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# Asset Price Movement and Derivatives: Implications for Risk Based Supervision and Effective Monetary Policy

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## I. Introduction

The consideration of asset price movements and monetary policy has attracted a lot of attention in the last few decades, as asset prices moved upwards significantly and there arose the general perception that there are bubbles in those prices. The argument has revolved around the role that monetary policy can play in this whether it can be used to prick the bubble before it is due for natural burst, or it can be designed and implemented in such manner as to prevent bubbles to grow in the first place.

One of the major ironies of the modern economy is the boom-burst cycle and the fear attendant to a booming economy. The fear is not about the boom itself, but of the burst that will inevitably follow the boom. Usually, the pervasive prosperity experienced during a boom grows in intensity, and as it does, so does the fear of an impending crash. Many market participants usually take advantage of the boom to the fullest, by embarking on carefree consumption spree and rapid new capital formation that is funded by the bubble, thus fueling inflationary pressures and creating worries for the monetary authorities.

Several studies have been conducted to try and track asset price movements, most

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of them broadly inferring that these movements are random and can hardly be predicted with certainty. It is this attribute of asset prices that make the burst point in the business cycle to be difficult to predict and, thus, limit the ability to make adequate preparations to contain the subsequent upheaval. This is why it has been argued that the best way to handle the fear of an impending crisis is to preclude it by pricking the bubble before it goes into natural burst.

The soundness of financial institutions and stability of the financial system has been established as the joint responsibility of the regulators and operators, being a departure from the old thinking that it was basically the responsibility of the regulators. There are times though that the responsibility falls squarely on the regulators, even when it is the unreasonable profit-taking and rent-seeking activities of the operators that created the problem. The recent global financial crisis (which snowballed into economic crisis) was, at some point, blamed on regulatory lapses, especially in the argument that the non-regulation of derivatives contributed significantly to the crisis. There was finger-pointing and recriminations, which were unnecessary, as the regulators were actually as guilty as the operators. A quick summary of it would be to state that the operators were careless in risk management and they were not particularly transparent in their dealings, while the regulators were laid back.

Financial assets have over the years become more synthetic, as derivatives emerged on the scene with securitization and very complex designs that looked perfect for breaking the risk implications of straightforward transactions into digestible smaller chunks. This gave market participants such confidence that made it look like, at last, modern finance has found a solution to the problem of the economic cycle.

In this new found confidence, credit grantors became a little careless because they did not need to retain the risk of the assets they were carrying, and this optimism spread all across borders and financial jurisdictions, and in the process creating unprecedented wealth. This outcome, on its own, further made most market participants to think that the system was working well and needed no rethink.

Ordinarily, the lessons of past market crashes should have been an effective caution as the contemporary market evolved. But the quick recovery after the downturn of the early 2000s was regarded as indicative of a permanent answer to the phenomenon of boom-burst cycle. The thought was 'finance has come of age.

The kernel of risk-based supervision is that the type of intervention that regulatory authorities will make is based on the nature of risks a financial institution is taking (whether directly or inadvertently) and its capability to handle such risks, including the pricing of such risks. The supervisory authority will then give more attention to the institution that is weak in risk management, either in terms of its enterprise-wide risk management framework (ERM) or its deployment. Appropriate pricing of risk is also important because more risky transactions should normally be more expensive to the customer of a financial institution. When the risk-price nexus is taken into account, an institution that has a strong ERM and capacity to implement it will then attract less attention from the supervisors.

As it is, monetary policy cannot effectively pre-empt asset price bubbles, but when it is designed to track asset price movements and also to correctly interpret them, it could recommend prompt actions that can be taken to minimize the adverse effects of a sudden bubble bust.



## II. Derivatives and Risk-Based Supervision (RBS)

Financial assets have in the last two and half decades become more synthetic, with the introduction of financial derivatives into the markets. They were first introduced in the equities and foreign exchange markets and, subsequently, in the credit markets with the securitization of corporate debts of varying degrees of health/toxicity.

Derivatives came in very complex designs that looked perfect for dealing with the risk implications of the underlying huge transactions by breaking them into digestible smaller chunks. The bankers that devised them were also deemed extremely brilliant, having created vehicles that would enable the world finance mega projects and deals without the worry of the risk crystallizing! It was considered a brilliant way to separate between risk and reward, beating the primordial link that had served over the centuries as a check to the voracious risk appetite of business managers who want to produce 'mind-boggling' numbers! It was thought that whenever risks crystallize, the spread of these instruments over market participants will ensure that individual losses are minimized. This of course, assumes that individual choices on the volume of derivatives to invest in would not create self-inflicted excessive risk.

