

# **NSE-NYU Conference on Indian Financial Markets 2016**

Edited Transcript of  
Keynote Speech and  
Panel Discussion

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<sup>1</sup> All remarks made by Prof. Acharya in this transcript were before the announcement of his appointment as the Deputy Governor of RBI.



## *Preface*

We at NSE recognize the usefulness of ideas and insights generated through research and deliberations on policy making, particularly on issues relating to the financial markets. As part of its continued efforts to provide such research support to policy makers, NSE had organized an international conference in collaboration with NYU Stern School of Business. The 'NSE-NYU Conference on Indian Financial Markets' was held in Mumbai on December 21-22, 2016. This conference was fourth in the series and comprised inter alia a keynote address by Dr. Yakov Amihud (Ira Rennert Professor of Finance at the Stern School of Business, New York University) and a panel discussion on 'Understanding the Investment Cycle of India from 2008 to date - The Role of Banking Sector Health'.

In his keynote address, Dr. Amihud cited US evidence to show that illiquid stocks have a higher return which means that the cost of debt capital for these companies is higher leading to lesser investment by them. The same applies to India, where companies with low liquidity in the secondary market have higher cost of capital, which deters their investment.

The panel discussion was on the role of banking sector health in understanding the investment cycle in India since the global financial crisis of 2008. The discussion was preceded by a presentation on 'The Anatomy of a Business Cycle' based on a research paper authored by Mishra P, et al. (2016). The main finding of their work was that firms connected to banks having exposures to weak sectors overinvested and had better sales outcomes in the upcycle as compared to firms connected to banks having exposures to healthy sectors. These trends were reversed in the downcycle. Furthermore, firms with low interest coverage had adverse outcomes vis-a-vis firms with high interest coverage irrespective of the cycle. The panelists debated on various ways to clean up public sector banks and called for a rethinking on state ownership being a pillar of strength. The panel included Dr. Prachi Mishra (Specialist Adviser, RBI), Dr. Shubhashis Gangopadhyay (Research Director, IDF), Prof. Krishnamurthy Subramanian (Indian School of Business) and Mr. Aditya Narain (Analyst).

I take this opportunity to thank all the panelists and the keynote speaker for their valuable contribution. I am also grateful to Prof. Viral Acharya for playing a wonderful role as a moderator in the panel discussion. The deliberations of the keynote speech and the panel discussion have been captured in this edited transcript and we believe that the transcript would be useful for industry participants, academics and policy makers.

**Nirmal Mohanty**

**Vice President**

**National Stock Exchange of India Limited**



## Welcome Remarks

**Mr. Nirmal Mohanty, Chief Economist, NSE and  
Prof. Viral Acharya, Program Director – NSE NYU Initiative**

**Mr. Nirmal Mohanty:**

I would like to welcome everyone to the fourth NSE-NYU Conference on Indian Financial Markets. For the first timers, this Conference is a result of a research collaboration between NSE and NYU Stern. The Conference is held annually under the aegis of this collaboration. The Initiative covers not just securities markets, as one would expect from a conference being sponsored by NSE, but the banking sector as well. There is one aspect of the Conference which many of you may not be aware of, which is that the program of this evening, which is open to the public is only a part of the Conference. The Conference also involves presentation of some research papers selected globally by a team of eminent academics. So today in the afternoon, for example, we had a couple of research papers which were presented and six paper presentations have been scheduled for tomorrow. Now, for these presentations, we typically invite academics and researchers because the papers are generally technical.

But the part that you will be going through this evening, has been deliberately kept non-technical, to the extent possible, keeping in view the fact that academics are a minority in the audience and most are professionals from securities markets and other corporates. Over the years, the proceedings of the conference have been standardized; it covers a panel discussion on a topical issue and a keynote speech. The keynote speaker for this year is Prof. Yakov Amihud from NYU who is going to be talking about 'Liquidity and Asset Prices'. As you know, he is an authority on liquidity and we all look forward to his talk.

Coming back to the Initiative, it has matured since it started in 2012. Three important things have happened and are worth noting. One is that we have started producing transcripts of these Conferences which would capture the part of the Conference proceedings that are open to the public (such as today's events) and disseminate them widely among policy makers, practitioners and academics. It acts as a useful means of dissemination of key insights generated during the discussions. Then we have something called the 'White Paper' which is basically the essence of the findings of the research papers presented in the conference in very simple, easy to understand language. We believe that 'White Papers' are the most appropriate way to inform the policy makers about the findings of the research papers. The third thing is that as the Initiative grows in stature, some papers presented in the conferences under this Initiative are getting international attention. One of the papers, for example, has been selected for the Journal of Financial Economics. It is a very interesting paper on the conflict of interest that credit rating agencies face while rating bonds issued by companies who hire them for non-rating services also.

Let me now invite Prof. Viral Acharya, who is the Program Director from the NYU side to say a few words. After that we will have Dr. Prachi Mishra making a presentation, following which we will have the panel discussion and then the keynote speech. Of course, there is dinner. So Viral, the floor is yours.

**Prof. Viral Acharya:**

Thank you, Nirmal. On behalf of everyone at NYU Stern School of Business, I thank the National Stock Exchange of India for supporting this partnership. It has been a flourishing partnership; it is in its fourth year. I want to stress that unlike a lot of India partnerships at other universities, we are entirely focused on research, want to promote research on Indian markets, the Indian banking sector, Indian economy and perhaps even other emerging markets which might be of relevance to India. We hope to build on this partnership in the coming years as well. For those who are here, we will keep you posted by e-mail as to our further plans.

Without much ado, we should get into the first key program for the evening which is the panel. Since last year we have adopted a format in which we actually invite a speaker to present on the issue of the panel for about 15 to 20 minutes some research, some academic findings, some thoughts and then we open it up to the other panelists. This year the theme for the panel is: What explains the investment “Boom and Bust Cycle” that we have seen in India over the last 7-8-years?

Let me now invite Dr. Prachi Mishra from the Reserve Bank of India. She is a researcher and a Specialist Adviser there. She is going to present some findings on the investment cycle and then I will introduce the other panelists and invite them to come to the podium. Thank you. Prachi?



# **The Anatomy of a Business Cycle**

**Dr. Prachi Mishra, Specialist Adviser, Strategic Research Unit, RBI**

Thank you very much, Viral and thank you, Nirmal for organizing this very good conference. This is my second time and I have thoroughly enjoyed the time I have spent here.

So, what I am going to talk about is ongoing work with Viral Acharya and N R Prabhala who is not here today. Let me start by giving you some context. What we are trying to do is to analyze the anatomy of India's economic as well as financial cycle since the global financial crisis of 2008 and what we document is that the cycle has been big and the cycle has been rather sharp, meaning that there have been sharp upward and downward changes during both the ascent and the descent phase. It is very much ongoing research and we would really welcome your feedback.

One interesting aspect is that the cycle has a very different genesis from that, for example, in the US or in the EU, perhaps they are very different lessons to learn for us. In the case of United States and Europe, the crisis was a story about shortage of resources for both the lenders as well as borrowers. In fact, it was aggregate resource crunch which affected all banks and especially it was a story about private banks. The cycle for India on the other hand has been very different. Rather than a problem of shortage, it is a problem of plenty. Some work done earlier shows that after the global financial crisis, there was a flight of deposits from private to public sector banks. So in that sense it involved redistribution of resources away from private towards public sector banks, very unique in an international context and importantly, it involved public sector banks, which faced an unexpected flow of excess resources which they then lent out and some of the repercussions of those excess resources being lent out are being felt now.

I think what we want to focus on in this work is the role of state ownership. So when the private banking system overlends and there is a crisis, the government intervenes through bank bailouts or quantitative easing (QE), making it a case of privatized profits but socialized losses. One answer to this problem is to have state ownership, because when you have state ownership of banks, basically government benefits from the upside as well and not only takes the losses. Of course, disadvantage of state ownership is that there might be mismatch between resources and capability. For example, in times of crisis when you need more prudent lending, more credit discipline, you might not have that with state ownership. So the question we ask in this paper is that whether state ownership defers the cycle but sows the seeds of another in the longer-term? What are the implications for banking system design, in the sense that, does state-owned banking system avoid systemic banking crisis? What we are trying to look into is, does state ownership really avoid the crisis or just postpones today's crisis for another possibly deeper one in the future?

With this background, what we are trying to do in our study are basically two things – First, we try to document the economic and credit cycle in India after 2008 and then try to understand and disentangle the different mechanisms which would explain the cycle. There are two key mechanisms which we focus on in this paper – The first is the bank lending channel, that is firms which were connected to weak banks overinvested during the boom period and then those loans turned bad as the firms suffered during the down cycle. Alternatively, what is crucial is not really the bank lending channel, but the fact that the firms are caught with stress. There was plenty of credit and it is just that there was no demand and basically that is the key to explain the cycle.

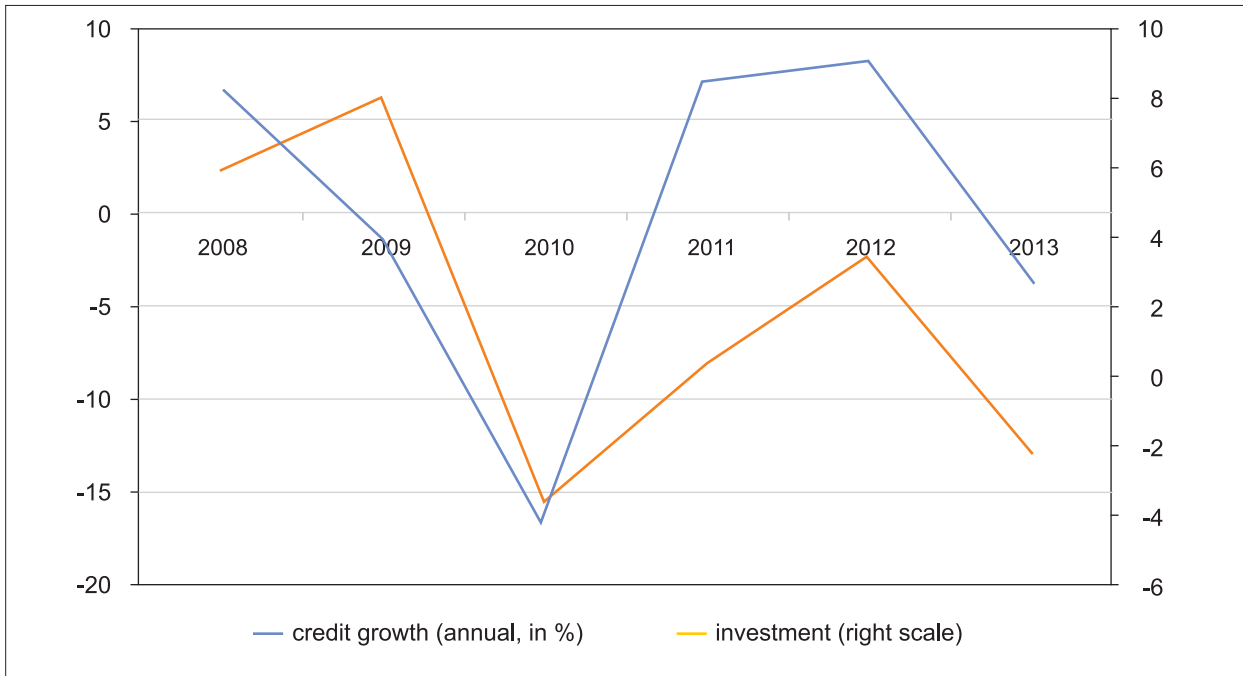
Let me just give you a quick overview of what we have found so far. If you look at some of the real variables like investment, India is a very unique case because we picked up immediately after the global financial crisis, but again slowed down starting 2011-2012. And if you look at GDP or even firm level variables, you see very similar real outcomes. We were affected by the crisis very sharply but then quickly picked up and then again declined around 2011-2012. We see a very similar cycle for bank credit and provide evidence in the study to show that the credit and real cycles were correlated.

Of course, the other channel I mentioned is corporate balance sheets. Did we experience the slowdown mainly because corporate balance sheets were stressed? There are some sectors like Iron & Steel, Energy, Transport and Textiles which had the highest share of non-performing assets due to a combination of both domestic and external factors. Domestic factors of course included things like risk management and credit culture in public sector banks, but also some of the unique problems with the state-owned power utilities in India, which as some of you would know is also linked to the states' fiscal position. Then, of course, global factors as well like commodity slowdown, which particularly affected some of the commodity-intensive sectors.

What we find in the paper is that the bank lending channel is really the key to explain the cycle and in particular, firms connected to weak banks actually overinvested and had better real outcomes in the upcycle, but had much weaker outcomes during the downcycle. However, corporate balance sheets do matter, as firms with weak corporate balance sheets experience adverse outcomes throughout the sample. Corporate balance sheet channel is important though not crucial to explain the pattern of the cycle. We believe that these results provide a case for the asset quality review and the cleanup of banks underway in India.

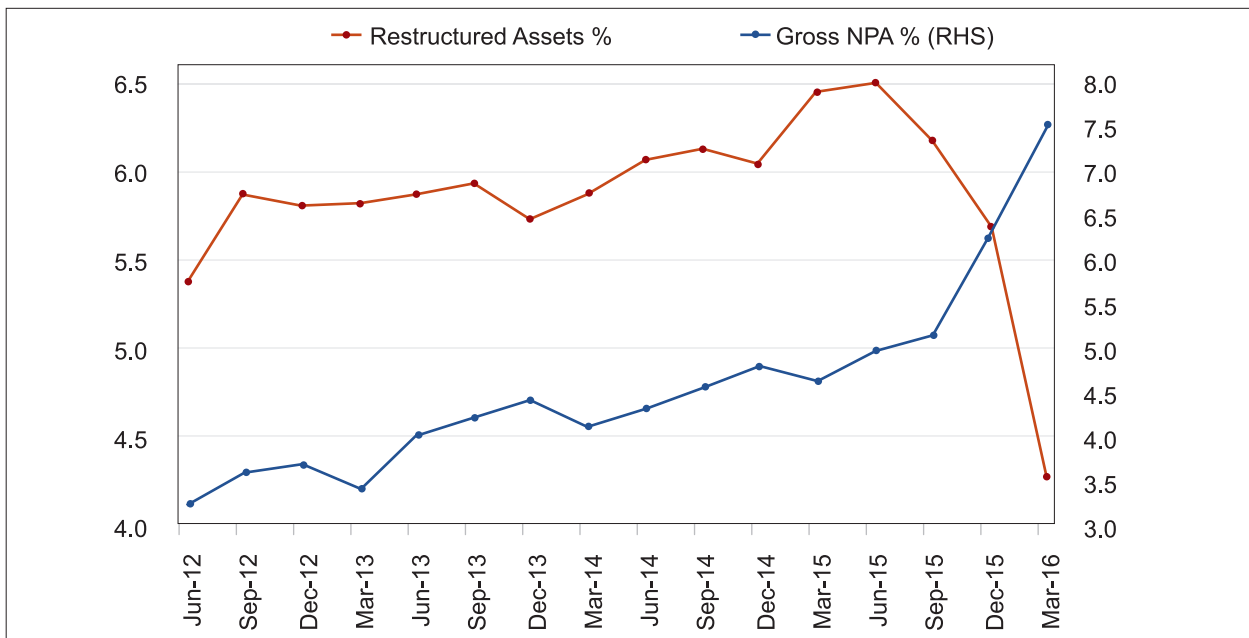
I am not going to go into details of the results and not show you too many tables, but I will just show you some of the key findings. I hope this is fairly non-technical. Chart I shows the credit growth and the growth rate of investment after stripping out the trend component. So this is really the cyclical component of both credit and investment. As you can see, these are very highly correlated, and as I said after the global financial crisis we declined, but we then picked up immediately before beginning to decline again.

