IMAGE: COURTESY ANNE RYAN

Raghuram Rajan

On leading a central bank, creating a digital payment system, and India's future in professional services

In August 2005, at the annual conference of central bankers in Jackson Hole, Raghuram Rajan created a stir. Rajan, then chief economist of the International Monetary Fund, argued in a presentation that a hidden danger of massive failures was lurking in the global financial system. Risks had been building up, he said, a result of the incentives facing private institutions in the environment of that era.

Attendees were generally unmoved, if not derisive. "The press thought I was a little bit of a crackpot," Rajan remembers. "There wasn't much attention paid. It was, 'Oh, yeah, somebody claiming the end of the world is near.'"

Two years later, Rajan's warning was borne out as the global financial crisis hit and economies cratered. His prescience garnered him, among other things, an appearance in the Oscar-winning 2010 documentary *Inside Job*.

Rajan later served from 2013 to 2016 as head of India's central bank, the Reserve Bank of India. Today, he's a finance professor at the University of Chicago's Booth School of Business. Some of his recent research has considered the implications of central banks maintaining large asset holdings — as in the case of the Fed's quantitative easing program — and the effects of shrinking those holdings; other recent work of his has looked at the Indian banking system and at unintended consequences of political pressure on monetary policymakers. He is a former president of the American Finance Association and is a member of the American Academy of Arts and Sciences and the international group of economics and finance experts known as the Group of Thirty.

He is the author or co-author of seven books. His most recent, *Breaking the Mold: India's Untraveled Path to Prosperity*, was published in May by the Princeton University Press.

David A. Price interviewed Rajan by phone in May.

EF: When you were governor of the Reserve Bank of India, inflation fell from a little under 10 percent in September 2013, when you arrived, to under 4 percent in July 2015. How did you accomplish this, and what worries did you have along the way?

Rajan: Well, the truth is that you put in place a bunch of measures and you hope it works. Exactly which measure worked is hard to say. The first thing we did was that we said we would have a glide path toward an inflation range, after which we would think seriously about implementing inflation targeting. We didn't want to announce inflation targeting up front, but we wanted to make sure we could bring inflation down to within the range we wanted to be in. And then we could say, OK, now we will implement the targeting.

That announcement, I think, carried some weight. I think the fact that we were serious about inflation was further enhanced by moving from targeting the producer price index, which reflected a lot of imported inflation and commodity inflation. Consumer price inflation is what people experience. So we said we were going to target consumer prices rather than producer prices, which sounds innocuous, but it made a huge difference because that was what really affected people and was much higher than the producer price, typically.

Then we did the usual central banking move of raising interest rates — all the while saying we are determined about inflation, and as we see inflation coming down, we will have room to cut rates. On the external side, the rupee had been very weak; India was considered one of the fragile five after the taper tantrum in the United States following Chair Bernanke's remarks in 2013.

And so, we also said we are a stable country. We announced a scheme by which investors could bring money into the country in bank deposits. That was a popular program; it raised something like $30 billion, but also assured the markets that we had plenty of foreign exchange and could call on more when we needed it. That helped stabilize the rupee.

All in all, the package worked. Which part specifically worked best, I don't know.

CENTRAL BANKS AND PAYMENT SYSTEMS

EF: Outside of dealing with inflation and monetary policy, you involved the Reserve Bank of India heavily in extending access to banking services to individuals who lack them. Why did you believe this was important? And why did you believe this was part of the role of the central bank?

Rajan: In India, the central bank has always played a developmental role in addition to a monetary role. So financial sector reform has often been driven by the central bank. The RBI, for instance, identifies priority sectors where more lending would be useful to reach excluded sectors of the economy. And it mandates a certain amount of lending to those excluded sectors.

Now, this is the historical role. And while it is important to create the environment for easier lending, I think you have to try and see how we can particularly reach some of these people and sectors that have been out of the mainstream.

One initiative, which was driven by the prime minister, was to get everyone bank accounts. And given that a large part of the Indian banking sector is state-owned banks, it amounted to just fiat. The prime minister said, we want every bank to open accounts for everybody in their catchment area. And that was a huge success in increasing the number of bank accounts. But the next step was to make sure that people used their bank accounts; it's all very easy opening the account, but then if they leave it dormant, you haven't improved banking services.

So over time, we worked on improving digital payments so that people could use their bank accounts at a distance. That was the beginning of what is called the UPI, the Unified Payments Interface, which allowed any financial institution that was in the network to allow their members to make payments from any bank account they held to any target bank account. And that bank account to bank account transfer was easily accomplished — so much so that in February this year, there were 12 billion transactions.

