in creative ways. When protectionist policies raise barriers, the market's passport demands a fresh visa: a locally tuned strategy backed by cultural empathy.

The Economic Weapon: Nicholas Mulder

By: Yanala Jyothish Reddy

Introduction:
Nicholas Mulders' The Economic Weapon: The Rise of Sanctions as a Tool of Modern War (Yale University Press, October 2022) is a powerful and timely examination of one of the most consequential and controversial tools in international diplomacy: economic sanctions. Through a meticulously researched historical analysis, Mulder uncovers how sanctions, initially envisioned as peaceful alternatives to war, evolved into instruments of modern coercive statecraft. His work is particularly relevant today, as global powers increasingly resort to economic measures to exert influence and punish adversaries.

Historical Context and Evolution:
Mulder begins by tracing the roots of economic sanctions to the aftermath of World War I, focusing on the League of Nations' efforts to maintain peace without military intervention. He contextualises sanctions not as modern inventions but as descendants of wartime blockadesparticularly those deployed during WWIthat resulted in significant civilian suffering. The transition from wartime blockade to peacetime economic restriction, he argues, marked a radical shift in how power could be projected in the international system.

What makes Mulder's approach distinctive is his emphasis on the interwar period, a critical yet often overlooked era in the development of economic tools of pressure. He examines how sanctions were viewed as a moral alternative to violence, yet often had destructive consequences similar to war itself. For instance, the sanctions imposed on Fascist Italy after the invasion of Ethiopia or on Japan before WWII did little to prevent aggression and, in some cases, accelerated the path to open conflict.

Effectiveness and Ethical Considerations:
One of the most compelling sections of the book deals with the efficacy and morality of sanctions. While sanctions have been justified as a means to avoid military confrontation, Mulder demonstrates how their outcomes often diverge from their intentions. In many historical cases, sanctions failed to deter aggressive regimes or bring about regime change. Instead, they led to widespread humanitarian suffering, disrupted economies, and hardened nationalist sentiments.

Mulder also questions the moral calculus behind economic sanctions. If war is judged by its immediate human cost, should not sanctions be evaluated with the same rigour, especially when they result in prolonged economic distress and social instability? This moral interrogation deepens the reader's understanding of the human impact of policies often discussed in purely strategic terms.

Contemporary Relevance:
In the wake of Russia's 2022 invasion of Ukraine, the West imposed sweeping sanctions targeting Russian banks, companies, and individuals. These actions revived global debate about the effectiveness of sanctions in the modern

geopolitical order. Mulder's work gains urgent relevance in this context. His historical lens provides policymakers with a framework for evaluating when, how, and why sanctions succeed or fail.

Crucially, Mulder emphasises that sanctions are not neutral tools; they reflect the power dynamics and ideologies of those who wield them. As global power shifts and multipolarity intensifies, the architecture and legitimacy of economic coercion must be scrutinised more carefully than ever.

Conclusion:

The Economic Weapon is a profound contribution to the literature on international relations and economic policy Nicholas Mulder challenges prevailing assumptions about sanctions, urging readers to grapple with their historical origins, ethical ambiguities, and complex consequences. It is a book that compels scholars, policymakers, and the informed public to reconsider how economic tools are used in the name of peace, and whether they truly serve that purpose.

Whether one agrees with all of Mulder's conclusions or not, his book ensures that economic sanctions will no longer be viewed as bloodless instruments of diplomacy. In an age where economic statecraft is increasingly central to global conflict, The Economic Weapon is essential reading.

research papers

1. Trumponomics: Trump's Administration and Indian Economy by Nitish Narang
2. Cryptocurrency as a Legal Tender by Chirag Dhingra
3. Middle-Class Strain: Indirect Taxes and Income Volatility in India by Sofia Do Carmo Rodrigues
4. The Economics of Absenteeism: Behavioural Patterns and Organisational Implications by Sara Goyal

03

Trumponomics

Trump's Administration and Indian Economy

By: Nitish Narang

Abstract

"When America sneezes, the world catches a cold." These words, spoken decades ago by an Austrian diplomat, Klemens von Metternich, have great relevance in present times. Donald Trump, as POTUS, is in actuality the controller of the global economy, being a threat to many and a boon for some. When it comes to economic foreign policy, Donald Trump's "America First" approach is grounded in a desire to put U.S. economic interests ahead of global cooperation or trade deals. In this scenario, it becomes essential for each economy to have strong relations with the American administration. This becomes even more vital when a country like India considers the U.S. its largest trading partner, most important export market, and one of the foremost investors.

As we know, during his previous tenure, Donald Trump's presidency saw significant shifts in foreign policy, impacting trade, immigration, and energy. With his return to office, the Indian economy could face renewed challenges but also new opportunities, depending on the administration's policies. To safeguard its interests, India must adopt a balanced approach that prioritises diplomacy, strategic partnerships, and diversified trade relations. Strengthening economic ties with the U.S. will require India to keep an eye on trade imbalances and regulatory barriers while exploring areas of mutual interest such as technology, defence, and energy. Additionally, India should leverage the role of other global economic players to influence U.S. policies and mitigate possible adverse impacts on its economy.

Thus, this paper seeks to explore the effects of Donald Trump's policies on the Indian economy. As Trump's return brings disruption and unpredictability, it is said that the impacts on trade and business policy will be most consequential for India. So, it raises some critical questions: What are the potential negative implications of Trump's administration for the Indian economy, and how might these policies bring fortune to it as well? What will be the extent of the impacts? What stance should the Indian government take to strengthen ties between the two nations? How can other global economic players play a crucial role in shaping U.S. policies towards India? This study, while answering all the given questions and providing quality solutions, focuses on America's current stance on tariffs and supply chains, pharmaceutical exports, IT and immigration, as well as energy and oil imports, in the context of India.

Introduction

Over the period of time, both the nations- India and the U.S. have remained in a balanced relationship shaped and maintained by various factors, such as economic cooperation, bolstered by peaceful strategic partnerships, and the presence of political friction to some extent. Remarkably, the US is India's largest trade partner, with bilateral trade reaching almost $120 billion in FY24 (2024, Indian Express). India enjoys a favourable trade relationship with the US, making it a vital source of foreign exchange. Additionally, Indians are heavily dependent on the US exports. According to official 2022-23 data, the US accounts for 18% of India's exports, compared to 10% in 2010-11. This export basket is also well-diversified, benefiting industries ranging from textiles to electronics and engineering.

This balance came under deep scrutiny during the first presidential term of Donald Trump (2017-2021). Trump's 'America First' policies, boosted by protectionist trade measures, unilateral withdrawal from multilateral frameworks, immigration restrictions, and transactional diplomacy, significantly disturbed the economic equation between India and the United States. India too lost duty-free access under the decades-old Generalised System of Preferences (GSP) programme, of which it had been the largest beneficiary. Despite these rigorous economic and political policies preached by the American government during Trump's first term as president, both nations continued to uphold the harmony and stability during that period, too.

Trump's return to power in 2024 presents a different scenario from his previous term. He is greatly motivated by the sense of ultra-nationalism and is driven by his aim of MAGA- 'Make America Great Again'. Consequently, the entire globe now faces the prospect of renewed economic turbulence under a more confident, domestically emboldened Trump administration, which also establishes a new set of challenges for India. As it is strongly projected that under Trump's presidency, there will be a revival of tariff wars, visa curbs, climate disengagement, and hardline bilateral dealmaking, this can affect India's economy to a large extent, a nation highly amalgamated into the trade, labour and technology markets of the US. Exposed to beefing up of tariffs, complex regulatory barriers, and stricter restrictions on immigration and mobilisation can rattle prominent economic sectors of India. According to a report by Bernstein Research, Indian pharmaceutical exports to the US could face severe setbacks. Stricter H-1B visa rules, where increased rejections are expected, could impact the operating margins of Indian IT firms. Additionally, issues can emerge in emerging digital trade, where digital trade disputes, especially data localisation, digital services taxation and AI regulation can become more relevant. Economic impacts of this issue can be gigantic. Despite these economic tensions, it is being argued that Donald Trump's resounding return as US President is likely to open a new chapter in deepening the US-India partnership with substantial potential for trade growth, skilled workforce demand, collaborative economic development, and stability in the markets. Trump's return also creates strategic opportunities for India. His Indo-Pacific Strategy (IPS), launched during his first term, positioned India as a cornerstone partner in the U.S. effort to counterbalance China's expanding economic and military footprint in Asia. This strategic calculus continues to guide U.S.-India defence cooperation, which has the potential to expand military exercises and augment defence technology transfers under frameworks such as the Quad, which brings together the US, India, Japan, and Australia. Trump 2.0 offers new avenues for India's defence, which can be a boon for its defence industry.