**Chart I: Credit and Investment Cycle**



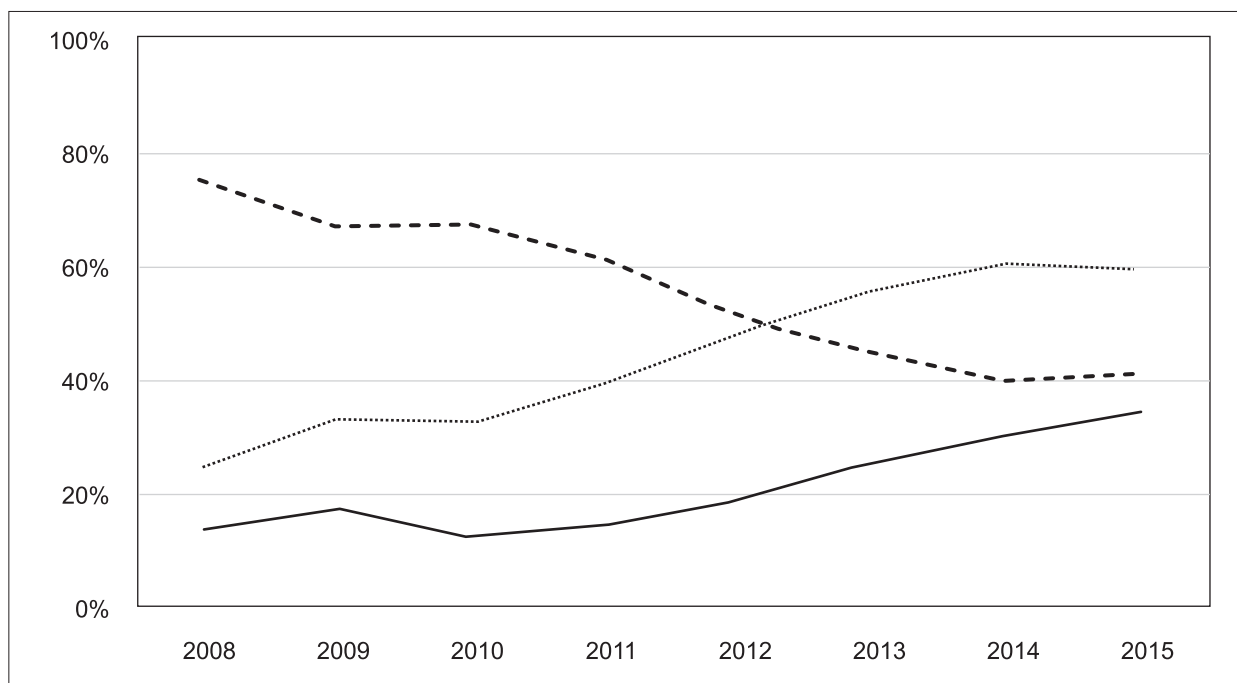
So did bank lending channel play a role and how important was that? Chart II paints a very striking picture on stressed assets of banks and you see that stressed assets as measured by non-performing assets have increased sharply over the last few years. Interestingly, one phenomenon which we have observed since the asset quality review initiated in August, 2015 is that, in the last quarter for which we have the data, the non-performing assets have gone up but the restructured assets have gone down sharply. This is the effect of the ongoing asset quality review because restructured assets have to be classified as non-performing.

**Chart II: Stressed assets of banks as % of gross advances**



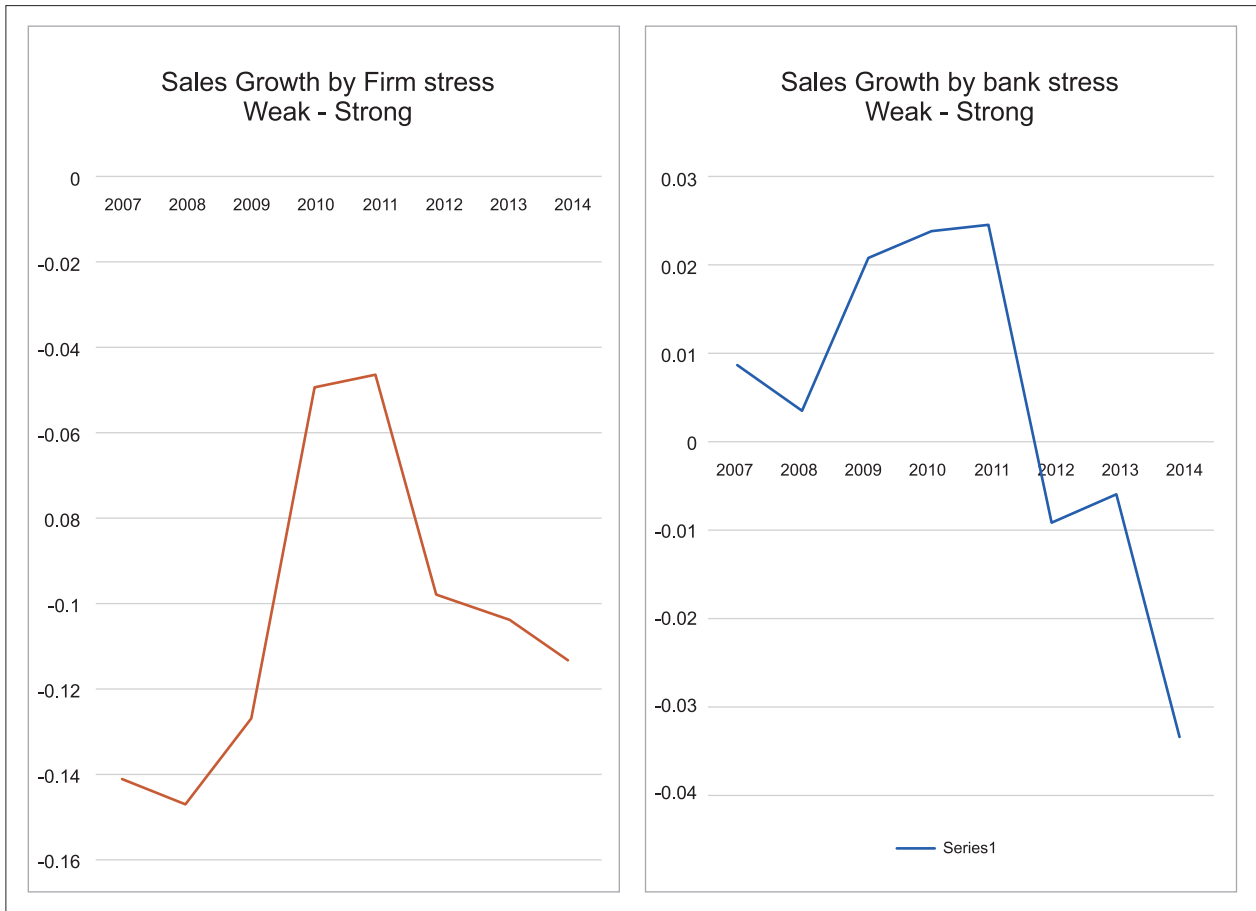
Next, we plot a chart which shows how the corporate balance sheet channel in India has also been important and how corporate balance sheets have been stressed. Chart III shows the percentage of corporate debt by interest coverage ratio (ICR). We define debt by high quality (firms with interest coverage ratio greater than 2), moderate quality (interest coverage ratio between 1 and 2) and low quality (interest coverage ratio less than 1). As you can see, low quality debt in India has gone up substantially whereas high quality debt has come down. I think it is quite a striking picture which shows the extent of stress in the corporate balance sheets in the Indian context.

**Chart III: % Debt by Interest Coverage Ratio**



I am not going to show any regression tables, but I think that Chart IV will make it clear whether corporate stress or the bank lending channel is key to explain the cycle we experienced in India. Chart IV shows the sales growth which is one of the real variables we use. I plot the difference in sales growth between weak and strong firms and firms connected to weak and strong banks in Chart IV. Weak firms are those firms which have  $ICR < 1$ . Firms associated with weak banks are defined as firms connected to banks which have exposure to weak sectors. Basically I am looking at the corporate stress channel and the bank lending channel in this chart. Notice that the difference in sales growth between weak and strong firms is in the negative territory. So throughout the sample period, weak firms had lower sales growth which is not surprising. However, the difference between firms connected to weak and strong banks is that: During the upcycle, the difference in sales growth is in the positive territory but during the downcycle, it is in the negative territory. This means that firms connected to weak banks actually overinvested and had better sales outcomes in the upcycle, whereas that turned vice versa in the downcycle thus providing evidence for the bank lending channel. This is sort of a summary of the results which we are trying to sharpen further in the paper.

Chart IV: Corporate stress channel vs. Bank lending channel



What do these results mean? In order to answer this question, what we did was a counterfactual exercise on the magnitude of the effect of a firm's relationship with weak banks. The counterfactual exercise estimates how much of the drop in sales growth between 2011 and 2014 can be attributed to the firms' connection with the weak banks. These numbers come out to be quite significant. Interpretation of these numbers is that, if these firms were not connected to weak banks, their employment would have been 57% higher, sales would have been 20% higher and the CAPEX would have been 27% higher. So we get very significant numbers and we are still trying to grapple with some of these magnitudes.

The main finding of the paper is that the bank lending channel is really key to explain the cycle. Real outcomes for firms connected to weak banks were much higher in the upcycle but declined during the downcycle, whereas firms with weak corporate balance sheets had adverse outcomes throughout the sample. So corporate stress is definitely important to explain the slowdown, but we find that to be important throughout the cycle rather than explaining the exact pattern of the cycle. We believe that these results provide a strong case for the clean-up of public sector banks and rethinking state ownership being a pillar of strength. With this, let me conclude.

## **Panel discussion: *Understanding the Investment Cycle of India from 2008 to date - The Role of Banking Sector Health***

**Panelists:** Dr. Prachi Mishra, Specialist Adviser, Strategic Research Unit, RBI  
Dr. Shubhashis Gangopadhyay, Research Director, IDF  
Prof. Krishnamurthy Subramanian, Indian School of Business  
Mr. Aditya Narain, Analyst

**Moderator:** Prof. Viral Acharya, NYU Stern School of Business

**Viral Acharya:** Thank you, Prachi. Let me now invite the other three panelists – our first panelist is Dr. Shubhashis Gangopadhyay, Founder and Research Director of India Development Foundation (IDF); our second panelist is Prof. Krishnamurthy Subramanian from Indian School of Business; and our third panelist will be Aditya Narain who has been an Analyst of the Indian Financial sector with Citibank, UBS and now on his own since several years.

The format is that each of the panelists speaks, based on Prachi's presentation and findings or presents his own independent view on the investment cycle in India, maybe 5 - 7 minutes each and then we will throw it open for Q&A. So Shubhashis, do you want to start off and then we can go to Subbu and then Aditya?

**S Gangopadhyay:** Thank you, Viral, thank you, Prachi. What I want to comment upon is based on what Prachi said. One thing that we often forget, when we study the Indian economy, is that we try to fit it into models that we have picked up elsewhere. I want to give you a particular example of where I thought we went wrong after 2008. During the financial crisis when people were saying that it would hit India, if you look at the data, there is no reason for India to get panicky unless the crisis came in from the real shocks abroad. As far as the financial shocks were concerned, there was no reason to panic in India, but we did panic. One of the ways we did panic was that people said the banks must start restricting credit, to be careful about lending, etc., and therefore, the risky loans were immediately retracted. So people looked at the Basel risk weighting norms, etc., and the first victim was Non-Bank Finance Corporations or what we call NBFCs. Now the problem is that these NBFCs finance the small and medium enterprises (SMEs). So, as soon as the banks restricted credit to the NBFCs for no rhyme or reason, because everybody said you must control your credit now as a crisis is imminent, we had a slowdown in the Indian economy because remember that SME is where

all the employment is in India, and that was the engine of growth in India around that time. So when we are looking at these aggregated models and aggregated experiences from other countries, we have to read them in the light of what drives the Indian economy. Economic issues of other countries are issues to look at but the risk has to be understood and looked at within the Indian context, not the aggregate meaning of risk abroad. This is what is important in making policy, because remember, 2008 we did not do badly, 2009 we did not do badly. However, when the new Finance Minister came in at that time, the first thing he did was to pump in a lot of money, which was completely uncalled for and in 2011-12 when it was withdrawn, you saw what happened. So, this is nothing to do with the crisis or the cycle as it was really a bad policy to begin with because of a lack of understanding of how the Indian economy operates. So this is one point I would like to make.

The second point I would like to make is that, I think it is very-very difficult to unravel weak banks from stressed firms. Because we never know if the banks were weak and hence the firms got into trouble or in other words the banks made bad loans or is it that the banks ended up with bad loans because the firms did not do well. Frankly I do not know because the problem is that especially with public sector banks, we have very little chance of distinguishing one from the other. There is so much herd mentality among public sector banks because of RBI guidelines. Lot has been said about RBI through the day, so I do not want to rub it in again. But I do not know if it is because of RBI guidelines or not, but public sector banks almost always follow the same path. So I really do not know how the system works because you cannot distinguish between good decisions and bad decisions made by public sector banks. We do know that some companies are connected with some banks and when those companies run away with the money to the UK, we say, those banks are bad. Luckily for us we find that many banks are involved with the same person who has escaped with the money. So it is very difficult to really figure out what is bad policy and what is good policy, simply because they are so intertwined and there is nothing really driven by market conditions. Whenever it could be, we are so caught up with aggregate behavior that we have picked up from abroad, it is impossible to decipher how the Indian industry or Indian economy is moving, and how the people who are actors in this Indian economy are reading the risks involved. I will stop there.

