artha 2024

SHRI RAM ECONOMICS JOURNAL

artha

2024

EDITORS' NOTE

"Education breeds confidence. Confidence breeds hope. Hope breeds peace." - Confucius

We are delighted to present this year's edition of Artha, the annual Economics Journal of SRCC. This issue represents our collective effort to delve into the dynamic world of economic thought.

Artha serves as a platform for students and young minds to engage with the complexities of the economic landscape. We believe that fresh perspectives and innovative approaches are essential for deepening our understanding of today's issues. This edition embodies that spirit, offering a vibrant collection of diverse viewpoints on the ideologies shaping our economic realities.

In a world often marked by confusion and conflict, the pursuit of knowledge stands as a beacon of clarity and hope. Through rigorous analysis and thoughtful discourse, we can navigate the complexities of our times, fostering understanding and paving the way for solutions to the challenges we face. This commitment to intellectual exploration drives the contributors to this Journal.

Within these pages, you will find thought-provoking analyses of contemporary economic challenges, critical examinations of established theories, and perhaps even glimpses into the future of economic thinking. The articles here are not just academic exercises; they are testaments to the intellectual curiosity and dedication of our esteemed contributors. As you explore these insightful contributions, we encourage you to challenge assumptions, consider alternative perspectives, and engage in your own critical analysis. Artha aims to be not just a repository of knowledge but a springboard for informed discussion and intellectual discourse.

We are immensely grateful to our faculty advisor for their invaluable guidance and support throughout this endeavour. We are also thankful to The Economics Society, SRCC for giving us this opportunity to contribute to academic thought and review meticulous, information-rich research pieces. This edition would not have been possible without the dedicated efforts and invaluable insights of the editorial team at The Economics Society, SRCC. Our heartfelt appreciation goes out to all the contributors whose research and writing form the backbone of this edition.

We invite you, the reader, to join us on this intellectual journey. Let our journal spark your curiosity, ignite your passion for economics, and inspire you to contribute to the ever-evolving dialogue on this critical subject.

Arin Verma and Paridhi Gupta

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Abstract

Human history is replete with instances of our morbid fascination towards particular elements which often have had disastrous ramifications. The 20th century witnessed several inimical events unfolding due to corybantic ideologies parading around the mass capture and possession of oil – from the United States' Pacific fleet at Pearl Harbour attacked by the Japanese to the shattering of Adolf Hitler's Iron Dream at Stalingrad. Innumerable proxy wars fought between the countries of West Asia at the behest of 'higher' powers – have all revolved around the frenzy of economically controlling oil. However, the turn of the century tilted the axis of global economic (and consequently, geopolitical) interest towards chips – unassuming pieces of silicon possessing the unique ability to both conduct electricity as well as insulate against it, at will. Better known as semiconductors, this microscopic material has its presence in virtually every aspect of life, ranging from domestic appliances and electronic gadgets to niche sectors like defence and healthcare. With the nations of the world already scrambling to strike while the iron is hot, will we see history repeat itself yet again? Or will the lessons of the past impede our myopic outlook from opening a Pandora's Box?
Keywords: Semiconductors, Geopolitics, Supply Chain, Crisis, Monopolies, Proxy War
JEL Classification : F14. L63, O33, L22

INTRODUCTION

The first semiconductor was invented in the United States of America (USA) in the 1950s – as a silicon wafer consisting of one to four transistors operating the flow of current through it. Over the years, the chip industry has modified and modernised with the typical chip nowadays consisting of millions of transistors operating current through it.

This development of the transistor capacity in a semiconductor is what has primarily fuelled the growth of the modernisation of electronic gadgets in the world, leading to faster computing times as well as reduced size of appliances. In this context, Moore's Law plays a defining role in putting into perspective the rate of development in this sector: 'Transistor density on integrated circuits doubles about every two years.' The reason behind this rapid growth in the semiconductor industry is attributable to the rampant demand generated by other sectors utilising the chips as raw materials and/or assembly line products.

SKEWED SUPPLY

The supply chain and logistics management of the global semiconductor industry has had a fascinating history. Semiconductors have a three-pronged approach in their supply chain structure - Designing, Manufacturing/Fabrication and Assembling.
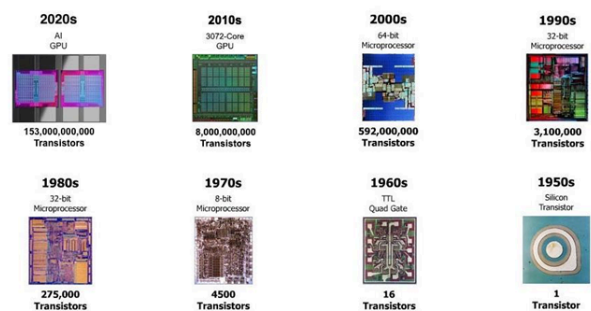

Figure 1: Brief Pictorial Representation of the Semiconductor-Transistor Timeline
(Source: https://www.computerhistory.org/siliconengine/)

These three processes are interlinked with each other. All the above functions were performed domestically by the USA in its entirety since the inception of its chip industry in the 1950s. They enjoyed the lion's share of both the supply as well as the demand side markets for chips initially – holding a monopoly in the world economy. However, with the increasing need for globalisation as well as diversification of supply chains, the monopoly was broken and the market fragmented internationally, with the USA still dominating in the designing as well as research and development (R&D) field, Taiwan and South Korea emerging as the top players in its manufacturing, and the People's Republic of China (PRC) occupying the foremost position in terms of assemblage of the semiconductors in a majority of its variants. Europe too plays a crucial role in the supply ecosystem with Germany and Austria providing various equipment and hardware aiding the entire process of chip assemblage.
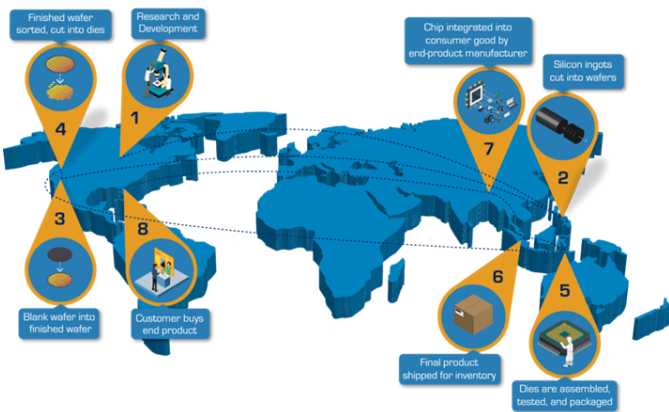
Figure 2: Global Supply Chain Ecosystem for Semiconductors
(Source:https://medium.datadriveninvestor.com/semiconductor-industry-supply-chain-value-stream-analysis-739f93546507)

Let us examine each process individually:

1.Designing

The designing aspect of the supply chain is largely controlled and monopolised by the USA.

Chips are designed to fulfil several objectives as per their device requirements - broadly of two types:

- Logic Chips (used in computer Central Processing Units (CPUs), microprocessors, Graphics Processing Units (GPUs) and the like. Logic Chips primarily perform intensive calculative tasks and in the application of Artificial Intelligence (AI).
- Memory Chips: These chips store data upon which logic chips function. They are produced in two variants: DRAM, which provides a volatile supply and the data is lost once the power is switched off, and NAND, a non-volatile storage that keeps data permanently.
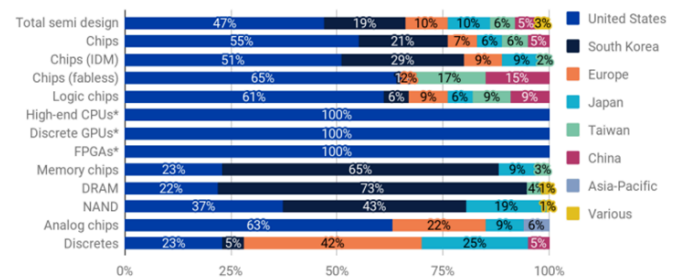
Figure 3: American Monopoly over Semiconductor Designing Market (January 2021)
(Source: Semiconductor Industry Association (SIA))

American Core Intellectual Property (Core IP) and R&D in this field remain unmatched, with billions of dollars spent to maintain competitiveness in this sector, which has ulterior geopolitical motives for the USA's foreign policy dictum.
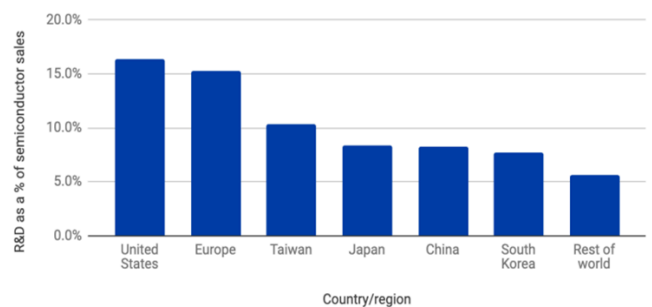
Figure 4: USA R&D Expenditure: A Comparison (January 2021)(Source: SIA)

2. Manufacturing/Fabrication:

This aspect of the supply process is done majorly in Taiwan, with South Korea also being a relevant player due to the country possessing an 18 per cent market share in this market - Samsung Electronics being the 2nd largest manufacturer world-wide, only behind the Taiwanese TSMC. South Korean firms are also present in the designing sector, especially in the DRAM segment (as shown in Figure 3). Most manufacturing is done through two processes: Integrated Device Manufacturers (IDMs): In this model type, a single firm integrates all the several processes of semiconductor production. Fabless-Foundry Model: Herein, separate firms produce each step. Fabless companies design and assemble the chips, but the fabrication is done via third parties known as Outsourced Semiconductor Assembly and Test (OSAT) concerns.
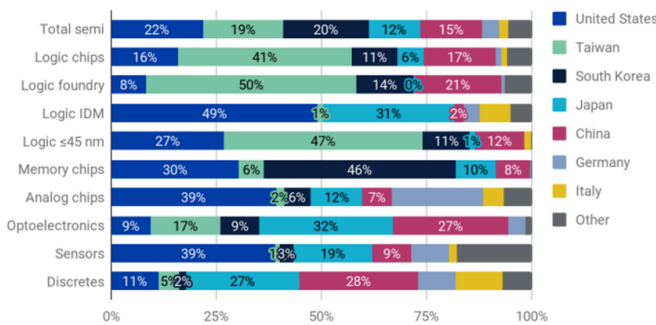
Figure 5: Market Share by Country Headquarters in the Fabrication Sphere (January 2021)
(Source: World Fab Forecast, Semiconductor Equipment and Materials International (SEMI))

1. Assembling:

Assembling, also known as Assembling, Testing and Packaging (ATP) is the final part of the procedure wherein the manufactured chips are assembled and placed into various hardware and appliances to ensure the final device's functioning. Even though this market is not completely dominated by a single economy throughout, China has been the market leader here simply due to its vast factories and production capacity. Despite not having vast ATP processing units natively, a huge amount of ATP processing is outsourced to it via other economies, thus enabling it to have a dominant hand. Like the

fabrication stage, this stage too features dual production modes: IDMs and OSATs.
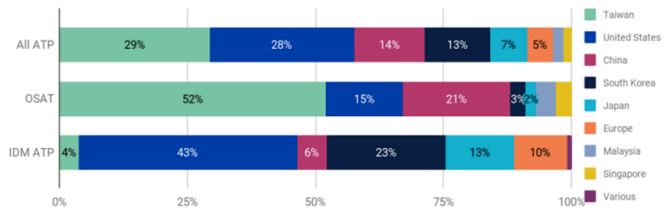
Figure 6: ATP Market Share by Country Headquarters (January 2021)
(Source: SIA and SEMI Insights)

VALUE ADDITION

Despite each wing of semiconductor processing being equally significant in the production and supply chain, several market analyses and studies have shown that the ATP processing stage generates the least amount of cash flows for an economy. China, being the largest player here, has made this a point of concern in its foreign policy strategy and has long since sought entry into the more profitable sectors of designing and fabrication to ensure it furthers its economic returns on investment.

Segment	Design	Fabrication	ATP	Total
Value add (USD billions)	$143.0	$248.1	$53.4	$444.5

Table 1: Value Added vis-à-vis Semiconductor Segment Globally (January 2021)
(Source: SIA Insights)

POTENTIAL

One trend that becomes extremely visible is that, despite the internationalisation of the semiconductor supply chain, domination remains painfully limited to a few select economies. These countries have kept their cutting-edge technology to themselves due to the projected exponential growth potential of this sector. Ever since the world embraced the digital revolution, the boom experienced by the semiconductor industry has been felt with a

resounding resonance in the global fabric of our market economy. According to the industry reports published by McKinsey & Company, the aggregate year-on-year growth for this industry could touch 6 to 8 per cent, culminating in the chip industry contributing a staggering USD 1 trillion to the world economy.

Production step	Supply chain segments	Value add (USD billions)	Value add (%)
Design	Design services	$132.3	29.8%
	EDA	$6.8	1.5%
	Core IP	$3.9	0.9%
Fabrication	Fabrication services	$151.8	34.1%
	Fabrication equipment	$66.4	14.9%
	Fabrication materials (wafers)	$10.9	2.4%
	Fabrication materials (other)	$19.0	4.3%
ATP	ATP services	$26.0	5.8%
	ATP equipment	$10.6	2.4%
	Packaging materials	$16.8	3.8%

Table 2: Segregation of Individual Processes as per Value Addition Globally (January 2021)
(Source: SIA Insights)

With such a precedent, world leaders and business houses in the above-mentioned have all kept their production and trade technologies to themselves, establishing various research and development (R&D) projects to further enhance and tighten their control over their monopolies.

TROUBLED WATERS

Given the prospective economic dividend to be amassed from this endeavour, it is hardly surprising that geopolitical tensions have broken out with regard to this. Chief among them is the USA-PRC-Taiwan stalemate, which has its roots in far more insidious places. With the advent of the rise of the PRC as a veritable economic powerhouse of its own, and having the capacity to stand up to the might of the USA, the schism between the two giants has only widened, keenly reminiscent of the Cold War back in the 20th

century. Both powers have consistently opposed and negated each other in every single global policy decision including, but not limited to, military buildups, land, space and extra-terrestrial exploration, cybersecurity and international alliances. Furthermore, the political smoke-screening and optics at each global leaders' summit exacerbates the situation to newer heights, like the open boycott by the USA of the Beijing 2022 Winter Olympics, and PRC's consistent disavowal of the human rights allegations levelled against it on the events unfolding at its Xinjiang province.
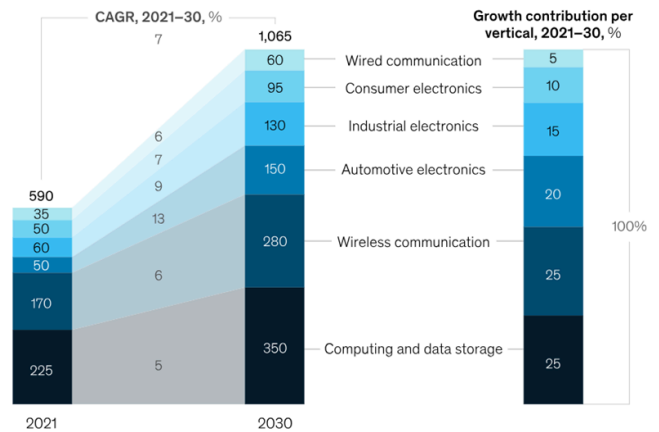
Figure 7: Growth Trajectory of Semiconductors in Various Sectors
(Source: McKinsey & Company Report (April 2022))

Yet another proxy battleground and reason for animosity between the two nations has cropped up to be the Republic of China (ROC), also known as Taiwan. Taiwan has an intriguing history and owes much of its current political deluge to that. The ROC had initially been an independently managed island, with its indigenous people. However, this peace was short-lived as the island nation thereafter was subjugated by the Dutch, the Spanish, the Chinese and the Japanese. China's Qing dynasty lost the island to Imperial Japan in the first Sino-Japanese War in 1895.

Appendix I

Sources of Secondary Data and Moving Average Analysis using Digital Payment Volume and Tax-GDP Ratio

Table I. Classification Of Data Sources and Variables

Classification	Description	Data Source
Dependent Variable (model 1)	Total number of digital transactions (# in crore)	1. Post demonetisation (2017 onwards): Digidhan, RBI, NPCI and Banks 2. Pre-demonetisation 2010-17: Payments Systems Indicator Report, RBI
Dependent Variable (model 2)	Volume of Direct Taxes	Incometax.gov.in
Independent Variable 1 (model 1 and model 2)	demonetisation	Dummy Variable (pre-demonetisation=0; post-demonetisation=1)
Independent Variable 2 (model 1)	GDP Current Market Price (₹ Crore)	Incometax.gov.in
Moving Averages (Black Money)	Tax to GDP ratio	Incometax.gov.in

Table Ⅱ. Moving Averages Calculation - Direct Taxes

Year	Total Direct Tax Volume (In Rs. Crore)	Moving Average	12-Month Moving Average	24-Month Moving Average
2010-11	445995	-	445995	-
2011-12	493987	-	469991	469991
2012-13	558989	469991	526448	510990.5
2013-14	638596	526488	598792.5	571789
2014-15	695792	598792.5	667194	624793
2015-16	741945	667194	718868	670076.5
2016-17	849713	718868.5	803840	735973
2017-18	1002738	795829	926225.5	827793
2018-19	1137718	926225.5	1070228	945971.5
2019-20	1050681	1070228	1090699.5	1005688.5

century'.

DARK HORSE

Amidst this scuffle, India has been trying to emerge as a much-needed alternative as well as to capitalise on the opportunity to break into this burgeoning sector. The pandemic underlined the structural and logistical vulnerabilities in the chip supply chain – with a considerable portion of the supply-side factors becoming handicapped due to the targeted lockdown in several prime chip economies. PRC's continued aggressions into ROC territory have also sounded alarm bells globally for a safer arena to park investments in the chip market. The need for immediate supply diversification was felt and it dovetailed with the Indian government's goal of self-reliance or 'atmanirbharta'. Furthermore, the Indian chip market was projected to catapult to possessing a market value of USD 55 billion by 2026.

A semiconductor powerhouse consortium ISMC (a joint venture between Abu Dhabi-based Next Orbit Ventures and Israeli Tower Semiconductor) is building up a USD 3 billion plant in Karnataka, which has to offer over 10,000 jobs. There is news of building information sharing and semiconductor alliances between the USA and India, the pair having signed several Memorandums of Understanding (MoUs) together to propel India as a diversification agent in the role of supporting and aiding the unstable political situation in Taiwan.
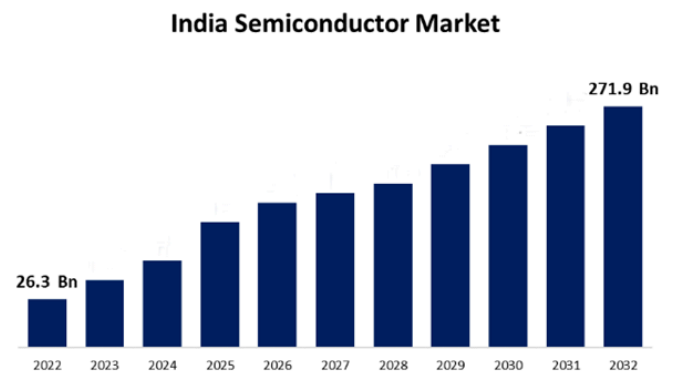
Figure 10: Indian Semiconductor Market – Past, Present and Projected Trends
(Source:
https://www.sphericalinsights.com/reports/semiconductor-market)

Figure 9: Global Semiconductor Market 2021 v. 2031
(Source:
https://www.alliedmarketresearch.com/semiconductor-market-A17597)

With this aim, the government reopened its USD 10 billion incentive plan in May 2023 to help support Indian involvement in the semiconductor industry, which received generous interest amongt world players.

However, there exist many loopholes in India's offers as well. Taiwan-based Foxconn pulled out of a massive indigenous production deal with Vedanta. Despite having signed a joint venture (JV) agreement, Foxconn pulled out of the same in less than a year due to undisclosed reasons. Despite their anonymity, an analysis of Vedanta's books reveals a very highly leveraged firm with a huge margin of unpaid debt which can be a very plausible reason behind the failure of the deal. Other analysts point out that the JV was not able to establish fruitful technology partners and licensing partnerships, with many of such companies not wishing to invest a stake in the JV.

Similarly, to counter Indian advancement in the industry, the PRC has been resorting to its age-old chequebook diplomacy, offering higher and more profitable deals than what India can offer, thereby curtailing what it considers, an adversary's growth. The conclusion that can be arrived at from these instances is that India needs to be able to advance its economic resoluteness as much as possible – only will an impregnable fortress of economic stability coalesced with the investment opportunities provided by the government lead to actualized improvements on the ground.

CONCLUSION

India is placed at a precarious edge in the global order presently, diplomatically juggling various dispensations worldwide to enhance its standing in the world as well as look for the welfare of its people. The semiconductor industry promises exceptional emoluments, however, is equally fraught with risk. Complex logistical issues, an unstable economic foothold as well as an aggrandizing political climate fester the chances of India being caught in the crossfire, and burning itself in the process. However, amassing a section of the blossoming chip industry will place India in good stead towards realising its goal of self-resilience and push itself towards providing better employment and security as well as channel robustness in its macroeconomic framework. The deftness of India's foreign policy along with its economic objectives will decide how it navigates the quagmires of this geopolitical conundrum: be stuck between the Scylla and Charybdis of USA and PRC, or emerge as a beacon of hope and stabilise the volatility in the global scheme of affairs.

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Can The Acceptance of Cryptocurrency as Legal Tender Benefit the Financial System?

Suhaan Khurana and Deepa Ragnath

Abstract

This research article examines the varied effects that cryptocurrency has as a form of legal tender on international finance. As the Consumer Price Index rose to 7.7%, showing increased inflation levels, this research looks into cryptocurrency's ability to resolve challenges in the current financial system. The authors provide an overview of the implementation, impact and implications for cryptocurrency as a legal tender, paying special attention to the advances in technology represented by the blockchain structure and its decentralised nature. They investigate the economic and social usability of cryptocurrencies, presenting diverse views from different countries, especially in India. Blockchain technology is assessed in terms of its popularity and potential to disrupt financial systems by enabling peer-to-peer transactions. On the other side, it also discusses issues with market liquidity and volatility in cryptocurrencies as a problem for prospective users and investors. The study uses the Chainalysis Blockchain data, Blockchain Research Lab, and other reliable literature to back up its results.

In addition, the paper discusses the social acceptance barriers, risks associated with digital money, including illegal activities and the reluctance of financial institutions and governments to embrace cryptocurrencies completely. It describes the polarisation in global reactions from nations such as El Salvador advocating for Bitcoin's legality to others like China imposing bans and India adopting a special approach towards digital currency. The article's conclusion argues that despite cryptocurrency having the potential to disrupt industries, it is currently neither stable nor viable for use as a legal tender. The authors recommend that governments adopt the fundamental technology used for more effective systems; as a result, this would predispose acceptance and integrative digital currency in the future.

JEL Classification : D53, E42, E44, F36, O33

Introduction

Cryptocurrency is a global phenomenon with varying levels of acceptance and regulation across different countries. The severity and urgency of this issue are reflected by the Consumer Price Index Rates growing to 7.7% this year according to the U.S. Bureau of Labor Statistics.[1] In the face of growing inflation, cryptocurrency can address the current financial system. This report evaluates the implementation, effects, and implications of cryptocurrency as a legal tender, including perspectives from different countries and a national perspective of India.

Literature Review

Prevalence of Blockchain Technology

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[1] U.S. Bureau of Labor Statistics. 2022. "Consumer Price Index Summary"

One of cryptocurrency's main selling points is its efficient blockchain technology. It allows users to transact peer-to-peer without a financial entity's involvement, saving on a lot of banking fees. Due to its technologies, it can revolutionise the financial system and make it more efficient.

The U.S. Department of Commerce defines blockchain technology as a decentralised system that uses cryptography to record and verify digital transactions. These transactions are organised into blocks, which are linked together through cryptography, making it hard to alter or tamper with previous records. As new blocks are added to the chain, older blocks become increasingly secure. The ledger is distributed across multiple copies within the network, and any discrepancies are automatically resolved using predefined rules.[2]

The Chainalysis Blockchain data platform estimated that over 50 Billion USD worth of crypto left East Asian accounts from 2019 to 2020[3] seen as a response to increased government intervention.[4] Chainalysisis a decently reliable source. It's a blockchain research platform that provides data to governments, exchanges, and financial institutions which increases its credibility. It's backed by Accel, Addition, Benchmark and other leading firms which also increases its credibility. It includes a lot of statistics that have been collected by the company themselves, however, they cannot be falsified as the data is collected from the transparent blockchain. Despite this, it may have a bias as it aims to 'build trust in blockchains.' Therefore, it may have a vested interest in increasing crypto popularity by making it seem safe as its business will grow as crypto popularity increases. The author's expertise or qualifications have not been

mentioned which weakens their claim. Overall, this is well-backed by many companies and contains a lot of data and statistics.

Social acceptance

Social acceptance is one of the major hurdles regarding the acceptance of crypto. According to the IRS, cryptocurrency is classified as 'Virtual Currency'.[5] The popularity of crypto is affected by age and cultural perceptions. It was found in a survey by The Blockchain Research Lab, that it is most popular within the age group of 18-29. Also, in terms of cultural differences, 44% of Chinese participants believe that cryptocurrency can effectively replace cash/card while only 17% of Western participants believed this.[6] This could be attributed to the emerging technologies developing in Asia, they are not only embracing cryptocurrency as an asset but also applying unique applications of cryptocurrency and blockchain.[7]

Blockchain Research Lab is a nonprofit organisation committed to conducting unbiased studies on blockchain technology and publicising the findings for the good of society. The diversity of their research staff in terms of their training and abilities is one of their primary strengths. The Blockchain Research Lab works with economists, management professionals, computer scientists, and experts in the new economy making it a credible source of information for this topic.

Above is clear evidence of the Asian perspective, however, Bitcoin is not considered traditional money, this leads to the social belief that cryptocurrency is more of an investment than a form of payment, although companies have started using several cryptocurrencies

[2] U.S Department of Commerce. 2022. "Digital Asset Competitiveness Report"
[3] Chain Analysis. 2020. "East Asia: Pro Traders and Stablecoins Drive World's Biggest Cryptocurrency Market"
[4] Francis Shin. 2022. What's behind China's cryptocurrency ban
[5] Internal Revenue Service, US. 2014. "Cryptocurrency Classification"
[6] Blockchain research lab. 24 February 2021. "Ownership, uses and perceptions of CryptoCurrency: Results from a population survey"
[7] Lihan Hyunwoo Lee. 24 November 2020. "What the western world should understand about The Asian Crypto Market"

as a form of payment.[8]

Market Liquidity and Volatility

Cryptocurrency is a fairly new concept: Bitcoin has been trading on exchanges since 2009 and has only been around for more than a decade. This leads to the market having relatively low liquidity. A study of the relationship between liquidity and volatility in the stock market by Joao Pedro Pereira and Harold H. Zhang states that *"liquidity and volatility often have a negative relation to each other".*[9] Due to the low liquidity of cryptocurrencies, people may be drawn away from them as they are extremely volatile and high risk.

This is a fairly reliable source written by independent researchers making it unbiased. They have referenced many sought-after economic journals, such as 'The Journal of Finance'. This has a lot of factual data as their statistics are directly from the stock market. This paper was published in 2008 which may make it outdated, however, it takes data from the stock market which has consistent patterns, but it still loses some credibility. Both writers have good qualifications which boosts this paper's credibility. Overall, this paper is credible as it does not contain any visible bias and has many statistics and data to back it up.

The risk of volatility has emerged from the buoyant prices of cryptocurrencies over the past decade. Consider the below graphs in which the volatility of different crypto assets is visible. The source of these is Ethereum, the second-most well-known blockchain network in the world, which serves as a platform for building decentralised apps using blockchain and smart contract technologies (a command that automatically enforces the terms of the

agreement based on a given algorithm). DeFi (decentralised finance) and the NFT mania, which saw billions of dollars stream into cryptocurrencies, were both born from this link.[10]

All-time BTC/USD Chart

All-time ETH/USD Chart

The above graphs portray the risk of cryptocurrency as an asset. However, the legalisation of cryptocurrency may introduce more users, liquidity and stability to it. From a national perspective, the Indian government wishes to ban cryptocurrency as a method of payment, except for a few private coins due to its underlying technologies. These private coins will help the Reserve Bank of India set up its own digital currency. It has been reported that the RBI would announce the digital rupee in the following year.[11]

Digital Money and Linked Risks

Despite all this, one other standing issue is that crypto does not hold the characteristics of conventional money. We cannot physically hold

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[8] Andrew Lisa. 2022. "14 Major Companies That Accept Bitcoin."

[9] João Pedro Pereira, Harold H. Zhang. 2008. "Stock Returns and the Volatility of Liquidity"

[10] Trading View

[11] Rahul Karunakar. 2022. "Delay In India's Crypto Bill Justified Due To Its Complexity: Experts"

crypto - we need a computer, an internet connection, and a digital wallet to transact it with. According to a report by the International Year of Basic Sciences for Sustainable Development, 90% of citizens in developing countries lack internet connectivity.[12] Hence, we may observe problems in the future.

Illegal activities can also occur via crypto. Its anonymity, security and decentralised nature make it attractive for criminal activities as there are several methods to launder tainted Bitcoin. Acceptance of crypto may lead to an increase in illegal activities. However, a report by Chainnalysis outlined that in 2020 only 0.34% of all cryptocurrency transactions were involved in illicit activity.[13] Due to this, governments are wary of cryptocurrencies and have critical views on them. FinCen says that the US has defined Bitcoin as a convertible currency with an equivalent value to real currency or one that can act as a substitute for real currency.[14]

The European government has classified cryptocurrencies as Crypto-Assets. They warn users that crypto-related activities are out of their jurisdiction and alert the public about its risks.[15] An interview was conducted with Jim Kong, a financial expert who has worked at Hewlett-Packard Enterprise as an investment banker for the past 15 years as a part of primary research. He believes that it will take some time for government entities to be able to understand the technology before they can enact enforceable laws. In the meantime, decentralised entities such as white hat hackers will arise to try to take down blatantly illegal activities. China has banned Bitcoin from bypassing conventional restrictions to increase state intervention as

people can only purchase 50,000 USD worth of foreign currency. However, people usually sidestep this rule by using Bitcoin to transfer money internationally.[16] Hence, analysing the causes and consequences of this apprehension about legalising cryptocurrency, one could say that the root cause is that low liquidity in the markets leads to higher volatility, which results in less social acceptance as this is a risky asset, and hence fewer people use it. And fewer people using it leads to low liquidity in markets and a cyclic effect is created.

Also, the most significant issue is that financial institutions and governments are not eager to adopt cryptocurrencies as a legal tender. This would entail a significant interruption in their customary business procedures and as a result of cryptocurrencies, people may undermine the function of the government in the country's financial system.[17] Moreover, this way, governments will lose the power to exert fiscal and monetary policies.[18] For example, due to 50 billion USD in crypto leaving Asian accounts, the government of China banned the use of cryptocurrency to increase government intervention. This led to many countries around the world following China's footsteps and creating/increasing legislation in their respective countries, clearly having a Domino Effect.

Discussion

Cryptocurrency is a new technology that can revolutionise the world, however, there are costs and benefits to it becoming a legal tender. It is important to make changes for this to be realised from increasing social acceptance by changing regulations to implementing unique

[12] Dann Okoth. 2022. "In developing countries, 90% of citizens lack internet connectivity"

[13] Kim Grauer, Will Kueshner, Henry Updegrave. 2022. "The 2022 Crypto Crime Report."

[14] Department of The Treasury Financial Crimes Enforcement Network. 2013. Application of FinCEN's Regulations to Persons Using Virtual Currencies.

[15] Prableen Bajpai. 2021. "Countries Where Bitcoin Is Legal and Illegal."

[16] Francis Shin. 2022. "What's behind China's cryptocurrency ban"

[17] Atif Aziz. 2019. "CRYPTOCURRENCY: EVOLUTION & LEGAL DIMENSION" *International Journal of Business, Economics and Law, Vol. 18, Issue 4*

[18] James Mcwhinney. 2021. "Why Governments Are Wary of Bitcoin"

policies. Mostly it is not suitable to be integrated into the financial system in its current state. Nonetheless, its technologies should be utilised by governments to create a more efficient financial/banking system. Issues of the social acceptance of cryptocurrencies have multiple reasons and time is the key factor to go about this. As cryptocurrencies grow, it will allow for more liquidity to flow into markets, more stability, and more social acceptance of it as a form of payment. Also, by decreasing taxes, people will feel incentivised to transact and use cryptocurrency more, which may lead to an increase in the use of crypto as a payment method.

Governments can also digitise their own currency. This will improve the Internet banking system exponentially as every transaction will be traceable. It will lead to transparency and a decrease in corruption. Moreover, governments having their digital currency means they can directly have P2P (person-to-person) transactions without the need for an intermediary (banks). India legalised cryptocurrency with the addition of a tax on digital assets. They have implied a flat 30% tax on all earnings via cryptocurrency and digital assets, taxes will also be levied on any payments made through cryptocurrencies. This marks the first formal recognition by the government of cryptocurrencies and their assets. However, imposing a tax on them implies that the government recognizes them as assets and not as currency.

While some countries, like El Salvador, have made Bitcoin their legal tender, others, like Nepal and Bangladesh, have placed an absolute ban on cryptocurrency. Other countries, such as Canada and Australia, have legalised the use of cryptocurrency and have developed regulations surrounding it. However, India is taking a unique approach by creating its own digital currency, which could revolutionise the financial system.

Conclusion

The technology behind cryptocurrencies, the blockchain, can revolutionise industries beyond just financial transactions and the idea of decentralised, borderless, and secure transactions becomes a possibility. Digital Rupee,[19] also known as e-Rupee, is electronic money. It operates as a form of digital currency issued and controlled by the Reserve Bank of India (RBI), using blockchain or distributed ledger technology for secure and transparent transactions. This is an effective example of the government utilising blockchain technology.

There are many limitations to cryptocurrency making it unfit for our current use, nevertheless, the technology is unmatched and it provides a new path away from corruption and inflation which may revolutionise and improve the financial system.

Cryptocurrency may replace conventional money someday as it is a solution to markets that are affected by inflation and corruption, and also its underlying technologies can be well utilised. However, due to its extreme volatility, it is unsuitable to be legal tender, and there is the issue of changing the social acceptance barriers.

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A Comparative Analysis: Reforms for the Current Sri Lankan Economic Crisis from the Indian Experience in the 1990s

Vaishnavi Verma and Viduravi Athulathmudali

Abstract

This paper is an examination and comparison of the economic crises experienced by India during the 1990s and Sri Lanka at present. It aims to provide a comprehensive analysis of Sri Lanka's current economic condition by investigating underlying root causes. While both countries faced balance of payments crises, distinctions emerged in their approaches to currency devaluation and globalisation. In light of India's recent $3.8 billion assistance towards rectifying Sri Lanka's economic crisis and India's pursuit of a "neighbourhood first policy", it's worth exploring whether India's economic restructuring measures implemented in the past may be helpful to resolve Sri Lanka's present situation. Additionally, this paper delves into an examination of the level of trust that currently exists between the two nations and includes a geopolitical analysis at the end. As Sri Lanka navigates its economic complexities, the ongoing exploration of these reforms and their nuanced applicability remains a critical aspect of this evolving narrative.
JEL Classification : E62, F34, F41, H12, O10

1.0. Introduction

India and Sri Lanka share a historical legacy dating back to the colonial era, yet their developmental trajectories diverged significantly. This paper aims to elucidate the demographic disparities between the two nations, shedding light on India's relatively slower growth in its initial phase of development attributed to its vast size and population dynamics. The economic challenges faced by Sri Lanka today present a compelling enigma, which this study endeavours to unravel. Furthermore, through a hypothesis-driven approach, this paper scrutinises India's economic crisis of 1990, discerning whether Sri Lanka can glean valuable lessons from India's experiences.

2.0. The demography

2.1. India in the 1990s:

India's demography in the 1990s was characterised by a high population growth rate, a declining fertility rate, a slow urbanisation rate, and a decreasing infant mortality rate. The following table summarises the data about Indian demography in 1991. The 1990s was also a historic decade in India, not just because of its economic crisis but also the rise of the middle class, the growth of the high-technology sector and the emergence of new social and political movements. India faced many challenges and opportunities in this period, such as the balance of payments crisis, the Babri Masjid demolition, the Kashmir insurgency, the Pokhran nuclear tests, the Kargil War and the rise of the Bharatiya Janata Party (BJP).

TABLE 1: Indian Demography (Population) in 1991

Total Population	846,421,000
Rural Population	628856000 (approx 74.2% of total population)
Urban Population	217566000 (approx 25.7% of the total population)
Growth rate (1991-2001) of Population	21.54 %
Sex Ratio	927 (Females per thousand)
Literacy Rate	52.21 %

Source: RBI (Handbook on Indian Statistics) 2023

India also increased its global presence and influence, as it established diplomatic relations with Israel, participated in peacekeeping operations in Somalia and Rwanda and became a founding member of the South Asian Association for Regional Cooperation (SAARC).

2.2. The Sri Lankan Demography

According to the 2012 census, the population of Sri Lanka was 20 million, however, it is now estimated to be 22 million. Boasting a literacy rate of 92.9%, the male-to-female ratio in Sri Lanka was 92.12 males per 100 females, in 2020. However, it is worth noting that the island nation of Sri Lanka has the fifth highest rapidly growing population of older people in Asia which has ignited concerns about the socio-economic challenges (DataLEADS/ANN, 2018). During 2019, only 1% of the population was recorded to be living under the International Poverty Line, and only 14.3% of the population living under the National Poverty Line.

TABLE 2: Sri Lankan Demography currently (2022-23)

Total Population	20,271,464
Rural Population	18.3%
Urban Population	77.3%
Growth rate of Population	1.0%
Sex Ratio	94% (94 males for every 100 females)
Literacy Rate	95.6%

Source: Census of Population and Housing 2012, Department of Census and Statistics, Sri Lanka.

2.2.1. What Caused the Economic Crisis in Sri Lanka: The Short and Long

In his book, Donald Snodgrass notes that during good times, Sri Lanka spent lavishly while in bad times such expenditure was irreversible. In a parallel sentiment, British Economist Joan Robinson has famously stated that Sri Lankans eat fruit without planting trees (Abeyratne, 2018). However, despite living beyond its means post-independence, Sri Lanka was able to navigate economic challenges with the liberalisation of its economy in 1977. The liberalisation of the economy was rather significant since Sri Lanka became the first country to transition to a liberal economy during the Cold War era, while also being a liberal democracy, making it the poster child for liberal economic development and earning Sri Lanka the title of 'donor darling' of the World Bank (Parkin, 2022). Under these circumstances, Sri Lanka received concessional funds and World Bank-sponsored programmes which were relatively less harsh than those received by other developing countries. However, the transition to a middle-income country altered the financial landscape of Sri Lanka, forcing the country to borrow from markets and expose itself to rating markets, leading to a paradigm shift. [1]

While short-term decisions pushed Sri Lanka into the economic crisis, deep-rooted structural problems which have impeded growth and inclusion over the years, pushed the country to the brink of the crisis. These structural problems include an excessively large and inefficient public sector (Aneez, 2022), untargeted universal subsidies (Business Times, 2011), a largely hidden public sector deficit due to the numerous State-Owned Enterprises (SOEs) and the burden on State-Owned Banks faced by such bad debt (Rafi, 2022).

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[1] While graduation to a middle-income country must be commendable, the issue was that the growth which facilitated this graduation was primarily driven by the non-tradable sector including construction, infrastructure and standard of living, which went on to pose challenges hindering the country's ability to service debts. It is noteworthy that 88% of the borrowings from 2015-2019 were used to service debts incurred prior to 2015, reflecting an unsustainable financial model.

Unsustainable government spending (Samarakoon, 2023), lack of central bank independence (Press Trust of India, 2023) and a reversion to protectionist trade policies further exacerbated the challenges (Herring, 1987).

Under these circumstances, by the end of 2019, Sri Lanka's debt-to-GDP ratio had reached nearly 90%, signalling a high risk of debt distress, stemming from significant domestic and external borrowing to sustain unsuitable government spending.

Despite making progress under the 2016-2019 Extended Fund Facility (EFF) programme, Sri Lanka faced a series of adverse economic shocks between 2017 and 2021, including Drought, Political Crisis, the Easter Sunday Attack and the Covid-19 Pandemic. The new government's implementation of unsustainable policies in 2019 such as substantial tax cuts and delayed reforms, resulted in a revenue loss exceeding 2% of the GDP, further heightening vulnerabilities (International Monetary Fund. Asia and Pacific Dept, 2023). For the longest time, the primary income and trade balance of Sri Lanka has been negative but the secondary income and services have cushioned these deficits in the current account, while the overall balance has remained negative. When the pandemic struck under these circumstances, Sri Lanka was in a precarious position with no cushion, thin reserves, high levels of debt and no fiscal space, causing a balance of payments crisis (Central Bank of Sri Lanka, 2022).

Furthermore, while Sri Lanka should have attempted to fill up the current account balance through FDIs, similar to Australia (RBA Education, 2022), it generally resorted to external borrowings. When investors identified that the current account balance was going above a sustainable measure, investors sought to increase the risk premium, leading to ballooning debt service payments. Accordingly, by 2022,

Investors were unwilling to make net purchases of Sri Lanka's assets leading to the crisis, and when borrowing was no longer possible, it had to resort to using its reserves to service debt. The following table provides some insights into the BOP of Sri Lanka for 2021 -2022:

TABLE 3: Sri Lanka Balance of Payments Analytical Presentation for 2021 and 2022

Item	US$ million 2021 (a)	US$ million 2022 (b)	Rs. million 2021 (a)	Rs. million 2022 (b)
Current Account (net)	-3,284	-1,453	-656,314	-316,154
Trade Balance	-8,139	-5,185	-1,617,274	-1,502,420
Exports	12,499	13,106	2,486,943	4,234,913
Imports	20,637	18,291	4,104,218	5,737,333
Services (net)	1,586	2,110	316,424	644,934
Receipts	2,475	3,062	493,320	952,999
Payments	889	953	176,896	308,066
Primary Income (net)	-1,959	-1,874	-390,158	-618,071
Receipts	116	249	22,965	84,209
Payments	2,075	2,124	413,122	702,280
Secondary Income (net)	5,228	3,496	1,034,694	1,159,404
Secondary Income: Credit	5,498	3,793	1,088,388	1,253,677
Workers' Remittances	5,491	3,789	1,087,188	1,252,504
Government Transfers	6	3	1,200	1,173
Secondary Income: Debit	270	296	53,694	94,272
Capital Account (net)	25	19	5,009	6,123
Capital Account: Credit	50	38	9,850	11,909
Capital Account: Debit	24	19	4,841	5,786
Current and Capital Account (net)	-3,259	-1,433	-651,305	-310,030
Financial Account (net)	-4,211	-1,946	-844,973	-538,153
Direct Investment: Assets	17	15	3,468	4,892
Direct Investment: Liabilities	592	898	117,894	309,142
Portfolio Investment: Assets	-	-	-	-
Portfolio Investment: Liabilities	-1,547	355	-305,900	168,647
Equity	-232	137	-46,061	30,342
Debt Securities	-1,315	218	-259,838	138,305
Financial Derivatives	-	-	-	-
Other Investment: Assets	387	1,302	77,454	390,162
Currency and Deposits	306	514	62,761	152,168
Trade Credit and Advances	257	282	51,199	89,293
Other Accounts Receivable	-176	506	-36,506	148,700
Other Investment: Liabilities	3,053	776	615,978	183,589
Currency and Deposits	4,016	272	810,195	-9,248
Loans	-1,503	-92	-299,296	51,432
Central Bank	-57	-140	-11,337	-48,316
Deposit-taking Corporations	-2,152	-1,645	-429,506	-495,847
General Government	873	1,679	174,382	580,605
Other Sectors	-167	13	-32,795	14,989
Trade Credit and Advances	-426	-895	-87,405	-279,812
Other Accounts Payable	180	1,492	34,713	421,218
Special Drawing Rights (SDRs)	787	-	157,771	-
Reserve Assets	-2,517	-1,234	-497,923	-271,828
Monetary Gold	-212	-152	-42,734	-38,820
Special Drawing Rights	123	-118	24,635	-41,965
Reserve Position in the IMF	-	-58	-	-20,980
Other Reserve Assets	-2,428	-906	-479,823	-170,064
Currency and Deposits	1,536	-895	300,122	-166,305
Securities	-3,967	-11	-780,435	-3,691
Other Claims	3	-	490	-69
Net Errors and Omissions	-952	-513	-193,669	-228,122
Overall Balance (c)	-3,967	-2,806	-745,312	-1,087,831
As a Percentage of GDP				
Trade Balance	-9.2	-6.7		
Goods and Services (net)	-7.4	-4.0		
Current Account Balance	-3.7	-1.9		
Current and Capital Account (net)	-3.7	-1.9		

Source: Central Bank of Sri Lanka | Annual Report 2022

Furthermore, while Sri Lanka should have attempted to fill up the current account balance through FDIs, similar to Australia (RBA Education, 2022), Sri Lanka has generally resorted to external borrowings. When investors identified that the current account balance was going above a sustainable measure, investors sought to increase the risk premium, leading to ballooning debt service payments. By 2022, investors were unwilling to make net purchases of Sri Lanka's assets leading to the crisis, and when borrowing was no longer possible, Sri Lanka had to resort to using its reserves to service debt. Therefore, the precipitation of the economic crisis that Sri Lanka currently grapples with is the culmination of historical challenges, unsustainable policies and the unfortunate convergence of continuous exogenous shocks.

2.2.2. Detrimental Effects on the Sri Lankan Demography

Irrespective of Sri Lanka's commendable performance on the Human Development Index, is the highest in South Asia (Nilar, 2022), which was further identified as a leading and credible

actor in the global deliberations around the development agenda for post-2015, following the achievement of the Millennium Development Goals (UNDP Sri Lanka, 2015), the demography of the country was heavily impacted by the economic crisis of 2022 and other events leading to it. In between the aftermath of the Easter Sunday Attacks and the pandemic, 300,000 people were plunged into poverty. Following the decrease in remittances, heavy inflation, contraction of jobs in services and industry and the chemical fertiliser ban had detrimental effects on households, adding 2.5 million people more into poverty doubling poverty to around 25% (World Bank Group, 2023). However, other surveys concluded that poverty stood much higher, at 30% of the population with 4 million people being impoverished between 2019 and 2022 (EconomyNext, 2023).

More than 100 developing nations' acute multidimensional poverty is measured by the global Multidimensional Poverty Index (MPI) (UNDP, Oxford Poverty and Human Development Initiative, 2023).[2] Additionally, prior to the economic crisis, the National MPI found that 16% of the population of Sri Lanka is multidimensionally poor, while 51.3% of the people living in estate areas are multidimensionally poor (Department of Census and Statistics, 2022). The Multidimensional Vulnerability Index[3] identifies that 55.7% of the whole population of Sri Lanka grapples with multidimensional vulnerability following the economic crisis (Kubota & Alkire, 2023), with the highest contributor to multidimensional vulnerability being household debt. According to the UNDP report, 33.4% of the population is experiencing social deprivation caused by this

factor and the World Food Programme (WFP) reports that nearly one-third of children under the age of five are malnourished (WFP, 2023). A key contributing factor to the significant increase in poverty in Sri Lanka was the high concentration of individuals living just above the poverty line, before 2019.[4] The continuous adverse shocks that Sri Lanka endured between 2019 and 2022 exacerbated this vulnerability, pushing a significant proportion of these individuals towards poverty (Deyshappriya, 2023).

3.0. Indian Economy in the 1990s
3.1. The backdrop of the crisis

Since 1951, India has been fully fledged as a planned economy. The first few plans focused on growth with the strengthening of the manufacturing and industrial sectors to form the backbone of the Indian economy. Other principal areas of planning were agriculture, poverty alleviation, employment generation, social development etc. Back in 1991, India saw itself battling its most critical economic and currency crisis ever, but after economic reforms and adopting the policy of LPG (Liberalisation, Privatisation and Globalisation) the Indian economy performed well. India's economic development, for many reasons, drew support in the 1950s through the mid-1960s. It was said that as honey attracts slides, gold attracts diggers, India attracts economists! It is argued that India's disappointing economic outcome was a result of a trade-off between its political preference for democracy and economic performance, but several researches over the years have shown there is no simple relation between democracy and growth rates if cross-

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[2] Multidimensional Poverty measures the overlapping deprivations of each individual across ten indicators in three equally weighted dimensions: standard of living, education and health. The standard of living is based on six indicators, whereas health and education are based on two indicators each.

[3] The Multidimensional Vulnerability Index conducted by the United Nations Development Programme, informed by the National MPI, which is a permanent statistic under the Department of Census and Statistics, and other evidence, to enhance comprehensiveness and accuracy

[4] Although this segment of the population is categorised as vulnerable non-poor because their monthly expenditure exceeds the poverty line, they remain susceptible to falling into poverty with even minor shocks to the system.

country regressions are run. So authoritarianism is neither a necessary nor a sufficient condition for growth.[5] The Harrod-Domar model provides insight into the disappointing growth rate experienced over a significant period of time, specifically in the 1950s, 1960s, and 1970s. This model suggests that the low growth rate can be attributed to the increase in saving rates, which doubled from around 10% to approximately 22% between 1950 and 1984.

One of the key factors contributing to this increase in saving rates was the inflow of foreign savings, primarily in the form of assistance rather than foreign investments. While foreign assistance can provide a temporary boost to the economy, it may not lead to sustainable growth in the long run.

The focus on saving rather than investment may have limited the productivity of the economy, as the resources were not being effectively utilized to drive growth and development. This imbalance in the allocation of resources could have hindered the overall economic performance and contributed to the disappointing growth rates observed during this period.

TABLE 4: Investments and Savings as Percentages of GDP

	1950/51	1960/61	1970/71	1980/81	1989/90
Investment (current prices, % GDP)	10.2	15.7	16.6	22.7	24.1
Investment (constant 1980/81 prices, % GDP)	14.7	18.1	18.7	22.7	21.8
Domestic Savings (% GDP)	10.4	12.7	15.7	21.2	21.7
GDP growth (% p.a., 10-year averages)		3.6	3.3	3.7	5.7

Note: Investment figures are those that are adjusted to equal the estimates of domestic plus foreign savings in the national accounts.
Source: Government of India, C.S.O. National Accounts Statistics.

