

## Narayana Kocherlakota: Re-thinking leverage subsidies

Speech by Mr Narayana Kocherlakota, President of the Federal Reserve Bank of Minneapolis, at the Tri-State Bankers Summit, Big Sky, Montana, 27 June 2011.

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*I thank Doug Clement, Ron Feldman, Dave Fettig, Terry Fitzgerald and Dick Todd for comments.*

Thank you very much for that kind introduction. I've been president of the Minneapolis Fed for nearly two years now. I'm often asked what I enjoy about my job. There are many possible answers, but one is certainly that it offers me a chance to visit Montana more than I would otherwise. This is definitely one of the most beautiful states in the Union.

I'm also delighted to have this opportunity to talk to this group in particular. You are all very aware that our country has gone through a difficult financial crisis and that we are still only beginning to make our way back from its impact. There have been many changes in financial regulation designed to reduce the risk of a recurrence of such a traumatic event. My goal today is to describe changes in the U.S. tax code that I believe will make such a crisis less likely to occur. And before going further, let me note that these remarks reflect my views, not necessarily those of others in the Federal Reserve System or on the Federal Open Market Committee.

My starting point is the Dodd-Frank Act. It's less than a year old, having been passed in July of 2010. But, even in that short time, it already seems clear that it is the single most important piece of legislation related to the U.S. financial system to be passed in at least 75 years – and arguably ever. Its first nine words describe the purpose of the 848 pages that follow as being “to promote the financial stability of the United States.” The Act envisions the Federal Reserve System as being integral to the fulfillment of this mission. In particular, the Fed is designated the supervisor and regulator of all systemically important financial institutions – including those that are not banks.

The Dodd-Frank Act makes significant headway toward the goal of promoting U.S. financial stability, but as the Act itself indicates, there is more to be done.<sup>1</sup> And given the Federal Reserve System's part in this mission, I believe it is incumbent on Fed leaders to point out ways in which Congress could potentially act to make the financial system even more stable. It is with this in mind that I'd like to offer the following contributions.

Of course, many Fed leaders have made these kinds of suggestions in the past, and I'm sure that they will do so in the future. In Minneapolis, my predecessor, Gary Stern, and my current head of supervision, Ron Feldman, did their part by writing a book in 2004 called *Too Big to Fail*. The book identified a host of incentives within the U.S. financial system that encouraged large banks to take on risks that could prove destabilizing. Their book has proven to be distressingly prescient. I will follow in Stern and Feldman's footsteps by focusing on ways in which our current tax system provides incentives for financial institutions to make destabilizing choices.

My focus today is on the use of debt as a form of financing – that is to say – on leverage. I will be making three points.

- First, the sharp and largely unanticipated fall in U.S. residential land prices after 2006 was the main cause of the financial crisis of 2007-09.

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<sup>1</sup> For example, section 1074 of the Act mandates that the secretary of the Treasury submit recommendations to Congress about possible changes to government-sponsored housing finance. Earlier this year, the secretary fulfilled that mandate.

- Second, household and financial institution leverage exacerbate the sensitivity of the financial system to declines in land prices and so reduce financial stability.
- Third, the U.S. tax system promotes leverage on the part of households and financial institutions.

My conclusion is that Congress should modify the U.S. tax system to reduce the incentives for destabilizing activities by banks and households.

As I have already indicated, my arguments will hinge throughout on what economists call *incentive effects*. One of my big surprises since taking this job is that there is a lot more scepticism among policymakers about the relevance of incentive effects than I would have thought. Basically, my point today about tax incentives is that if the tax system reduces the cost of one activity versus another, then people will do more of the first. I can restate this idea even more prosaically by saying that if apples fall in price relative to bananas, people will buy more apples, and fewer bananas, than previously. This proposition about choices is entirely obvious if one is willing to assume – as I generally do – that people behave in a purposive, goal-oriented way.

But this assumption of purposive behavior is sometimes controversial. For that reason, it's worth emphasizing that the power of incentives does not rely on this assumption. By way of illustration, suppose that, in my apples and bananas example, people simply divide their available money randomly between apples and bananas. Gary Becker, a Nobel laureate at the University of Chicago, showed that, even with this seemingly irrational behavior, incentives still work their magic.<sup>2</sup> Here's why: Say you have \$10. Now split that \$10 into an amount you want to spend on apples and an amount you want to spend on bananas. However you choose to split the \$10, it will end up buying more apples and fewer bananas if the apple price falls relative to the banana price. Becker's point is that incentives are shaped by scarcity – here, the scarcity of money to spend on apples and bananas – not rationality. His message underscores the enormous power of incentive effects – and why they need to be considered in any policy discussion.

