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Lacunae in financial regulatory framework vis-à-vis financial repression

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Abstract:
This article makes four points. *First*, it suggests regulation of entry into the finance profession, whose tasks would include 'prescribing' a portfolio choice for (financially) uninformed investors. *Second*, it suggests that the government should encourage information collection to help ensure informational efficiency of markets. *Third*, it introduces a new 'academic' concept - optimal noise in financial markets. *Fourth*, in the context of financial intermediaries, given that deposit insurance, lender of last resort, capital adequacy, and supervision of banks are in place, there is no need to impose the following beyond reasonable prudential norms: (a) cash reserve ratio requirement, (b) statutory liquidity ratio requirement, and (c) barriers to entry.

Key words: Financial repression, under-regulation, optimal noise, subsidy for information collection, behavioural finance, complex products, regulation of entry.

JEL Classification: G01, G18, G19.

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I am grateful to Shubhashis Gangopadhyay for suggesting that I write it up. This writing has benefited from my teaching. This work would not have been possible without the enabling atmosphere ensured by my family, my colleagues, my university, and indeed the society in general. Any errors are my own responsibility.

The recent financial crisis and recession have drawn attention to various lacunae in regulations in an economy. Here we will confine ourselves to regulations in one part of the economy only viz., the financial sector. It is primarily the banking (including the shadow-banking) sector within the broader financial system, which has been in news for lack of adequate regulations. But there are also serious inadequacies in regulation of the other part of the financial system viz., financial markets. While the need for greater regulation in the banking sector is well recognized now, the same cannot be said in case of the financial markets. Moreover, while the financial crisis has highlighted the need for greater regulation, and rightly so, we also need to remember that for very long there have been parts of the financial system in some economies that have been excessively controlled or regulated. This is usually termed as financial repression (Goldsmith, 1969). Correction of the regulatory regime requires removal or reduction of this financial repression.

Though there are lessons to be learnt from the recent experience in the world economy in general and in the US economy in particular, there is also a long experience from the pre-crisis days in emerging economies like India. While the recent experience in US points to lacunae in regulations, the past experience in India points to financial repression. Any major policy overhaul in India needs to check both the lacunae in financial regulatory framework as well as financial repression.

The lacunae in regulations in the financial sector have been noted primarily in the context of one part of the financial system viz., the part that deals with financial intermediaries. This article will show that there are serious lacunae in regulations in the context of the other part of the financial system as well viz., the financial markets.

This is not an article on the current financial crisis per se, though it may have been motivated by it and the writings on these events. On one hand, it cautions against extreme reactions to the current events. On the other hand, it also suggests where there has been an almost complete neglect of some important issues.

The discussion of regulations in the banking sector here is within the paradigm in which both the lender of last resort (LLR) facility and deposit insurance are present. Moreover, we take it for granted that banks are supervised. We abstract from this issue here. This is not to suggest that it is not important in the context of the current crisis. Finally, capital adequacy norms too are in place though there is scope for improvement. These can be revised upwards – for banks in general and for the non-bank financial intermediaries (NBFIs) in particular. There is, of course, a larger issue as to why these are required. Discussion of this question is beyond the scope of this article. We will here assume that all these are in place. In this context, do we need other prudential controls and regulations in banking? In particular, do we need the cash reserve ratio (CRR) and the statutory liquidity ratio (SLR) requirements? Do we need to impose barriers to entry in the banking sector? Do we need to impose restrictions in various ways on banks in their quick and easy recovery of loans? If the answer to these questions is yes, then is it a conditional yes or an unconditional yes?

In practice, there is considerable participation by irrational traders or noise traders in financial markets. This is fairly wide-spread and persistent. It has, as we will elaborate later, far reaching adverse implications not only for the financial markets but also for the financial system as a whole. Indeed there are implications for the economy as a whole. So there is a need to do something about this problem. One rather radical solution is that we impose a restriction that investors must consult a financial analyst who 'prescribes' a portfolio choice (just as qualified medical practitioners alone can prescribe medicines to patients). And we need stringent criteria to certify that some people can indeed function as financial analysts, financial advisors and finance executives. The idea is to reduce, if not eliminate, irrational behaviour in the financial system. It is true that noise traders also play a positive role, as we will see. However, what may be required is noise. One way to get this is by having participation of noise traders who are irrational. But there are other ways. As Dow and Gorton (2006) write, 'Irrationality is not needed to explain significant amounts of noise' (p. 5). We will explain this in detail later.

