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# INDIA-SINGAPORE FINTECH COOPERATION: OPPORTUNITIES AND CHALLENGES

## **About the Institute of South Asian Studies**

The Institute of South Asian Studies (ISAS) is dedicated to research on contemporary South Asia.

It was established in July 2004 as an autonomous research institute at the National University of Singapore. The establishment of ISAS reflects the increasing economic and political importance of South Asia, and the strong historical links between South Asia and Southeast Asia.

The Institute seeks to promote understanding of this vital region of the world, and to communicate knowledge and insights about it to policymakers, the business community, academia and civil society, in Singapore and beyond.

ISAS Roundtable

India-Singapore FinTech Cooperation: Opportunities and Challenges

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# India-Singapore FinTech Cooperation: Opportunities and Challenges

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3 October 2018 | Singapore

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# Executive Summary

Financial technology (FinTech) offers enormous potential in providing better and more accessible financial services to society, thereby enhancing social welfare and prospects for inclusive growth.

Singapore and India lead developments in the use of FinTech – disruptive innovation that is changing the way traditional financial institutions do business. India offers the highest global returns on investment in FinTech, and the world’s largest biometric identity base, a solid digital infrastructure that provides the foundation for the growth of FinTech. Singapore has developed cutting-edge sandbox for testing new FinTech products, it has a world-class digital and physical infrastructure and a highly skilled manpower base, and risk capital seeking profitable avenues for FinTech. The potential for mutually beneficial collaboration is vast.

The Institute of South Asian Studies at the National University of Singapore organised a Roundtable on ‘India-Singapore FinTech Cooperation: Opportunities and Challenges’ on 3 October 2018 to better understand how Singapore and India could leverage their complementary strengths in FinTech and the digital economy, to strengthen collaboration and mutual benefits between the two growing FinTech players

The key recommendations from the Roundtable include the following:

- i. On collaboration between governments, there is a need for information sharing on policies, consultations on data privacy, cybersecurity, data localisation, development of a digital infrastructure and reaching out to the Association of Southeast Asian Nations (ASEAN) jointly.
- ii. Interoperability of the systems is vital for innovation. The benefits are manifold. Interoperability allows for seamless fund transfers across geographical zones via a single account and offers ease and savings in trade and business activity. The

network economies arising from interoperable payment systems can catalyse innovations in payments systems.

- iii. In the domain of regulation, there is a need for consultations on use of the sandbox, and a sharing of information on industry and regulatory developments.
- iv. It is necessary to raise awareness of FinTech opportunities available for the private sector in each country. Information gaps on initiatives in other countries can be substantial, especially for start-ups. Industry associations and business development agencies in the public sector can help bridge the information gap.

## Overview of the FinTech Ecosystems

On 3 October 2018, the Institute of South Asian Studies at the National University of Singapore organised a Roundtable titled 'India-Singapore FinTech Cooperation: Opportunities and Challenges'. The event brought together FinTech start-up founders, venture capitalists, consultants, policymakers and researchers from India and Singapore to examine developments in the FinTech sectors in India and Singapore, and assess opportunities for cooperation in this sector.

The contents of this paper draw upon the opening address by the Indian High Commissioner to Singapore, Mr Jawed Ashraf, and the keynote address by Mr Sopnendu Mohanty, Chief FinTech Officer, Monetary Authority of Singapore (MAS), as well as subsequent discussions among participants at the Roundtable.

The motivation for the Roundtable arose from a memorandum of understanding (MoU) signed between the Singapore and Indian governments in June 2018 to strengthen cooperation in financial innovation through the establishment of a Joint Working Group. This MoU builds upon a growing level of cooperation between the two countries in business-to-business cooperation, increasing cross-border investment and several initiatives to ease cross-border financial engagement in FinTech.

The report focuses on several key areas. First, it offers a brief overview of the FinTech landscape and the ecosystems in Singapore and India. Thereafter, it discusses the emerging issues in the FinTech ecosystems in the two countries. It concludes by making several recommendations to increase FinTech engagement between Singapore and India.