Let me now move on to talk about the behavior of land prices over the past 40 years. Right from the start, I'll emphasize that I'm talking about *land* prices, not *housing* prices. A house is actually a bundle of two goods: a structure and the land underneath that structure. The price of the structure itself is largely dictated by the cost of materials and the cost of labor needed to build it. The prices of residential structures rose relatively little over the decade 1996-2006 and have fallen relatively little since 2006. Hence, the evolution of the price of housing over the past 15 years is really driven by movements in the price of residential land.

The data that I'll use are maintained by the Lincoln Institute of Land Policy, together with the University of Wisconsin School of Business. They are constructed following a methodology originally due to Morris Davis of the University of Wisconsin and Jonathan Heathcote, a researcher at the Minneapolis Fed.<sup>3</sup> These data reveal that U.S. residential land prices grew at 2 percent per year from the fourth quarter of 1975 to the first quarter of 1996 in real terms (that is, corrected for inflation). At that point, the rate of growth accelerated sharply. Real land prices grew at 11 percent per year from the first quarter of 1996 to the first quarter of 2001. Monetary policy is often blamed for what's now termed a nationwide *bubble* in housing prices, so it's worth noting that this original acceleration in prices took place during a period of relatively tight monetary policy. It also began before the passage of the Gramm-Leach-Bliley Act, which officially repealed the Glass-Steagall Act's separation of commercial and

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<sup>2</sup> See Becker (1962).

<sup>3</sup> See Davis and Heathcote (2007).

investment banking.<sup>4</sup> Prices did accelerate still further in the early 2000s, growing in real terms at a rate of 17 percent per year from 2001 to 2006.

By early 2006, the price of U.S. residential land had risen over 250 percent in a decade. Firms and people around the world held a wide array of financial assets that were ultimately backed by U.S. land – mortgage-backed securities, for example, or any asset backed by them – and these investors viewed the assets as being largely free of risk. They may have understood that a fall in the value of U.S. land would impose large losses on them. However, they put low odds on such a decline taking place. Rather, they seemed to believe that U.S. land prices would continue to rise at a steady clip as they had over the past decade.

By the second half of 2007, that belief began to unravel in the face of incoming data. People were starting to learn the hard way that U.S. land was a risky investment. Now the only question was how risky. The uncertainty about the answer to this question planted the seeds for a global financial panic.

What do I mean by the term *financial panic*? Financial panics are events that blur the line between liquidity and solvency. A firm is solvent if its revenues (in a discounted present value sense) exceed its expenditures. A firm is liquid if it is able to raise enough funds – either by borrowing or by selling assets – to pay its current costs. In a well-functioning financial market, solvent firms are typically liquid, because they are able to borrow against their future profits. In contrast, in a financial panic, lenders feel unable to assess the future profits and/or collateral of borrowers. Borrowing becomes highly constrained, and even highly solvent firms may become illiquid.

During the mid-2000s, many forms of collateral around the world were either implicitly or explicitly backed by U.S. residential land. As I've described, beginning in mid-2007, it became clear that this asset had more risk than financial markets had originally appreciated. It was not clear, though, how much additional risk was involved. As a result, financial markets became increasingly uncertain about how to evaluate assets backed by U.S. land. That uncertainty translated into uncertainty about the ultimate solvency of institutions holding those assets – and the ultimate solvency of any of those institutions' creditors and their creditors and so on. Spreads in credit markets between Treasury returns and other bond returns began to widen – at first slightly and then alarmingly. The financial crisis of 2007-09 was under way.

Thus far, I've described how the fall in land prices that began in 2006 triggered the recent global financial crisis. I now move to my second point: Higher amounts of household and financial institution leverage mean that the financial system is more susceptible to these kinds of shocks.

To understand my argument, it is best to consider an example. Suppose a household buys a house worth \$200,000. The household puts down \$20,000 and borrows \$180,000 from a bank through a nonrecourse mortgage – meaning that in the event of default, the bank has access only to the collateral: the house itself. The bank is a big one – it has \$2 trillion worth of assets, \$1 trillion of those assets consisting of mortgages (either through direct ownership or through ownership of mortgage-backed securities). The bank has \$200 billion worth of outstanding equity – so its debt-to-equity ratio is 9-to-1. Here, I should be clear that my value references are all market-determined values.