This research paper, in an expounded manner, examines the upcoming myriad impacts of Trump's second term on India's economy and strategic positioning. By evaluating economic data, policy reviews, expert opinions, and comparative historical analysis, it explores how Trump's economic nationalism, immigration policies, stance on energy exports, digital disputes, and defence strategies can reshape U.S.-India relations. More importantly, the paper investigates how India can heed towards crafting a policy response bolstering its economic interests while preserving its strategic autonomy, allowing it to emerge as a more robust economic and geopolitical player in the post-2025 global order.

Objectives

1. To examine the economic impacts of Trump's protectionist, tariff escalations, regulatory restrictions, and visa curbs policies on India's key export sectors, such as pharmaceuticals, IT services, agricultural products, etc., during his second term.
2. To evaluate the consequences of stricter H-1B visa regulatory policies and immigration restrictions, which directly affect the mobility of India's skilled workforce, remittance flows, and the profitability of Indian IT firms operating in the United States.
3. To analyse the Indo-US energy partnership, which is primarily centred around fossil fuel exports, climate disengagement, and the diminishing scope for renewable energy cooperation under Trump 2.0.
4. To investigate the emerging concerns regarding digital trade conflicts, including disputes over Digital Services Tax (DST), AI (Artificial Intelligence) advancement, data localisation laws, and India's regulatory independence in its growing digital economy.
5. To assess the strategic opportunities created by Trump's reinforcing Indo-Pacific Strategy (IPS) and India's positioning within the Quad framework, especially in terms of defence technology cooperation.
6. To propose policy responses for India in

- order to enhance its economic resilience, diversify trade partnerships, strengthen self-reliance in critical sectors and preserve strategic autonomy in the midst of various global uncertainties.

Literature Review

Reshaping of the relationship between the World's Oldest Democracy and the World's Largest Democracy under Donald Trump's presidency has been widely analysed, considering economic and various other geopolitical dimensions. Various scholars have examined the impacts of Trump's first term (2017-2021) on the Indian diaspora, while newer studies predict the potential effects of his second term (2025-2029). This section diligently reviews key literatures that construct the basis for this study, highlighting trade relations, immigration policies, digital economy conflicts, and global governance realignments.

A) Trump 2.0: Impact on Global Politics with Major Challenges and Opportunities in India's Foreign Policy (by Ashok Kumar Pushkar)

1. Trade relations and economic policies under the Trump presidency:

According to the article written by Pushkar, the protectionist stance of Trump on global trade can create opposite directions between the two countries. He pointed out the inevitable fact that Trump's protectionism can lead to the emergence of trade wars with major countries such as China, and also has the strong potential to cover India too (2015, Bhattacharya et al.). Taking reference from Trump's first term as president, Pushkar (2025) highlights that India had to counter tariff restrictions for the steel and aluminium exports and lose America's GSP (Generalised System of Preferences) status, which turned into negative areas in bilateral relations, discouraging duty-free exports worth over $6 billion to the U.S.

Predictions of experts yell that Trump 2.0 will bring even stricter tariff measures, increasing trade volatility for India and adversely impacting trade diversification. In this context, Vajiram & Ravi (2025) suggest that India should focus on accelerating its Free Trade Agreement (FTA) negotiations with the European Union, the UK, and Australia to mitigate US-imposed trade barriers.

2. Immigration policies and their impacts on India's IT sector:
Rigour stature developed under Trump's 'America First' policy made immigration stringent, particularly hindering skilled Indian professionals in the IT sector. During his first tenure, H1B visa rejection rates soared from 6% to over 30%, which ultimately forced Indian IT firms to increase onshore hiring costs in the U.S. (2021, NASSCOM). As these policies prioritise American workers, this can result in limiting opportunities for Indian engineers and software professionals, fracturing India's skilled labour exports.

Now, it is being projected that Trump's second term will possibly tighten visa restrictions, impacting Indian firms' ability to outsource talent and sustain U.S.-India IT cooperation (2022, Jaishankar et al.).

3. Digital economy conflicts and U.S.-India tech relations:
A new form of tension between the nations resides in their digital trade. Both nations got involved in disputes over India's Digital Service Tax (DST) during Trump's first term. Pushkar highlights that it was due to the US apprehension of discrimination against America's tech firms. It was highlighted that the pro-business stance adopted by Trump did not move hand-in-hand with India's digital economy policies, for example, its data localisation laws (2019, Watts). It was projected by Pushkar that this type of dispute between the nations could result in a jinx for tech giants operating in India.

B) Trump 2.0 and Likely Trade Implications for India (by Prabir De, Somesh Mathur, and Archana Srivastava)

Worldwide concerns have been raised with the return of Donald Trump to the US presidency. Apprehensions are also prevailing for India's trade, investment, and strategic positioning in the global economy. De, Mathur, and Srivastava (2025) have tried to design an in-depth, structured assessment of the economic consequences that India may face in future due to Trump's pro-US economic policies. Their study gives a better understanding of the macroeconomic impacts of U.S. trade policies on various sectors of the Indian economy. These impacts are explained below:

1. Trade policy and tariff escalations:
The study diverts the readers' attention to the rise of economic nationalism as a result of Trump's 'America First' policy, which may result in the imposition of higher tariffs on Indian exports. The authors projected that:

- There is a strong possibility of worsening of India's trade deficit with the US as a result of the withdrawal of GSP prerogatives, which were revoked in 2019, as there seems to be no chance of its revival.
- US tariffs that may be as high as 20% may be irksome for the pharmaceuticals, textiles and auto parts sectors of India.

- As it is visible that Trump prioritises the US and its people, there are high chances that India's export competitiveness in the US market will plummet shortly.

2. Supply chain disruptions and "China plus one" strategy:

The paper dives deep into the intense US-China trade war, which could lead to realigning of global supply chains, offering both challenges and opportunities to the Indian diaspora. Key insights that this section holds are:

- Moving away of US firms from China may shift various manufacturing-based investors and operations to India, allowing India to be a major part of the spotlight.
- Enthusiastic participation of Delhi in regional trade partnerships (IPEF and Quad initiatives) can have a positive impact on the Indian economy, as due to it can become an attraction for US FDI in the manufacturing sector.

3. Sectoral analysis: pharmaceuticals, IT, and energy:

One of the best things about the paper is that this paper has explored sector-wise impacts by keeping those industries in focus which are seen as most vulnerable to Trump's policies. Key insights are as follows:

- Pharmaceuticals: Trump's potential price control measures and regulatory FDA could impinge on the exports of the largest generic drugs supplier to the US, i.e. India.
- IT services: The Profitability of Indian IT firms will be directly affected as a result of stricter H1B visa policies, which promote local hiring in the US.
- Energy trade: As it is vividly clear that Trump is continuously disengaging the US from climate-related global issues, it. could limit the transfer of green technology to India

4. Policy recommendations for India:

Moving towards a robust conclusion, the authors have emphasised the need for India to proactively make strong adjustments in its trade and investment policies to minimise economic disruptions under Trump 2.0. Their recommendations include:

- Bolstering its domestic manufacturing through PLI schemes to overcome the US trade restrictions.
- Finding and diversifying trade partners across the globe (EU, ASEAN, Gulf countries) to minimise reliance on Washington-based markets.
- Flourishing its FDI policies to attract investments from companies exiting China due to tariff escalations.
- Broadening the base of defence cooperation between both nations while maintaining a much-needed autonomy from Trump's rigorous policies.