### **Landscape**

FinTech is a disruptive innovation that entails the use of technology to carry out traditional finance functions, including payments, credit, insurance and wealth management. It is rapidly changing the landscape of the financial sector. At its simplest, it makes access to finance easier for customers and consumers by cutting costs, easing payments and enabling

access to credit to demographic groups hitherto excluded by formal financial institutions. As an illustration, FinTech offers new ways of assessing risk and easing access to credit. It is adding diversity to the credit landscape, with innovations such as crowdfunding and person-to-person lending, among others.

In the keynote address, Mr Mohanty highlighted three 'buckets' of initiatives that define a robust ecosystem for the growth of FinTech.

The first bucket is the policy formulation framework which revolves around a trusted national identity, a trusted data hub, a clear consent architecture, and a public infrastructure that supports the digital economy.

Public authorities need to build a trusted nationally recognised identity (ID) for individuals that would allow third party institutions, both private and public, to operate and validate transactions via the trusted ID. This is integral to the customer on-boarding process.

However, the ID itself does not add much value if we are not able to develop the trust to build the database associated with it.

The Supreme Court judgment in India in September 2018 on *Aadhaar* (a universal biometric identity with enrolment exceeding one billion) made clear that individual consent was essential for signing up for *Aadhaar*. The lesson is that, if given a choice, citizens will accede but if it is a mandated process, citizens are likely to spurn the choice. Thus, building a consent architecture is a hallmark of policy designed around digital identity and digital data. The challenge for policymakers is to develop trust in a consent architecture that empowers citizens to make a choice about willingness to share digital IDs and data with a third party and offering a choice.

The *SingPass* in Singapore, the equivalent of *Aadhaar*, and Know Your Customer (KYC) data, was consent driven. It resulted in very limited drop out from the whole process as people had a choice. If a citizen does not want to use it, he/she has an option of not doing so. The government can play an important role in offering choice and developing an infrastructure that nurtures the growth of the digital economy.

The second bucket centres on technologies that define the digital economy. It includes Application Programming Interface (API) construct, the open banking construct, cloud infrastructure, and data residency issues.

Should lenders share data with financial technology and other non-bank firms? Open banking is successful if there is voluntary participation by banks. Banks are increasingly allowing third-party developers to access APIs for functions such as payments, fund transfer and remittances. An open API encourages innovation and growth, for example, data sharing agreements between banks and telecommunications service providers and other intermediaries, including ride-hailing apps that are growing in popularity, as institutions seek to broaden their footprint across sectors.

The MAS is developing guidelines for ethical usage of data analytics and artificial intelligence that could work with both regulated and unregulated industry participants. Banks and FinTech firms need to focus not only on getting the initial permission for data use, but also to understand how to use that data once they have the permission. The leak from Facebook and the siphoning of data to Cambridge Analytica, a British firm with ties to the United States President Donald Trump's campaign in 2016, are testimony to the importance of managing data securely and in a principled manner.

Cloud computing, the use of a network of remote servers on the Internet rather than local servers, to store, manage and process data is a technology in ascendance. The barriers inhibiting widespread adoption of cloud computing include a lack of awareness about the technology, data localisation requirements, the cost and quality of broadband infrastructure, privacy and cybersecurity concerns, and the lack of common cloud standards across countries. Cloud computing potentially democratises access to technology and delivers considerable benefits for governments and businesses. It can enhance the competitiveness of small and medium enterprises (SMEs) and other enterprises by freeing up capital investments for servers, software, and mainframes. A concerted effort is needed to address barriers that impede widespread adoption. It offers practical benefits for national governments, for cities, businesses (especially SMEs), manufacturing, banks, financial

services firms, health and education institutions, public sector and social enterprise organisations. The MAS has been proactive in this area and issued cloud computing guidelines in 2016.

Pilot schemes in India and elsewhere providing weather and crop insurance to farmers elicited an encouraging response, offering a measure of stability to farmers. Demand for micro-insurance from farmers, small businesses, SMEs in manufacturing and services, is vast with considerable potential for growth. Joint exploration between Singapore and India, as well as with ASEAN states, holds the promise of finding mutually beneficial solutions. Data residency requirements are turning increasingly complex with the passage of regulations such as the Global Data Protection Regulation (GDPR)<sup>1</sup> in Europe and the Revised Payments Services Directive (PSD2)<sup>2</sup> issued by the European Union. Companies need to comply with local regulations wherever they have operations. The complexity increases as firms shift to cloud computing. Most countries implement a measure of data localisation, but taken to an extreme, data localisation can discourage foreign investment and innovation in a globalised economy.