Now, suppose that land prices fall, and so houses around the United States fall suddenly and permanently in value by 30 percent. For the house in my example, that means its value has fallen from \$200,000 down to \$140,000. The household is now significantly underwater because it owes \$180,000 on a house worth \$140,000. If the household loses its sources of

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4 My dating of the onset of the acceleration in land prices (1996) is similar to Robert Shiller's dating of the beginning of the housing bubble (1997). See Shiller (2011).

income – as might well be true if houses around the country are worth 30 percent less – then it will have no choice but to default on the loan (through a short sale or a foreclosure). Even if the household keeps its sources of income, it's now in a position where so-called strategic default on a nonrecourse mortgage is financially rewarding. The bottom line is that this mortgage once worth \$180,000 is now worth much less, perhaps no more than \$140,000. In other words, the 30 percent fall in the value of the underlying asset has led to as much as a 22 percent fall in the value of the mortgage itself.

This has severe implications for the bank, of course. Recall that \$1 trillion of the bank's assets took the form of these kinds of mortgages. Given the possible 22 percent drop on its mortgage values, the bank's assets have fallen by as much as \$220 billion, depending on the default choices of households. Its equity, originally worth \$200 billion, will fall greatly in value – possibly to zero. It is a reasonable conjecture that it will not be able to raise new funds in debt or equity markets.

These troubles for a \$2 trillion institution will almost automatically pose a systemic risk to the U.S. financial system. But I don't view size as essential to my story. I could have told exactly the same story if I had described 200 banks that each had \$10 billion in assets and \$5 billion of these kinds of mortgages.

While size isn't critical, there are three key variables that do matter in this little story. The first is household leverage. Remember that the house fell in value by \$60,000. Suppose that the household had made a more traditional down payment of 20 percent rather than the 10 percent figure I used initially. The fall in home value would still leave the household underwater, but the mortgage value would have fallen by only \$20,000, not \$40,000. The bank's assets would have fallen by at most \$120 billion. It would not have risked insolvency.

The second relevant variable is bank asset concentration. In my example, the bank had half of its assets directly tied to U.S. residential land. If it had had only 30 percent of its assets in mortgages, then its losses could not have led to insolvency.

Finally – and perhaps most obviously – bank leverage matters. The bank in my example had a 9-to-1 debt-to-equity ratio. Had its debt-to-equity ratio been 4-to-1 instead, its equity of \$400 billion would have outweighed its losses of \$220 billion, and it would not have become insolvent.

Thus, household leverage and financial institution leverage render the financial sector more sensitive to downward movements in the price of land. This kind of sensitivity decreases the stability of the financial system and so increases the potential for the kind of crisis we endured in 2007-09.

On to my final point: The U.S. tax system encourages household leverage and bank leverage, even though both are potentially destabilizing. Let's start with household leverage. Think about a family that wants to buy a \$300,000 house. It has sufficient financial assets in stocks and bonds to cover half of the cost. Will it use these assets to fund half of the house price and take out a mortgage of \$150,000? Or will it take a more levered position: Make a \$60,000 down payment, and borrow the remaining \$240,000?

It's not possible to answer this question with certainty for any given household. But we know that the tax system provides an extra incentive for any given household to take out the larger loan. Under the current tax code, the household can deduct from its gross income any interest payments it makes on the extra \$90,000 of mortgage debt. This means that the household's after-tax interest rate on its mortgage is lower than it would otherwise be, making mortgage financing more attractive. It is in this sense that the mortgage interest tax deduction undercuts financial stability.

In making this argument, I should note that only about one-third of U.S. tax returns itemize deductions and are therefore affected by the tax code's leverage inducement. However, over 60 percent of those households that make over \$50,000 do itemize, as do over three-quarters of those households that make over \$75,000.<sup>5</sup> And—contrary to some misconceptions – the mortgages of these relatively upper-income households are certainly relevant as we think about the impact of the fall in land prices. According to a recent online survey, just over 20 percent of mortgage-holding adults with incomes over \$50,000 – and a similar fraction of those with incomes over \$75,000—believe that they are “underwater” on those mortgages.<sup>6</sup> This fraction is pretty much the same as the percentage for all households.<sup>7</sup>

Next, I turn to financial institution leverage. Consider a financial institution that needs to raise an extra million dollars. It can do so by issuing debt or attracting deposits that pay 1 percent interest. Under this approach, the borrower owes \$10,000 of interest to its creditors next year. Alternatively, it can raise the million dollars by issuing the same amount of equity. Abstracting from risk considerations, the equity holders will expect to be compensated by receiving \$10,000 of dividend payments every year.