**Viral Acharya:** Thank you, Shubhashis. Subbu, do you want to take charge next?

**K Subramanian:** Yes. What the authors of the paper are documenting is a much broader phenomenon. Of course, they are focusing right now on what happened after

the financial crisis, but before going for my PhD, I used to work with ICICI during 1999-2001. A similar sort of phenomenon of stress had manifested at that time as well. So we seem to go through cycles where we believe that when the economy is doing well, public sector banks are great, there is no governance problem, everything is fine. But then, only when we have a low tide, we know who is swimming naked. We again then come back to say that, "Oh! We basically need to fix the public sector banks." So what the authors are documenting, while being quite important and pertinent in the context of the financial crisis, is actually a broader phenomenon. These boom and bust cycles that we are experiencing has been recurring over several business cycles.

So, I want to open up the hood here and think about why we see this sort of phenomenon recurs again and again. I think one of them has to do with governance and there I actually quite agree with what Shubhashis said about herding among public sector banks. But I think that it is the nature of the governance that actually leads to this herding. Think about how a lot of the directives are given to public sector banks. As part of our work for the P.J. Nayak Committee, we had actually looked at the directives that are made by the Ministry of Finance. So, whom do the chairman of banks report to? They actually report to the banking secretary and it is the banking secretary who issues these guidelines. If you read those notifications that are given, those notifications are not specific to a bank but to all the public sector banks and many times also include insurance companies. As a result, what has happened is that there has actually been a lot of homogenization of these banks. At the time before nationalization, State Bank of India may have been very different from let us say Central Bank of India or from Punjab National Bank. But the bureaucrat who is actually in-charge of banking finds it optimal to issue common guidelines because he does not have to think carefully about tailoring the guidelines specifically to State Bank of India vis-a-vis Punjab National Bank. As a result of such common directives, we get this homogeneity across the entire spectrum of public sector banks. So my view is that, it is not that we actually have 20-odd public sector banks, we have one large bank which occupies 70% of the market because there is too much herding which is in turn a result of the nature of governance that manifests in these public sector banks. So this is something that we opined as well in the P.J. Nayak Committee. What we then said is that we need to move away from this process of homogenization. What is interesting and this maybe something that the authors can look at is, do you see the same kind of herding behavior among the private sector banks? I do not think so because the kind of policies or the strategic initiatives that an



ICICI Bank follows, maybe very different from HDFC. For instance, at the time when HDFC was maybe expanding into the retail segment, ICICI Bank was still trying to catch up in the retail sector. The only way to discontinue the high level of homogenization in the future is to let the boards of the public sector banks become empowered. We made an entire list of recommendations about how to constitute the bank board's bureau, the bank investment company, etc., so as to eventually empower boards. Some of these recommendations have been implemented by the government, others not. But I think that the basic problem actually happens to be the homogenization of the public sector banks which in turn leads to herding by these banks.

The second aspect which is related to the public sector banks is that a lot of frictions get generated; think about for instance the resolution of distress that we are facing. Let's say, if the respective Chairman of SBI or Punjab National Bank tries to restructure loans by taking haircuts on the stressed loans. This is something that is done the world over when a bank has a distressed asset and the firm in question is suffering from significant debt overhang. In such a situation, the bank may be better off actually agreeing to a lower value of the debt than insist on the entire amount. For instance, take Kingfisher which owes about 5000 crores to the public sector banks. If because of the debt overhang, the promoter is unable to invest in positive NPV (Net Present Value) projects, the banks may be better off taking a haircut. This will create incentives for the promoter because he will have skin in the game. This is done world over, but think about that being done by a public sector bank Chairman. You will have the Central Vigilance Commission (CVC) going after him possibly saying, "Oh! Maybe there are side bets that happened between the Chairman of Kingfisher and the public sector bank Chairman." Maybe you will have CBI going after him as well and not only that you may actually have a lot of our politicians going up saying, "Oh! This is basically *suit-boot ki sarkar*" and this that and the other. A lot of the problems are actually institutionally built-in because of state ownership. Now the public sector bank Chairman would anticipate that after retirement, he maybe running from pillar to post to fight cases against him and to retrieve his reputation back and establish that he did not commit any crime. No Chairman or for that matter, none of us in the same shoes would take such a risk. In order to resolve some of this distress, you need risk taking, but that is what you do not see. What you actually have is a phenomenon of excessive risk taking at the time of loan origination particularly during the boom phase and too little risk taking at the time when resolution has to happen for the distressed assets. A lot of that has to do with some of the institutional mechanisms that come from government ownership

of banks. That again gets to sort of the umbilical cord that connects the public-sector banks to the government. Unless that is cut, we will basically continue seeing this phenomenon.

I have had conversations with some former deputy governors who ask why we should change anything in the public sector banks because they were doing very well up until 2008-2009. The fact is that across several episodes of financial crises across the world, we see governance problems manifesting only during bad times. I think the basic governance problems affecting public sector banks need to be put to rest by implementing the reforms we have advocated in the Nayak Committee. I think what needs to be done is well documented. There is a lot of debate now about it, but the government has to sort of find the bandwidth now, get away from demonetization and implement some of these reforms.

**Viral Acharya:**

Thank you Subbu. Aditya, let me handover to you next.

**Aditya Narain:**

Thanks. It is always little intimidating for a market man to come in after three academics, so please bear with me. My discourse will be simpler, but I will also talk about the markets because I think what has actually happened over the last few years in this cycle and actually the cycle that preceded it, is that the role of the markets has been kind of unappreciated. People tend to get carried away by operators, investors, bank personnel and bank Chairmen, but the role of markets is seldom appreciated. If you see this investment cycle of 2008 to the current one that we are talking about, I would stretch it and say that this is actually a cycle that started in 2002-2003 and has gone on till now, and 2008 actually was not when it dipped. The real underlying economic cycle in India actually extended beyond. It was only the financial markets that dipped in 2008 so they tended to create that dip, but in many senses that is actually what also explains the fact that it was in 2011 and 2012 the problem started because the problem in 2008 and 2009 was not economic but effectively a market problem. I do believe that in terms of going forward, the influence of the market on the duration of cycle or how banks actually play them, how capital is invested in them is going to actually make or mar the cycles. In all likelihood, the market will probably shorten these cycles as equity market cycles are often shorter and provide the equity capital to banks to address the asset quality cycle, but I think that is actually very, very important. It is in some senses that increasingly you will find the state of the markets actually leading or at least influencing the timing of the underlying cycle. I think that is one part.

I think a second thing to look at which is very interesting in the Indian context if we were to follow this cycle is that, while we have had a bad asset quality

from 2008-09 to up until now, that is really only looking at the corporate side. We have actually had a phenomenon where the corporate cycle has been bad, but we have had a boom in a very high quality retail asset segment, and that is very unusual in an economy where we have one cycle which is collapsing, the other which is supposed to run along with it is actually tending to do fairly well. The takeaway is that in an emerging economy, the retail segment is still in its early days in terms of penetration. The retail cycle had actually happened before, then the bust had already happened. So the next cycle was effectively much better, but my sense is that the overall influence of the economy has actually tended to dampen the retail cycle. As far as bank portfolios have been concerned, the risk has not been as much simply because a lot of banks had a certain amount of retail on them which narrowed the risk as corporate loans formed a smaller part of the overall portfolio. To some extent, demand in the economy was also not impacted as much as potentially could have been, simply because the banks had strong retail lending which provided a certain demand impetus.

I think it is interesting that we had the retail and corporate cycle moving in opposite direction in contrast with a few markets. Again my sense is that going forward, this is something that would moderate. I do not think we are going to have such disconnects, but it is really interesting to see it in the current context. It is also interesting to see it in terms of where we are at this point in time because even as the corporate cycle is bottoming out, one can debate it, but it is clearly closer to a bottom than otherwise. The retail segment actually might be tending to start seeing some kind of problem, so we could have a dampening on the other side.

The third thing that I think is relevant is the fact that you had a really bad-asset-quality cycle in the last couple of years, plenty of concerns about banks blowing up, recapitalization and all kinds of numbers floating around, but it is interesting that this has occurred in a country with a fairly developed corporate debt market and at the same time, there are large fixed income mutual funds. I think there has been just one or two stories or instances where there have been credit defaults that have actually happened for bond funds and that is fairly interesting. On one side, we have the entire corporate risk portfolio sitting on banks which seem to be under massive stress, but corporate bond funds have had no problems. So what we have actually seen is that the impact of the corporate asset cycle has been almost entirely concentrated in the banks with very limited implications for the broader financial system and I think this is something that will change because the RBI has come out with new regulations which impose significant caps on banking sector exposure

to individual groups. So more money is expected to go into the bond market, but it is highly unlikely that we can have such a big disconnect between the broader financial system and the banking system where all the bad assets actually sit with the banking system. Now, there is always the risk that the higher rated corporates will continue to go to the bond market and banks are actually going to get the lower end of the investment cycle. But if that is the case, it spells bad news for the banks because they will either not grow, given that risk appetite is relatively diminished or we have the disconnect which will keep on widening and this cannot go on for too long.

I think one other thing that I would just like to touch on, and Prachi has talked about it in terms of resolution and in terms of ownership of banks, is that it is actually interesting if we were to look at the US at one end and China at the other end in terms of how they have tackled their asset quality issues. With the US, it was a very quick, rapid, fixed amount of big capital coming in, the market mechanism to sell down assets, take losses which Dr. Subramanian mentioned in India we effectively don't do and that has been one model. If we were to look at the US equity markets, we can see that it has actually done very well. However, if we were to look at the US investment market and study whether investment has come back in the system, I think it is actually a much more mixed picture. Businesses have done well, but when it comes to the investment cycle, lending has actually tended to stay a little diminished.

If we look at the other side, which is the Chinese experience where God only knows what the challenges are, there obviously has been a problem and the way it has been addressed is to pump in more capital, lend out more money, go easy on the accounting and everything looks hunky-dory. So, if we were to just look at the upfront numbers, there has been reasonable growth, asset quality has not deteriorated sharply and things are okay. However, if we were to look at what the equity market is saying, valuations have come down from three to four times price-to-book to less than one. What this means is that China has actually just pushed out the problem, not indefinitely but to a point in time when it is going to be much, much harder to handle. In contrast, if we see what India has done, as a country and as a set of policymakers we do tend to work in the middle, which is something what India has continued; its partly government owned, partly privately owned. The policymakers have actually tightened resolutions, they have tried to create the infrastructure for resolutions to quicken, they put in some levels of capital but not a huge lot either like China or like the US, but effectively they are trying to go a slower way, a surer way. But I do believe that they are tending to lean more towards the US side which is less government ownership, better accounting and more

transparency. It is still nascent days in terms of creating the infrastructure for resolution but clearly that is one way that they are effectively going about it.

Finally, as far as the markets are concerned, they are very clear that there is a problem with government ownership. It becomes more exaggerated and more extreme when you have an asset quality cycle that justifies your view, but I do believe that at the end of the day, the governance and the ownership is something that will remain at a bit of a discount, or maybe a large discount, as far as the state owned banking sector is concerned. As far as them following market cycles is concerned, I think public sector banks will probably be a little more astute than they have been in the past, not necessarily because of their own skills but because there is an increasing level of market scrutiny and market awareness that is coming in, so what you have really seen with the banks in India over the last one or two years is that everyone likes retail because the guys who did retail in 2008 and 2009 are the ones who are prospering, so everyone is tending to follow that herd now. I suspect what will happen is that public sector banks will be ready to switch around a little quicker than they have in the past. I think they will be better at purely following market cycles, but from a governance angle, I think they will remain at a discount. So effectively those are my views.

**Viral Acharya:** Prachi, do you want to respond to anything before we throw the floor open?

**Prachi Mishra:** I will quickly say a few words following up on what Dr. Gangopadhyay said. I think you are absolutely right. What happened in 2008-09 was very interesting in the Indian context. Government gave a huge stimulus, which was not only very large but also lasted very long, which led to high inflation and which reduced the purchasing power of households and led to a consumption slowdown. At the same time there was an investment slowdown due to several reasons including policy logjams. Stalled projects went up sharply and the world as a whole was not doing well, so it is a combination of all of this. Economic variables declined after the global financial crisis, but we picked up immediately and then we slowed down, so the genesis of this goes back to large and the very long-lasting stimulus which we gave. I think Dr. Gangopadhyay is absolutely right about disentangling the channels whether the slowdown we saw was because there was not enough demand from the corporate or banks were not willing to lend because of their stressed balance sheets. I think it is challenging to disentangle the two and we are trying to do this econometrically. Another point which was raised and I think is important, is that even though bank credit growth has been slow, there is evidence that corporates are actually bypassing banks to borrow; for example, directly from

the commercial paper (CP) market and as a result CP issuances have increased very sharply in recent times. These are few things just to follow up and I agree with a lot of what Dr. Subramanian said and also on the market stuff.

**Viral Acharya:**

Let me start with one question before we throw it open to the audience, if any of the panelists wants to respond. One thing that has always bothered me, and all of you have reacted to this in one way or the other, is that very rarely we see anything happening to a public sector bank. Ideally one would expect that healthier private sector banks over time would grow their market share. However, over the last 20 years, private banks' share of banking assets has not grown that much. Public sector banks have really stayed their ground. The key problem is that every time some of them do not do well, we just end up recapitalizing them back to whatever the Basel capital adequacy requirements are. This ends up throwing good money after the bad and the banking sector running in two silos. There is this one silo which is not moving that much and there is another silo that is moving ahead, but we are not allowing a graceful expansion of the better performing silo in our effort to keep the other one going. I wanted to get your thoughts on what may be some minimal reforms that we could bring in to make this possible or if you think this is just a no go.

**Aditya Narain:**

I will respond to it from a market perspective. I think the biggest move has already been made which is this whole business of removing the on-tap licensing for new banks, because I would completely agree with you that the private sector has not been given enough of a play and that has meant that their role in the economy has stayed insignificant simply because only a few licenses have been given resulting in limited competition amongst themselves. I think that the banking sector has been liberalized much more now and almost anyone with a decent amount of capital and some track record can setup. I think more competition is the first move and the simplest move. I would actually go back to the airline experience in India when we had Air India as the monopolist and that created all kinds of problems. We did not have to shut-down or sell Air India even though at the moment it is making little losses, so it is a little embarrassing. But that apart, if we allow enough outsiders to come in, we will effectively get the situation that we have today, that Air India is just another airline. It is fighting to stay on its feet but the industry has not suffered because of Air India's presence. So we did not shut down Air India and to some extent, it is useful in the sense that if we require political airlifts and issues like that, we actually have a mother airline that we can fall back on. Ideally, if there had been more private banks allowed earlier, this problem would have been a little less acute than it is today. Moving forward, a better way to deal with the situation is to allow new entrants to come in.