There is evidence of mispricing of financial assets, which is widespread, considerable and persistent (though there is still debate about many methodological and conceptual issues). Just imposing a license requirement alone is not going to be easy or adequate. Indeed there can be teething troubles and imperfections in the new regulatory regime. We will see how there can be vested interests in the present system that can work against a change in the regulatory regime. Many other changes too may be required. We will discuss how there is a need to reconsider the teaching of and research in financial economics. In particular, what is the role of behavioural finance vis-à-vis, what we may call, non-behavioural finance? Why are animal spirits important in finance? Why are fancy or complex products a big concern in financial economics (and not in other fields)? We will consider a comparison between financial economics and physical/medical sciences in this context. It is true that at present investors do have access to a 'professional' route to investments in financial markets. This takes the form of mutual funds. However, as we will see, these have their limitations.

This article is divided into four sections. Section I discusses the difference between optimal regulation and actual regulation of a financial system. We will discuss how lacunae in regulations and financial repression can co-exist. Discussion in this section may seem elementary but it is very important, and worth discussing. A financial system may be broadly divided into two parts - financial intermediation and financial markets. Section I deals with the financial system in general rather than with financial intermediation alone or with financial markets alone. Section II discusses regulation of financial intermediation in India. Section III discusses regulations of financial markets. This discussion is not specific to any one country. It is more general though we will consider some examples from India and from the US. We conclude in section IV.

I Optimal regulation and actual regulation

It is well known in the literature that markets alone cannot ensure efficiency in an economy. There is a need for regulations in an economy in general and in the financial

sector in particular. This, however, does not imply that each and every part of the financial system needs to be regulated, or equally regulated, or regulated in one and the same way. Ideally, governments would regulate only what needs to be regulated, and leave other parts of the financial system unregulated. In practice, often governments over-regulate some parts of the financial system and under-regulate other parts.

We may classify the financial sector in two ways. In the first classification, we can divide a financial system into two parts on the basis of actual regulation – one part that is actually regulated and another part that is not actually regulated. In the second classification, we can divide a financial system into two parts on the basis of need for regulation – one part that needs to be regulated and another part that does not need to be regulated. With this two-fold classification, we get four categories into which a financial system can be divided:

(a) Part of the financial system that is actually regulated and is in need of regulation,
(b) Part of the financial system that is actually regulated but is not in need of regulation,
(c) Part of the financial system that is not actually regulated but is in need of regulation, and
(d) Part of the financial system that is not actually regulated and is in no need of regulation.

The above is admittedly a very simplified picture. We have considered a financial system in which either there is a need for regulation or there is no need for regulation. This is a black and white picture. Either we have black colour or we have white colour. There is no grey colour in the picture. However, as we will see, this picture is good enough for making some analytical points. Ideally, a financial system would consist of two parts only viz., part (a) and part (d). These two categories cover cases in which regulation is actually carried out if and only if it is needed. In an ideal world, part (b) and part (c) would be empty sets. However, in practice, typically this is not the case. Part (b) and part (c) are not empty sets in practice. It is hard for policy makers to ensure that these two sets are completely empty. There can be practical difficulties in ensuring an ideal regulatory framework. Part (b) and part (c) can, in practice, have some positive size. This, however, does not imply that part (b) and part (c) need have substantial size due to practical difficulties in ensuring an optimal regulatory framework. If they do, then this is a reflection of an inappropriately conceived regulatory framework.

As Table 1 suggests, the regulatory framework can be inappropriate in two ways. First, a financial system can have part (b). Second, a financial system can have part (c). Part (b) is a case of, what we know in the literature as, financial repression – there are controls and regulations that are not needed for prudential purposes, and that repress the financial system. We may view part (c) as a case of, what we may call, lacunae in financial regulatory framework. In this case, there is a vacuum in the sense that regulations are needed but they are not in place.

We can have either a large part (b) or a large part (c) in a financial system (alongside part (a) and part (d)). It is also possible that both part (b) and part (c) are large and co-exist in a given country. In the context of many countries, there are other possibilities. For simplicity, consider two countries – country A and country B. Country A may be characterized by lacunae in financial regulatory framework whereas country B may be characterized by financial repression. Both countries need to improve their respective regulatory frameworks. However, they need to do this in different ways. While country A obviously needs to regulate more than it has done in the past, observe that country B needs to regulate less than it has done in the past. Moreover, country A needs to regulate more only those parts of its financial system that are in need of regulation but have been actually left unregulated. Country A does not need to increase regulation in all parts of its financial system. Similarly, country B needs to decrease regulation only in those parts of the financial system that have been over-regulated. Country B does not need to decrease regulation in general.