The reengineering of banking supervision and standards through the Basel I and II accords, created the impression (perhaps wrongly so) that when adequate capital is complemented with sophisticated risk management techniques, financial systems should remain safe and stable. The assumptions ignored the fact that greed, across the market spectrum, can easily make all market participants careless and bring the entire system to a ruin. This is popularly referred to as the 'herd instinct'.

In this *new found confidence*, credit grantors became a little careless because they did not need to retain on their books the risk of the assets they were carrying, as much as they could easily create Credit Default Swaps (CDS) and sell these tradable instruments to willing and excited investors. It is quite logical for lenders to churn the volumes and leave the risk of collection to someone else, whilst enjoying the support of rating agencies.

The *optimism* spread across all borders and financial jurisdictions, and the process lowered the *cost of capital* as well as created unprecedented wealth. This notion is generally interpreted as having the unusual combination of higher yield and less risk! This brings to mind the remarks of Janet Tavakoli, President of Tavakoli Structured Finance about credit derivatives they are an anomaly! Tavakoli describes credit derivatives “*surgical strikes against portfolio credit risks.*”

Ordinarily, the *lessons* of past market crashes should have been an effective guide and caution. The recovery of the late 1980s, after the crash of 1987 that most people blamed on the equity-futures market has shown how resilient an ordered market (with necessary restrictions) can be. That market has grown in leaps and bounds till date. In 2007, the Chicago equity futures traded US\$45 trillion of contracts on the Standard and Poor (S&P) 500 Index, against underlying assets (equities) of \$10 trillion.

Unfortunately, the lessons were not carried over to the other segments of the derivatives market, since things seemed to be working well there. Indeed, the quick recovery after the downturn of the early 2000s in the USA was attributed, among other factors, to the existence of Credit Default Swaps (CDS), which were regarded as an effective solution to the risks that can cause market upheavals and

lead to boom-busting. This was the kind of concern that Timothy F. Geithner, President and CEO of the Federal Reserve Bank of New York (now US Treasury Secretary), expressed about credit derivatives in April 2007, stating that:

“...when innovation, such as we are now seeing in credit derivatives, takes place in a period of generally favorable economic and financial conditions, we are necessarily left with more uncertainty about how exposures will evolve and markets will function in less favorable circumstances. The past several years of exceptionally rapid growth in credit derivatives and the larger role played by non-bank financial institutions, including hedge funds, has occurred in a context of very low realized credit losses, low expectations of future default risk, a high degree of confidence in the financial strength of the major banks and investment banks, relatively strong and significantly more stable economic growth, less concern about the level and volatility in future inflation, and low expected volatility in many asset prices. Even if a substantial part of these changes prove durable, we know less about how these markets will function in conditions of stress, and the most sophisticated tools available for measuring potential losses have less to offer than they will with the benefit of experience with adversity.”

Now, the kernel of risk-based supervision (RBS) is how regulatory authorities may intervene when an intervention is called for. The nature of this intervention should reflect the type/depth of risks a financial institution is taking (whether directly or inadvertently) and its capability to handle such risks, including the pricing of such risks.

In transiting from Basel I to Basel II Accord, it has been argued that having large capital or having adequate capital is not a sufficient condition for soundness in banking business. This is underscored by bank failures during the years since Basel I Accord became operational. There is also the moral hazard question. In so



far as a bank's doors are open for business, the depositors and other bank stakeholders will assume that the bank must be healthy for the regulatory authorities to allow it to remain open. They reason that:

1. Having a valid CBN license means that the bank has a clean bill of health, which must have been granted it after the CBN conducted bank examination.
2. CBN is the lender of last resort who will be there to bail out such bank in the event of trouble.
3. The Nigeria Deposit Insurance Corporation (NDIC) provides deposit insurance that assumes that most depositors, of insured banks will get their money back in the event of liquidation.

Unfortunately, this attitude weakens market discipline that ordinarily should be exercised by banks' customers and depositors, and puts back on bank regulators and supervisors the burden of safety and soundness of the financial system.

The deficiencies of risk-insensitive capital adequacy tool as an assurance of bank safety and the growing importance of market discipline places good emphasis on risk-based bank supervision. This is premised on the dictum that in the world of risk “*One size does not fit all.*” As such, the aim of RBS is to create incentives among banks for:

1. More responsible management and risk control.
2. Effective hedging of risk, which includes right pricing of risk.
3. Greater efficiency.