Do remember that in spite of me being from the market, I am not a full advocate of shutting down PSBs, selling them and things like that. For an economy like ours, the entire Jan Dhan exercise (realistically everything) has been done by PSBs which shows that they can operationally deliver. In some senses they are effectively required. Even if we think of demonetization, which we will not discuss further in other elements, but the reality is that a large part of the execution has rested with them.

**S Gangopadhyay:** I would like to add to that, one of the good things about the aviation industry, to a lesser extent than banks at least, is that Air India is not treated differently from other airlines. It has to abide by the same rules and regulations. In banking, since you mentioned Jan Dhan, not the other one (demonetization), I am just talking about Jan Dhan. I think this is what allows the PSBs to get away because these are things which are politically desirable, which are even socially desirable because it was driven by an attempt to have financial inclusion. But you are making only public sector banks do this. This allows them to turn around and say “we are different so we will do things differently, we are not the market”. And indeed, if you look at bankers in PSBs, and bankers in the private sector, the remuneration differences are so huge. It will be very difficult to attract good talent with that. So I think, if we want the PSBs to be really driven by the market, then we have to get down to these fundamentals, else there is no point criticizing them.

**K Subramanian:** I would like to add a couple of thoughts. Both the eminent panelists have made important comments. I think the recognition of the moral hazard created by this very strongly implicit government guarantee can be verified if one looks at the board meeting minutes of the PSBs. It looks like most people just come perfunctorily to the meeting, talk about some peripheral issues and then they go back. The strategic issues, risk related issues, do not get much attention. Because one knows very well if you are, let’s say Chairman of a PSB, then even if things go very bad, the government is always there to recapitalize the losses. This moral hazard is showing up in so many ways.

I also want to actually build on the other point which is the perception that PSBs have basically got to pick up all the slack on the social side. I think that really sort of puts the PSBs at a significant disadvantage. Take for instance priority sector lending. Now when you can ask PSBs and private sector banks to actually do 40% of their lending to priority sectors, why can’t you actually, through regulation, ask Jan Dhan to be done equally by PSBs and private sector banks. Why put so much of an onus on the PSBs? And in fact it works both ways. For instance, take the demonetization exercise. Anecdotally speaking, it turned out that a lot of the cash actually that was coming into the PSBs for them

to service the customers. So it works both ways, it creates a perception that PSBs are basically different, that they may not be subject to market discipline and therefore things can continue as they are. Something that left me quite surprised was when United Bank of India was in real trouble a couple of years back. If the strongly implicit guarantee from the government was absent or if it was a private sector bank in a similar situation, there should have been a run on the bank. Or for that matter consider the situation after the Chairman and Managing Director of Syndicate Bank was found to be corrupt. Again, if the strongly implicit guarantee from the government was absent, there should have been a run on the bank. But there was none; it was business as usual. While such guarantee from the government may seem desirable to protect the deposits of small depositors, actually deposit insurance is supposed to provide the insurance against small depositors. Thus, the guarantee from the government creates significant moral hazard without providing much benefit. This is the elephant in the room that people are really not talking about.

**Viral Acharya:** That is great. Let me throw it open to some questions. How are we doing time wise, Nirmal?

**Nirmal Mohanty:** Not bad.

**Viral Acharya:** Not bad, okay. So ask short questions and we will give you long answers.

**Participant:** There is a question for Prachi. When you said firms are tied up with weak banks, what is the captive arrangement here? Firms leave these banks and look for other stronger banks for credit relationships?

**Prachi Mishra:** So, basically we define firms connected to weak banks in several ways. One is, we use the Prowess database and look at which banks a firm has a relationship with, and then we look at those banks' exposure to weak sectors. So, say a firm connects to a bank which has large exposure to a sector with very low interest coverage ratio, so that is one of the definitions. We also look at non-performing assets. Firms connected to weak banks are those firms which are connected to banks with higher non-performing assets. Surprisingly, with this non-performing asset definition, the results are in fact weaker because it is probably an ex-post definition of a weak bank.

**Participant:** But there is no externality effect here? In fact, the firms are getting affected by these weak banks?

**Prachi Mishra:** The central thesis in the paper is that firms that were connected to banks which had weak balance sheets were the ones which did very well in the up-cycle and then collapsed during the down-cycle. So of course there is an externality, if I am understanding correctly.



**Viral Acharya:** No, I think it is an interesting question. Generally the evidence in banking literature, and I am sure it is probably true in India also, is that banking relationships are not that easy to switch because there is usually some kind of a lemon-problem resulting in some borrowers being denied credit by their banks. While the problems may be with the bank, at the level of each individual firm there may not be any way of knowing the reason for being denied credit. The firms may, therefore, be willing to accept a little bit of higher spread or higher interest rate or a lower loan than signaling to another bank their intention to switch back. The very high rated credits, though, should have no problems because there should be enough transparent information about them.

**Prachi Mishra:** This is borne out by some of the other work I am doing. In the Indian case also if you are rejected by a private bank, the probability of you going to a PSB and getting a loan is fairly low. So the fraction of loans sanctioned by PSBs which are rejected by private sector banks are relatively small.

**K Subramanian:** Just to add to what Dr. Acharya was saying, it is true in the Indian context as well that relationships are very strong and I have some work looking at the monetary policy transmission and how, because of relationship banking, monetary policy transmission is very muted because banks are not changing either the loan or the price of the loan to the relationship borrower.

**Aditya Narain:** Just if I might add, the market corroborates Prachi's view. The weakest banks rise the most when things are looking up, and they fall the sharpest when things are looking low.

**Participant:** Yes, as it was earlier put, there are absolutely two silos working in Indian banking. As you rightly said, as far as PSBs are concerned, we follow the China model, nothing less or nothing more on it. And when it comes to private sector banks, we follow a different silo because I feel most of these new private sector banks operate like how these foreign banks operated few years back and they got into deep trouble showing consistent profit. Then as we said, market capitalization shows huge difference between private sector and public sector. They are in two different businesses and follow different governance standards. So that is the issue which is bothering more. And I do not think in my opinion this will continue forever for private sector banks. Public sector, God only has to say how governance will improve, how Government dilution will happen, that is what the market will decide.

**Viral Acharya:** So I think we probably all broadly agree. Do you have any specific question?

**Participant:** What about the deliberation and discussion towards that and how to set it right? This is not a good thing to happen, so the panelists can share their views how we tackle this issue. That is the question.

- Participant:** Related to the observation that PSBs are never allowed to shrink, I was just wondering if there is any thought or process to at least discriminate within PSBs. Those which are relatively performing among them should be recapitalized or provided more help if needed, but poor performing maybe the ones who have corruption, etc, so let them wind down. So has there been any effort at any point?
- K Subramanian:** I can take that. I think the new recapitalization norms provide for Rs. 70,000 crores of capital which is to be allocated to PSBs over the next five years. It looks like there are objective metrics that have been specified in order for a PSB to be recapitalized. Banks have to satisfy some performance norms to be eligible for the capital. So it is not necessary that every bank actually will get that. I think it looks, at least de jure, as an attempt. Whether de facto it is happening or not actually remains to be seen. But I think the bigger point is that Rs. 70,000 crores still is woefully inadequate. It is a fraction of what the public sector banks need over the coming years. So even the best performing PSBs will continue with thin levels of capitalization.
- Viral Acharya:** I think both Shubhashis and Prachi have something to add.
- Prachi Mishra:** This has been a big issue. Even though the amount is not enough, how to allocate it among banks is not an easy question and I think both the government and the RBI have deliberated a lot on it. It is not straight that actually the best performing banks should be recapitalized because if you think about the less better performing banks, they get a double whammy because they get less of the recap funds and also they cannot access the markets. So there is no clear answer.
- S Gangopadhyay:** I will just make another point, related but very different from what is being discussed over here. The banks do not operate independently of everything else. So if we want our banks, whether public or private, to operate better, then we have to look at the entire system in which they are operating. To give you an example, given our bankruptcy laws, I do not think any of our banks can do any better than this, frankly. We went in and started saying that you must do better accounting, NPAs have to be recognized in a particular fashion, but all those incentives are meaningless if you do not have a proper bankruptcy procedure. So I think if we are talking about the banking system, we have to talk about all these things, else we get too “silo-ized” into banks.
- K Subramanian:** But I would like to disagree a little bit, because if you see, with the same bankruptcy system you actually find private sector banks doing different from the PSBs.

- S Gangopadhyay:** Their lending patterns are different, they lend for different things, please understand that. Also for us, the PSBs fund the investments we are talking about.
- K Subramanian:** I think this is a larger debate ...
- Aditya Narain:** But I think Dr. Gangopadhyay has a point. The best private sector banks which have not been impacted have not been part of the investment cycle at all, they have been into retail or working capital. So there is effectively a challenge as the private sector banks that were in this space have also got impacted, not to the same extent as PSBs but both have been impacted.
- K Subramanian:** But you have to ask the question "Why is it that they decided to stay away?" Maybe their understanding of the origination process is better than PSBs?
- Aditya Narain:** I mean, there is no doubt about the fact that their loan appraisal systems are different, the incentives are different. But the reality is that the private sector banks have got stuck, that is why we are stuck.
- Viral Acharya:** Yes, I have thought quite a bit about this even in the context of Europe. Europe is going through a big forbearance cycle of its own towards banks and I think Italy has a problem right now because three years back they did not do anything to fix their banks and now they have just rolled over bad loans and stuff. I am of the opinion that once you provide emergency support or recapitalize a bank, you have to stop their asset growth. They cannot grow any more beyond that point. However, we do the reverse discrimination by giving the highest capital injection to the bank that actually has under performed the most because we have to shore up its capital to the required level. It is sort of negative market discipline. Ultimately a critical and challenging issue in addressing the problem could be the labour laws. If let us say, a sick PSB is sold to a good bank, the first thing that the good bank would do is to shed the PSB's staff. It requires deep thinking to see how this would work but it might be worthwhile to do so.
- K Subramanian:** Even before we start thinking of mergers and acquisitions among PSBs, we have to sort out their governance because our PSBs are not corporations under the Company Law. They are entities that derive their existence from the Bank Nationalisation Act. Till they are not converted into corporations under Company Law, we cannot even do that.
- Viral Acharya:** Yes, because it seems that would be perhaps easier to fix, which is that you can sell branches or you can sell some asset portfolios. Probably asset portfolios can be sold even now but I do not know if branches can be sold. But then

the question is whether you allow certain amount of time for downsizing the labour.

**Aditya Narain:** It is basically an HR problem.

**Viral Acharya:** Any questions?

**Participant:** In this entire discussion about banking, as Mr. Narain clearly mentioned, the problem is not whether the cycle was wrong, the problem is the kind of lending we are getting into. Because during the same cycle, when the corporate bond market has been performing so well with marginal defaults, why has the whole discourse not been opening up of the bond market at a much faster rate because that will reap far easier access to credit and help the economy to revive faster. Solving the banking sector problem is not one or two years job while strengthening the corporate bond market can help in reviving the cycle and also act as a governance tool for the PSBs, because when firms do not come to borrow from them, they may automatically be more careful in how they conduct themselves.

**K Subramanian:** I think while you are right that you could sort of focus more on the corporate bond market, world over the corporate bond market is generally accessed by more creditworthy and larger firms. Firms that are more credit constrained have always been served by the banks and thus, a healthy banking system is absolutely important. I do not think you can run away from fixing the problems in the banking system.

**Viral Acharya:** I think there is also a little bit of a chicken and egg problem which is that if banks do not fail, then you cannot allow certain markets to develop. In Europe it was very interesting. In 2011-2012, when the sovereign debt crises occurred and banks got into trouble and as a result there was a credit crunch, immediately the bond market in Europe started taking off because the sovereigns in Europe did not have enough balance sheet capacity to actually put enough capital into the banks. So they have shown forbearance and have not allowed banks to fail. But they have also not been recapitalized so that they can start lending. You are raising an important point that sometimes besides the two silos, markets do not develop fully if banks are allowed to remain as the key credit providers in the economy.

**Aditya Narain:** May I just add two points to this. Firstly, I think over the last 15 years, every budget and every second credit policy has something on developing the bond market. So I think there is plenty of effort that goes into it. But more seriously, the second issue right now is that there is no credit risk appetite because of asset quality issues. I think how developed the market is and how much of a move there will be into lower levels of credit will be tested this time around

when the credit cycle starts moving up. We will get a better sense of market depth, when credit quality starts improving and investors start looking at lower rated credit offerings. I think that is going to be distinctly better than what we have seen in the past, because the market is substantially more developed now and there is much more money with mutual funds. We are probably in a situation that no one wants to lend to anyone and everyone wants to lend to the top end of the market. We will get a better sense of the depth of the market when credit quality starts improving – rather than when there is no risk appetite to test the weaker credits in the system.

**Prachi Mishra:** Two quick points. If we look at credit growth, it is actually quite interesting. It is not that there has been a slowdown in all the sectors. For example, personal loans in housing has been quite robust. It is basically credit to small and medium industry which has slowed down substantially, so it's not that there is no distinction. And number two, as I said, actually corporates are moving to non-bank sources of finance. CP issuances have increased significantly, but as Dr. Subramanian said, CP markets are accessed by highly rated large firms. Thus, PSBs need to start lending again to help the smaller firms.

**Participant:** Sir, execution challenges aside, would the new bankruptcy laws help? Do you think the new laws will kind of help some of the issues that we have been discussing about the banks?

**K Subramanian:** I will give you a partial answer. I think my view is that while the law is necessary, what you need is the judicial system. The judicial system, I think is not understanding some of these nuances of resolution. We can create the law but the law will be administered by the judicial system, which is anyways overloaded. So I will still wait and watch to see whether it really makes a difference.

**Participant:** I have a question in the context of the study that has been done by Dr. Mishra and Dr. Acharya. Just elaborating on Dr. Gangopadhyay's point, how do we go about causality here? So is it that the firms which are related to the weak banks do indeed tend to show negative sales growth during down cycles? Or whether it is reverse, firms that tend to show negative sales growth during down cycles are related to weak banks?

My second question regarding this is, while we did talk about development of bond markets, we do find that there are some capital control decisions that are taken by RBI. For example, on 3rd February 2015, FPIs were banned from participating in short-term corporate bonds. Do you think this has an impact on corporate bond markets not growing and firms over dependent on banks for credit?