Table 1: A two-fold classification of a financial system

	Regulation needed	Regulation not needed
Regulation actually carried out	Part (a)	Part (b) – a case of financial repression
Regulation not actually carried out	Part (c) - a case of lacunae in financial regulatory framework	Part (d)

In the context of the current financial crisis, it is the lacunae in financial regulatory framework that have been in the news, and rightly so. This is particularly the case in the US where there is a need to increase regulation in some parts of the financial system e.g. in case of investment banking. There is a need to tighten capital adequacy norms for investment banking in the US. What about India? While there are parts of the financial system in India that are in need of more regulation (e.g. the non-bank financial intermediaries (NBFIs)), India is still more a case of financial repression than a case of lacunae in financial regulatory framework (if we must give only one of the two labels to the financial system). Commercial banks are still over-regulated in India (more on this later). So there is a need to selectively deregulate commercial banking in India. So there is no contradiction in saying that while US needs to regulate more, India overall needs to regulate less.

The distinction between the two cases of financial repression and lacunae in financial regulatory framework is important. When this distinction is not made, there can be wrong analysis and conclusions. An example of this is the policy lesson that some politicians and journalists have drawn in India in the recent past. It has been loudly proclaimed that the Indian financial system is more resilient and did not witness a banking crisis because it has not been liberalized very much. This conclusion is not quite correct. As we will see, every case of liberalization is not a case of an increase in vulnerability, and every case of regulation is not a case of ensuring prudent behavior.

In the next section, we will see how there is considerable financial repression in the banking sector in India, what effects this repression has on the economy, and how this repression can be removed or reduced without making the banking sector vulnerable to a banking crisis. Thereafter in section III, we will see how the financial markets face an opposite problem in the sense that they are regulated less than what is required.

II Regulation of financial intermediation

In India, we have financial repression in the banking sector in the sense that we have a high CRR requirement, a high SLR requirement, barriers to opening new banks and even new branches, restrictions on payment of interest on some deposits (like current accounts), restrictions on banks in quick recovery of their loans, and so on. On the other hand, we also have lacunae in financial regulatory regime in India in the sense that the present capital adequacy norms are low - particularly in case of NBFIs. So India is a case of both financial repression and lacunae in the financial regulatory framework as applied to financial intermediaries. But, as these examples show, India is perhaps more a case of financial repression and less a case of vacuum in financial regulatory framework.

Many of the cases of financial repression are confined to India and perhaps some other developing countries. Developed countries by and large do not use these. In the recent academic literature too, there is hardly any discussion of such issues. See for example Gorton and Winton (2003). While India can differ from developed countries in its regulations of financial intermediaries, we have to have strong reasons for making such a case. As the analysis below shows, it is hard to make such a case.

CRR requirement

The CRR requirement in India has been high compared to what have become accepted norms in many parts of the world. Though it has now been brought down substantially, it is still high at about 5%. Typically the interest rate on reserves is much less than that on loans. So the income of the banks is adversely affected. This can reduce the interest rate on deposits and/or increase the interest rate on loans. The result is that the size of the banking sector shrinks. This can adversely affect the economy anywhere but more so in a country like India where banking is supposed to be more important than financial markets. So there is a need to reduce the CRR requirement.

It may be argued that a reduction in CRR can make a bank vulnerable because banks would then have low cash reserves with which to meet liquidity needs of its customers. This can be problematic for the bank customers. Also a failure to meet such needs may trigger a run on a bank with all its ramifications. These fears were indeed valid in the past when the LLR was not present and deposit insurance did not exist. Given the LLR facility at present, banks do not need to keep large cash reserves, and given the deposit insurance, banks need not fear a run.

In any case, observe that CRR is a mandatory requirement. This means that cash reserves kept to meet the CRR requirement cannot in any case be used to meet the liquidity needs of bank customers!

Given that the LLR facility is present, there is no need for an additional prudential measure such as a large CRR requirement. There is, of course, the issue of moral hazard. The availability of LLR facility can encourage banks to ignore liquidity risk. This problem can, however, be taken care of easily. The LLR can charge a penalty in its interest rate imposed on funds borrowed by banks (Bagehot, 1873). It may be argued that it may not be very practical or wise to charge a high interest rate from banks that borrow funds from the LLR, which will typically happen when an individual bank or many banks are going through a crisis. A high interest rate imposed on funds borrowed can further compound the problems of banks in difficulty.