The analysis of productivity growth at a detailed level of disaggregation of the Indian manufacturing sector establishes a phase of stagnation in the manufacturing sector in the 1960s and 1970s, the total productivity in the manufacturing sector grew at a rate of 3.4% p.a compared with no growth in the preceding decade and a half (indeed the slightest decline).[6]

3.2. Foreign Trade and Investment

The balance of payments came under severe strain from one liquidity crisis experienced in mid-January 1991 to another in late June 1991. On both occasions, the foreign exchange reserves dropped significantly and the government had to resort to measures, such as using its stocks of gold. The analysis indicates the reasons to be:

Allied to an extensive control framework was India's persistent failure to seize the gains from trade as India's trade policy was based on - "Export Pessimism".[7] This tendency was partially reversed in the 1980s when Indian tariffs were raised to very high levels. The effect was to reduce the growth rate not only of exports-India's share of world exports fell from 2% at independence to 0.4% by the end of the 1980s- but also of GDP since the latter became effectively constrained by the growth of agriculture.

India's attitude to foreign investment was equally isolationist. *The Foreign Exchange Regulation Act* passed in 1973 restricted foreign ownership in Indian companies to 40% and introduced many other wide-ranging impediments to the activities of foreign investors. The consequence was that inflows of foreign investment were reduced to a trickle (about $100 million per year).

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[5] Kohli, fn. 4, above, Table 1, p.157

[6] Much of it was based on the controls by the government i.e., the Industrial sector was regulated by three sets of licensing policies that controlled the entry and growth of firms - capacity licensing, monopoly control, and small-scale industry reservations and in addition, by foreign trade controls (dealt with below), location controls, and price and distribution controls. In addition to licensing controls, the industry also faced full or partial price and distribution controls, for example in petroleum products, coal, electricity, fertilizers, iron and steel, cement, and a range of other items. Refer, Cf. I.J. Ahluwalia, Productivity and Growth in Indian Manufacturing.

[7] Before 1980, controls were usually the binding constraint on imports and internal prices were higher than landed cost.

The Economic Survey 1990-91 noted a 38% increase in trade deficit, suggesting India's external sector to respond and adopt the structural changes in the World Economy.

The impact of the Gulf Crisis on the balance of payments situation was very adverse and serious. Largely as a consequence of the increase in the import bill for crude oil and petroleum products imports in rupee terms did rise by 21.9% against an increase of 17.5% in exports creating the trade deficit, which when combined with remittances from West Asia (Kuwait & Iraq), sharply deteriorated the BOT.[8] The production of crude oil declined by 3.1% during 1990-91 mainly due to the *Agitation in Assam*. Even refinery production in terms of crude throughput declined by 0.3% during 1990-91 compared to an increase of 6.9% during 1989-90.[9]

Time Series -1

Monetary, Monetary Authorities/Central Bank, Total Assets (Non-Standardized Presentation), Domestic Currency
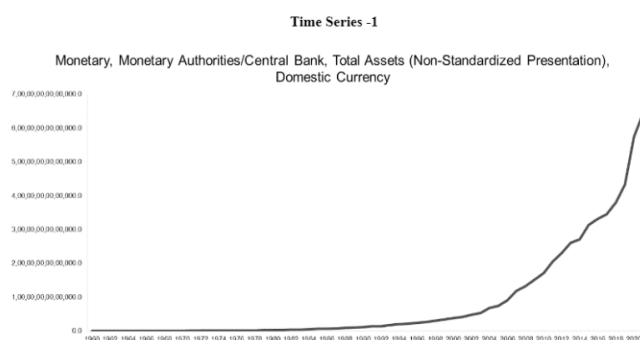
3.3. Banking Crisis:

Now, the major reason for almost all the economic crises in the world is the Central Bank's bankruptcy, which was a result of high reserve requirements (CRR & SLR) which staggered to almost 63.5% in 1991 in case of India.[10] The Interim Budget for 1991-92 presented to the Parliament on March 4, 1991, estimated the burden at Rs.1500 crores for 1990-91 (RE) compared with the budget estimate of INR 1000 crores. The government also proposed Rs. 1500 Crores under the debt relief scheme affecting the whole banking system with its scale.[11] This further made it difficult for individuals and businesses to access funds for investments or consumption, raised the burden on the government leading to higher taxes on the whole population of the nation and ultimately decreased people's confidence in the financial system of the country.

3.4. Role of IMF in Managing the Crisis & BOP Correction Measures:

The first recourse to the IMF was made during July-September, 1990 when India drew INR 1173 crores which constituted 22% of India's quota that could be drawn without any conditions, which was followed by further recourses under modified Compensatory and Contingency Financing Facility (CCFF) and first credit tranche under a three-month stand by agreement. Despite sizeable borrowing from the IMF in July—September 1990 and January 1991, the level of foreign exchange reserves (excluding Gold and SDR) which was about INR 5,050 cores at the beginning of August 1990 dropped to INR. 4,388 crores by the end of March 1991, and further to INR. 2,386 by the end of June 1991. Apart from foreign borrowings, the government took two major schemes for managing its BOP crisis to encourage the inflow of capital funds from abroad-

- **The India Development Bond Scheme:** Mobilised $1.605 Billion
- **The Immunity Scheme:** Mobilised $793 Million

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[8] Moreover, the Gulf Crisis and domestic political developments affected confidence abroad in the Indian Economy which made borrowing more difficult from the international markets.

[9] The decline in the production of crude oil is a cause for serious concern in the context of the balance of payments situation.

[10] The central budget for 1990-91 introduced a debt relief scheme under which outstanding loans up to Rs. l0,000 for the non-wilful defaulters engaged in agriculture and other allied activities were waived by the government, which ultimately increased the financial liability and fiscal deficit than originally provided in the budget.

[11] It not only deteriorated the fiscal situation but also constrained the supply of credit for productive purposes which in turn affected the rural credit delivery system.

TABLE 5: Drawals from IMF, 1990-1992

Date	Facility	SDR million	US $ million	Rs Crore
July-Sept 1990	RT	490	660	1177
23.01.1991	FCT	552	789	1450
23.01.1991	CCFF	717	1025	
22.07.1991	CCFF	166	221	570
12.09.1991	CCFF	469	639	1654
15.11.1991	UCT	85	117	305
02.01.1992	UCT	185	265	683
Expected till March 1992	UCT	461	650	1700

3.5. Structural Reforms for Indian Economy in the 1990s: LPG

3.5.1. Liberalisation

Under the Monopoly and Restrictive Trade Practices Act of 1969, firms with assets above a certain threshold (defined in nominal rupee terms and altered very infrequently) had to receive clearances before entering or expanding any line of production, which reduced competition in the economy and collapsed it.

1. **Fiscal corrections**: A necessary reversal of the trend of fiscal expansionism was essential. This was done by a sharp decline in projections of budget deficit to INR. 7719 Crore in 1991-92, similarly, in fiscal deficit, projections were to reach INR. 37,772 crore from INR. 43,331 crore. These performances were made possible by decisions to abolish export subsidies, increase fertiliser prices as well as keep non-plan expenditures in check i.e. defence expenditures. Both the central and state government employees had their pay revision in 1987-88 and 1988-89 respectively.

2. **Trade Policy Reforms**: The aim was to create an environment that simulates trade and stimulus to export. The devaluation of the rupee in mid-1991 had increased external debt service in rupee terms. Even if the

3. **External Sector Reforms**: Along with the devaluation of the rupee, liberalisation of the trade regime, allowing imports of gold,

encouraging foreign direct investment and technology inflows, opening the capital market to portfolio investment by foreign institutional investors and permitting domestic companies to access foreign capital markets have brought about a dramatic turnaround and steady progress in the balance of payments.[12] In February 1992, a dual exchange rate system was introduced, which allowed exporters to sell 60% of their foreign exchange in the free market and 40% to the government at the lower official price..

4. **Financial & Capital Sector Reforms:** In the financial sector, the nationalisation of banks in 1969 heavily regulated banks which by 1991 led to the country with a very erected, unprofitable, inefficient and financially unsound banking sectors, of course, there were other reasons in play with nationalisation like directed credit, lack of competition, etc. So in reforms, financial liberalisation was a major component i.e.

   i) Moves to reduce SLR,

   ii) Interest rate deregulation,

   iii) Liberalising commercial banks' interest rates.

   iv) Reducing deposit rates etc.,

Major development in the capital market involved the establishment of a regulatory body, the Securities and Exchange Board of India (SEBI) in 1988 which was given statutory powers in 1992 which concentrated on enacting and enforcing the statutory control on floatation and pricing issues. Its other task is to improve the trading and settlement procedures in the secondary market for equity. Then onwards further developments happened with the establishment of BSE and NSE in line with this.

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[12] As a result, external assistance, external commercial borrowing, IMF loans, and NRI deposits declined progressively from 85.8% of net capital inflows in 1990-91 to 40% in 1993-94. By contrast, inflows of foreign investment (FDI, FIT, and euro equities) increased from $3.75 billion in 1993-94 to $4.66 billion in 1994-95. As a part of the 1991 reform, the government devalued the rupee by 22 percent against the dollar from Rs 21.2 to Rs 25.8 per dollar.

5. **Tax Reforms:** The Tax Reform Committee recommended a structure of seven rates, rising roughly with the degree of processing, though consumer goods would pay the highest rates of 30-50 per cent regardless of the degree of processing. Customs revenue stood at 3.9% of GDP in 1990/91, and 3.3% in 1995/96 (revised budget estimates).[13] In the 1990s, a good deal had been made to simplify central excises. Specific rates have been changed to ad valorem, and many reduced. The number of rates has also been greatly reduced (to ten). A limited form of VAT introduced in the late 1980s, called MODY AT, under which some but not all excise taxes were rebated, has been extended. At the same time, many exemptions have been eliminated. The yield has fallen only a little (to 3.8% of GDP). (Very recently GoI has adopted a one nation one tax policy reform in the form of GST).

3.5.2. Privatisation

There has been a wave of privatisation in the world, largely resulting from the fiscal burden imposed by loss-making public industries. Dr Manmohan Singh in his budget speech of 1991-92 pointed out that the rationale for disinvestment was to raise resources, not to improve efficiency.[14] To improve efficiency, infuse professionalism and enable them to compete more effectively in the liberalised global environment, the government identifies PSEs and declares them as *Maharatnas, Navratnas and Miniratnas*.[15] Scholars allege that instead of facilitating public enterprises in their expansion and enabling them to become global players, the government partly privatised them through disinvestment.

3.5.3. Globalisation

All this has created new markets like service, consumer and financial, new agents like MNCs, WTO, Regional Blocks and Policy Coordination groups. Since the beginning, India has adopted the policy of the most favoured nation (MFN) to all its trading partners. Ideally, WTO's arrangements of 1995 aimed to simplify world trade and rectify the prevailing trade barriers.

But the decline in India's exports during the post-WTO regime may be attributed to various restrictions imposed by various countries on Indian exports. This is because of the fact that while developed nations are not reducing subsidies on their farm products, at the same time they are arguing for a reduction in subsidy on farm products for developing nations including India which has ultimately reduced the degree of competitiveness of Indian farm products in the international market

This table presents the overall rates of growth and decline in the Indian Economy post and pre-reform era.

TABLE 3: Growth of GDP and Major Sectors (in %)

Sector	1980-91	1992-2001	2002-07	2007-12	2012-13	2013-14	2014-15
Agriculture	3.6	3.3.	2.3	3.2	1.5	4.2	-0.2*
Industry	7.1	6.5	9.4	7.4	3.6	5	7.0*
Services	6.7	8.2	7.8	10	8.1	7.8	9.8*
Total	5.6	6.4	7.8	8.2	5.6	6.6	7.4

Source: Economic Survey for various years, Ministry of Finance, Government of India.

Note: *Data pertaining to GVA [16]

Figure 1: Yearly Growth Rates of GDP

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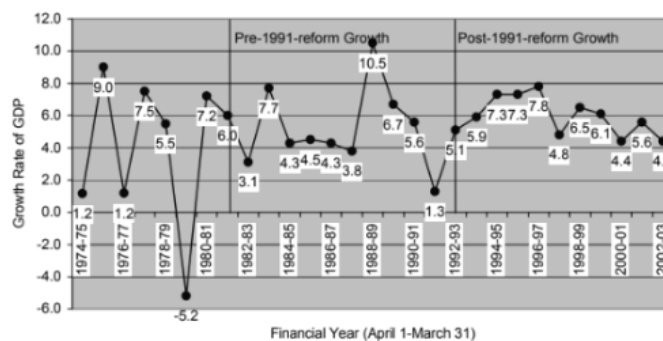
[13] This small fall in the face of large reductions in tariff rates is explained by rapid import growth in the previous two years and the elimination of many exemptions.

[14] Dr Manmohan Singh in his budget speech of 1991-92 stated that the "...public sector an engine of growth rather than an absorber of national savings… concentrate the future operations of the public sector in areas that are strategic for the nation, require high technology for the economy, and are essential for the infrastructure."

[15] The granting of status resulted in better performance of these companies.

[16] WP/04/43 IMF Working Paper by Arvind Panagariya

The diagram below presents the overall picture of the Indian economy and the influence the reforms of 1991-92 had on the Indian economy.

Figure 2: Trends in Sri Lanka's Current Account Balance and Fiscal Balance (2021-2023)

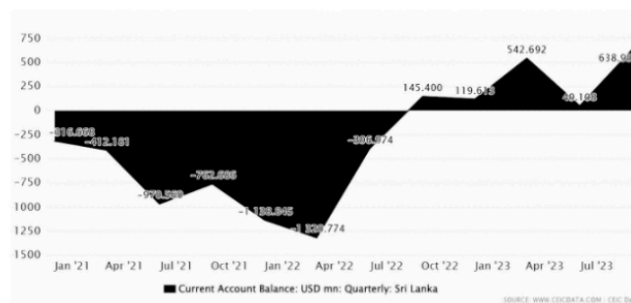# 4.0. Measures Taken by Sri Lanka Since the Economic Crisis
4.1. Background

The government of Sri Lanka sought the help of the International Monetary Fund (IMF) for the seventeenth time following the economic crisis in 2022.[17] The IMF programme mainly targets the balance of payments issue which led to the economic crisis. Following the restoration of monetary stability, the current account of Sri Lanka started a positive trend, recording a surplus of $639.0 million in September 2023 (CEIC DATA, 2024).

consumer's needs and further drive inflation—which has happened in the case of Sri Lanka—the commodities thus being produced domestically have often been seen as less competitive in global export markets.

4.2. Social Reforms

One key area of focus has been the reform of **Social Security Nets** to shield vulnerable populations from the adverse impacts of the economic crisis. The government has taken steps to increase spending on Social Security Net programmes, reaching <u>0.6% of GDP</u> in 2022.[19] Accordingly, preliminary evidence suggests that the scaled-up social safety net transfers have contributed to a poverty-reducing impact of 3.1% in 2022 (International Monetary Fund, Asia and Pacific Dept, 2023).[20] Additionally, institutional reforms, including the operationalisation of the **Welfare Benefit Board** and the **development of a new Social Registry** and eligibility criteria, are underway to improve the efficiency and transparency of social safety net programmes (Farzan, 2023).

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[17] Sri Lanka received the first tranche of IMF bailout funds amounting to $2.9bn, in March of 2023, and upon a progress review, the second tranche of bailout funds amounted to $2.9bn, in December of 2023.

[18] Twin deficits signal that a country's national expenditure exceeds its national income, and that its production of tradable goods and services is inadequate. This phenomenon is typically true for developing consumption-driven economies, with high levels of debt on both the domestic and the international fronts.

[19] Emergency support, amounting to $326 million from the WB and the ADB, has been instrumental in expanding the coverage, with beneficiaries increasing by approximately 2.3 million in 2019 to around 3.3 million in 2022.

[20] To further enhance the adequacy of coverage, authorities committed to a spending floor target of LKR 187 billion for the year 2023.

[21] The preceding legal framework which was governed by the Monetary Law Act enacted in 1949, was deemed inadequate in the face of evolving economic challenges.

4.3. Financial Sector

Significant reforms in the financial sector of Sri Lanka have been undertaken, particularly the enactment of the New Central Bank Act.[21] The New Central Bank Act of 2023 clarifies the objectives of the Central Bank of Sri Lanka (CBSL), with an explicit focus on price stability as the primary goal, with a clear prohibition on CBSL providing monetary finance, aiming to prevent inflationary pressures resulting from government deficits and primary market purchases of treasury securities. Financial stability has been identified as a secondary objective, reflecting a commitment to flexible inflation targeting under a flexible exchange rate regime. (*Central Bank Act*, 2023) Accordingly, the autonomy of the CBSL is set to be strengthened with the removal of government representation from both the Governing Board and the Monetary Policy Board, mitigating potential government influence over monetary policy decisions. Nevertheless, the key concentration of the Central Bank is the inflation target, which the new act embeds as the key anchor, and the involvement of the Executive branch of governance will maintain involvement in setting the inflation target. Additionally, the new enactment emphasises transparency and accountability, requiring the CBSL to communicate Monetary Policy Board decisions and submit reports to the Minister of Finance during economic disturbances threatening price stability, while the CBSL Governor can be summoned to the Parliamentary committees *(Central Bank Act, 2023)*. The government is also expected to present the Public Finance Management Bill to ensure greater transparency and reporting of fiscal performance to facilitate greater public scrutiny of the same (Editor Daily FT, 2023).[22]

In the face of the economic crisis, the Sri Lankan government has made significant strides in the realm of governance and anti-corruption. A comprehensive Governance Diagnostic (GD) mission, initiated at the request of the authorities examined corruption severity and identified governance weaknesses across various state functions. The report of the GD mission was distressing and portrayed how corruption has become a big burden on the economy while providing sixteen key recommendations for the formulation of governance and anticorruption policies and programs in Sri Lanka (Editor Daily FT, 2023). Therefore, the government informed by such reports must seek to formulate prioritised and tailored recommendations to reduce corruption risks and enhance governance. Parallelly, the government is advancing legislation to strengthen the legal and institutional framework for addressing corruption. The new anti-corruption law, enacted in August 2023, encompasses the creation of an anti-corruption commission, asset declaration requirements for public officers and a centralised mechanism for managing and verifying declarations *(Anti-Corruption Act, 2023)*.[23] Sri Lanka has also implemented **new tax policies** that involve increased taxes across various income groups, impacting professionals, workers, and businesses. The rationale behind these policies is to address the fiscal challenges faced by Sri Lanka and to create a more sustainable economic framework (Kapilan, 2023). Concurrently, the reduction of allowances, particularly targeting public sector employees and professionals, is part of the broader austerity measures intended to curtail unwanted public spending, reflecting an effort on the part of the government to create fiscal discipline (Wickremasekara, 2023).

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[22] This action had to be taken due to the regular violations of the Fiscal Management (Responsibility) Act and the amendments to the Act which has resulted in the economic crisis

[23] Furthermore, to ensure further compliance with the United Nations Convention against Corruption, the government of Sri Lanka plans to introduce an additional bill by March 2024, covering comprehensive asset recovery provisions.crisis.

[24] These measures, including higher taxes for those earning more than LKR 100,00 per month, have significantly reduced workers' take-home pay, aggravating their financial struggles amid hyperinflation

Furthermore, in an attempt to raise government income, value-added taxation was increased up to 18% under the Budget for 2024, while reducing the VAT threshold from LKR 80 million to LKR 60 million, and revising the exemptions to VAT (Wanigasinghe, 2024). Protests have erupted across Sri Lanka with people expressing their discontent over increased taxes, reduced allowances and high bank loan interest rates implemented in line with the IMF programme (Reporters of WSWS, 2023).[24] However, amid the protests and opposition from various sectors, it is crucial to recognise the broader economic context. The IMF programme, although unpopular, is positioned as a critical means to address the economic crisis. Sri Lanka's revenue collection has fallen significantly below the expected target, thereby facing immense challenges in enhancing revenue to meet financial obligations (Siriwardana, 2023). While protests reflect the immediate hardships faced by the population, it is essential for Sri Lankans to understand that the IMF is not an external imposition but rather a strategy devised by the Sri Lankan government to address its own economic challenges. Taking ownership of the programme and actively participating in shaping its contour, similar to India's approach in the 1990s, is a more effective method of empowering people to influence the direction of economic reforms.

5.0. Lessons to be Learnt from the Indian Experience

5.1. Hypothesis [25]

- H$_0$(Null Hypothesis): Due to the similarities of experiencing the Balance of Payments (BOP) crisis, it can be posited that the Indian Reforms of the 1990s apply to the economic

advancement of Sri Lanka.

- H$_A$(Alternative Hypothesis): Sri Lanka can't rely on India's economic reforms from the 1990s as a perfect parallel since the two countries, both of which endured the Balance of Payments crises, have diverse operating environments.

Upon careful consideration, the following reforms of the 1990s are applicable to the Sri Lankan Economic Crisis:

5.1.1 Self-Sufficient FDIs

Along with the IMF's assistance, Sri Lanka should make schemes that are going to increase foreign flow into their economy just like the two most successful Indian schemes[26] mentioned in section 3.4 above.

5.1.2. Fiscal Corrections

Matched with Indian reforms, Sri Lanka has reduced its estimated fiscal deficits which will ultimately reduce the gap and help the economy to survive, very recently with CBSL reform (section 4.3 above) maps the need to maintain a difference between the country's fiscal policy (Government) and Monetary Policy (Central Bank) with correct separation of fiscal powers.

5.1.3. Devaluation of domestic currency

This was the most useful reform in boosting Indian Exports during the 1990s. However, upon analysis, it is clear that this ***reform does not apply*** to Sri Lanka today. The government is constantly trying to appreciate its currency because it has already crossed the mark level with a soft peg. Therefore, there is a need to limit this floating exchange rate as it already damages the Sri Lankan economy and exchange

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[25] Assumption: The major reason for both these economic crises is the Balance of Payment.

[26] The India Development Bond Scheme, The Immunity Scheme

[27] In 2021, state-owned Sri Lankan Airlines **reported losses** of more than one percent of Sri Lanka's GDP. Totaling USD $552 million in 2021, the loss of one state owned enterprise is larger than the entire national social security budget set at 0.6 percent of the GDP by the IMF's Extended Fund Facility. If Sri Lankan Airlines was privatised and these losses were not held by the state, Colombo's social security spending could be more than doubled. Facing a **continued economic crisis**, the Sri Lankan government must begin privatising state-owned enterprises (SOEs).

rate ($1) which is already above 300 LKR.

5.1.4 Privatisation

Sri Lanka staggers with its SOEs[27] and needs similar reforms as were taken in India in the 1990s (refer to section 3.5.2).

5.1.5 Globalisation

Outsourcing on a large scale is a challenge in Sri Lanka due to concerns surrounding the country's sovereignty, commitment to self-sufficiency, and a small population lacking the labour force necessary to work for lower wages. Sri Lanka's demographics set it apart from India in this practice. On the other hand, India's experience demonstrates a greater compatibility with globalisation in other aspects.

NOTE: This research delves into the current economic turmoil afflicting Sri Lanka. Any assertion regarding the state of ongoing reforms in the nation would be premature and misleading. It remains to be seen whether our hypothesis will hold up under closer econometric scrutiny, which is why this investigation remains ongoing.

6.0. Managing Bilateral Relations between India and Sri Lanka

6.1. Backdrop

While Sri Lanka grappled with the unprecedented financial meltdown, India emerged as a reliable ally,[28] extending a multi-faceted assistance package exceeding $3 billion in loans, credit lines and currency swaps.[29] Guided by its 'Neighbourhood First' policy, the

proactive approach of India signifies India's proactive role as a reliable partner in the region.

6.2. Geopolitical concerns for both India and Sri Lanka

While the bilateral relationship between India and Sri Lanka spans across millennia (Bilateral Briefs - MEA, 2016) the Sri Lankan public has always looked at India with distrust. The support extended by India during the economic crisis has helped in gaining some public trust among Sri Lankans (Srivastava, 2022). Yet, as a consequence of the changes in the geopolitical equilibrium in the region and a resultant growing trust deficit, a transactional approach has increasingly dominated aspects of the Indo-Lanka bilateral relationship (Moragoda, 2021). Geopolitical concerns have always played a significant role, with India expressing unease over the deepening ties between Sri Lanka and China. Accordingly, India has taken a strategic interest in projects such as the Trincomalee Oil Tank Farm and the Colombo Port, in an effort to counterbalance China's influence in the region.

However, the anti-Indian sentiment among Sri Lankans is deeply rooted in past grievances and suspicions of interference, adding complexity to the relationship (Waduge, 2012).[30] Shaped by these past events, the perception of the Sri Lankan people creates a considerable challenge for building mutual trust and cooperation. Under such circumstances, even the provision of credit lines, loans, and essential commodities, is viewed through the lens of broader geopolitical dynamics and historical baggage and a strategic move to increase Sri Lankan dependence on

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[28] The enduring bond between Sri Lanka and India is deeply rooted in a long and intertwined history that spans cultural, historical, and diplomatic dimensions, laying a foundation going beyond geographical proximity, and navigating contemporary challenges reflecting a relationship that has withstood the test of time. This bond, however, was further deepened with India's steadfast support and substantial financial assistance to Sri Lanka during the economic crisis.

[29] The multifaceted support by India, included a $1 billion credit facility for essential imports, such as food, medicines, and other commodities, already in operation, with around 16,000 metric tonnes of rice. A separate $500 million Line of Credit for petroleum products facilitated the delivery of various fuel consignments, addressing crucial energy energy needs. Furthemore, India responded to urgent medical needs by delivering essential drugs.

[30] These anti-Indian sentiments are easily marketed among Sri Lankans, with historical incidents such as the alleged backing of the Liberation of Tamil Tigers Eelam, contributing significantly to a sense of distrust.

India (Aneez, 2017). While the India-Sri Lanka Free Trade Agreement was signed following much difficulty in 1998, the ability for greater cooperation has been continuously stalled due to these perceptions, (Agence France Presse, 2010), irrespective of India being the third largest export market for Sri Lanka (TrendEconomy, 2024). Therefore, to strengthen the bond between India and Sri Lanka, a shift in perceptions on both sides grounded on transparency is crucial.

6.3. Transparency as a Solution

Amidst the evolving geopolitical landscapes, a commitment to openness can pave the way for a more robust, cooperative, and mutually beneficial relationship between the two nations. Historically, Sri Lanka has maintained a tendency to withhold strategically crucial information from India. The strategic centres of India lie towards the South, away from China and Pakistan, and therefore it is important that Sri Lanka acknowledges the security concerns faced by India, such as the presence of Chinese ships in Sri Lanka, and control over critical infrastructure arising from the deepening Sino-Sri Lankan relations (Jain, 2021, 14-19). To foster a healthier Indo-Sri Lankan relationship, it is imperative for Sri Lanka to prioritise honesty and transparency in its dealings with India, avoiding unexpected surprises. Perhaps, the ongoing negotiations for the Economic and Technology Cooperation Agreement between India and Sri Lanka can set the tone for renewed and stronger ties between the two nations.

7.0. Conclusion

The economic reforms initiated by India in the 1990s, driven by financial, capital and tax sector transformations, serve as a valuable point of reference for Sri Lanka grappling with its recent economic crisis. Lessons from India's experience, including the judicious use of FDIs, privatisation and fiscal corrections, offer potential pathways of knowledge for Sri Lanka's recovery. However, it is worth noting that aspects such as currency devaluation and globalisation strategies demand a tailored approach because of the natural differences between India and Sri Lanka. Currently, Sri Lanka's response to the crisis involves significant financial, anti-corruption and social reforms, albeit with challenges and public discontent. Sri Lanka must also seek to properly. manage its geopolitics effectively, for the Indo-Sri Lankan relationship is crucial in the backdrop of geopolitical concerns, underscoring the need for transparency to build cooperation. While Sri Lanka navigates through its economic challenges, exploring different reforms and their applicability, it is crucial to understand that the nation's context shapes the effectiveness of economic policies.

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Assessing Demonetisation's Contribution to Economic Resilience Through Digitalisation

Khushi Shah and Shamika Nayak

Abstract

In November 2016, the two highest denomination currencies in circulation in India were demonetised. This paper analyses its impact on black money reduction and how it fostered digitalisation which became an important tool in the formalisation of the Indian economy. Although digitalisation was not among the primary stated objectives, post-demonetisation large-scale digital transactions elucidated the establishment of a digital payment structure in India. A time series analysis using the moving average method is used to project the impact demonetisation had on the volume of black money in the system and a multivariate regression model is used to study the post and pre-demonetisation effect on GDP, black money and digital payments. The enhanced transparency in the system due to digitalisation led to a rise in the proportion of taxes in the GDP after demonetisation. However, there were certain areas where demonetisation failed, like, it targeted the use of large-denomination cash notes only as a means to curb black money, without directly addressing other forms of hidden wealth, such as benami properties, or investments in assets like gold. Marked by a 99% return of demonetised currencies to the RBI, it was evident that black money had other hidden forms too. Nonetheless, apprehensions that demonetisation got with it acted as a catalyst to foster cashless transactions leading to digitalisation which was witnessed in the continuous year-on-year rise in digital transactions.
JEL Classification : E42, E52, G33, H26, L81, K42

Introduction

In an era marked by economic uncertainties and global challenges, fostering resilience within an economy is of paramount importance. As nations around the world embark on this path, the objectives of ensuring accountability and transparency to their citizens are also imperative. Therefore, while on the one hand, the government aims to maintain transparency with its citizens, on the other hand, it is also accountable for tackling important issues obstructing national development. One such obstacle faced by most countries is the accumulation of black money in the economy. To tackle this problem, the government of India, in November 2016, announced 'demonetisation',

as a strong monetary policy tool. It is an economic policy tool in which certain units of currency cease to be recognized as forms of legal tender. The demonetisation aimed at reducing black money, terrorist financing and counterfeit currency. Its impact has been widely debated in terms of the need and efficacy of this move. Some argue that it was a necessary step to cleanse the economy of black money and promote financial inclusion. Others argue that it was a poorly implemented policy that caused significant economic disruption and hardship for the poor and marginalised. Small-scale farmers, merchants, daily wage labourers and tradesmen suffered because of the sudden nature of this move. The poor were taken aback and the lack of sufficient banking infrastructure in the hinterlands caused extreme inconveniences

to the marginalised people in rural regions. In the urban regions, long queues at banks and ATMs and the small limit of withdrawal marked this move in common consensus as a setback to medium and small-scale players in the Indian economy.

On the positive side, the most significant impact of demonetisation has been the rise in digital payments. As people sought alternative ways to conduct transactions, they turned to digital wallets, mobile banking apps, and other cashless payment platforms. This trend has continued ever since demonetisation, with digital payments now accounting for a significant share of all transactions in India. The value of NEFT (National Electronic Funds Transfer) transactions alone stood at ₹ 9,88,000 crore in September 2016 (two months before the demonetisation) and this rose to a significant ₹1,41,82,000 crore in September 2017 and two years later, in September 2018 it rose to ₹1,80,15,000 crore. (Upadhyay et al., 2019) Therefore, demonetisation did in some way, push the Indian economy to adopt a cashless system, hence reducing hand-to-hand cash transactions and leading to a large-scale conversion into more transparent digital transactions.

Hypothesis

Demonetisation led to an increase in digital payments, which helped to reduce black money and promote economic resilience.

Objectives

- Analysing the trends in the use of digital payments before and after demonetisation.
- Assessing the impact of demonetisation on the economic resilience of the country.
- Identifying factors that contributed to the success or failure of demonetisation in reducing black money and promoting a cashless economy

Literature Review

Not all black money was held as cash and not all cash held was black money. Only 4% of black money was held in cash, the rest of it was held in terms of gold or kept abroad. Although demonetisation is an established practice in the monetary policy to tackle the increase in volumes of black money. The move has seen success in developed countries like the US where bills above $100 were classified null and void in 1969. However, in a country like India, demonetisation was not designed in advance, therefore, it hurt the poor and middle class of the country. The rich sent their 'mules' to stand in lines to deposit and exchange their money, and the common men faced hardships. (Shirley, 2017) In our paper, we agree with the latter part of the statement about the hardships faced by the masses and the lack of planning for the move. However, our research contradicts the assumption that the influence of demonetisation on black money was negligible and ascertains the fact that after demonetisation, although the economy saw an initial slowdown, the steady rise in digital transactions increased transparency in the system and aided the effectiveness of the Permanent Account Number (PAN) mechanism for regulatory tax payer profiling. The paper also speaks about a liquidity crunch caused by demonetisation which will jam consumption. We establish the fact that the quick supply of the new notes did not let the economy slip into a liquidity crunch and through the rise in digital payment modes soon after, consumption was revived quickly. Additionally, since digital transactions can be tracked efficiently as compared to cash, the push towards digitalisation also encouraged the idea of maintaining fewer liquid assets like cash hence pushing for a conversion of liquid assets into gold and other forms of investments.

Demonetisation led to a significant increase in the use of digital payments, increasing the

number of mobile wallet transactions by 242% in the three months following demonetisation. The study describes the differentiating features of digital transactions. It shows how individuals use different digital payment methods based on the requirement and monetary value transferred. It points out how cash transactions are still a dominating player and to initiate more cashless transactions they need to consider factors affecting a cashless economy. (Impact of Demonetisation on the Ddigital Eeecosystem, Sahil Manocha, Ruchi Kejriwal, Akaanksha Updhyay, 2019). Through our research, we focus on the ease of regulating and tracking Digital payments by the government, which has helped to reduce black money and tax evasion. Additionally, our paper also analyses the growth of financial inclusion through digital payments as a result of the ease of operation and the convenience of mobile payments and UPI.

The theory of economic development states that there is a positive relationship between economic growth and financial development. Not only did demonetisation lead to a decrease in black money but also an increase in tax revenues. By focusing on the efficiency of the 2016 demonetisation over the 1946 and 1978 demonetisations in terms of the former being implemented in a time when there's 100% bank coverage, taxpayers' PAN identification numbers, extensive computerisation of banking services and citizen identification numbers (Aadhar). Through our research, we aim to quantitatively analyse the coupled effect of the demonetisation along with strong digital banking coverage during the 2016 demonetisation through a rise in the volume of computerised banking transactions.

Methodology

To assess the impact of demonetisation on digital payments, a moving average analysis and a time

series regression are conducted. In this research, the moving average analysis is used to identify trends in taxation and the volume of black money over time. The moving average analysis is conducted, based on data collected on the variables of interest, namely, the volume of direct tax transactions and the ratio of total taxes collected to the GDP as a demarcation of the proportion of black money in the economy over ten years, from 2010-2020. Information on data sources and variables is available in Table I of Appendix I. Following data collection, moving averages for each of the two variables are formulated, thus smoothing out the data and demarking trends in a rise in direct taxes corresponding to an increase in the proportion of taxes in the GDP. The moving average showed us the general trend in taxation over the past 10 years. For constructing the moving averages, Microsoft Excel has been used. Moving averages help in the identification of trends and patterns in datasets. Moving average data for direct tax volume and Tax GDP ratio is available in Table II and III of Appendix I respectively.

A multiple regression analysis is undertaken following the time series analysis to identify the relationship between demonetisation, black money, GDP and digital payments. Two regression models are constructed - one to analyse the impact of demonetisation and GDP on the volume of digital transactions and the other to analyse the impact of demonetisation on the volume of black money measured through the proxy - the volume of direct taxes. The dependent variable taken for the first model is the volume of digital payments and for the second model, it is the volume of direct taxes. The independent variables considered are GDP (at the current market price) and demonetisation for the first model and only demonetisation for the second. Demonetisation was included in the regression model through a dummy variable

where pre-demonetisation years take the value '0' and post-demonetisation years take the value '1'. Hence, two regression models are obtained. To determine the statistical significance of the regression models, the t-test and F-tests for hypothesis testing were conducted. Data for the Multiple Regressions are seen in Table I and II of Appendix II, and the results of the regression are seen in Table III and IV of Appendix II.

Analysis

A. Moving Averages:-

The 12-month moving average of total direct tax volume in India has been on a steady upward trend since 2010-11, with a few minor dips along the way. The growth in the moving average from 2010-11 to 2022-23, represented an average annual growth rate of 20%. The 24-month moving average of total direct tax volume in India has been steadily rising. However, since the 24-month moving average is more sensitive to long-term trends, its growth rate has been slower than that of the 12-month moving average which is more sensitive to short-term fluctuations. The 24-month moving average has grown from ₹. 445,995 crore in 2010-11 to Rs. 9,926,225 crore in 2022-23, representing an average annual growth rate of 16%.

Total Direct Tax Volume (In Rs. Crore) and Moving Average
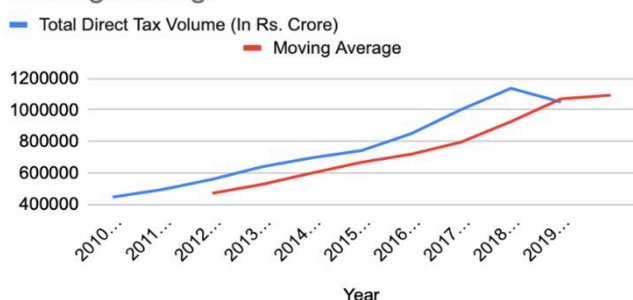
Overall, the data shows that the Direct Tax Volume has been increasing steadily over the past decade, with a slight dip in 2016-17. It has been observed that the growth rate of

Direct Tax Volume has accelerated from 7.9% in 2015-16 to 12.1% in 2016-17, the year after demonetisation. The growth rate of Direct Tax Volume on the other hand remained strong even during the COVID-19 pandemic, averaging 9.7% per year from 2019-20 to 2022-23. By reducing tax evasion and increasing tax compliance, demonetisation has helped to create a more formal economy. Digitalisation has made it easier for businesses to collect taxes from their customers and for taxpayers to file their returns. This has reduced the cost of tax compliance and made it easier for businesses to grow and for taxpayers to fulfil their obligations.

The tax-GDP ratio measures a country's tax revenue relative to the size of its economy. It is calculated by dividing tax revenue by gross domestic product (GDP). A higher tax-GDP ratio means that a country's government collects more tax revenue relative to the size of its economy.

Tax- GDP Ratio and Moving Average
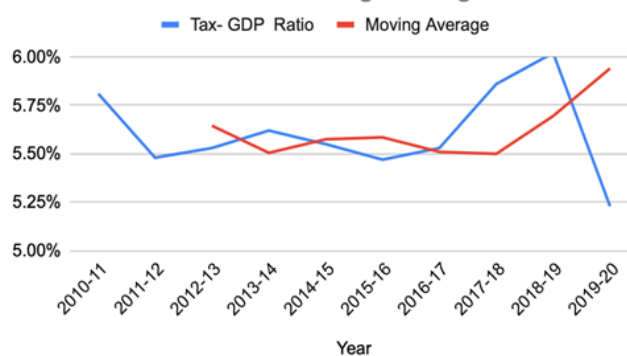
Additionally, the 12-month moving average of the tax-GDP ratio is 5.65%, implying that the average tax-GDP ratio over the past 12 months has been 5.65%. While the 24-month moving average of the tax-GDP ratio observed as 5.58% means that the average tax-GDP ratio over the past 24 months has been 5.58%. The fact that the tax-GDP ratio has been relatively stable suggests that there has been no major shift in the tax burden in recent years. However, the tax-GDP ratio increased significantly in the year

following demonetisation, from 5.23% in 2016-17 to 5.94% in 2017-18. This increase in the tax-GDP ratio can be attributed to the eventual increase in the use of digital payments. The data does not show a major shift in black money or tax reduction as a result of demonetisation. In fact, the tax-GDP ratio has remained relatively stable over the past decade, both before and after demonetisation. Black money is nothing but money generated in legitimate transactions that are hidden from the government to avoid paying the transaction cost (usually tax) in the economy. This is usually done by using physical cash. This cash after that must be processed to convert into consumption or investment.

B. Regression Analysis:-

Model 1: Digital Transactions= -2813.1 + 0.00027GDP + 592.38D1

Model 2: Black money = 5.576 + 0.083D1

Through the regression models, the impact of demonetisation on black money and digital transactions can be analysed. From model 1 (Regressing digital transactions on GDP and demonetisation) It can be inferred that post-demonetisation, the digital transactions have been estimated to have increased by an average of 592.38 crores while for a unit rise in GDP, the volume of digital transactions rose by an average 0.000275 crore rupees. Therefore, indicating that after demonetisation, the volume of digital transactions has increased steadily and the proportion of digital transactions in the GDP is estimated to increase with successive increases in GDP. The significance of the model is tested by hypothesis testing for the null:

Ho: The independent variables cannot explain the changes in the dependent variables.

Since the value of f obtained (15.5) is significant, the null hypothesis is rejected and the model is

significant. Additionally, the coefficient of goodness of fit of the model is 81% which also supports the significance of the model estimation that the change in the dependent variables can be explained by the changes in the independent variables.

From model 2 (Volume of Direct Taxes on demonetisation) it can be inferred that for the post-demonetisation years, the volume of direct taxes is 0.08 more than that for the pre-demonetisation years. Hence indicates that after demonetisation, the instances of tax evasion have minimised therefore the volume of black money in the system has reduced and from model 1 the volume of digital transactions has risen. Therefore, in the post-demonetisation years, the volume of digital transactions has increased while black money has decreased. For this model, the coefficient of goodness of fit is 3.5% which is extremely small. This can be attributed to several reasons, most specifically to the small size of the sample (10 values).

The demonetisation of 2016 was quite different from the previous demonetisation of 1978. The 2016 demonetisation aimed at the following two things:

1) Tackling Black Money - The main aim of demonetising the higher denomination banknotes (₹ 1000 and Rs.500) was to reduce the flow of black money in the economy. However, 99% of the banknotes were deposited back to the RBI indicating that either most of the black money held in cash was legitimised or not held in cash at all. Therefore, the analysis from the point of view of the currency in circulation did not yield successful results for the goal envisioned by the government. However, the increasing proportion of taxes measured through the volume of direct taxes is indicative of the increase in the proportion of direct taxes in the system after demonetisation. This can be connected to the next aim which was more

successfully brought about because of the demonetisation of 2016 - The Digitalisation of Transactions.

2) Digitalisation of transactions - The Indian government has constantly been promoting 'Digital India' by facilitating a cashless economy to enhance transparency in financial transactions. For a short period immediately after demonetisation, there was a severe shortage of printed notes (owing to the mass demand for exchanged notes); this initiated cashless transactions in the economy through the introduction of multiple e-transaction platforms, most prominently - Unified Payments Interface (UPI).

The short-run effects of demonetisation can be understood more effectively through the IS-LM framework, corresponding to the shifts in the IS and LM curves in the economy. Because of the note ban and the slow inflow of the new banknotes, the economy witnessed a fall in money supply (in the short run); because of this fall in money supply, the LM curve shifted leftwards hence, increasing the rate of interest. Additionally, because the people did not have banknotes at their immediate disposal, their consumption level dropped leading to the fall in the aggregate demand. This drop in aggregate demand led to a leftward shift in the IS curve, as a consequence, the interest rates would reduce. Since the magnitude of the fall in interest rates would be much larger than the rise, hence in the short run, both the GDP and interest rates would fall. Hence, as represented by the graph below, both the GDP and rate of interest dropped from Y and r to Y' and r' as a short-run consequence of demonetisation. The long-run implications of demonetisation are explained by the regression models and the time series analysis. It can be inferred that demonetisation has impacted both volumes of black money and digital transactions in the long run. The threefold impact of demonetisation on these
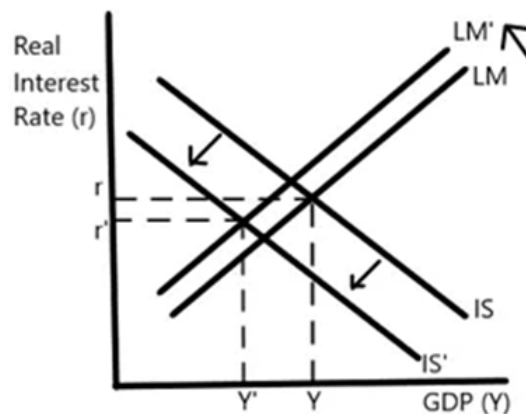
Figure- Leftward shift in the IS and LM curves

variables is explained below:

1) Tackling Black Money - Improving the efficiency and transparency of the tax department.

Problem: The term "black economy" refers to all the activities that help in using this hidden cash, making profits, and spending it without the government knowing. So, the first step to tackle this is to fix the problems in the tax system. Based on Table V in Appendix II, the growth rate of direct tax volume accelerated from 7.9% in 2015-16 to 12.1% in 2016-17, the year after demonetisation. The consistent growth in direct tax revenue suggests an expanding tax base and a reduction in tax evasion, indicating improved compliance. Demonetisation is credited with reducing black money by formalising the economy, making transactions more transparent and increasing digitalisation. Another important aspect to be noted here is the cumulative impact of the Goods and Services Tax. The GST Impact (%) column shows the percentage change in Direct Tax Volume from the previous year, minus the percentage change in Direct Tax Volume from two years ago. This is a way to measure the impact of GST on Direct Tax Volume. As can be seen, the GST Impact (%) has been positive since 2017-18, suggesting that GST has had a positive impact on Direct Tax Volume. However, the COVID-19 pandemic led to a sharp decline in economic activity and

hence a reduction in tax collection showing a negative impact.

2) GST Regime - Another policy implemented to enhance transparency in transactions has been the replacement of multiple indirect taxes with the GST a single tax, simplifying the tax structure and reducing the scope for tax evasion. This has led to increased compliance among businesses, expanding the tax base and reducing the overall level of black money. The GST's digital infrastructure, including online registration and electronic invoice generation, has further enhanced the transparency and traceability of transactions. The GST's simplification of the tax system and reduction in black money have improved the efficiency and transparency of the economy, making it more resilient to external economic challenges.

3) Evolution of India's Digital Ecosystem - India's digital ecosystem has witnessed tremendous growth and evolution after the demonetisation coupled with the effects of internet penetration, and the rise of e-commerce. One prominent development here is that of the UPI - Unified Payment Interface in 2016. The UPI along with BHIM - Bharat Interface for Money has simplified the process of digital payments also enabling real-time inter-bank transactions. In 2017, one year after demonetisation, UPI witnessed a year-on-year (YoY) growth of 900% (National Informatics Centre). Even during the Pandemic years, the UPI presented itself as the most convenient mode of transactions while maintaining the COVID-19 protocols, indicative of the 63% YoY growth in UPI transactions with more than INR 4.73 trillion being processed in December 2020. However, it must be noted that while demonetisation has been a vital factor for this growth in digital transactions, other factors like increasing smartphone and internet penetration in India and e-commerce growth have been prominent.

The e-commerce market in India is expected to grow at a 31% CAGR (Compound Annual Growth Rate) and reach the $200 billion mark by 2026. (National Informatics Centre)
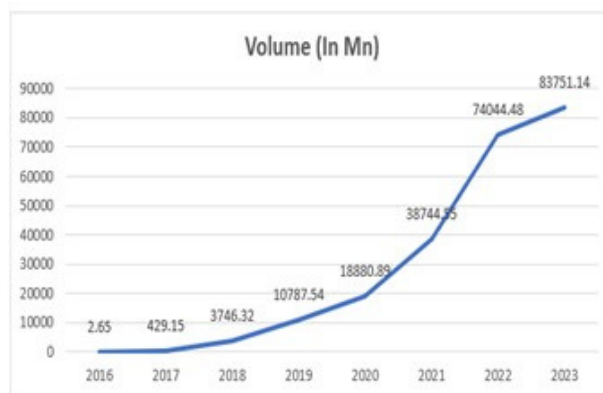
Source:- National Informatics Centre, Government of India, November 1 2023

As demonstrated by regression model 1, compared to pre-demonetisation years, the volume of digital transactions has seen huge spikes after demonetisation, therefore demonetisations can be credited as an initiating factor in the establishment of the digital payment ecosystem in India. Supported by multiple public and private entities, the digital payment volume accounted for 8,840 Crores of Digital Payment Transactions in FY 2021-22, 87.20% Savings and Current accounts seeded with Aadhaar Number and 81.05% Savings and Current accounts seeded with Mobile Number. A comprehensive and integrated Digital Payments dashboard composed of 118 private sector and regional, rural and public sector
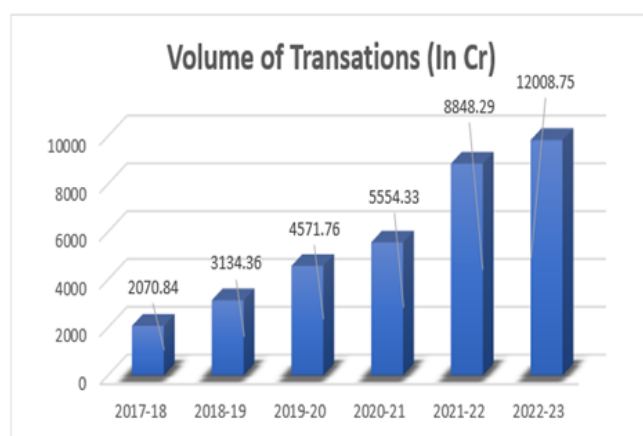
banks presents the following year-on-year growth of digital transactions. Hence, in an economy as huge and diverse as the Indian economy, it is difficult to credit any developmental change solely to a singular decision or phenomenon. It is always a culminated effect of several factors that result in a notable change. In the case of digital transactions too, multiple factors played a part in building the digital payment ecosystem in India. However, the inception as a response to demonetisation which in itself had many short-term difficulties and the embarkment of the GST regime later ascertained the resilience of the Indian economy.

Policy Recommendations

The rationale behind demonetisation was elucidated by three primary economic objectives —wiping out black money, eradicating fake currency notes and creating a cashless economy by pushing digital transactions. Although demonetisation targets the use of large-denomination cash notes to curb black money, it doesn't directly address other forms of hidden wealth, such as offshore accounts, benami properties or investments in assets like gold. The root causes of black money are often linked to corruption and tax evasion. People may hide income to avoid paying taxes or engage in corrupt practices to accumulate wealth illegally. While demonetisation can make it harder to use undisclosed cash, it doesn't directly tackle the deeper issues of corruption and tax evasion. These require broader policy measures, such as tax reforms, anti-corruption measures and improved governance.

The income tax department should strengthen its intelligence system. It should keep a close watch on suspected cases of tax evasion. Simplify tax procedures, reduce rates and offer incentives to motivate people to pay taxes. India's GST system, while a step forward, still overlaps with

certain state-level levies like state integrated and can't talk GST and layers taxes on certain goods. This creates confusion, compliance costs, and inefficiencies. Overlapping taxes discourage economic activity through higher transaction and administrative costs for businesses and consumers. It leads to cascading taxes, raising final product prices and reducing demand. Policies focused on streamlining GST rates or enabling a banking transaction cost across all transactions at a minimal percentage will equalise the playing field. Estonia implemented a flat 20% VAT on all goods and services, eliminated complexity and boosted compliance. Tax revenues increased despite the lower rate, showcasing the efficiency gains from a simpler system.