Literature Gaps

Undoubtedly, both the papers by De, Mathur and Srivastava (2025) and Pushkar (2025) have delved into the topic in the most efficient manner to shed light on the economic impacts of Trump's second term as US president on India. It is also to be noted that their studies exhibit several key gaps, leaving blank space in areas of long-term impacts, digital economy, frameworks on regional trade and financial markets. These key gaps are outlined below:

1. Lack of proper analysis of the financial market and currency:

- Both studies primarily revolve around trade and FDI, neglecting repercussions on the Indian financial market, which comprises of stock exchange, flow of capital and currency stability.

- None of the papers is focused on likely hikes in US Federal Reserve Bank interest rates as a possible response to Trump's fiscal policies, which can adversely impact the rupee and eventually investors, impinging FII flow in India.

2.No mention of long-term FDI flows and global competition:

Both studies stated that there could be possible benefits which India could cherish as a result of US-China trade wars, but they failed to address the possible competition that India is bound to face from Vietnam, Indonesia or Mexico, the nations which are also competing for supply chain relocation from China.

3.No exploration of U.S. domestic political volatility and its possible impact on India:

- Both studies have entirely focused on Trump's foreign policy but have ignored ongoing political instability, such as rising rift and polarisation, potential impeachment proceedings and their possible indirect impacts on the Indian economy.
- The papers neither address the unpredictability arising from possible frequent changes in Trump's political and economic policies, both domestically and internationally, nor do these papers consider the ways of mitigating the future risks from US policy volatility and policy reversals in the near future.

Methodology

This study is focused on pure secondary data collection research, which employs past research from peer-reviewed journals and government reports. This study has adopted a multi-method approach integrating qualitative type analysis with quantitative data, along with comparative evaluation to dig into the possible implications of Trump's second term on India's economic positioning.

This study strives to construct a data-driven and policy-oriented framework by adopting the ways and approaches written below:

1. Qualitative-quantitative mixed-method approach:

This study employs a qualitative-quantitative mixed-method approach in order to have a multi-dimensional understanding of the study.

- **Qualitative analysis:** This comprises scrutinising expert opinions, discourses presented by the media at both the national and international levels. It allows for to development of a deeper understanding of the courses shaping bilateral relations between India and the US.
- **Quantitative analysis:** Numerical and statistical data from economic reports from various sources, trade analysis in monetary terms and FDI trends help quantify the economic impact of U.S. policies on India's exports, capital flows, and currency stability.

By integrating these two approaches, the research aims to provide a balanced and holistic evaluation of the economic and trade consequences of Trump's presidency for India.

2. Data sources and collection:

The study draws its basis from the following secondary data sources:

- Government and organisational reports: Ministry of Commerce and Industry; reports presented by the International Monetary Fund (IMF) and World Bank on data revolving around FDI inflows in India and the Reserve Bank of India (RBI) bulletins.
- Reports presented by Brookings India & Observer Research Foundation (ORF)

- delve into India's rigorous economic resilience and competitiveness in global trade markets.
- NASSCOM and Bernstein research reports to examine US H-1B policies and their projected impacts on India's IT sector.
- Expert commentaries in the form of media reports from The Economist, Indian Express, The Hindu, Financial Times, Financial Express, which help to construct an understanding of Trump's stance on economic policies during his second term.

3. Analytical approach:

Diligent analysis has been done to touch every wall of the study. Analytical tools adopted for this study are as follows:

- **Comparative analysis:** By taking references from Trump's first term, this study outlines economic policies which Trump intends to adopt and their possible impacts on India. It helps to examine trade policy reversals, such as GSP withdrawal and tariff escalations.
- **Sector-wise analysis:** Key industries such as IT, pharmaceuticals, digital economy and related industries have been analysed to draw possible consequences on these industries as a result of US protectionist policies.

Findings and Policy Measures

This section centres its attention towards evaluating the economic impact of Trump's second term (2025-2029) on India, based on trade, FDI, and immigration in detail. This section also points out the major issue that India is likely to counter during Trump's second term and suggests robust policies to mitigate it. Additionally, this section also tries to complete previous literature works by filling the identified gaps present in them.

A) Trade and Economic Relations: Increasing Protectionism and Volatility:

Economic nationalism and protectionist trade policies, which were aggressively followed by Trump, are expected to escalate, creating trade tensions in various economic sectors among both nations. These trade tensions are:

1. **Higher tariffs:** During his first term, Trump had already invoked 25% tariffs on steel and 10% on aluminium imports from India (2024, Indian Express). There are high chances of expansion in these tariffs, which could hit India's pharmaceuticals, textiles and auto exports.
2. **No restoration of GSP:** India lost its Generalised System of Preferences (GSP) status in 2019, impacting more than $6 billion in duty-free exports to the US, the reversal of which appears unlikely.
3. **Reciprocal tariffs:** As India is imposing more tariffs on agriculture imports from US (39%) in comparison to much lower tariffs in US (5%) for the same which is around 8 times higher than those in US (2025, The Hindu), Donald Trump's re-election could lead to higher reciprocal tariffs on India's agricultural exports (like basmati rice, spices, and seafood) if it doesn't reduce import duties. Moreover, even for non-agricultural products, India's tariffs are about 4 times higher than the USA's (2025, The Hindu), and the US trade deficit with India in 2024 rose to $45.7 billion, with an increment of 5.4% from 2023 (2025, India Briefing). So, to reduce this trade imbalance, Trump's policies could also result in the imposition of reciprocal tariffs on non-agricultural products such as automobiles and pharmaceuticals, and India may face pressure to import more U.S. goods (agriculture, energy, defence equipment)

Policy Measures

- **Boost domestic manufacturing:** India's Production Linked Incentive (PLI) schemes in electronics, pharmaceuticals, and semiconductors could drive U.S. investment and promote self-reliance. India can set up industrial corridors with world-class infrastructure to attract global manufacturers.
- **Enhance trade diversification:** The US accounts for 18% of India's total exports, making.

India is vulnerable to tariff changes. India can strengthen economic ties with the EU, ASEAN, and Gulf countries to reduce reliance on the U.S and can diversify exports towards Europe, Southeast Asia and Africa to mitigate US trade risks. It is high time to promote "Brand India" in these regions through trade fairs and diplomatic outreach. Also, it is projected that Trump's pro-fossil fuel stance may reduce US-India clean energy cooperation. India should boost energy trade with Middle East nations and with Russia to ensure stability in energy deals.

- **Enhance domestic market strength**: Dependency on export-led growth could be reduced by strengthening MSMEs and startups to drive economic growth, investing in infrastructure building, promoting digital payments and rural development to boost demand and promoting 'Make in India' and 'Atmanirbhar Bharat' initiatives, which can build a strong manufacturing base.

B) Foreign Direct Investment (FDI): Opportunities amidst trade disruptions:

While trade tensions may escalate between both nations, FDI inflows to India could rise due to supply chain realignments and U.S.-China decoupling. As the study mentioned earlier that India could benefit from the "China one plus" strategy, as firms will then seek alternative locations for them. The following written points could become sources of apprehension for India, slowing down this process:

1. **Regulatory barriers:** India's bureaucracy and taxation system could slow down the pace of investments.
2. **Competition from Vietnam, Mexico and Indonesia:** Vietnam and Mexico benefit from streamlined business regulations and proximity to the US, attracting companies like Apple and Samsung, while Indonesia is positioning itself as a hub for EVs and semiconductors. Here, challenges against Indian include higher logistics and labour force, complex regulatory frameworks and policy uncertainty.