Observe that the apprehensions due to a low CRR are valid in the context of banks that have inadequate capital. Losses incurred by these banks can wipe out their capital and they may need to close down. On the other hand, if banks have adequate capital, then a penalty only affects the profitability of the bank. It does not make a bank vulnerable in the sense that survival is not at stake. So the original sin is that banks are allowed to function with little capital which is when the issue of high interest costs for banks is bothersome. Note that we have already identified inadequate capital as a case of lacuna in financial regulations. This vacuum needs to be filled. Thereafter, we can easily reduce the CRR requirement, if not eliminate it altogether.

Of course, a high CRR serves another purpose for the central bank. The latter pays interest on reserves of banks which is much lower than the returns on investments made by the central bank. So the CRR requirement is a source of income for the central bank and, hence, for the government (since the latter owns the former). As such, the CRR requirement may be viewed as a tax on banking. Like any tax, this too discourages the activity that is being taxed (and encourages some other activity in a larger general equilibrium context). So the CRR requirement reduces banking activity. See Fama (1980).

It is true that any tax has a distortionary effect. The issue then is whether or not banking is more desirable compared to other activities in the economy. If it is, then (implicit) taxation of banking is not a good idea. For a long time, the government in India has (and indeed governments elsewhere too have) repeatedly given indications that it views banking as special. This view has been further reinforced in the recent past with emphasis on financial inclusion. An important part of financial inclusion is making banking accessible for ordinary households. In this context, a tax on banking in the form of a CRR requirement is not desirable. The implication is straightforward. It is time to drastically reduce CRR, and if possible, eliminate it altogether. This can be done gradually. Needless to say, this does not imply that banks will choose to keep zero reserves (that is costly for them).

Reserve requirements have been declining worldwide. 'In the United States, the FED eliminated reserve requirements on time deposits in December 1990 … Canada has gone

a step further: Financial market legislation taking effect in June 1992 eliminated all reserve requirements over a two-year period. The central banks of Switzerland, New Zealand, and Australia have also eliminated reserve requirements entirely.' (p. 406, Mishkin, 2004).

SLR requirement

Banks in India are required to invest a fraction (about 25%) of their assets in government securities. The SLR requirement is supposed to increase liquidity with banks. However, like CRR, this is a mandatory requirement. So the government securities cannot really be used to raise cash to meet liquidity needs of banks! If they were used, there would be a violation of the SLR requirement. Moreover, it is only recently that we are seeing a somewhat developed market for government securities so that we can indeed say that government securities in India are liquid. Otherwise it was a case of asking banks to keep securities, which were effectively illiquid, under the head of statutory *liquidity* ratio! So it is doubtful if the SLR requirement helped to meet liquidity needs of banks.

We have a high SLR requirement imposed on banks in India. In contrast, we do not see such a requirement imposed on banks in developed countries like the US. Despite the financial crisis in the US, there has been no talk of imposing an SLR requirement on banks there. This suggests that the SLR requirement is dispensable as far as prudential management is concerned.

It is true that the SLR requirement serves another purpose in India i.e. it helps the government finance its deficits in a non-inflationary way, and without increasing the government's external debt. With the SLR requirement, the government is getting committed funds from commercial banks to finance its deficits. Since this does not in any big way increase the base money on account of financing fiscal deficits, it does not lead to an excessive increase in money supply and correspondingly an excessive increase in the inflation rate (given a simple Quantity Theory of Money framework, for simplicity). The SLR requirement affects primarily the allocation of credit. It decreases credit to the private sector and for commercial purposes, and increases the same for the government. Also the SLR requirement enables the government to internally finance its deficits i.e. within the country. So it need not borrow abroad. So external debt of the government (which is often viewed as being more problematic than the government's domestic debt) is avoided or at least kept in check. So the SLR instrument is useful for the government. Would a reduction of SLR not then create difficulties for the government and for the Indian economy at large?

An alternative to SLR requirement

Let us begin from the beginning. The government's tax revenues are small compared to the expenditures, and so there are deficits which need to be financed in various ways. One way is direct borrowing from the market. This seems a costly way. Moreover, there is uncertainty about how far the market is willing to provide funds to a government that cannot be said to be very credible financially – an unfortunate but hard reality in case of India. Another way is that the government imposes the SLR requirement, and thereby ensures for itself a definite access to funds. This raises an important question – to begin

with, why are the government's revenues small relative to its expenditure? It is true that there is quite a bit of wasteful expenditure and there is a need to cut this sooner rather than later. In the long run context, however, there is a more basic problem. Even if the wasteful expenditure is cut drastically, there are various expenditures that the government does need to increase over time (expenditure on social security, public health, education, and so on). So there is no escape from increase in taxation in the long run, even if wasteful expenditures are cut.