Digital payments also helped with credit. Once people used their bank accounts, once businesspeople had records of transactions going in and out, even the street vendor could basically show a financial institution, "Here are the flows into my accounts from the payments that are coming in, so you can see how much in revenues I make. So I am more creditworthy than you think." I think low-cost digital payments coupled with near-universal bank accounts helped propagate inclusion quite a bit.

EF: Were privacy concerns a stumbling block at the time?

Rajan: No. There were all the usual concerns with any digital transaction — data protection, privacy, security, protection against cybercrime, all that stuff. Fortunately, we had an organization, which was set up by the RBI way back and now was owned by the banks, called the National Payments Corporation of India, which was tasked with bringing new technology to payments and implementing that. They were very efficient.

The role of the RBI was really to ensure that we were satisfied with the checks and balances in their process. Perhaps the most important thing we did was to allow nonbanks into the process. The banks were very reluctant to allow the nonbanks in. We felt that the banks, which controlled this payment interface, would protect their own franchise and not let the service expand. So when we allowed the nonbanks in, that made a huge difference.

When I last checked, three nonbanks — Google Pay, Walmart's Indian sub called PhonePe, and an Indian entity called Paytm — accounted for 95 percent of the market in UPI transactions. Almost surely, the banks would not have been as competitive or innovative and UPI may not have taken off if we had left it to them. There are now worries that these new guys dominate too much. But that's another story.

EF: Over the course of your three years as governor of the RBI, what did you learn that you wish you'd known before?

Rajan: It wasn't so much learning big things as trying to figure out why there was a certain way of thinking in the Reserve Bank. I was an outsider, and I obviously brought a lot of academic thinking, but I also brought impatience with bureaucracy into the organization. And given that it's a hierarchical organization, like most central banks, it would have been easy to say "jump" and people would have done that — maybe grumbling, but they would have jumped.

The more important task was to find out on every issue what was the thinking, what was the experience, why were they reluctant to do A but happy to do B. For every issue we needed to deal with, I set up a group that was tasked with figuring it out. The group typically had a lot of insiders. The agenda was typically something that required change. They all knew I wanted change and reform. But they also knew that I would listen to sound arguments explaining why it was hard or it was not advisable to move in that direction.

And they could craft the way they wanted to change. I think that created a lot of ownership, and it moved the reform in interesting ways that I could never have thought of on my own. If my original thoughts had prevailed, it would possibly have been a disaster. So the whole issue was to learn but learn in a way that they knew the ultimate goal was change, because we needed to keep reforming to improve the system.

They also knew that we would, where possible, experiment. And if it didn't work, we would keep changing until it worked. Give it some time, understand why it's not working, make the changes necessary to make it work better. So we did accomplish a lot. But most important is that there was local ownership. And that continued when I left.

GROWTH PATHS FOR INDIA

EF: In your new book, *Breaking the Mold: India's Untraveled Path to Prosperity*, you argue that the conventional wisdom about developing countries — to start at the low end with exports of commodities and low-skilled manufacturing and work their way up — isn't the best path for India. Instead, you argue that India should seek to leapfrog over that process as much as possible by increasing its targeting of high-skilled services such as financial analysis, consulting, and software. What are the benefits and risks to such a strategy?

Rajan: The underlying idea is that India's biggest asset is its human capital. And regardless of how India grows, it needs stronger, more capable, better human capital, especially in a world where AI and so on are coming in in a big way. Then the question is, where can this human capital be used? The old tradition was export-led manufacturing growth: Start with low-skilled manufacturing and move up that ladder.

The problem with that, however, is that the rents from manufacturing, especially the low-skilled assembly work, have been competed away. Today, when you enter that area, you're not competing with well-paid Western workers. You're competing with Chinese workers who are bolstered by a superb infrastructure as well as good machinery. Or you're competing against Bangladeshi or Vietnamese workers who are not very different from you.

So competition is fierce at that level. The virtuous circle by which you once made profits from your cheap labor, reinvested it in improving human capital, with the profitable firms paying taxes and the government using revenues to improve infrastructure, that part is much harder now. Now if you want to leapfrog, you can leapfrog to high-skilled manufacturing or you can leapfrog to high-skilled services as the leading sector of the economy. The problem with high-skilled manufacturing — chip manufacturing, for example — is that it's hugely capital intensive.

On the other hand, high-skilled services is not that capital-intensive. It's human capital intensive. And India has a lot of that human capital. India exports about 5 percent of global services, less than 2 percent of global manufacturing. The graduates of India's top universities today can walk into a McKinsey or a Bain and do consulting not just in India but across the world. And you can see a whole horde of multinational firms starting what are called global capability centers. JPMorgan Chase hires lawyers in India to support its operations globally.