Policy measures

- **Implementation of a single-window clearance system for FDI approvals:** Similar to Vietnam's investment approval model, the Indian government can focus on the establishment of a centralised digital platform where investors can apply for all necessary approvals in one place instead of navigating multiple government agencies. It will eventually reduce approval time for large investments from 6-12 months to under 3 months. Also, it can reduce bureaucratic hurdles through digitising approvals with an AI-powered clearance system, which improves ease of doing business.
- **Expand tax incentives for foreign investors:** In order to attract a large number of investors, India should reduce corporate tax rates for high-priority sectors like semiconductors, electronics, and renewable energy to match or undercut tax rates in ASEAN nations. Also, giving investors incentives like tax holidays and exemptions for the first 5-10 years can lead to the setting up of

Sr. No.	Sector	Key Trump Policy	Potential Negative Impact on India	Policy Opportunity / Recommendation
1	**Pharmaceuticals**	Tariff escalation, FDA regulatory tightening.	Reduced competitiveness in U.S. market; export losses	Accelerate domestic production, diversify export destinations
2	**IT Services**	H-1B visa restrictions, local hiring mandates	Workforce mobility curbed; rising operational costs for Indian firms	Negotiate for India-specific visa model; invest in hybrid/remote workforce
3	**Energy**	Focus on fossil fuels, withdrawal from climate pacts	Disengagement from green tech collaboration; supply instability	Boost ties with Middle East, Russia for stable energy trade
4	**Manufacturing / FDI**	"China+1" supply chain shift, deregulation bias	Opportunity from U.S.-China decoupling, but tough competition from ASEAN, Mexico.	Build industrial corridors, streamline FDI clearance, expand tax incentives
5	**Digital Economy**	Opposition to DST, data localization disputes	Tech company tensions; reduced digital investment	Engage in bilateral tech agreements; maintain regulatory independence
6	**Financial Markets**	Fed rate hikes, strong USD	Capital outflows, rupee depreciation, stock market volatility	Diversify forex reserves, promote rupee-based trade
7	**Agriculture**	Reciprocal tariffs, pressure on trade balance	Export loss (e.g. basmati rice, spices, seafood); tariff retaliation	Negotiate sectoral trade deals; reduce tariff disparity
8	**Defence & Strategic**	Quad cooperation, Indo-Pacific strategy	Expansion in defence partnerships; counter-China positioning	Deepen tech transfer frameworks; enhance military cooperation under Quad

major projects. Manufacturing and technology firms are setting up in India.

- **Overcome foreign competition:** India can invent industrial corridors and port efficiency to compete with Vietnam and Mexico; can expand rail and road connectivity to measure industrial hubs, upgrading ports and shipping facilities to enable faster exports. To mitigate risks arising from Indonesia, India can offer higher subsidies and tax benefits for semiconductor and EV plants to attract global chipmakers like Intel and Samsung, strengthening its EV battery and electronic supply chain.

C) Immigration and skilled workforce mobility: H-1B visa challenges:

Trump's stance on anti-immigration policy has historically hurt Indian IT professionals, and his return could further restrict work visas. Expected changes are:

1. **H-1B visa restrictions:** Visa denial rates are likely to rise from 6% to over 30% during Trump's first term, which could worsen under Trump 2.0, following his "America First" policy (2024, Indian Express). According to the National Foundation for American Policy (NFAP), Indian IT firms have reduced H-1B visa use by 56% over the last decade. Infosys' visa applications dropped by 21% between FY15 and FY23, while TCS saw a 75% decline. Wipro also reported a 69% decrease in approved H-1B petitions during the same period (2024, The Economic Times). Thus, an increase in visa rejection rates will eventually affect the STEM (Science, Technology, Engineering, and Mathematics) population of India the most.
2. **Higher visa costs & quotas:** U.S. firms may be forced to hire more local talent, raising operational expenses for Indian IT firms like TCS, Infosys and Wipro.

Policy measures

- **Leverage U.S. tech industry support:** India should work more with U.S. tech giants (Google, Microsoft, Amazon, and Apple), to make them depend heavily on Indian talent; as a result, these companies will resist stricter H-1B rules. India should ensure that Indian professionals remain critical to U.S. technological and scientific advancements.
- **Develop an alternative "India-specific work visa" model for U.S. companies:** The Indian government can negotiate for a special category of work visas for Indian professionals under a U.S.-India Technology and Innovation Partnership. It can also focus on implementing a framework where Indian professionals work for U.S. firms on hybrid models (short-term on-site work + remote work from India).

D) Impact of Trump's fiscal policies, inflation trends and Federal Reserve rates on India:

1. **Capital outflow and rupee depreciation:** An increase in US interest rates can lead to investors pulling out money from emerging markets like India and park their funds in US Treasury bonds. It will hamper the growth of foreign exchange reserves, which stood at $626 billion in January 2025 (2025, Financial Express). Also, continuous rupee depreciation against the dollar will make imports expensive, adversely affecting the Balance of Trade.
2. **Stock Market Volatility:** NIFTY and SENSEX indices could experience sell-offs as India will possibly counter FII flights from India, which will park their funds in US assets, replicating past cries like in 2018, when investors sold off due to Fed hikes, leading to a 25% decline in Indian stock market inflows.

Policy measures

- Diversification of FER: India can diversify its foreign reserves by accumulating non-dollar currencies like the Euro, Yen and Yuan, etc. It will help to hedge against increasing currency volatility against the dollar.
- Trade in domestic currency: India can expand bilateral agreements in rupees by adopting a currency-swap policy with non-US nations. India should increase offshore rupee bonds to attract global investors, and should promote the use of rupee in energy and defence trade deals. India is already dealing in rupees with 22 nations worldwide (2023, MEA).

E) Impact of US domestic politics on Trump's policies towards India:

1. **Congressional opposition:** A democratically controlled Congress could oppose Trump's trade war, limiting fresh trade tariffs.
2. **Supreme Court rulings**: Trump's rigorous immigration and trade policies may face legal challenges, impacting tariff implementation.
3. Election cycle: There will be midterm elections in 2026 in US Republicans will lose seats, and Trump's policies may be diluted or reversed after that. Another possibility is that a democratic win in 2028 may reverse Trump's trade policies, hindering long-term relations.

Policy measures

- **Engaging with bipartisan leaders**: Strengthening diplomatic ties with key US lawmakers from both parties and conducting regular trade dialogues to maintain bipartisan support will be effective in lthe ong run.
- **Through Multi-Year Agreements:** India should focus on securing multi-year Ensuring Long-Term Trade Stability trade agreements, ensuring long-term trade
- stability pacts covering sectors like pharmaceuticals, IT, manufacturing and defence, including strong dispute resolution mechanisms to prevent sudden policy shifts in the US and should strengthen India-US strategic economic dialogue for continuous engagement.

Conclusion

The study throws light on the imminent economic landscape of U.S.-India relations under Trump's second term, focusing on both challenges from Trump's protectionist policies and opportunities arising from global trade realignments. Although the inevitable higher tariffs, stricter visa norms and possible financial market volatility can result in a fraught environment for India's export sector, IT industry, and investment climate, on the other hand country's strong economic position globally, expanding industrial base, and proactive policy measures provide resilience against these policies. The loss of past economic benefits from the US could imbalance trade flows, but India's strengthening relations with the EU, ASEAN, and the Middle East offer a much-needed alternative path to sustaining export growth. Additionally, reducing the reliance of multinational corporations on China can work as a buoy for the manufacturing sector by surging its production, given the fact that India has to improve certain things, such as ease of doing business, infrastructure, and investment incentives.

This paper reflects that India's IT and technology sector is bound to face hurdles due to the tightening of H-1B visa policies and rising labour costs in the US, but its effects can be mitigated by developing a strong base to construct a well-structured digital economy, which has the potential to provide India with long-term and sustainable growth. India can lower its dependence on the U.S by effectively strengthening its domestic innovation ecosystem, being an attraction for global R&D investments, and empowering its local talent. Moreover, the study underscores how U.S. fiscal policies and Federal Reserve rate hikes may cause huge capital outflows, depreciating the rupee and fluctuating its stock market, yet if India works on building a robust and diverse forex reserve and introduces fruitful financial sector reforms, counter to these disparities is possible. Despite global uncertainties, India has the potential to leverage its strengths and emerge stronger in the global economy. By adopting ways like domestic industry growth, trade diversification and introducing favourable policies, India can turn challenges into strategic advantages. Undoubtedly, if India effectively balances diplomacy, economic resilience, and industrial growth, it has the potential to not only withstand Trump's policy shifts but also emerge as a key global economic powerhouse in the post-2025 world order.