**Viral Acharya:** Your question of causality is a great one. Our conclusion is that currently with the granularity of data that we have, it is difficult to establish causality at the firm level. The way the literature has done this is that you need a firm that is borrowing from two different banks, where one of the banks is affected and the other bank is unaffected. Then you observe if the affected bank withdraws credit but the unaffected bank does not withdraw credit as much. But we do not have loan origination level data which is what you need to do a good job of this. We have firm-bank relationship data from Prowess which tells us the banks that a firm is attached to at a given time. The RBI may have some large borrower data set, but I believe it covers only the last six or eight quarters and I do not think it has been analyzed for research that much.

**Participant:** While we heard some discussion on bank restructuring, of course there is a regulatory aspect to that and we discussed that as well. Entry and exit into the banking system is not easy and that is where the regulations are. Restructuring, of course, is not an easy task. We heard about the bond market and clearly, based on my experience of the capital markets, we are leading to a high yielding territory to actually be able to get as much money as we need to raise from the bond markets. I think that is going to be a very challenging task considering the high yield assets that we have. So my question is, what are we doing to restructure the corporate NPAs? Who is actually going to take the step and come up with solutions such as restructuring management, getting promoter capital and forcing the promoter to make certain changes including changing operations? There are various ways of restructuring these assets, but to me, I do not see any move by the PSBs or any regulatory push towards trying to force these assets to become performing by restructuring them. What can we do in that regard?

**K Subramanian:** I think there was a proposal or there was a thought about creating a bad bank. I think that has some merit because the expertise required for basically judging which asset has value and therefore should be restructured or has little value and should be liquidated, that expertise is generally very, very scarce and maybe only very few people in a particular bank have it. By bringing them together in a bad bank, we can create a team that actually has this sort of expertise. What is also happening is, as I was alluding to earlier, some of the institutional frictions that exist, whether it is a CBI or CVC, tend to create hurdles in resolution of distress. If we create a bad bank which is legally mandated, we do not have to grapple with some of these problems where you have internal vigilance which has more firm specific information to separate the actual corrupt from somebody who actually just took at a bad judgment. I think the basic problem right now is that malafide intent cannot be separated

from bad judgment. So, we have to evolve an institutional mechanism that enables a clear separation between malafide intent and bad judgment. This will then provide incentives for bank personnel to take judgments that may possibly go wrong. Not every asset that you are going to actually restructure will eventually see the light of the day and perform well. The system, including the political establishment, has to be fine with that for such resolutions to happen. I think these are some of the basic things that need to be put in place.

**S Gangopadhyay:** We need to think in much simpler terms than we usually end up doing. We want these assets to be restructured not because everybody I see, everybody I know, everybody I can think of; I want to restructure to ensure that people who had given money into the system are taken care of, which would essentially be the small depositors, the small shareholders of the banks (and may be even firms). Unfortunately, whenever we talk of bankruptcy, whenever we talk of restructuring, we talk of everything else but the people whose money we are trying to get out. And if we think that way, then we will forget the old promoter, the old promoter is not relevant at all in this discussion. Why do we want to satisfy the old promoter? But we have to start thinking like that, we have to start thinking with one clear objective. Everything we do, especially when it comes to financial markets, is that the entire Indian society is our objective and I think that is the wrong way to proceed, because that just ties us up in knots and we do not know which way to go.

**Participant:** I wanted to highlight the two silos problem that has been mentioned. If you think of it, of all the licenses given to the new generation Indian private sector banks, half of them have vanished, but how many PSBs have? So we had Global Trust Bank, Vysya, Centurian Bank etc., but they are not there anymore. However, this time around, with merger of the SBI subsidiaries, I think it is an important step going forward and how it works out would be important. So wanted to know your views on that, how that can be taken forward and if that can impact the landscape of the Indian banking industry?

**Viral Acharya:** You mean the SBI conglomerate?

**Participant:** Yes. Do you think it is an important milestone?

**Aditya Narain:** Maybe, I have covered SBI for 20 plus years, so I should at least have a view on it if nothing else. I think it is a good move but it is an easy one, simply because merger with subsidiaries would have the explicit guarantee that there will be no retrenchment, and people will retain their jobs. In fact, what the management has presented is that the additional cost of taking this on is going to be about Rs. 3,000 to 4,000 crores. They are showing savings in other forms which will cover that cost. But the reality is, if the same thing had been done

in the private sector, it would have been much more accretive. Consider on the other hand private sector banks that got merged or sold out. More than half of the private banks that started initially, effectively failed or were bought out. Four of them were bought out by private sector banks. That is the way to do it. Shareholder loses, some employees lose, but the system survives and overall, it is a much more strong entity. So I think this is not exactly a benchmark.

In fact, if one refers to your Global Trust example, it is interesting. Global Trust was the only one that was taken over by a government bank. Oriental Bank of Commerce (OBC) was doing pretty well at that time and this actually brought OBC down. So it gives us some sense of the challenge of just stepping back and saying "let's consolidate this". There is a big buzz that if we want to strengthen the sector, we should consolidate all the government banks. If there is no economic basis at the end of the day, or the economic basis gets stifled if the PSB cannot take some level of costs, then it becomes actually more and more of a challenge. SBI is the easy one that has been done but it is a good thing that it has actually been done. Whether it is going to be the template for what happens beyond, one will actually have to wait and watch.

**K Subramanian:** I think I will just add to that. Actually, top-down pushing of consolidation maybe a lot more costly in the long run than being beneficial. Individual banks and their boards have to find synergies that will make them merge rather than Ministry of Finance basically telling them to go and merge with each other. Take the example of the Indian Airlines - Air India case. I teach a class on mergers & acquisitions at ISB and I use the Indian Airlines - Air India case as an example of something that did not go very well. We have a similar situation with a lot of these PSBs where we are bringing together chalk and cheese. So, we may end up with a very bad mixture.

**Prachi Mishra:** Also, we already have a very concentrated banking sector. So the idea is to get more competition rather than more concentration.

**Viral Acharya:** Okay. I think we should thank the panelists for a very stimulating discussion. We have a 15 minute break to get some "liquidity" and then Prof. Yakov Amihud will tell you the rest about it.



# Keynote Speech: Liquidity and Asset Prices

Prof. Yakov Amihud

Ira Rennert Professor of Finance at NYU Stern School of Business

**Viral Acharya:** Let us get started for the final presentation for the day. So we are very delighted to have with us, Prof. Yakov Amihud from Stern School of Business, New York University. The only thing I would like to say is that Yakov, in my opinion, started the whole field of liquidity in asset prices in Finance. I think it was born in Department of Finance at NYU Stern with his longstanding co-author Haim Mendelson who was at Stanford. Many of us who are here have been students at NYU, and my sense is that when I sometimes think about a classic paper that was written at NYU Stern, I think of two papers: Ed Altman Z-Score and Amihud and Mendelson. So you will hear about liquidity from where it started. Thanks, Yakov.

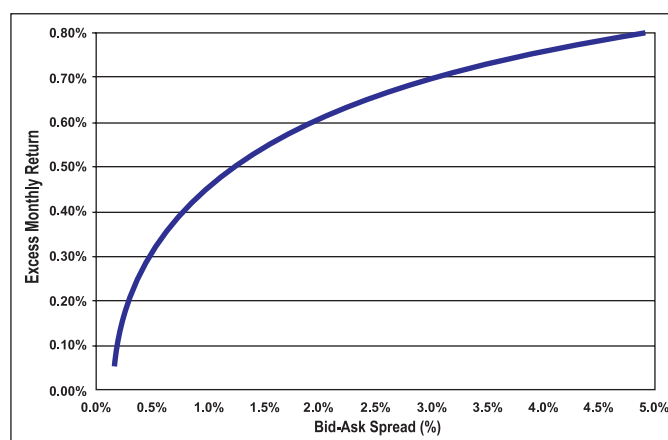
Thank you, Viral. Many of the ideas that I will talk about appear in my book that came out two years ago. I will start my presentation by presenting something which is familiar to you all – “The positive relation between risk and return.” This is what we teach students. Risk is a bad thing for risk-averse investors. So they require compensation for risk. This makes sense, right? The greater the risk of a financial asset, the greater is its expected return. The problem is that there is weak empirical support for that. What we tell students, yes, riskier assets generate higher average return. If you need proof, you can observe that on average, the stock market generates higher average return than the bond market. But this is where it ends. Because if you rank stocks by their risk and you look at their average return, if you are lucky, there is no relation between risk and average return. If you are unlucky, you observe a negative relation between risk and average return. There are some papers written about it and it is hard to explain but this is what the empirical evidence shows. I should be fair, some papers showed positive relation between risk and return using some advanced statistical techniques. But I would say the evidence is weak.

The theory I am going to present is the relation between expected return and stock illiquidity. The theory that I developed with Haim Mendelson in 1986 says that expected return is an increasing function of illiquidity or transaction costs. We have a formal model, I will not go into it, but I will just explain the intuition, which is very simple. Investors care about their net return after transaction costs. So they demand higher return such that after considering the costs, they will break even with what they really wanted to obtain, given the risk and other characteristics of the stock or bond. In other words, consider an asset with given cash flow, with given risk. Its price will be lower if its illiquidity or transaction costs are higher.

As I told you before, the risk-return theory predicts a positive relation between something which is bad, i.e., risk and something good, i.e., expected return. In Chart 1, I show you a positive relationship between something which is bad, illiquidity, and expected return. This is the function that we estimated for stocks listed on the New York Stock Exchange. On the X-Axis we have bid ask spread (S), and on the Y-Axis, we have the average return (R). As you can see, after controlling for beta risk, there is a positive relation between the log of the spread and the return. So the higher the illiquidity (the spread), the higher is the average return. Now, why is the relation concave and not linear? Why is there – for more liquid (lower S) stocks – higher sensitivity of required return to trading costs?

**Chart 1: Average stock return as a function of the stock’s bid-ask spread**

$$R_i = 0.0065 + 0.01 \cdot \beta_i + 0.0021 \ln(S_i) + \text{year dummies}$$



**Illiquidity means higher transaction costs.**

**Higher illiquidity → higher average return**

Maybe before I explain the first, let me explain the answer to the second question here. In reality, there are investor clienteles. The investor clienteles differ in the horizon by which they want to hold their investments. There are some investors who are frequent traders like the high frequency traders (HFTs). But even if we do not consider HFTs, there are investors who trade more frequently than other investors. The investors who are frequent traders care a lot about transaction costs because they incur them more often. There are other investors who have specified investment policies like pension funds who are patient and hold the stocks or bonds they invest in for a long time, sometimes for many years. So what happens? Remember, investors care about the *net* return after transaction costs. Thus, the long-term investors care less about transaction costs because they trade infrequently. Consider the case where transaction cost is 5% and I hold the asset for 5-years, it costs me only about 1% per year on average. If the transaction cost is 5% and I trade it every month, it costs me a huge amount. The gross return would not compensate for the transaction costs. Thus, investors move or select the stocks they want to trade according to their investment horizon. Which stocks would the frequent traders choose? The liquid stocks where the transaction cost is minute like Apple, Microsoft or Google because they can trade large quantities with very small impact on the price. Thus, frequent investors who have great sensitivity to the change in transaction costs

hold the more liquid stocks. If there is even a minute change in transaction costs, they ask for much higher compensation in terms of returns because by their trading strategy the cost will be incurred very frequently by them and by future frequent traders and so should get higher additional gross return to compensate for that. In contrast, patient investors are not very sensitive to transaction costs. They think that if transaction costs rise by 1%, depreciated over five years, it would not be so bad. So, in general, we get a positive relationship between transaction costs and expected return which is concave, i.e. the additional return that is required for higher transaction costs diminishes for securities with high transaction costs. Now, still you would say that the long-term investors always have an advantage over short-term investors in bearing the transaction cost as they can depreciate everything for a longer period of time and pay a higher price for any asset. But they are constrained. They do not have all the money in the world. They have to choose from among the assets that are available. So they opt for assets in which their long-term-holding advantage is most pronounced, i.e., assets with high transaction costs. The remaining assets, the more liquid ones, will be held by frequent traders.

Until now, I talked about the impact of liquidity in terms of expected return. You can translate that into impact of liquidity on the price/earnings (P/E) ratio. The P/E ratio should be higher for more liquid stocks than it is for illiquid stocks. This is because, for any given earnings that the company generates, the price of illiquid stocks should be lower in order to generate higher expected returns or earnings yield, which investors expect from such stocks. Let us look at the empirical evidence. A study from 2003 by Loederer and Roth found that in Nasdaq and the Swiss market there is a discount of over 20% in the P/E ratio for a stock with average or medium liquidity compared to a stock with perfect liquidity. This is found after controlling for risk, beta risk, dividend payout, growth rate and expected earnings growth. After all that we observe a price discount if the stock is illiquid.

You can ask yourself, why is it that a small transaction cost has such a large effect on price? So I will give you a simple numerical example. Suppose you have a stock whose price is \$10 and the dividend is \$0.20 or 2%, which is approximately the average dividend yield in the New York Stock Exchange. So how do you price the stock? You discount the infinite stream of dividends and you get \$10. Now, suppose there is a tax of \$0.01 every year. Then, the price of the stock would fall by 5%. Why? Because the dividend remains \$0.20 every year, but because of the tax you receive \$0.19, so the present value of the dividend falls by 5%. Like dividend, transaction costs are incurred for ever. When I sell the stock to you, you sell the stock to him, he sells the stock to her and so on – we have to take into account the present value of all transaction costs that will be paid for ever on the stock that changes hands from one person to another. Therefore, the total effect of transaction cost on price is the present value of all the future transaction costs that will be paid over the life of the stock. So in this case if you trade the stock let us say once a year and instead of the \$0.01 tax, every end-of-year you get \$0.20 dividend and you pay \$0.01 transaction cost, then the value of the stock will fall by 5%. As you can see, transaction costs of 1/10 of one percent cause a decline of 5% in value. Note that price/dividend ratio is 50. So in general, this simple model shows that the present value

of trading costs equals the transaction cost per trade multiplied by the price/dividend ratio. This is a large number; 50, 40 depending on the time period we are looking at.