The third bucket focuses on policy formulation and governance. It involves policy making to experiment and cybersecurity.

A challenge faced by FinTech is developing the policy framework to attract risk taking capital. In a sector that is rapidly evolving and pushing new frontiers in finance, policymakers and corporate leaders need to adapt. If a board member doesn't understand the implications of new technology, it will be challenging to assess risk and oversee the firm's operations. Cybersecurity is a serious risk – a breach of data can potentially result in high costs for the firm and undermine confidence in the entire system. Cybersecurity ultimately runs on trust and it is imperative to develop a collective approach to build trust in this ecosystem, or else the credibility of the entire system may be at risk.

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<sup>1</sup> The GDPR is a law on data protection and privacy for all individuals within the European Union (EU) and the European Economic Area. It contains provisions relating to processing and safeguarding of EU citizen's data, and applies to all institutions doing business in the EU.

<sup>2</sup> The PSD2 requires banks to open their payments infrastructure and customer data assets to third parties that can then develop payments and information services to customers. It seeks to create a level playing field for all payment service providers while ensuring security and consumer protection.

## Singapore

Backed by a robust start-up ecosystem and over 400 FinTech start-ups spanning the financial services landscape, FinTech firms in Singapore serve Southeast Asia, South Asia and beyond. Singapore is at the forefront of global initiatives in FinTech experimentation and validation. DBS Bank was recently voted the 'Best Digital Bank'<sup>3</sup> in the world.

The business environment is among the most progressive and open in the world, and Singapore offers a unique regulatory sandbox that allows start-ups to develop, test and apply financial products and services to assess regulatory compliance before bringing them to markets. Regulatory sandboxes and the provision of risk capital are some strategies to explore the promises of emerging technologies in the financial sector.

With its status as the financial hub of the region, its technologically-adept and well-educated workforce, FinTech-friendly regulatory framework and its position as a regional leader in FinTech, Singapore is well poised to become one of the world's FinTech capitals in the next five years since it sits in the middle of India, China and Southeast Asia, economies which are seeing significant investments in FinTech.

## India

The 'JAM' trinity underpins development of the enabling environment for FinTech development in India: the confluence of bank accounts for every individual in the country (*Jan Dhan* or people's wealth accounts); a universal biometric identity card (*Aadhaar*); and the increasing penetration of mobile phones that will offer access to a growing portfolio of financial services. Policymakers treat the digital infrastructure as a public good, with interoperability, consumer protection and strong anti-money laundering safeguards. India has taken steps that have ultimately enabled the launch of pure play digital banks.

Established by DBS Bank, Digibank, India's first fully digital bank, has enlisted more than a million customers.

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<sup>3</sup> DBS was selected as the best 'Digital Bank' in the world in 2018 by Euromoney. It is the first bank to quantify the benefits that digitisation brings. The benefits stem from digitising an increasing set of activities, in payments, loans and other areas of banking. It has opened Digibank, a fully digitised bank with no branches, in India. Digibank already has a million customers.

India is second globally in the adoption of FinTech services across a range of industry segments, with 52 per cent of the population using at least one FinTech product driven by mobile wallets and innovations, including the Unified Payment Interface (UPI) platform unveiled by the National Payments Corporation of India.

UPI, the first such interoperable system in the world, enables payment systems to be fully interoperable across all payment system players, allowing funds to be transferred between mobile wallets from different financial institutions, and smartphones to double up as virtual debit cards to send and receive money instantly. An area with huge potential and benefits, given the size of the diaspora, is person-to-person remittances to India. The Reserve Bank of India (RBI) has issued a report on a Working Group on FinTech and Digital Banking and a consultation paper on the person-to-person lending market. The Working Group recommends a close examination of the regulatory implications of FinTech and digital banking. In the domain of person-to-person lending, another application is enabling workers overseas to repatriate earnings back home. The smaller the remittance size, the higher the transaction cost percentage, which makes it extremely expensive for poor workers to repatriate funds. The consultation paper has suggested the creation of a new class of non-bank financial companies in the person-to-person space, with the RBI recognising person-to-person institutions as a class of intermediaries with proposed regulation overseeing KYC and loan recovery practices. This presents a big opportunity for any FinTech firm committed to addressing the challenge of bringing credit to an underserved segment of the market, especially micro, small and medium-sized firms, and small borrowers unable to access banks.