Accordingly, banks will need capital that is appropriate to their risks and controls, and by implication, banks that focus on low risk activities are likely to require less

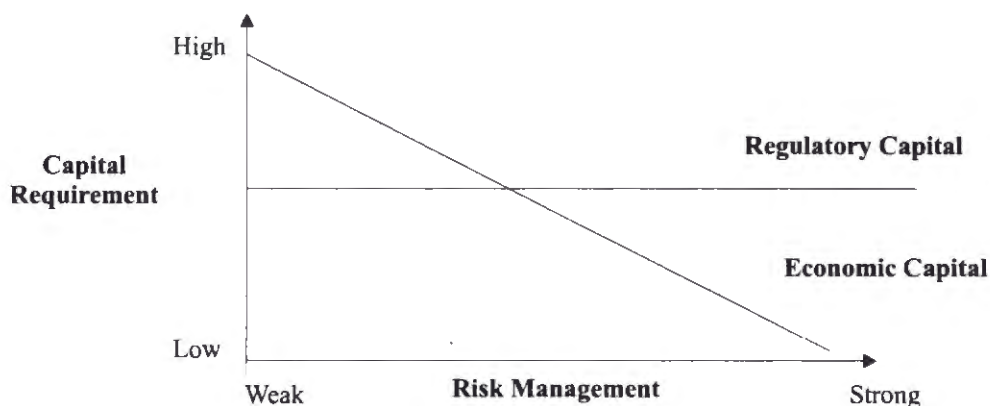


capital. In the same vein, banks that adopt advanced risk control systems will require less capital. It then means that two banks can have the same value-at-risk (VAR) but have different capital requirements because of the relative strength of their risk control systems.

In an RBS environment, banks would be free to set their individual limits to reflect the level of their control systems and to manage their individual risks, which should make them have well-managed portfolios. The critical assumption then is that bank management would be guided into right behaviour rather than driven by the desires for 'numbers', i.e. the bottom-line which is profit.

The Basel II Accord aims to make the regulatory capital of a bank more equal to its economic risk capital, as depicted in diagram 1. The stronger a bank is in risk management, the lower the economic capital it requires, and vice versa.

Figure 1



The supervisory authority will then give more attention to the institution that is weak in risk management, either in terms of poorly designed Enterprise-wide Risk Management framework (ERM) or poor implementation of ERM. As such, an institution that has a strong ERM and capacity to implement it will attract less attention from the supervisors and vice versa.

Regulatory review under RBS encourages quick intervention, which gives more freedom but confers higher responsibility on bank management and as well empowers regulators to supervise more flexibly and effectively. In essence, more diverse and complex risks require the regulators to give more attention to risks that have wider implications for the entire banking system, so as to be able to pre-empt systemic distress. Risks that are isolated to particular institutions and have no contagion or systemic implications will attract less attention from the regulators.

The essence of RBS then is not to prevent banks from taking risks considered appropriate, but to ensure that bank management understand and control the types and levels of risks their institutions take. Thus, the sophistication of the risk management systems will vary across banks depending on the level of risk present and the size and/or complexity of the institution itself. This means that the regulatory authorities will assign greater resources to areas of higher or increasing risk, both within an individual institution and among banks in the general. In addition, examinations will be performed based on the risks and the conclusions reached on the institution's risk profile and condition. The regulator will follow up only on the areas of concern.

The worry today is how come, with this higher level of sophistication in risk management, the recent financial crisis and meltdown could not be correctly predicted and prevented. It seemed everybody was excited about the prosperity attendant to the creativity of bankers and the opportunity it afforded them to buy corporate debt.

### III. Monetary Policy to the Rescue?

Over the years, there have been robust debates over the role that monetary policy can and should play in an environment of rapid asset price increases. There are arguments for and against this expectation, and some empirical studies have been conducted. While some suggest that monetary policy should be proactive to pre-empt asset price bubbles, some argue that it should rather stand ready to deal with a meltdown when it occurs, as asset price movements cannot be easily predicted.

However, where the thought is for monetary policy to be proactive and intervene to prick the bubble before it gets to a natural bust, the challenge has remained how to figure out the best time to intervene. This of course, would require monetary authorities to track asset price movements and correctly interpret them and, thus, be able to determine when to stick in the 'pin'.

### IV. Stylized Facts

According to the Contact Group on Asset Prices (2002), asset markets affect economies more today than at any other time historically because:

- i. Financial liberalization has deepened the stock and property markets and, thus, expanded participation.
- ii. Economic integration and globalization have reduced the ability of individual countries to absorb market shocks without cross-border collaboration. Interdependence and wider (and more complex) international trade have made nations to depend more on each other and react to any developments in the financial jurisdictions of their trade partners.
- iii. Credit cycles are larger and credit growth has become more pro-cyclical. This is the observed phenomenon of rapid expansion of credit during recovery and credit crunch during recession.