What this is saying is services have become much more exportable. Now, that doesn't mean that's only what you do. To the extent that lower-skilled manufacturing is possible, you do that. But what I'm saying is that the manufacturing-led exports path is no longer the only path to development. You can have a high-skilled-services led export path; you can have a mix. The important thing to do is to improve your human capital, make it easier to do business, encourage entrepreneurship and innovation, improve your universities, improve your colleges. All this will get you on a path for growth, which may not be the ones that China or Vietnam choose.

> ## Raghuram Rajan
>
> **PRESENT POSITION**
>
> Katherine Dusak Miller Distinguished Service Professor of Finance, University of Chicago Booth School of Business
>
> **SELECTED PAST POSITIONS**
>
> Governor, Reserve Bank of India (2013–2016); Vice Chairman of the Board, Bank for International Settlements (2015–2016); Economic Counselor and Director of Research, International Monetary Fund (2003–2006)
>
> **EDUCATION**
>
> Ph.D. (1991), Massachusetts Institute of Technology; MBA (1987), Indian Institute of Management (Ahmedabad); B. Tech. (1985), Indian Institute of Technology (Delhi)

EF: Should Indian policymakers in such a case be concerned that AI might limit the growth of the country's exports of high-skilled services?

Rajan: It will limit the exports of anything, right? Good AI in manufacturing could create much better robots. That's going to displace manufacturing workers also. So I don't think AI is a reason to be worried about services in particular. I think what's important is how we use AI. We may enhance the quality of services. Today, AI can help increase the productivity of software developers significantly. And so we absolutely must do that.

It certainly will create some job displacement. Maybe five, 10 years from now, you will have AI displacing the consumer services person you get at the end of the line. We're not there yet, but we will get there. But it will also create new jobs. AI needs prompting, for example, and people are learning how to prompt it to get the right answers rather than hallucinations.

There's a lot of work to do. I think that almost surely the more skilled, educated, creative your workforce is, the more it can ride on AI rather than be swamped by it.

THE ROLE OF THE INDIAN INSTITUTES OF TECHNOLOGY

EF: The Indian diaspora has been important to America and the American economy. Of note, Indian immigrants have assumed the chief executive role at a number of major U.S. companies, including Google, Microsoft, and Starbucks. In an interview in April, the U.S. ambassador to India, Eric Garcetti, highlighted this change in corporate America. What's your assessment?

Rajan: I don't think, if you look at the census numbers, that you would find a disproportionate number of Indians in top jobs relative to, for example, the number of highly educated Indians there are in the United States. Additionally, you are getting a selected sample of Indians into the United States; it's a long way to migrate. Many of them come as students in high-quality universities. Sundar Pichai [Google and Alphabet CEO] is a graduate of Stanford; Satya Nadella [Microsoft CEO] is a graduate of Chicago Booth. They come from excellent universities. My sense is if you correct for all that, it's reasonable. I think that you are getting the cream of the crop from India.

That said, if you pushed me into a corner and insisted that Indians are disproportionately represented as CEOs, the only thing I can think of is that India's culture is a little more oriented toward trying to reduce conflict. Typically, Indians are less in your face and maybe this is a better disposition to deal with highly talented individuals who we see in many of these high-tech companies.

But that's a hypothesis. I don't have evidence for it, and it may be totally wrong. I would first want to be convinced that it is true that they're overrepresented. Clearly, one in six CEOs is not Indian, which is what would have to be true if you had Indian CEOs based on their share of global population. Maybe relative to the population in the United States, we have more CEOs coming from Indian origin than from other origins. But we also need to correct for how many are in the tech industry, how many are highly educated, all that. So it's a very tentative answer.

EF: Speaking of education, you received your undergraduate degree in electrical engineering from one of the Indian Institutes of Technology, IIT Delhi. Do you think the IIT system has played a significant role in India's economic story?

Rajan: I think so. It certainly has been world class in both the students it admits, the competition it generates amongst them to learn, as well as the quality of the faculty that you get there. Of course, as India has tried to expand the IIT system to create many more IITs, it's run into shortages of faculty. But by and large, I think it was an idea that came well before its time, when India didn't have the ability to employ all the fine graduates that came out from the IITs, and so many of them ended up abroad.

I think they played an enormous role outside the country. And then you have the fact that a lot of faculty in the United States came from the IITs. Sergey Brin and Larry Page's mentor at Stanford, Rajeev Motwani, was an Indian from the IITs.

This is a diaspora that has done well and also spread the image that Indians are capable, which is very important as India expands in services, for example.

EF: Are IITs doing something different from, let's say, American universities or universities someplace else?