Minimising Exemptions and Deductions: India's tax code is riddled with numerous exemptions and deductions for specific sectors or activities. These create loopholes, lead to administrative burdens, and distort resource allocation. Exemptions and deductions can favour certain industries or individuals, creating unfairness and inefficiency. They also reduce the tax base, leading to higher rates for remaining taxpayers. Hence, there is a need to conduct a comprehensive review of exemptions and deductions, eliminating those that no longer serve a valid purpose or distort economic activity and phasing out complex deductions in favour of simpler, broader allowances. For example, in Chile, a gradual reform in the 1980s eliminated numerous exemptions and deductions, simplifying the tax code and boosting revenues. This enabled lower tax rates for all, promoting investment and growth.

Tackling Counterfeit notes: According to the RBI, in FY 22 counterfeit currency for ₹ 10 and ₹ 20 notes increased by 16.45 and 16.48% respectively. Fake Rs 200 notes rose 11.7 per cent. Counterfeit notes detected in denominations of Rs 50 and Rs 100 declined

28.65 and 16.71 per cent, respectively, the report showed.

- Australia's transition to polymer banknotes in the late 1980s significantly increased security and made counterfeiting more difficult. This could be a long-term solution for India, though initial production costs might be higher.
- Decentralised production: Australia's banknotes are printed by multiple private security firms, reducing the risk of a single point of failure or compromise in the production process.
- The Bank of England's "Think. Check. Spend." campaign educates the public on how to identify fake notes. Similar targeted campaigns in India, tailored to different regions and demographics, could raise awareness and encourage vigilance.
- Switzerland prioritises security features for its high-value currency, making counterfeiting of those notes less profitable and more challenging.

India could consider similar measures while ensuring adequate security for all denominations.

Limitations

- For black money, there is no official data available to demonstrate the volume of black money in the system. Hence the amount of direct taxes is used as a proxy for black money. However, this measure does not include all forms of black money in the system and is only an estimated proxy.

- Since digitalisation has been actively recorded only recently, the data used for the regression based on the volume of digital transactions is relatively limited.

Conclusion

Demonetisation was a historic policy adopted in the Indian economy. There were several implications of this move, both in the short run and the long run. While the move was intended to reduce the volume of black money in the system, it also had several other ramifications. The 2016 demonetisation was one of a kind, yet not the first. However, the previous demonetisations of 1946 and 1978 occurred in times when there was negligible internet penetration and a scarcity of bank coverage, during the demonetisation of 2016, these problems were sparse because of the strong internet penetration, 100% bank coverage, extensive computerisation of banking services and taxpayers' identification through PAN.

Demonetisation aimed at reducing the volume of black money in the system, which was achieved in the form of an increased proportion of direct taxes in the GDP after demonetisation; however, 99% of the banknotes were deposited back to the RBI indicating that a large proportion of black money was also held by the people as other assets like real estate and gold. Regardless, the large-scale digitalisation was a demonstration of the resilience of the Indian economy. Demonetisation can be seen as the prime catalyst in fostering e-transactions in India. As noted through the records from various banks, after 2016, apprehensions regarding holding liquid cash compelled the majority of the population to adopt digital modes of payment for their bigger transactions and with the establishment of the UPI today, e-transactions have gained a strong momentum even for regular small amount transactions. Therefore, although the main aim of demonetisation was a reduction in black money, digitalisation was a more fruitful consequence.

Through the regression models (1) and (2) the two consequences have been analysed based on

how they have been impacted by demonetisation. However, it must be noted that both these consequences, although strongly impacted by demonetisation, were not solely outcomes of the same. Several other socio-economic factors impacted the two, including the GST regime adopted by the government of India soon after, the COVID-19 pandemic and a significant growth in e-commerce establishment in India have been other notable factors. The GST regime marked a change in the taxing system improving the transparency in transactions by simplifying the tax structure with a singular tax replacing multiple indirect taxes. The COVID-19 pandemic fostered cashless transactions through contact-free purchases.

Similarly, the strengthening of e-commerce through major platforms like 'Amazon' and 'Flipkart' penetrating deep interiors of the country as well as the 'Swiggy-Zomato' revolution enhanced the digitalisation of the economy and increased the transparency of the economy. Further, a reduction in tax evasion and an increase in tax compliance has been witnessed post-demonetisation has enabled it to act as a tool for creating a formal economy. The development of the UPI and BHIM has led to an approximate volume of digital transactions of ₹12008 crore in 2022-23 from ₹2070 crore in 2017-18. Hence, digitalisation has been the tool through which demonetisation has fostered the economic resilience of the Indian economy.

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Table III. Moving Averages Calculation - Tax GDP Ratio

Year	Tax- GDP Ratio	Moving Average	12-month moving average	24-month moving average
2010-11	5.81%	-	5.81%	0.004704166667
2011-12	5.48%	-	5.65%	0.0045875
2012-13	5.53%	5.65%	5.51%	0.004645833333
2013-14	5.62%	5.51%	5.58%	0.004654166667
2014-15	5.55%	5.58%	5.59%	0.004591666667
2015-16	5.47%	5.59%	5.51%	0.004583333333
2016-17	5.53%	5.51%	5.50%	0.004745833333
2017-18	5.86%	5.50%	5.70%	0.00495
2018-19	6.02%	5.70%	5.94%	0.0046875
2019-20	5.23%	5.94%	5.63%	0.002179166667
	-	5.63%	-	0.023375

Appendix II

Multiple regression analysis of digital transaction on Gross Domestic Product of India and demonetisation as a dummy variable and simple linear regression analysis of black money on demonetisation.

TABLE I. Data for Regression Model 1

YEAR	Total Direct Tax Volume (In ₹. Crore)	GDP Current Market Price (₹ Crore)	demonetisation (Pre=0; Post=1)
2010-11	445995	7674148	0
2011-12	493987	9009722	0
2012-13	558989	10113281	0
2013-14	638596	11355073	0
2014-15	695792	12541208	0
2015-16	741945	13567192	0
2016-17	849713	15362386	1
2017-18	1002738	17098304	1
2018-19	1137718	18886957	1
2019-20	1050681	20074856	1

Table Ⅱ. Data for Regression Model 2

Year	Total number of digital transactions (in crore)	Demonetisation (Pre=0; Post=1)
2010-11	50.2	0
2011-12	67.8	0
2012-13	93.2	0
2013-14	127.7	0
2014-15	181.6	0
2015-16	292.8	0
2016-17	1004	1
2017-18	2,071	1
2018-19	3,134	1
2019-20	4,572	1

Table Ⅲ. Regression Statistics of Model 1

Multiple R	0.903205369				
R Square	0.815779939				
Adjusted R Square	0.763145635				
Standard Error	773.4307564				
ANOVA					
	df	SS	MS	F	Significance F
Regression	2	18542873	9271436	15.49902	0.002683362
Residual	7	4187366	598195.1		
Total	9	22730239			
	Coefficients	**Standard Error**	**t Stat**	**P-value**	
Intercept	-2813.169999	1394.807	-2.01689	0.083513	
GDP Current Market Price (Rs. Crore)	0.000275321	0.000127	2.170415	0.066576	
demonetisation (Pre=0; Post=1)	592.3855006	1034.819	0.572453	0.584924	

Table IV. Regression Statistics of Model 2

Multiple R	0.188712839				
R Square	0.035612536				
Adjusted R Square	-0.084935897				
Standard Error	0.237521929				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.016666667	0.016666667	0.295420975	0.601580387
Residual	8	0.451333333	0.056416667		
Total	9	0.468			
	Coefficients	Standard Error	t Stat	P-value	
Intercept	5.576666667	0.096967921	57.51042806	9.27829E-12	
demonetisation (Pre=0; Post=1)	0.153319746	0.543526425	0.601580387		

Table V. Cumulative Impact of GST and Demonetisation on Tax Collection

Year	Total Direct Tax Volume (In ₹ Crore)	Moving Average	12-Month Moving Average	24-Month Moving Average	Direct Tax Volume Change (%)	GST Impact (%)
2010-11	445995	445995	445995	445995	NaN	NaN
2011-12	493987	469991	469991	469991	10.760659	NaN
2012-13	558989	526448	526448	510990.5	13.158646	2.397987
2013-14	638596	598792.5	598792.5	571789	14.241246	1.0826
2014-15	695792	667194	667194	624793	8.956523	-5.284723
2015-16	741945	718868	718868	670076.5	6.63316	-2.323363
2016-17	849713	803840	803840	735973	14.525066	7.891905
2017-18	1002738	926225.5	926225.5	827793	18.009022	3.483956
2018-19	1137718	1070228	1070228	945971.5	13.461143	-4.547878
2019-20	1050681	1090699.5	1090699.5	1005688.5	-7.650138	-21.111282

Environment Kuznets Curve in the Context of Asia

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Abstract

This empirical paper aims to examine the EKC "(Environment Kuznets Curve)" relationship (Holtz-Eakin, Selden, 1995) within the context of both developed and developing countries in South and Southeast Asia. This paper also looks to test the revised EKC hypothesis proposed by Dasgupta and others (Dasgupta et al, 2002) in the context of the chosen countries. The investigation of EKC will enhance our understanding of the relationship between economic growth and environmental degradation particularly in developing countries, which have faced a different growth path in comparison to the regular "industry-led" structural change pattern that was followed in the Western world. The paper examines 13 countries in South and Southeast Asia and performs quadratic regressions (Holtz-Eakin, Selden, 1995) and time lag regressions (Taguchi, 2012) on the same to find the relevant turning point for the EKC relationship in these countries. This paper finds that the turning point values are significantly higher than estimated by the current literature. In the case of SO2 emissions, the EKC relationship is also in question. These findings serve as warning signs for policymakers, as a grow first, clean up later method doesn't seem feasible anymore given the high turning points and the pressing problem of climate change.
JEL Classification : C33, C21, Q56, Q53, O13

Introduction and Background

Economic growth and environmental pollution are frequently perceived as trends that move together. The relationship between economic growth and environmental pollution is a vital one as it raises questions on the environmental cost of economic growth and whether a country is willing to pay that environmental trade-off. The Environmental Kuznets Curve (EKC) remodels the Kuznets curve relationship of an inverse U shape in the context of economic growth and environmental degradation in the form of CO2 and SO2 emissions.

The Environmental Kuznets Curve depicts an empirical relationship between pollutant emissions and economic growth. The curve hypothesises that during the early stages of development, countries are more focused on economic growth and are willing to take on the

costs of environmental degradation for the same. Then comes a point where the cost of economic degradation equates to the benefit achieved from economic growth. This is the tipping point, post which countries are more focused on reducing economic degradation as the costs of it overshadow the benefits of economic growth. This transition is modelled by the inverted U-shaped relationship between economic growth (with GDP per capita on the x-axis) and environmental degradation (with CO2 and SO2 emissions on the y-axis). The EKC was empirically proved in a 1995 paper by Holtz-Eiken and Selden (Holtz-Eiken, Selden, 1995). The paper looked to prove the EKC relationship by graphing out the per capita CO2 emissions of different countries across their GDP per capita values over the years. This paper's policy recommendations materialise in favour of economic growth, as the relationship seems to suggest that through enough economic

growth, carbon emissions and, in turn, environmental degradation can be reduced. According to Dasgupta and co-authors, Holtz-Eiken and Selden's paper has had the following impact: "In developing countries, some policymakers have interpreted such results as conveying a message about priorities: grow first, then clean up." (Dasgupta et al, Pg 147, 2002)

The current EKC relationship is formulated in the Western context of countries that have acquired their economic growth through industrialisation and control of markets in colonies. There is a need to study and analyse this hypothesis in the context of lesser developed countries located in Africa and South Asia that have had to approach economic growth in a different structural manner and a different world context. Presently, developing countries encounter a distinct economic context in terms of globalisation, greater climate consciousness, political instability and an evolution of economic theory that doesn't rely heavily on industrialisation as the backbone for economic growth. It is precisely this change in context that makes Dasgupta and his co-authors theorise and support a revised EKC model that predicts a lower turning point in the EKC curve for developing countries (Dasgupta et al, 2002). With a rise in global climate consciousness, pollution is receiving increased policy attention and controlling emissions has become a priority. These changes may help contain the problem earlier and hence lower the amount of economic growth needed before pollution is emphasised (Dasgupta et al, 2002). Below is a graphical representation of the revised EKC hypothesis.
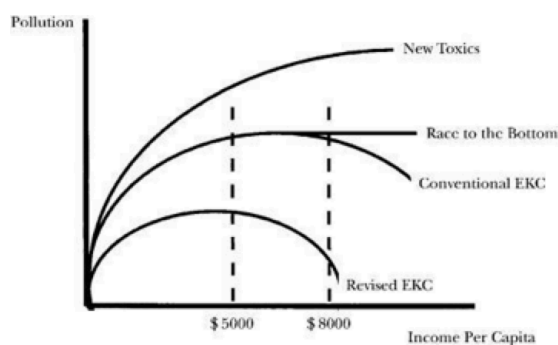

Figure 1: Alternate EKC hypotheses, Source: (Dasgupta et al, Pg 148, 2002)

Countries in South Asia and Southeast Asia serve as a good baseline to study this revised EKC hypothesis, as there is a set of developed and developing countries in this part of the world that have experienced a different development story and historical global context. For example, countries like South Korea have focused on a trade-based model to power structural change rather than a highly private industrial sector pushing growth upward. Studies in these areas have boosted support for the revised EKC model, as data shows that for certain countries, a lower turning point for SO_2 emissions has been achieved; however, this change is not reflected in the case of CO_2 emissions (Taguchi, 2012). This paper hopes to extend the current literature by expanding the time period and the set of countries on which the EKC hypothesis and its revised versions have been tested, especially in the South Asian context. This paper aims to find a more detailed and conclusive result about the EKC hypothesis and the other scenarios proposed to conclude whether the EKC hypothesis stands across countries, time and contexts.

Data and Descriptive Statistics:

This section talks about the datasets used and provides some descriptive statistics to motivate the analysis. This paper aims to test the EKC hypothesis and the other EKC scenarios in the context of developed and developing countries in South Asia. The countries this paper looks to analyse are Bangladesh, China, India, Indonesia, Nepal, Thailand, Malaysia, South Korea, Taiwan, the UAE, Singapore, Japan and the Philippines.

For carbon emissions, this paper's data comes from the Oak Ridge National Laboratory's Carbon Dioxide Information Analysis Center

(CDIAC). The variable considered is total carbon emissions per capita from fuel consumption, net of gas flaring. This paper uses Penn World Table version 10.01 to generate GDP per capita values for different countries across time. This data is an updated version as compared to version 5.0 used in the 1995 paper by Holtz-Eiken and Selden (Holtz-Eiken, growth, carbon emissions and, in turn, environmental degradation can be reduced. According to Dasgupta and co-authors, Holtz-Eiken and Selden's paper has had the following impact: "In developing countries, some policymakers have interpreted such results as conveying a message about priorities: grow first, then clean up." (Dasgupta et al, Pg 147, 2002)

For sulphur dioxide emissions, this paper uses Anthropogenic Sulphur Dioxide Emissions from the National and Rural Data Set by Source Category, version 2.86, which is distributed by the NASA Socioeconomic Data and Applications Centre (SEDAC).

Next, we visually examine the relationships between GDP per capita values and CO2 and SO2 emissions per capita values. Figure 2 seems to suggest the existence of an EKC relationship between GDP per capita and CO2 emissions per capita for the given subset of countries chosen. However, Figure 3 seems to suggest the opposite, with an N-shaped relationship between GDP per capita and SO2 emissions per capita. The N-shaped curve contradicts the conclusions in the existing literature about the presence of a revised EKC relationship between GDP per capita and SO2 emissions per capita (Taguchi, 2012). These differences in results further motivate the study of the EKC relationship and its revised version in the context of South Asian countries.
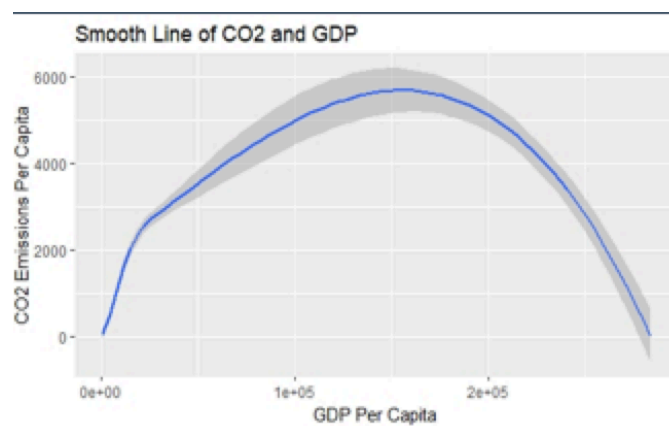

Figure 2: Shows an EKC relationship between GDP per capita and CO2 emissions per capita.
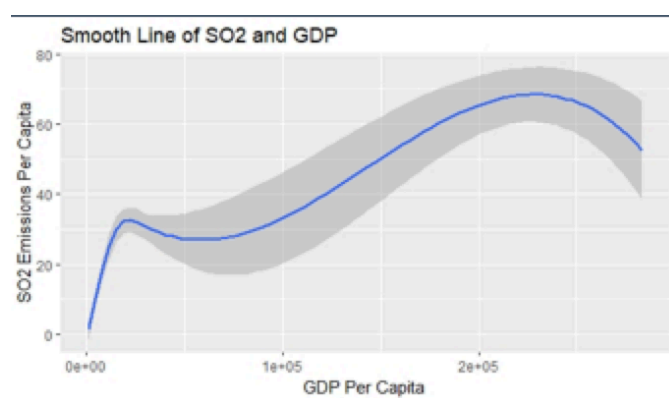
Figure 3: Shows an EKC relationship between GDP per capita and SO2 emissions per capita.

Empirical Strategy:

To study the EKC hypothesis and identify the turning point, the paper plans on using the regressions mentioned below. These regressions and the use of the 1986 USD value as a benchmark stem from the methodology followed in the existing literature (Holtz-Eiken, Selden,1995). In their revolutionary empirical paper on the EKC hypothesis, Holtz-Eiken and Selden followed a similar regression model while using the above-mentioned sources for population and CO2 emission data.

$$CO2_{it} = \beta_0 + \beta_1 \, y_{it} + \beta_2 \, y2_{it} + \lambda t + c_i + u_{it}$$

$$SO2_{it} = \beta_0 + \beta_1 \, y_{it} + \beta_2 \, y2_{it} + \lambda t + c_i + u_{it}$$

Where CO2it: carbon emissions per capita.
SO2it: sulphur dioxide emissions per capita.
yit: GDP per capita based on expenditure-based measure and expressed in 1986 USD. λt: Year fixed effects. ci: Country fixed effects. uit: stochastic error term. i and t index country and year, respectively.

To test out the revised EKC hypothesis and turning points after accounting for past emissions, this paper tries to replicate a time-lag regression model similar to the one in the existing literature (Taguchi, 2012) which is mentioned below:

$$CO2it = \beta0 + \beta1\ yit + \beta2\ y2it + CO2i(t-1) + \lambda t + ci + uit$$

$$SO2it = \beta0 + \beta1\ yit + \beta2\ y2it + SO2i(t-1) + \lambda t + ci + uit$$

Where CO2it: carbon emissions per capita.
SO2it: sulphur dioxide emissions per capita.
yit: GDP per capita based on expenditure-based measure and expressed in 1986 USD. λt: Year fixed effects. ci: Country fixed effects. uit: stochastic error term. i and t index country and year, respectively.

All of these regressions are run on a merged panel data subset with country and year-fixed effects, clustered at the country level. The final panel data set used includes data related to population, GDP, CO2 and SO2 emissions. This data set is further subdivided to only include the specific South Asian countries being studied in this paper, which include Bangladesh, China, India, Indonesia, Nepal, Thailand, Malaysia, South Korea, Taiwan, the UAE, Singapore, Japan and the Philippines.

Empirical Results:

Tables 1 and 2 present the results of the quadratic regression conducted to assess the EKC relationship for the selected countries.

Table 1 represents the regression run for the relationship between CO2 emissions per capita and GDP per capita. The turning point for this EKC relationship is $56,124.8 which is much higher compared to the turning point in the existing literature, which is $35,428 (Holtz-Eakin, Selden, 1995). According to the regression, a one-unit increase in GDP per capita will lead to a 0.133 unit increase in CO2 emissions per capita. All the coefficient values in the regression are significant. The significant coefficient values of β1 and β2 seem to suggest the existence of an EKC relationship.

	Dependent variable:
	CO_2pc
gdppc	0.133^{***}
	(0.025)
I(gdppc2)	-0.00000^{***}
	(0.00000)
Observations	626
R^2	0.928
Adjusted R^2	0.919
Residual Std. Error	465.446 (df = 557)
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 1: Quadratic regression on CO2 emissions per capita and GDP per capita Results

Table 2 represents the regression run for the relationship between SO2 emissions per capita and GDP per capita. The turning point for this EKC relationship is $64,971.64. According to the regression, a one-unit increase in GDP per capita will lead to a 0.001 unit increase in SO2

emissions per capita. However, it is important to note that this coefficient value is not significant. The fact that none of the coefficients are significant and the high turning point, coupled with the N-shaped smooth curve we saw earlier, raises doubts over the existence of an EKC relationship between SO2 emissions per capita and GDP per capita.

	Dependent variable:
	SO_2pc
Gdppc	0.001
	(0.001)
I(gdppc2)	-0.000
	(0.000)
Observations	4,186
R^2	0.763
Adjusted R^2	0.754
Residual Std. Error	23.171 (df = 4031)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 2: Quadratic regression on SO2 emissions per capita and GDP per capita results

Table 3 and Table 4 represent the time-lag regression results. These regressions were run to test the turning points when accounting for past emissions in the selected countries. The results may also provide us with insight into the revised EKC hypothesis.

Table 3 represents the time lag regression run for the relationship between CO2 emissions per capita and GDP per capita. The turning point for this EKC relationship is $60,420.1, which is

much higher compared to the turning point in Table 1, which is $56,124.8. According to the regression, a one-unit increase in GDP per capita will lead to a 0.0253-unit increase in CO2 emissions per capita. However, this coefficient value is not significant. The regression also projects that a one-unit increase in CO2 emissions per capita last year would lead to a 0.7784257-unit increase in CO2 emissions per capita in the current year. The positive lag coefficient seems to suggest that past emissions have a significant positive impact on the future emission rate. The high turning point also seems to suggest that countries in the global south are prioritising economic growth and are nowhere close to making a transition away from carbon-based fuels.

VARIABLES	co2pc
Gdppc	0.0253
	(0.0279)
c.gdppc#c.gdppc	-2.09e-07
	(2.24e-07)
L.co2pc	0.778***
	(0.133)
Constant	79.06*
	(41.33)
Observations	613
Number of id	13
R-squared	0.870
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Table 3: Quadratic time lag regression on CO2 emissions per capita and GDP per capita results

Table 4 represents the time lag regression run for the relationship between SO2 emissions per capita and GDP per capita. The turning point

emissions per capita. However, it is important to note that this coefficient value is not significant. The fact that none of the coefficients are significant and the high turning point, coupled with the N-shaped smooth curve we saw earlier, raises doubts over the existence of an EKC relationship between SO2 emissions per capita and GDP per capita.

	Dependent variable:
	SO_2pc
Gdppc	0.001
	(0.001)
I(gdppc2)	-0.000
	(0.000)
Observations	4,186
R^2	0.763
Adjusted R^2	0.754
Residual Std. Error	23.171 (df = 4031)
Note:	$^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 2: Quadratic regression on SO2 emissions per capita and GDP per capita results

Table 3 and Table 4 represent the time-lag regression results. These regressions were run to test the turning points when accounting for past emissions in the selected countries. The results may also provide us with insight into the revised EKC hypothesis.

Table 3 represents the time lag regression run for the relationship between CO2 emissions per capita and GDP per capita. The turning point for this EKC relationship is $60,420.1, which is

for this EKC relationship is $55,017.62, which is considerably lower than the turning point in Table 2, which is $64,971.64. According to the regression, a one-unit increase in GDP per capita will lead to a 0.000235-unit decrease in SO2 emissions per capita. The regression also projects that a one-unit increase in SO2 emissions per capita last year would lead to a 0.9784996-unit increase in SO2 emissions per capita in the current year. Both the GDP per capita coefficient and the lag coefficient are significant. The positive lag coefficient seems to suggest that past emissions have a significant positive impact on the future emission rate. A positive trend emerges from the small but significant negative coefficient of the GDP per capita term. This trend suggests that we may already be noticing a fall in SO2 emissions in high-income countries in Asia. The high turning point, however, suggests that a complete reduction in SO2 emissions will still take time and isn't possible anytime soon.

VARIABLES	(1) so2pc
Gdppc	-0.000235**
	(9.39e-05)
c.gdppc#c.gdppc	2.14e-09***
	(5.83e-10)
L.so2pc	0.978***
	(0.00521)
Constant	0.543
	(0.462)
Observations	613
Number of id	13
R-squared	0.954

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Quadratic Time Lag Regression on SO2 emissions per capita and GDP per capita Results

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Economic Impact of Increased Female Workforce Participation in India

Anjul Bhatia, Ishika Bhatia

Abstract

The increased participation of women in India's workforce holds the potential to catalyse economic growth, advance gender equality, and further social development. This research article examines the economic impact of heightened female labour force participation within the Indian context.

Drawing upon theoretical frameworks of Human Capital Theory and Gender Economics, the study explores the multifaceted dynamics underlying women's participation in the workforce. The scope of the study encompasses an analysis of trends, patterns and disparities in women's labour market engagement, with a focus on identifying the economic implications of increased participation. Utilising a mixed-methods approach, the research methodology incorporates data collection from various sources, including government reports, surveys and academic studies. Employing statistical analysis techniques, the study investigates key economic indicators, such as GDP growth, household income, poverty reduction and social welfare outcomes, to assess the economic impact of increased female workforce participation.

The findings reveal significant correlations between increased women's labour force participation and positive economic outcomes, including enhanced productivity, income growth and poverty alleviation. However, the analysis also highlights persistent challenges and barriers that hinder women's full integration into the workforce, such as gender-based discrimination, unequal access to education and training, and cultural norms.

In conclusion, this research underscores the importance of promoting women's workforce participation as a driver of inclusive economic growth and gender equality in India. The study contributes to the existing body of knowledge by offering insights into the economic implications of increased female labour force engagement and advocating for policy interventions to address barriers and enhance opportunities for women in the workforce.

Keywords: Women's workforce participation, Economic impact, Gender equality, India, labour market dynamics, Human capital, Social development.

JEL Classification : J16, J21, J24, J31, O15

Introduction

Female employment in India is intricately linked to female empowerment, a critical issue that has garnered considerable attention over the years.

The country's economic growth trajectory has significantly impacted the lives of Indian women, exerting a profound influence on female employment dynamics. According to the

National Statistics Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI), India's Periodic Labour Force Survey highlights the status of female employment in the country. Despite India's female labour force participation rate (FLFPR) remaining below the global average of 52.9 per cent for several years, there has been a commendable rise in women's empowerment, reflected in the increasing trend of female employment. The latest Periodic Labour Force Survey for 2022-23 indicates a notable increase in FLFPR for the prime working age group (15 years & above), reaching 37% in India. Structural improvements such as declining fertility rates and the expansion of women's education have propelled India's female LFPR on an upward trajectory. Presently, India stands as a country where one-third of women have joined the labour force.

Despite India's commitment to international agreements supporting women's economic empowerment, gender disparity in the labour market persists. This disparity encompasses various dimensions, including low labour force participation, wage inequality, occupational segregation and a high burden of unpaid care work. While the fall in female labour force participation can be attributed to multiple factors, including improved educational opportunities for girls and changing domestic responsibilities, addressing these challenges is imperative to harness the full potential of female participation in India's workforce and achieve broader human development goals.

Theoretical Foundation

The economic dynamics of female workforce participation in India are shaped by several key theoretical frameworks that illuminate the complex interplay between gender, labour and economic development. One such framework is the Human Capital Theory, which posits that investments in education, skills training and

health contribute to individuals' productivity and earning potential, thereby shaping their participation in the labour force. In the context of female employment, human capital theory emphasises the importance of educational attainment and skill development in facilitating women's entry into and advancement within the workforce. Empirical evidence suggests that improvements in women's access to education and training are associated with higher rates of labour force participation and greater economic empowerment.

Additionally, gender economics provides valuable insights into the structural factors that influence women's economic status and opportunities in society. Gender economics examines how social norms, institutional arrangements, and discriminatory practices shape gender disparities in labour market outcomes, including wages, job segregation and career advancement. This framework highlights the systemic barriers that hinder women's full integration into the workforce, such as gender-based discrimination, unequal access to employment opportunities and the unequal distribution of unpaid care work. By analysing the gendered nature of economic systems and policies, gender economics offers a lens to understand and address the underlying causes of gender inequality in the labour market.

Furthermore, Feminist Economics offers critical perspectives on the intersections of gender, economics, and social justice. It draws on feminist theory and methodologies to challenge he traditional economic paradigms that overlook or undervalue women's unpaid labour, reproductive work and contributions to household welfare. This framework emphasises the need for gender-sensitive policy interventions that promote women's economic rights, enhance their bargaining power in the labour market, and address the structural barriers to gender equality.

By centring on women's experiences and perspectives in economic analysis, Feminist Economics seeks to advance inclusive and equitable economic development that benefits all members of society.

The Indian Context

The participation of women in the labour market in India is shaped by a complex interplay of social norms, economic factors, and structural dynamics. Numerous studies have attempted to understand and explain the decline in female labour force participation (FLFP) within the Indian context. These studies often draw on individual-level data from various rounds of the National Sample Survey (NSS), focusing on factors such as education, income, employment opportunities, and cultural norms as determinants of female labour market engagement.

The causal mechanisms affecting female economic activity are multifaceted and not easily generalised across contexts.
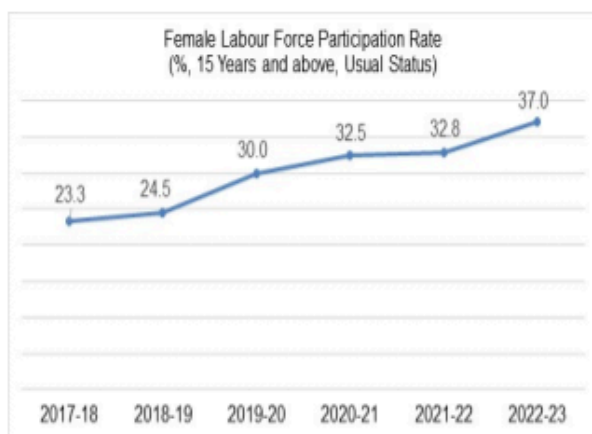

Figure 1: Female LFPR (in percent) over the years.
Source: Annual Report on Periodic Labour Survey (2022-23)

For instance, the impact of education, depends on both economic opportunities and cultural perceptions regarding the roles of women in the workforce, further mediated by the economic

status of the households. Traditional gender roles, where men are considered primary providers, may contribute to women's relative absence in the labour market, reflecting both individual and household preferences, often with class implications.

The rural-urban divide significantly influences female workforce participation. Rural areas may present fewer opportunities for females due to limited access to education and employment. On the contrary, urban areas may offer more diverse opportunities yet these opportunities are typically accompanied by challenges related to job availability and accessibility.
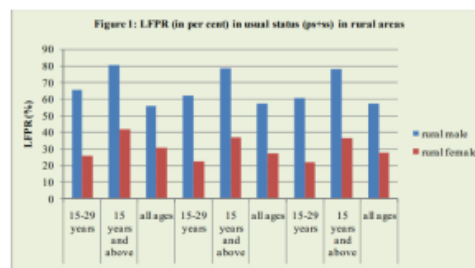

Figure 2: Female LFPR (in percent) in rural areas.
Source: Annual Report on Periodic Labour Survey (2022-23)
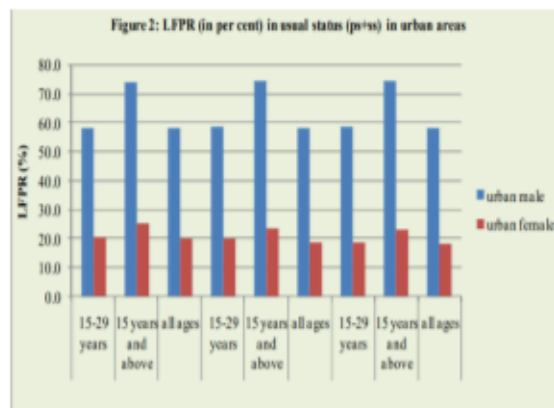

Figure 3: Female LFPR (in percent) in urban areas.
Source: Annual Report on Periodic Labour Survey (2022-23)

Furthermore, a class divide further shapes the involvement of females in the labour market. Socio-economic status often dictates access to education, employment opportunities, and the capacity to enlist domestic help, thereby

affecting ' participation in the workforce.

Cultural attitudes toward female workforce participation also contribute to the complex landscape of FLFP in India. Many families may prioritise traditional gender roles, giving precedence to females concentrating on domestic responsibilities. Additionally, within households, there might exist partiality between daughters and daughters-in-law regarding work outside the home, further influencing females' decisions regarding workforce participation.
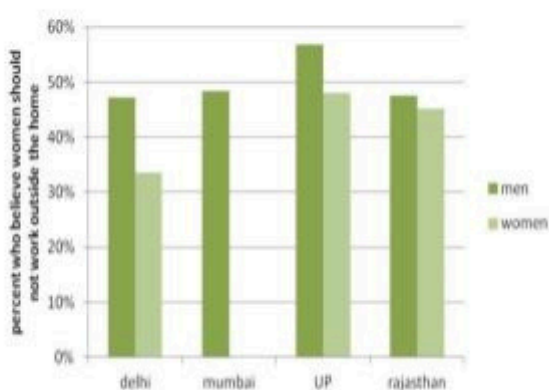

Figure 4: Percent of people who believe women should not work outside the home
Source: Rice Institute. The Stigma around Women's work

Moreover, economic factors such as rising uncertainty about future earnings may influence female labour force participation as a protective mechanism for households, particularly in rural areas during periods of economic distress. However, explanations solely relying on economic factors may not comprehensively account for the long-term decline in FLFP. While increased access to education could theoretically result in lower participation rates due to expanded opportunities for higher education, studies suggest that declining employment opportunities for females may also be a significant factor. The National Rural Employment Guarantee Act (NREGA) of 2005, which guarantees 100 days of employment per household annually and mandates equal pay for

men and women, had positively impacted female economic activity, as evidenced by studies utilising difference-in-difference frameworks. The National Rural Employment Guarantee Act (NREGA) of 2005, which guarantees 100 days of employment per household annually and mandates equal pay for men and women, had positively impacted female economic activity, as evidenced by studies utilising difference-in-difference frameworks.

In summary, the Indian context reveals a complex interplay of economic, social, and cultural factors influencing female labour force participation, underscoring the need for nuanced approaches to tackle the challenges and capitalise on the opportunities encountered by females in the workforce.

Objective

The main objective of this research is to examine the economic impact of increased female labour force participation in India. Specifically, the study aims to:

- Explore the relationship between increased female workforce participation and key economic indicators, such as GDP growth, household income, poverty reduction, and social welfare outcomes.
- Identify the factors that influence women's participation in the labour force and assess the extent to which these factors contribute to economic disparities and gender inequality
- Evaluate the effectiveness of existing policies and programs aimed at promoting women's economic empowerment and identify areas for improvement and intervention.

Hypothesis

Based on existing literature and theoretical

frameworks, we hypothesise that increased female labour force participation in India will positively correlate with higher GDP growth, household income, and social welfare outcomes. This hypothesis is informed by studies such as Klasen & Lamanna (2008), which suggest that greater gender equality in education and employment can lead to enhanced economic growth and development. Furthermore, we hypothesise that the engagement of women in the workforce will actively contribute to poverty alleviation and gender equality, leading to broader socio-economic development. This hypothesis draws from theories of Human Capital and Gender Economics, which argue that increasing women's access to employment opportunities can empower them economically, lower household poverty, and promote gender equality within society. Studies such as Malhotra (2017) and Mishra have demonstrated the interconnection between female labour force participation and poverty reduction, emphasising the potential of women's economic empowerment.

Methodology

This research employs a mixed-methods approach, combining quantitative analysis of secondary data with qualitative insights gathered from interviews and focus group discussions. Data sources include government reports, surveys, and academic studies, providing information on key economic indicators, labour market trends, and socio-cultural factors influencing women's workforce participation. Statistical analysis techniques and descriptive statistics are employed to examine the relationships between female labour force participation and economic outcomes. Concurrently, qualitative methods are employed to delve into the underlying dynamics and contextual factors that shape women's employment decisions.

Female Employment: Nature and Trend

Demographic Indicators

The Female Labour Force Participation Rate (FLPR) in India exhibits variations across different demographic indicators such as income deciles, education levels, marital status, and age groups. Interestingly, rural areas consistently demonstrate a higher FLPR compared to urban areas across all income deciles, reflecting distinctive employment dynamics.
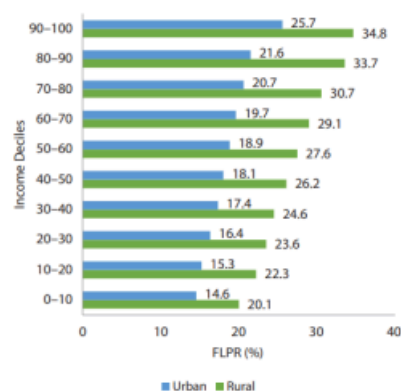

Figure 5: Income Decile Classes and FLPR in India, 2021–2022
Source: Asian Development Bank: A Statistical Portrait of the Indian Female Labor Force

In both rural and urban settings, FLPR tends to increase as income levels rise, indicating a correlation between economic prosperity and female workforce participation. Notably, while Agriculture remains a dominant sector for female employment across income deciles in rural areas, whereas the proportion of women engaged in manufacturing and services increases with rising income levels.

Moreover, examining FLPR by education levels reveals a U-shaped relationship, with women at the extremes of educational attainment (i.e., those with lower or higher education levels) exhibiting higher participation rates than those with secondary/senior secondary education.

Similarly, FLPR varies by marital status, with married women generally having higher participation rates, particularly in rural areas. Additionally, FLPR peaks within the age group of 35–54 in rural areas, while it is more evenly distributed across age categories in urban settings.
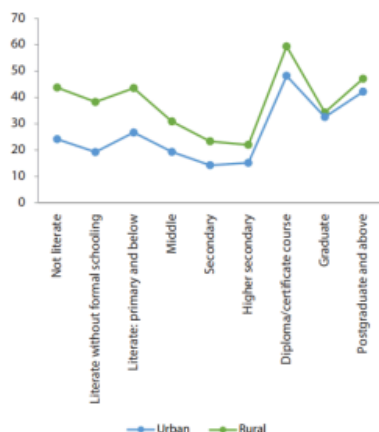

Figure 6: FLPR by Education Level Above 15 Years, 2021–2022 (%)
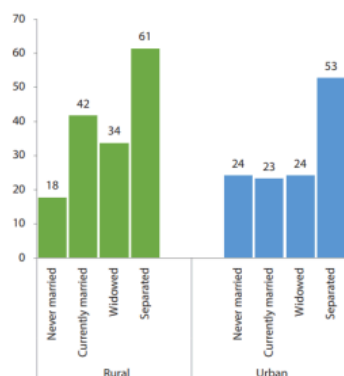*Source: Asian Development Bank:A Statistical Portrait of the Indian Female Labor Force*

Figure 7: FLPR by Marital Status for Women Above 15 Years, 2021–2022 (%)
Source: Asian Development Bank:A Statistical Portrait of the Indian Female Labor Force

Sectoral Indicators

A detailed analysis of FLPR trends across different sectors sheds light on the changing landscape of female employment in India. While FLPR among women workers has grown notably in rural areas, driven primarily by increased employment in agriculture, urban regions have experienced more diversified growth across various sectors including manufacturing, trade, retail, and services. Notably, the service sector emerges as a significant source of employment for women in urban areas, with roles in education, healthcare, and household services gaining prominence.

Table (10):Percentage distribution of workers in usual status (ps+ss) by broad status in employment for each industry of work

all-India rural persons

industry as per NIC-2008 (2 digit NIC Division codes and corresponding descriptions)	self-employed			regular wage/ salary	casual labour	all
	own account worker, employer	helper in household enterprise	all self employed			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01-03 (agriculture)	46.8	33.9	80.7	0.8	18.4	100.0
05-09 (mining & quarrying)	2.6	1.6	4.2	42.3	53.6	100.0
10-33 (manufacturing)	44.7	8.7	53.4	35.2	11.4	100.0
35-39 (electricity and water supply)	16.5	2.0	18.5	75.2	6.4	100.0
41-43 (construction)	10.4	0.4	10.8	2.6	86.6	100.0
05-43 (secondary)	22.8	3.4	26.3	16.0	57.8	100.0
45-47 (trade)	63.0	15.3	78.3	19.2	2.6	100.0
49-53 (transport)	51.6	1.1	52.7	35.9	11.4	100.0
55-56 (accommodation & food services)	47.6	16.9	64.5	25.6	9.8	100.0
58-99 (other services)	23.5	1.8	25.3	71.5	3.2	100.0
45-99 (tertiary)	44.8	7.7	52.5	42.7	4.8	100.0
total	41.0	22.0	63.0	12.2	24.8	100.0
sample workers	46,513	25,284	71,797	15,470	23,388	1,10,655

Table 1 – The sectoral distribution of rural female workforce
(Source – Annual report, PLFS, 2022-23)

Table (10): Percentage distribution of workers in usual status (ps+ss) by broad status in employment for each industry of work

all-India rural female

industry as per NIC-2008 (2 digit NIC Division codes and corresponding descriptions)	self-employed			regular wage/ salary	casual labour	all
	own account worker, employer	helper in household enterprise	all self employed			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01-03 (agriculture)	26.4	51.7	78.2	0.5	21.3	100.0
05-09 (mining & quarrying)	5.0	1.2	6.2	7.3	86.5	100.0
10-33 (manufacturing)	65.7	17.1	82.8	11.4	5.8	100.0
35-39 (electricity and water supply)	12.4	5.0	17.4	65.4	17.2	100.0
41-43 (construction)	0.2	0.3	0.5	2.6	96.9	100.0
05-43 (secondary)	43.3	11.3	54.6	8.8	36.6	100.0
45-47 (trade)	38.1	51.6	89.8	9.8	0.4	100.0
49-53(transport)	9.5	31.2	40.6	59.0	0.4	100.0
55-56 (accommodation & food services)	29.3	47.4	76.7	15.9	7.3	100.0
58-99 (other services)	11.3	1.7	13.0	84.8	2.2	100.0
45-99 (tertiary)	20.6	20.0	40.6	57.4	2.0	100.0
total	27.9	43.1	71.0	8.0	21.0	100.0
sample workers	12,971	17,231	30,202	3,654	7,148	41,004

Table 1 – The sectoral distribution of urban female workforce
(Source – Annual report, PLFS, 2022-23)

Occupational Indicators

The distribution of female workers across occupational categories further elucidates the nature of female employment in India. In rural areas, a significant proportion of female jobs are concentrated in agriculture and related occupations, followed by elementary occupations and craft workers. Conversely, urban areas exhibit a more diverse employment landscape, with women engaged in a range of occupations including service and sales workers, craft-related workers, managers, and professionals.

Despite this diversity, gender pay gaps persist across all occupational divisions, with men generally earning more than women.

Key Findings

The analysis of female employment trends reveals several key findings:

- Economic prosperity does not necessarily correlate with higher FLPR, suggesting complex socio-economic factors influencing female workforce participation.
- Women's employment patterns vary significantly across rural and urban areas, with distinct sectoral preferences and occupational distributions.
- Education and marital status play a role in shaping FLPR, highlighting the importance of socio-cultural factors in determining female labour force participation.
- Sector-wise analysis underscores the growing significance of the service sector in urban employment and the persistent dominance of agriculture in rural areas.
- Occupational disparities persist, with gender pay gaps observed across all sectors and occupations, indicative of broader gender inequalities in the labour market

Conclusion and Findings

While our research highlights several significant insights into the complex landscape of female employment in India, it also underscores additional key findings that enrich our understanding of this multifaceted issue.

Firstly, our analysis reveals that female labour force participation rates in rural areas surpass those in urban regions, challenging conventional assumptions about urban-centric development narratives. This disparity underscores the importance of tailoring policies and interventions to address the distinct needs and challenges faced by rural women, including access to education, vocational training, and employment opportunities.

A noteworthy addition to our discussion is derived from the recent Barclays report titled "India's breakout moment." This report not only reaffirms the importance of women's participation in the workforce but also quantifies the potential economic impact. By projecting an 8% GDP growth rate achievable through ensuring women comprise more than half of the new workforce by 2030, this report underscores the urgency of prioritising policies and initiatives aimed at enhancing female labour force participation. To address the challenges highlighted in our research and capitalise on the economic potential of increased female workforce participation, policymakers must adopt a multifaceted approach. Investments in education, vocational training, and skills development are crucial for enhancing women's employability and economic empowerment. Additionally, addressing gender-based discrimination and ensuring equal opportunities across sectors are equally important. Policies aimed at providing support for working mothers, such as affordable childcare services, parental leave, and flexible work arrangements, can play a significant role in bolstering women's labour force participation while accommodating their caregiving responsibilities.

In conclusion, while our research underscores persistent challenges and offers new perspectives, it also emphasises the importance of adopting inclusive and context-specific approaches to promote female workforce participation. By acknowledging the diversity of women's experiences and prioritising targeted interventions, India can unlock the untapped potential of its female workforce and pave the way for a more inclusive and equitable society.

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The Correlation of Money and Happiness

By Samarth Jhunjhunwala

Abstract

Money and happiness have always had a long-standing relationship with each other. Viewed as the most longed-for commodities of a rational human being, when observed as economic variables, these concepts continuously influence one another. This research aims to address this correlation and identify whether more money implies more happiness. With a thorough evaluation of micro and macroeconomic models, this study presents a comprehensive account of the monetary guide to happiness. It debunks myths and answers the question: "Are money and happiness positively correlated?"
Keywords: Happiness, Money, Wealth, Utility
JEL Classification : D31, D60, I31, O15

Introduction

As students, we've all written that hackneyed essay on the topic 'Money Can't Buy Happiness' at some point or the other. Upon close evaluation, we realise that our fifth-grade English teacher's favourite composition topic happens to be an actively debated paradox in the field of economics. In a society, where 'money' and 'happiness' are construed to be the most longed-for commodities, this research is an attempt to measure the correlation, if such a relationship does exist, between these two economic variables.

With a preliminary understanding of how economics functions, one can conclude with ease that a higher amount of wealth implies more happiness. However, upon delving deeper into this study we realise that this relation is, in fact, a lot more complex. I am basing this research on the hypothesis that happiness is positively correlated to wealth, however, the degree of this correlation is modest at best.

At the outset, we must appreciate that happiness as a variable has not always been a matter of study in economics since it bears a nature more qualitative than quantitative. Consequently, 'happiness' does not have a singularly accepted

definition in economics. For the purpose of this research, drawing from accepted definitions in the field of psychology, 'happiness' refers to the 'subjective well-being' (Diener, 2024)[1] of an individual at the micro level and individuals from an aggregate perspective.

What does existing literature have to say?

Traditional research by economists has found that a rise in wealth causes a rise in happiness, however, after breaching a given level of wealth, the rise in happiness begins to plateau. This means that there exists an upper limit until the attainment of which wealth impacts happiness. This upper limit is taken to be the point at which consumers satisfy their demand for necessities and comforts and enjoy a high standard of living.

In a study led by Dr Kahneman (Killingsworth et al., 2010)[2], it was found that on average, this upper limit is $100,000. What was subsequently concluded was that a rise in wealth, such that total wealth remains below $100,000 causes a rise in total happiness, but once the $100,000 mark is crossed, a rise in wealth does not impact happiness.

Total Wealth = W, Total Happiness = H
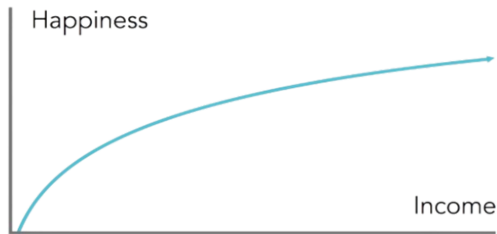$W \uparrow H \uparrow$
If W > \$100,000
$W \uparrow \quad H$

Figure 1: Existing literature overview

However, since this point of inflexion may differ from one consumer to another, owing to the subjective nature of 'happiness', it is difficult to agree to the said limit of \$100,000. However, this research is based on the fundamentals of this study which tries to convey the complex yet positive correlation these variables share.

Through this study, we will try and answer the following questions:
a) What is the nature of the correlation between happiness and wealth?
b) Does something like a 'satiation point' exist in this correlation?
c) Is it possible to quantify this satiation point?

Research Methodology

In this research, we are going to evaluate various economic models which have been proposed in subjects associated with the topic at hand. We will observe the behaviour of the two economic variables- 'happiness' and 'wealth' in each economic model and then draw 'model-based conclusions.' At the culmination of the paper, when we have derived conclusions from various economic models, we will subject them to a nexus which aims at solving this paradox.

With regards to statistical data for the sake of accuracy in results, we will be making use of

secondary data sources from experiments that have been conducted by economists in the past. All such data will be cited for the reference of the reader. The research is first being evaluated from a micro viewpoint wherein we will perform a consumer utility analysis. Subsequently, we will explore macro models to gain a more comprehensive understanding of the topic in question.

Model I: Maslow's Hierarchy of Needs

Background:

Maslow's hierarchy of needs is a motivational theory in psychology comprising a five-tier model of human needs, often depicted as hierarchical levels within a pyramid. From the bottom of the hierarchy upwards, the needs are physiological, safety, love and belonging, esteem and self-actualisation. Maslow went ahead and called the lower order needs 'deficiency needs' which are essential for one's survival and the top three levels were termed 'growth needs' which were developed in pursuit of better qualities of life.

This theory defines man's priorities of spending as their wealth rises. Essentially, as one fulfils a given level of their necessities they develop a desire to satisfy the next level up the pyramid.
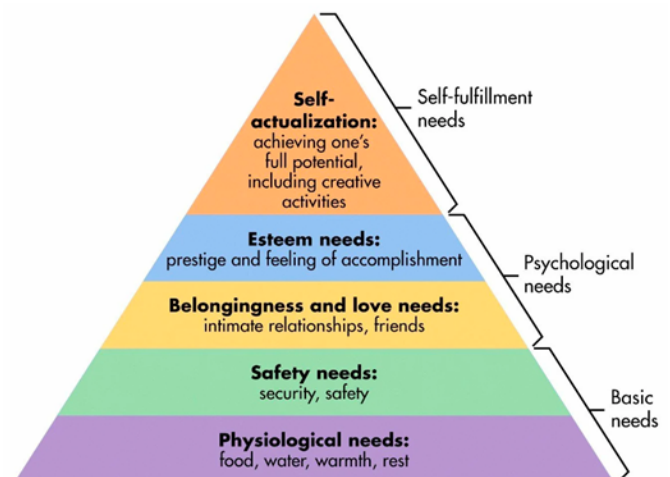

Figure 2: Maslow's Hierarchy of Needs

Objective:

To derive the correlation between happiness and wealth by first evaluating the relation between a) happiness and fulfilment of needs and b) wealth and fulfilment of needs and then superimposing the two curves to obtain the said correlation.