## Emerging Issues

The report revolves around themes relevant to the FinTech ecosystems in India and Singapore. Looking ahead, it has identified issues of data security, regulation, followed by issues of interoperability and prospects for expansion of the sector.

### Regulation

The key questions relating to regulation are as follows:

- i. What is the scope of regulation?
- ii. What should we regulate?
- iii. Whom do we regulate?
- iv. When to regulate?
- v. How do we balance regulation and innovation?

These questions are germane to FinTech.

As FinTech takes off in India, there needs to be careful thinking about regulation. The overriding concern, of course, is stability and there should be no compromise on that. However, investors need a predictable environment. Otherwise, they would be hesitant to commit capital. Should India launch a principle-based regulatory sandbox?

Singapore is in the top tier of international financial centres, along with New York, London, Hong Kong and Tokyo, with a developed regulatory and supervisory regime. The sandbox is intended for FinTech enterprises whose activities are not covered by existing regulation. Very few FinTech enterprises are in that situation. Barely 10 have been admitted to the sandbox with one graduate in the past year. The challenge with a sandbox in India is that the regulators - the Securities and Exchange Board of India - the RBI and the pension regulator - the Pension Fund Regulatory and Development Authority - do not communicate with one another. So how do you create a sandbox where you get all the various regulators, with their own legacy and history, to agree to a common language of a sandbox?

There was a proposal to divide the sandbox into two boxes: a regulatory sandbox and an industry sandbox. Regulators are not in the business of testing software but they should seek to understand policy barriers that inhibit innovation. FinTech owners applying to the sandbox bear the responsibility of demonstrating how their solution delivers a greater benefit to society and why they should be admitted to the sandbox. The sandbox candidate must be production ready and not be testing software. The regulators assess the risks of allowing policy changes needed to allow the product to be tested. After six months, if the regulator determines that there is no risk, it makes it a level playing field for everyone.

The industry sandbox allows FinTech companies and banks from anywhere to participate in a collaborative platform where they can trial their product and quickly experiment with new ideas before moving to production.

### **Data Privacy, Trust and Cybersecurity**

The Indian Supreme Court judgment was structured around the original intention of *Aadhaar* – as a national biometric ID – targeting direct benefits from the government. It has already been used to extend micro-loans to 1.25 million poor women.

Often, there is confusion between data and privacy. These are different. While privacy is critically important, the data is owned by all in an open interconnected world. Trust is vital for the use of data and, indeed, for the sustenance of FinTech. Ideally, the management of trust should be distributed across many stakeholders, so there cannot be a single point of failure for the economy, whether in terms of market structure, trustees or storage of data. In Singapore, governance is centralised, with the use of decentralised technologies to make sure that there is easy entry and exit and barriers to entry are removed. In a successful FinTech system, there should be no place for regulation that hinders FinTech companies from partnering with the incumbents and/or working on their own.

Decentralisation also creates vulnerability. While a bank may develop its own cybersecurity system that is difficult to hack, there is often a lack of awareness on how to handle data. Most data breaches take place at data collection vendors, raising the question of awareness

of data security. As was the case with Google and Facebook, the leakage of the data on *Aadhaar* cards<sup>4</sup> was not in the biometrics but the numbers which are stored in the computers of the data service centres.

How do we structure consent architecture? Can an individual's data be used for further processing without his/her consent? It is important to ensure a centralised and protected identity, and to know from the very outset that the data are protected when developing the infrastructure or the distributor system. The challenge then is how to ensure that the data is securely protected even when it is not resident in the *Aadhaar* server but with other service providers.