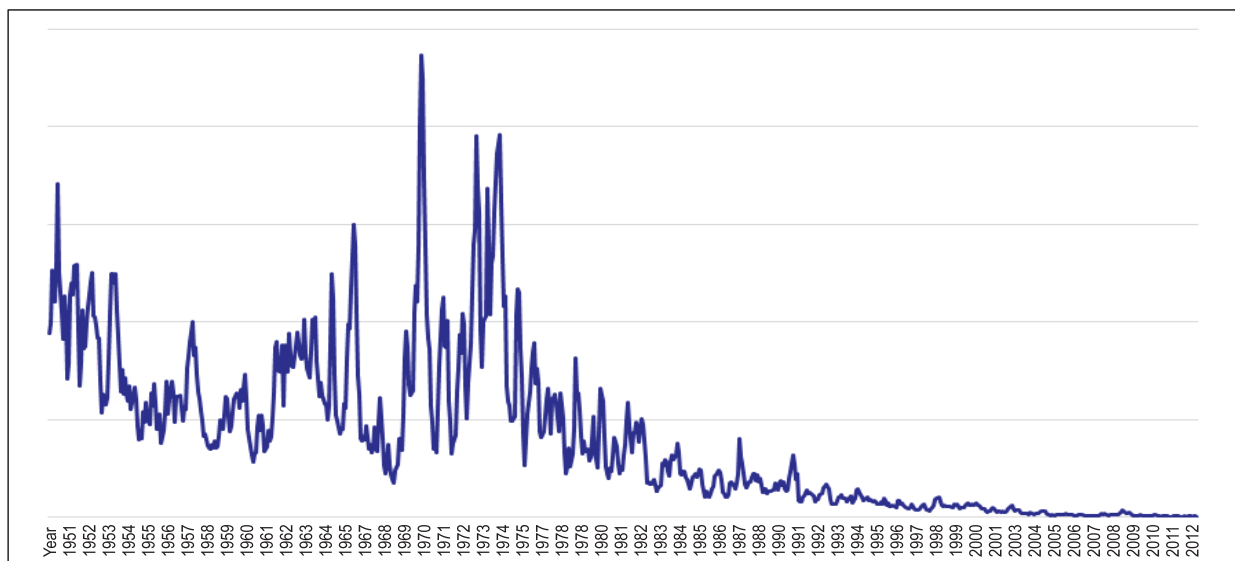
Liquidity affects investment and this is important because it affects the real sector. The value discount due to illiquidity lowers the ability of firms to raise capital for investment. Consider the following. In the United States, suppose we have a stock traded in the market and the stock price is \$100. The company wants to issue stock but the new shares are not registered with the SEC. In this case, there was a restriction that you cannot trade the stock for two years. The restricted stock was the same in every respect in terms of dividend, voting rights and distribution rights as the traded stock except for one thing: for two years you could not pick up the phone and tell your broker to sell immediately. Here is the research question: The stock is traded in a market at a price of \$100. This price reflects all the information about the future cash flows of the stock, about the future risk, growth, everything. Then, there is the restricted stock of the same firm and for two years you cannot trade it. At the end of two years, the two types of shares become the same. How much discount should be there for the restricted stock? The answer is one-third of value! If the traded stock price is \$100, the price of the restricted stock was on average \$67. This evidence was found in research by Bill Silber. A huge discount of a third of the stock value just for the fact that for two years one cannot trade it. This tells you how great is the value of liquidity, the ability to trade a stock easily and freely.

Liquidity is important because it implies that merely going public raises firm value. Stockholders in a private company (that is, not listed for trading in a public exchange and have a small group of investors) can hardly trade the stock. They get the cash flow but they do not have liquidity, so the stock is worth less. The convention in the United States is that unlisted private companies should sell at lower P/E multiples than similar publicly-traded companies. If I own shares in an unlisted private company and I want to sell it, the buyer will say, "Look, there is a company identical to yours in the market. Its price is, let us say \$30. I will pay you \$20." For the same company, same earnings, same risk, you will get only \$20. If the company goes public, it will make the value of the company rise from \$20 a share to \$30 a share. You can now see why liquidity is important for companies. The story of liquidity is not only a story of something that happens in the capital markets. It is connected to the real sector. If companies become more liquid, they can raise more capital from investors. This enables them to invest more and this enables the economy to grow more. The fact that illiquid stocks have on average a higher return means the cost of capital of debt and equity for these companies is higher. We know from basic economics course that this is bad for economic growth.

I will now present some evidence on the Indian market. The Indian market is very illiquid. This means that the cost of capital for Indian companies is higher, and this hurts economic growth. Improving the liquidity in the market is equivalent to the RBI lowering the interest rate. If RBI lowers the interest rate, it will be easier for companies to invest. In the same way, if we make the Indian capital market more liquid it will enable companies to invest more because we have lowered the cost of capital for them. This is an important connection between the financial sector and the real sector.

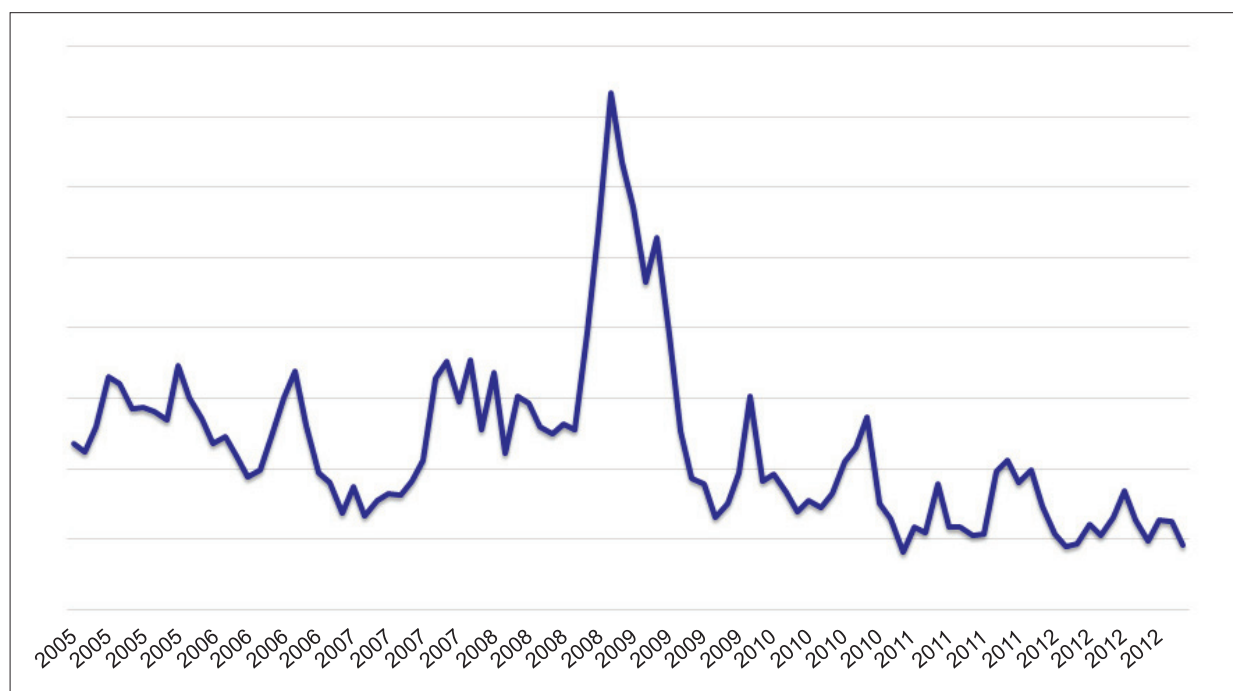
How to measure liquidity? We use the bid-ask spread which is the difference between the buying price and the selling price. There is a more detailed and important measure. We call it “Market Impact” (symbol lambda) which measures the change in price per unit of traded quantity, that is, by how much does a given trade size move the price. If lambda is high, it means that given the trading quantity, there is a larger impact on price. A larger lambda implies lower liquidity. There is also a third measure which is called resilience: How much can I buy or sell without moving the price. In Google, for example, I can buy and sell a million dollars without moving the price. In other small stocks, if I execute a sell order of \$10,000, the stock will tank. If I do not have detailed intraday trades and quotes data, there are coarser measures. For example, the measure which I call ILLIQ (for illiquidity) is the average ratio of the absolute daily return to the daily monetary volume. This answers the question: by how much does a given daily volume move the price. Other measures include the effective bid-ask spread – I will not go into the detailed calculation; it is also a measure of illiquidity. In India, lots of stocks have many zero-return days or stocks are not traded for days. Even in the New York Stock Exchange, not to mention the Nasdaq, there are many stocks which have days with no trading. The question is, what is the frequency of such an event happening? In India it is high. I want to show you some charts and then I will talk about India.

**Chart 2: Market illiquidity (ILLIQ) in NYSE, 1950-2012**



Remember market impact: It tells by how much a given monetary volume moves the price. Chart 2 shows the level of illiquidity (ILLIQ) in the United States from 1950 to 2012. Look how high it was in the 1970s, the 1980s, but since then, the market has improved in terms of illiquidity. The US market has become remarkably liquid over the years. This is what caused in part the rise in stock prices. Because, if it costs you less to trade, you are willing to pay a higher price for the stock. In Chart 2 you do not see a lot of changes in the recent period because it is close to zero, so I have Chart 3 to show what happened around the global financial crisis.

**Chart 3: Market illiquidity (ILLIQ) in NYSE around the 2008 crisis, 2005-12**

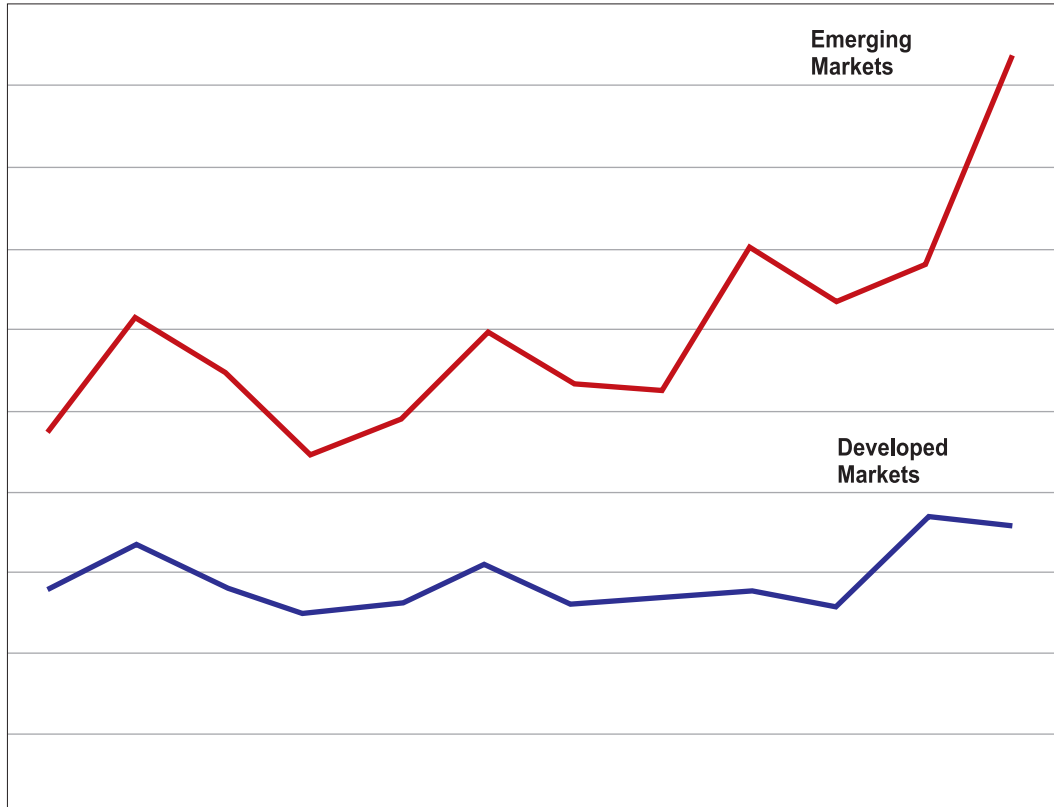


As you can see, illiquidity bounces around. It started to rise already in 2007, just before the crisis. People say, this is the canary in the coal mine, an indication of coming danger. Illiquidity started to rise in 2007 and then came the crisis when illiquidity shot up. But then look at it now, it is even lower than it was before the crisis. Liquidity has been completely repaired.

Now I will talk about commonality in liquidity and I will talk on how it applies to India. There is a phenomenon which we call commonality in liquidity. Stock prices move together, right? When the index goes up, most stocks go up, some more, some less. When the index goes down, most stocks go down. So we have commonality in returns. What about commonality in liquidity? Nearly all stocks become illiquid at the same time, some by more, some by less. That is to say, illiquidity or transaction costs move together across stocks. The cost of trading or the difficulty in trading is moving together. Sometimes the market is very liquid for most stocks and sometimes it is illiquid for most stocks. Evidence shows that in emerging markets, this co-movement of stock illiquidity, or the commonality in illiquidity, is greater. High commonality in liquidity is bad. Why? Because it means you cannot diversify your liquidity position. Either all stocks are liquid or all are illiquid at the same time. Chart 4 is a plot of the commonality in illiquidity for emerging markets and developed markets from 1996 to 2007. There is a big difference between them.