Observations:

Happiness-Need Relationship:
We will first compare the happiness derived, as an individual transitions from one level to another on the pyramid of needs:

An individual's first priority is the fulfilment of the basic necessities required for survival. If these needs are not satisfied, the consumer is likely to be unhappy. Therefore, we conclude that the bottom two levels of the hierarchy grant increasing happiness to the individual.

As the individual moves up the pyramid, we realise that the attainment of each level continues to grant happiness to the individual. However, relatively, the happiness derived at an upper level of the hierarchy is expected to be lesser than that from a lower level. This suggests that ΔH is higher when the individual lies on lower levels of the pyramid as opposed to a higher level.

Mathematically, $\Delta H^{necessities} > \Delta H^{comforts} > \Delta H^{luxuries}$ implies marginal happiness as we move up the pyramid is declining for an individual.
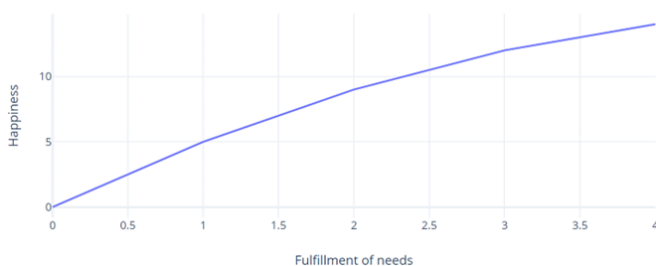

Figure 3: Happiness Needs Curve

Wealth-Need Relationship:
In the second stage, we are going to evaluate the relationship between the rise in wealth and how an individual progresses on the pyramid of needs:

Assumption: Wealth is being spent on products that grant maximum utility
As an individual's wealth rises, it becomes easy for them to fulfil their basic needs - since to satisfy them one requires basic financial resources. However, when we compare the rise in wealth with psychological needs and self-fulfilment needs, the relation gets blurred. This means that $W\uparrow$ does not necessarily imply that there will be a fulfilment of one's growth needs. Essentially, a rise in wealth can help fulfil our deficiency needs but can not always satisfy our growth needs.

Figure 4: Wealth Need Curve

Conclusions

Through this model, we can summarise our observations into two statements:
a) As we move up the pyramid, our needs get satisfied, increasing our happiness although at a decreasing rate.
b) As our wealth increases, we can move up the pyramid only for the fulfilment of deficiency needs, and not our growth needs.
Combining these two postulates, we will now derive the

Wealth-Happiness Relationship:
A rise in wealth causes a rise in happiness as an individual fulfils their deficiency needs. This implies a positive correlation between wealth and happiness in the first two stages of the pyramid. However, in the rest of the stages, the correlation between wealth and happiness cannot be concluded, because the needs are fulfilled through factors which need not be a rise in wealth.

Deficiency Needs: W ↑ H ↑

Growth Needs: W ↑ ⇏ H ↑

Figure 5: Happiness Wealth Curve

Model II: Fulfilment Curve

Background:

The fulfilment curve was a model described by Joe Dominguez and Vicki Robin (Dominguez et al., 1992)[3], in their book 'Your Money or Your Life'. It proposes a graphical representation of 'money' on the X-axis and 'fulfilment' on the Y-axis. The model explores the relation between the given two economic variables and presents a unique analysis.

Objective:

The fulfilment curve analysis is similar in approach to the previous model that was taken into consideration, however, the conclusions derived from this model are different from what we have already seen. Moreover, this model also answers the question of whether the happiness curve can become negative, after attaining
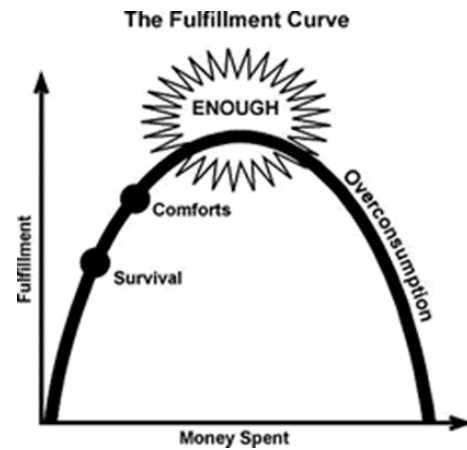
maxima at the point of inflection.

Figure 6: Fulfilment Curve

Assumptions:

a) The money is being spent on items that grant maximum utility

b) Fulfilment is the same as utility

c) Utility is positively correlated to happiness

Observations:

The fulfilment curve describes the relation between 'money spent' and 'fulfilment' to have 3 stages:

Stage 1: Survival: In this stage, the consumer purchases items of necessity, on which their survival depends. With every additional unit of money spent, there is a rise in fulfilment. Over here, marginal utility of money is increasing and this causes a rise in marginal fulfilment. This draws from the analysis of 'deficiency needs' which we had discerned under the previous model.

$$\Delta W \uparrow \Rightarrow MU \uparrow$$

Stage 2: Comforts and Luxuries: In this stage, the consumer purchases items which increase their quality of life and are referred to as 'comfort' and 'luxury' goods. The purchase of these goods also causes a rise in fulfilment, however, this occurs at a decreasing rate.

$\Delta W \uparrow \Rightarrow MU \downarrow$ (TU continues to rise)

As long as MU remains positive, TU continues to rise. When MU becomes zero and intersects the X-axis, TU is going to attain maxima. Beyond this, further spending of W will cause MU to become negative, which propels TU to decline.

This point, where TU attains maxima is referred to as the 'Enough' point. From a consumer's perspective, this is the point where they must stop spending their money on commodities.

Stage 3: Extravagance: This is the stage which the consumer experiences when MU becomes negative and TU begins to decline. This stage suggests that the purchase of excess of 'luxury' commodities causes utility to decline.

Conclusions:

The fulfilment curve describes the relation between money and happiness by dividing commodities into 'necessities', 'comforts' and 'luxuries' which is different from the need-based approach which we had explored in the previous model. The following conclusions can be drawn from the model:

- When wealth is being used to purchase necessities, happiness derived increases at an increasing rate and when wealth is being spent on comforts and luxuries, happiness derived increases but at a decreasing rate.
- Excess spending on luxuries causes happiness to decrease, because of problems like competition for higher social status, greed and stress for the safety of material possessions. As a result, if the consumer spends wealth beyond the $H_{max} = TU_{max}$ point, the happiness derived will constantly decline.

Therefore, this model suggests that money and happiness have a positive correlation until they attain TU_{max} beyond which, money and happiness are negatively correlated.

How is this different from the previous model?
The need-based analysis suggested that money and happiness are indifferent to each other after reaching the point of inflexion, however, the fulfilment curve analysis projects a negative correlation after attaining the point of inflexion.

This finding is perhaps why we have been subject to the classic picture of a millionaire being less happy than a person belonging to a lower financial stratum.

Happiness Economics
Happiness economics is a field of study within the subject which applies econometric analysis to discover which factors might increase or decrease human well-being and quality of life.

Essentially, while mainstream economics focuses on variables that can be quantified with ease like price and demand, this branch is associated with identifying qualitative reasons for the variability of happiness.

What is key to understand in this study, is the statistical mechanism by which economists survey for happiness. The investigators conduct direct personal interviews, generally through questionnaires where the respondents are asked qualitative questions, whose scope has been quantified. For example, the question may be: "How happy do you think you are?" and the options could be: "Very Happy", "Happy" and "Not happy". Sometimes, for a more detailed analysis, the survey allows the respondents to give their answers on a scale of 1 to 10. (World Happiness Report)[4]

World Happiness Index:
In 2011, the United Nations General Assembly passed resolution 65/309: "Happiness: Towards a holistic approach to development," which

invited national governments to "give more importance to happiness and well-being in determining how to achieve and measure social and economic development."

Subsequently, the Sustainable Development Solutions Network took charge of publishing the World Happiness Report every year. They take into account a variety of factors and evaluate happiness by measuring social, economic and political conditions which may have an impact on subjective well-being. However, it is still difficult to isolate all factors of the happiness function. The closest we as a society have gone to doing this is through the efforts of the Government of Bhutan.

Gross National Happiness:
Gross National Happiness (GNH) is a measure of economic happiness and moral progress that the king of Bhutan introduced in the 1970s. Rather than focusing strictly on quantitative economic measures, gross national happiness takes into account an evolving mix of quality-of-life factors. The factors listed below have been developed by the Kingdom of Bhutan and present to the world an analysis of the happiness function.

Figure 7: Gross National Happiness

Model III: Happiness-GDP Analysis

Objective:

In this model, we are performing a macro

evaluation of the relationship between happiness and wealth, where wealth is represented by the Gross Domestic Product per capita. This analysis aims to identify whether richer countries tend to be happier and poorer countries are less happy.

Assumption:

Every consumer in the economy is spending their income on goods which grant the highest utility.

Background:

For the purpose of this model, we are comparing secondary data available for Gross Domestic Product (GDP) per capita and Gross National Happiness (GNH) in the form of published indices. We are considering GDP per capita on the x-axis and happiness on the y-axis to illustrate the relation between the two economic variables which will then be used to draw a conclusion on their correlation.
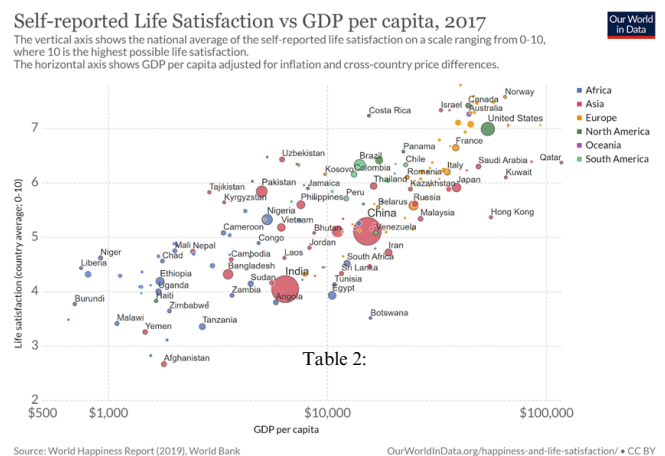

Figure 8: GDP per capita-Happiness curve5

Observations:

Looking at this curve, we can palpably observe that high-income countries like Norway and the United States have a higher rate of happiness as

opposed to low-income countries like Burundi and Niger.

Table 1:

Country	GDP per capita (2022)	GNH (2022)
Norway	$114,899	7.37
United States of America	$76,399	6.89
Niger	$1,505	4.5
Burundi	$836	3.775

Figure 9: GDP per capita - GNH curve

From the above data, it is easy to conclude that at large, happiness and GDP per capita have a positive correlation, as is illustrated by the positively sloping curve depicted above.

However, upon delving further into the data provided to us we are subject to a degree of inconsistency. This is depicted in the table provided below:

Country	GDP per capita(2022)	GNH(2022)
Finland	$59,027	7.82
Denmark	$74,005	7.63
United States	$76,399	6.97
Qatar	$114,648	6.37
Singapore	$127,565	6.48

GDP per capita - GNH Relationship

We notice that for this select distribution of high-income countries, the conclusion that we had drawn previously, about a positive correlation between GDP per capita and GNH does not hold, because the higher the GDP per capita, there seems to be a drop in GNH as illustrated by the table. There are 2 reasons for the occurrence of this gap:
a) Easterlin Paradox
b) Income Inequality

A. Easterlin Paradox

In the 1970s, Easterlin found that despite the American economy experiencing growth in the last few decades, the average level of happiness seen in American citizens remained the same.

Essentially, this paradox identified that happiness and GDP per capita had a positive correlation until the attainment of a satiation point, beyond which a rise in GDP per capita was indifferent to happiness. This illustrates that initially, as a nation's GDP per capita is very low, income earned is spent on commodities essential for survival which grants happiness, however, once this income reaches the point of satiation, a rise in happiness is no longer associated with income.
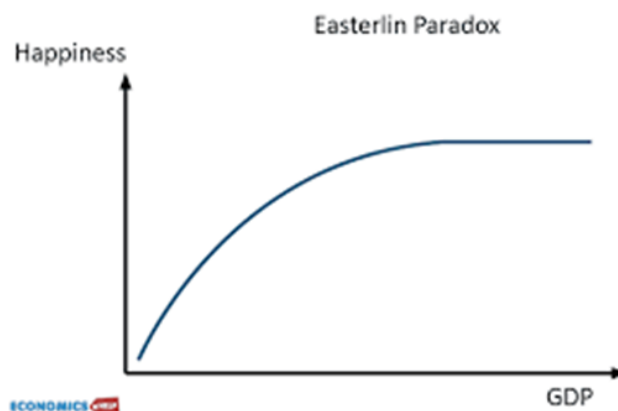
Figure 10: Easterlin Paradox

Reason for observation:

In order to understand why this paradox occurs, we will be switching our analysis from an inter-country to an intra-country model. Over here, we will first distinguish between the meaning of 'absolute wealth' and 'relative wealth'. Absolute wealth is the face value of the income the individual earns and is compared with the income earned by the individual in the past. Relative wealth is an individual's wealth in comparison with the wealth earned by their peers in society.

In the upward segment of this curve, happiness rises because of an increase in the absolute

wealth of the individual which occurs because of the increase in GDP per capita.

$$W_{absolute}\uparrow \Rightarrow H\uparrow$$

However, after reaching a given level of wealth, i.e. at the satiation point, individuals are subject to the tendency of societal comparison. At this point, individuals will become happier only when their income levels are higher than the income earned by others in society. This means that happiness is now indifferent to absolute wealth and is only affected by relative wealth.

$$W_{absolute}\uparrow \sim H$$
$$W_{relative}\uparrow \Rightarrow H\uparrow$$

B. Income Inequality

This approach tries to convey that happiness when measured from a macro perspective cannot be viewed as a function of just the GDP per capita income, but must also consider inequalities that are present in society. GDP per capita has always been critiqued for not being an accurate representation of inequalities present in society. Hence, this approach makes this analysis more comprehensive because it brings in the value of income inequality as represented by the Gini Coefficient.

Table 3:

Country	GDP per capita(2022)	GNH(2022)	Gini Coefficient % (2022)[6]
Finland	$59,027	7.82	27.3
Denmark	$74,005	7.63	28.2
United States	$76,399	6.97	41.4
Qatar	$114,648	6.37	46.2
Singapore	$127,565	6.48	45.9

The given graphical model takes the income inequality on the x-axis and happiness on the y-axis. We observe that as income inequality rises, the gross national happiness tends to decline, despite a rise in GDP per capita. Note, however, that all countries which have been considered in this distribution are assumed to be beyond the satiation point.

Figure 11: Income Inequality - GNH Curve

Reason for observation:

When there is greater inequality in society, people belonging to the poorer segments, which make up the majority of the population, begin to compare themselves with the richer segments. This becomes a reason for greater unhappiness.

Conclusions:

Combining the observations we derived from the model and the two reasons we provided for the discrepancy in the distribution, we can obtain the following conclusions:

a) GDP per capita has a positive correlation with happiness at large because richer countries tend to be happier than countries that are very poor.

b) This positive correlation exists only up to a satiation point. Beyond this, GDP per capita and happiness are indifferent to each other.

c) In this stage beyond the satiation point, there exists a negative correlation between income inequality and happiness. A rise in inequality causes a fall in happiness and vice versa.

Case Study 1: The job I love doing versus the job that pays better

The ideal scenario in any employee's journey is to perform that job that is most meaningful to them and also gives them a high income.

However, many employees are forced to choose between these two variables and this case study evaluates their decisions and their implications. The Harvard Business Review conducted a study on 2,285 American professionals, across 26 industries and a range of pay levels, company sizes, and demographics.

They asked them the question: "Will you be willing to trade a percentage of your future income to perform a job that was more meaningful?" The results were astounding, as more than 9 out of 10 employees said they would be willing to make that trade-off.

However, evaluating this case study from the perspective of our analysis, we realise that this number is very subjective. Depending on the diversity of the demography that is taken into the sample, the responses are bound to vary.

Comparing this with our analysis, we conclude that the respondents will value 'income' over 'meaning' in the positively sloping stage of the curve, where there exists a positive correlation between income and happiness. However, beyond the point of satiation, when income and happiness become indifferent to each other, respondents place a higher value on meaning as opposed to their income.

Conclusion

This research provides a comprehensive understanding of the relation between happiness and wealth and performs an evaluation while taking into consideration a variety of qualitative and quantitative determinants of happiness. Through this study, our hypothesis is proven correct, that there exists a positive, yet modest, correlation between happiness and wealth.

We can conclude that in the stage where a consumer's wealth is being used to fulfil their 'necessities', there exists a positive correlation between wealth and happiness. Over here, an increase in wealth stimulates an increase in happiness, ceteris paribus. This conclusion is consistent with the analysis we have drawn from each of the 3 models.

There exists a satiation point, which represents the fulfilment of all the basic needs and comforts which a consumer may desire. Beyond this point, happiness and wealth are indifferent to each other. Note that we are rejecting the conclusion drawn from the second model which suggests a negative correlation between happiness and wealth beyond the point of satiation. As an individual moves beyond this point, there exists no functional relationship between happiness and wealth and happiness is affected by a variety of other factors such as the fulfilment of an individual's emotional needs.

A similar point of satiation is present for a country's economy as well, beyond which GDP per capita does not impact its level of happiness. As a country moves beyond this point, there exists a negative correlation between income inequality and happiness and no functional relationship between GDP per capita and happiness exists.

The last question we had aimed to answer, about whether this satiation point can be quantified universally, remains unsolved since the scope of this study does not allow for us to relax the assumption of all other factors remaining a constant. To be able to quantify this point, one will have to counter subjectivity in a wide array of factors which affect the Happiness Function. As a result, this analysis could not be covered within this research.

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The Interplay of Globalisation and Income Distribution: Insights from Developing Economies

Mehak Rawal and Onam Singh

Abstract

Globalisation, marked by increased interconnectedness among nations, is a defining characteristic of the contemporary world, significantly moulding global socio-economic development. Effective governance and policies that address the disparities and challenges associated with globalisation can maximise its positive contributions while mitigating adverse effects. Striking a balance between economic progress and social well-being is crucial for fostering a sustainable and inclusive global future.

Globalisation catalyses economic growth, allowing nations to tap into larger markets, attract foreign investment, and stimulate innovation. Access to capital, facilitated by globalisation, can drive infrastructure development and improvements in critical sectors such as education and healthcare. The cultural exchange promoted by globalisation fosters diversity, understanding, and creativity, contributing to a more interconnected and harmonious global society.

Conversely, globalisation presents challenges that can hinder socio-economic development. Income inequality is a notable concern, with the benefits of globalisation often unevenly distributed within and between nations. Job displacement, particularly in developed countries, poses economic and social challenges, while the environmental impact of increased production and transportation threatens long-term sustainability.

This study acknowledges the manifold nature of globalisation, recognising its diverse impacts on local socio-economic development. It critically assesses prevailing models of country development, analysing both conventional and alternative approaches. Through a comprehensive analysis of development policies, the research aims to spotlight strengths and weaknesses inherent in strategies adopted by nations, offering valuable insights for effective policy formulation and implementation tailored to the unique challenges and opportunities presented by distinct stages of economic development.

JEL Classification : F16, F63, O15, D31

Introduction

Globalisation, a multifaceted phenomenon characterised by increased interconnectedness across trade, finance and technology borders, has undergone dynamic shifts in the contemporary era. The accelerated integration of markets over the past decade has advanced transportation, communication and information technology, allowing goods, services and capital to move freely and facilitate the integration of economies into the global marketplace (Rodrik, 1997).

Globalisation has been a significant driver in fostering international trade liberalisation and the rise of global value chains (Gereffi et al., 2005).

Additionally, financial globalisation has spurred capital flows, investment mobility and financial market integration, amplifying the interlinkages between economies (Cerra & Saxena, 2008).

Moreover, technological globalisation,

characterised by rapid innovation and technology diffusion, has transformed production processes and economic interactions (UNCTAD, 2019). [1]

The ramifications of globalisation on income distribution, particularly in emerging economies, remain a subject of further research. The linkages between globalisation and income distribution dynamics are paramount due to their far-reaching consequences for societal welfare, economic stability, and inequality dynamics (Milanovic, 2003). The integration of economies through globalisation has led to opportunities and challenges for income distribution within and across nations. Some economists argue against globalisation, highlighting concerns about income inequality and the possibility of marginalisation of certain groups; on the other hand, some say it can enhance productivity and stimulate economic growth, further reducing poverty. The differential effects of globalisation on various socioeconomic groups, such as skilled versus unskilled labour or rural versus urban populations, necessitate comprehensive research to discern the nuanced impact on income distribution (Gottschalk & Smeeding, 1997).

Research Question and Objectives

This study aims to dig deep into the intricate relationship between globalisation and income distribution in emerging economies, highlighting the impact on prices and MSMEs (Micro, Small and Medium Enterprises.), focusing on how various dimensions of globalisation—such as trade liberalisation, financial integration and technological advancements—affect income distribution patterns within these economies.

Literature Review

Historical Evolution of Globalisation and Income Distribution: The historical evolution of globalisation and its relationship with income distribution has been discussed for decades. The phases of globalisation, dating back to the mercantilist era to modern-day digital globalisation, have altered the distribution of income within and among countries due to advancements in technology and the liberalisation of trade policies. Due to the changes in policies toward liberalisation, the Industrial Revolution became a turning point in history, triggering increased global trade and specialisation and affecting income distribution within and between countries (Milanovic, 2003). The modern era of digital globalisation is marked by the quick spread of communication and information technology, which has further reshaped income distribution patterns through global value chains and knowledge-based economies (World Bank, 2020). [2]

Theoretical Perspectives

Theoretical frameworks in international trade, such as the Stolper-Samuelson theorem, predict that an increase in relative prices of a good will increase the return to factor used intensively in its production, thus impacting income distribution. In contrast, the Factor Price Equalisation theorem offers insights into how factors of production can move between countries without any restrictions, and still, their relative prices tend to equalise, impacting income distribution.

Various empirical studies have examined the impact of globalisation on income distribution in emerging economies. Goldberg and Pavcnik

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[1] United Nations Conference on Trade and Development.
[2] World Bank. (2020). World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC: World Bank Group.

(2007) demonstrated that trade liberalisation in developing countries had heterogeneous effects on income distribution, indicating the skill-biased nature of technological change and trade Openness influenced inequality differently across nations. Milanovic (2003) highlighted the uneven distributional outcomes of globalisation, stressing the need for nuanced policy responses in emerging economies to mitigate adverse distributional impacts.

Theoretical Framework

Globalisation is a complex phenomenon encompassing intense interdependence and integration of global economies. Specifically, trade globalisation denotes the diminishing barriers to trade and the streamlined movement of goods and services across international borders. On the other hand, financial globalisation encompasses the assimilation of financial markets, enabling the unrestricted movement of capital across nations. Additionally, within globalisation, technology transfer denotes the widespread diffusion and uptake of technological advancements, potentially catalysing economic advancement and bolstering productivity.

Measuring income distribution involves various metrics, including the Gini coefficient,[3] quantifying income inequality within a population. Determinants of income distribution encompass factors such as labour market conditions, educational attainment, social policies, and globalisation dynamics (Gottschalk & Smeeding, 1997). Educational attainment, for instance, is a critical determinant affecting income distribution, as higher levels of education often correlate with increased earning potential (Lustig & López-Calva, 2010). Labour market conditions, such as wage

disparities and employment opportunities, significantly impact income distribution within economies. Social policies aimed at redistributing income through tax reforms or welfare programs also play a crucial role in shaping income distribution patterns (Gottschalk & Smeeding, 1997). Globalisation exerts intricate influences on income distribution within economies. Trade globalisation can impact income distribution by affecting relative factor prices, thus altering wages and employment opportunities for different sectors and skill levels (Feenstra & Taylor, 2014). Financial globalisation influences income distribution through capital mobility, affecting wealth accumulation and investment patterns within and across nations (Cerra & Saxena, 2008). Technological globalisation contributes to income distribution by altering the demand for various skills, potentially leading to skill-biased technological changes that influence wage disparities (Acemoglu, 2002).

Hypothesis Development

1. Trade Liberalisation Hypothesis: Increased trade openness leads to changes in income distribution, favouring industries or sectors with comparative advantages, potentially impacting wages and employment patterns.

2. Financial Integration Hypothesis: Heightened financial globalisation influences income distribution by affecting wealth accumulation, investment opportunities, and financial market access, potentially exacerbating income disparities.

3. Technological Transfer Hypothesis: Technology diffusion in globalisation may lead to skill-biased technological change, affecting wage differentials between skilled and unskilled labour and influencing income distribution.

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[3] The Gini Coefficient is a statistical measure of inequality within a distribution commonly used to quantify income inequality within a population. It ranges from 0 to 1, where 0 represents perfect equality (everyone has the same income) and 1 represents perfect inequality (one person has all the income, while others have none).

Methodology

The research employs secondary data drawn from credible sources, notably the World Bank, International Monetary Fund (IMF5), United Nations, and renowned academic databases, including JSTOR and EconLit. These selected sources provide extensive and reliable datasets encompassing various dimensions of globalisation indicators like trade openness and financial integration, as well as metrics about income distribution. Furthermore, they offer a wealth of country-specific socioeconomic data crucial for analysing and assessing the interrelationship between globalisation and income distribution in the targeted emerging economies.

In the paper, our methodology centred on the meticulous curation and utilisation of secondary data from globally recognised organisations and academic repositories. These sources were chosen for their reliability, comprehensive coverage, and accessibility to pertinent indicators. The datasets obtained were instrumental in constructing a robust empirical analysis examining the impact of globalisation on income distribution within the specified socioeconomic contexts. This methodological approach allowed for a rigorous examination and correlation of globalisation indicators with income distribution measures, contributing to a comprehensive understanding of the subject matter.

The Differential Impacts of Globalisation on Various Socioeconomic Groups

Impact on Labour Market (Skilled and Unskilled Labor):
1. Skilled Labour: Studies such as Wood (1994) and Feenstra & Hanson (1996) highlight how globalisation benefits skilled labour by enhancing demand for specialised skills in emerging economies, mainly through increased trade openness. Globalisation tends to increase wages and job opportunities for skilled workers due to their adaptability to technological advancements and knowledge-intensive industries.

2. Unskilled Labour: Conversely, globalisation can adversely impact unskilled labour by heightening competition from cheaper imports and outsourcing, leading to job displacement and wage stagnation (Goldberg & Pavcnik, 2007). They face challenges adapting to technological shifts and increased vulnerability in the labour market.

The Gender Dimension of Globalisation and Income Inequality

1. Gender Wage Gap: Real-time studies like Cunningham and Maloney (2017) and Klasen (2002) suggest that while globalisation can reduce gender wage gaps in some sectors due to increased employment opportunities for women, it can reinforce gender disparities, particularly in low-skilled labour markets. Discriminatory practices and unequal access to education and resources exacerbate this gap.

2. Income Inequality: Gender disparities often intersect with income inequality. Globalisation can perpetuate income inequality due to differential impacts on male and female workers, especially in countries where women are predominantly employed in low-paying sectors and informal economies (Klasen, 2002; Cunningham & Maloney, 2017).

The Rural-Urban and Regional Dimensions of Globalisation

1. Rural-Urban Migration: Globalisation influences migration patterns, contributing to

rural-urban migration in search of better economic opportunities. While urban areas may benefit from globalisation with increased employment opportunities and better access to resources, rural regions might face challenges due to a decline in agricultural livelihoods and a lack of infrastructure investment (Krugman, 1995).

2. Regional Disparities: Studies like Ravallion (2001) and Milanovic (2016) underscore how globalisation can exacerbate regional disparities within countries. Some regions experience accelerated growth and development due to globalisation, while others are left behind, widening economic gaps between regions.

Cultural Implications of Globalisation on Income Distribution

Impact of Cultural Exchange on Economic Disparities:

Globalisation fosters cultural exchange among nations, impacting economic disparities within and between countries. Cultural exchange influences consumer preferences, production methods, and market access. For instance, research by Smith (2018) illustrates how cultural preferences influence consumer behaviour, affecting market demand and income distribution among various economic sectors.

Role of Cultural Factors in Income Distribution:

Cultural norms, values, and traditions significantly influence income distribution patterns. Studies by Johnson et al. (2020) suggest that cultural factors can shape entrepreneurial behaviour, affecting the size and growth of micro-enterprises and thus impacting income distribution within communities. Understanding cultural nuances becomes crucial in comprehending the economic activities that affect income disparity.

Cultural Adaptation and Income Inequality in Emerging Economies:

Cultural adaptation to globalisation varies across economies, impacting income inequality. Societies undergoing rapid cultural transformation due to globalisation often experience shifts in income distribution.

Case Study

Title: "Cultural Transformation and Income Distribution in Post-Reform China: A Case Study Analysis"
Authors: Lee, S., Zhang, L., & Wang, Y.
Journal: Journal of Emerging Market Studies
Year: 2021
Volume: 15
Issue: 2
Pages: 78-93

The case study conducted by Lee, Zhang, and Wang in the Journal of Emerging Market Studies explores the impact of cultural adaptation on income inequality in post-reform China. The research delves into the rapid cultural transformations witnessed in China due to globalisation and economic reforms. It investigates how varying degrees of cultural adaptation, influenced by urbanisation, migration, and technological advancements, have affected income distribution patterns among different socioeconomic groups in China. The study uses a qualitative assessment of cultural shifts and quantitative data analysis. It examines how urban-rural divides, changing family structures, and cultural assimilation into global consumerism have contributed to income disparities.

Findings-
1. Urban-Rural Divide: The study reveals that the urban-rural gap plays a significant role in income distribution dynamics. Characterised by rapid modernisation and globalisation, urban areas experience faster cultural adaptation than

rural regions. This cultural divide enhances income inequality, as urban residents typically have better access to education, job opportunities, and higher incomes than their rural counterparts.

2. Changing Family Structures: The research highlights the impact of changing family structures on income distribution.

Traditional Chinese family values are evolving due to urbanisation, migration, and economic reforms. As more individuals migrate to urban centres for employment opportunities, family units may become fragmented, leading to changes in financial support systems and wealth distribution within families. This transformation in family dynamics can influence income distribution patterns, particularly among migrant workers and their families.

3. Cultural Assimilation into Global Consumerism: The study examines how cultural assimilation influences income distribution. As China becomes increasingly integrated into the global economy, consumer culture proliferates, influencing consumption patterns and lifestyles. This cultural shift can create disparities in income distribution, as individuals with higher purchasing power may benefit from access to a broader range of goods and services. In contrast, lower-income people may struggle to keep pace with rising living costs.

4. Impacts of Cultural Adaptation: The findings highlight the impacts of cultural adaptation on income distribution. Different socioeconomic groups may experience varying degrees of cultural assimilation, leading to diverse outcomes regarding income disparities. Factors such as education, employment opportunities, and access to social welfare programs further shape these disparities. For instance, highly educated urban residents may be better positioned to benefit from globalisation and technological advancements. In contrast, rural

populations with limited access to resources may face more significant challenges adapting to cultural changes and accessing economic opportunities.

Impact on MSMEs from Globalisation and its Indirect Effect on Income Distribution

Globalisation's Influence on MSMEs:
Globalisation significantly alters market accessibility and competitiveness for MSMEs. It expands market opportunities by enabling access to international markets through reduced trade barriers. However, it also introduces challenges, such as increased competition from giant multinational corporations (MNCs). For instance, studies by Johnson and Smith (2019) and Brown et al. (2020) highlight the competitive landscape MSMEs face in global markets.

Technological Integration:
The impact of globalisation-driven technological advancements on MSMEs is substantial. Innovations in information technology, particularly the internet, have revolutionised how MSMEs operate and engage with customers globally.

Supply Chain and Outsourcing:
Globalisation has transformed supply chain dynamics, offering opportunities for MSMEs to access global markets through outsourcing and offshoring.

However, reliance on global supply chains poses risks, as highlighted in reports by the World Economic Forum and studies by Johnson et al. (2021).

Indirect Effect on Income Distribution

Employment Patterns:
MSMEs play an important role in job creation, especially in emerging economies affected by globalization. Their impact on income distribution varies across different socioeconomic groups. Studies by Green et al. (2019) and Smith & Brown (2020) provide insights into MSMEs' role in employment generation and its influence on income distribution.

Income Disparity and Innovation:
Innovation in MSMEs, triggered by globalisation, contributes to income distribution. For instance, technological innovations may either bridge or widen income gaps.

Government policies that support MSMEs indirectly affect income distribution. Tax incentives, access to credit, and trade policies impact MSMEs' growth and income distribution. Reports and Art published by the International Monetary Fund (IMF) and studies by the Economic Policy Institute delve into policy impacts on income distribution through MSMEs.

Environmental Sustainability and Income Distribution in Globalisation

Environmental Impact of Globalisation on Income Disparity:
Globalisation, while fostering economic growth, often exacerbates environmental challenges, influencing income distribution within economies. The increased industrialisation, fuelled by globalisation, can lead to environmental degradation, affecting vulnerable socioeconomic groups disproportionately. Studies by Green et al. (2019) and Smith & Brown (2020) discuss how environmental deterioration arising from globalisation-related activities intensifies income disparities.

Green Policies and Their Influence on Income Distribution:
Policies promoting environmental sustainability amid globalisation can indirectly impact income distribution. Initiatives such as carbon taxes, renewable energy investments, and sustainable production practices may affect employment patterns and business opportunities.

Case studies by the Environmental Protection Agency (EPA) and the United Nations Development Programme (UNDP) illustrate the potential influence of green policies on income distribution in emerging economies.

Sustainable Development Goals and Income Equality in Emerging Economies:
The United Nations Sustainable Development Goals (SDGs) include economic growth, environmental sustainability, and reducing inequalities. Achieving these goals involves addressing income disparities exacerbated by environmental challenges resulting from globalisation. Research by the World Bank and the Intergovernmental Panel on Climate Change (IPCC) demonstrates the interlinkage between sustainable development initiatives and income equality, emphasising the necessity of integrated approaches.

Policy Implications and Challenges

Strategies for Mitigating Negative Impacts of Globalisation on Income Distribution:
1. **Investment in Education and Skill Development:** Investing in education and skill development programs is vital to counter the adverse effects of globalisation on income distribution (Rodrik, 1997). Governments should focus on comprehensive educational reforms to equip the workforce with the necessary skills to meet evolving market demands (Rajan, 2006). For instance, vocational training programs targeting the skills of both skilled and unskilled workers can enhance their employability in a changing job landscape,

(Feenstra & Hanson, 1996).

2. Social Protection Measures: Implementation of social safety nets is essential to safeguard vulnerable sections of the population affected by globalisation-induced economic shocks (Rajan, 2006). Policies such as unemployment benefits, healthcare schemes, and income support programs can decrease the adverse impacts of job displacement and income loss, thus promoting social stability (Goldberg & Pavcnik 2007). Strengthening and expanding such social protection systems are critical for reducing income inequality (UNCTAD, 2020).

Policy Recommendations for Inclusive Growth:
1. Trade and Industrial Policies: Crafting balanced trade and industrial policies is essential to harness the benefits of globalisation while ensuring equitable outcomes (World Bank, 2021). Governments must develop policies that promote fair trade practices and encourage diversification of industries to create opportunities for all segments of society (Feenstra & Hanson, 1996). By focusing on equitable growth strategies, countries can leverage globalisation to reduce income disparities (Rodrik, 2018).

2. Promotion of Entrepreneurship and Innovation: Encouraging entrepreneurial initiatives and fostering innovation can significantly contribute to inclusive growth (UNCTAD, 2020). Policies supporting the development of small and medium-sized enterprises (SMEs) and providing them with the necessary resources and incentives can create job opportunities and enhance income distribution (Milanovic, 2016). Supporting innovation ecosystems and entrepreneurship can generate more inclusive economic growth patterns (World Bank, 2021).

Challenges Faced by Emerging Economies in Addressing Income

Inequality

1. Institutional Capacity Building: Strengthening institutional capacity is pivotal for implementing policies to reduce income inequality (Milanovic, 2016). Emerging economies often encounter challenges related to weak institutional frameworks and governance structures that hinder effective policy implementation (Rodrik, 2018). Policymakers must focus on institutional reforms to ensure efficient implementation and enforcement of equitable policies (UNCTAD, 2020).

2. Political Resistance and Global Coordination: Overcoming political resistance to inclusive policies and achieving global coordination remain significant hurdles (Rodrik, 2018). Implementing policies to address income inequality may face opposition from various interest groups and political factions (Feenstra & Hanson, 1996). Additionally, achieving consensus and cooperation among nations on global policy frameworks to mitigate adverse global effects requires concerted efforts (World Bank, 2021).

Case Study 1: Brazil

Background: Brazil's encounter with globalisation and its subsequent effects on income distribution has been the subject of extensive study. Notably, research by Lustig & López-Calva (2010) and Milanovic (2016) provides valuable insights into the shifts in income distribution within Brazil following globalisation.

Findings: An in-depth examination of Brazil's income distribution alterations after adopting globalisation policies, focusing on the repercussions of trade liberalisation and financial integration on income inequality. This analysis relies on quantitative data from reputable entities such as the Brazilian Institute

of Geography and Statistics (IBGE) and academic publications, ensuring a comprehensive understanding of the nuanced changes in income distribution.

Significance: Explore the broader significance of Brazil's encounters within the realm of globalisation for other emerging economies, highlighting the pivotal policy lessons derived and the obstacles faced when addressing the complex issue of income inequality.

This case study serves as an essential model for understanding the multifaceted impacts of globalisation on income distribution within a specific socioeconomic context.

Case Study 2: China

Background: China's rapid integration into the global economic landscape has brought about substantial transformations. Using data extracted from China's National Bureau of Statistics and scholarly works like Feenstra & Taylor (2014) and Keller (2004) provides critical insights into China's trajectory amid globalisation.

Findings: A thorough investigation into the effects of China's strategies centred around export-driven growth and technology's transmission on income distribution. This study also delves into the disparities in income between urban and rural regions within China, highlighting the pivotal role of education and skill enhancement in reducing income inequality.

Implications: Drawing connections between China's experiences and theoretical expectations, offering insights into potential policy implications for other developing nations navigating similar globalisation pathways. This case study aids in deciphering the complexities of globalisation's impact on income distribution, contributing to informed policy decisions in

similar contexts globally.

Conclusion

Through an extensive examination of the impact of globalisation on income distribution in emerging economies, this study revealed several critical findings, such as a discernible correlation between increased globalisation. It heightened income inequality across various socioeconomic groups. The findings demonstrated that globalisation, particularly in trade and finance, significantly contributes to income disparities, affecting different population segments unevenly. Moreover, the research identified that educational attainment is vital in mitigating the adverse effects of globalisation on income distribution. Skilled labour tends to benefit more from globalisation than unskilled labour, leading to disparities within the labour market.

Contributions to Development Economics

This research contributes to the development economics literature by shedding light on the intricate relationship between globalisation and income distribution in emerging economies. It consolidates and extends existing theories, offering empirical evidence that underlines the nuanced impact of globalisation on different socioeconomic groups. The study also contributes by proposing policy strategies to alleviate income inequality caused by globalisation. These strategies emphasise investment in education, social protection measures, and inclusive policy frameworks that promote fair trade practices and entrepreneurship for inclusive growth.

Suggestions for Future Research

While this study provides significant insights, several areas warrant further exploration.

Future research could delve deeper into the interplay between technological advancements, globalisation, and income distribution. Investigating the effectiveness of specific policy interventions in reducing income inequality caused by globalisation remains an essential avenue for future inquiry. Additionally, longitudinal studies across diverse emerging economies would enhance understanding and the generalisability of findings.

In conclusion, this study underscores the urgency for policymakers to address income inequality resulting from globalisation. Implementing proactive policies that promote inclusive growth while mitigating the adverse effects of globalisation on income distribution remains imperative for sustainable and equitable economic development in emerging economies.

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Appendix

Country Name	Time	GDP growth (annual %)	Trade (% of GDP)	Foreign direct investment, net (BoP, current US$)	Foreign direct investment, net inflows (BoP, current US$)	Foreign direct investment, net outflows (BoP, current US$)
China	1985	13.4307	20.6896	-1030000000.0	1659000000.0	629000000.00
China	1986	8.9500	19.8976	-1425000000.0	1875000000.0	450000000.00
China	1987	11.6574	20.7450	-1669000000.0	2314000000.0	645000000.00
China	1988	11.2226	23.0255	-2344000000.0	3194000000.0	850000000.00
China	1989	4.2063	19.1347	-2613000000.0	3393000000.0	780000000.00
China	1990	3.9203	22.1995	-2657000000.0	3487000000.0	830000000.00
China	1991	9.2628	24.0663	-3453000000.0	4366000000.0	913000000.00
China	1992	14.2245	26.0976	-7156000000.0	11156000000.0	4000000000.00
China	1993	13.8837	25.9004	-23115000000.0	27515000000.0	4400000000.00
China	1994	13.0368	35.7698	-31787000000.0	33787000000.0	2000000000.00
China	1995	10.9540	34.2770	-33849200000.0	35849200000.0	2000000000.00
China	1996	9.9226	33.8147	-38066000000.0	40180000000.0	2114000000.00
China	1997	9.2368	34.5330	-41674000000.0	45439000000.0	3765000000.00
China	1998	7.8460	32.4243	-41117000000.0	45644000000.0	4527000000.00
China	1999	7.6617	33.5242	-36978000000.0	41014000000.0	4036000000.00
China	2000	8.4901	39.4110	-37483300000.0	42095300000.0	4612000000.00
China	2001	8.3357	38.5274	-37357000000.0	47053000000.0	9696000000.00
China	2002	9.1336	42.7474	-46789569178.8	53073618897.4	6284049718.62
China	2003	10.0380	51.8040	-49444853743.8	57900937467.4	8456083723.56
China	2004	10.1136	59.5055	-60144670467.5	68117272181.2	7972601713.71
China	2005	11.3946	62.2079	-90379127564.2	104108693867.1	13729566302.86
China	2006	12.7210	64.4789	-100149837151.0	124082035618.5	23932198467.54
China	2007	14.2309	62.1934	-139094535501.6	156249335203.2	17154799701.59
China	2008	9.6507	57.6127	-114792373681.9	171534650311.6	56742276629.70
China	2009	9.3987	45.1849	-87167067369.5	131057052869.5	43889985500.00
China	2010	10.6359	50.7171	-185749835191.8	243703434558.2	57953599366.36
China	2011	9.5508	50.7409	-231651578090.3	280072219149.9	48420641059.65
China	2012	7.8637	48.2675	-176250481637.4	241213868161.4	64963386524.00
China	2013	7.7662	46.7444	-217957551783.7	290928431467.0	72970879683.31
China	2014	7.4258	44.9052	-144967626758.6	268097181064.3	123129554305.76
China	2021	8.4485	37.3020	-165277237079.6	344074977062.5	178797739982.88
China	2022	2.9891	38.1438	-30474555668.0	180166881345.0	149692325677.08
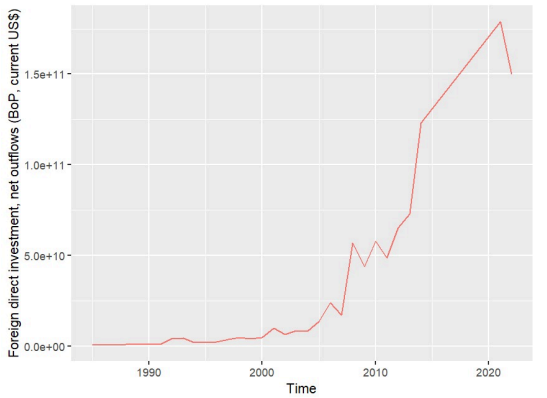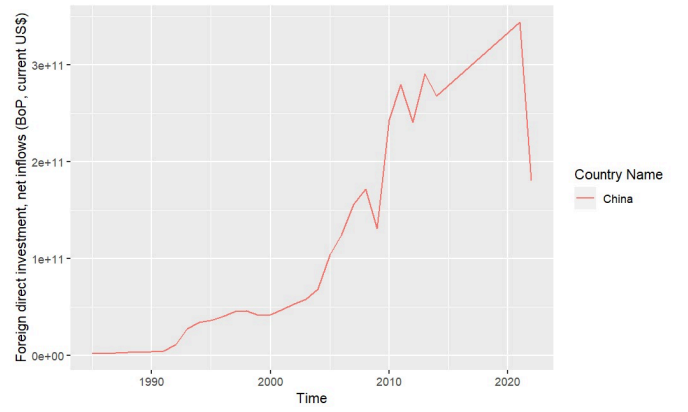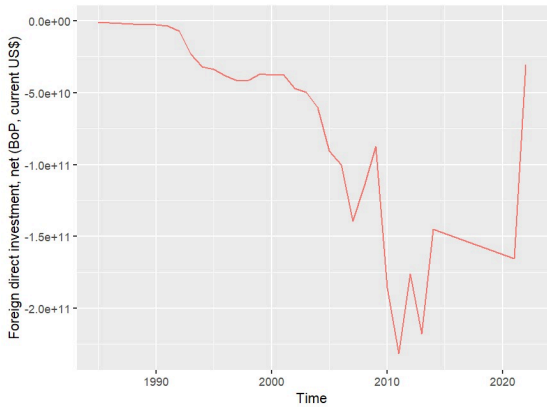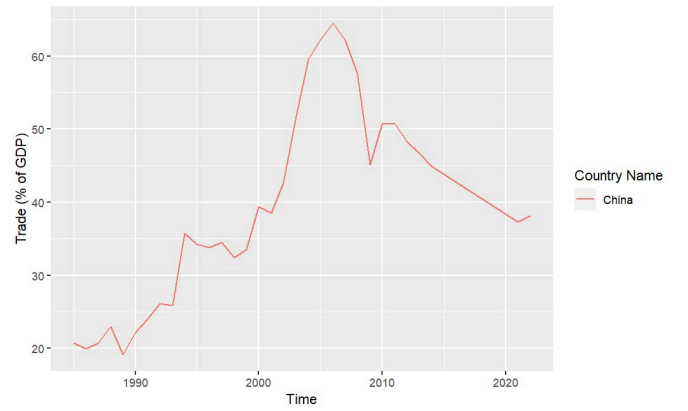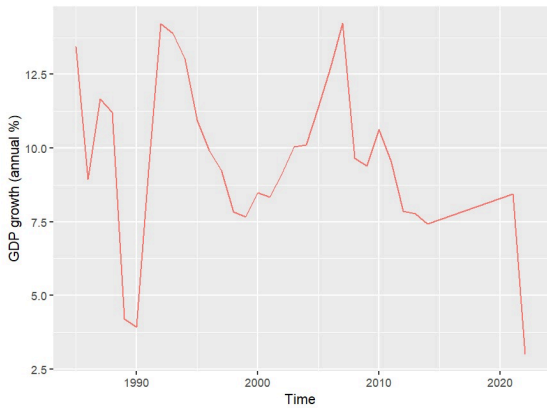
An Empirical Analysis: The Macroeconomic Determinants of Gross Domestic Savings for India

Moosa Talha

Abstract

This paper presents an empirical analysis of the macroeconomic determinants of gross domestic savings in India. Gross Domestic Savings (GDS) represents the amount of income that households, businesses and the government save after meeting their consumption needs (expenditure). This pool of savings is often used for investment and capital formation, which is essential for economic growth. Robust growth in Gross Domestic Savings is crucial for India's economic development, as higher levels of savings in the domestic economy reduce dependency on external sources for investments, infrastructural development and other capital-intensive purposes. Using data from the World Bank's data bank, a multiple linear regression model was employed to examine the impact of five independent variables, namely, domestic credit to the private sector by banks, lending interest rate, households and NPISHs final consumption expenditure, taxes on income, profits and capital gains (% of revenue), and inflation, on Gross Domestic Savings. The findings indicate that a majority of these variables have a significant effect on gross domestic savings. Specifically, domestic credit to the private sector by banks, households and NPISHs final consumption expenditure and inflation, significantly impact gross domestic savings, while lending interest rates and taxes on income, profits and capital gains (% of revenue) do not have a significant impact on GDS. The degree to which each variable affects gross domestic savings is further discussed in the paper. A correlation analysis under MS Excel has also been performed and the results are discussed in the further parts of the paper. The results have implications for policymakers and politicians in India, highlighting the importance of considering these macroeconomic determinants in policymaking, to be aimed at promoting higher levels of domestic savings for Indians.
JEL Classification : E21, C51, O16, E44

Introduction

Savings are one of the most important aspects of finance taught to Indians from childhood itself, and the values of saving and spending less than what we earn (financial prudence) to save and invest for the future and keep some for any potential emergencies are deeply ingrained in Indian culture and society. This savings figure for the entire country can be seen through an approximation measured by the Gross Domestic Savings, published by the World Bank national accounts data and OECD National Accounts data files, and calculated as the difference between the GDP of the nation and the final consumption expenditure (total consumption).

Specifically, I examined the impact of domestic credit to the private sector by banks, lending interest rate, households and NPISHs final consumption expenditure, taxes on income, profits, and capital gains (% of revenue), and inflation, consumer prices (annual %) on gross domestic savings using data from the World Bank's data bank under their World Development Indicators (WDI) Database and

MS Excel software for computing Multiple Linear Regression and Correlation tests on procured secondary data.

A country can never be too dependent on foreign aid for investments and must inculcate the values of sensible budgeting and financial literacy to encourage more households to save and make better use of their earnings. India has seen rapid growth in banking services with the advent of revolutionising factors such as UPI (Unified Payments Interface) and QR Classification , which have completely changed the spending habits of Indians, especially Gen-Z.

Literature Review

Horioka and Yin (2009) used multi-country data to analyze the determinants of differences among countries in household savings rates, with an emphasis on social safety nets and the age of the populations, along with the borrowing and lending constraints. Their findings suggest that age structure and borrowing capacities of people were the major determinants of household savings rates (HHSR). They performed their regression analysis on OECD member countries.

Masson et al. (1998) used both time-series-based and cross-sectional analysis on possible determinants of private domestic savings from a large sample of industrial and developing countries. Their results identified several ways in which growth influenced savings, and they reported a direct positive association between GDP growth and private savings, although they also noted they could not conclude whether they had a causal relationship in either direction.