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Cryptocurrency as a Legal Tender

By: Chirag Dhingra

Abstract

Cryptocurrencies have emerged as significant disruptors in global finance, offering an alternative to traditional monetary systems and challenging established frameworks. This paper examines the implications of adopting cryptocurrencies as legal tender through secondary research, focusing on case studies such as El Salvador\u2019s Bitcoin experiment and the development of Central Bank Digital Currencies (CBDCs). The analysis highlights the potential benefits of cryptocurrencies, including reduced remittance costs, greater financial inclusion, and technological advancements in payment systems. However, it also addresses critical challenges such as price volatility, regulatory uncertainty, and privacy concerns. CBDCs are explored as a more controlled alternative, offering central banks enhanced tools for monetary policy while raising questions about data security and surveillance. By synthesising data from diverse sources, this study provides a balanced understanding of the transformative role of cryptocurrencies and the legal and economic frameworks required for their effective integration.

Keywords: *cryptocurrencies, legal tender, Bitcoin, CBDCs, financial inclusion, regulation, economic stability, blockchain technology, monetary systems, financial innovation, remittances, digital payments, data security, privacy concerns.*

Introduction

Cryptocurrencies have revolutionised global financial systems, offering an innovative alternative to traditional currencies and monetary frameworks. By leveraging blockchain technology, cryptocurrencies provide a decentralised, secure, and transparent means of conducting transactions without the need for intermediaries like banks. Bitcoin, introduced in 2009, paved the way for the proliferation of digital currencies, leading to increased public and governmental interest. Among the most controversial and transformative developments is the consideration of

List Of Abbreviations

Abbreviation	Definition	Abbreviation	Definition
BTC	Bitcoin	AML	Anti-Money Laundering
ETH	Ethereum	KYC	Know Your Customer
CBDC	Central Bank Digital Currency	DAO	Decentralized Autonomous
IMF	International Monetary Fund	PoS	Proof of Stake
USD	United States Dollar	PoW	Proof of Work
P2P	Peer-to-Peer		

cryptocurrencies as legal tender, as evidenced by El Salvador's historic decision to adopt Bitcoin in 2021. This move marked a bold shift in monetary policy, sparking debates over the feasibility, risks, and benefits of integrating cryptocurrencies into formal economic systems.

The significance of cryptocurrencies as legal tender is underscored by their potential to reshape global remittance markets, which are valued at over $800 billion annually. For nations like El Salvador, where remittances constitute nearly 24% of GDP, Bitcoin has been adopted to reduce transaction costs and enhance financial inclusion. However, data from the World Bank indicates that the average cost of remittance transactions remains around 6%, emphasising the need for efficient and cost-effective solutions. Despite these promising prospects, cryptocurrencies face challenges such as price volatility, limited adoption, and regulatory uncertainty, raising questions about their long-term viability as official currencies.

The significance of this investigation lies in its capacity to educate policymakers, financial institutions, and stakeholders about the opportunities and challenges of integrating cryptocurrencies into traditional economic systems, thereby contributing to the ongoing discourse on the future of global finance. This study considers the implications of cryptocurrency adoption as legal tender through a thorough secondary research approach, analysing existing literature and case studies to explore the economic, legal, and societal impacts of this monetary innovation.

Literature Review

The global financial landscape has undergone significant transformations with the advent of cryptocurrencies and Central Bank Digital Currencies (CBDCs). As nations grapple with integrating digital currencies into their economies, academia, and industry, have extensively explored their implications, challenges, and opportunities. This literature review synthesises findings from recent studies, identifies research gaps, and outlines the methodology employed for this study.

As decentralised financial instruments intended to upend established monetary systems, cryptocurrencies emerged. Blockchain technology was introduced by the first cryptocurrency, Bitcoin, allowing for safe and open peer-to-peer transactions. However, its utility as a trade means has been constrained by its volatility and vulnerability to security breaches (Jozipović et al., 2024).

On the other hand, Central Bank Digital Currencies (CBDCs) are centralised digital assets managed by monetary authorities. They are designed to leverage the technological advantages of cryptocurrencies while providing stability and regulatory oversight. Notable examples of CBDC initiatives include:

- China's digital yuan: Demonstrates technological advancement, fostering financial inclusion while ensuring regulatory compliance (Panova et al., 2021).
- Uruguay's e-peso: Highlights the secure and flexible deployment of centralised digital currencies for peer-to-peer and commercial transactions (Costa et al., 2019).

Unlike cryptocurrencies, CBDCs function within established legal frameworks, ensuring:

1. Reduced transaction costs, particularly in cross-border payments.

2. Broader financial inclusion, especially in underbanked regions.
3. Mitigation of risks associated with physical

cash, such as theft and counterfeiting.

The increasing interest in CBDCs stems from their potential to serve as stable, government-backed digital alternatives to cryptocurrencies. They also promise to address inefficiencies in existing payment systems and foster economic resilience.

Challenges in Adoption
Despite their transformative potential, both cryptocurrencies and CBDCs face substantial barriers to adoption:

1 . Cryptocurrencies:

- **Illicit Use:** Studies estimate a significant proportion of cryptocurrency transactions involve illicit activities, raising concerns over money laundering and fraud (Costa et al., 2019).
- **Volatility:** Price instability undermines their reliability as a store of value, deterring broader use (Jozipović et al., 2024).
- **Lack of Regulation:** The absence of cohesive global regulatory frameworks exacerbates challenges to widespread acceptance.

2. CBDCs:

- Infrastructure Barriers: Nations with underdeveloped digital ecosystems face challenges in implementing CBDCs effectively (Sanz-Bas et al., 2021).
- Public Trust: Concerns over data privacy and potential government misuse of centralised systems deter adoption.
- Case in Point: China's digital yuan, while advanced, has sparked debates over surveillance and state control, emphasising the need for transparency and public trust (Geva et al., 2021).

3. Case-Specific Challenges:

- El Salvador's Bitcoin Experience: Adoption as legal tender resulted in reduced official cross-border activities, attributed to uncertainty and the growth of unrecorded transactions (Goldbach & Nitsch, 2024).
- Africa's Financial Inclusion Goals: Inadequate infrastructure and regulatory inconsistencies have hindered the implementation of CBDCs tailored to local needs (Panova et al., 2021).

Overcoming these challenges requires tailored approaches that consider each nation's economic and technological context. Governments must prioritise public education, transparent policies, and infrastructural investments to foster trust and enable widespread adoption.

Legal and Regulatory Perspectives
The integration of digital currencies into national economies necessitates robust legal and regulatory frameworks. Comparative studies of Venezuela's Petro, Uruguay's e-peso, and China's digital yuan reveal diverse approaches:

1. Venezuela's Petro:

- Backed by natural resources, it represents an attempt to counter economic sanctions.
- However, it has faced limitations due to insufficient enforcement mechanisms and a lack of trust (Costa et al., 2019).

2. Uruguay's e-peso:

- Demonstrates the feasibility of CBDCs within existing legal frameworks.
- It utilised a centralised platform for transactions, ensuring compliance while allowing for future innovations (Costa et al., 2019).

3. China's Digital Yuan:

- Operates within a centralised blockchain framework, emphasising state control.
- Its two-tier system involving commercial banks addresses privacy concerns while ensuring financial inclusivity (Artemov et al., 2020; Sanz-Bas et al., 2021).

These examples underscore the importance of aligning CBDC implementation with existing institutional structures. Governments that adopt proactive, transparent regulatory measures are better positioned to maximise the benefits of digital currencies while addressing potential risks.

Identifying the Research Gap

While existing literature provides valuable insights into the technical and regulatory aspects of digital currencies, significant gaps remain in understanding their broader socioeconomic impacts:

1. **Macroeconomic Impacts:** Studies on El Salvador's Bitcoin adoption highlight potential disruptions to traditional financial systems. However, the mechanisms and long-term implications are underexplored (Goldbach & Nitsch, 2024).
2. **Sustainability of Digital Currencies:** Limited research exists on scalability, energy consumption, and integration with existing monetary systems, particularly in regions with fragile financial infrastructures (Sanz-Bas et al., 2021).
3. **Cross-Border Financial Stability:** The role of CBDCs in enhancing global financial flows while mitigating risks remains inadequately studied

.

