

Monetary Policy and Incentives. Address by Raghuram G. Rajan, Economic Counselor and Director of Research, International Monetary Fund, at the Bank of Spain Conference on Central Banks in the 21st Century, June 8th 2006.ⁱ

In recent days, we have seen a retrenchment of investors from a broad range of risky assets, especially emerging market debt and equity. While there are ex-post facto explanations for each country as to why investors were on a selling spree, a graph of the stock market index run up from January 2004 to the peak in 2006 against the fall since that peak to date is a pretty significant straight line – the more markets went up, the more they fell. The most widely accepted explanation seems to be changing “risk aversion”. Investors were risk tolerant while pushing up markets, and suddenly became risk averse. Like most facile explanations in the markets, this one illuminates little. Why were investors so foolhardy then, and so scared now? What made them change?

I will argue in this talk that much of what is termed changes in “risk aversion” is likely to be changes in the structure of incentives and resulting behavior of investment managers -- by “investment manager” I mean managers of financial assets ranging from those running insurance companies to those running venture capital and hedge funds. A primary driver of these changes is likely to be a change in the stance of monetary policy. Monetary policy thus might have effects outside the traditional channels, though the behavioral channel will amplify traditional effects. I will discuss what all this might imply for policy making.

Examples of greater risk taking in a low interest environment

Let me start by offering two examples of why institutions may take more risk when interest rates are very low and reverse that when interest rates are high. The first, traditionally known as “risk shifting”, is well known. When an insurance company has promised premium

holders returns of 6 percent, while the typical matching long-term bond rate is 4 percent, it has no option if it thinks low interest rates are likely to persist, or if it worries about quarterly earnings, but to take on risk, either directly or through investments in alternative assets like hedge funds. All manner of risk premia are driven down by this search for yield and thus risk.

A second example is that of hedge funds themselves where a form of induced “risk shifting” can be seen. The typical compensation contract for a hedge fund manager is 2 percent of assets under management plus 20 percent of annual returns in excess of a minimum nominal return (often zero). When risk free returns are high, compensation is high even if the fund takes on little risk, while when risk free returns are low the fund may not even exceed the minimum return if it takes little risk. Thus low rates will increase fund manager incentives to take on risk. Furthermore, since the cost of borrowing can also be low at such times, fund managers can goose up returns by adding leverage. In doing so, they further add to risk

Alpha and Illiquidity Seeking

The two examples are a little different. In the first case, procyclicality of risk taking behavior is induced by the level of interest rates because of the nature of pre-contracted liabilities. In the second, procyclicality is induced by the nature of compensation. I want to explore the incentives induced by compensation more generally. To do this, I will first describe the very practical theory behind how investment managers are compensated.

The typical manager of financial assets generates returns based on the systematic risk he takes – the so called beta risk – and the value his abilities contribute to the investment process – his so called alpha. Shareholders in any asset management firm are unlikely to pay

the manager much for returns from beta risk – for example, if the shareholder wants exposure to large traded U.S. stocks, she can get the returns associated with that risk simply by investing in the Vanguard S&P 500 index fund, for which she pays a fraction of a percent in fees. What the shareholder will really pay for is if the manager beats the S&P 500 index regularly, that is, generates excess returns while not taking more risk. Indeed, hedge fund managers often claim to produce returns that are uncorrelated with the traditional market (the so-called market neutral strategies) so that all the returns they generate are excess returns or alpha, which deserve to be fully compensated.

In reality, there are only a few sources of alpha for investment managers. One comes from having truly special abilities in identifying undervalued financial assets – Warren Buffet certainly has these, but study after academic study shows that very few investment managers do, and certainly not in a way that can be predicted before the fact by ordinary investors.

A second source of alpha is from what one might call activism. This means using financial resources to create, or obtain control over, real assets and to use that control to change the payout obtained on the financial investment. A venture capitalist who converts an inventor, a garage, and an idea into a full fledged profitable and professionally managed corporation is creating alpha. A private equity fund that undertakes a hostile corporate takeover, cuts inefficiency, and improves profits is also creating alpha. So is a vulture investor who buys up defaulted emerging market debt and presses authorities through various legal devices to press the country to pay more.

A third source of alpha is financial entrepreneurship or engineering – investing in exotic financial securities that are not easily available to the ordinary investor, or creating securities or cash flow streams that appeal to particular investors or tastes. Of course, if

enough of these securities or streams are created, they cease to have scarcity or diversification value, and are valued like everything else. Thus this source of alpha depends on the manager constantly innovating and staying ahead of the competition.