- iv. Price stability has not co-varied with financial stability, especially considering periods of financial instability during which the advanced economies enjoyed relative price stability.
- v. Crashes in property markets have tended to have more severe consequences than crashes in equities and other markets, largely because of the important role of properties as collaterals. Bernanke and Gertner (2001) found from historical data 8 per cent dip in GDP with crisis in the property market as against 4 per cent decline when there was crisis in equities and other markets.
- vi. Deregulation comes along with opportunities for wealth creation and growth that accompany asset price bubbles and poorly timed monetary policy response can worsen the situation rather than ameliorate or temper the consequences.
- vii. Unsound incentive structures to the financial sector can lead to excessive risk-taking, by both the individual credit officers and the institutions they work for.
- viii. Growth and internationalization of asset markets have increased the need for transparency and information disclosure.
- ix. Because asset markets are forward looking, strong equity prices seem to correlate with high price-earning ratios, while high property prices co-vary with property rents.
- x. "It is often taken for granted that a monetary regime that produces aggregate price stability is likely to limit the risk of excessive asset price fluctuation and to promote stability in the financial system."

These facts provide grounds to explore whether monetary policy should intervene in asset markets or not, although there is no strong indication that asset markets have important potential for causing financial instability. The challenge still remains how to establish a perfect relationship between asset prices and the fundamentals, such that bubbles can be measured precisely, price movements predicted correctly and, thus, determine the point at which to prick the bubble without mistake.

## V. Monetary Policy not to Intervene

The argument that monetary policy should not intervene is based on the summary provided by Saxton (2003) on the *characteristics* of asset price movements as follows:

- i. Historically, there have been many 'booms and busts' in asset prices and stock market crashes, irrespective of the exchange rate regime fixed or flexible.
- ii. 'Boom and bust' episodes are more frequent in stock markets than in property market.
- iii. It is rare for 'boom and bust' to occur at the same time in the stock market and property market. As such, the 2008 crisis is unusual and uncommon and thus, difficult to figure out and resolve quickly.
- iv. More frequently, real estate bubbles are localized and, therefore, not a macroeconomic issue. Again, the 2008 crisis has proved otherwise the bubbles were transnational and intercontinental!
- v. Equity prices are more volatile than property prices.
- vi. There is empirical evidence that consumption increases with asset price bubbles, while there is no strong evidence of increase in investments. The 2008 crisis has both elements to compound the situation.
- vii. Empirical evidence finds no strong, reliable relationship between changes in monetary policy and equity prices. This explains why the tinkering with reserve requirements by the Central Bank of Nigeria during the fourth quarter of 2008 had no visible impact on equity prices in the Nigerian stock market.
- viii. In addition, there is no evidence of strong relationship between changes in equity prices and changes in general prices.

There are two important implications of the above stylized facts and empirical evidence:

- a. Monetary policy *should not respond* to any of the disturbances mentioned above because it is a macroeconomic tool.
- b. Since equity prices are not reliably related to changes in monetary policy, equity prices *will not serve as a useful policy indicator* in an inflation targeting regime.

Furthermore, it was argued that monetary policy should focus on what it can do especially that:

- a. The causal effects from stock prices to aggregate demand are relatively weak and unreliable.
- b. Circumstances mandating a monetary policy response to asset price movements are relatively unusual, and indeed, rare events.
- c. In practice, asset price misalignments and bubbles are difficult to identify and control.

Now, rather than leave things to the markets to work out by themselves, there is the advocacy for monetary authorities to move quickly to nip asset market bubbles before they mature and bust naturally, the latter having more dire consequences for the financial system and the economy. The argument rests on the following facts:

- A. The stock market is larger and more widespread.
- b. The equity market plays a larger role in the monetary transmission process.
- c. Asset price bubbles can foist significant financial imbalances on the financial system.
- d. Asset price volatility and financial imbalances will increasingly proliferate in low inflation and stable economic environments.
- e. Asset prices and asset price inflation are important components of general prices and general inflation.
- f. Asset price bubbles can be identified and controlled. Indeed, the bubble component in asset prices can be identified.

The importance of this role for monetary policy depends largely on the ability to identify a bubble through early warning signals, such as those suggested by the researchers of the Bank for International Settlements and the European Central Bank, namely:

“When credit-to-income ratio and the real aggregate asset prices simultaneously deviate from their trends by 4 percentage points and 40 per cent respectively.”