This study intends to close these gaps by offering practical insights into the socio-economic effects of adopting digital money, focusing on inclusive frameworks and sustainable practices.

Methodology

This study employs a mixed-methods approach to ensure comprehensive analysis:

1. Quantitative Analysis:

- Utilises a Difference-in-Differences (DiD) regression model to evaluate changes in capital flows before and after digital currency adoption.
- Enables causal inference by controlling confounding variables (Goldbach & Nitsch, 2024).

2. Qualitative Case Studies:

- In-depth studies of nations implementing digital currencies, including China, Uruguay, and El Salvador.
- Offers contextual insights into unique challenges and successful strategies (Costa et al., 2019).

This dual methodology bridges empirical data with real-world applications, providing a holistic understanding of digital currency adoption.

Justification for Methodology

The mixed-methods approach aligns with the study's objectives by:

- Capturing macroeconomic trends through quantitative analysis.
- Addressing contextual variabilities with qualitative insights. Key advantages include:
- **Triangulation of Data:** Enhances the reliability and validity of findings.
- **Comprehensive Analysis:** Integrates broad statistical trends with localised, in-depth case studies.

By leveraging this methodology, the study ensures robust, actionable outcomes that account for diverse regional and cultural dynamics.

Results

Research Questions Restated

1. What financial and economic effects would the adoption of cryptocurrencies have?
2. How do legal and regulatory frameworks adapt to the use of cryptocurrencies in formal economies?
3. To what extent do cryptocurrencies enhance financial inclusion in underserved populations?

Description of Results

The secondary data analysis highlights mixed outcomes regarding adopting cryptocurrencies as legal tender. Economically, countries like El Salvador have observed marginal improvements in remittance efficiency and access to financial services. However, these gains are often offset by issues such as price volatility and limited public trust in digital assets. For instance, reports indicate that while Bitcoin transactions have reduced remittance fees, adoption among the general population remains below expectations. Similarly, legal adaptations to integrate cryptocurrencies vary significantly, with some nations embracing proactive regulatory frameworks while others maintain restrictive policies.

From a societal perspective, cryptocurrencies show promise in improving financial inclusion by reaching unbanked populations, particularly in developing economies. Yet, digital literacy and infrastructure gaps pose significant barriers to widespread adoption. The results align with the literature, suggesting that while cryptocurrencies offer unique advantages, their integration into traditional systems requires careful navigation of economic, legal, and technological challenges.

Overall Research Question Restated

How do cryptocurrencies as legal tender impact economies, regulatory systems, and financial inclusion?

Synthesis of Results

When considered collectively, the findings suggest that cryptocurrencies hold transformative potential but are not without challenges. The economic benefits, such as cost savings in remittances, align with the literature, affirming their role in enhancing financial efficiency. However, the volatility of cryptocurrencies often undermines their reliability as a stable medium of exchange. Regulatory adaptations, as observed in countries like El Salvador and China, demonstrate both the possibilities and complexities of integrating digital assets into formal economies. These examples confirm that successful implementation requires comprehensive legal and technological infrastructures.

The results also diverge from certain optimistic perspectives in the literature by emphasising the critical need for digital literacy and technological access. This gap indicates that cryptocurrencies can enhance financial inclusion, but these benefits are not universally accessible without addressing foundational barriers.

Topics of Discussion

The Experience of El Salvador with Bitcoin: El Salvador's acceptance of Bitcoin has unanticipated consequences, such as a decrease in official international financial flows due to greater uncertainty and the replacement of official transfers with unrecorded operations. This demonstrates how difficult it will be to make cryptocurrency legal tender.

CBDCs as Substitutes: Examples of organised approaches to national digital currencies prioritising security, scalability, and government support include Uruguay's e-Peso and China's digital yuan.

Resource-Backed Cryptocurrencies: Petro from Venezuela is an example of a cryptocurrency that uses natural resources to support a domestic currency. However, it also shows how difficult it is to get market acceptance and trust.

Recommendations

To maximise the potential of cryptocurrencies as legal tender, policymakers should focus on developing robust regulatory frameworks that balance innovation with risk management. Public awareness campaigns and digital literacy programs are essential to build trust and understanding among users. Additionally, partnerships between governments and technology providers can enhance infrastructure, ensuring that the benefits of digital currencies reach underserved populations.

Limitations

Overall Limitations of the Study

This study relies on secondary research, which inherently limits the ability to provide original, primary data. The findings are contingent on the accuracy and comprehensiveness of the existing literature, which may include biases or incomplete analyses.

Specific Limitations

- ***Research Design:*** As a secondary research study, the design is constrained by the scope of available sources. The inability to conduct direct interviews or collect primary data restricts the depth of insights.
- ***Sample:*** The data analysed focuses on a limited number of case studies, such as El Salvador and China. These examples are illustrative; they may not fully represent the global diversity.
- Technological Context: Variability in technological infrastructure across regions means that findings may not be universally applicable. Regions with limited digital access may experience different outcomes compared to technologically advanced nations.

Acknowledging these limitations, the study underscores the need for future research involving broader datasets, cross-country comparisons, and primary data collection to build a more comprehensive understanding of cryptocurrencies as legal tender.

Research Implications

Theoretical Implications: By filling in the knowledge gaps on cryptocurrency's regulatory issues and possible economic ramifications as legal cash, the study substantially contributes to the body of academic literature. This study examines the relationship between legal frameworks and economic repercussions in a unique way since other research has mostly concentrated on blockchain technology or the adoption of cryptocurrencies in particular industries. The introduction of Bitcoin in El Salvador, for example, demonstrated how changes in regulations can lead to changes in capital flows and global financial practices, shedding light on the broader economic effects of cryptocurrencies as legal tender. Furthermore, comparing the evolution of CBDCs—such as Uruguay's e-Peso and China's digital yuan—provides important information about different strategies for incorporating digital currencies into national economies.

Practical Implications: The study's conclusions provide important information for financial institutions and policymakers. Legislators can create well-balanced rules that safeguard investors and encourage innovation. Comprehensive regulatory systems, for example, can be guided by lessons learned from the IMF's cautious approach to risks like financial instability and consumer protection. The infrastructure requirements found in successful CBDC programs, such as Uruguay's e-Peso, which emphasises the significance of safe and intuitive digital payment systems, can be used by financial institutions. Policymakers and institutions can also assess the advantages and difficulties of supporting digital currencies with physical assets like natural resources by looking at Venezuela's Petro project. The report emphasises financial inclusion and the contribution of cryptocurrencies to closing the gap in financial access, as evidenced by innovations in digital payments in underbanked areas like Africa. Governments and financial institutions working together can promote cryptocurrency adoption, guaranteeing its sustainability on a worldwide scale and acceptance in a range of economies.

Conclusion

The integration of cryptocurrency as legal tender has sparked significant debate, with wide-ranging implications for economic, legal, and technological frameworks. Drawing insights from this research and a review of key studies, it is evident that cryptocurrencies offer promising opportunities for financial inclusion, enhanced transaction efficiency, and innovation, but their adoption as legal tender introduces critical challenges. These include regulatory ambiguity, volatility, and the potential for unrecorded financial activity.

Case studies such as El Salvador's Bitcoin experiment highlight the importance of aligning cryptocurrency adoption with robust legal and institutional frameworks. Countries exploring similar pathways must address economic stability, technological infrastructure, and consumer protection concerns. Moreover, the divergence in approaches across nations, from Venezuela's Petro to China's digital yuan, demonstrates that the success of cryptocurrency as a legal tender depends on its contextual integration within each country's unique socio-economic landscape.

It is imperative to strike a balance between creativity and prudence as this industry develops to make sure that the use of cryptocurrencies enhances rather than detracts from financial systems. Future studies and legislative initiatives have to focus on resolving these complex issues while utilising digital currencies' revolutionary potential to promote equitable economic growth.