Which method of finance—debt or equity – will the financial institution choose? Taxes play a role in this decision. If it chooses the debt route, the bank can deduct its interest payments from its earnings before paying any corporate income taxes. If it chooses the equity route, then the financial institution must make its dividend payments from profits that are left after it pays corporate income taxes. Debt repayments are cheaper. In this way, the tax code includes what is known as a corporate debt tax shield that encourages higher leverage for financial institutions.

Through the previous discussion, I hope that I have convinced you of three main points. First, the financial system meltdown of 2007-09 was caused by the unexpectedly large decline in U.S. residential land prices. Second, higher amounts of household and financial institution leverage leave the financial system more vulnerable to these kinds of shocks. Finally, the U.S. tax system encourages leverage by providing incentives for households to take on more mortgage debt and financial institutions to finance through debt.

What policy conclusions should we draw from these points? As an economist, I have a full appreciation that every policy choice has both benefits and costs. Policymakers may well disagree about how to weigh those benefits and costs. However, I would say that the experience of the past few years has demonstrated how challenging it is to safeguard the financial system against systemic risk and how costly it can be if we fail to do so. Given this fresh experience, and my earlier remarks, I would assess the costs of providing tax incentives for leverage to be higher today than such an assessment in, say, 2006.

With that in mind, I believe that my analysis suggests two changes in the tax code. The first change is to lower the fraction of mortgage interest that households can deduct from their taxable incomes. The second is to lower the fraction of their interest payments that corporations<sup>8</sup> are allowed to deduct from their taxable incomes. Of course, it would be appropriate and important to adjust the timing of these changes in light of prevailing macroeconomic conditions.

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5 See Internal Revenue Service (2010).

6 See Harris Interactive Poll (2011).

7 See CoreLogic (2011).

<sup>8</sup> I have argued that financial institution leverage undercuts financial stability. However, in practice, I believe that it would be administratively challenging to have different tax treatments for given corporations based on whether they are “financial” or “nonfinancial.” Hence, my suggested policy proposal applies to all corporate debt.

I regard these two proposals for the tax code as being entirely natural ones to consider in light of the recent financial crisis. But I would also encourage policymakers in the tax arena to ask broader questions about the mortgage interest and corporate interest tax deductions. What are the social benefits associated with these deductions? Can these social benefits be achieved using an approach that does not undercut the stability of the financial system? For example, suppose that a policymaker likes the mortgage interest deduction because he or she believes that it encourages home ownership. That policymaker could consider replacing the mortgage interest deduction with a tax credit that offsets part of a buyer's down payment toward a home purchase. Such a tax credit would encourage home ownership without simultaneously providing more incentives for households to accumulate more debt.

Similarly, a policymaker may like the corporate interest tax deduction because it stimulates business investment. That policymaker could consider replacing the corporate interest tax deduction with a lower corporate income tax rate. The lower corporate income tax rate would encourage business investment without simultaneously providing incentives for corporations to acquire leverage.

Let me wrap up. In a speech last October, Janet Yellen, the vice chair of the Board of Governors of the Federal Reserve System, gave a speech about the roots of the recent financial crisis.<sup>9</sup> As I have done today, she emphasized the critical role played by excessive household and financial institution leverage in generating the crisis. She described how the changes in supervision and regulation contained within the Dodd-Frank Act would put new and important brakes on these kinds of build-ups.

I agree with her completely about these benefits of the new supervisory and regulatory regime. But I also agree with her statement that "systemic risk surveillance will demand Herculean efforts by the regulatory agencies." In my view, this observation means that other elements of the policy environment need to be as supportive as possible of the regulatory agencies. It is for this reason that I believe that policymakers should be willing to reconsider the extent of leverage subsidies within the U.S. tax code.

That brings me to the end of my prepared remarks. I would be happy to take your questions on what I have said, or on other any matters. Thanks for listening.

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<sup>9</sup> See Yellen (2010).