Now, we come to India. India's commonality in illiquidity between stocks was among the highest in the world (China's commonality in illiquidity was the highest). Either the whole market is liquid or the whole market is illiquid at the same time. This means that there is greater liquidity risk in India than in most other countries. When a mutual fund takes positions in stocks and asks: "Will I be able

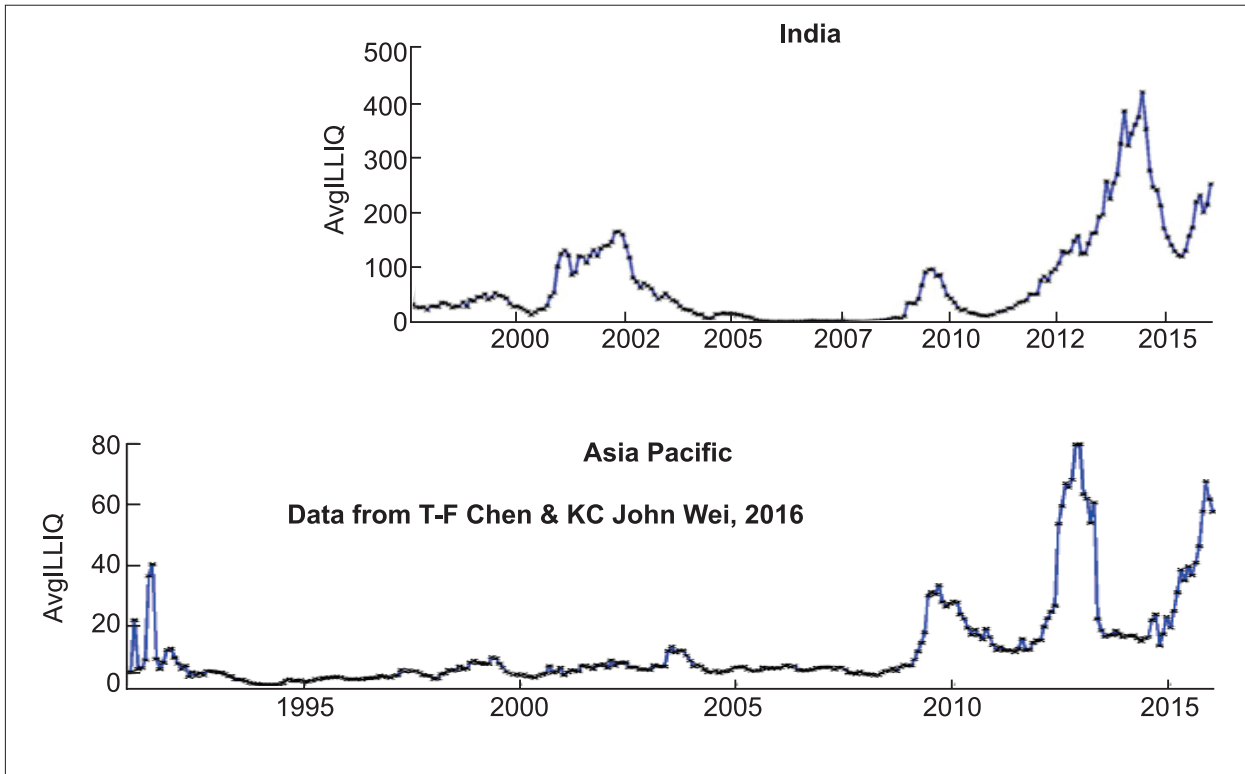
Chart 4: Commonality in illiquidity in emerging and developed markets, 1996-2007



to accommodate redemptions and unwind the position in stressed times?” In all probability, it will be more costly to do so in India. In the United States for example, we have illiquid stocks and we have very liquid stocks like Google. In bad times, if the market becomes illiquid, Google will not really become very illiquid. I will be able to sell a position in Google if I need cash. Think about a manager of a mutual fund who faces redemptions. He or she needs to sell some stocks to get cash in order to redeem the claims of investors. So he will always have some very liquid stocks which he will be able to sell easily without bearing high transaction costs. In India it will be harder, because illiquidity moves more closely together.

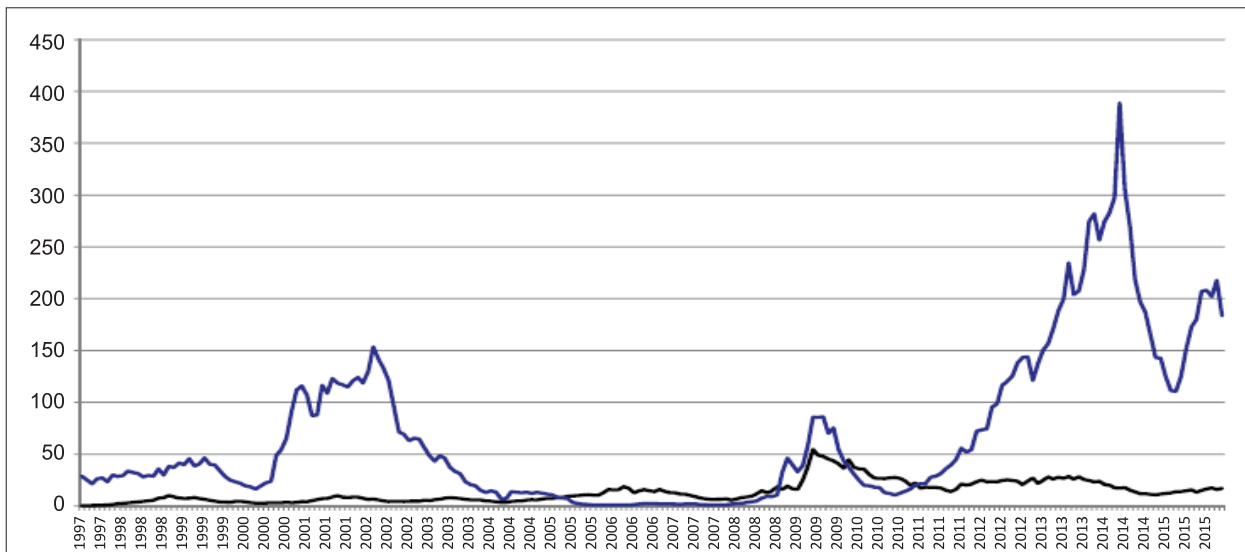
Let us look at country illiquidity around the world. Here, India is in a very bad shape. I did a study with my colleagues, professors Hameed, Kang and Zhang, on 45 countries around the world using data between 1990 and 2011. In general, as one expects, illiquidity in emerging markets is higher than illiquidity in developed markets. We found that illiquidity in India is among the highest in the world. This needs to be studied – why is that so? I will propose explanations, one based on discussions with some people that provided me with information, but I still do not have a complete answer as to why market liquidity in India is so bad. I will show you some graphs. Chart 5 shows the average illiquidity in India and the average illiquidity in the Asia-Pacific countries from late 1990s to 2015.

**Chart 5: Commonality in illiquidity in India and Asia Pacific**



Note that the two plots look about the same. There is only one problem. In India, the average illiquidity numbers are 100, 200, 400, and in the Asia-Pacific markets, the average illiquidity numbers are 10, 20, 40. The pattern of illiquidity over time is about the same, but the level of illiquidity in India is about 10 times the average of illiquidity in the Asia-Pacific region. This is the problem. Chart 6 shows the illiquidity in India compared with that in Malaysia. Malaysia does not have a huge liquid market or a large and liquid economy. Look at India and look at Malaysia. It does not look good for India in terms of level of illiquidity. It is much higher in India.

**Chart 6: Market illiquidity (ILLIQ) of India (higher line) vs. Malaysia**





Some of this may be technical. In India, you have something that does not exist in other countries: single stock futures. The price discovery is done to a great extent in single stock futures, not in all stocks, just in active stocks. So stockholders look at the movement of the price in the futures market and think: "If the stock futures price has risen by 1%, the stock price should also go up by 1%". This is because the process price discovery is done in the futures market. So what you have is that the price moves with relatively little stock volume. I measure liquidity by measuring the change in price relative to volume. If the volume is small, the whole ratio is high. In other words, to do a fair analysis for India, I should take the volume on the stock and the notional stock volume on the futures together. In Malaysia and other countries, you do not have single stock futures. Technically, it could be that I was exaggerating the problem of illiquidity in India.

Another problem in India, but it exists in other countries as well, is of high insider holding. Because of the ownership structure, public float in many stocks is very small. In my research I found that for a company of a given size, if the float rises, the liquidity rises. There is no question about it. Is it so that the only thing that investors care about is the return and risk? No, they care also about liquidity, which is enabled by a larger float. If there is very small float, investors are willing to pay a lower price or demand higher return and thus the cost of capital of the company increases. The promoters are so obsessed with control, they forget this and pay for control in terms of greater price discount or a higher cost of capital.

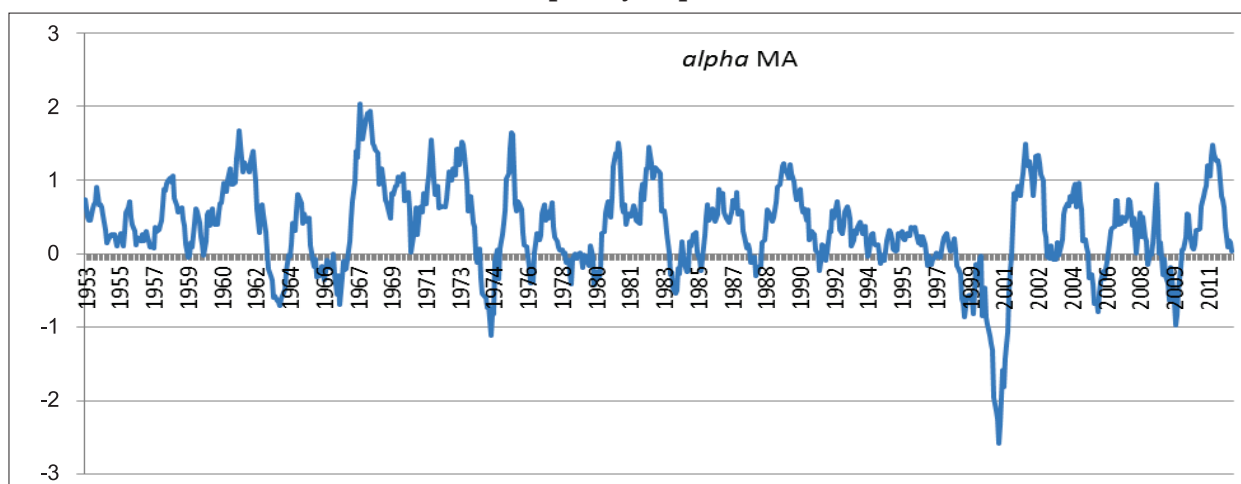
I had discussions with market professionals here in India. They told me something that really surprised me. I quote a Professor of Finance in an university which I visited before I came here. She tells me that she has a portfolio of not-so-small companies and mid-size companies which are profitable and there is no problem with the companies, they are doing well. I said, "How do you trade the stocks?" She said, "I cannot sell them." I said, "What does it mean? You probably have a broker that enables you to trade them online". She said, "I will tell you how it works. I go to my broker's web site, I say that I want to sell the stock. It asks me whether I want to do it on NSE or BSE. I say, for example, the NSE. I go to the NSE site, there are no quotes... nobody is willing to buy the stock." I said, "It cannot be. In the US in every stock you have quotes." She said, "No, for hundreds of companies, consistently, there is no market". I do not understand this. In the US, for example in the New York Stock Exchange, historically, we used to have specialists whose obligation was market making, they always had to post bid and ask prices. The specialists have disappeared. In NASDAQ, you had designated market makers. They have also disappeared. Who is making the market in the US? You and me who place limit orders and professional firms whose only business is to place buy and sell limit orders. Yes, if the stock is illiquid, if it trades less frequently, the bid-ask spread is high. If it trades more frequently, the bid ask spread is narrow but it is hard to think of a situation that I want to sell a stock in the US, even a small stock, not to mention mid-size stocks, and there is no quote! But this apparently happens in India. So I ask: Why is that the case?

Please understand, I repeat it again and again, it is not a question of the convenience of the traders, it is the question of the growth of the economy, the cost of capital that companies face. If the stock

market functions more efficiently and if there is always a market where investors can trade, if there is liquidity, then companies will be able to raise capital more easily at higher prices and invest more. I will talk later about some things that can be done. Maybe India should adopt the rule that was adopted in France which allowed companies to designate a market maker to make market in their own stock. There was a problem because the company can tell the market maker to manipulate the stock price. But there are regulations to deal with it. French investors are not different from Indian investors and manipulators are there and here. It was dealt with. So I think some of these regulations can be copied here and companies can be given the option to retain a market maker and provide the capital, so that the market maker will make market in their stock. But this would help only if it is a mid-size company, it will not help small companies as they would not have the resources to retain the market maker. Something has to be done and this has to be studied. Mid-size and small firms are the engines of growth. It is important to improve the liquidity of their stock.

Until now, I have talked about the situation in India in terms of commonality, the movement together of liquidity, in terms of the level of liquidity. Now, I am going to talk about India in the context of the other countries in terms of the price of liquidity, i.e., the premium that investors require for liquidity. I have shown that higher transaction costs lead to higher required return (Chart 1). I then studied the return-liquidity relation across 45 countries. I took the stocks in each country, in each month I put them into five buckets according to their illiquidity: high illiquidity (top bucket, the most illiquid stocks), low illiquidity (bottom bucket, the most liquid stocks). I then ask: What is the difference in average returns between the top bucket and the bottom bucket of stocks, i.e., between the most illiquid and the most liquid stocks? I have illiquid minus liquid (IML) which is the difference in returns between the portfolio of illiquid stocks in the top bucket and the portfolio of liquid stocks in the bottom bucket. Google, IBM and Microsoft will be there in the bottom bucket and there will be the illiquid stocks in the top bucket. What I found is that after controlling for common risks of growth, value, market, size – the common factors that you all know about – the alpha (proxy for excess returns) of the IML portfolio was 4% per annum on average in the United States. This is the price of illiquidity on average. Chart 7 plots the IML over the period 1953 to 2011 in the US.

**Chart 7: Price of liquidity (alpha) in US, 1953-2011**



We observe that the IML is usually in positive territory. If you buy the illiquid stocks and sell the liquid stocks, you earn a positive risk-adjusted average return. What about the big negative spike? What happened here? This occurred during the burst of the dot-com bubble. The dot-com stocks were illiquid and they all crashed.

We find that in general, the IML average return is much higher in emerging markets than it is in developed markets. That is, the price of liquidity is higher in emerging markets. India, again, stood out. The average IML – the return premium for illiquid-minus-liquid stocks – was the highest in India. Not only is the level of illiquidity high in India, the price of illiquidity is high too.

Some regulatory changes and changes in trading can improve liquidity. Consider, for example, trading in corporate bonds that is done in the U.S. over the counter, without a central market place. In 2002, the TRACE system was established by which all trades had to be reported to a central place. This improved transparency: When I call my broker to make a trade I know the price of the recent transaction, and dealers too have this information. Consequently, bond liquidity improved. Because the yield on bonds is higher for illiquid bonds, this lowered the corporate cost of borrowing. Thus, this simple central bulletin board of transaction increased the liquidity of the bonds and lowered the cost of borrowing. Here you can see how an improvement in the financial market can help companies raise capital at lower cost.

I have a recent paper with Viral Acharya and Sreedhar Bharath on the pricing of liquidity in the corporate bond market that shows that the pricing of liquidity in the bond market varies over time, depending on market conditions. I told you that liquidity affects corporate bond yields. We found that in good times, people forget about liquidity and they do not price it. In bad times, in times of financial distress, they become concerned about liquidity and they price it very highly and very significantly. In times of adverse market conditions, bond prices react strongly to liquidity shocks and then there is a flight to liquidity. Investors dump the junk bonds and switch to investment grade bonds which are more liquid. The conclusion is that the cost of liquidity is not constant, it varies according to the state of the economy.