Finally, alpha can also stem from liquidity provision. For instance, investment managers, having relatively easy access to finance, can hold illiquid or arbitrage positions to maturity: if a closed end fund is trading at a significant premium to the underlying market, they can short the fund, buy the underlying market, and hold the position till the premium eventually dissipates. What is important here is that the investment managers have the liquidity to hold till the arbitrage closes.

This discussion should suggest that alpha is quite hard to generate since most ways of doing so depend on the investment manager possessing unique abilities – to pick stock, identify weaknesses in management and remedy them, or undertake financial innovation. Unique ability is rare. How then do the masses of investment managers justify the faith reposed in them by masses of ordinary investors? The answer is probably liquidity provision, which is the activity that depends least on special managerial ability and could be termed the poor manager's [source of] alpha. But when the supply of liquidity is plentiful, many investment managers enter the business of liquidity provision. Even as they take ever more illiquid positions, they compete away the returns from doing so. The point is that extremely accommodative monetary policy, as well as a sense that policy will stay accommodative, engenders "illiquidity seeking" behavior, which has close parallels to risk seeking I spoke about earlier.

When Alpha is Hard to Generate.

Alpha is hard to generate, but ordinary investors seem to value managers who seem to have the ability to generate it. New investors are attracted by the high excess returns generated by a manager, and the promise (invariably disappointed, I should note) that it holds for future excess returns. And current investors, if dissatisfied, do take their money elsewhere although they often suffer from inertia in doing so. As an example from one class of investment managers, if you plot the flows into an average U.S. mutual fund as a function of the excess returns it generates, you will see, positive excess returns generate substantial inflows while negative returns generate much milder outflows. Investors thus think that managers who perform well this period will do so in the future. Since managerial compensation also varies with assets under management, overall, investment managers face a compensation structure that moves up very strongly with good performance or apparent alpha, and falls, albeit more mildly, with poor performance. In the jargon of economists, the compensation structure is convex in alpha.

So what is the manager with relatively limited ability to do when central banks flood the market with liquidity and the competition to generate alpha from liquidity provision makes it ever harder to generate more alpha? Put another way, as market inefficiencies are narrowed by the flood of money, what can managers do to earn their keep? As Grossman and Stiglitz have argued, the paradox of efficient markets is that they do not pay those who keep them efficient. In the real world, this might well lead to more agency problems.

One option is to hide risk – that is, pass off returns generated through taking on beta risk as alpha by hiding the extent of beta risk. Since additional risks will generally imply higher returns, managers may take risks that are typically not in their comparison benchmark (and hidden from investors) so as to generate the higher returns to distinguish themselves.

For example, a number of insurance companies and pension funds have entered the credit derivative market to sell guarantees against a company defaulting. Essentially, these investment managers collect premia in ordinary times from people buying the guarantees. With very small probability, however, the company will default, forcing the guarantor to pay out a large amount. The investment managers are thus selling disaster insurance or, equivalently, taking on “peso” or “tail” risks, which produce a positive return most of the time as compensation for a rare very negative return.ⁱⁱ These strategies have the appearance of producing very high alphas (high returns for low risk), so managers have an incentive to load up on them, especially when times are good and disaster looks remote.ⁱⁱⁱ Every once in a while, however, they will blow up. Since true performance can only be estimated over a long period, far exceeding the horizon set by the average manager’s incentives, managers will take these risks if they can.

One example of this behavior was observed in 1994, when a number of money market mutual funds in the United States came close to “breaking the buck” (going below a net asset value of \$1 per share, which is virtually unthinkable for an ostensibly riskless fund). Some money market funds had to be bailed out by their parent companies. The reason they came so close to disaster was because they had been employing risky derivatives strategies in order to goose up returns, and these strategies came unstuck in the tail event caused by the Federal Reserve raising interest rates quickly.

While managers may load up on hidden “tail risk” to look as if they are generating alpha, they are also likely to recognize that true alpha is hard to generate. Therefore, for the more observable investments or strategies for their portfolio, they are likely to be wary of being too different from their peers, because they insure themselves against relative

underperformance when they herd – after all, there is safety in numbers for who can be fired when everybody underperforms? In other words, even if they suspect financial assets are overvalued, they know their likely underperformance will be excused if everyone else is in the same boat.

Both the phenomenon of taking on tail risk and that of herding can reinforce each other during an asset price boom, when investment managers are willing to bear the low probability “tail” risk that asset prices will revert to fundamentals abruptly, and the knowledge that many of their peers are herding on this risk gives them comfort that they will not under perform significantly if boom turns to bust.