When a cybersecurity issue comes up in an interconnected world, there must be consistency of regulation. With automated teller machine-related cards, two factor authentications in some locations make it difficult to ensure consistency in usage. What is the appropriate regulation here?

## **Financial Inclusion and the Digital Divide**

FinTech offers the possibility of bringing hundreds of millions of India's financial excluded citizens, including the poor, women and other socially and economically marginalised groups, as well as SMEs starved of capital within the ambit of formal finance. It can help millions of individuals and SMEs to leapfrog access to financial services at affordable costs. Payments can be a pathway to other areas such as lending, savings, insurance and wealth management. Most people in India lack credit history. Digital payments give them a credit history which can be leveraged in other areas. Estimates suggest over \$30 billion of direct benefit transfers have already taken place, with savings of up to \$10 billion. The realisation that lending, savings, investment and insurance can all be unbundled and then bundled together substantially enhances access to these services.

Yet, the digital divide poses a serious risk. Slightly over 20 per cent of Indians are connected to the Internet. Despite several hundred million Indians opening bank accounts, many of the

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<sup>4</sup> A journalist with an Indian newspaper was able to access the *Aadhaar* database after paying the equivalent of S\$10 to a 'middleman'.

accounts remain dormant. With limited connectivity, the e-identity becomes critically important, as without connectivity, the hurdles in the way of financial inclusion are almost insurmountable.

### **Interoperability**

To develop an open competitive system, interoperability, as with the UPI, is imperative. India has done remarkably well on that count, with the UPI, the first such system in the world. It allows for exchanges between a range of products, or transfers across different banks. An open interoperable system is preferable to a closed loop proprietary ecosystem where identity and the process are at the mercy of private players.

### **Regulation of the Payment System**

Should the central bank be regulating payments at all? A new payment regulatory board is being considered in India. Should regulators operate networks? These are important questions for regulatory policy making.

# Recommendations for Singapore-India Cooperation

## Government-to-Government Collaboration

India and Singapore can share information on FinTech trends and developments. They can work on projects tapping on the latest financial technologies such as cross-border payments and KYC processes, cybersecurity, and the deployment of blockchain for functions beyond financial transactions, for example, medical records and land ownership records – an enduring challenge in India.

Since financial services and FinTech affect every sector of the economy, policymakers on both sides should endeavour to connect businesses, including SMEs, large companies and service sector firms, including investing in artificial intelligence and blockchain, to gain a competitive advantage in the digital era.

## Broader Regional Integration

Singapore is leading ASEAN's efforts in FinTech. The ASEAN FinTech Network (AFIN) offers an excellent platform to learn and share experiences and, over time, to increase trade and financial linkages. An affiliation with the AFIN can facilitate innovation and collaboration between financial institutions and FinTech enterprises in India and ASEAN in financial inclusion, blockchain, cybersecurity and innovations in trade finance with the potential to ease India's integrations into the Regional Comprehensive Economic Partnership. India and ASEAN should also work towards an interoperable system; with discussions on data privacy, data localisation and cross border data flows.

Broader cooperation in the digital economy is an important instrument to advance the vision of an open, balanced and inclusive architecture for the region and of countries integrated by trade and connected by the cyberspace. It may be useful to draw upon expertise and networks at multilateral institutions, such as the Asian Development Bank, to catalyse such initiatives.

## **Digitalisation of Small and Medium Enterprises**

Policymakers can help SMEs take up the challenge of digitalisation through technical assistance as well as information to help avail of government programmes, digitisation endeavours in managing payments and supply chain and finance. When SMEs digitalise successfully, it induces more SMEs to digitalise. The experience of the Industry Transformation Programme (ITP) in Singapore that drew up Industry Transformation Maps<sup>5</sup> for 23 industries is instructive in this context.

## **Collaboration among the Regulators**

The MAS and the RBI are collaborating in building infrastructure that is interoperable with the Network for Electronic Transfers Singapore and the National Payments Corporation of India. The scope of collaboration should be widened to encompass consultations on regulatory policies, sandbox models, to gauge what works, what does not work and to delineate innovations in regulation and regulation technology that may be deemed best practices.