In summary, research teaches us that higher liquidity leads to lower cost of capital. Government and corporations should strive to improve liquidity in order to reduce the cost of capital for corporates, which will help economic growth. The question is how? One way would be to improve the securities market, make the securities market more efficient. I do not know enough about NSE and BSE but maybe there could be something done within the trading mechanism to improve the market. I will give you a simple example: Many markets around the world, including the NYSE, opened with an auction transaction before proceeding with continuous trading. Then, policy makers understood that having the market closing the trading day with an auction transaction improves its efficiency. In Tokyo, there is also an auction in the middle of the day. An auction enables to collect a large quantity of orders that cross at a single price without having to pay the bid-ask spread. So you can see that an improvement in the trading mechanism can improve the efficiency and liquidity of the market. Other examples of means to improve liquidity are better disclosure of trading information (I mentioned before the “TRACE” system), and decimalization in the US which reduced the

minimum price change or tick from 12.5 cents to one cent, thus lowering the trading costs. I will give you a simple example of what was done in India by SEBI. In 2010, SEBI lowered the minimum trading unit on futures. The result of that was entry of retail investors who do not have enough money to buy large blocks but can buy small blocks. It is a step towards improving liquidity of the stocks. In Japan too, lowering the minimum trading unit on stocks facilitated entry of retail investors and improved stock liquidity. The companies in Japan that announced a reduction in their minimum trading unit experienced an increase in price. It is the same company, the same business, the same risk but more liquidity led to higher value. One can increase the value of the company without making any effort to increase profitability, just by making the stock more liquid. There are other things that companies can do. For example, have fewer bond issues that are larger instead of having many small bond issues. This improves liquidity. Similarly, increase the float of the stock – I discussed it earlier. Reduce insider trading, I do not know the extent of this in India. Surely, greater likelihood of insider trading makes the bid-ask spread wider, increasing transaction costs and reducing liquidity.

Bottom line is that liquidity matters and it is important for prices and returns. Governments and organizations should do their utmost to improve the liquidity of stocks and bonds because this helps the real economy, makes it easier for companies to raise money and to get more money for any given profits that they have, like higher price at the FPO, which means they can raise more capital which means they have more resources to invest.

Thank you very much. If you have questions, I will be happy to answer.

**Participant:** Will you consider the fact that India has an underdeveloped debt market when you compare it with Malaysia? Malaysia has a very safe debt market in the sense that their bond markets are far more developed than India, and what you are saying is absolutely true, but one of the reasons could be that the debt market in India is very shallow compared to the rest of the world?

**Yakov Amihud:** The data I presented was for stocks, not for bonds. So the question is why for stocks in India the average illiquidity is 10 times that of Asia Pacific area and even higher than a country like Malaysia. Only in Pakistan I found that the illiquidity is higher. Malaysia having a more liquid bond market is something that can be copied.

**Participant:** In Indian market you have quite a large universe, there are not many sponsored trades. If we measure liquidity of the top 500 stocks, my guess is that will dramatically make India higher on the list.

**Yakov Amihud:** Not sure. We did not restrict ourselves, but we evaluated the illiquidity by excluding stocks during the window of three months that did not have a minimum of 50 trading days. Thus, we excluded a large part of the Indian market from our average statistics. From those which remain in the universe which was a large number, we evaluated the liquidity, even then liquidity

in India was low. Importantly, the values are weighted by the market capitalization of the stock. So automatically, larger stocks have a greater weight and affect the results much more than smaller stocks.

**Participant:** One of the reasons is because delisting of infrequently traded stocks does not happen unlike in other markets.

**Yakov Amihud:** I understand. I do not know enough about the Indian market, but there is some red light there. It needs to be studied further to find out what is the problem and what can be done to solve it. That is all I can say.

**Participant:** Has there been any study on regulatory enforcement of free float, for example, in India it is 25%. So if the regulator says that the free float has to be x% will it improve liquidity? What is the US experience?

**Yakov Amihud:** I am not sure that in the US there is a restriction on the free float, but it naturally happens that the float is relatively large. The US and UK are the two countries with the largest float relative to the value of the companies, Canada too. In the rest of the world you have large ownership blocks and smaller free float. But in India in some cases it is extreme. In some conglomerates, one firm in the conglomerate holds stock in another firm in the conglomerate. Then, even if the float is seemingly high, it is effectively small and the liquidity is low.

**Participant:** But there is no study which has compared the regulatory changes of free float on liquidity?

**Yakov Amihud:** I myself did research on that. I will not get into details. I found that when companies increase their float because of an exogenous event, their liquidity improved dramatically.

**Participant:** I had one question related to the point that you are making about the participation of retail investors in the market. It is actually very interesting to contrast the clientele in the developed markets versus emerging markets like India and China where retail investors are actually a larger percentage of the overall market compared to countries like US. So on the one hand you could think that it is good to have more participation of retail investors but the disadvantage is that adverse selection can increase because there is more information asymmetry if you believe that retail investors are not informed. You could also argue that maybe in some of these emerging markets, because there is weaker enforcement of insider trading laws and things which you also touched upon in your speech, will that actually help improve or reduce liquidity? So what are your thoughts about institutional ownership versus retail ownership and how that affects liquidity?

- Yakov Amihud:** We are getting a little technical. There is a paper by Kyle which shows that liquidity improves if there is significant a mount of uninformed trading for liquidity reasons; for example, I want to buy a car, so I sell stocks for \$10,000 to raise the money to buy the car. Note that I do not sell this stock because I have information. The more people are like me, the more liquid the stock is and the consequences follow. So if you facilitate the entry of people who trade the stock for liquidity reasons and not for information reasons, you make the stock more liquid. This is the rationale in reducing the minimum block size of the futures trade.
- Participant:** It is not clear that retail investors are uninformed and trade for liquidity reasons.
- Yakov Amihud:** Maybe, but I think this is the evidence in general.
- Participant:** I have a question regarding the French system where you mentioned you have market makers. For any given stock, is there a monopoly market marker?
- Yakov Amihud:** No. Let me explain. In the United States, there is a lot of market making activity taking place, but it is not the official market making. For example, I can appoint myself to be the market maker in a stock by putting limit orders to buy and sell, but I can withdraw from doing that. Now, if the company designates a market maker, it is not a monopoly, others can still participate and compete with their limit orders, but he has the obligation to be there all the time and post buy and sell quotes or limit orders. So whenever a trader comes to the market to trade, he will have a counter party to trade with. The Finance Professor told me that here you come to the market and there is nobody on the other side who wants to buy or sell. The market maker always has to buy, always has to sell but anybody else can do it as well. If the company observes that there is enough activity in the stock, they will stop designating the market makers, so we do not need them anymore. But the company may need the market maker to be there while nobody else is stepping in.
- Participant:** You mentioned that the “French” system is prone to corruption and manipulation?
- Yakov Amihud:** Not in general. Of course there is a problem of potential price manipulation. A company that designates a person to make market in the stock could tell the market maker: “When people sell, you buy, you do not let the price fall, we will give you enough capital to do that. Next week, we need the price to be at a certain level. We the company will take care of your losses later.” This is a

problem. In general, a market maker is supposed to smooth trading, not lean against the wind. He is supposed to end flat in terms of the position held, not to accumulate large inventory in the long or short side. The French regulator dealt with this problem and you can see how they did it, you can copy it if necessary. There are research papers showing beneficial effect of designation of a market maker by French companies on stock liquidity. The French regulation is intended to reduce the price manipulation that I described.

**Participant:** Can market makers be appointed by the regulators?

**Yakov Amihud:** You could do that but I do not know. As I said, in the New York Stock Exchange, in return for the obligation to provide market, the specialist had some privileges and market power in some aspects of trading. Now, the market share of the specialists is disappearing because you have electronic trading. The question is whether the market maker will have the capital to support his activity? When he is designated by the firm, the firm helps in providing capital.

**Participant:** What is the magnitude of the effect of the transaction cost on stock returns in your paper and in the Acharya and Pedersen paper?

**Yakov Amihud:** They estimated their model over a different period than I estimated. So you cannot compare. As I mentioned before, in the paper that I have with Viral, we show that the cost of illiquidity varies over time and as the state of the economy changes. So the premium for liquidity does change over time, it is not constant. In addition, Acharya and Pedersen estimated the risk premium due to illiquidity and it too does not remain constant. To illustrate, on average, in the last 100-years, the return on the market, in excess of the return on treasury bills was 6%. But sometimes it was higher and there were periods of even 10-years with negative excess market return, meaning that the return on the market was lower than the return on treasury yield. This does not say that on average you do not have a risk premium. It just says that the realized premium is negative. It is the same with the illiquidity premium. On average it is positive, but there are periods when its realization is negative.

**Participant:** Is there any stock with perfect liquidity in reality?

**Yakov Amihud:** I do not know about perfect, but I think that in Google, Facebook or AT&T, you can download a huge quantity of stock without significantly moving the price. This means converging to perfect liquidity. High frequency traders are attracted to stocks with such high liquidity, they do not trade small stocks.

- Participant:** I just wanted to tie in with what other people have asked specifically about India. I think you went over some reasons as to why India might have a lot of illiquidity because of price discovery in the futures market. Is that all?
- Yakov Amihud:** The price discovery in the futures market applies only to the active stocks, but then there are hundreds of stocks with no futures trading. They too have little or no liquidity.
- Participant:** But you also said that the liquidity measure is value weighted, so I am guessing that is the reason why we find liquidity to be low in the Indian market. I wanted to tie in the same with the results from US, where we have seen from 1980 a downward trend in illiquidity.
- Yakov Amihud:** The US is amongst the most liquid markets in the world. There are other markets which are equally liquid. Just as the futures in India, in the US you have single stock options. Price discovery is often done in the options market. So you have the same situation in the US as you have in India. Yet, because the US market is so liquid, the single-stock options might play a smaller effect on stock liquidity than in India which has is a less liquid market. In other countries in the world, it is rare to have single stock options and you do not have single stock futures. Therefore, the price discovery in other countries is taking place in the stocks themselves.
- Participant:** My question was as to what can be learnt from the US model recognizing the fact that it has had a long history and a lot of financial innovation as well?
- Yakov Amihud:** I showed you for the US market, how bad it was, or how high illiquid it was years ago and how nice it is today. So India has a hope to be there in terms of liquidity.
- Participant:** Are there were certain points you could take away from the US story and apply to India now?
- Yakov Amihud:** I do not know enough about the Indian market to answer that. I think the government should have a committee or something like that to study this issue because it is very important.
- Participant:** I have a question on the aspect of the commonality of liquidity. Is there any positive correlation between the increased commonality of liquidity in the developed markets going with the trend that the traditional market makers like the banks and the large financial institutions are being driven out from the market making role and that part is entirely being taken away by the HFTs and the machines. So we have these flash crashes which have increased?



- Yakov Amihud:** In the United States, I think that the expansion of index funds and exchange traded funds leads to greater commonality in liquidity. I do not think this is what you have in the emerging markets, where we generally observe higher commonality. And I do not think that HFT is the cause. Even if high frequency traders were driven out, the question is why the liquidity commonality is higher in India than in other countries? When it rains, it falls on everybody, everybody becomes wet. Why is it different in India than in other countries?
- Participant:** Yes, but in the graphs which you showed, there was an increase in illiquidity possibly around the time when the HFT trading started to take off?
- Yakov Amihud:** It is more likely because of the crisis. The whole market became less liquid. But otherwise you see variations over time and from casual observation I did not see a trend variation in the gap between them.
- Participant:** There has been an implementation of securities transaction tax (STT) in India and there has been this recent hue and cry about this driving down the volumes of the securities market. India is one of the only countries where STT is imposed on transactions. How important do you think is this factor in driving down the volumes and driving up the illiquidity?
- Yakov Amihud:** I think it is an important factor. I do not know the size of the transaction tax in India but in general it hurts liquidity. In United States, they wanted to impose transaction tax a number of times. I wrote a paper on the effect of a transaction tax in the United States. I made an estimation of that and it did not look pretty. I think you mentioned the size of transaction tax in India is small. Maybe it is sufficiently small compared to the liquidity problems that I have described here. But it does not help.
- Participant:** At any point in time, higher liquidity is a policy goal, right? Look at the interest rate for example. Now the policy makers change interest rates up and down depending on which part of business cycle we are in. So the same should hold for liquidity in the equity market. To the best of my knowledge, the only policy instrument that is available for regulators is to have a transaction tax. Has there been any jurisdiction where the transaction tax has been used to raise the cost of capital for a definite period of time?
- Yakov Amihud:** None of the cases that I know of has transaction tax with the objective of raising the cost of capital. The objective was to raise money for the government. Usually the countries do that when they have a budget deficit. Sweden, for example, had it once when they had budget deficits and then trading fled out of Sweden and they abolished the tax. In the US, President

George Bush when he went for election in 1988 said, “Read my lips, no new taxes.” He got elected. Then he saw that there is a huge hole in the budget that he has to fill in. But he had said, “Read my lips, no new taxes”. So there was a suggestion to impose a transaction tax of 0.25%. In US, you have tax on tobacco and on alcohol in order to reduce their consumption and everybody accepts that this is a good thing. Some people had the same view about trading, considering it a bad thing. Instead of doing something productive like ploughing the fields, raising vegetables, working in factories, people waste time in trading. Instead of talented engineers creating something useful, they waste their time in trading. People say, we have to reduce this. I am quoting James Tobin, who earned a Nobel Prize in Economics. I am not making it up. I was with him in his session. I argued against imposing a transaction tax. He said, “Productive people, smart people waste their time in trading. We have to pour sand in the wheels to make them stop trading so much. How do we do it? We raise the transaction tax.” Even Lawrence Summers, a well known Economics professor who was at some time Secretary of the Treasury, said that. I have a different opinion. So, as you say, the objective of the securities transaction tax is not to raise the cost of capital, the reason is to raise money because there is a hole in the budget which we have to plug, or in order to inhibit an activity that looks wasteful.

**Participant:**

I see your analysis and I see that India has one of the most illiquid markets in the world. On the other hand, the Indian exchanges also have one of the highest number of trades in the world...top-3, top-4. I am just wondering, how big was the sample of stocks that you considered for your analysis?

**Yakov Amihud:**

We started with all stocks in the Indian exchanges. We filter out some stocks for the sample we use in the paper. We estimated illiquidity over a moving window of three months. We eliminated stocks that had less than 50-trading days in the estimation period of three months, which has approximately 70-trading days. We also filtered out stocks on the basis of their minimum price, I think it was \$1. We still had over 1,000 Indian stocks in our sample.

**Participant:**

My submission would be that probably liquidity in India is concentrated in the top-50, top-70.

**Yakov Amihud:**

That is true. To answer your question before, the overall market illiquidity number that I calculated was a value-weighted average, so larger stocks played a prominent role in this average. In spite of that, average liquidity in India was low.

**Viral Acharya:**

Thank you, Yakov. That was a great illuminating talk.

# Notes

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