When these were applied to historical data, they successfully predicted 55 per cent of financial crisis. Relying on them would, however, have triggered a false alarm about an impending financial crisis 3 per cent of the time.

## VI. Inferences

From these stylized facts and the strength of the arguments as well as empirical evidence, the obvious inference is for monetary policy *not to* seek intervention in equity and property markets to address rapid price movements. The weight of evidence supports the conventional view, which is that monetary policy should focus on its traditional role, and only seek to respond to asset prices in a *defined*, and *limited circumstances*. That will be when asset prices obviously might affect *aggregate demand* or *price stability*. Monetary policy should also respond to rapid asset price movements when asset price deflation becomes a threat to *financial system stability*, which relates to the central bank's role as a lender of last resort.

It is widely believed that the sort of intervention desired of monetary policy is actually more amenable to the tax and financial system regulatory authorities. That is, the tax authorities should reconsider the tax deductibility of interest payments and regulatory authorities more vigilant during periods of asset price bubbles.

Schwartz (2002) suggested the adoption of “capital requirements that increase with the growth of credit extensions collateralized by assets whose prices have escalated.” This will be an effective check on financial institutions becoming reckless in granting credit to support speculation during periods of rapid asset price movements.

It is, however, to be noted that not all bubbles are *dangerous*, Trichet (2005) argued that booms become costly when associated with leverage. What needs to be watched carefully then is the credit-GDP ratio, corporate debt vis-à-vis aggregate credit, and proportion of credit that goes into the sector experiencing bubbles.

For Nigeria, especially with the recent meltdown in the stock market and fear of an impending similar meltdown in the property market, the concern should be more with what portion of the investments that drove the boom was financed by bank loans. The more significant bank loans are, the more worried the Central Bank of Nigeria should be and the more logical it would be for monetary policy intervention to be considered to stabilize the financial system.

An International Monetary Fund (IMF) study found that housing busts are more costly than equity market busts. Empirical facts confirm that housing bust causes output losses amounting to 8 per cent of GDP and this is twice that of equity bust. By implications, monetary authorities should worry more about housing bubbles than stock market bubbles.

Bernanke and Gertner (2001) concluded in an update of their previous studies and empirical evidence that inflation-targeting central banks should not respond to asset price movements, except on occasions that the movements affect inflation forecast. This is the 'standard model'.

There is no better way to put all the arguments together than to quote from a speech by Bernanke (2002):

“The correct interpretation of the 1920s, then, is not the popular one -- that the stock market got overvalued, crashed and caused a great depression. The true story is that monetary policy tried overzealously to stop the rise in stock prices. But the main effect of the tight monetary policy, as Benjamin Strong had predicted, was to slow the economy -- both domestically and, through the workings of the gold standard, abroad. The slowing economy, together with rising interest rates, was in turn a major factor in precipitating the stock market crash.”

## **VII. Conclusion**

There is no doubt that an emerging economy like Nigeria, that is also reforming, will produce a lot of investment opportunities across different sectors, as they open up and internationalize. The attraction of new investments, especially to the stock and property markets, will naturally start a boom.

The review of literature shows that labeling a boom as 'bubble' is the critical thing in the consideration of whether the central bank should act or not when there arises rapid asset price movements. The two schools of thought standard and 'bubble-busting' proponents have interesting arguments, but the weight of evidence favours the standard model.

The final take, as at today, is that for an inflation-targeting central bank, it should stick to its primary function economic growth and financial system stability. It is dangerous to seek to 'prick' the bubble in asset prices when the bubble is difficult to identify, let alone measure and determine the appropriate policy response. The greatest danger in intervention is that by tightening monetary policy, inadvertently the central bank will slow down the economy and possibly help it into recession. This was what happened in the 1920's, with the benefit of hindsight and historical analysis.

Also, there is a lot of lessons to be learnt from the 2008 crisis. Conceptually, financial derivatives are an effective instrument for risk diversification and dispersal, but they turn into time bombs when left unregulated. If and when Nigerian financial institutions begin to create and trade credit derivatives especially, the apex bank should ensure that an effective regulatory framework is in place and each of such product undergo an approval process, the same way the bank used to do for all special products of banks in the 1990s.

As useful as minimum capital requirement and risk-insensitive regulatory capital are to force banks to maintain capital levels that are commensurate to the nature of their business (high gearing), the Central Bank should begin to focus more on economic



capital. More capital should be required of banks that are more risky, while the review (through stress tests) should take place at more frequent intervals than hitherto. The latter will make us preclude the kind of 'big bang' of July 2004.

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