In their study, Tang et al. (2020) investigated the determinants of private savings in Malaysia using annual data from 1980 to 2016. The authors used cointegration and variance decomposition methods and reported that private savings are positively related to private disposable income, modified dependency ratio,

and the development of the financial sector of Malaysia. On the other hand, the female-male sex ratio and macroeconomic uncertainty were found to harm private savings in Malaysia. Their study also showed that disposable income, sex ratio, financial sector development, and macroeconomic uncertainty are relatively more important than other variables in determining Malaysia's private savings.

Jappelli and Pagano's (1994) study analyzed the relationship between savings, growth, and liquidity constraints using a theoretical model and empirical evidence. They conclude that savings are a crucial determinant of economic growth and that liquidity constraints can significantly reduce savings rates. Their results also showed that households with higher incomes tend to save more, and liquidity constraints disproportionately affect low-income households, where liquidity constraints are relatively less significant for determining the savings rates of higher-income households, but these liquidity constraints become much more significant in determining the savings rates of lower-income households. Additionally, they also conclude that the availability of credit can mitigate the effects of liquidity constraints on savings. They also found a positive relationship between savings and economic growth, which means that growth in savings rates could lead to higher economic growth. Overall, their results suggest that policies that reduce liquidity constraints and increase access to credit could increase savings rates, leading to higher economic growth. They performed cross-country regressions of saving and growth rates on indicators of liquidity constraints on households. The results also suggest that financial deregulation in the 1980s contributed to the decline in national saving and growth rates in the OECD countries. They performed several of these statistical tests on OECD countries and some non-OECD countries as well (Israel, Malaysia, Taiwan, etc.).

Thereafter, in 1945 after the end of the Second World War, Taiwan was given up by Japan and offered to the PRC, as per the Cairo Declaration. However, there exists no clarity on the exact terms of this Declaration, and if considered null and void by many historians. This ambiguity worsened when the Chinese Civil War broke out in the 1930s, with ROC's Chiang Kai-shek government and the Chinese mainland's Mao Zedong on opposing sides. With Mao's supremacy and complete control over China (thereafter called PRC) and the rise of Communism, Kai-shek's loyalists fled and took refuge in the island of Taiwan, later forming a political party - Kuomintang (KMT), which is the principal opposition party in Taipei's government this day. Since this act of fleeing as well as the Cairo Declaration, Zedong and his successors have considered Taiwan to be an 'integral part' of the Chinese mainland, in line with their 'String of Pearls' theory, serving as yet another thorn in the USA-PRC political relations.

- 1912 Quing Dinasty gets overthrown
- 1925 KMT founds rival Government in Guangzhou
- 1928 KMT forms government in Beijing, civil war with Communists starts
- 1937 Japanese invade China, KMT and Communist fight them together
- 1945 Japan surrenders, hands Taiwan to KMT
- 1946 KMT – Communist truce breaks down
- 1949 Communists proclaim PRC
- 1949 Chiang Kai-shek proclaims Taipei capital of RoC
- 1971 PRC becomes official Chinese representative at the UN, Taiwan loses all UN representation

Figure 8: Simplified Timeline of Taiwanese History (20th Century)
(Source: https://libel.iflry.com/when-is-a-country-not-a-country/)

In the 21st century, the Taiwanese issue has become an all-encompassing part of US foreign policy, with them openly aligning with Sai Ing-wen of ROC. Xi Jinping has taken an equally assertive stand against the Biden administration and has launched repeated incursions and violations into Taiwanese territory, openly flouting the restrictions placed upon it – sanctions or otherwise.

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Along with the foreign policy dynamic, the semiconductor symphony is worsening the situation to epic proportions, with the USA and PRC locking horns over the same. Taiwanese speciality in chip fabrication and its importance in the supply chain logistics has made it an important element in the saga. Controlling the chip industry translates to having expansive economic power in the global economy. Controlling and safeguarding semiconductor technology also equals having an added military edge over the opponent. PRC has been desirous of dominating ROC to access its cutting-edge technology and utilize it to its advantage. The fall of ROC would not only entail a huge supply disruption of chips globally but also cripple its rivals from gaining upper ground in its ascension towards the market leader herein. USA too, has been ever-cautious of the intentions of the PRC, and hence has resorted to passing legislations like the CHIPS Act, which, though seemingly innocuous, purports to choke the nascent Chinese manufacturing and design chip industries by restricting the sale and export of advanced semiconductor hardware or human talent to them, whilst sanctioning USD 280 billion to further augment American chip firms. This altercation renewed itself with fervour with the PRC, in May 2023, banning a USA chip-giant, Micron, from operating in the country and hence paying back in the same coin. With this avenue of aggression rapidly turning into a proxy war witnessing heavy arms deployment by both sides around the South China Sea and the adjoining Pacific, as well as the constant threat and stockpiling of nuclear weapons and explosives from both factions, it is indeed, in the words of Anthony Blinken, Secretary of State, USA – 'the biggest geopolitical test of the 21st

Hussain and Brookins (2001) used extreme-bounds methodology to investigate the determinants of national saving, including current transfers from abroad. Their study is unique in that they examine the robustness of the signs and size of several proposed determinants of saving, which has not been done extensively before using the extreme-bounds methodology. They analysed both cross-sectional and panel data and found that traditional EBA and restricted EBA tests do not support the commonly used determinants of national saving, such as demographic variables, income, and financial factors. However, they also identify four robust determinants of saving behaviour in panel models: public saving, overall budget balance, agriculture share, and current account balance.

Additionally, they reported that alternative methods, such as the significance ratio and cumulative distribution tests, indicated that real GDP per capita, young-age dependency ratio, income volatility, and total trade are also robust determinants of national saving.

In Khan's (2018) study on the determinants of gross domestic saving in eighteen Asian countries, spanning the period 1995-2016, various statistical techniques, including a fixed effect model, descriptive statistics, and a correlation matrix, were employed. The research revealed that gross domestic product (GDP), age dependency ratio, broad money, and inflation exerted statistically significant effects on gross domestic saving. Conversely, tax revenue demonstrated a non-significant impact. Notably, positive effects were observed for GDP, broad money, and tax revenue, while age dependency ratio and inflation exhibited negative effects on gross domestic saving.

Research Methodology

The data has been collected and sourced completely from the Data Bank provided by the World Bank under its World Development Indicators. The data covers 1999 to 2020 and a consequent regression analysis along with a correlation analysis has been performed on the collected data to identify any potential relationships and the strength of these relationships between the variables.

The regression analysis is based on a panel data time series-based approach, and both the regression analysis and the correlation matrix were formulated using Microsoft Excel (Data Analysis ToolPak).

The Dependent variable in this regression model is :

- **Gross domestic savings (current US$):** Gross domestic savings (NY.GDS.TOTL.CD) is an economic indicator that measures the amount of savings generated within a country. It is calculated as the difference between a country's Gross Domestic Product (GDP) and its total consumption expenditure. In other words, it represents the portion of a country's income that is not spent on consumption and is instead saved for future investment. This indicator is expressed in current US dollars and can be used to compare the savings rates of different countries. A high level of gross domestic savings can indicate a strong economy with a high level of investment, while a low level may suggest that a country is consuming more than it produces. Data on GDS for India has been taken from the World Development Indicators by the World Bank.

The Independent variables and corresponding hypotheses are as follows:

- **Lending Interest rates (%):** As per the World Bank, the lending rate represents the bank's interest rate tailored to cater to the short- and medium-term financial requirements of the private sector. These rates typically differ on a subjective basis, based on the creditworthiness of

borrowers and the intended financing goals. Direct comparisons using lending rates may not be straightforward since there are a lot of variations in these rates and many factors to be considered.

- Null Hypothesis(H0) - There is no significant relationship between Gross Domestic Savings (dependent variable) and Lending interest rates (%).
- Alternate Hypothesis(H1) - There exists a significant relationship between Gross Domestic Savings (dependent variable) and Lending interest rates (%).

- **Inflation, consumer prices (annual %)**: Consumer price index (CPI) inflation signifies the annual percentage shift in the expense for the average consumer to obtain a set basket of goods and services. This basket may have items that remain constant or alter at specified intervals, typically on an annual basis. In simpler terms, inflation is the increase in the general levels of prices for goods and commodities all across the board. Higher levels of inflation for longer durations weaken the economy since it erodes the purchasing power of a consumer and severely affects demand.
- Null Hypothesis(H2) - There is no significant relationship between Gross Domestic Savings (dependent variable) and Inflation, consumer prices (annual %).
- Alternate Hypothesis(H3) - There is a significant relationship between Gross Domestic Savings (dependent variable) and Inflation, consumer prices (annual %).

- **Domestic credit to the private sector by banks (% of GDP):** Domestic credit extended to private sector entities by banks usually refers to financial resources provided to private sector companies by banking institutions. This includes financial loans, purchasing or selling non-equity securities, and trade credit receivables, these establish a claim for

potential repayment. This credit mechanism allows businesses to grow and expand their markets and consumer base, and limited credit facilities hamper the growth of start-ups and businesses in any country.

- Null Hypothesis(H4) - There is no significant relationship between Gross Domestic Savings (dependent variable) and Domestic credit to the private sector by banks (% of GDP).
- Alternate Hypothesis(H5) - There exists a significant relationship between Gross Domestic Savings (dependent variable) and Domestic credit to the private sector by banks (% of GDP).

- **Households and NPISHs final consumption expenditure (current US$):** This is a metric that refers to the total spending by households and non-profit institutions serving households (NPISHs) on final goods and services that are consumed during the current period. This expenditure represents the amount of money that households and NPISHs spend on consumption activities, such as buying food, clothing, housing, and other consumer goods and services. This consumption figure is important to consider since higher consumption will most definitely lead to lower levels of savings for households and how consumption is affected by other factors and their consequent movements is considered through the correlation and regression analyses.
- Null Hypothesis(H6) - There is no significant relationship between Gross Domestic Savings (dependent variable) and Households and NPISHs final consumption expenditure.
- Alternate Hypothesis(H7) - There is a significant relationship between Gross Domestic Savings (dependent variable) and Households and NPISHs final consumption expenditure.

- **Taxes on income, profits, and capital gains (% of revenue):** This metric, expressed as a percentage of revenue, comprises taxes on income, profits, and capital gains. The taxes on income, profits, and capital gains pertain to levied on individuals' actual or presumptive net income, corporate profits, and capital gains from assets like land and securities—whether realised or not. Higher levels of taxes drain excess liquidity from individuals and companies alike into government coffers in the form of tax revenue. In the general sense of belief, higher levels of taxes may lead to decreased savings, but the relationship is more nuanced than expected.
- Null Hypothesis(H8) - There is no significant relationship between Gross Domestic Savings (dependent variable) and taxes on income, profits, and capital gains.
- Alternate Hypothesis(H9) - There exists a significant relationship between Gross Domestic Savings (dependent variable) and taxes on income, profits, and capital gains.

Results and Discussions

Data Analysis and Interpretations

Regression Statistics	
Multiple R	0.998552
R Square	0.997105
Adjusted R Square	0.99614
Standard Error	1.6E+10
Observations	21

Table 1.

Table 1. provides the results obtained after running a regression analysis with the dependent variable (GDS) and the independent variables (Taxes on income, profits, and capital gains (% of revenue), Domestic credit to private sector by banks (% of GDP), Households and NPISHs final consumption expenditure (current US$), Lending Interest rates (%), and Inflation, consumer prices (annual %). The results show that the Multiple R value is 0.998 which suggests a very strong positive correlation between

the dependent and independent variables.

The R Square value of 0.997 tells us that approximately 99.71% of the variations in the dependent variable (GDS) can be Explained by the variations in the independent variables.

This helps to conclude that the model is a good fit for the data.

The Adjusted R Square considers the number of independent variables used in the model and accordingly adjusts to better fit the model. In this case, the value of 0.99614 suggests that the model output generated is reliable and there is a good fit between the dependent and the independent variables.

ANOVA					
	df	SS	MS	F	Significance F
Regression	5	1.31E+24	2.63E+23	1033.363758	1.78E-18
Residual	15	3.82E+21	2.54E+20		
Total	20	1.32E+24			

Table2.

Based on the ANOVA output presented in Table 2., further important interpretations can be drawn:

We can see that the F-statistic is 1033.4 which indicates a statistically significant relationship between the dependent variable (GDS) and independent variables.

	P-value	Statistical Significance
Intercept	0.032863004	
Inflation, consumer prices (annual %)	0.005867832	Significant
Lending interest rate (%)	0.100659907	Not Significant
Domestic credit to the private sector by banks (% of GDP)	0.034809687	Significant
Households and NPISHs final consumption expenditure (current US$)	1.18347E-13	Significant
Taxes on income, profits, and capital gains (% of revenue)	0.117363759	Not Significant

Table 3

Additionally, the p-value associated with the F-statistic under the column Significance F in Table 2. is 1.78E-18, which is very small and significant, indicating that the probability of obtaining such a large F-statistic by chance or by no connection between the variables is very low. This again helps to establish a strong and significant relationship between the independent variable mix and the dependent variable, i.e., Gross Domestic Savings.

Data Interpretation

Inflation, consumer prices (annual%)
The p-value associated with inflation and GDS is 0.00587 (roughly 0.587%) which is statistically significant at the 95% confidence level. If the p-value were to be larger than 0.05, then the relationship would not be determined to be significant. Further analysis for Correlation Analysis using MS Excel; Karl Pearson's correlation coefficient (r), came out to be around 0.1312 which is positive but relatively low. This suggests a weak positive linear relationship between gross savings and the inflation rate.

Based on the p-value analysis, we can observe that the null hypothesis [H0] can be rejected since 0.00587 is below the required confidence level of 0.05. This implies that there is sufficient evidence to reject the null hypothesis in favour of the alternate hypothesis [H3]. Therefore, the statistical analysis yields a compelling basis for accepting the alternate hypothesis over the null hypothesis.

Lending Interest Rate (%)
As per the regression results, the relationship between GDS and lending rates does not hold significantly at the 95% confidence level since the p-value is at 0.1006 (not below the desired 0.05 level). The correlation coefficient, r, stands at around -0.7272, which suggests a highly negative/inverse relationship between interest rates and GDS. This could be mainly because higher interest rates increase the burden of existing debt for individuals and businesses. In such situations, people might prioritise paying off debt rather than saving.

This negative relation could also be because higher interest rates provide more attractive returns on certain investments, such as bonds or other interest-bearing assets. In such cases, individuals might choose to invest their money rather than keep it in traditional savings accounts.

Based on the p-value analysis, we fail to reject the null hypothesis [H2]. This implies that there is insufficient evidence to reject the null hypothesis in favour of the alternate hypothesis [H3]. Therefore, we do not find significant support for the alternate hypothesis at the chosen level of significance.

Domestic credit to the private sector by banks (% of GDP)
The p-value for the variable "Domestic credit to the private sector by banks (% of GDP)" is 0.0348, which is less than the conventional significance level of 0.05. This suggests that the coefficient for this variable in the regression model is statistically significant.

Based on the regression results, we find that the null hypothesis [H4] can be rejected since it meets the desired level of confidence at 0.0348 (<0.05) and this favours the alternate hypothesis [H5] suggesting that there is indeed a statistically significant relation between gross domestic savings and domestic credit provided to the private sector by banks.

The correlation coefficient (r) between "Domestic credit to the private sector by banks (% of GDP)" and "Gross Domestic Savings" is 0.9099. This indicates a very strong positive linear relationship between these two variables.

This seemed counterintuitive at first, but there are many complex reasons why this result has been produced, which makes this much more interesting.

Consumer and business behaviour also play a role. Some individuals may choose to borrow and spend, while concurrently maintaining or increasing their savings. Businesses might use credit for investment purposes while also maintaining healthy cash reserves. The correlation may be influenced by economic cycles. During periods of economic expansion, both domestic credit and gross domestic savings may increase. Conversely, during economic contractions, both could decrease. This just goes

to show how truly interconnected and complex the relationship between these metrics is in the economy.

Households and NPISHs final consumption expenditure (current US$)
Households and NPISHs final consumption expenditure has a p-value of 1.18347E-13 which is very small and is far below the required level of significance at 0.05.

This helps us to reject the null hypothesis [H6] in favour of the alternate hypothesis [H7] and observe that there is a statistically significant relationship between gross domestic savings and final consumption expenditure of households and NPISHs.

Correlation Analysis	Gross savings (current US$)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Domestic credit to private sector by banks (% of GDP)	Households and NPISHs final consumption expenditure (current US$)	Taxes on income, profits, and capital gains (% of revenue)
Gross savings (current US$)	1					
Inflation, consumer prices (annual %)	0.131186	1				
Lending interest rate (%)	-0.72725	0.075373	1			
Domestic credit to private sector by banks (% of GDP)	0.909882	0.246285	-0.62071	1		
Households and NPISHs final consumption expenditure (current US$)	0.982449	0.021113	-0.72923	0.828992	1	
Taxes on income, profits, and capital gains (% of revenue)	0.872162	0.282056	-0.51534	0.96856	0.783523	1

Taxes on income, profits, and capital gains (% of revenue)

The high correlation coefficient indicates a positive relationship, suggesting that, on the surface, there might be a link between higher taxes on income, profits, and capital gains and higher gross domestic savings.

However, the non-significant p-value implies that, within the context of the regression model, the observed relationship may not be statistically robust. In other words, while there is a correlation, the relationship might not be reliably captured by the regression model due to variability or other factors.

With the p-value standing at around 0.1173, it is not lower than the desired 0.05 level of significance and hence the relationship between gross domestic savings and taxes on income, profits, and capital gains is not statistically significant according to the results of the regression. Thus, we fail to reject the null hypothesis [H8].

Limitations and Potential Areas for Research

Further research could, for instance, examine the effect of social and cultural factors on the savings behaviour of Indian households since these factors are known to influence financial decision-making in society and also analyse how government policies such as tax incentives and subsidies affect domestic savings in India since these policies are often used by policymakers to encourage households and businesses to save.

It is also important to note that the present study has certain limitations that must be taken into account when interpreting its results.

This study relies on a relatively simple regression model which may not have adequately captured the full complexity of the relationship between the variables. Demographic factors and regional variations in savings behaviour may also be important determinants of gross domestic savings that have not been considered in the model and thus provide room for further research.

Statistical models also have some limitations, such as the problems of multicollinearity and heteroscedasticity. These can distort the true relations between the variables, and such limitations should be kept in mind while interpreting the results of these models and software.

Conclusion

This study has provided important insights into the major determinants of gross domestic savings, a critical component for economic

growth and stability. The regression and correlation analyses revealed several key findings:

- Income level (GDP per capita) is a strong positive predictor of GDS, as higher incomes enable greater capacity for savings. This suggests that policies aimed at promoting economic development and raising living standards can have a meaningful impact on a country's savings rate.
- Inflation was found to have a statistically significant negative relationship with GDS (p-value = 0.0058), highlighting the importance of price stability for encouraging household savings. This suggests that policymakers should focus on maintaining low and steady inflation through sound and flexible monetary policies.
- The relationship between lending interest rates and GDS was not statistically significant (p-value = 0.1006) within the regression model, despite the observed strong negative correlation. This suggests that the impact of interest rates on savings decisions is much more complex and may be influenced by other factors.

- Domestic credit to the private sector by banks (as a % of GDP) exhibited a positive and statistically significant relationship with GDS (p-value = 0.0348). This implies that efforts to deepen and broaden financial markets can facilitate greater mobilization of savings.
- Household and NPISH final consumption expenditure had a highly significant negative association with GDS (p-value = 1.18347E-13), underscoring the inherent trade-off between consumption and savings.
- The relationship between taxes on income, profits, and capital gains (as a % of revenue) and GDS was not found to be statistically significant (p-value = 0.117), despite the observed positive correlation.

"The curious task of economics is to demonstrate to men how little they know about what they imagine they can design."

~Friedrich August von Hayek

As Hayek aptly reminds us here, the complexity of economic systems means that policymakers and speculators must exercise caution and humility when attempting to "design" optimal savings outcomes. Unforeseen shocks, such as the COVID-19 pandemic, or escalating tensions between countries and many more such scenarios can dramatically alter the savings and investments landscape. Therefore, a balanced approach that accounts for both empirical insights and the inherent unpredictability of economic forces over time is essential for crafting policies that can effectively promote national savings and, ultimately, sustainable economic growth for India.
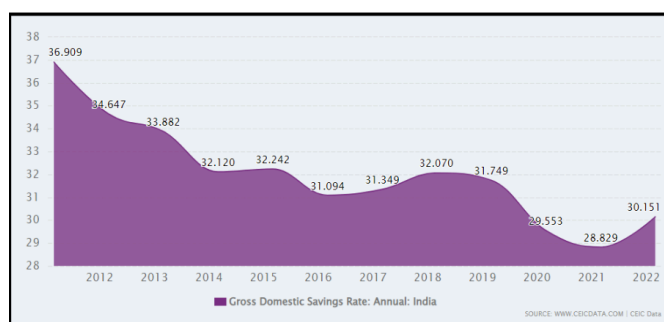

Fig1.

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An Escape from 33 years of Deflation

Akshay K Dutta

Abstract

This study examines Japan's financial market, which is showing signs of recovery after a long period of deflation. This revival, which could signal an end to Japan's three-decade economic slump, is driven by several factors. These include the Bank of Japan's (BOJ) unique monetary policies, a depreciating yen, and a recovering global economy. The Nikkei 225, a stock market index, has reached its highest point in many years, while Japanese government bonds (JGBs) continue to yield low returns. These trends have sparked hope among investors and policymakers, suggesting that Japan's economy may be reaching a turning point. The BOJ's commitment to its unique monetary policy, known as "Abenomics," has been key in revitalising the Japanese economy. The central bank's large-scale asset purchases and negative interest rates have increased the amount of money in the financial system. This has reduced borrowing costs and encouraged investment, which in turn has weakened the yen, increased exports and boosted corporate profits. As the global economy recovers, Japan, with its export-driven industries, has benefited from strong international demand. The country's exports have become more competitive due to the yen's depreciation, which has increased the trade surplus. The paper concludes by discussing the future of the Japanese financial market and the role of JGBs. It also addresses the ongoing challenge of balancing economic growth with fiscal sustainability and emphasises the need for Japan to continue building a strong and resilient financial ecosystem.

Keywords: Resurgence, Japanese government bonds (JGBs), Unorthodox monetary policies, Fiscal sustainability, Yen depreciation, Investor confidence.

JEL Classification : B22, E52, E58, E62, E71, G11, G18, G23, G41

Purpose

1. To understand the factors that contributed to the Japanese government bond market resurgence.
2. To evaluate how the preferences of investors have shifted in response to the changed JGB market conditions.
3. To study the limitations and potential adverse consequences of the monetary policy of the Bank of Japan (BoJ), and its effects on the Indian as well as Japanese bond market.

Introduction

Japan, a major global economy, has been dealing with deflation for over 30 years. This long-lasting deflation has slowed down growth and challenged traditional economic policies. But recently, things have started to look up. Japan's financial market is showing signs of recovery, moving away from stagnation.

This paper will take a deep dive into this significant change. It will look at the complex factors at play and the crucial role of Japanese Government Bonds (JGBs) in this turnaround. While deflation is a worldwide issue, Japan's situation is unique because of its long period of stagnation. This makes it an interesting case study with lessons for other countries. The revival of Japan's financial market is evident in the Nikkei 225 stock index, which has reached its highest point in many years. JGBs, which often don't get much global attention, have been key to this revival. Their consistently low yields have helped rejuvenate Japan's financial scene.

A variety of interconnected factors have contributed to this revival. One of the main ones is the unconventional monetary policies of the Bank of Japan (BOJ), including a massive asset purchase program and negative interest rates. These strategies have pumped a lot of money into the financial system, lowered borrowing costs, encouraged investment and weakened the yen. This has made exports more competitive and increased corporate profits. At the same time, a global economic recovery has boosted Japan's export industries. A weaker yen has made Japanese exports more competitive, increasing the trade surplus and strengthening the economy.

However, this revival of the Japanese financial market also brings challenges. One of the main ones is finding a balance between economic growth and fiscal sustainability. This paper will explore these challenges as it examines Japan's escape from deflation. It will also look at the importance of building a strong and resilient financial system. The insights gained from this exploration will not only shed light on Japan's economic path but also provide a valuable case study for economists, policymakers, and investors around the world. It shows how countries can adapt and overcome major economic challenges and highlights the crucial role of financial instruments like JGBs in shaping a country's financial future.

The Significant role of Monetary and Fiscal policies of Japan's deflation

Monetary Policy: The Bank of Japan (BoJ) pursued a policy of low-interest rates and quantitative easing (QE) to stimulate economic growth. However, the effectiveness of these measures was limited by a "liquidity trap," where nominal interest rates were close to zero, and conventional monetary tools became less impactful. The prolonged period of near-zero

conventional monetary tools became less impactful. The prolonged period of near-zero interests rates reduced the incentive for households and businesses to borrow and spend, leading to weak demand and deflationary pressures.

Fiscal Policy: The Japanese government implemented various fiscal stimulus packages to boost economic activity, including public infrastructure projects and tax cuts. However, these efforts often led to mounting public debt without substantial improvements in economic growth. The large debt burden, coupled with demographic challenges (an ageing population and shrinking workforce), limited the government's ability to sustain fiscal expansion. As a result, the impact of fiscal measures on demand and inflation remained subdued.
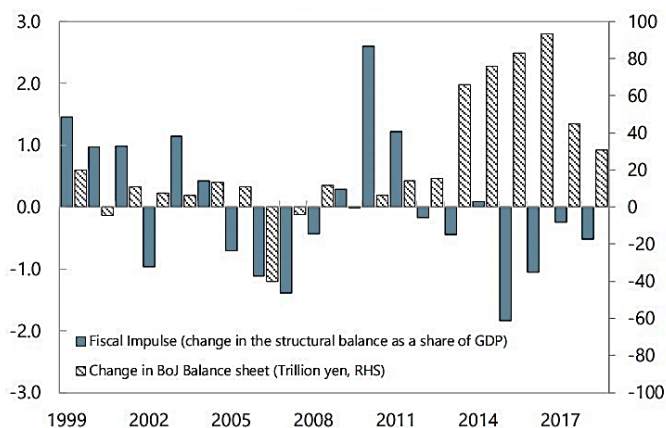

Figure 1: Japan's Fiscal and Monetary Policy Coordination

The Joint Statement in 2013 by the government of Japan and the BoJ was an important attempt to address this coordination failure. However, the effort has not panned out as hoped [2].

Japanese Government Bond (JGB)

Key Participants of JGBs: The Japanese government is the issuer of JGB, Domestic Investors, Foreign Investors, Commercial Banks and Central Bank (Bank of Japan), intermediaries like Brokerage firms, credit rating

agencies, regulatory bodies, such as Japan's Financial Services Agency (FSA).

Distribution of Japanese Government Bond (JGB) holders: According to the distribution of Japanese Government Bond (JGB) holders as end of March 2023 was the Bank of Japan (BOJ) held 53.3 percent, Domestic banks held 11 percent, Foreigners held 7.2 percent and the other holders included insurance companies held 19.1 percent, pensions held 2.8 percent, households held 1.2 percent, etc. [3]
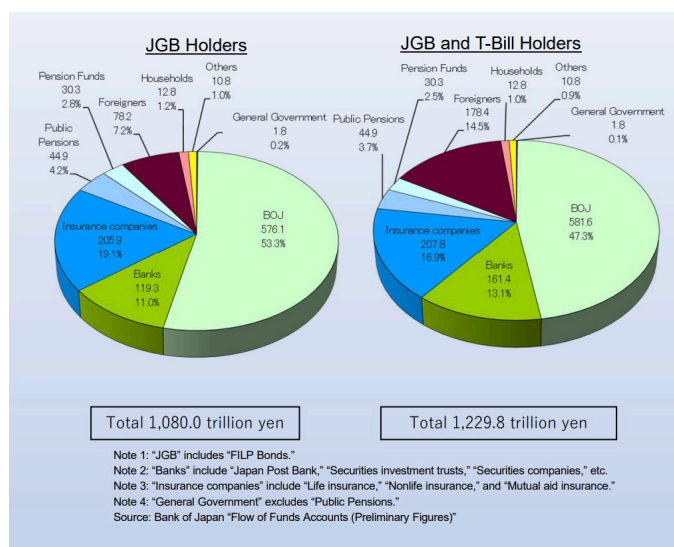
Recent Surge of JGB: The yield on 10-year Japanese government bonds (JGB) rose to 0.65% on Thursday, August 03, 2023, 08:05 AM IST, the highest since April 2014, after the Bank of Japan loosened its grip on yield curve control last week [5]. The Bank of Japan now owns half of outstanding Japanese government bonds (JGBs) issued in the market, data showed Monday, a sign the bank's aggressive buying to defend its 0.25% yield cap is bloating an already huge balance sheet [6].

In its statement, the bank said it would maintain its current inflation target until it could be maintained in a "stable manner," adding that it would "not hesitate to take additional easing measures, if necessary" [8].

Literature Review

Japan's financial landscape has been marked by a prolonged period of deflation, a unique economic phenomenon that has puzzled both policymakers and investors for over three decades. This period, often referred to as the "Lost Decades," began in the early 1990s following the burst of an asset price bubble. The deflationary spiral was characterised by falling prices, weak consumer demand, and sluggish economic growth. Despite numerous attempts at economic revitalisation, Japan remained trapped in this deflationary cycle. Previous research has extensively analysed this period, examining the economic policies implemented and their outcomes. These studies provide valuable insights into the complexities of deflation and the challenges faced by policymakers in combating it.

The catalyst for change arrived with the advent of "Abenomics," an economic revival strategy championed by Prime Minister Shinzo Abe in late 2012. This strategy consisted of "Three Arrows" - aggressive monetary easing, flexible fiscal policy, and structural reforms aimed at promoting economic growth. The first arrow, monetary easing, was implemented by the Bank of Japan (BOJ) under the leadership of Governor Haruhiko Kuroda. The BOJ introduced unorthodox monetary policies, including quantitative and qualitative monetary easing (QQE). This policy marked a decisive departure from traditional monetary strategies and had a multifaceted impact on the economy. It included the massive purchase of government bonds, which drove up their prices and suppressed yields. This not only helped to reduce borrowing costs but also influenced the broader financial market by injecting substantial liquidity.

Japanese Government Bonds (JGBs) have

played a crucial role in Japan's financial system. The JGB market is one of the largest and most liquid bond markets in the world, attracting both domestic and foreign investors. The historically low yields on JGBs have been instrumental in influencing borrowing costs across various sectors of the economy, fostering a climate of affordability. JGBs also play a significant role in shaping Japan's fiscal policy. They serve as a benchmark for interest rates, influencing not only government spending but also private-sector investment decisions. Furthermore, the BOJ's massive purchases of JGBs have provided a channel for monetary policy transmission, fostering liquidity and influencing broader financial markets.
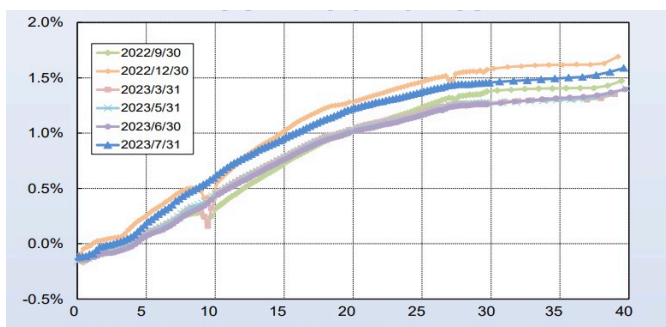

Figure 2: JBG Yield Curves

The changed conditions in the JGB market have led to a shift in investor preferences. As the yields on JGBs remained low, investors started looking for higher returns elsewhere. This led to an increase in investment in riskier assets, such as stocks and real estate. The shift in investor preferences has been studied extensively, with research examining the factors influencing investment decisions in the context of the JGB market.

The shifting preferences of Japanese investors in response to changing Japanese Government Bond (JGB) market conditions have been influenced by a variety of factors as follows -

- Japanese investors, including institutional players like pension funds and insurers, are

now seeking alternative investments that

- offer higher yields to meet their income requirements. This search for yield has led them to explore foreign markets, including emerging markets like India, where higher yields can be found. Japanese investors are increasingly recognising the importance of diversifying their portfolios to manage risk and enhance returns. The concentration of holdings in JGBs exposes them to interest rate risks and limited capital appreciation potential. As a response, investors are looking beyond their domestic market to include a broader range of assets, such as equities, foreign bonds and alternative investments.

- Regulatory body changes both domestically and internationally, can impact investor preferences. Japanese authorities' policies and regulations related to overseas investments can influence the ease with which investors allocate capital to foreign markets like India. Tax considerations, such as withholding taxes on foreign investment income, can also influence decisions. As well as financial institutions including banks and security firms, are affected by changing investor preferences. These institutions may need to adapt their product offerings and strategies to align with the evolving demands of their clients

- Japan's ageing population and declining birth rates have implications for its investor landscape. Pension funds and insurers, which cater to these demographics, face challenges in generating sufficient returns to meet their liabilities. This encourages a broader search for higher-yielding assets beyond the JGB market.

The Impact on the Indian Financial Market

The resurgence of the Japanese financial securities market, as illuminated in the study, "An escape from 33 years of deflation: The Japanese financial securities market is experiencing a grand upswing with special reference to Japanese Government Bonds," carries implications that reverberate far beyond the shores of Japan. This resurgence holds the potential to exert a discernible impact on the Indian financial market, even though the two nations might seem, at first glance, to be disparate players in the global economic theatre.

Firstly, the Japanese upswing, with a revitalised global economy as a backdrop, provides an expanded avenue for Indian investors to diversify their portfolios. As Japan's financial securities market regains its vibrancy, it may become an attractive destination for Indian investors seeking to allocate their resources into-to international assets. A dynamic and stable Japanese market can offer a haven for Indian investors in times of global economic volatility. Moreover, the resurgence of the Japanese financial market, underpinned by the Bank of Japan's (BOJ) unorthodox monetary policies, can impart important lessons for Indian monetary authorities and policymakers. The BOJ's commitment to combat deflation, accompanied by its massive asset purchases and negative interest rates, offers insights into the toolkit that India's central bank, the Reserve Bank of India (RBI), can potentially employ to address its own economic challenges. The study, by shedding light on the effectiveness of these policies, can inform the RBI's future strategies. The study's emphasis on the role of Japanese Government Bonds (JGBs) is particularly pertinent for Indian policymakers. As India navigates its own fiscal and monetary policies, it can draw valuable lessons from how JGBs have been leveraged as financial instruments to stimulate Japan's economy. This includes the influence of JGBs on borrowing costs, which can guide Indian policymakers in their management of domestic government securities. Furthermore, the study's exploration of the global economic context and its impact on Japan's resurgence underscores the interconnected nature of international markets. As the Indian financial market remains integrated into the broader global economy, Japan's revival has implications for the prospects of Indian exports and the overall health of the Indian economy. The synchronised global economic recovery, as witnessed in the study, can augur well for Indian trade and industry. The resurgence of the Japanese financial securities market, detailed in the research paper, casts a substantial shadow that touches the Indian financial landscape.

From offering diversification opportunities for Indian investors to serving as a source of policy insights and lessons, the study underscores the interwoven nature of global financial markets and how events in one nation can cascade across borders, influencing financial dynamics in seemingly distant regions like India. As such, the study serves as a valuable resource for Indian financial analysts, policymakers, and investors navigating the intricate world of international finance.

The literature review concludes by summarising the key points discussed. It highlights the interplay of historical, policy, and global factors that have contributed to Japan's escape from deflation. It emphasises the need for further research in this area, particularly in understanding the long-term effects of the BOJ's monetary policies and the evolving role of JGBs in Japan's financial system. The review also underscores the interdependence of domestic policies and the global economic environment, illustrating that Japan's escape from deflation is not an isolated phenomenon but a part of the

roader economic landscape.

Research Methodology

In the pursuit of comprehending the profound transformation witnessed in Japan's financial securities market—an evolution marked by the triumphant escape from three decades of deflation and the emergence of a grand upswing —a well-structured research methodology is imperative. This research employs a methodology primarily centred on secondary data analysis. Secondary data analysis, a robust and systematic approach, relies on the scrutiny and synthesis of pre-existing data, literature, and scholarly works, fostering a nuanced understanding of the research topic. The foundation of this research draws upon a diverse array of secondary data sources, each constituting a critical building block for the narrative of Japan's economic resurgence. Economic reports and publications, emanating from a spectrum of sources, serve as fundamental pillars. These encompass documents from Japanese government entities, the esteemed Bank of Japan (BOJ) and international financial organisations. These reports are indispensable in casting light on Japan's economic policies, monetary strategies, and the unfolding dynamics of its financial markets. They provide the essential backdrop, lending context to Japan's journey of economic transformation. Simultaneously, the study delves into the intricate landscape of historical financial market data. This treasure trove of information encompasses a multitude of financial indices, including the performance of stock markets, the comportment of bond yields, the oscillations of exchange rates and the intensity of trading volumes. These datasets, both extensive and invaluable, empower the systematic tracking of trends and patterns within Japan's financial securities market. They are instrumental in chronicling the impact of various economic

policies and monetary measures, further enriching the research's evidentiary foundation.

The academic realm, specifically in the form of academic journals and research papers, is another invaluable trove of insights. These scholarly sources provide a wealth of empirical studies, theoretical frameworks and in-depth analyses, all of which enrich the research by providing a deeper understanding of the multifaceted factors that have facilitated Japan's economic resurgence. This body of scholarly work is underpinned by rigorous research methodologies and the latest economic theories, making it a vital reference for the research's conceptual framework. To further contextualise the research and offer a more comprehensive perspective, books and monographs authored by eminent experts in the fields of economics and finance are consulted. These authoritative volumes deliver expansive overviews and historical context, thus enhancing the research's depth and breadth of comprehension. The global perspective is also considered through reports and publications from international financial institutions such as the International Monetary Fund (IMF) and the World Bank. These reports offer a panoramic view, enabling the evaluation of Japan's role in the larger international economic tableau and the potential global implications of its resurgence. The secondary data analysis methodology adheres to a meticulous and systematic approach. It commences with data collection from a diverse array of sources. Subsequently, the amassed data is organised with precision, categorised thematically, and chronologically structured to ensure a coherent narrative. A comprehensive literature review follows, entailing the identification and analysis of academic papers, expert opinions and scholarly publications. This literature forms the foundational underpinning for the research's theoretical and conceptual framework. The process culminates in data synthesis, a nuanced exercise involving the

identification of prevailing trends and patterns. This synthesis facilitates the discernment of causal relationships and allows for the formulation of hypotheses and conclusions, enriching the understanding of the research topic. While the secondary data analysis methodology offers a potent means of research, it brings with itself its own limitations. The reliability and quality of the data hinge on the credibility of the sources. The potential for bias within the data or the sources themselves poses a challenge to objectivity. Moreover, the scope of the study is inherently confined to existing sources, potentially omitting specific details or the most recent developments. To address these limitations, the research methodology incorporates a rigorous approach to data quality, diversity of sources and the mitigation of potential bias.

In summation, the secondary data analysis methodology stands as the cornerstone of this research, offering a systematic and profound exploration of Japan's financial resurgence. It encapsulates the essence of an endeavour committed to unravelling the complexities of a significant economic and financial narrative. The narrative of Japan's escape from deflation and the remarkable ascent of its financial securities market, with special reference to the role of Japanese Government Bonds, is an essential component of the contemporary economic landscape, and this methodology serves as a robust vehicle for comprehending its intricacies.

Limitations

The comprehensive analysis of Japan's departure from a protracted era of deflation and its subsequent financial resurgence, with a specific focus on the Japanese Government Bond (JGB) market, is a subject of considerable significance. However, it is imperative to acknowledge the inherent limitations that temper the scope and depth of this study.

1. **Data Limitations:**
   - The reliance on historical data and information sources may introduce inaccuracies and incompleteness.
   - Data availability constraints, particularly for specific timeframes and precise financial transactions, may hinder comprehensive analysis.

2. **Temporal Constraints:**
   - Absence of real-time data may limit the ability to capture recent developments and their immediate impacts.

3. **Complexity of Financial Markets:**
   - The intricate nature of Japan's financial markets poses challenges in fully exploring all interrelated factors influencing market behaviour.
   - Establishing definitive causality amidst multifaceted market dynamics may be difficult, leading to the unveiling of correlations rather than causal relationships.

4. **Generalisability Concerns:**
   - The unique historical, cultural, and economic attributes of Japan may restrict the applicability of findings to other nations or regions.
   - Extrapolating findings to different contexts might oversimplify complexities inherent in other economies.

5. **Dynamic Nature of Financial Markets:**
   - Financial markets are subject to frequent fluctuations and unforeseen events, potentially rendering certain conclusions outdated.
   - Unforeseen events and exogenous factors, such as geopolitical conflicts or natural disasters, can exert profound influences on market dynamics.

6. **Policy and Regulatory Factors:**
   - Changes in government policies and

- regulatory frameworks may significantly impact financial markets.
- The assumption of a relatively stable policy and regulatory environment may overlookthe potential impact of future shifts on Japan's financial securities market.

While this research contributes valuable insights into Japan's escape from deflation and the revitalisation of its financial securities market, these categorised limitations underscore the complexity and ever-evolving nature of financial markets. Future research should aim to build upon and refine our understanding of these intricate dynamics.

Conclusion

The revival of the Japanese Government Bond market, driven by the Bank of Japan's policy adjustments, has had far-reaching effects on investor preferences and foreign markets like India. Expectations about future inflation can impact bond yields. Higher inflation xpectations tend to lead to higher yields, as investors demand compensation for eroding purchasing power. Significant shifts in global bond markets, including JGBs, may influence the Reserve Bank of India (RBI)'s monetary policy stance and its decisions regarding policy rates and liquidity measures otherwise large-scale withdrawal of Japanese investment from Indian bonds can

experience spillover effects on other segments of the Indian financial markets, including equities and currency markets. Citi Bank has quoted that BOJ will eliminate YCC before the end of 2023 "We expect that the Bank of Japan will purposefully exit its ultra-loose monetary policy, which could take place in the second half of this year. If this happens, the yen has room to strengthen further," says Citi Bank. However, the case study also underscores the limitations and potential side effects of the BoJ's monetary policy on the bond market. It is essential for policymakers and banks to carefully navigate these challenges while seeking to achieve stability and growth in bond market or else investors' sentiment can quickly shift in response to unexpected events, such as the collapse of Silicon Valley Bank [5]. If investors become less optimistic about economic stability, they may revise their expectations for central bank actions, including the BOJ's policy on JGB yields. It can also affect geopolitical events, including trade tensions, political instability and global conflicts and can create uncertainty in financial markets and influence investor behaviour of Japan and India. This interplay between policy, investor behaviour and market dynamics highlights the complexity of modern global financial systems.

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Mapping the Affluence Line

Mehak Sharma

Abstract

This study explores the understudied realm of top-heavy economies amidst the ongoing discourse on inequality. Introducing the concept of an affluence line, distinguishing between the "rich" and "super-rich", the paper proposes a weighted average approach, combining per capita GDP and Mean Income. It highlights the tendency of the super-rich towards extravagance, creating a new norm that parallels the struggles of the less affluent.

This study sheds light on the intricate interplay between affluence, entitlement and economic dynamics at the highest societal strata, offering insights into potential ramifications on GDP growth and wealth distribution. Furthermore, it utilises Tanguanian cabinet analysis to prove the existence of invisible dictators driving the choice of affluent individuals to consume goods at a higher markup and augmenting the economy at large due to said consumption. The policy implications of this study provide a different lens for reviewing taxation on luxury goods.

Keywords: Affluence line, Poverty line, Churning rich, Income inequality, Consumption deprivation

JEL Classification : D31, D63, E21, H23, I31

Introduction

Recent years have seen a rise in the discussion of inequality in academia as well as outside it. Most discussions in the third world regarding inequality revolve around the poverty line. No analysis of the top-heavy countries is conducted to analyse how overall income affluence affects consumer decisions and thereafter augmenting the economy to be lopsided. Besides, recent developments like the Occupy Movement in 2012[1], the discussion centred around Thomas Piketty's "Capital in the 21st Century" (2014)[2], or even the book "The Triumph of Injustice" by Saez and Zucman (2019), refer to increasing inequality at the top end of the income ladder. The functional justification for an affluence line lies in the formation of a riches line, an analogous line between the rich and the super-rich[3] i.e., the point at which one earns too much.

These lead to both an evaluative and a normative claim. Members of society can generally agree on the approximate location of the line between the rich and those who have much more than what is needed to lead a fully flourishing life. Several institutional measures could be taken to move in the direction of the situation where no one lives above the rich line.

In the long term, the affluent influencers lead the consumers just above the affluence line to consume more and more affluent products which provides them with an equation of social status with that of a second-degree affluent market. There is a bifurcation of identity from the person's financial capability to the potential of financial capability to ape second-degree affluence due to first-degree affluent people seeing that as the final echelon of human achievement.

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[1] The Occupy movement of 2011–2012 was a series of protests that emerged in various cities around the world, sparked by economic inequality, corporate influence over government, and concerns about social and economic justice.

[2] "Capital in the 21st Century" documented the rise in inequality and particularly strengthened the position of the rich

[3] See also, for reference, Robeyns (2017, 2019), Volacu and Dumitru (2019), Zwarthood (2018), Timmer (2019)

This leads to the formation of a "Churning Rich"[4] or a section of society that can purchase such luxuries only at some points in their lives but not always. The churning rich therefore would be characterised as the "seasonal customer" of luxury brands[5]. A fair amount of the population would fall under the auspices of the churning rich due to societal constraints and an upward incentive spiral to augment the consumption of seemingly extravagant goods.

Due to such a section of the population falling under the churning rich, private disposable income may act as the source of stimulus to the economy at large and increase employment on varied scales. A variation in overall affluence for the set of populations defined as proximate to the affluence line would lead to large visible shocks in apparent macroeconomic changes. Following an analysis of rational expectations, a large section of expectations of inflation in the economy is also from the usually discarded variable of overall apparent consumption. This means that if consumption isn't apparent to people at large, the expectation of inflation will be lower, therefore inflation will also be lower, thereby reducing the profitability of the firms due to the inability of the firms to "fool" their workers under the fooling model of business cycles. The variability of macro-business cycles may be altered through this metric of hierarchising consumption for the apparent affluent population.

Literature Review

The empirical literature grounds the concept of affluence in societal aversion to poverty, thus introducing the concept of affluence lines while emphasising the impact of resource distribution on well-being. Medeiros (2006) argues a redistributionist approach within a specific time frame and proposes a statistical tool for designing more effective redistribution measures. Drewnowski (1977) interprets affluence as a threshold above which consumption is deemed unnecessary and should not increase. It suggests that development should persist despite potential resource scarcity, emphasising optimal resource utilisation. The affluence line delineates the threshold beyond which the consumption of individuals and nations should not rise, ensuring the progress of those below the poverty line. These methods however do acknowledge barriers like disincentives for the rich and the temporary nature of income transfers. **Brzezinski (2010)** estimates various statistical indices, such as the income share of top percentiles, the population share of individuals above the affluence line and other comprehensive measures that capture the extent and intensity of affluence. Many researchers also attempt to study the extent, intensity and breadth of affluence across various dimensions in a unified framework, by employing multidimensional affluence measures for analysing the top of the income distribution. The methodology is positioned as an "antipoverty line" obtained through an egalitarian redistribution mechanism. Some studies, like **Lichter and Eggebeen (1993) and Dynan et al. (2000)**, define affluence based on the position of the individuals in the personal or household income distribution. They determine an arbitrary higher quartile of income distribution, identifying the population found above its threshold and treating it as rich, regardless of the absolute values of their incomes.

Other methods that rely on the position in the income distribution introduce variations, such as measuring the deviation from the average income. In this approach, individuals are classified as affluent if their incomes surpass a predetermined threshold of standard deviations

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[4]Churning Rich, the affluent counterpart of the churning poor, refer to the people who fluctuate above and below the affluence line.

[5]The "Churning Rich" section of the population are the people employed in the contractually wealthy professions.

from the average. Alternatively, Inhaber and Carroll (1992) present an intriguing definition of affluence based on shifts in the shape of the personal wealth distribution curve. Under this framework, individuals deemed affluent are situated in the section of the curve displaying a resemblance to a Pareto distribution. The approach employed by Rank (1999), Danziger et al. (1989), and Hischl et al. (2001) establishes a connection between the poverty and affluence lines, with the affluence line defined as a multiple of the poverty line. However, this multiple is chosen in a seemingly arbitrary manner, thus underscoring a need to establish a sustainable rationale behind the conceptual framework.

The lack of a clear justification for this choice raises questions about the basis of the adopted concept and highlights the need for a more robust argument to support the chosen concepts in defining the affluence line. The literature highlights the complexity in defining, measuring, and interpreting affluence, providing a foundation for future investigations and policy considerations in the realm of wealth distribution and societal well-being.

Methodology

A lack of analysis is not realising that the super-rich tend to take part in activities of extravagance. This extravagance then becomes the new norm, something that needs to be achieved to scale the ladder of social hierarchy in a predominantly bourgeoisie world. This creates a class of people who are currently well off or passably rich but if they indulge in such extravagance they may not be so well off. This creates a situation similar to that of the churning poor. However, the classical affluence lines given by Lichter and Eggebeen (1993) and Dynan et

al. (2000) do not refer to the rich sections of society but instead, refer to the super-rich. We define this as the difference between first-degree affluent individuals (rich) and second-degree affluent individuals (super rich).

To further classify this difference, we have subdivided the overall affluence in a country to be that of a weighted average between per capita GDP and Mean Income[6]. The first variable i.e. per capita GDP is utilised to reflect how much an economy is producing and how that production is then subdivided into the population. At large the means of subsistence are created from such a production base which makes commodities allow communities to thrive in an economic space[7]. Additionally, the second component of the affluence line is the Mean Income, the relevance of the mean income to be included in this analysis is recumbent on the overall difference between the super-rich and the impoverished.

Further, this study analyses how extravagance translates into entitlement and that entitlement leads to the creation of the churning rich and drives the production of various consumer products with a higher markup. The same can therefore be utilised to explain a supposed production-expense asset bubble which may have created augmentations in the GDP through extravagance-led value addition at various stages of the production process.

Estimation of the Affluence Line

The methodology of the estimation of the affluence line is fairly simplistic, keeping Occam's razor in mind. The estimation combines two key indicators of relative affluence or being "well off" the poverty mark in a nation

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[6] The reason why median income is not taken is to understand the functionalities of income inequality at upper reaches of the Lorenz Curve.

[7] People Earning more than per-capita GDP have purchasing power of more than total subdivided product available to each citizen

space. The two indicators are GDP Per Capita and Mean Income. The identification of these two indicators is contingent on a collective choice analysis of production in a societal space and the utilisation of said productive capacity to achieve human needs. Therefore, the affluence line refers to overall production being subdivided amongst all constituents of a national space and of the mean income received by an individual.