Financial regulators need to strike a balance between innovation and stability. Regulatory sandboxes and the provision of risk capital are strategies to explore within emerging technologies in the financial sector. Assessing risk and the potential impact of the growing FinTech sector on banks and the overall stability are important themes for discussions among the regulators.

Singapore and India should develop a consistent and uniform regulatory and compliance regime in FinTech. This would provide a clear and unambiguous set of guidelines for all participants covered by this regulatory framework.

At the multilateral level, regular consultations with the Bank for International Settlements will enable Singapore and Indian government agencies and regulators to stay abreast of the most recent developments in the regulation and supervision of the FinTech sector.

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<sup>5</sup> Under the ITP, roadmaps will be developed for 23 industries to address issues within each industry and deepen partnerships between the government, firms, industries, trade associations and chambers.

## **Business-to-Business Engagements**

Engagement among the FinTech industry bodies and institutions such as the National Association of Software and Services Companies, the Confederation of Indian Industry and the Federation of Indian Chambers of Commerce and Industry in India, the Association of Banks in Singapore and Singapore Business Federation in Singapore, with the intent to curate and lead regular business-to-business summit discussions involving industry representative groups is important for developing a broad-based FinTech relationship between Singapore and India.

FinTech industry agencies in Singapore and India are well placed to make recommendations that promote talks between the government and the regulators in both countries. Issues should include the challenges to entering each other's market; policy issues related to data security; avenues for potential collaboration among SMEs; statistics on industry performance; funding, surveys on challenges faced by domestic firms and collaborative ventures; and developing metrics for monitoring progress on bilateral projects.

Corporate joint ventures can provide channels for entry into third countries. The collaboration between Bharti Airtel and Singtel, coupled with Singtel's strong international presence across ASEAN, can drive India-ASEAN digital cooperation.

Corporate cultures in India and Singapore are different. Sharing experiences and delineating best practices as well as challenges could benefit all FinTech participants.

India and Singapore can draw upon the 'India Singapore Entrepreneurship Bridge' or 'Inspreneur' to organise joint hackathons to develop solutions to challenges in the two countries. They should seek the participation of incubators, venture capital funds, consultants and regulators.

The two sides can seek similar support for social impact projects, to find technology-based solutions to the challenges of ageing, healthcare, water, sanitation, education and affordable housing.

The education of FinTech consumers and service providers is important. Those managing critical information infrastructures need to be well educated about data security.

Policymakers also need to ensure education starts early and the curriculum matches what the market needs – a challenge for many institutions.

The Singapore and Indian governments can extend their collaboration in technical education and skills development to impart skills to citizens to learn how to manage data and put it to beneficial use. Despite a surfeit of technical expertise, India needs to increase its pool of computer scientists programmers versed in FinTech skills.

# Appendix 1

## List of Participants

### Chairperson

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### Speakers

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Indian High Commission in Singapore

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## Appendix 2

### About the Authors

**Dr Dipinder S Randhawa** is a Senior Research Fellow at the Institute of South Asian Studies (ISAS). He researches issues in the domain of economics and finance. His research interests and publications are on structural changes in the financial sector, financing issues in infrastructure, micro-finance and the informal sector, and on constraints on investments, policy analysis and governance.

Before re-joining the National University of Singapore (NUS), Dipinder was Deputy Head, Finance Programme, at the School of Business, SIM University. Prior to this, he was Fellow and Coordinator, Research and Industrial Outreach at the Risk Management Institute, NUS. He has taught at the Department of Finance, NUS Business School.

Dipinder has also taught at the undergraduate, Master of Business Administration (MBA), Executive MBA and in Executive Development programmes in the United States (US) [Syracuse University and the State University of New York], China (University of Shanghai for Science and Technology), Singapore (NUS and SIM University) and Thailand (Mountbatten Institute – Naresuan University Campus). Besides other corporate entities, he has conducted consultation projects for Oxford Economics, Japan International Cooperation Agency and the Institute of Banking and Finance (Singapore). The transition to the world of academia was preceded by brief stints in banking and public policy analysis.

Dipinder received his PhD in Finance from the Whitman School of Management at Syracuse University, and Master's degree in Economics from the Delhi School of Economics.

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