Monetary Policy and Incentives

Thus far, I have highlighted four types of behavior – risk shifting, illiquidity seeking, tail risk seeking, and herding among investment managers. My conjecture, which needs to be tested econometrically, is that all these behaviors are amplified when interest rates are low (especially following a period of high rates), liquidity supply is plentiful, and both conditions are expected to prevail for some time. In reduced form, this behavior will look like an increase in risk tolerance. Conversely, if monetary conditions are expected to tighten substantially, we should see a reversal in this behavior, which would be attributed to increased risk aversion. Of course, part of this behavior would be accentuated by the genuine uncertainty surrounding any turn in monetary policy. Preliminary analysis suggests simple proxies for the risk aversion of financial markets in the United States, such as the VIX index, do seem to be positively correlated with the level of short-term interest rates, as with broad measures for liquidity.^{iv} Moreover, the VIX explains a significant portion of the variation in emerging market debt spreads (see Kashiwase and Kodres (forthcoming)).

If verified empirically, however, this would suggest an additional “behavioral” channel for the transmission of monetary policy than the ones we are familiar with, the traditional money channel, the borrower balance sheet channel (Bernanke and Gertler (1995)), the bank lending channel (see, for example, Bernanke and Blinder (1988, 1992) or Kashyap and Stein (1997)), and the liquidity channel (Diamond and Rajan (2006)). I admit though that clever work would be needed to tell its effects apart from these other channels.

Nevertheless, from a policy perspective, this “behavioral” channel introduces new dimensions to thinking about monetary policy. For one, it could work entirely through institutions outside the banking system -- through finance companies, insurance companies, pension funds, hedge funds, and venture capitalists. Equally important, it could have wider effects than through credit. In particular, it will affect asset prices, and could thus also amplify existing channels like the balance sheet channel, with the riskiest and most illiquid financial assets or borrowers affected the most. Finally, because emerging markets and developing countries offer risky and illiquid assets, there will be substantial spillover of industrial country policies to these markets.

Let me conclude. If indeed there is a strong behavioral channel we need to think more about:

1) Do the anticipated dynamics of monetary policy matter? For instance, a period of prolonged low rates following a period of high rates may create particularly perverse incentives. On the other hand, rapid and sudden tightening following a prolonged period of accommodation may leave a number of participants stranded on a limb of illiquidity. How should this knowledge affect the conduct of policy and the molding of expectations?^y

2) Should industrial country policymakers take into account the substantial spillovers their policies may have on emerging markets and developing countries? What should emerging market policymakers do when faced with potentially volatile funds that are being “pushed” in because of investor risk tolerance?

3) Should the net for prudential supervision be expanded? What elements need to be brought to bear, if any, to curb immoderate behavior? Do we have tools to affect managerial incentives more directly? What do we have to learn to be able to use them effectively?

4) What happens if there is a crisis? Should liquidity be infused? How? And how does one limit future moral hazard stemming from the infusion?

I do not think we know the answers, but I do think we have to work to answer them. It may well be that monetary policy is best focused on maintaining domestic price stability narrowly defined over a medium term horizon, and not on anything else. But it is important that we take into account the many changes that have affected the financial world in arriving at this conclusion and not simply leave it to theology. Thank you.

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ⁱ The following reflects my views only and are not meant to represent the views of the International Monetary Fund, its management, and its board. I thank Charles Collins, Graham Hache, and Laura Kodres for useful comments.

ⁱⁱ Peso risk is named after the strategy of investing in Mexican pesos while shorting the U.S. dollar. This produces a steady return amounting to the interest differential between the two countries, although shadowed by the constant catastrophic risk of a devaluation. Another example of a strategy producing such a pattern of returns is to short deep out-of-the money S&P 500 put options (see Chan, Getmansky, Haas, and Lo (2005)).

ⁱⁱⁱ Certainly, the pattern of returns of hedge funds following fixed income arbitrage strategies suggested they were selling disaster insurance. The worst average monthly return between 1990 and 1997 was a loss of 2.58 percent, but losses were 6.45 percent in September 1998 and 6.09 percent in October 1998.

^{iv} A GARCH model with ARMA terms in the mean equation (thereby correcting for autocorrelation and heteroskedasticity) finds a positive and statistically significant correlation between the first differenced 3-month U.S. T-Bill yield and the implied volatility of the CBOE S&P 500 Index options contract.

^v In many ways, my argument dovetails well with work at the BIS, which suggests that quiescent goods price inflation may have created a fertile new environment for asset price booms and consequent busts. Perhaps oversimplifying the well-argued ideas of Borio (2003),

Borio and Lowe (2002), and Crockett (2003), in this new environment, credit expansions are less likely to be accompanied by goods price inflation. Monetary policy that is focused on controlling short-run goods price inflation is likely to exert fewer checks on credit expansion and asset price inflation. The increase in the number of booms and busts in recent years is thus attributed, in part, to the death of inflation. My own view is that the change in the institutions dominating the financial landscape, as well as their incentives, should also be part of the story.