This approach aims to provide a quantitative measure to account for not only the distribution of production but also of affluence being related to overall income and the difference between incomes as a conduit of social expectations and status.

The indicators and their requisite weights are as follows-

1. **GDP per Capita (Weight: 0.65):** GDP per capita serves as a representative measure of the economic output per individual in a given country. It allows us to recognise the general subdivision of production in an economic space. The weight of 0.65 is assigned to signify its relatively higher importance in the affluence estimation.

2. **Mean Income (Weight: 0.35):** Mean income reflects the average income level within a specific population. It acts as an effective proxy for social status and expectations arising from it. The weight of 0.35 acknowledges its contribution to the overall affluence measure, recognising the significance of income distribution among individuals.

The formula for calculating the estimated affluence line (AL) using the weighted average is given as

AL = (0.65 X *GDP per Capita*) + (0.35 X *Mean Income*)

This formula allows for the incorporation of both economic productivity (GDP per capita) and income distribution (Mean Income) into a single indicator, providing a balanced perspective on affluence and encompassing the duality of said influence into its fold.

Mathematical Modelling of the Consumption Deprivation

First, a distinction between first-degree affluent influencers and second-degree affluent influencers needs to be made. First-degree affluent influencers are those influencers who influence the choices and decisions of the people belonging near the affluence line, i.e., the "churning rich". Whereas second-degree affluent influencers account for the top section of the Lorenz curve, i.e., the richest people in a nation. This section of the population attempts to "sell" or "influence" the affluent lifestyle onto the churning rich population, who are unable to sustain their living when the high source of income no longer exists[8].

This section of the paper draws on inspiration from Amartya Sen (2017) for the basic direction on which to take this direction. For the basic modelling of a media ideologue as an invisible dictator, we utilise the requirements of an invisible dictator as proven by Kirman and Sondermann (1972):

1. "He can hold any logically possible ordering over the alternatives, i.e., for each P ε B there exists an f ε F such that f(G) = P. E.g., take the specific situation f ε F, such that P is held unanimously by all individuals in V. Then, by the continuous extension off to r, one has f(ZO) = P.
2. "He is the only individual in P who, for the specific social welfare function under

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[8]They are the, either forced to survive off of their savings or reduce their extravagant expenditure, leading to a change in their social standing, leading to social exclusion.

consideration, is decisive for all possible situations."

Under this conformity, an affluent influencer represents a choice over any idea of social welfare. A social welfare mechanism would include questions on whether a certain product gives me maximal benefit and is socially preferred. For an affluent social group, they are prescribing a certain value to an affluent article. In such a case the affluent influencer then becomes a representative of the choice of the masses and in case of a large-scale accepted choice they become "representative" of the majority opinion. Tanguaine (1991d) has provided relative proof of said representative dictatorship. Such representative dictatorship has multifaceted economic implications for an ideologue.

For this, we model the following things as functional variables:

A set of all possible alternatives in a social welfare choice "X". X contains a set of products for the affluent influencer to decide between. A summation of all situations under which you would use a certain product "F". Meaning thereby that any situation which affects the usage of a certain product which has a very high markup in a social space where the consumption of that product is considered optimal is defined by a situation "f" such that $f \in F$.

The sample space for all events is given by:

$$\Omega = X \times X \times F$$

A Simple Event "w" which is a function of 2 alternatives belonging to X since the affluent influencers accept only 1 affluent product/style the preference profile would be $x_l P(X-x_l)$ where x_l is preferred to all other alternatives in X. These events can then be modelled as

$$w_1 = \{x_1, (X-x_1), f\}$$
$$w_2 = \{x_2, (X-x_2), f\}$$
$$w_3 = \{x_3, (X-x_3), f\}$$
$$.$$
$$.$$
$$.$$

$w = \{x_k, (X-x_k), f\}$; Maximised when w_k represents the most used product.
The above functions represent a specific product "x" preferred to all other alternative products.

A person is given by "$v \in V$". Where V is the set of all individuals in a social space.

In the real-world coalition analysis as given by Tanguaine (1989a) and Armstrong (1980), a person preferring "x_k" to "y_k" is given by the coalition modelling:

$$Aw_k = Ax_k, (X-x_k), f = [v: v \in V, \{x_k, (X-x_k)\} \in f(v)]$$

In simpler terms, the above equation represents the coalition of people who prefer the product "x_k" compared to all other products but x_k i.e. $(X-x_k)$ is the set of all people who agree with the influencer and buy only a specific set of products. Let μ be a weight of this coalition such that $0 \le \mu \ge 1$. Therefore, upon fixing any affluent influencer as an individual within the social space μ as v_i we get:

$$m(v_i, w_k) = m(v_i, x_k, y_k, f) = (A_{wk}) \text{ if } v \in A_{wk}; 1 - A_{wk} \text{ if } v_i \notin A)$$

As the measure of representativeness for an influencer for an event w_k. Extending this case to a cabinet of "q" influencers which is the total number of influencers in the influencer base of a country:

$$C = \{v_{i1}, v_{i2}, v_{i3} \ldots v_{iq})$$

The representativeness of this Cabinet is given by the formulation:

$$m_q = m_q(C) = m_q(C, w_k) = \max(v_i, w_k);$$ maximised at (v^*)

Where $m(v_i, w_k)$ is the representativeness of the cabinet member v. The influencer base is therefore then represented by the dominant affluent influencer. There could be two conditions which increase the buyout of a single product in a market space. That is to say in the maximisation of the v^* dictator this maximisation could be done either by maximising "v" or maximising "w".

The maximisation of the "v" variable would mean that the representativeness of the affluent influencer is high. This will only hold if the affluent influencer is following some second affluent influencer. The v variable will therefore be maximised if and only if the v variable is congruent to that of the Proper dictator in second-degree affluence influencers. Since the second-degree affluent market is viewed with an aspirational value, the product prevalent in the respective market will be viewed as a product that is singularly better than other products. Simplistically speaking, the results by Mason (1992) for a product being bought due to social and status value will be shifted to a style of dressing a fashion sense, or even a basket of goods as a whole.

The maximisation of the w variable would mean that the product is in any way accepted by society at large without the influence of an affluent influencer. In other words, the "w" variable could be high due to factors other than fashion choices. Practicality could be a large reason why a certain piece of clothing is largely accepted by society. If a very practical article of clothing has the name of a non-haute couture fashionista on it the sales for the same may increase by a large amount due to the

aforementioned mathematical modelling.

Distentions and Considerations

Consumers in the free market can in the end alter their choices as well and choose their preferences independently of this construction of affluent markets and non-affluent markets. There may also be too many affluent influencers such a case is characterised by the following mechanism:

Individuals V_1, V_2, V_n ε V are said to be *independent*, if for arbitrary preferences P_1, P_2….., P_n such that $P_1 = (x_1) P(X-x_1)$ and so on. Therefore, it holds under the independence of all individuals in a social space Ω that:

$$v\{f \varepsilon F, f(v_1) = (x_1)P(X-x_1),\dots f(v_n) = (x_n)P(X-x_n)\} = \prod\{f{:}f \varepsilon F, f(v_i) = P_i\}$$

This case then becomes an idea summation which leads to no differentiation in the products in a social space Ω.

Additionally, the weights assigned to GDP per capita and Mean Income aim to strike a balance between considering the overall economic health of a nation and acknowledging the importance of equitable income distribution. Adjusting the weights may be necessary based on specific contexts, societal values, or the unique characteristics of a given population. Stakeholder consultations and empirical analysis can guide the determination of appropriate weights. The accuracy and comparability of GDP per capita and Mean Income data are crucial for the reliability of the affluence line estimation. Regular updates and improvements in data collection methodologies enhance the robustness of the affluence measure.

In employing this weighted average approach, it is essential to recognise that the affluence line is a dynamic concept influenced by various factors.

While this method provides a quantitative estimation, it should be complemented by qualitative assessments, considering additional indicators that contribute to a comprehensive understanding of affluence within a given context.

Policy Implications

Affluence Line, even though it may not have universal applicability, facilitates a better understanding of the circumstances, independent of the fact whether any policies are envisaged to modify the existing conditions. Affluence Line takes on special importance when it comes to policies that are based on the beliefs that excessive wealth is bad for society and that unfair income distribution, and hence welfare, is a bad thing. These beliefs are pervasive and are becoming stronger. Based on them, policies would try to maintain population welfare within the "sufficiency" range, with the Affluence Line serving as the population's ceiling and the Poverty Line as its floor. These could be termed poverty-affluence policies.

A wide variety of these policies are possible. The places that the Poverty Line and the Affluence Line are assigned, as well as the level of commitment to creating circumstances that allow individuals to live above the Poverty Line and below the Affluence Line, may set them apart from one another. As a result, these policies need to set up a hierarchy of priorities among different goals related to social fairness, economic development, and preventing societal decline. Numerous policy tools and techniques may be developed to accomplish these goals. Their decision will be heavily influenced by the institutional framework of the socioeconomic systems in which the policies will be implemented. The determination of the Poverty Line and Affluence Line's respective positions should be based on a review of how needs are met at different levels, but it would probably be

wise to formulate a basic concept at the end of this review, such as the Affluence Line being three or four times the Poverty Line (in terms of personal income). Naturally, that principle will also constitute a policy decision in and of itself, reflecting the decision-maker's ideology. Additionally, this shall have implications for the tax system. Under the Poverty-Affluence policy, it is improper to collect taxes from those below the Poverty Line. It is also preferable that income beyond the Affluence line be subject to taxation. A tax may be increased in the range between the Poverty and Affluent points.

It is also necessary to establish and understand the relationship between the demands met by private means and the needs met by group resources. One Poverty-Affluence policy tool could be the idea that certain requirements are met by group efforts rather than by individual purchases made on the open market. Take health and education, for instance. Since no money will be spent on those necessities, the Affluence Line for individual income would need to be lowered. It is obvious that to ensure that there is no trespassing over the Affluence Line in the concerned areas, the needs met by collective action must be maintained at the level below the Affluence Line. The issue of equality is not automatically resolved by this system. It guarantees that the needs are satisfied within the P-A range, but if the issue is not given continuous, careful attention, inequality may develop within that range. Any program designed to lessen income disparities could be considered a specific instance of a Poverty-Affluence policy. A situation where no population is found below the Poverty Line and none above the Affluence Line would be the goal of the strongest Poverty-Affluence policy. Weaker policy types would permit deviations from the standard case, either by attempting to move toward the standard position in stages spread over different amounts of time, or by permitting exceptions within a certain range.

The degree of democracy in the countries that adopt poverty-affluence policies determines how well those policies work. They are unquestionably in the majority's best interests. As a result, they must be embraced and put into action whenever and wherever the interests of the majority win out. This paper provides impetus for far-reaching policy considerations for preserving luxury goods and a better look at analysing the taxation for luxury goods. The capitalist economic superstructure is recumbent on the reflexivity of income modalities the perception of wealth and the lack of value augmentations. Due to such value augmentations being unable to realise consumption due to consumption being a derived output of satisfaction, upon the achievement of affluence by a certain section of the population, the satisfaction metric relies not on the achievement of the basic necessities to live but on betterment, which inevitably feeds the "first-degree affluent influencer" to push affluent people to consume goods that are either for second-degree affluent people or achieve an increment in their incomes for further betterment and entitlement of their lives.

Conclusion

Affluence Line can be adopted as an analytical device and an instrument of policy but it does not predetermine the scope of analysis or the orientation of policies. Its significance is derived from the fact that it helps to interpret and formulate policy objectives from the available information concerning the levels of living, welfare or distribution of income. The introduction of Affluence line as an analytical and policy instrument would benefit the welfare state and modem market economics along with centrally planned economies. It is applicable to all socio-economic systems that exist today since it is a concept which refers to the conditions in which people live (to their level of living) and not to the 'mode of production'. It is not concerned with the ownership of the means and the process of production and hence does not refer to the incomes of business corporations (joint stock or state-owned, national or multinational).

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The Tale of Nusantara: the Archipelago's Ancient Connections with India & Its Prospects

Dr Sampa Kundu

Background

Indonesia's President, Joko Widodo, has embarked on an ambitious initiative to relocate the nation's capital from Jakarta to East Kalimantan, unveiling the new city as Nusantara. This project involves substantial financial commitments and budget allocations. As the country approaches the presidential and legislative elections on February 14, 2024, the election results will play a crucial role in determining the fate of the Nusantara project. The global community eagerly awaits updates on the development of the new capital. This commentary aims to explore the historical significance of Nusantara and its connections to ancient India, especially as India and Indonesia are poised to celebrate 75 years of diplomatic partnership in 2024. By delving into this historical link, the commentary seeks to highlight an additional avenue for enhancing the relationship between Indonesia and India, bridging both the modern and civilisational aspects of their longstanding association.

The Historical Significance

Nusantara has been selected as the name for Indonesia's new capital city, situated on the east coast of Borneo Island, specifically in East Kalimantan Province. The term "Nusantara" is derived from old Javanese, combining two linguistic elements: "Nusa", meaning island and "antara", signifying in between or in the middle, with the latter borrowed from Sanskrit. This term encompasses the idea of outer islands and implies an island outside the central landmass of the country. Nusantara, in its metaphoric sense, is possibly situated between the Indian and Pacific Oceans.

Historically, 14th-century manuscripts like "Pararaton" and "Nagarakretagama" shed light on the significance of Nusantara. Gaja Madah, one of the Prime Ministers of the Majapahit Kingdom famously vowed not to eat any spices unless he conquered Nusantara as part of the kingdom's expansion. Majapahit was the last Hindu Kingdom in Indonesia between 1293 AD and 1527 AD. In ancient Indonesian literature and culture, Nusantara was a unifying concept for the archipelago's islands, transcending geographical distances and differences.

In the modern era, the Indonesian government plans to replace Jakarta with Nusantara as the new capital city on Borneo Island. The city's coastal border spans from Makassar Strait to Balikpapan Bay; and therefore, is reflecting logically on Indonesia's aspiration for a national and cultural identity that harmonizes ancient civilizational concepts with the modern necessity of a state-of-the-art capital. Some also see this shift as Indonesia's contribution to Southeast Asia's regional cooperation and identity, all while celebrating diversity.

The Futuristic Agenda

Under the leadership of President Joko Widodo, earnest endeavours are underway to shift Indonesia's capital from Jakarta to a new location, driven by various administrative, developmental, and environmental considerations. Firstly, the move aims to alleviate Jakarta's challenges arising from its rapidly increasing population, projected to make it the world's most populous city by 2030. Secondly, relocation seeks capital that is less susceptible to environmental disasters. Thirdly, it addresses the need to diminish developmental disparities between Java and other islands. At present, the Indonesian part of Borneo contributes only 8% to the national GDP compared to the 56% contribution made by Java. Fourthly, it aligns with Indonesia's ambition to be acknowledged as an archipelagic nation. Lastly, the plan involves establishing a smart capital city, necessitating a fresh location. On August 17, 2024, the Indonesian government is slated to inaugurate the new capital city in Nusantara, gradually phasing out the existing capital. President Joko Widodo envisions Nusantara as "a new centre of economic gravity" and "a place where we will embark on the future green economy, future technology, and future knowledge." Nikkei Asia reported that the government of Indonesia plans to provide 20% of the total funding to build the new capital city and will therefore depend on private capital to fund the rest of the 80%.

Nusantara is envisioned to be four times larger than Jakarta, drawing inspiration from meticulously planned cities like Putrajaya, Brasilia, and Canberra. The city's planners prioritize livability, economic development, and robust infrastructure. Beyond government buildings, subsequent phases will see the establishment of centres for excellence, innovation, schools, universities, healthcare facilities, and various other amenities. Nusantara is committed to being carbon-neutral and sustainable, with 80% of commuting relying on public transport, cycling, and walking. The city will feature ample green spaces and water-catchment reservoirs, transforming it into a 'sponge-city' capable of absorbing excess rainwater and remaining flood-free. Green corridors will be a central focus, driving collaborations with foreign corporations, particularly in activities geared towards sustainability, such as EV battery production. The ambitious project is expected to take 15-20 years to complete. However, the inauguration of Indonesia's new capital city is set for August 17, 2024, commemorating Indonesia's National Day and marking the beginning of the gradual replacement of Jakarta as the capital.

The desire to relocate the capital from Jakarta is not a new phenomenon in Indonesia. Past President Sukarno wanted to relocate the capital to Borneo and Suharto was willing to relocate it to West Java. Even Jokowi's immediate predecessor President Yudhoyono too wanted to replace Jakarta as the capital city. However, none of these plans materialised. In Southeast Asia, moving of capital has not been any exception. Myanmar shifted its capital to Nay Pyi Taw and Malaysia built a new administrative capital in Putrajaya. However, in both cases, old capitals (Yangon and Kuala Lumpur respectively) remained the heart of the commercial and business activities of their countries. Nusantara's future therefore will depend on various factors including the political and administrative will, the intentions of the corporate world and industries; and the facilities and amenities available in the city.

The Indian Connections with Borneo

Borneo, also known as Kalimantan, is divided among Brunei Darussalam, Malaysia (western side), and Indonesia (eastern side), with East Kalimantan selected as the site for Nusantara, the new capital city. Ancient Indian traders, between 500 AD and 1300 AD, travelled to Borneo and referred to it as Borneo Suvarnabhumi (the land of gold) and

Karpuradvipa (Camphor Island). East Kalimantan, including the region chosen for Nusantara, has historical connections with Hindu kingdoms. It housed an ancient Hindu Kingdom, Kutai Martadipura in the 4th Century BCE, where King Mulavarman's inscriptions detail significant contributions to the Brahman community.

Beyond its administrative and geographic importance, Nusantara carries broader civilizational and neighbourly connections, as seen in the Majapahit kingdom's historical ambition to conquer all of Nusantara. Majapahit Empire spanned from Java, Sumatra, the Malay Peninsula and Kalimantan and like most ancient Hindu-Buddhist kingdoms, it also adopted the mandala system for administration and governance. This historical context is relevant to understanding contemporary foreign relations, particularly in countries like India and Indonesia. Despite the relative maritime distance between the Indian islands (Andaman and Nicobar Islands) and Nusantara compared to Sumatra and Java, this doesn't impede Indian business interests. An Indian Business Forum Delegation was engaged in high-level B2B interactions in East Kalimantan in 2014. India's Apollo hospital chain currently collaborates with Indonesia's Mayapada Hospital Group for a healthcare facility in the new capital. Potential sectors for cooperation in Nusantara include digitalisation and renewable energy, where Indonesia may seek support from successful neighbours like India.

India-Indonesia at 75

In 2024, India and Indonesia mark the 75th anniversary of their diplomatic ties, providing an opportune moment to explore new avenues for collaboration and reinforce existing institutional frameworks to elevate their relationship. Beyond historical connections, both nations share common values and ethical principles within the international arena. As aspiring responsible global maritime players, India and Indonesia are committed to upholding their respective domestic principles and sovereignty. Having recently concluded its G-20 presidency, Indonesia handed over the leadership role to India, positioning them in the G-2-Troika, affording them enhanced global influence and the ability to articulate shared concerns. Both countries exhibit mutual interests in addressing non-traditional security issues. Bilaterally, they have instituted various mechanisms to collaboratively tackle issues of common interest. These include the Joint Commission meeting, Foreign Office Consultation, India-Indonesia Security Dialogue, Defence Ministers' Dialogue, Consular Dialogue, Joint Working Group on Counter-Terrorism, Joint Working Group on Narcotics, Biennial Trade Ministers' forum, Joint Task Force on Andaman & Nicobar Islands – Aceh Connectivity, and India-Indonesia Infrastructure Forum, reflecting the depth of their partnership. The bilateral trade figures for 2022-23 demonstrate a robust relationship, with the total reaching USD 38.85 billion. This positive trajectory underscores the significance of preserving historical ties while embracing modernity. The collaborative efforts between New Delhi and Jakarta, coupled with their shared vision for the future, are expected to further strengthen the links between India and Indonesia in the years to come. In this context, Nusantara's role as a hub for economic, technological, and educational advancements, with a commitment to sustainability, signifies not just a shift in administrative capital but a transformative endeavour with global implications. As demonstrated by ongoing collaborations, including in healthcare and potential areas like digitalisation and renewable energy, Nusantara presents an avenue for enhanced cooperation, with countries like India playing a vital role in this shared journey towards progress and prosperity.

The Great Balancing Act of Development and Climate Change Policies in India

Mansi Sharma

Abstract

The article explores the dynamics of climate change, its impact on the economy, and monetary policy responses, with a focus on the Reserve Bank of India. A deeper understanding of the increasing frequency of extreme weather events due to climate change and their macroeconomic implications, including physical and transition risks is the need of the hour. A nuanced and comprehensive approach must be evolved to incorporate climate change-induced inflation into central bank policy frameworks. The article also presents preliminary empirical evidence linking extreme weather events to food and beverage price inflation in India, reiterating the importance of addressing climate-related risks for long-term economic stability

JEL Classification : R11, Q54, Q58, Q48, O13

Introduction

Climate change in the 21st century has become a topic of global concern, affecting not only individuals or countries but the entire world in various ways. Human activities have significantly impacted Earth's climate since the onset of the Industrial Revolution. One remarkable attribute of contemporary climate change is its swift progression compared to natural variations alone, a pace that surpasses anything seen in the history of modern civilization.

The sudden increase in water levels, floods, droughts, melting glaciers, declining groundwater, RRheatwaves, cyclones, severe monsoons and extreme weather events such as El Niño and La Niña are some of the effects observed on a large scale. India, being a peninsular country, is also experiencing the repercussions of climate change in various forms. The rising global temperatures have significant impacts on India's natural environment, subsequently affecting the economy and society. Lately, India has been at the forefront of facing significant challenges, including the adverse impacts on health, agriculture, and water availability resulting from heatwaves experienced by 15 states in 2022.[1] Floods have caused substantial economic losses, amounting to US$26.3 billion, equivalent to approximately 0.5% of India's GDP (Organization, 2020). Various studies highlight the significant economic and social consequences of climate-related damages in India, projected to reach US$35 trillion over the next five decades with a particular impact on health and agriculture (Richardson, 2023).

The heightened occurrence of climate-induced calamities is most acutely felt by the local communities residing in India's "climate frontiers" regions that are particularly vulnerable to climate-related disasters. There is a looming risk of a climate-induced refugee crisis from neighbouring countries like Bangladesh,

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[1] https://internal.imd.gov.in/press_release/20220426_pr_1591.pdf

Myanmar and Pakistan, while internal migration and livelihood losses are already underway. As per the index released by the Global Climate Risk Index 2021 (David Eckstein, 2021), India is ranked as the seventh most affected country by climate change. According to the State of India's Environment in Figures 2022 report,[2] India experienced 280 heatwave days, the highest number in 12 years, during the period from March 11th to May 18th, 2022 wherein Rajasthan and Madhya Pradesh suffered the most among the states.

India's vulnerabilities present a unique opportunity for transformative change. With nearly 20% of the world's population, the country is striving to overhaul its rapidly expanding infrastructure and energy systems to significantly reduce greenhouse gas emissions. The results of these endeavours carry global significance, given that India ranks as the third-largest emitter of greenhouse gases, following China and the United States. China and the United States have unveiled their ambitious plans to achieve net zero emissions by 2060 and 2050 respectively, India is now under mounting pressure to enhance its own ambitions, emerging as a pivotal player in the global transition towards clean energy.

Earth's Energy Balance and Climate Dynamics

The human-induced climate influences had an overall impact which resulted in a rise in the average global near-surface temperature by approximately 1.5 degrees Celsius in the year 2023 above the pre-industrial levels.[3] This event becomes a paradox as the Paris Agreement on climate change pledged to restrict the long-term temperature rise to a maximum of 1.5 degrees Celsius above pre-industrial levels while the year 2023 has already witnessed the risen

temperature, making 2023 the hottest year on record as per the World Meteorological temperature, making 2023 the hottest year on record as per the World Meteorological . The Earth's energy balance, which entails the equilibrium between incoming solar radiation and outgoing thermal radiation, plays a crucial role in determining the planet's global climate. Changes in the composition of the atmosphere influence climate by regulating the fluxes of incoming and outgoing radiation at the Earth's surface. The primary drivers of contemporary climate change are anthropogenic (human-induced) emissions GHGs, aerosols, and alterations in land use and land cover (LULC). GHGs trap heat near the Earth's surface by impeding the escape of terrestrial radiation into space. Atmospheric concentrations of key GHGs such as carbon dioxide, methane and nitrous oxide are currently higher than any levels observed in the past 800,000 years based on ice core records. Furthermore, the rates of increase in their concentrations over the past century have been unprecedented in the last 22,000 years (R. Krishnan, 2020). According to a 2020 report by the UN Office for Disaster Risk Reduction, there has been a notable[4] increase in disasters globally over the past two decades.

In the Indian context, since the mid-twentieth century, there have been experiences of elevated average temperatures, reduced monsoon rainfall, heightened occurrences of extreme temperatures and rainfall events, droughts, rising sea levels and intensified severe cyclones, among other alterations in the monsoon pattern. Substantial scientific evidence indicates that anthropogenic activities have played a crucial role in shaping these shifts in the regional climate. For the year 2023, the period from January 1 to September 30 in specific, India encountered extreme weather events on

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[2] https://www.cseindia.org/heat-waves-in-india-a-cse-media-briefing-note-11241
[3] https://wmo.int/media/news/wmo-confirms-2023-smashes-global-temperature-record
[4] https://www.undrr.org/

235 out of 273 days. Approximately 86% of the first nine months of the year witnessed extreme weather phenomena occurring in one or more regions of the country. Additionally, there were record-breaking temperatures observed for multiple months, and various parts of India experienced significant flooding due to exceptionally heavy rainfall, resulting in loss of life and livestock. These extreme occurrences highlight the heightened frequency and intensity of extreme events in our rapidly warming world (Kiran Pandey, 2023).

Climate Change Conundrum for India

Climate change presents complex policy dilemmas for India, especially in terms of development vs. sustainability. Balancing the imperative to improve living standards for its 1.4 billion population while also being a significant player in global efforts to reduce greenhouse gas emissions is a daunting challenge. While the government has introduced various measures to encourage renewable energy adoption and transitioning away from coal, achieving India's net zero emissions goal by 2070 remains a substantial task. However, it is imperative to acknowledge that India's cumulative emissions from the year 1850 to 2019 represent less than 4% of the world's total cumulative carbon dioxide emissions since the pre-industrial era, despite India having 17% of the global population.[5] Therefore, India's contribution to global warming up to this point has been relatively small, and even now, its annual per capita emissions are only around one-third of the global average. India, however at the 26th session of the Conference of the Parties (COP26)[6] to the United Nations Framework Convention

on Change (UNFCCC) in Glasgow, initiated and led its commitment to combatting climate change with a comprehensive set of ambitious goals called the Panchamrit[7] which include:

- Achieving a non-fossil energy capacity of 500GW by 2030.
- Sourcing 50% of energy requirements from renewable sources by 2030.
- Reducing total projected carbon emissions by one billion tonnes by 2030.
- Decreasing the carbon intensity of the economy by 45% by 2030 compared to 2005 levels.
- Targeting net zero emissions by 2070.

India emphasised the importance of transferring climate finance and low-cost climate technologies to facilitate climate actions in developing countries like India. It called for increased ambition in climate finance from developed countries and advocated for tracking progress in both climate mitigation and finance. Further, India promoted the "Lifestyle for Environment" (LiFE) mantra, urging for conscious and sustainable consumption patterns to combat climate change.

India has been a front runner in terms of developing policies on climate and environmental action encompassing various initiatives such as protecting regional glaciers, implementing greener practices in the railway system, reducing single-use plastic,[8] and promoting the production of clean cooking fuel through PM Ujjawala Yojana 2.0.[9] With a goal of achieving net zero emissions by 2070, India is trying to decouple its economic growth from emissions, as highlighted in the 2022 IPCC report (Singh, 2022). Compared to other major world economies, India maintains a commendable track record of low emissions per capita. India has consolidated its Nationally

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[5] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1945472
[6] https://www.un.org/en/climatechange/cop26
[7] https://pib.gov.in/PressReleasePage.aspx?PRID=1795071
[8] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1809125
[9] https://www.pmuy.gov.in/about.html

Determined Contributions (NDCs) for the Paris Agreement into a set of enhanced targets aimed at achieving net zero emissions by 2070. These objectives align with those of other industrialised nations, showcasing India's ambitious agenda despite its historically low contribution to GHG emissions. India reiterated the principles of equity and common but differentiated responsibilities, emphasising equitable access to the global carbon budget.

Need for Clean Energy Policies

Climate change vulnerabilities in terms of exposure to the infrastructure are one of the highest for India as per the recent global physical climate risk report conducted by the Cross Dependency Initiative (XDI).[10] The report further states that 80% of the top 50 most at-risk states and provinces by 2050 are located in China, the United States, and India. The Gross Domestic Climate Risks 2023 report (XDI, 2023), rankings were determined by evaluating the vulnerabilities of the regions to climate change hazards, such as riverine and surface flooding, coastal inundation, extreme heat, forest fires drought-related soil movement, extreme wind, and freeze-thaw events. As per the rankings, nine Indian states are among the world's top 50 at-risk states and provinces. These states include Bihar, Uttar Pradesh, Assam, Rajasthan, Tamil Nadu, Maharashtra, Gujarat, Punjab and Kerala. Among them, Bihar emerges as the most vulnerable state from India, securing the 22nd position globally, followed by Uttar Pradesh, Assam and Rajasthan.

Government Initiatives and Policy Framework

Climate change policies of India have primarily aimed at fostering alignment between development objectives and climate-related outcomes. India was one of the first countries to enact the Energy Conservation Act in 2001 , distinguishing itself among nations. This legislation underwent an amendment in August 2022, introducing significant modifications. The Energy Conservation (Amendment) Bill[11] initiated the establishment of a domestic carbon trading market in India, aimed at reducing the country's energy consumption and encouraging the adoption of clean technologies. Further, India has been at the forefront of introducing and formulating policy measures to address climate change through various programmes and missions aimed at reducing climate-related risks.

The National Action Plan on Climate Change (NAPCC),[12] inroduced in 2008 is one of the significant initiatives, wherein eight sub-missions were designed to facilitate adaptation and enhance ecological sustainability in India's development trajectory. In the year 2022, the Union Cabinet, led by the Prime Minister, approved the revised Nationally Determined Contribution (NDC) to be presented to the UNFCCC as part of the Paris Agreement. Since then, the Indian government has been introducing various policies to reduce carbon footprint and give a push to renewables in India. India, although a developing nation, yet is working hard to transition towards sustainability.

Some of the recent policies[13] undertaken by India are:

- **National Green Hydrogen Mission**[14] : Executed by the Ministry of New and

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[10] https://archive.xdi.systems/gross-domestic-risk-dataset/

[11] https://prsindia.org/files/bills_acts/bills_parliament/2022/Energy%20Conservation%20(Amendment)%20Bill,%202022.pdf

[12] https://dst.gov.in/climate-change programme#: ~:text=The%20Government%20of%20India%20launched, Mission%20for%20Enhanced%20Energy%20Efficiency

[13] https://pib.gov.in/PressReleasePage.aspx?PRID=1992732

[14] https://mnre.gov.in/national-green-hydrogen-mission/

- Renewable Energy, the Union Cabinet on January 4, 2023, sanctioned a budget of ₹19,744 crore, aiming to establish India as a primary hub for the production, utilisation, and export of green hydrogen and its derivatives. India has also announced its Green Hydrogen standard, specifying emission criteria for hydrogen production to qualify as 'Green', sourced from renewable origins.
- **Rooftop Solar Capacity**[15] : Between January and November 2023, approximately 741 MW of rooftop solar capacity was installed under the grid-connected rooftop solar program, while an additional roughly 2.77 GW capacity had been installed across all sectors, with or without Central Financial Assistance.
- **PM KUSUM Scheme**[16] **:** The expansion of the scheme has been sanctioned, with updated targets to install/solarise 49 lakh pumps under Components B (Installation of stand-alone solar agriculture pumps of capacity up to 7.5 HP) and C (Solarisation of existing grid-connected agriculture pumps of capacity up to 7.5 HP) of the program.
- **Solar Parks**[17] **:** The initiative for "Development of Solar Parks and Ultra Mega Solar Power Projects" began in December 2014 with a capacity of 20,000 MW. The Ministry in the year 2023 has authorised 50 solar parks with a combined capacity of approximately 37,490 MW across 12 states in India.
- **PLI Scheme for High-Efficiency Solar PV Modules**[18]**:** The Indian government aims to establish manufacturing capacity at the gigawatt scale for high-efficiency solar PV modules. The objectives include enhancing manufacturing capacity for high-efficiency solar PV modules, introducing advanced

technology to India's manufacturing sector, promoting integrated plants for improved quality control and competitiveness, fostering a local material sourcing ecosystem, and generating employment while achieving technological self-sufficiency.

- **Mangrove Conservation :** According to the State of World Mangroves 2022 report (Maricé Leal, 2022), mangroves store four times more carbon than other ecosystems. Losing just 1% could lead to a loss of 0.23 gigatons of CO2, akin to 520 million barrels of oil. Indian Government has introduced MISHTI[19] initiative through its budget, which aligns with its goal to create an additional carbon sink of 2.5-3 billion tonnes of CO2 equivalent by 2030. It can help enhance carbon sequestration, mitigate climate change, preserve biodiversity, and support coastal communities, making it crucial for sustainable development and climate resilience.

According to the report released by the International Renewable Energy Agency under its Renewable Energy Capacity Statistics 2023 (Arvydas Lebedys, 2023), renewable energy capacity in India from 2013 to 2022 has been on an upward trajectory. Total renewable energy capacity has more than doubled over the period, surging from 63,589 MW in 2013 to 162,963 MW in 2022. India ranks fourth worldwide in terms of installed capacity for renewable energy, fourth in wind power capacity, and fifth in solar power capacity. Hydropower remains the predominant source of energy, with a consistent increase in capacity over the years, reaching 52,002 MW by 2022. Wind energy, although growing steadily, shows a slower pace of

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[15] https://pmsuryaghar.gov.in/

[16] https://pmkusum.mnre.gov.in/landing.html

[17] https://mnre.gov.in/development-of-solar-parks-and-ultra-mega-solar-power-projects/

[18] https://mnre.gov.in/production-linked-incentive pli/#:~:text=Overview,outlay%20of%20Rs.%2024%2C000%20crore.

[19] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1914421

expansion compared to other sources, standing at 41,930 MW in 2022. The most striking growth is observed in solar energy capacity, which experiences rapid acceleration, soaring from 1,599 MW in 2013 to 63,146 MW in 2022, attributing to achieving net zero emissions by the year 2070. Bioenergy, while exhibiting moderate growth, maintains a steady contribution, reaching 10,670 MW by 2022. The expansion and diversification to non-fossil fuel sources for deriving energy, especially from solar and wind energy and moving towards renewables ensures India's concerted efforts and commitment to a sustainable energy future and achieving 500 GW non-fossil-based electricity capacity by 2030.
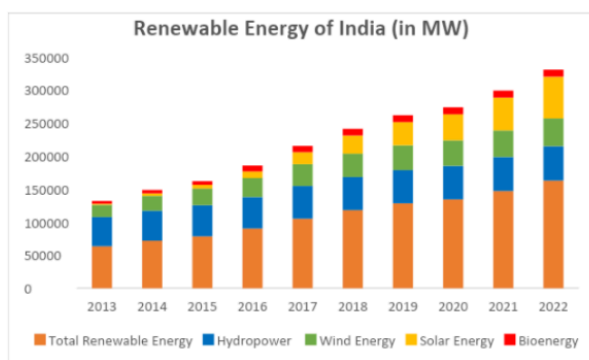
Source: Renewable Energy Capacity Statistics 2023, IRENA

Conclusion and Policy Recommendations

Climate crisis require immediate attention and action to mitigate GHG emissions to adapt to the changing climate (Nicholas Stern, 2023). India has been taking active initial steps towards transitioning to a cleaner energy source, however, further efforts are imperative. Prioritising investments in renewables, embracing sustainable practices and enhancing energy efficiency, are pivotal measures to reduce India's share of carbon footprint. Further, strengthening early warning systems and bolstering resilience to extreme weather events would be critical for safeguarding communities

and livelihoods. Lately, India has been an active recipient of climate-induced disasters, wherein extreme weather events serve as a poignant reminder of the extreme impacts of climate change. Effectively tackling this global challenge demands a collaborative approach to curtail GHG emissions and adapt to the evolving climate. By encouraging the transition to a low-carbon economy and fostering resilient communities, promoting afforestation and reforestation initiatives, implementing sustainable urban planning practices, and enhancing public transportation infrastructure, India can further take up centre stage by setting an example and assuming a leading role in shaping more sustainable future for all. Encouraging sustainable agricultural practices and promoting water conservation, especially after the gruesome conditions faced by cities like Bengaluru[20] should also become an essential component of India's climate action strategy.

Fostering international cooperation and partnerships to share technology, knowledge, and resources can amplify the effectiveness of climate mitigation and adaptation efforts on a global scale. Thus, it is imperative to work towards the development of a robust framework that can fundamentally change how Indian cities respond to the challenge of climate change. These changes should be partly driven by Government initiatives and partly by creating effective implementation mechanisms which can eventually lead to behavioural change in people. A pragmatic approach and forward-thinking strategy would help India transition from fossil to non-fossil renewable energy sources. For example, India has been heavily reliant on coal for its energy generation for many years. Additionally, sustainable management of forests, crucial carbon sinks, requires collaboration between local communities and the government.

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[20] https://indianexpress.com/article/cities/bangalore/water-scarcity-bengaluru-school-government-9201840/

Leadership in financial, political, and policy realms forms the foundation of recommendations for an effective climate change policy in India. Engagement at regional, state, national, and global levels is critical for India to realise its vision of a climate-resilient planet and attain sustainable growth in the long term.

National and State governments in India have started becoming active participants in the climate change policy, however, local governments in India seem to be absent from this discourse. A one-size-fits-all approach is being used at most of the levels, however, there is a need to understand that each geographical area demands a different approach to deal with climate-related challenges.

For this to happen, there is an urgent need to involve Urban Local Bodies (ULBs) which would help align national priorities with state development goals. Lastly, India will be witnessing large-scale urbanisation alongside increased climate risks. While development is integral, the adoption of effective climate strategies to meet national and global sustainable goals outlined in UN SDGs[21] and the Habitat III Agenda[22] is also equally important. Indian cities face complex challenges compounded by limited resources, high vulnerability, and multi-hazard environments (Neha Sami, 2018). Integrating developmental and climate goals can enhance resilience and meet global commitments effectively beyond UNFCCC pledges.

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[21] https://sdgs.un.org/goals
[22] https://habitat3.org/the-new-urban-agenda/

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Confronting Global Capitalism's Negativity: A Truthful and Positive Storytelling

Annavajhula J C Bose

Abstract

Economies in the world do not work for everyone. The rentiers and corporates have pocketed the gains of neoliberal economic policies, globalisation, automation and outsourcing over the last four decades even as the majority of the population has been down and out with uncertainties and insecurities. This article presents Guy Standing's sensible analysis in this regard, which persuasively leads to a progressive political strategy for the benefit of the losers biting the dust.

Keywords: New global class system, Rentiers and corporates, Precariat, Politics of paradise, New social reforms.

JEL Classification : P16, D63, J80, F54, J21

Introduction

How is it that despite its dubious record and dire prospects of persistent and increasing socio-economic inequalities entailing the profit motive, capitalism is less resisted and more popular than ever? Can capitalism be effectively confronted to establish an economy that works for everyone? How can we arrive at an economy in which democratic, egalitarian, participatory economic relations brought about by civil society are dominant in determining the economic conditions of life and access to a livelihood for most people? How can the collective action of civil society fuel broader social change toward this imagined alternative future and which conditions might shape this transformation?

These are indeed the most difficult questions to answer. An answering inquiry like that of Schiller-Merkens (2020), however, can lead, inter alia, to the exploration of revolutionary radical thinking of People's Internationalism by the *International Peoples' Assembly*. It is all about developing a political platform for anti-capitalist

struggle and new forms of organising society; for anti-imperialist, anti-colonial and anti-Zionist struggle and in defence of national and popular sovereignty; for anti-capitalist and people's feminism; for the anti-racist struggle and against racial discrimination; for control and nationalisation of the financial system, tax havens, and transnational corporations; for the right to work for all with rights and wages with dignity; for an end to the failed bourgeois state; for a new people's democracy; for the deepening of natural resources as common goods; for a people's land reform; for social and human rights; for the right to education and access to knowledge; for the rights of LGBT people; for our rights as migrants, refugees, populations in diasporas, indigenous and Afro-descendant peoples, and all those who are especially vulnerable in our society; for the freedom of all political prisoners in the world; for struggle with political power; and for fight against fundamentalism, sectarianism and religious intolerance. The *Tricontinental: Institute for Social Research* belongs to the International People's Assembly, and pursues research agenda

on three main axes. It studies developments in the contemporary capitalist economy, with a special focus on the unproductive growth of the financial sector, the rise of rentier forms of near-monopoly firms, the expansion of a precarious working class, and the social effects of capitalism's structural imbalances; develops a theory that the wretchedness of contemporary capitalism has been produced by proponents of both right-wing free-market conservatives and liberals of social democracy; and tracks the various forms of socialist revolution that have been developed so far. Whether an overwhelming revolutionary countermovement on these lines, influenced by Marxism and Anarchism, is emerging is open to question.

Such an inquiry can also factor in the radical social reformative perspective, briefly sketched here, of the labour as also development economist Standing (2011; 2016), which economics students must know and critically reckon with.

A New Worldwide Class Structure

Globalisation, neoliberal economic policies, automation and outsourcing over the last four decades have given rise to a new global class system which comprises the following groups in descending order by income: plutocrats, elites, salariat, proficians, proletariat, precariat, and underclass/lumpenprecariat (criminals, vagrants, unemployed and the other abject poor).

The plutocrats and elites at the top earn rentier incomes. They live off income gained from property and other assets. They also wield enormous political clout. International bureaucracies such as the International Monetary Fund, the World Trade Organisation, the World Bank and others have shaped the rules that have made the system so unfree and the gains by the plutocracy and elite so vast.

The salariat gets income from capital, not from wages. They get much of their revenue in the form of shares and profit-related pay. They have employment security and an extensive array of non-wage enterprise benefits like pensions, paid holidays and medical leave. Their company pension funds depend on financial investments. But they are a shrinking group. The proficians are the consultants or freelancers with technical skills, working on gig projects under contract. They frenetically make a lot of money and also gain from subsidies, tax breaks and the like but are endangered by burnout.

All these top four groups are detached from the groups below them.

The proletariat (or the working class for which unions had worked and for whom welfare states were built in the post-second-world-war period) have stable full-time labour, with entitlements linked to labour performativity. They are rapidly shrinking everywhere and on the verge of extinction. Unfortunately, many of them are becoming easy prey for populists and neofascist politicians, playing on racism, xenophobia, religious nationalism and the like.

By contrast, the precariat is a rapidly rising group with numerous defining features. The people in this group represent unstable and insecure labour. They suffer from existential insecurity due to a lack of occupational identity or narrative to give to their lives. They do much work-for-labour that is neither recognised nor remunerated. They have a feeling of being out of control of time. They get mostly money wages without non-wage benefits, rights-based state benefits or informal community benefits. Their money wages have stagnated or fallen with growing labour supplies in the Global South. Their real wages too have been falling in a context in which average real wages have stagnated and wages are increasingly volatile, with declining prospects of upward mobility and

increasing downward risks. They live in chronic unsustainable debt, which is a systemic form of rental looting. They face deepening poverty traps, as governments have moved to means-testing, conditional social assistance and workfare. They also face precarity traps like long delays between someone becoming eligible to receive benefits and starting to receive them and lowered long-term earnings when other job-seekers or wage-slaves take jobs below their competence or outside their profession. They are also losing acquired rights—cultural, civil, social, economic and political.

Interestingly, there are three factions among the precariat. One looks backwards, feeling deprived of a real or imagined past. This faction succumbs to populist sirens who play on their fears and blame the migrants, refugees or some other group easily demonised. Another faction consists of migrants and beleaguered minorities. These people feel deprived of a present time, home or belonging. There is yet another faction which feels deprived of a lost future like the educated youth who were active in the Occupy Movement more than a decade ago. They go to college, promised by their parents, teachers and politicians that this will grant them a career. They soon realise they were sold a lottery ticket and come out without a future and with plenty of debt. They are not attracted to populists. They also reject old conservative or social democratic parties. And they look forward to a new 'politics of paradise' which they do not see in the old political spectrum or in such bodies as trade unions of both the Right and the Left.

The precariat is a complicated miscellaneous group but, as Standing points out, only it has the potential, in terms of size, growth, and structured disadvantage, to articulate a progressive response to rentier capitalism and its corruption. The underclass/lumpenprecariat does not have the agency to act, although some in it join protests. As beggars, after all, they cannot afford to be choosers.

Most People in the Doldrums

The plutocrats (billionaires) constitute the top 0.001 per cent of the population. The elites—millionaires and multimillionaires—constitute 5 per cent of the world's population. The salariat and proficians constitute 20 per cent, and 5 to 10 per cent of the population respectively.

The proletariat comprises 10 per cent of the working population. The precariat represents 40 to 50 per cent of the population!

The labour market flexibility reforms have accentuated the precariat's insecurities. The weakened regulations for banks and financial companies have enabled financiers to gain more income while pushing the precariat into greater debt. The strengthening of property rights of all kinds—physical, financial and intellectual—has given an increasing share of income and wealth to asset holders (rentiers) at the expense of everyone else. The granting of tax cuts for the rich and generous subsidies for corporations has resulted in reductions in public spending to balance budgets and cutting down benefits for the precariat. Consequently, both relative and absolute incomes have fallen.

The way in which the public sphere and the historically created commons nurtured over centuries have been privatised and commercialised is accelerating the ecological crisis that threatens all of us and is transferring precious aspects of community life to the rentiers and corporates.

There is so much thinning of pro-people democracy in the world to wonder if we do have democracy at all today!

All in all, almost all gains have gone to a small global rich and super-rich who have pushed for

even more of the same, with minimal opposition from politicians, economists and mainstream media. Politicians of all hues have especially been craven, serving rentier and corporate interests rather than common citizens.

Transformative Reforms

In this milieu, a new distribution system must be constructed in which wage earners and others receive part of the income accruing to rent and profits. Wages by themselves will not sustain living standards. In fact, wage bargaining does not make sense and will not work now. While wages continue to stagnate or decline and fall, innovative ways must be found to limit and share rental income and to share profits, according to Standing. Otherwise, inequality will continue to grow, with ugly social and political consequences.

A wide-ranging, new social reforms are required now (Standing, 2014).

The trend to ever-stronger intellectual property protection must be reversed. The copyright regime also requires tipping the balance away from the rentiers towards the public interest, by shortening protection terms and expanding 'fair use', 'personal use' and other exceptions. Open access—for instance through Creative Commons licensing—should be the norm for publicly funded work. All trade investment pacts should be done away with as they are disgracefully biased toward rentier and corporate interests. Subsidies and selective tax breaks for rentiers that are the bane of the modern state must end as they are regressive, distortionary, costly and inconsistent with the free markets the neoliberals claim to support.

This is not all. Rentiers and corporates must be prevented from buying politicians and political parties to do their bidding. There should be tougher rules, strictly enforced, on lobbying and

revolving doors. The rentiers should not be permitted to shunt much of their wealth into tax havens. All countries should cap election spending and provide state funding for political parties that reach a threshold of support. Besides, parties should only be allowed to raise money from membership subscriptions and individual donations. Companies, institutions and other 'non-persons' should be barred from funding parties and politicians. Foreign oligarchs should have no role in a nation's democratic politics.

The labour market should be made into a 'free market, without labour brokers and with the wage determined by bargaining and contract, according to the perceived value to the buyer and seller. However, for that to work, the bargaining positions of the parties must be roughly equal. Unfortunately, statutory minimum wages and its higher variant known as the 'living wage' may set decent standards but have scarcely affected the precariat.

Every country should set up a democratic sovereign capital fund, fed, by taxation, from a share of rental income, including at least 10 per cent of profits from the exploitation of natural resources. A 'social dividend' system, providing every legal resident with a modest but growing basic income, partly paid out of the fund, must be built up. Universal unconditional basic income can be boosted by needs-based supplements for disability or particular costs of living and private insurance as well as employer benefits.

Social reproductive activities like caring for one another, caring for the commons (zones of shared public space) and caring for the community need to be encouraged more. Governance must make a priority of rescuing and preserving public lands and preventing industries like fracking and mining from taking place on them. Those who deplete the commons

must be heavily taxed so that corporations can no longer ignore the social costs—including pollution, erosion, habitat destruction, species loss, noise, and opportunity costs—they are imposing.

Education needs to be de-commodified. Due process for all must be there. There should be new institutions to give people collective representation in society. Deliberative democracy should be strengthened so that there is a more open, transparent and substantive politics based on public participation in discussion of the issues, rather than on pundits providing shameless lies, crocodile tears, soundbites, manipulations, and post-truth assertions that have no basis in fact.

Conclusion

We need stories that embrace darkness and yet produce positive energy in listeners to circumvent it (Fryer, 2003).

Standing as an unconventional, radical economist has done this job uniquely and frankly well. He has given us a compelling storytelling which not only weaves a lot of truthful information but also arouses the people's emotions and positive and realistic energy to fight against the dark side of global capitalism of the last four decades and its dread for the majority of the population in the world, as pointed out above.

The transformative argumentation of Standing against the rentier rich and super-rich, and in favour of the precariat needs to be appreciated by both the Left who do not have the social basis to replace capitalism with socialism and the Right who assert a belief in 'free markets' and want us to believe that economic policies are extending them. Unfortunately, the Old Left is stuck in tired agendas, while actually pandering to the interests of the elites.

Their vocabulary reveals little understanding of contemporary realities, including the insecurities, anxieties and aspirations of the precariat that Standing has elaborated. Furthermore, the proletariat of the Old Left sees the employer as the primary antagonist whereas for the precariat the enemy is the state, representing the interests of global finance and rentiers. For them, employers come and go in a global market system in which the firm is increasingly a commodity.