Rajan: No, I would say what they do get is the cream of a very select crop. We've got the selectivity in IITs higher than, for example, the selectivity at Harvard and Yale because so many Indians apply to them and many go through years of coaching classes to write the entrance exam. You get a very qualified and capable intake of students. And then putting them together and getting them to learn from each other, getting them to compete against each other, does some of the magic; of course, the faculty does the rest. But I don't think it's unique. And I would say some of the IITs would kill for the resources that many U.S. universities have.

EF: Do you think the single exam system is part of what's helped the IITs?

Rajan: It has in ensuring a clean admission process. One could debate whether these single exams tend to focus students for too long a time and overly narrowly on the issue of learning for the exam. And some of them are so drained out, I understand, after taking the exam, that once they get in, they are unable to fully participate in the learning that takes place in the institution. The exam was tough when I took it; it's an order of magnitude tougher today when so many kids want desperately to get in because the IITs are still affordable. I think the process may have gone past the optimum level of learning and intensity for the exam.

SHRINKING THE FED'S BALANCE SHEET

EF: Earlier, you noted the effects of the so-called taper tantrum in the United States in 2013, when financial market participants believed that the Fed was about to curtail quantitative easing. What lessons have you drawn from India's experience in that episode?

Rajan: I think the important point was that stuff can happen at any time, and it is best to be prepared for it. I remember, for example, that before the big taper tantrum in February of that year, we were trying to persuade the G20 that when monetary policy turned, it could be potentially dangerous for the emerging markets in developing countries. The pushback we got was, oh, it's not going to turn, we're low for a long while, don't worry. Then the Fed's announcement of tapering led to a sharp outflow of foreign capital from India and other markets, as well as economic volatility in those markets. But more important was India was running a large fiscal deficit. The current account deficit was also large and inflation was high. That was a bad set of macro indicators to have when the market suddenly turned on you. I think the lesson from that was be careful about departing too much from reasonable macro indicators.

EF: What are you working on now?

Rajan: Viral Acharya, Sascha Steffen, and Rahul Chauhan, a student here, and I have been working on central bank balance sheets, and what expanding and contracting them does. Is it a fully benign process? Or when you expand, do you get the system overly dependent on central bank liquidity because you've created many more reserves and then you find it hard to withdraw? That creates possibly illiquidity, even though the central bank's balance sheet is much bigger than when it initially started. So the inadvertent consequences of central bank balance sheet expansion and contraction is what we've been looking at.

I've also been working on, of all things, the 1950s drought in Texas and how access to finance allowed communities to adapt to it by doing more irrigation and so on. It seems obvious that access to finance should help, but finance is also very local. Finance available in place A tended to help place A and petered out over a distance. And so it's very important to have good local financial institutions when you're hit by that type of event. At least historically that seems to be true. It probably applies to many emerging markets today. But the bottom line is that finance can help adaptation.

EF: With regard to your work on the central bank balance sheets, the Fed right now is in the process of gradually reducing the size of its balance sheet. What do you think is important for the Fed to have in mind as this process is underway?

Rajan: I think the last statement of the FOMC to some extent mirrored our concerns. What we're saying is, look, it's not going to be easy to shrink your balance sheet, even though it is much bigger than when you started. And that's because the system has come to depend on it.

What we've seen with the Fed shrinking its balance sheet is that initially what shrank were the reverse repos that the Fed did with money market funds. Those, we think, are relatively benign. But once you start shrinking the reserves held by the banks themselves, it becomes a tougher process. And so you want to proceed slowly. Yes, you want to do it. I absolutely am for shrinking the central bank balance sheet. But you want to do it carefully, giving the system enough time to react because too abrupt a shift in the reserves outstanding can create significant liquidity problems. At least, that's what the past tells us.

So I am happy that they've decided to slow down the pace of shrinkage. That means they will have more time to observe what is going on and react accordingly. Are the usual measures of illiquidity starting to move up? Do you see potential concerns about liquidity not reaching the right places, some spreads moving up, some interest rates moving up when they normally shouldn't? All those are signs that things aren't going well. So I think close monitoring is warranted, and I'm glad that the Fed is doing that.

EF: It's been reported that you're a fan of J.R.R. Tolkien. Is that true, and if it is, where did your affinity for him come from?

Rajan: It is true. I've always enjoyed deep fantasy of the kind that Tolkien writes. I chanced upon his books in my late teens. I just saw them somewhere and started reading them and was fascinated. And then when my daughter was growing up, I read the books again to her, and she enjoyed it. And then the movies came along, and she's watched them a zillion times. So the whole package is fascinating. And of course, I also read Harry Potter to her. It was a nice excuse to be able to read to your children because then you can relish the books without somehow feeling that you're not doing the adult thing. **EF**