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Middle-Class Strain

Indirect Taxes and Income Volatility in India

By: Sofia Do Carmo Rodrigues

Abstract: *This article investigates how income volatility moderates the relationship between indirect taxation and consumption behaviour among middle-class households in India. Drawing upon secondary data and literature in public and behavioural economics, it argues that freelancers and gig workers experience a disproportionate burden due to indirect taxes compared to salaried employees. Using a conceptual moderation framework, the paper highlights the importance of income-stable tax policy in an evolving labour market.*

Keywords*: Indirect Taxation, Middle Class, Income Volatility, Gig Workers, Consumption Behaviour, Tax Incidence*

Introduction

India's tax system has undergone substantial reform with the implementation of the Goods and Services Tax (GST) in 2017. While indirect taxes have streamlined tax collection, they are also consumption-based and, therefore, regressive in nature. This affects all citizens equally in nominal terms but unequally in relative economic burden. As the workforce structure shifts with the rise of freelancers and gig workers, an urgent question emerges: Do indirect taxes affect households differently based on income stability?

This paper explores how income volatility—common among freelancers and gig workers—moderates the impact of indirect taxes on middle-class household consumption. The hypothesis is that the same tax burden leads to greater consumption reduction among households with volatile income than among salaried ones. This issue has particular relevance in India's urban economy, where the gig workforce is rapidly expanding amid digital transformation and post-pandemic work shifts.

Literature Review

Tax incidence literature has consistently shown that indirect taxes are regressive, disproportionately affecting the poor and middle class (Piketty & Saez, 2013). In the Indian context, Mukherjee (2020) demonstrates that GST imposes a heavier relative burden on lower and middle-income groups. Studies also highlight that the tax burden increases for those spending a larger proportion of income on taxed essentials (Rao, 2019).

According to the OECD (2022), indirect taxation often fails to account for labour income irregularities, which undermines tax fairness in modern labour markets. While indirect taxes appear neutral on paper, they exert a heavier psychological and financial toll on those with unpredictable income streams.

Behavioural economics further supports this. Shapiro and Slemrod (2003) argue that households with uncertain income perceive tax burdens more acutely due to reduced planning capacity and a stronger need for precautionary savings. The Permanent Income Hypothesis (Friedman, 1957) posits that consumption decisions are based on expected long-term income rather than immediate inflow. However, in volatile settings, households cannot rely on such forecasts, leading to more reactive and often conservative spending behaviour.

The gig economy's rise introduces a new demographic of middle-class earners who lack the financial predictability of salaried employment. ILO (2021) reports that gig and freelance workers, though growing in number, face uncertain earnings, lack social protection, and often operate in informal contractual arrangements. This segment is particularly vulnerable to policies that ignore income volatility.

Yet, most tax incidence studies, including those from CMIE and NSSO, aggregate middle-class data without distinguishing between income-stable and income-volatile households. This gap overlooks an important nuance in understanding how modern labour structures interact with fiscal policies.

Conceptual Framework

This study adopts a moderation framework. The independent variable is the burden of indirect taxes (e.g., GST, fuel levies). The dependent variable is middle-class household consumption behaviour. The moderator is income volatility—whether the household income is derived from salaried employment or freelance/gig work.

Hypothesis: Income volatility strengthens the negative impact of indirect taxation on household consumption among the middle class.

This model assumes that while all households may reduce consumption in response to increased indirect taxes, the intensity of the response will vary based on income stability.

In essence, this suggests a conditional relationship where the tax impact is exacerbated by irregular earnings.

Graphically, the model is:

Indirect Tax Burden

↓

(Moderated by Income Volatility)

↓

Change in Consumption Behavior

Methodology

This is a conceptual and literature-based secondary research study. No primary data was collected. Data sources include:

- CMIE's Consumer Pyramids Household Survey (CPHS) reports
- NSSO consumption expenditure surveys
- OECD reports on taxation trends
- ILO publications on gig economy employment patterns
- Reports from RBI and NITI Aayog on income and labour patterns

The study segments middle-class earners based on income stability: salaried (income-stable) vs. freelancers/contractors (income-volatile). Analytical synthesis of secondary data and comparative interpretation across sources provides a foundation for the conceptual model. While no statistical model is estimated, this theoretical analysis lays the groundwork for future empirical testing.

Discussion

Findings from the literature indicate that salaried workers are generally more resilient to tax shocks due to their predictable income streams, access to credit, and the ability to plan expenses. Their monthly budgeting accommodates indirect tax increases more smoothly. In contrast, freelancers often operate without guaranteed income, health insurance, or employer-provided benefits. They experience income spikes and troughs that undermine financial predictability.

A sudden rise in indirect taxes—such as GST increases on items or hikes in fuel levies—can trigger disproportionately large reductions in discretionary spending for income-volatile households. Unlike their salaried counterparts, freelancers may need to forgo leisure, delay durable purchases, or reduce savings to cope with the same tax increase.

Furthermore, the financial instruments available to salaried individuals—such as personal loans or EMI options—are not easily accessible to gig workers, compounding the challenge. This scenario demonstrates the regressive behavioural impact of uniform tax policies that ignore labour market segmentation.

The policy implications are significant. India's tax regime does not currently recognise income volatility as a dimension of tax burden analysis. Policymakers could consider offering temporary GST credits for income-volatile earners or reducing indirect tax rates on essential goods more heavily consumed by this group. Another approach could involve integrating income stability metrics into welfare targeting, ensuring that relief schemes reach not just the poor, but also the insecure middle-class segment.

A larger concern arises in terms of economic justice. If the tax system is blind to labour realities, it could reinforce structural inequalities. The gig economy will likely form a major part of the future workforce; ignoring their fiscal vulnerability could lead to long-term negative outcomes in consumption, welfare, and overall growth

Conclusion

This paper underscores the importance of recognising income volatility as a key moderating variable in understanding the impact of indirect taxation on consumption. While India's middle class is a vital driver of the economy, its increasingly diversified income sources require a more nuanced tax approach.

Indirect taxes, though simple to administer, can be deeply inequitable when applied uniformly across income-stable and income-volatile earners. As freelancing and gig work continue to expand, the current one-size-fits-all tax design may aggravate financial precarity and depress consumption, especially in urban areas.

Future fiscal frameworks must be sensitive to the heterogeneity within the middle class. Recognising income volatility as a critical lens in public finance will help ensure that India's tax policy supports—not hinders—its dynamic labour market and equitable economic growth.

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The Economics of Absenteeism

Behavioral Patterns and Organizational Implications

By: Sara Goyal

Analysing employee absenteeism patterns reveals significant economic implications for organisational productivity and labour market efficiency. This research examines behavioural factors driving workplace absences using data from a Brazilian courier company, identifying key determinants that can inform targeted policy interventions to mitigate productivity losses and optimise workforce allocation.

Introduction to Absenteeism as an Economic Challenge

Workplace absenteeism represents a substantial economic burden to firms and broader economies, with U.S. employers alone losing an estimated $225 billion annually. In European contexts, absenteeism costs approximate 2.5% of GDP, highlighting the macroeconomic significance of this phenomenon1. Despite these considerable costs, organisations frequently struggle to implement effective, data-driven attendance strategies that address the multidimensional drivers of absenteeism.

This research employs advanced statistical methodologies to analyse a three-year dataset (2007-2010) from a courier service firm, providing econometric evidence on the key determinants of absenteeism duration and frequency. By identifying and quantifying these relationships, this study offers valuable insights for developing economically efficient human resource policies that balance productivity requirements with employee welfare considerations.

Theoretical Framework and Prior Economic Research

Absenteeism can be conceptualised within labour economics as a manifestation of labour supply decisions at the intensive margin. When workers choose absence over attendance, they implicitly reveal preference structures that balance the utility of leisure or necessary non-work activities against the disutility of potential wage penalties or career advancement limitations. Market factors (wage rates, job security) and non-market constraints (health status, family obligations) influence this economic decision-making process.

Prior economic literature has established that absenteeism generates direct costs through lost productivity and indirect costs through administrative burdens, replacement labour expenses, and negative externalities on team performance. However, the heterogeneity in absence patterns and their economic determinants remains incompletely understood, particularly regarding the interaction between personal characteristics and institutional factors.