The precariat is a large emerging class. It is becoming larger day by day. It comprises the rapidly growing number of people facing lives of insecurity, moving in and out of jobs that give little meaning to their lives. As a frustrated and angry lot of underdogs, it is producing instabilities in society. It is dangerous because it is internally divided, leading to the villainisation of migrants and other vulnerable groups like religious minorities. Lacking agency, its members are susceptible to the siren calls of worldwide Far Right or neo-fascist forces. If the progressives among them spontaneously erupt like in the Occupy Movement, it will eventually be decimated by the state in collusion with the rentiers and corporates. To prevent such disasters, Standing has argued for a feasible 'politics of paradise', in which redistribution and income security are reconfigured in a new kind of Good Society, and in which the fears and aspirations of the precariat are made central to a progressive strategy. The precariat on their part should work on forging their group identity and take the lead in mobilising their energies and vision in favour of the progressive strategy of new social reforms as etched above, garnering support from across the political spectrum of the Left and the Right. They need to learn how to effectively mix prefigurative politics with strategic politics in order to move on with victories for a new social liberal and republican governance (Bose, 2020).

Whether liberal democratic and other governments heed Standing's analysis and proposals and radically transform the economic system and reduce the inequalities and insecurities that are the terror of the precariat, is the real moot question now. Positive prospects seem to be currently bleak, though. But there is always hope against hope to find a way out!

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Understanding the Firm-level Monetary Policy Transmission in India

By Abhay Pratap Raghuvanshi[1] and Wasim Ahmad[2]

Abstract

This study investigates the monetary policy transmission on 16,636 firms from 2011-2022. The evidence suggests that during the contractionary phase of the monetary policy, a sales reduction is reflected more through firm-specific factors, including high leverage, low liquidity, low operation cash flow, small size, and lower market power. However, transmission sensitivity is heterogeneous across firms, and large firms experience weak transmission.

Keywords: Firm heterogeneity, Monetary transmission, Leverage, Market power, Conglomerate India

JEL Classification : E22, E52, E58, D43, L11

INTRODUCTION

Monetary policy transmission has a heterogeneous impact on firms' investments (Ottonello and Winberry, 2020; Durante et al., 2022). Evidence suggests that low-leveraged firms are more sensitive to monetary policy shock than highly leveraged firms and size matters, and smaller firms are more responsive to monetary policy shock than large firms (Jeenas, 2019; Crouzet and Mehrotra, 2020; Laine, 2023; Cloyne et al., 2023). Moreover, firms with more market power are less affected by the monetary policy change than firms with high market power (Hamano & Zanetti, 2022; Ferrando et al., 2023; Duval et al., 2023; Renzhi and Beirne, 2023).

This paper examines the above dimensions using firm-level data on various firm-specific indicators, including leverage, market power, liquidity, and size. This study is the first in India to document the monetary policy transmission at the firm level on a sample of 16,636 firms for 2011-2022. The paper finds that the size, high

market concentration, low leverage, high liquidity and conglomerate companies weaken monetary policy's interest rate and credit transmission channels.

Recent research highlights a growing interest in how firm-level market power affects monetary policy transmission, particularly through the credit channel. Hamano and Zanetti (2022) employed a multivariate framework to analyse the interaction between rising firm market power and monetary transmission. Their findings suggest that contractionary monetary policy while aiming to curb inflation, can have unintended consequences: it results in the exit of uncompetitive firms, thus reducing competition for the incumbent firm. The product variety for the consumers and competition among the firms reduces as contractionary monetary policy discourages the entry of new firms. Ferrando et al. (2023) study the relation between the monetary policy effectiveness and the degree of market power of the firms in the eurozone and reveal that firms with higher market power tend to have more profitability and have preferential

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upstream and downstream agreements, so they face fewer borrowing constraints compared to the small and medium enterprises in the market. Increased market power reduces the effectiveness of monetary policy for small and medium enterprises with a significant share in output, production, and employment. The contractionary monetary policy increases the borrowing cost for the SMEs. Duval et al. (2023), using the firm-level data for the US firms, demonstrate that the firms with lower market power exhibit a stronger response to the monetary policy shock than those with high market power. The rising market power of firms in the economy can potentially lower the effectiveness of the monetary policy. Renzhi and Beirne (2023) provided empirical evidence that high market concentration reduces the effectiveness of monetary transmission for the micro-level data of 3000 firms from the group of 11 Asian economies for 2013-2021.

Our research makes several key contributions to the existing literature: *First*, we examine how a firm's heterogenous characteristics can elucidate the different reactions of the firm's sales to monetary policy change, particularly in developing countries like India. To do that, we delve into the balance sheet channel of monetary policy transmission, recognising credit as an important variable that decides the firm's economic growth. *Second*, we study the responsiveness of the firm's sales to monetary policy change and assess how the firm's heterogeneity in terms of size, liquidity, leverage, and market power is important in explaining the differential response of the firm to monetary policy change. *Third*, further, we categorise firms based on ownership (public vs private), listing status (listed vs unlisted), conglomerate affiliation, sector (manufacturing vs service) and goods produced (durable vs non-durable). We observe how the response of a firm's sale to monetary policy change varies across different groups. Our findings reveal statistically

notable disparities in how firms' sales react to monetary policy change across the distribution of the firms classified in heterogeneous groups. This study makes the following contributions: First, it is the first study in India to document monetary policy transmission at the firm level. The study adds to the literature discussing the role of financial friction and ineffective monetary policy transmission in the context of developing countries like India, where empirical literature is limited. Second, the study contributes to the limited literature on the role of market power and conglomerates in understanding the effectiveness of monetary transmission. Third, the empirical literature on the relationship between the distribution of firm leverage ratio and monetary policy shock is mixed in developed countries like the US and Euro area countries; we attempt to examine how leverage ratio is important in determining the firm response to the monetary shock in developing countries like India. Fourth, we investigate other firm characteristics apart from the balance sheet indicators like ownership, sector of operation, conglomerate affiliation, and firms' profitability, which are relevant in understanding the differences in monetary transmission across firms.

The paper is structured as follows. Section 2 outlines the data and methodology. Section 3 shows the empirical results, and section 4 concludes.

Data and Methodology

Data
We analyse a data set comprising 16,636 Indian firms. The sample size is determined based on the availability of data, coverage of sectors, and missing observations. The data for the variables is collected at the end of the financial year. To understand the importance of firm heterogeneity, we include different firm

characteristics variables like size, profitability, debt-to-asset ratio, operating cash flow, current ratio, and market concentration. The sample period is 2011-2022. Table 1 shows the list of variables considered for the analysis. The firm-specific and macro variables are sourced from Prowess and the Reserve Bank of India (RBI).

Econometric Framework

We employ Jordà's (2005) local projection method in a panel regression framework to examine the impact of the contractionary phase of monetary policy on sample firms.

$$\Delta Sales_{i,\,t+h} = ln(\,Sales_{i,\,t+h}),\text{-} ln(\,Sales_{i,\,t}\,) = a_i + \sum_{g=1}^{G} \beta_g^h\, d_g * MPD_{i,\,t} + {}^{(1)}$$

for $h = 0,1,2,3\ldots\ldots$

$\Delta Sales_{i,\,t+h}$ is the change in the real sales for the firm i at period t. Here h is the horizon (years after the monetary shock), a_i is the firm-specific fixed effect, $\varepsilon_{i,\,t+h}$ is the white noise error term, $MPD_{i,\,t}$ is the monetary policy shock and takes the value of 1 for the periods of contractionary monetary policy and 0 otherwise. The firms are grouped into low and high categories for each heterogeneous characteristic of the firm using the dummy variable d_g. We create a dummy variable for the presence and absence of the firm characteristics such as market concentration, firm size, leverage, liquidity, durability of goods, listed and non-listed firms, public and private ownership, manufacturing and service sector, domestic and foreign firms, and conglomerate and non-conglomerate. The dummy variable takes the value one for the presence of the firm's characteristics and zero otherwise. The classification of the firms into high and low groups is based on the percentile value of given firm characteristics. The firms are classified in the high group, and the dummy variable takes the value of one if the median value of an individual firm over the period 2011-2022 is below the twenty-fifth percentile for the

distribution of all firms for a given characteristic. If the median value is above the seventy-fifth percentile, then the dummy variable takes 0. To understand the heterogeneous impact of the firm size, we include an interactive dummy of the firm group dummy and monetary stance dummy variable. $\phi^h(L)$ the lag polynomial in the equation X_t includes the set of firm-specific control variables in the above equation. Equation 1 controls firm-specific factors such as net fixed assets, debt ratio, and total liabilities. Eq 1, β_g^h gives how the dependent variable responds to monetary shock at each horizon h. We use the estimate β_g^h to generate the impulse response functions for the change in the monetary policy. Equation 1 is estimated using OLS for each horizon(year) $h = 0,1,2,3$.

Table 1: List of Variables

Variable	Variable Description	Data Source
Asset	Natural logarithm of total asset	Prowess QI Database
Liquidity	The current ratio and operating cash flow	Prowess QI Database
Leverage	Debt to asset ratio and debt to equity ratio	Prowess QI Database
Sales	Natural logarithm of gross sales	Prowess QI Database
Policy rate	Repo rate	RBI Database
Market power	Market power is measured using the firm's share in the total market share of the product group in which the firm is present. For 2011-2022, we find the median market share of the given firm. If the median market share of a given firm is below the 25th percentile distribution of the market market power. If it is above the 75th percentile, it is ranked as a firm with high market power.	Author's Own
Conglomerate	The firms that have operations in two or more than two sectors are considered conglomerates, taking the dummy value of 1, and the other firms are considered non-conglomerates, taking the dummy value of 0	Author's Own
Ownership	Public sector firms take the value of 1, and private sector firms take the value of 0	Author's Own
Sector	Firm in the manufacturing sector takes a value of 1, and firms in the service sector take a value of 0	Author's Own
Durability	Firm producing durable goods takes a value of 1, and non-durable producing goods firms take a value of 0	Author's Own
Listed	Firms listed on either the Bombay Stock Exchange or the National Stock Exchange take the value as 1 and the remaining firms take a value of zero	

Result and Discussion

Fig.1(a) illustrates the impulse response of real sales to changes in monetary policy. Small sized firms exhibit greater sensitivty to monetary policy shocks than large firms. The sales of the firms with low market concentration undergo a

significant decline following a monetary contraction relative to those with high market concentration at the end of horizon two. We find evidence that the rising market power of the firms diminishes the effectiveness of the monetary transmission, consistent with the recent empirical literature (Ferrando et al., 2023; Duval et al., 2023). Fig.1(b) shows the heterogeneity of the firm leverage and its impact on the firm's sales. The interest rate change by the central bank is observed to have the most significant impact in case of highly leveraged small-sized firms.

Fig.1(c) shows how the conglomerate firm's sales response differs from the non-conglomerate firms. Non-conglomerate firms are less sensitive to contractionary monetary policy, consistent with the literature. Fig.1(d) impulse response shows how the difference in liquidity is an important variable in the monetary transmission. The effect of the contractionary monetary policy on small-size firms with low liquidity is visibly higher than on large firms with high liquidity. The financial friction channel is operative; small-sized firms with low operating cash flow and high leverage have a more pronounced effect on reduction in sales growth due to the contractionary monetary policy.

We also examine the monetary policy transmission for public and private sector firms (Fig.1e). Large private sector firms seem to offset the effects of the contractionary monetary policy as compared to public sector firms. It explains the operational efficiency of private firms over public sector firms, which operate conventionally. Further, the non-listed firms are more responsive to contractionary monetary policy stance than the listed firms due to limited borrowing channels (Fig1f).

At the sectoral level, the negative impact on the net sales is higher in manufacturing than in

service sector firms Fig (2a). The result suggests that the monetary contraction decreases sales for the firms producing durable goods more than non-durable goods (Fig2b). Firms that produce non-durable goods are more collateral-constrained than those that produce durable goods. At the end of the two horizons, small low-profit firms are more affected by monetary contraction than large high-profit firms (Fig2c). Small firms with low profits are constrained because of their small size and low levels of internal funds due to low profits. The impulse response function statistically differs between large domestic and foreign firms. Foreign large firms are more insulated from monetary contraction than domestic ones (Fig 2d).

These results are robust to modelling specifications, balance sheet controls, interaction terms, and the specifications mentioned in Jordà (2005). However, the paper does not include the context of quantitative easing and forward guidance, as these are non-conventional monetary policies that stand for the Indian economy.

Conclusion

Our analysis of the Indian data provides significant evidence of monetary policy transmission at a granular level. Some of the significant findings are: *First*, firms with high market power, high liquidity ratio, high financial leverage, listed firms, domestic firms relative to foreign firms, and public sector firms compared to private sector firms exhibit a statistically significant decline in the firm's sales at the end of the second horizon in response to the contractionary monetary policy. *Second*, sales of large conglomerate firms, which are involved in diversified activities, are less affected by the monetary contraction than non-conglomerate firms. *Third*, the firm's sales in the durable goods sector respond more to the interest rate change than the non-durable goods

in the manufacturing sector. These findings may provide new directions for future research and may also open new avenues of research.
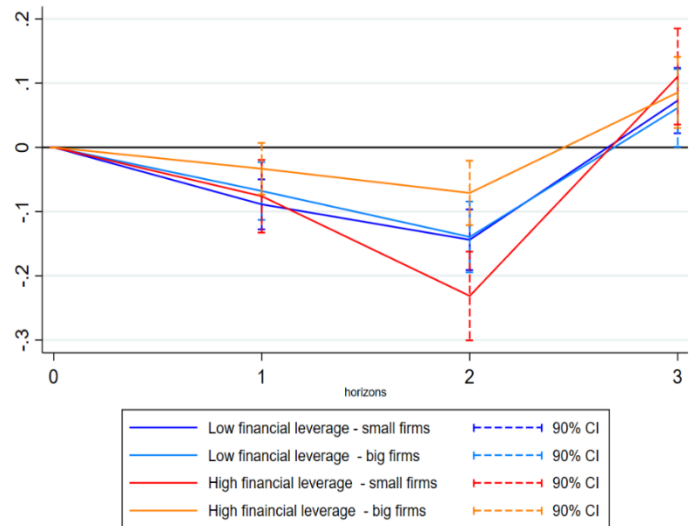
Some findings may also be helpful for forward guidance (static and dynamic).
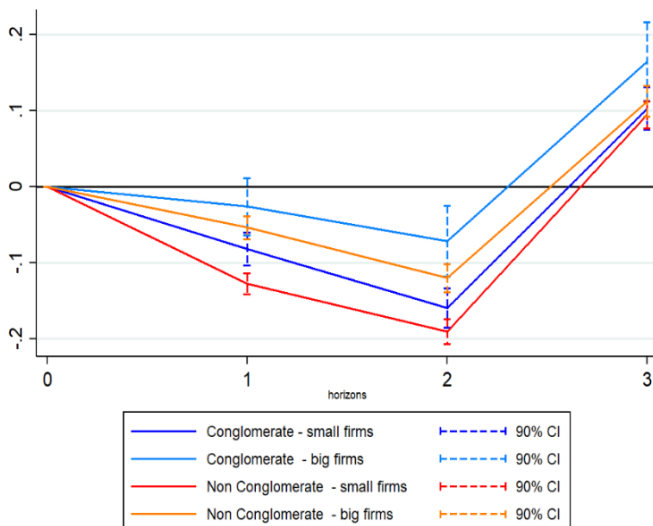
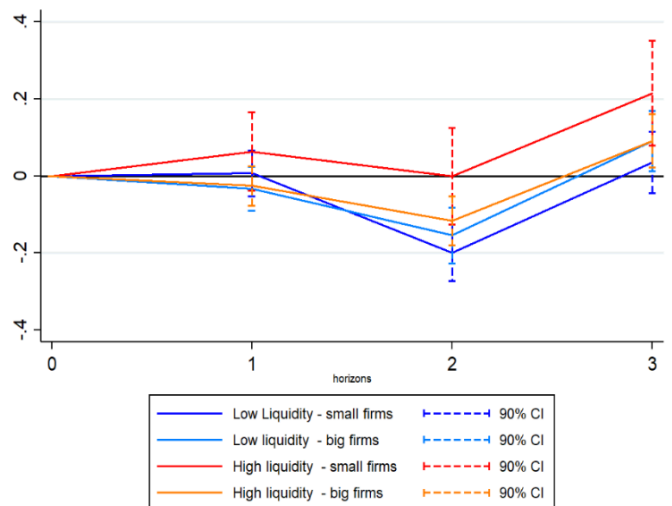*Figure 1*

a) Market Concentration
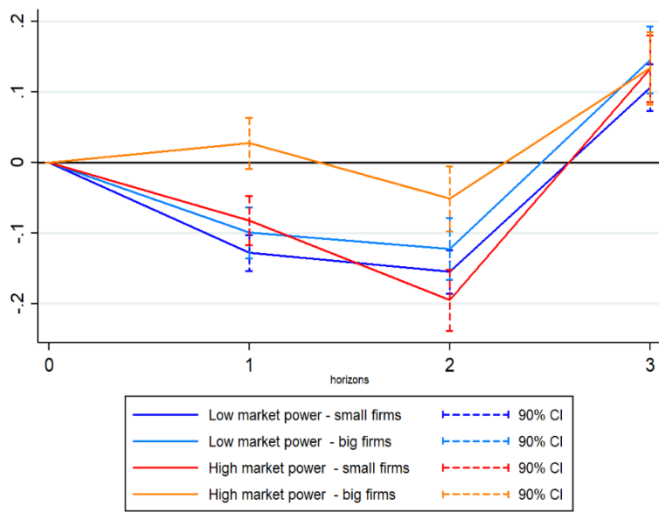
b) Financial Leverage
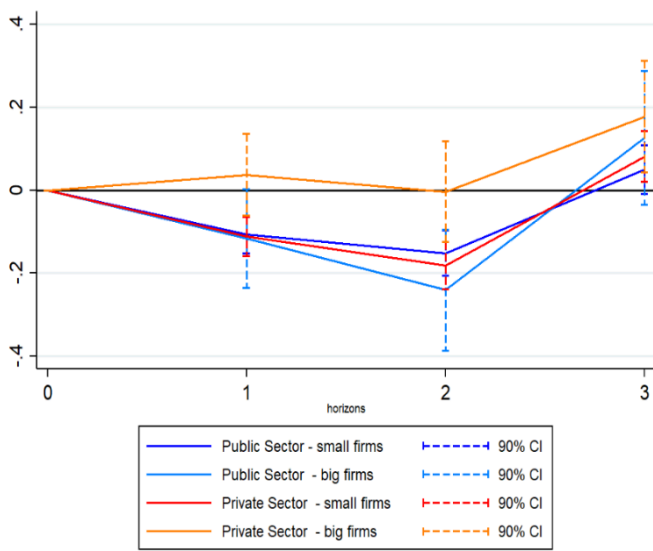
c) Conglomerate

d) Liquidity

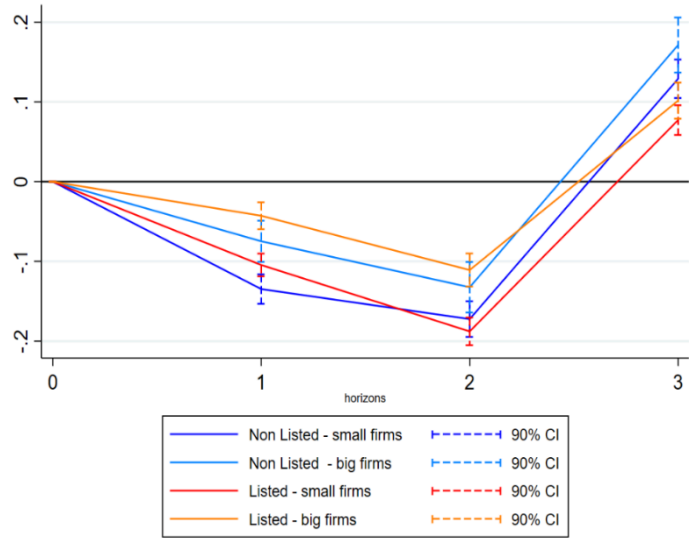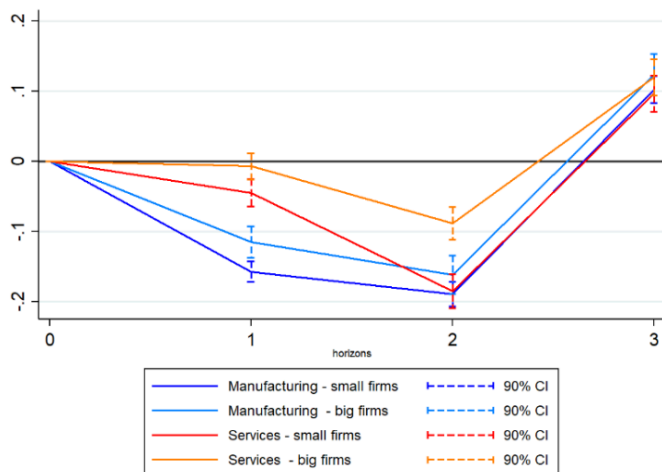e) Public and Private Sector firms

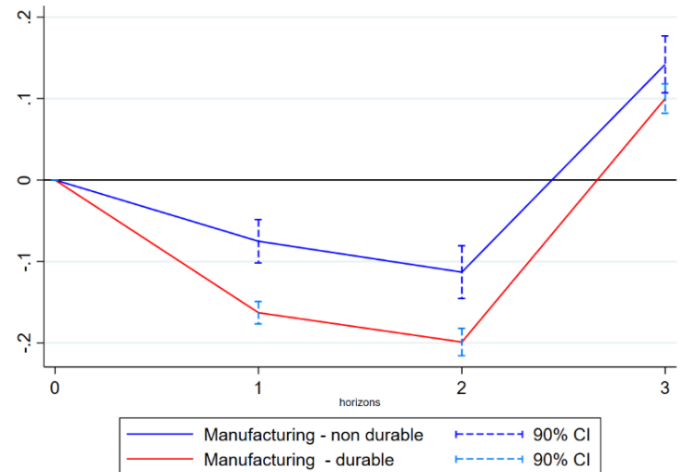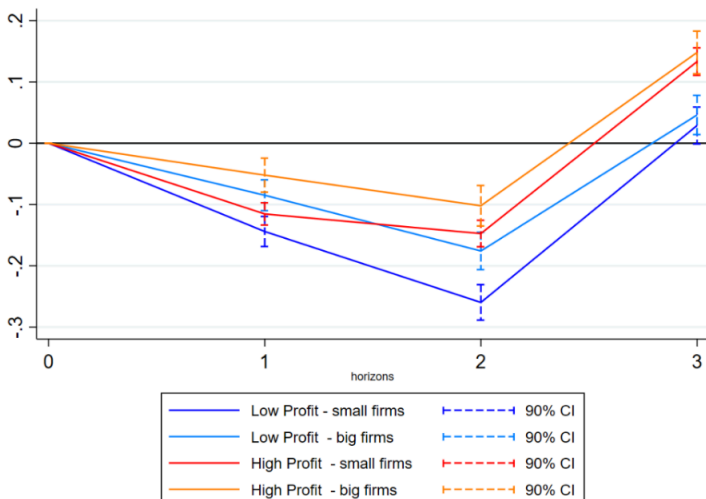f) Listed and non-listed firms

Figure 2

a) Manufacturing and Service Sector

b) Manufacturing durable and non-durable

c) Profitability

d) Domestic firms and Foreign Firms
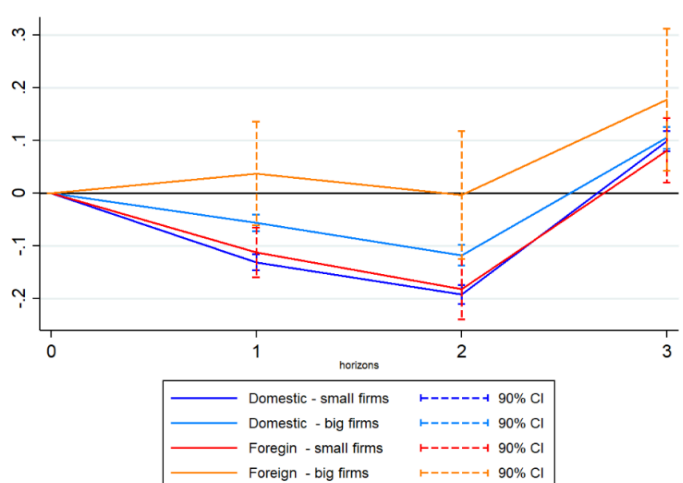
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Taming Inflation, Fostering Growth: India's Policy Conundrum

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Abstract

Deciphering the intricate balance between inflation and economic growth is pivotal to formulating effective economic policies. This article explores India's policy conundrum of taming inflation while fostering growth, particularly amidst aspirations to become a $5 trillion economy by 2027. The relationship between growth and inflation is constantly evolving, from economists debating the existence of a trade-off to completely disregarding it. Strategies like the disinflation glide path have emerged to reduce inflationary pressures while gradually minimising adverse effects on growth. The Reserve Bank of India adopted flexible inflation targeting to balance price stability with growth objectives, though unique challenges such as supply-side inflation persist. The article concludes by advocating for complementary fiscal policies alongside monetary measures to sustainably address inflation and promote growth on India's path to economic prosperity.
Keywords: Inflation Targeting, Disinflation Glide Path, Supply-Side Inflation, Monetary Policy.
JEL Classification: E31, E52, E58, E61, O11

Introduction

Comprehending the relationship between inflation and growth has always been a key concern in economics discussions. Amongst various policy challenges, few are as nuanced and delicate as maintaining a fine balance between inflation and economic growth. For a nation aiming to become a $5 trillion economy by 2027, with eyes on achieving developed country status by 2047 and entering Amrit Kaal, taming inflation and fostering growth simultaneously becomes all the more imperative.

For a long time, until the 1960s, the relationship between growth and inflation was considered positive. The coexistence of persistently high inflation and low growth emerged in the 1970s, bringing a paradigm shift in how developed countries formed their economic policies towards inflation. In the mid-20th century, economists like Milton Friedman and Edmund Phelps introduced the concept of the Phillips curve,

suggesting an inverse relationship between unemployment and inflation. However, their work also highlighted the existence of a short-run trade-off between inflation and unemployment, known as the "Friedman-Phelps" hypothesis. Later, Rober Lucas challenged this and argued that the trade-off between growth and inflation does not exist in the long run and instead emphasised the importance of rational expectations and the role of supply-side factors.

Overall, economists recognised that there is a potential positive correlation between economic growth and inflation. Although the relationship is not always straightforward, an attempt to decrease inflation adversely affects economic growth. In light of this, the concept of the disinflation glide patch originated in macroeconomic policy as a tool to cool inflationary pressure. It refers to a gradual and systematic reduction in the inflation rate over time, achieved through a series of deliberate

policy actions by monetary authorities. The origins of the disinflation glide path can be traced back to the experiences of various countries in the 1970s and 1980s when high and volatile inflation became a significant macroeconomic challenge. During this period, policymakers grappled with the adverse effects of inflation on economic stability, such as erosion of purchasing power, distortions in resource allocation, and uncertainty for businesses and consumers.

In response to these challenges, economists and policymakers began advocating strategies to bring down inflation gradually and sustainably, rather than through abrupt and disruptive measures. The idea was to balance containing inflationary pressures and minimising adverse effects on economic growth and employment.

The disinflation glide path typically involves a combination of monetary policy tools, such as interest rate adjustments, open market operations and changes in reserve requirements, aimed at gradually tightening the money supply and reducing inflationary expectations. Central banks are crucial in implementing and communicating the disinflation glide path through inflation-targeting frameworks or other monetary policy regimes.

Leveraging India's Growth Potential for Economic Growth

As the world's largest democracy and one of the fastest-growing major economies, India is characterised by myriad unique features that set it apart from the rest of the world. India, the most populous nation in the world, also has a relatively younger population than its contemporaries, with a median age of 28 years. This demographic dividend presents a unique opportunity to harness the potential of its youthful workforce and propel economic growth

towards a higher trajectory, possibly even higher than the much-heralded $5 trillion. As the world's largest democracy and one of the fastest-growing major economies, India is characterised by myriad unique features that set it apart from the rest of the world. India, the most populous nation in the world, also has a relatively younger population than its contemporaries, with a median age of 28 years. This demographic dividend presents a unique opportunity to harness the potential of its youthful workforce and propel economic growth towards a higher trajectory, possibly even higher than the much-heralded $5 trillion.

With an increasing population and labour force, India is witnessing inter- and intra-state migration in search of better livelihoods. This has led to rapid urbanisation and industrialisation. The government, in an attempt to give an impetus to job creation for a continuously expanding labour force, has injected a colossal amount of money into the Indian economy through various schemes like Make in India, Startup India, Smart Cities Mission, Pradhan Mantri Awas Yojana, etc. Government initiatives to enhance skill development, entrepreneurship, and vocational training also play a crucial role in equipping the workforce with the necessary skills and competencies to meet the demands of a rapidly evolving economy.

The Minister of Finance and Corporate Affairs of India stated that "the era of Amrit Kaal would be one in which economic growth is supported by social welfare, where India is committed to leaving no one behind and ensuring that the impact and benefits of its growth and progress reach all in its diverse and expansive populace, transcending innumerable cultures, languages and geographies, constituting the country's real wealth."

Increasing expenditure on human capital, an

expanding labour force, a younger population, a skilled workforce, and investments in infrastructural development would undoubtedly positively impact economic growth, as is visible in India's rising gross domestic product. However, economic expansion has the potential to increase inflationary pressure. The Reserve Bank of India (RBI) has also issued a cautionary note regarding the potential for inflationary pressures amidst rising economic growth.

The acceleration of economic growth in India can exert upward pressure on prices, leading to inflationary tendencies within the economy. Demand-pull factors like rising population and increasing government expenditure put upward pressure on price levels. In India, several cost-push factors equally contribute to inflationary pressures. These include minimum support prices, rising wages, supply chain bottlenecks, etc.

Striking Balance between Price Stability and Growth

Considering India's precarious situation, the RBI formally adopted flexible inflation targeting (FIT) in June 2016 to make price stability, defined as target CPI inflation, the primary objective of monetary policy.

Flexible inflation targeting is an approach to monetary policy that aims to balance maintaining price stability, typically through a target inflation rate, and supporting economic growth. Flexible inflation targeting allows the Reserve Bank of India (RBI) to consider other macroeconomic objectives, such as supporting employment and fostering sustainable economic growth, alongside price stability, which aligns with the government's objective of fastening economic growth. This circumvents, to some extent, the situation where output is sacrificed massively due to disinflation. Since 2016, India

has survived multiple economic crises, including rising oil prices, a supply chain breakdown due to the pandemic and unfavourable weather conditions adversely affecting agricultural produce. Flexibility has aided growth and recovery. It is observed that the output sacrifice from disinflation in an emerging market could be huge, as underemployment is high and supply shocks drive inflation.

However, over the last few years, it can be said that inflation targeting may not be suitable for India due to the unique challenges faced by its economy, such as the significant role of the agricultural sector in generating inflation and the limited effectiveness of monetary policy tools in addressing supply-side inflation. Food inflation remains the primary driver of the consumer price index, which has approximately 45% weightage. Supply-side inflation cannot be countered using existing monetary policy tools of the RBI like the CRR, SLR, OMO, repo rate, reverse repo rate and others. It requires targeted policy interventions and improvements in market efficiency. Any attempt to contain inflation would turn out to be futile, as was seen with the surge in inflation driven primarily by high tomato prices last year. Also, since India is expanding its share in world trade, the role of global commodity prices in determining the local price level will continue to increase. This makes us all the more vulnerable to volatility in inflation. An inward-looking inflation-targeting policy may overlook crucial external influences on domestic inflation dynamics and tend to increase output sacrifice or dampen growth momentum while lowering inflation.

Conclusion

The relationship between inflation and growth has evolved, yet economists and policymakers grapple with the trade-offs. From the early debates on the Phillips curve to adopting flexible inflation targeting, India has witnessed a

journey marked by attempts to reconcile sometimes conflicting objectives while steering the economy toward stability and prosperity.

If India is to achieve the $5 trillion mark and move on an upward path of growth sustainably, then, apart from flexible inflation targeting, other policy initiatives to combat supply-side inflation like farm bills (to reduce the cascading of prices from farmer to buyer), fiscal prudence, managing the rising non-performing assets, etc. have to be undertaken. The mere anchoring of inflationary expectations through monetary policy actions will not be conducive to economic growth in the long run. Fiscal policy measures should play a complementary role to monetary policy in controlling inflation, as they have a direct impact on aggregate demand. Advanced economies have observed that reducing public expenditure by one per cent of GDP lowers inflation by half a per cent. Taking a cue from this, policymakers should explore the role of fiscal restraint and targeted transfers to ensure sustainable growth without compromising on high inflation rates and the problems stemming from them.

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The Impact of Population Ageing on Inflation in India

Jakir Hussain Mazumder[1], Diwakar Bharat[2]

Abstract

The present study provides an overview of the demographic transition in India. It demonstrates how the decline in fertility rates and an increase in life expectancy have resulted in staggering numbers of the elderly population in India. We find that India will have the highest elderly population compared to all BRICS and G7 countries by 2100. We also discuss the relationship between ageing and inflation from 1960 to 2022 with the help of scatterplots and find a negative association between them. The negative association is consistent even when we use the alternative measures of ageing and inflation. The study also tests some channels that mediate the relationship between ageing and inflation, and we find that the life expectancy channel explains the negative relationship in the Indian context.
JEL Classification: E31. J11, O53, C22

Introduction

The population ageing in India is slow but persistent. According to United Nations Population Prospects (2022), the proportion of the population 65 and above grew by 119.35% between 1950 and 2021 and is projected to grow by 338.38% between 2021 and 2100. India will, therefore, face macroeconomic challenges; for instance, Kim (2016) outlined that increasing the elderly population lowers per capita GDP. However, recent studies have established the association between population ageing and inflation, among other macroeconomic variables.

The traditional link between population ageing and inflation appeared from the life-cycle hypothesis (Modigliani and Brumberg, 1954), which indicates that as the median age of the population increases, it leads to a rise in the elderly population, which produces inflationary pressure in the economy.[3] Juselius and Takats

(2021), using data from 22 OECD countries, confirmed the hypothesis that the rising elderly population creates inflationary pressure. On the contrary, some studies, including Yoon et al. (2018), found that the ageing population lowered inflationary pressure due to the slowing of economic growth from changing consumption patterns which reduces the aggregate demand accompanying lower inflation. In the later section, we discuss several channels that mediate the relationship between ageing and inflation.

While studying the macroeconomic ramifications of demographics in India, Mukherjee et al. (2019) found that the growth of the elderly population in India is deflationary due to the lower aggregate demand. The present study contributes to scarce literature by focusing solely on the relationship between population ageing and inflation in the case of India. It uses different measures of population ageing and inflation to observe the consistency of the relationship.

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[3] Ageing population do not contribute to production but demand goods and services for consumption which causes aggregate demand to increase. Thus, supply remaining same, higher aggregate demand increases the price level.

Demographic Background of India and Ageing Population

Bloom and Williamson (1998) state that demographic transition occurs broadly through three stages:

1. Pre-transition level, with a high birth rate and death rate.
2. Transition level, where the birth and death rates decline, but the latter decline faster than the former; in this phase, population growth occurs.
3. In the post-transition level or third stage, both birth and death rates become stationary.

The United Nations Population Prospects (2022 revision) provides data on the fertility rate and life expectancy at birth but the data starts from 1950 onwards, so our idea about the pre-transition level is limited. However, Bhat (1989) estimated that the fertility rate was between 5.7 and 5.9 from 1900 to 1950, and the life expectancy was 24 to 40 years from 1900 to 1950.

In Figure 1, we plot the fertility rate[4] and life expectancy at birth[5] from 1950 onwards to get an intuition of demographic transition in India. In the last half a century, the fertility rate decreased by 64.56% and life expectancy increased by 61.15%. These significant changes (especially life expectancy) in the key indicators imply an improvement in India's health sector and socio-economic conditions. According to United Nations Population Prospects (2022 revision), the fertility rate is projected to decline by 16.74% and increase life expectancy at birth by 27.84% between 2021 and 2100. The decrease in fertility slows down the growth of the working-age

population; on the other hand, an increase in life expectancy increases the elderly population in the economy.

Figure 1: Fertility rate and life expectancy at birth in India (1950-2100).
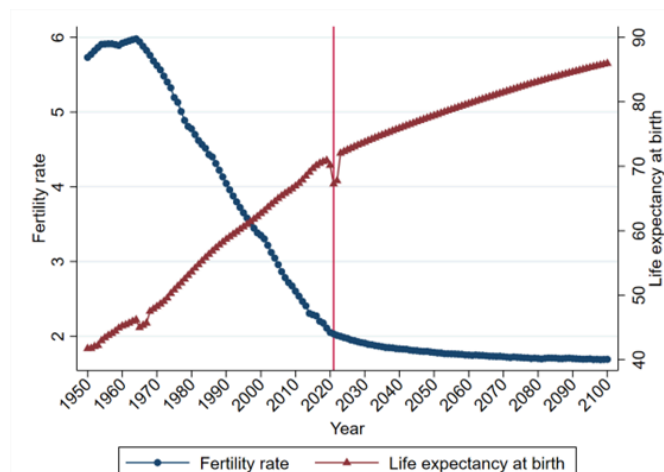
Source: Calculated based on the United Nations population prospects (2022 revision).

Table 1: The comparison of the elderly population 65 and above in India with BRICS and G7 countries.

	Population of 65 + (Thousands)			Share (%)			Growth rate	
	1950	2021	2100	1950	2021	2100	1950-2021	2021-2100
BRICS								
Brazil	1291.14	20534.73	61868.23	2.39	9.58	33.52	300.38	249.90
China	27428.28	187501.50	313820.60	5.04	13.15	40.93	160.80	211.28
India	11072.93	95749.03	456048.60	3.10	6.80	29.81	119.33	338.22
Russian Federation	4922.42	22626.48	31226.89	4.80	15.59	27.86	224.96	78.69
South Africa	529.34	3546.98	15320.85	4.06	5.97	20.55	47.16	244.07
G7								
Canada	1058.46	7066.80	17004.80	7.70	18.52	31.55	140.48	70.33
France	4767.26	13760.20	20831.85	11.39	21.32	34.23	87.15	60.55
Germany	6713.50	18491.90	23246.87	9.46	22.17	33.72	134.35	52.11
Italy	3753.96	14028.33	14082.82	8.09	23.68	38.19	192.65	61.28
Japan	4125.99	37118.45	28502.08	4.89	29.79	38.70	508.98	29.93
United Kingdom	5426.16	12726.95	22949.99	10.84	18.92	32.56	74.50	72.13
United States of America	12124.29	56207.48	120062.10	8.18	16.68	30.47	103.98	82.68

Source: Calculated based on the United Nations population prospects (2022 revision).

Table 1 illustrates the size, proportion and growth rates of the elderly population aged 65 and above in 1950, 2021 and 2100, respectively.

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[4] The World Bank defines as "the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year."

[5] The World Bank defines as "the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life."

We can observe that the demographic transition has increased the proportion of the elderly population (65+) from 3% to 7% between 1950 and 2021. In 2021, the proportion of elderly in India was around 7%, the second lowest among BRICS and G7 countries, followed by South Africa (6%). However, the projections of the UN Population Prospects (2022 revision) suggest that India will have the highest elderly population (456.04 billion) among the BRICS and G7 countries. From Table 1, it can be observed that there will be a 338.22% growth in the elderly population in India between 2021 and 2100, which will be the highest among all BRICS and G7 countries.

The increase in the elderly population is associated with changes in the primary economic variables such as economic growth, labour productivity, real interest rates, and aggregate savings, among others. However, structural factors like an ageing population play a role in determining inflation in the economy (Gajewski (2015) and Yoon et al. (2018). The present paper is motivated to study the relationship between population ageing and inflation, given the significant rise in the elderly population in India (Table 1).

The Relationship between Ageing and Inflation in India and Possible Channels

Population ageing is measured by the old-age dependency ratio (OADR) as the ratio of the population aged 65 and above to the working-aged 15-64 population. Inflation is measured as the changes in the consumer price index. We use scatterplots to understand the relationship between ageing and inflation using different measures of ageing and inflation. The horizontal axis of Figure 2 represents population ageing, and the vertical axis represents the inflation rate. Figure 2a illustrates that in India, ageing is

negatively associated with inflation. Moreover, we add two alternative measures of ageing; the first is the share of 65 and above in the total population (a crude measure of ageing). Second is the ageing index (ratio of the population 65 and above to the young-aged 0-14 population), which provides broader aspects of the ageing process. We find similar results using both measures of ageing (Figures 2b and 2c), that overall inflation also declines when ageing intensifies.

Furthermore, we employ an alternative measure of inflation known as the gross domestic product (GDP) deflator, which considers all products, including consumer and non-consumer products, unlike CPI inflation (CPI inflation only considers consumer products). However, the negative relationship between ageing and inflation does not change (Figures 3a, 3b and 3c).

Figure 2: Population ageing and inflation (1960-2022)
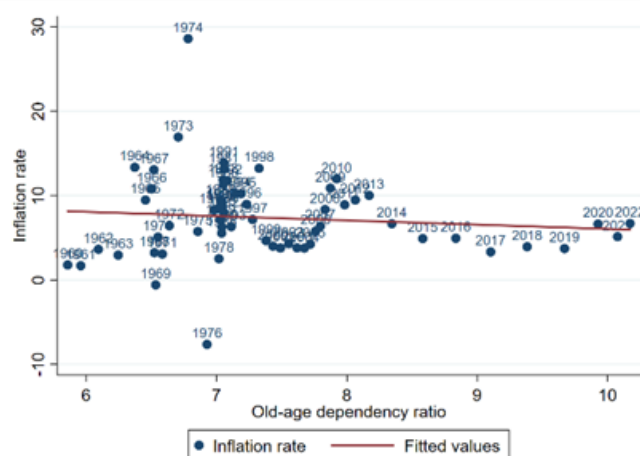
Figure 2a: OADR and inflation.

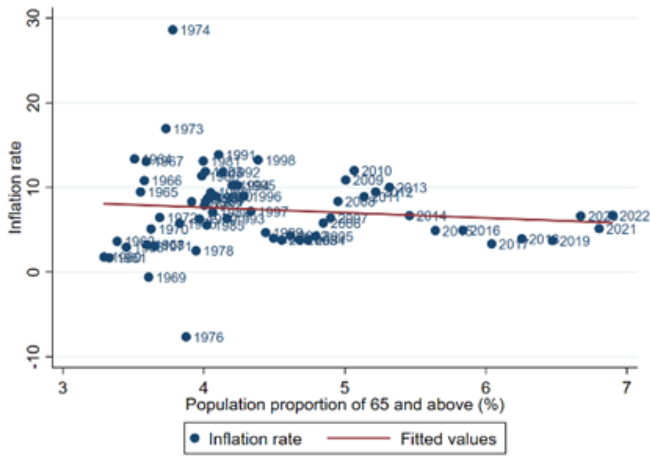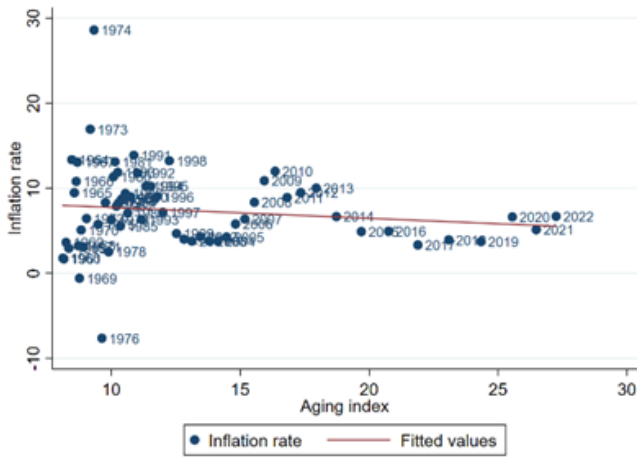*Figure 2b: Population proportion of 65+ and inflation.*

Figure 2c: Ageing index and inflation.

Source: Authors' estimation using data from World Bank-World Development Indicators.

Figure 3: Population ageing and GDP deflator (1960-2022)

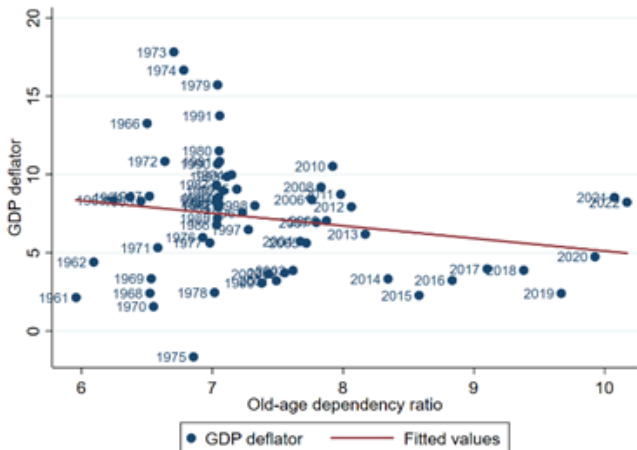*Figure 3a: OADR and GDP deflator.*

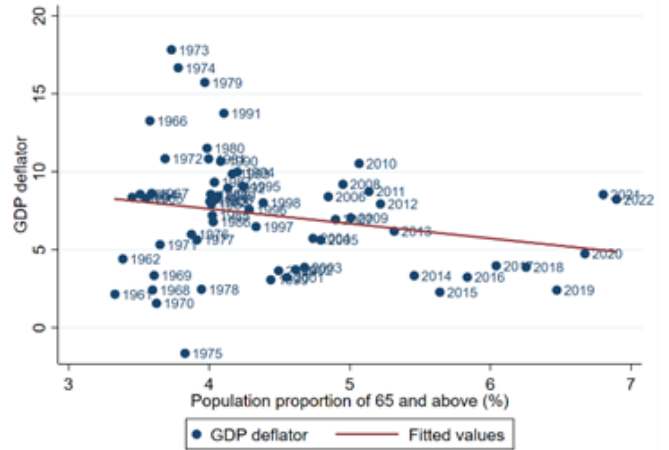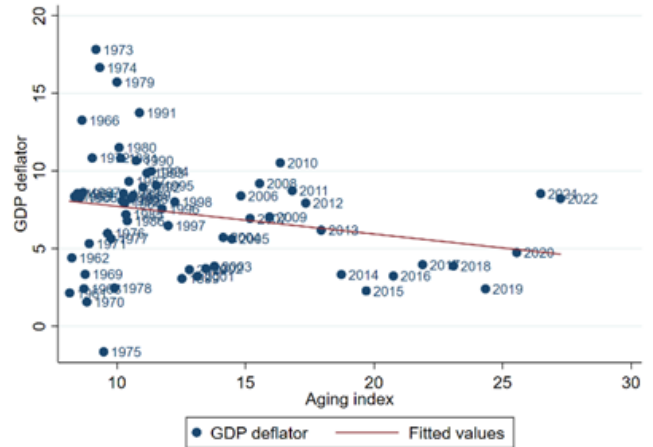*Figure 3b: Population proportion of 65+ and GDP deflator.*

Figure 3c: Ageing index and GDP deflator.

Source: Authors' estimation using data from World Bank-World Development Indicators.

However, the scatterplots only show the correlation between the two variables, and we cannot control the impacts of other variables on the relationship between ageing and inflation, as demonstrated in Figures 2 and 3. Thus, we employ the regression analysis to confirm whether ageing is indeed deflationary or not. We retrieve the data on different macroeconomic and demographic-related variables from World Development Indicators for the periods between 1960 and 2022. We start with ordinary least squares (OLS) and the results are presented in Table 2. In Model 1 (Table 2), the OADR has a negative coefficient (which we have also observed from our graphical analysis),

interpreted as increasing ageing leads to deflationary pressure.

To control for other factors that may influence our results, we add four macroeconomic variables (broad money, trade openness, real interest rate, and government debt) that have an established relationship with inflation. However, in Model 1 (Table 2), we only find real interest rates significantly impacting inflation.[6] In Model 2 (Table 2), we replace the OADR with a population proportion of 65+ and find the result consistent with Model 1 (Table 2). In Model 3 (Table 2), we replace the OADR with the ageing index and find similar results.

However, the coefficient of the ageing index is higher than the other two measures, which makes sense because the ageing index covers a broader aspect of ageing, considering the changes in the young population (0-14). In Models 4-6, we use the GDP deflator as a dependent variable instead of CPI inflation; we find results consistent outcomes irrespective of alternative measures of ageing and inflation. Moreover, we can observe that the r-square or explanatory power of the model increased from around 36% (Models 1-3, Table 2) to 86% (Models 4-6, Table 2). The trade openness becomes statistically significant with the expected sign (an increase in trade leads to higher competition in the domestic market, which causes a decline in the price level) in Models 4-6 (Table 2), along with the real interest rate.

In the case of India, we find a negative association between ageing and inflation, which is in contrast with the life cycle behaviour. Below, we discuss some possible channels through which can explain the deflationary effect of ageing:

Table 2: The regression estimates - ageing and inflation.

Model	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	CPI Inflation			GDP Deflator		
Old-age dependency ratio	-1.72**			-1.30***		
	[0.69]			[0.30]		
Population share 65 and above		-1.90**			-1.53***	
		[0.81]			[0.34]	
ageing index			-0.31**			-0.26***
			[0.14]			[0.06]
Broad money	-0.02	-0.02	-0.01	0.05	0.04	0.05
	[0.13]	[0.14]	[0.14]	[0.08]	[0.08]	[0.08]
Trade openness	-0.01	-0.00	-0.01	-0.10***	-0.09***	-0.09***
	[0.05]	[0.05]	[0.05]	[0.02]	[0.02]	[0.02]
Real interest rate	-0.51*	-0.50*	-0.50*	-1.02***	-1.02***	-1.02***
	[0.29]	[0.30]	[0.30]	[0.12]	[0.12]	[0.12]
Government debt	-0.10	-0.10	-0.10	-0.06	-0.06	-0.06
	[0.09]	[0.09]	[0.09]	[0.04]	[0.04]	[0.04]
Constant	29.48***	24.54***	20.17***	28.13***	24.93***	21.52***
	[7.95]	[6.84]	[6.02]	[3.00]	[2.31]	[1.92]
Observations	44	44	44	44	44	44
R-squared	0.38	0.37	0.36	0.87	0.87	0.86

Source: Authors' estimations using data from World Bank-World Development Indicators.

Notes: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. The data of real interest rates became regular from 1978 onwards, so total workable observations were reduced to 44 in the models. The descriptive statistics are available upon request.

- Life expectancy channel: Katagiri et al. (2020) argued that ageing could have a negative relationship with inflation if ageing in the economy occurs through an increase in life expectancy. When life expectancy increases, the increasing political influence of the elderly compels the government to suppress inflation to protect the fixed income of the elderly.

- GDP growth channel: Population ageing can lower inflation because of the future growth prospects in the wake of ageing. The loss in demand and investment induced by ageing may not be offset by monetary policy if inflation is already low in the economy (Shirakawa, 2012). The changing consumption patterns as demographic structures (higher elderly population) change in the economy also reduce the aggregate demand (Yoon et al., 2018).

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[6] The expected sign of the coefficient of real interest rate is negative because an increase in real interest rate leads to a decline in inflation due to increased cost of borrowings.

Savings channel: Anderson et al. (2014) found that dissaving by the elderly after retirement leads to deflationary pressure in Japan through real exchange rate appreciation. The dissaving in Japan was accompanied by the repatriation of foreign savings, which led to the appreciation of the exchange rate.

- Redistributive effects channel: Bullard et al. (2012) argued that the elderly prefer lower inflation, and depending on their political influences on redistributive policies, the central bank may engineer lower inflation.

- Institutional quality channel: Ma and Tang (2023) found that the relationship between ageing and inflation is mediated by institution quality. The study argued that greater age is correlated with lower justifiability of corruption. If there are higher numbers of elderly population, then institutional quality is expected to be good, which mediates the lower inflation in the economy.

We test some of the channels below by interacting GDP growth, life expectancy at birth, and gross savings with the old-age dependency ratio in India.[7] Only the interaction between the OADR and life expectancy at birth on inflation is statistically significant at a 10% significance level among other channels (GDP growth and gross savings).[8] This finding is also intuitive; ageing in India[7] has intensified due to the increase in life expectancy, which increased by 61.15% between 1950 and 2021. Figure 4a shows that the effects of the old-age dependency ratio on nflation increase from -4.28 at the life expectancy of 40 years to 2.23% at the life expectancy of 75 years, but it can be observed that confidence intervals reduce at higher levels of life expectancy.

However, for the other two channels, such as GDP growth and gross savings (Figures 4b and 4c), we can see that confidence intervals remain higher, and the effects of the old-age dependency ratio on inflation remain around -1.6% and -1.7%, respectively.
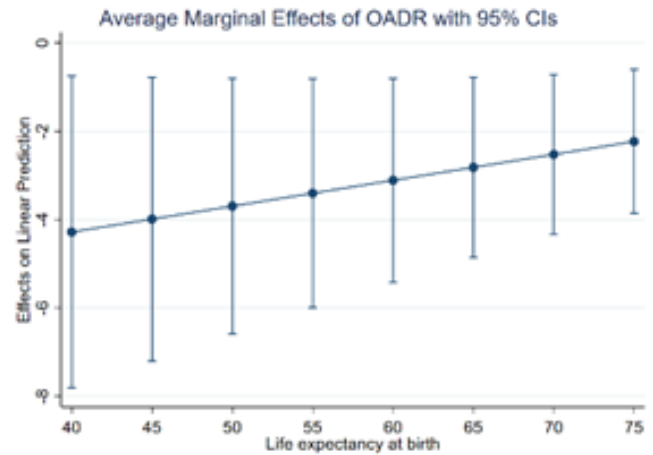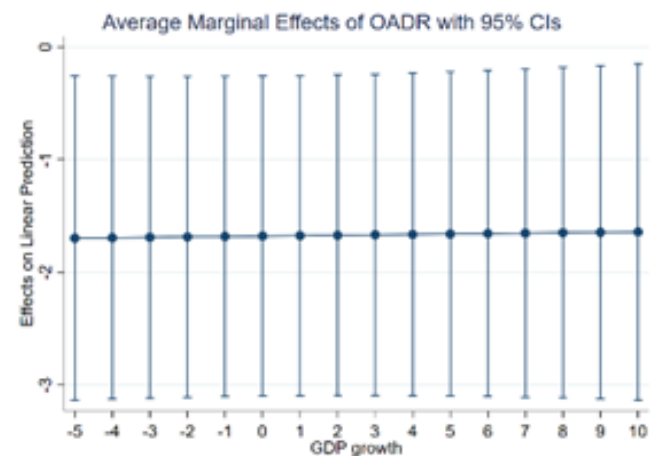
Figure 4a: Life expectancy channel


Figure 4b: GDP growth channel

Conclusion

The present study provides an overview of the demographic transition in India. It demonstrates how the decline in fertility rates and an increase in life expectancy have resulted in staggering numbers of the elderly population in India. We find that there will be the highest elderly population in India compared to all BRICS and G7 countries by 2100.

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[7] We do not test channels such as, institutional quality and redistributive effects due to the data unavailability.
[8] Results are available upon requests.

Figure 4c: Gross savings channel
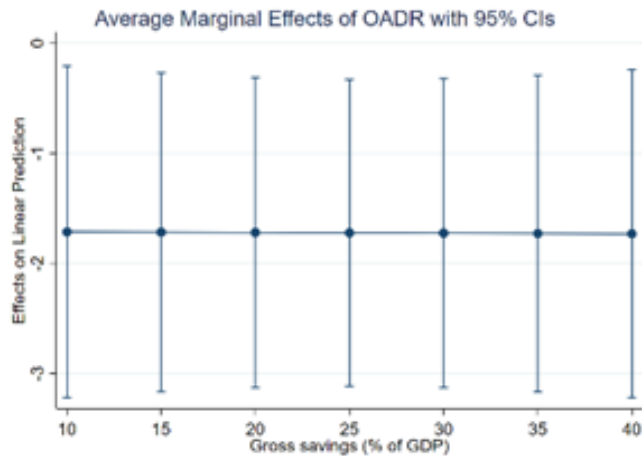
Source: Authors' estimations using data from World Bank-World Development Indicators.

Notes: CIs refer to confidence intervals.

We also discussed the relationship between ageing and inflation from 1960 to 2022 with the help of scatterplots and found a negative association between them. The negative association is consistent even when we use the alternative measures of ageing and inflation. However, the scatterplot indicates only the correlation, not causation, so we estimate the relationship using regression analysis, controlling for other macroeconomic variables such as broad money, trade openness, real interest rate, and government debt. The relationship between ageing and inflation remains negative, irrespective of macroeconomic controls and alternative measures of ageing and inflation. We point out some possible channels through which ageing can impact inflation negatively. The study also tests some channels that mediate the relationship between ageing and inflation, and we find that the life expectancy channel explains a negative relationship.

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Addressing Climate Change: Challenges and Strategies for Central Banking

Sunil Paul, Anand B

Abstract

The article explores the dynamics of climate change, its impact on the economy, and monetary policy responses, with a focus on the Reserve Bank of India. A deeper understanding of the increasing frequency of extreme weather events due to climate change and their macroeconomic implications, including physical and transition risks is the need of the hour. A nuanced and comprehensive approach must be evolved to incorporate climate change-induced inflation into central bank policy frameworks. The article also presents preliminary empirical evidence linking extreme weather events to food and beverage price inflation in India, reiterating the importance of addressing climate-related risks for long-term economic stability

JEL Classification: E58, Q54, E31, Q56

1. Introduction

The escalation of extreme weather patterns due to climate change is increasingly disrupting human lives worldwide. Various studies have found that extreme weather conditions, spurred by volatile climatic conditions, can profoundly affect the macroeconomy. As a result, researchers, policymakers and investors are becoming more cognizant of the socio-political and economic implications of climate change. Thus, obtaining a comprehensive analysis of the implications of climate change requires a nuanced understanding of the risks stemming from extreme climatic events in the macroeconomy.

In this context, the Reserve Bank of India's (RBI) discussion paper on 'Climate Risk and Sustainable Finance' provides a broad overview of the sources of climate change risk (RBI, 2022). Risks emanating from climate change can be broadly classified into two categories: physical risk and transition risk. Physical risks

associated with climate change encompass the economic and financial consequences stemming from two main factors: the increasing frequency and severity of extreme weather events—such as floods, heatwaves, storms, and wildfires—and longer-term shifts in climate patterns, including changes in precipitation and rising sea levels. It can also include indirect effects in terms of the loss of ecosystem services, such as water shortages, degradation of soil quality, loss of marine ecology, etc.

As evident from the discussion above, physical risk can manifest as economic shocks, which may be either transitory or permanent. These shocks can materialise as either supply or demand shocks, resulting in inflation, output loss, and increased economic uncertainty. Additionally, physical risks can negatively impact headline inflation by causing spikes in food and energy prices, disruptions in supply-demand dynamics, and volatile expectations (McKibbin et al. 2020). Further, physical risk stemming from extreme weather events can strain the cash flows of firms and erode the

collateral value of loans resulting in financial stress. These risks threaten financial stability, potentially leading to defaults on loans tied to flood-prone properties or weather-sensitive industries.

Similarly, the transition to a low-carbon economy to mitigate the impact of climate change introduces "transition risks". These risks stem from climate policies, advancements in clean technologies, and shifts in customer preferences. The transition, aimed at reducing carbon emissions, has far-reaching economic implications. For instance, stricter environmental regulations might harm carbon-intensive industries and render the fossil fuel ecosystem obsolete. Subsidies for energy-efficient practices not only incentivise environmentally friendly industries but also drive technological advancements in clean energy innovations, thereby contributing to the reduction of greenhouse gases. The adjustment costs of the transition may have implications for price and financial stability. Moreover, changes in consumer and investor sentiments can also influence the economy. For example, innovations in cleaner energy could devalue assets reliant on outdated technologies, affecting investment portfolios and cash flows. Additionally, customers may prioritise investments in businesses with climate-friendly policies or projects. (Grippa et al., 2019).

1.2 The need for an integrated approach

The near consensus on the devastating effects of climate change has spurred a multi-faceted global mitigation effort with specific net-zero emission targets. The policies to address these challenges encompass an explicit, economy-wide carbon pricing mechanism like carbon taxes, cap and trade systems and the adoption of a comprehensive suite of regulatory measures and subsidies for clean energy technologies (see

McKibbin et al., 2020 for a detailed discussion). In the Indian scenario, the country's fight against climate change focuses on both reducing carbon emissions and adapting to the inevitable impacts of climate change. India's National Action Plan on Climate Change (NAPCC), initiated in 2008, comprises eight national missions targeting various sectors. These include the National Solar Mission, aimed at increasing solar power generation, and the National Mission for Enhanced Energy Efficiency which promotes energy-saving practices. The plan also emphasises sustainable urban development, agriculture, water management, and forest conservation. India aims to achieve 50% of its energy requirements from non-fossil fuels by 2030, primarily through expanding solar and wind energy capacities. Additionally, India is exploring cleaner coal technologies, pledging to achieve net zero emissions by 2070, and developing financial instruments like green credit markets to support green growth initiatives.

As evident from the above discussion, the scope of the existing mitigation plans is by and large limited to fiscal solutions. Nevertheless, extreme climatic conditions risk one of the critical objectives of central banks, namely price stability. For instance, the physical risks posed by climatic risks have serious implications for price stability through supply and demand shocks. On the demand side, the nexus is somewhat ambiguous. However, a strand of literature suggests that extreme weather conditions may lower the demand for food and energy due to decreased economic activity (Kotz et al., 2023). On the other hand, supply shocks can lead to inflation through elevated food and fuel prices. Studies indicate that extreme weather events and higher temperatures can drive up food prices, but their medium-term impact on headline inflation in advanced economies tends to be limited (Faccia et al., 2021; Mukherjee and Ouattara, 2021). However, emerging economies

experience more significant effects from natural disasters and temperature rises on food and headline inflation compared to advanced economies (Parker, 2018, Kishore and Shekhar, 2022). For instance, as shown in Figure 1 below, the South Asian countries most affected by floods worldwide occurred during the period 2000-2022. Also, climate change can affect headline inflation by deteriorating labour productivity during heat waves or constraining capital productivity owing to infrastructural damage.

Flood occurrence per country (2000-2022)
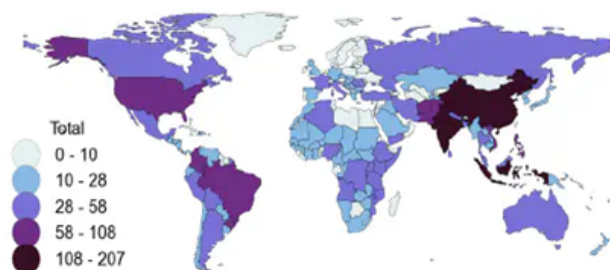
Similarly, transition risk from climate change mitigation strategies can also exert pressure on prices. The term 'green inflation' specifically refers to such inflationary pressure due to climate change mitigation efforts through changes in production methods, regulations, and consumer behaviour. The resulting impact on headline inflation depends on the pace and scope of the energy transition. Moreover, climate change introduces added complexities for central banks. This includes the possibility of encountering the zero lower bound more frequently due to a decline in the natural interest rate, thereby influencing monetary policy. Additionally, climate change has the potential to exacerbate volatility in financial markets and systemic risks, which poses challenges for ensuring financial stability.

While climate change-induced inflation has become more than just a theoretical concept in recent times, the response from central banks

worldwide regarding this issue has been tepid. This is primarily because the central banks not only lack expertise and limited domain knowledge to address climate change risks but can also affect the independence and credibility if such policies are pursued aggressively (RBI, 2023; Hansen, 2022).

1.3 Climate Change Risk and RBI

The Reserve Bank of India (RBI) has recently taken steps to address climate risk in the financial sector, including proposing a disclosure framework and issuing guidelines on climate risk and sustainable finance. These initiatives focus on improving transparency, risk management, and building capacity within the financial sector to handle climate-related financial risks. However, the RBI is yet to consider climate change-induced inflation and its impact on its primary objective of price stability. Although the occurrence of extreme climate events and their impact on economic activity has become more frequent (see Table 1) in countries like India, there is a notable lack of rigorous empirical studies in this direction.

It is to be noted that the RBI has missed the permissible level of inflation (2-6 percentage) under the flexible inflation target 1 for three consecutive quarters in 2022 alone, mostly owing to elevated food price inflation. One of the contributing factors to the supply shock could be an increase in the incidence of physical risk due to extreme climate conditions. The increasing divergence in India's regional inflation may be attributed to the increasing incidence of physical risks (this is evident from figures 2 and 3). Figure 2 gives the scatterplot of days in 2022 that had extreme weather events against food and beverage price inflation for the financial year 2022-23. This is to capture the lag effect of physical risks on inflation. Figure 2 shows a positive association between extreme

Table 1

States	Extreme Weather Events (Days)		Human Deaths		Crop area affected (Hectors)		Houses Damaged (Numbers)	
	2022	2023	2022	2023	2022	2023	2022	2023
Andhra Pradesh	55	51	34	46	25212.19	129732	45	121
Arunachal Pradesh	38	47	41	5	96	9	1045	109
Assam	143	113	301	52	245837.3	48316.33	306362	1639
Bihar	54	82	246	642	37000	0	140	250
Chhattisgarh	63	79	102	115	457.51	18179.65	1445	1820
Delhi	45	24	6	18	0	0	0	11
Goa	40	48	1	8	0	0	88	265
Gujarat	82	86	190	179	0	300000	6762	15510
Haryana	62	59	1	48	16187	563507	0	4686
Himachal Pradesh	110	149	400	414	0	75760	1448	15484
Jharkhand	47	47	26	31	0	0	0	0
Karnataka	91	58	181	46	1031102	11788	49362	12322
Kerala	60	119	96	74	0	10263	2216	2547
Madhya Pradesh	143	141	301	253	0	45000	6646	2626
Maharashtra	126	110	283	181	0	161433	3592	467
Manipur	16	23	89	17	0	124	0	0
Meghalaya	65	75	49	13	1493.87	117	5587	246
Mizoram	6	13	11	6	0	55	1	209
Nagaland	15	23	10	17	484	124	716	2002
Odisha	67	91	61	61	136323	15576	9693	3651
Punjab	59	117	25	79	82727.32	166119	1888	7098
Rajasthan	113	93	113	80	0	42165	25	362
Sikkim	47	118	9	135	238.39	8	3935	2723
Tamil Nadu	69	72	36	136	153011	36014.49	435	1550
Telangana	43	54	52	33	16997	62811.43	14858	5193
Tripura	22	37	14	19	0	0	2476	816
Uttar Pradesh	127	119	213	344	213018.4	0	3267	1231
Uttarakhand	59	95	86	111	0	44882	1218	3120
West Bengal	62	89	14	19	0	0	0	0

Source: compiled from the EPW time-series database and India's Atlas on Weather Disasters (downtoearth.org.in).

weather events and food and beverage inflation. Also, the variables under scrutiny exhibit a considerable positive correlation (0.42). Similarly, figure 3 captures the relationship between headline inflation and the number of extreme weather event days indicating the influence of physical risks on price stability.

Such an inquiry can also factor in the radical social reformative perspective, briefly sketched here, of the labour as also development economist Standing (2011; 2016), which economics students must know and critically reckon with.

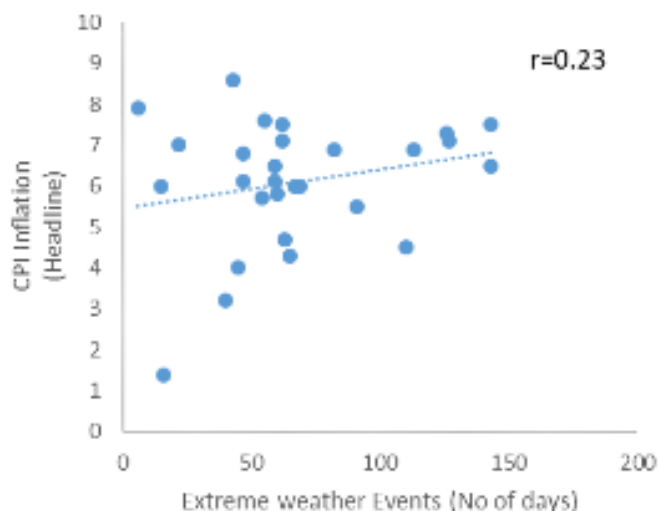Figure 2: State-wise CPI inflation (food & beverage) 2022-23 vs Extreme weather events (2022)
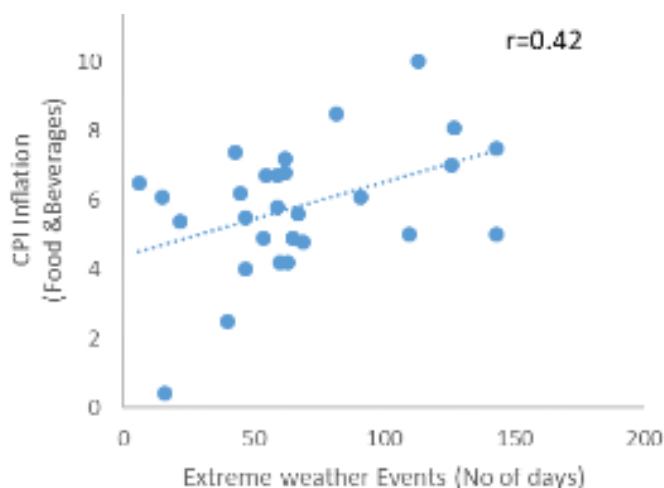
Figure 3: State-wise CPI inflation 2022-23 vs Extreme weather events (2022)

Summary and conclusion

The implications of extreme weather events due to climate change raise serious challenges for humans across the globe. While many central banks, including the Reserve Bank of India (RBI), have taken various prudential policy measures to address climate risk, there remains a dent in terms of the attention rendered to extreme weather-induced inflation and its ramifications on price stability. Physical risks, induced by climate change, significantly contribute to supply shocks that can lead to elevated food and fuel prices, affecting headline inflation. The increasing divergence in India's regional inflation may be attributed to the growing incidence of physical risks, as evidenced by the positive association between extreme weather event days and food and beverages price inflation. Therefore, it is crucial for central banks, including the RBI, to consider climate change-induced inflation as a potent risk and incorporate it into their policy frameworks to ensure long-term economic

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The Invisible Challenge to Sustainability

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While sustainability is not a new concept, the challenges it poses are becoming increasingly urgent. The World Meteorological Organisation (WMO) has declared 2023 as the hottest year in the past 174 years of recorded history, with the effects of this heat now visible not just on land, but also in our oceans. The Global 50 Future Opportunities report of the Dubai Future Foundation underscores the uncertainty of our future, with climate change being one of the most persistent and pressing concerns.

The preferred way to raise the alarm of sustainability is to highlight the damage caused by climate change and extreme weather events to businesses across the globe or in limited geographies. Arriving at a consensus on the same is also a challenge but let's save it for another day. A report by the University of Delaware authored by Dr James Rising points to huge inequalities in the impacts of climate change signalling a variety of impacts. The report estimates, using a machine learning methodology utilising over 50 economic models, the population-weighted loss at 6.3% of GDP in 2022 and a corresponding unweighted figure at 1.8%. This would amount to approximately $1.5 trillion. The difference in the two figures points to the unequal impacts of climate change wherein the poorer and smaller economies stand at a disadvantage. Climate change appears to be amplifying the differences and global inequity. Addressing sustainability therefore could also address inequality and inequity in certain ways.

Another iniquitous impact of climate change has been the internal climate-induced displacement of 21.6 million people between 2012-2021 but the worst is yet to come. This number is expected to reach anywhere between 113 million to 216 million by 2050. It is also estimated to increase the proportion of the population exposed to water stress in the MENA region from 80% (2023) to 100% by 2050. The Global 50 Future Opportunities report highlights the work of researchers in stating the persistence of climate change of the order of 118% increase in CO_2 emissions between the decades of 1970s to 2012-2021 matched with a rise in methane emissions by 44% and Nitrous Oxide by 53%.

While we are repeatedly told that climate change is one of the critical threats to the planet, there is hope. Every entity, including governments, is trying to find a way to deal with the twin challenges of survival of the human race and the planet against the backdrop of rising average temperatures and other pollutants. Corporations and businesses have taken a big leap towards sustainability through various reporting and disclosure as well as internal and external projects concerned with absolute measures. They are finding new ways to allocate resources to problems and micro-challenges that are material to them (in other words, that matter to them). They are also exploring new horizons of knowledge and solutions to resolve old problems while preparing for newer or unseen ones.

The United Nations Framework Convention on Climate Change (UNFCCC) is attempting to tackle the challenge at the global level through

various negotiating groups such as G-77, Aosis, LDCs etc. Their analysis reveals complex dynamics between climate change, economic outcomes and capital investments, putting climate investment and climate finance at the centre of the debates. The findings related to these always underscore the urgency for global cooperation to address the impacts of climate change.

Even at the firm level, the industrial sector is trying to be at the forefront of tackling the climate and environment-related challenges and now expanding the ambit to the entire ESG domain. However, their biggest challenge is an economic challenge. They are essentially taking a risk by trying to build a new green business. This risks not only the bottom line today but also the future revenue streams and business differentiation as most likely the funds for experimentation have been assorted by cutting on R&D costs at multiple places. The most common patterns however remain – 1) leveraging technology for existing products, 2) adapting existing infrastructure 3) Leveraging existing strengths while challenges remain 1) unclear market size and growth rate, 2) early-stage technologies 3)lack of clarity about required competencies, facilities, and product characteristics coupled with changing regulations.

There are a plethora of reporting frameworks and GRI is one of the most popular for the industrial sector but there are many others within the fold of UNFCCC itself. UNFCCC is the largest framework of its type guiding individuals, teams and entire organisations themselves on the path to sustainability. However, transitioning economies such as India have made recent commitments for renewable energy and emissions reductions by 2030 and a net zero by 2070. Despite these good steps and agreements, calculations at the global level still see the world on a 2-degrees path. Being on this

path, in turn, means that it is more difficult to match the requirements for a 1.5 degree-path. We are probably going to see more climate impacts which take us away from this path. We are on the cusp of breaching newer planetary boundaries. This raises one of the most profound but simple questions around sustainability. What theory of economics can help us figure out new ways to catapult sustainability research and activities to enable human ingenuity to overcome the forbearing challenge that we are faced with currently?

Some recently proposed solutions and new innovations coming in with the rise of data analytics and new theoretical approaches such as ESG and Circularity concepts carry immense hope for the future, but we are yet to move away from the 2-degree path. Today in geographies such as Europe an increasing proportion of customers are interested in a firm's Corporate Sustainability Responsibility (CSR) as much as its products and services. We are seeing a similar trend though in its initial phases in geographies such as India and China. This spells good news for eco-entrepreneurs in their efforts to create businesses that have a lasting positive impact on the environment. The shift in customer trends towards sustainability opens avenues of charging premiums for environmental and social good as well as for better or good governance. This has resulted not only in opportunities for increased revenue earnings for firms but also a strong brand presence and attitude amongst customers to reduce the costs of acquiring and maintaining customers.

Concepts such as circularity and zero-waste and replacement of more environment and social friendly substances as raw materials are resulting in huge cost benefits for firms. The cost benefits are also leading to unlocking new cost-cutting potential thereby making sustainability an incredible internal credo for organisations.

The combined opportunity of reducing costs and increasing revenues coupled with the possibilities of brand building and customer loyalty alter the economics of the firm and for the firm. This translates into the true potential of sustainability as the next strategic frontier which can unlock value and growth for organisations for the next decade or two. We do not have standard estimates of the same as of yet as the theory is changing, the future is uncertain, and the ability of organisations and industries vary significantly to be able to chart as standards.

This brings us to the foremost theoretical challenge of sustainability. If we increase the scale of activities, does it also harm my organisation or benefit it and at the same time does the increasing scale of activities involve more harm or lesser harm to the environment? The same question is also valid for the set of activities termed "green activities" or sustainability activities – *does increasing the scale of green activities lead to greater benefit or harm for the organisation and the environment?*

Neo-Classical economics informs us that most businesses function near the zone of increasing returns to scale and as such they have significant scale benefits to capture. The same also ought to apply to green activities and environmental impacts. However, there are three confounding theoretical issues with this.

The first is the classical question of sustainability which asks if business and sustainability can go hand in hand and often the debate is about the underlying assumptions pertaining to the production function with both profits and sustainability as outcomes.

The second issue lies with the accuracy of measures including the reliability of the causal relationships which business is exploiting to scale activities for sustainability impacts. This pertains to both science as well as the non-linear

conceptualization of sustainability and economics thereby directly challenging the prevailing neo-classical economics paradigm. . Some of the manifestations of corporate challenges are papering over the cracks, being circular and inclusive, and blending strategic planning and creativity to overcome the value-action gap. The real issue that needs to be addressed but lacks theory in totality currently is an invisible challenge of missing theory and empirical evidence. This challenge is the challenge of figuring out what is going to drive the economics of organisations and the industry as a whole – Economies of scale or Economies of scope.

To understand this invisible issue, consider this example, there is a manufacturing organisation that has embraced sustainability through the implementation of Zero-waste and circularity along with a net-zero commitment with respect to water and emissions. It is obvious that the organisation would expect its profits to increase over time or maintain its current profit levels in the face of increasing competition. The net-zero commitment seems to impose diseconomies of scale on the organisation. However, circularity appears to impose economies of scale on the organisation. At the same time, if we consider the concept of zero-waste which would refer to waste being reconsidered as a by-product from an existing process leading to the production of a new product which further aims at producing no waste or reconsidering this waste as a byproduct used for the production or co-production of yet another product. This clearly refers to situations which are governed by economies of scope rather than economies of scale.

This challenge is less realised in practical applications or manufacturing processes than in creating a theoretical model that helps us predict the production function as well as guide various decisions of the organisations for long-term

economic benefits. Economics may need to reevaluate its neo-classical and other theories if they allow for economies of scale and scope to co-exist if at all, and further if we have enough understanding of such a theory. This invisible challenge to sustainability may not find many takers currently but is more likely to engage many researchers and innumerable practitioners in the times to come. Addressing this challenge is paramount to understanding sustainability comprehensively and exhaustively. In other words, not addressing this challenge leaves a massive lacuna in theory resulting in either incorrect models or incorrectly specified models

which in turn lead to errors in the decisions and heir implementation. This ultimately results in less than satisfactory or downward modified results, impacts and outcomes for sustainability. Thus, the invisible challenge to sustainability pertaining to the co-existence of economies of scale and scope, is the challenge that will define what modern economics will entail. It is also the challenge that will determine how effective sustainability is as a long-term strategy and the challenge is critical awaiting being addressed by the industry and firms which are trying to exploit the strategy to go green systematically and logically.

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How Financially Literate are Indians?

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Abstract

In 2010, Rajo, a 32-year-old lady in a village in Rajasthan, used to set aside Rs.200 every month and save for a rainy day. Rajo is self-employed and makes and sells papad (papadum) for a living, whereas her husband works in a field during cultivation season and migrates to the nearby town for work during the off-season. Five years later, she came to know that there was some government scheme that allowed her to open a bank account free of cost. Will Rajo change her financial behaviour and start saving Rs.200 every month in her bank account? The answer is she may not. Let us find out why.
JEL Classification: G53, O16, D14, E21, I24

Introduction

Financial inclusion is believed to be associated with growth as well as development. It ensures ease of access to the financial system for the individuals of a country. Dr. C Rangarajan, heading of the Committee on Financial Inclusion, 2008 defined financial inclusion as, "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as the weaker sections and low-income groups at an affordable cost." An inclusive financial system is touted as one that enables efficient and equitable allocation of capital in the economy. In line with this view, in India, the Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched in 2014. This was one of the largest financial inclusion initiatives in the world. The program aims to provide universal access to banking facilities in India wherein every household should have at least one basic bank account. As per the All India Debt and Investment Survey, 2019, 84.4% of adults in the country had deposit accounts in banks. Even though we have made considerable progress in

terms of financial inclusion, less is known about the financial literacy of Indians. It is then pertinent to ask what is financial literacy. Financial literacy is simply defined as the ability to use knowledge and skills to manage financial resources effectively for financial well-being. Being financially literate may reduce the likelihood of committing financial mistakes. Financial literacy is crucial to ensure that financially included individuals use financial instruments to their advantage. The Financial Inclusion Insights (FII) Program by Kantar, along with the Bill and Melinda Gates Foundation, collects data to understand the financial landscape of economies in the Global South, including India.[1] The most recent available survey for India dates back to 2018 when a detailed questionnaire was administered to over 48,000 individuals aged 15 or more. As a part of the survey, there were questions that captured the financial literacy of the individuals. The financial literacy question captures the individual's ability to understand the concepts of compounding, inflation and diversification. The FII survey administers the standard financial literacy questions proposed by the OECD/INFE

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[1] The state of Jammu & Kashmir, the Union Territories of Andaman & Nicobar, and Lakshadweep were excluded from the survey.

and is widely accepted. The questions are as follows:

Compound interest related

- Suppose you put money in the bank for two years and the bank agrees to add 15 percent per year to your account. Will the bank add more money to your account the second year than it did the first year, or will it add the same amount of money both years?
  (a) Same
  (b) More

- Suppose you had Rs. 100 in a savings account and the bank adds 10 per cent per year to the account. How much money would you have in the account after five years if you did not remove any money from the account?
  (a) Exactly Rs. 150
  (b) More than Rs. 150
  (c) Less than Rs. 150

Inflation related

- Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today or more than you can buy today?
  (a) Less
  (b) Same
  (c) More

Diversification related

- Is it safer to put your money into one business or investment, or to put your money into multiple businesses or investments?
  (a) One business or investment
  (b) Multiple businesses or investments

Financial literacy is measured based on

performance in the financial literacy test and is not a self-assessed financial literacy of the respondent. An individual is considered financially literate if all the responses to the above questions are correct, otherwise not.

Figure 1 below gives the percentage of individuals having knowledge of each domain and also overall financial literacy. A striking picture emerges from the figure suggesting that a mere 7.9% of the Indian adults were able to answer all the financial literacy-related questions correctly. Even though over 65% of individuals were able to answer the compounding-related question correctly, in the inflation and diversification categories, the correct responses fell drastically. It indicates that financial inclusion may not itself be sufficient to improve the financial literacy of individuals, and the financially included, especially the newly financially included individuals, remain vulnerable to committing financial mistakes. In other words, even if PMJDY improved access to financial products, it may not translate into efficient usage of financial products given such low levels of financial literacy. Hence, even though Rajo, opens a bank account, she may not end up using it to her advantage if she is not financially literate.
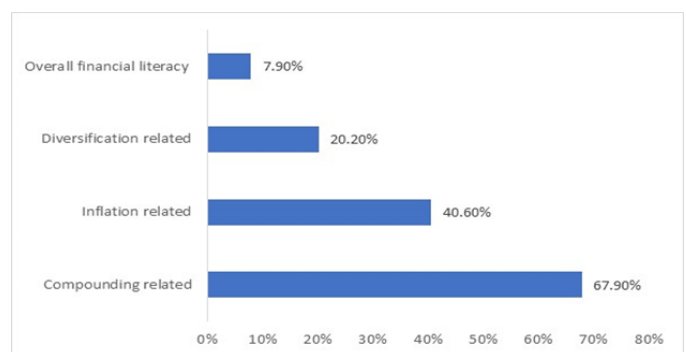

Figure 1: Percentage of individuals correctly answering questions in each domain

Figure 2 gives the regional variation in financial literacy within India. The Southern region

appears to perform well across all dimensions of financial literacy compared to the national average. In other words, another lady similar to Rajo in all aspects but staying in the say Tamil Nadu is more likely to be financially literate than Rajo. This may not seem very surprising if we believe that education positively correlates with financial literacy. However, if we assess the correlation between state-wise literacy rate as per Census 2011 and the overall financial literacy at the state level, the association among them appears to be weak, albeit positive (Figure 3). It also underscores the fact that increasing education may not be sufficient to achieve desirable levels of financial literacy among individuals. Understanding and addressing the drivers of this regional variation in financial literacy remain important from a policy perspective.
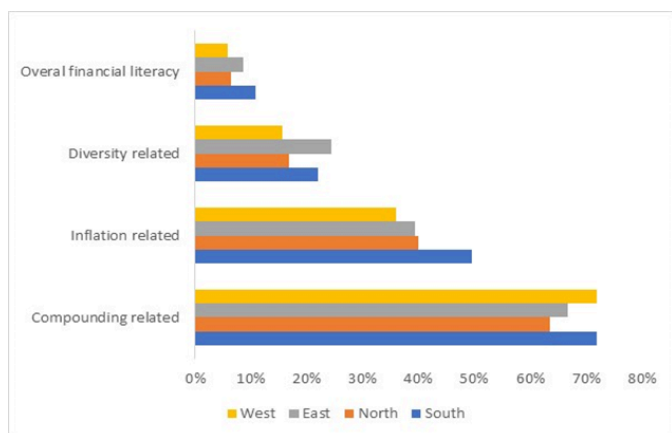

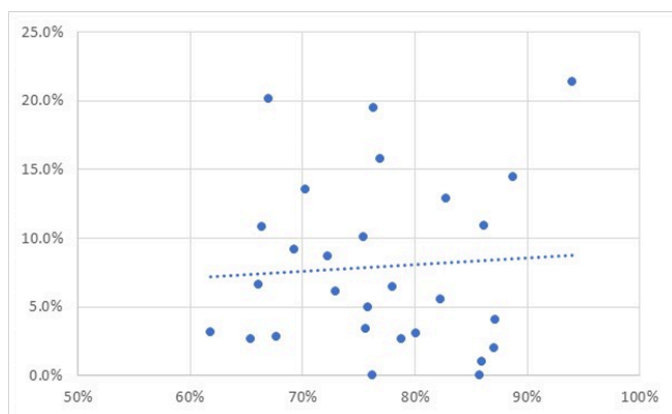
Figure 2: Regional variation in financial literacy

Figure 3: Association between financial literacy and literacy rate. y-axis gives the state-wise

financial literacy rates and the x-axis gives the state-wise literacy rate as per Census 2011

Furthermore, the financial literacy among women is lower than males (Figure 4), this is true across each dimension of financial literacy as well as for overall financial literacy. In other words, men in Rajo's village are more likely to be financially literate than Rajo or other women in the village. In this regard, it is also important to note that for compounding-related questions, the gender gap in financial literacy is close to 16%, whereas for diversity-related concepts, the gender gap increases to almost 24%. In other words, it highlights that the gender gap worsens as the level of complication related to the concept increases.
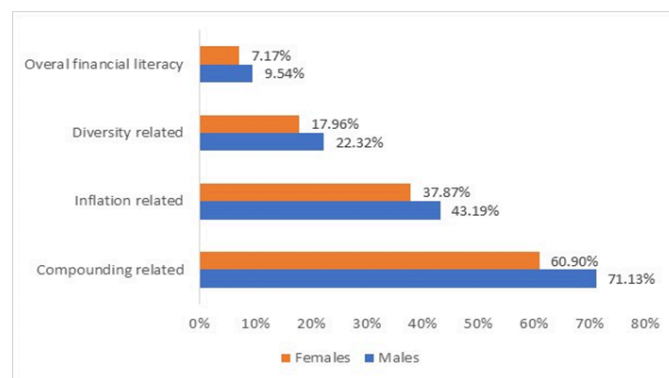

Figure 4: Gender-wise financial literacy

Existing policies/ initiatives

The National Centre for Financial Education (NCFE) was established by the Securities Exchange Board of India (SEBI), the Insurance Regulatory and Development Authority of India (IRDAI) and the Pension Fund Regulatory and Development Authority (PFRDA). NCFE conducts workshops, training programs, and campaigns that focus especially on teachers and students, among others. Additionally, there are Financial Literacy Centres (FLCs) in the districts that conduct awareness about financial products among farmers, self-help groups, and others. These are mostly community-driven

financial literacy initiatives. The Reserve Bank of India (RBI) celebrates the Financial Literacy Week from February 26 – March 01, 2024. As a part of a financial education initiative, RBI created content in 13 vernacular languages and developed games and films for better outreach.[2]

Concluding remarks

Even after many years of implementation of one of the world's largest financial inclusion programs, PMJDY, the state of financial literacy in India remains rather poor. The problem becomes more chronic for nuanced concepts like the importance of diversity. Furthermore, there exists a north-south divide in financial literacy with the southern states out-performing the northern states. The gender gap in financial literacy is also widespread. In spite of several policy initiatives, the improvements in the levels of financial literacy have been rather unimpressive. This can be attributed to at least two reasons. First, the poor implementation of these schemes at the ground level is a major concern. A 2015 survey conducted by SEBI and the National Council for Applied Economic Research (NCAER)[3] suggests that less than 1% have ever attended any financial awareness/ training program. Unless the scale of existing schemes is increased manifold, the effects may not be visible. Better targeting is also crucial for improving the effectiveness of financial literacy programs. For example, regions or groups that are more disadvantaged should be focused first or conducting women-only financial literacy programs in each district should be prioritised.

Second, visiting banks has an opportunity cost for poor people like Rajo, who would anyways deposit a small sum and travel to the bank would mean that Rajo will not be able to work and make papads that day. Second, there could be an

issue related to trust in financial institutions. Often there is a perception among the rural poor that the moneylender (often known to them) willhelp them by extending credit, if needed. It is important that bank correspondents (BCs) first meet the local people, build trust, and then explain the benefits of formal financial products to the poor. In conclusion, even though bank account ownership is nearly universal, there is a long way to go before people like Rajo start leveraging formal financial products to their advantage. Financial literacy can be viewed as one of the ways to increase the efficient usage of the banking system by the common man.

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[2] For more information visit https://www.rbi.org.in/financialeducation/

[3] https://www.sebi.gov.in/sebiweb/home/HomeAction.do?doListingAll=yes&sid=4&ssid=0&smid=0

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Indian Economy and Three Decades of Economic Reforms

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The Indian economy has passed through various hurdles before embarking into the current phase. Today India is considered as an emerging economy and stands among the top countries in terms of global recognition. Through this treatise, an attempt is taken to bring the economic history of India since its independence and how the turnaround resulted in a better way.

Since independence, India has adopted the socialistic pattern of society as its economic system and in implementing this, a mixed economy comprising of elements of socialism and capitalism was experienced. The Industrial Policy Resolution of 1948 and 1956 laid the foundation for the socialistic pattern of society, where the public sector was given more focus in nation-building exercise. However, the three decades - 1950s, 1960s and 1970s didn't give much progress and prosperity in terms of economic growth and development. The average economic growth during this period was a mere around 3.5 per cent per annum. As a consequence of this sluggish growth, a need for a policy shift was realised in the early 1980s under the then Prime Minister Shri Rajiv Gandhi. A shift from the socialistic pattern of society to market liberalisation was well recognised and the government started working towards liberalisation, privatisation and globalisation (LPG). Thus, LPG became the driving force for the economy on the development agenda. The privatisation move initiated in the 1980s started yielding results and the increase in GDP got a boost. However, going forward, India faced

difficult times in the early 1990s as the balance of problems disturbed the economy. . The foreign exchange reserves got reduced to a mere $1.1 billion, just sufficient for three weeks of imports. Inflation skyrocketed in the economy. To manage the crisis, India had to pledge gold with the Bank of England and mobilise resources. The economic growth of the country was negative. Had bold reforms were not taken, India would have gone bankrupt. It is, in these circumstances, that the then government under the leadership of Prime Minister P.V. Narasimha Rao and Finance Minister Manmohan Singh took bold initiatives and introduced a series of economic reforms in the country. The key reform areas were industrial reforms, banking sector reforms, insurance sector reforms, stock market reforms, tax reforms, PSU reforms etc.

The Industrial Policy Statement 1991 was a landmark piece of legislation wherein four decades of license raj was dismantled and India gave way for the privatisation of industries. The industrial licensing criteria was abolished, barring a few ones for strategic reasons. The industries reserved for the public sector were dramatically reduced to three areas - arms and ammunition, atomic energy, and rail transport. Foreign Direct Investment (FDI) was encouraged for better technology and modernisation, boosting exports, etc.

The banking sector was the major beneficiary of the economic reforms initiated in the country. The sector was under severe stress on the eve of

1991. The efficiency, productivity, and profitability of commercial banks in India were shaken. The sustainability and survival of banking institutions were questioned.The government came with a big bang of reforms in the banking sector, most of the reform areas were at par with international standards. These reforms were introduced in response to the Narasimha Committee's recommendations to revamp the banking sector in India. International best practices were tested and implemented. The key reforms were in the areas of deregulation, liberalisation of interest rate, capital adequacy framework, classification of loan assets, introduction of technology, adopting risk management practices etc. The commercial banks were given the autonomy to utilise the resources they mobilised from the market. The level of Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) maintained by the banks were on the higher side, which makes banks difficult to deploy funds in the market as lending. In 1991, 53.5 per cent of resources of the banking sector were pre-empted in the form of CRR and SLR. The administered structure of interest rates, introduction of direct credit programs and increase in statutory pre-emption had an adverse effect on the profitability of banks. The capital base of banks in India was very low, with the Capital Adequacy Ratio (CAR) of banks at slightly over 2 per cent in 1991-92. The quality of loan assets of the banking system declined as a result the bad loans of the banking sector reached 24.2 per cent in 1992-93. The balance sheet of the performance of the banking sector was weak as far as viability and sustainability are concerned.

The government along with the Reserve Bank of India announced a series of banking reforms. Deregulation measures helped the banking institutions get the freedom to deploy financial resources. The CRR and SLR were reduced substantially, and the current levels are 4.5 per cent and 18 per cent respectively, implying that

banks can lend 77.5 per cent of the resources they mobilised. On liberalisation of interest rates, banks were given the freedom to determine the interest rates on deposits and advances, instilling competition among banks. The capital adequacy ratio of banks was raised in stages and increased to reach international standards. The international practice on capital standards based on Basel Norms, a standard accepted unanimously by global banks was introduced. Today, the capital adequacy ratio of banks stands at 16.8 per cent, as against 11.5 per cent stipulated by the Reserve Bank of India under Basel-III norms. The international norms on income recognition, asset classification and provisioning were introduced in banks, making the loan books of banks quite transparent. The high level of bad loans was reduced. The non-performing assets (NPAs) of the banking system, which were as high as 11.60 per cent in the year 2018 got reduced to the current level of 3.2 per cent, thanks to the recovery efforts. On the technology front, banks adopted technology and introduced core banking solutions, making the banks ready to serve customers with Internet banking. On the payment system, India has revolutionised with the advent of UPI. Last, but not the least, the introduction of risk management practices is another reform area in banking. Introducing norms on credit risk, market risk and operational risk, Indian banks were brought under international standards.

Insurance penetration in India is very poor, making the people vulnerable to protection. The government introduced reforms in the insurance sector. The key reforms introduced are setting up of a separate regulator for the sector, allowing private participation, increasing the FDI in the insurance sector, deregulating the tariff on insurance policies etc. These reforms were initiated in response to the Malhotra Committee' recommendations. Insurance Regulatory and Development Authority (IRDA) was established as a regulatory agency

in the insurance sector in April 2000. In 2000, the private sector was allowed to establish insurance companies in India as a result companies started operations in life insurance as well as non-life insurance segments. In 2000, Government of India allowed FDI insurance sector up to 26 percent, the same was increased to 49 per cent in the year 2015 and further to 74 per cent in 2021. Owing to tariff deregulation, individual insurance companies have the freedom in price of insurance policies. The reforms in the insurance sector made the insurance industry respond to competition as a result more insurance players would be in the insurance business, offering innovative products to the public and making the sector vibrant.

The securities market plays a dominant role in India enabling companies to mobilise funds from the market and the investors get a vehicle to park their funds in the stock market. Securities and Exchange Board of India was established as a regulatory agency through SEBI Act 1992 and the functions are to regulate the various intermediaries in the securities market, to develop the orderly growth of the securities market, and to protect the interest of the investors. With the help of technology, screen-based trading became a reality in India. Today, two national-level stock exchanges viz. Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) operate nationwide, and companies are listed in these exchanges. Through IPO reforms, an enabling environment is created wherein companies can raise financial resources through IPO issues, and investors get the opportunity to subscribe to the companies and participate in the growth stories. Mutual funds were allowed to be created in the private sector and India witnessed a good number of private agencies setting up mutual funds. Today there are about 45 mutual fund houses in India and the assets under management reach Rs 53 lakh crores. Through merchant banking reforms, merchant banks were asked to undergo

regulatory regime and fair practices were introduced by SEBI. Introduction of dematerialisation of scrips is a landmark reform witnessed in the Indian securities market. This facility enables investors to keep their investments in equity and debt markets in electronic form instead of physical form. In 1991, India introduced demat facility and since then two demat companies were established viz. National Securities Depository Ltd (NSDL) and Central Depository Services Ltd. (NSDL). Through Depository Participant (DP) Institutions, investors can open demat accounts with any one of the two demat companies and hold the certificates in electronic form. The brokerage industry was regulated by SEBI laying down rules and regulations for various brokerage houses. The investors can buy or sell transactions in securities through their trading account with a stockbroker and the settlement time is reduced to T+2 i.e., trading day plus two days. Today, the Indian securities market is one of the best in the world in terms of participation of companies and investors, thanks to the reform measures introduced as part of economic reforms.

Under tax reforms, a structural shift is seen where rationalisation of tax structure enables the government to mobilise more revenue at the same time tax payers enjoy the benefits of reduced tax rate. The objectives of a good tax policy are to mobilise maximum revenue for the government with least difficulty to the tax payers. This is made possible with the tax reforms carried out in India as part of economic reforms. The *Chelliah Committee* on Tax Reforms in 1991 gave a series of recommendations and the suggestions include broadening the tax base, reducing the tax rates, simplifying the tax structure and making the administration more effective. The high level of income tax rates, corporate tax, customs duties, excise duties etc. was reduced. For personal income tax, the number of brackets was reduced

to three, the maximum rate being 40 per cent. In 1997-78, the maximum income tax rate as reduced to 30 per cent. The corporate tax was also reduced to the range of 25-30 per cent. India's biggest tax reform - Goods and Service Tax (GST) was introduced in July 2017. GST replaces the sales tax and has got four rate structures - 5 percent, 12 percent, 18 percent and 28 per cent. The GST collection in January 2024 touched a record level of Rs 1.72 lakh crore. The government also rationalised the capital gains tax. The long term and short term capital gains tax from sale of securities in stock market is reduced to 10 percent and 15 per cent respectively. Thus an enabling environment is created by the government in terms of rationalisation, broadening and deepening the tax system in the country.

Public sector was the backbone of the Indian economy during the pre-reform era and unfortunately the sector suffered serious problems in terms of efficiency and income generation. The 1991 reforms advocated disinvestment of select public sector undertakings (PSU), provided a new direction to the ownership and management of PSUs by way of categorising the PSU units into *maharatnas*, *navaratnas*, *mini ratnas* etc. Wider participation of the public in the affairs of management of PSUs was made through disinvestment i.e., sale of part of the ownership to the public. The government has initiated the disinvestment process and has been continuing it as a strategy to raise finances and instil competitiveness in the market.

India has made all round progress during the post reform era. Today, the industrial environment in the country is conducive for new ntrepreneurs to come into the field and show their mettle. This is evidenced through the fact that the number of unicorns i.e. start-ups having valuation over one billion US dollars reached the figure 100 by May 2022, collectively valued

at $332.7 billion. In the unicorn eco system, India is ranked third after the US and China. Today, the Indian banking system is one of the best in the world in terms of financial stability. The Indian stock market has earned the confidence of investors and companies. Insurance industry is fast developing with new institutions, new products, and new processes. Tax compliance is contributing to the development of the economy. The paradigm shift of the functioning of PSUs is a welcome development.

The Government of India under Prime Minister Shri Narendra Modi pledged to turn India into a $5 trillion economy by 2025, but the COVID-19 induced environment pushed back all the projections and estimates. Today, India is the fifth largest economy with a GDP of $3.7 trillion and expected to become the third largest in the coming years. The FDI inflows stood at $70.9 billion in 2023 as against $236 million in 1991. The foreign exchange reserves as of February 2024 stand at $619 billion after reaching the record level of $642 billion as against the level of $1.1. billion in 1991. The global exports was 0.60 per cent in 1991 which now stands at 1.8 per cent. During the year 2021-22, India's overall exports reached an all-time high of $770.18 billion. On the development agenda, India has made rapid strides. Recent World Bank statistics reveals that there is substantial improvement in the reduction of poverty in India and the extreme poverty situation is getting eliminated. To conclude, the fruits of the reform process have reached all sectors and all segments of the population.

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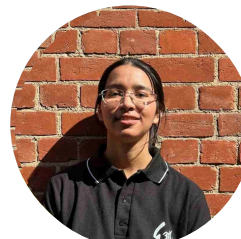
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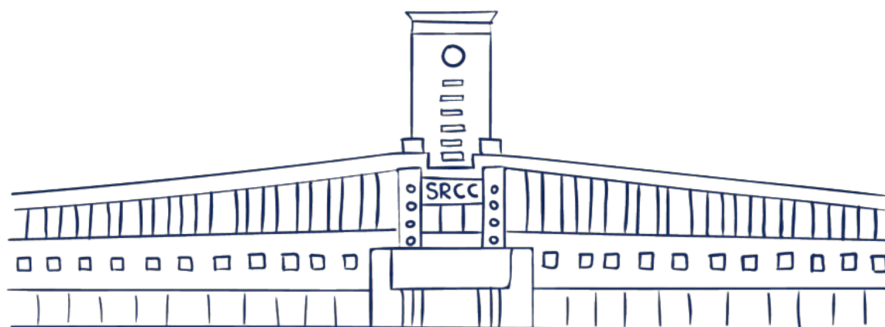
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