Data Description and Econometric Methodology

Dataset Characteristics

The analysis utilises a dataset containing 740 instances of employee absences recorded over three years at a courier company. The dataset includes 21 attributes spanning:

1. Employee demographic information (ID, age, tenure, education level)
2. Absence details (month, day, reason, duration in hours)

3. Workplace factors (daily workload, performance metrics, transportation costs)
4. Health and lifestyle factors (BMI, smoking and drinking habits, number of children)
5. Environmental variables (season, weekday of absence)

Econometric Approach

The econometric analysis employed distributional analysis, hypothesis testing, and regression modelling techniques appropriate for count data with overdispersion. The right-skewed, overdispersed nature of absenteeism hours (confirmed by the Shapiro-Wilk test, $p<0.001$) necessitated the use of Negative Binomial regression rather than standard linear models. For group comparisons, non-parametric Mann-Whitney U and Kruskal-Wallis tests were utilised to accommodate non-normality in the dependent variable.

The modelling strategy progressed from bivariate correlation analysis to multivariate regression, controlling for potential confounders while testing specific hypotheses about the economic determinants of absenteeism. Classification techniques were subsequently employed to identify distinct patterns in absenteeism behaviour that might require differentiated management approaches.

Empirical Results: Economic Determinants of Absenteeism

Health-Related Factors and Productivity Loss

The analysis reveals that medically-classified (ICD-related) absences, though less frequent (262 instances versus 478 non-ICD absences), result in significantly longer durations of productivity loss (Mann-Whitney U test: p=7.46×10^-36)1. This finding has substantial implications for human capital investment decisions, suggesting that preventative healthcare measures or wellness programs might yield positive returns by reducing the incidence of high-duration medical absences.

Further investigation using the Kruskal-Wallis H-test (p=9.76×10^-50) demonstrated significant variation in absence duration across illness categories, with cardiovascular and certain other medical conditions associated with particularly extended periods of work incapacity. This heterogeneity in health-related productivity losses indicates potential efficiency gains from tailoring medical leave policies to illness-specific recovery trajectories.

Transport Costs and Labour Market Frictions

Contrary to theoretical expectations that commuting distance might create labour market frictions, increasing absenteeism, the analysis found no significant relationship between commute length and absence duration (Mann-Whitney U test: p=0.4968).

Notably, the data revealed only minimal differences in transportation expenses between employees commuting less than 40km (Rs. 217) and those with longer commutes (Rs. 229). This finding suggests the possible presence of firm-provided transportation subsidies that effectively neutralise commuting costs as a barrier to work attendance.

From a labour economics perspective, this result indicates that reducing geographical frictions through targeted transportation subsidies may represent an efficient mechanism for minimising absence-related productivity losses, particularly in urban labour markets with substantial commuting requirements.

Family Responsibilities and Labour Supply Constraints

The negative binomial regression model identified a robust positive association between the number of children an employee has and their absenteeism hours (coefficient=0.2057, $p<0.001$)1. Each additional child corresponds to approximately 20.57% higher absenteeism, suggesting substantial labour supply constraints imposed by childcare responsibilities.

Temporal analysis revealed that while month-to-month variations showed no significant overall pattern ($p=0.196$), employees with children exhibited pronounced absenteeism spikes during March, May, and July. This finding aligns with institutional factors such as school holiday schedules, indicating predictable labour supply fluctuations that organisations can anticipate in workforce planning.

These results highlight the economic importance of family-supportive workplace policies as mechanisms for reducing friction between household production demands and market labour supply. Flexible work arrangements or employer-provided childcare may represent Pareto-improving interventions that simultaneously enhance worker welfare and firm productivity.

Classification of Absenteeism Patterns and Economic Implications

The research identified three distinct categories of absenteeism behaviour—chronic, occasional, and minimal—with important implications for targeted management strategies. Statistical classification achieved high precision (100% for chronic absenteeism) and good overall accuracy (83%), demonstrating the feasibility of early identification of problematic absence patterns.

A particularly revealing finding was the significant difference in "reason consistency" between patterns: employees with minimal absences typically cited consistent reasons (consistency index: 0.64), while chronic absentees reported widely varying justifications (consistency index: 0.32). This discrepancy suggests that chronic absenteeism may represent a form of strategic behaviour requiring different economic incentives to address effectively.

From a principal-agent perspective, these distinct absence patterns indicate heterogeneous responses to standard incentive structures, suggesting potential efficiency gains from tailored attendance policies that address the specific motivational factors relevant to each employee segment.

Economic Policy Implications

Optimal Design of Healthcare Benefits

The substantial productivity losses associated with ICD-classified medical absences suggest that employers might achieve positive returns on investment through enhanced preventative healthcare benefits or wellness programs. Tailoring benefits to address the specific medical conditions most strongly associated with extended absences (categories 9, 12, 13, and 19 in the dataset) could yield particularly favourable cost-benefit ratios.

Work-Family Balance Initiatives

The strong association between parenthood and absenteeism, particularly during specific months, indicates potential economic benefits from family-supportive policies. Options include:

1. Scheduled flexibility during peak absence periods (March, May, July)
2. Remote work options for parents during school holidays
3. Employer-subsidised childcare during critical periods

4. Parental leave policies that accommodate predictable childcare demands

Such interventions may reduce unplanned absences, which tend to generate higher coordination costs and productivity losses than scheduled leave.

Targeted Interventions for Chronic Absenteeism

The classification results suggest economic benefits from early identification and targeted intervention for employees showing patterns consistent with chronic absenteeism. Given the observed inconsistency in absence reasons among chronic absentees, policies might focus on addressing underlying motivational factors rather than specific justifications provided.

For these employees, potential interventions include redesigned incentive structures, job modifications to increase engagement, or wellness programs addressing potential undiagnosed health issues. The high classification accuracy demonstrated in this research (100% precision for chronic absenteeism) suggests that such targeted approaches are feasible and potentially cost-effective.

Limitations and Directions for Future Economic Research

Several limitations warrant consideration when interpreting these findings. First, the dataset derives from a single courier company in Brazil during 2007-2010, potentially limiting generalizability across industries, cultural contexts, and periods. Second, certain economically relevant variables—such as wage rates, job satisfaction, and specific organisational leave policies—are not directly measured, constraining the ability to fully model all relevant parameters.

From an econometric perspective, the weak l inear correlations between most predictors and absenteeism hours suggest potential unmodeled complexity in the relationships. While the negative binomial regression approach accommodates the overdispersion observed in the data, the relatively small sample size increases the risk of estimation instability, particularly for extreme values.

Future research could strengthen the economic analysis by:

1. Incorporating wage data to examine price effects on absenteeism decisions
2. Evaluating the cost-effectiveness of specific interventions identified in this study
3. Conducting natural experiments or field trials of alternative policy approaches
4. Expanding the analysis to include organisational performance metrics to quantify productivity impacts more precisely
5. Applying structural economic models to isolate causal mechanisms better

Conclusion

This econometric analysis of workplace absenteeism provides significant insights into the behavioural determinants of absence patterns and their economic implications. The findings demonstrate that absenteeism is predominantly driven by health conditions and family responsibilities rather than commuting costs or general seasonal factors, with important heterogeneity across employee segments.

The research reveals that medically classified absences, although less frequent, generate significantly longer productivity disruptions. Family responsibilities substantially increase absenteeism, with each additional child associated with approximately 20% more absence hours and notable temporal patterns aligned with school schedules. The ability to classify employees into distinct absence behaviour categories offers a foundation for economically efficient, targeted management approaches.

These findings support the economic case for multifaceted workplace policies that address the diverse drivers of absenteeism while acknowledging its heterogeneous manifestations across the workforce. By implementing targeted interventions based on these empirical insights, organisations can potentially reduce the substantial economic costs of absenteeism while simultaneously enhancing employee welfare.

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Citation of Original Dataset: Martiniano, A. & Ferreira, R. (2012). Absenteeism at work [Dataset]. UCI Machine Learning Repository.

This economics article is directly inspired by my advanced statistics project, which used rigorous statistical and econometric techniques to analyse real-world absenteeism data from a courier company. The project's methodology—employing negative binomial regression, non-parametric hypothesis testing, and classification models—allowed for nuanced insights into the drivers of absenteeism, particularly the impact of health-related absences and family responsibilities.

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