Observe that the tax GDP ratio in India is very small compared to that in most developed countries. It is true that there is greater scope for tax evasion in a less developed economy, given that corporations in the formal sector play a smaller role in a developing economy than in a developed economy, and given that the tax authorities can better monitor and verify the accounts and actual flows of funds at the level of a corporation than at the level of small and numerous enterprises in the informal sector. So it is possible that the tax GDP ratio in a less developed country would be naturally less than that in a developed country. However, at present, the difference between the tax GDP ratio between the two kinds of countries is very large – too large to be explained by differences in their development. In developed countries like the US and many European countries, tax GDP ratio roughly varies from 30% to 40%. On the other hand, in developing countries, the ratio could vary from 10% (or even less) to 20% or so. What then can explain the large difference in tax-GDP ratio between developed countries and developing countries? Tax collection is a function of how effective the administrative tax machinery is, rather than on just how developed an economy is. The diagnosis then is simple. The government needs to improve its tax administrative machinery so that the tax revenues can be increased relative to the GDP.

Let us consider an analogy. Observe that typically, institutes of higher education are better developed in more developed countries than in developing countries. One may have thought that this is natural. However, in India there are some highly reputed institutes of higher education even though India is a developing country. The reason is simple. Despite being under-developed, we decided to set up and maintain some high quality institutes. So there is nothing natural about developing countries being under-developed in higher education just because they are under-developed as far as some other parameters are concerned. Let us now return to the issue of taxation. If the government spends more on, and looks better after, the tax administrative machinery, then it is possible to substantially increase the tax GDP ratio – perhaps not to as high a level as it is in developed countries but definitely make a dent in the status quo.

Let us return to the issue of financial repression in the form of SLR requirement imposed on banks. Recall that we argued that effectively the rationale for SLR requirement is that the government needs to finance its deficits. We have now argued that one simple way to reduce deficits is that the government raises its tax revenues, and one important way in which this can be done is that the government improves its tax administrative machinery. So while, on one hand, the government needs to remove the SLR requirement, on the other hand, it also needs to improve its tax administrative machinery. The government should be doing this in any case. After all, taxation is an important role of the government.

On the other hand, it is the SLR requirement which is not natural. The SLR requirement tries to make funds available indirectly through the banks to the government in a non-transparent manner. It is amazing how, for so long, we have continued to live with an unnatural arrangement.

In the long run, there is no alternative to raising taxes. Otherwise the government will need to compromise on social welfare. It is true that the government can for very long continue to finance its deficits by imposing the SLR requirement on banks. However, there is no free lunch. The SLR requirement adversely affects lending for productive purposes. At the margin, it affects the rate of growth of economy. So it is important to get rid of the SLR requirement as soon as possible.

Barriers to entry

There are serious barriers to entry into the banking sector in India. The central bank in India rarely gives a new license. It is true that in the 1990s, after the general liberalization in the economy, there were some new private sector banks that were set up. However, after that phase, there has been a major slowdown in giving new bank licenses. It is true that the banking sector is different from other sectors in the economy but this does not imply that the government imposes serious barriers to entry into banking. Banking is different and the way to take care of its special place is that we have the LLR facility for banks, capital adequacy norms are imposed in case of banking, deposit insurance is in place, and banks are supervised by the government. Of course, it is also important that the government takes care in who it is giving a license to. So it can have some (strict) eligibility criteria. But, in practice, the government goes too far. It hardly gives out any new licenses even if the applicants are sound.

There may be an apprehension that the license may go to some group that is not sound. Even if the government occasionally makes an error in granting a license to a group that is actually not sound, there are safeguards thereafter to check malpractices. There is the minimum capital requirement. Besides, banks are regularly supervised. It may be argued that the government has limited manpower to carry out supervision which is why it cannot have too many banks to look after. But clearly the regulatory regime has to keep pace with a growing economy, instead of the growth rate of the economy adjusting to the size and quality of the regulatory regime.

It is important to remove or at least reduce barriers to entry for the simple reason that we still do not have adequate banking in the country (see Government of India, 2008, Report of the Committee on Financial Sector Reforms, popularly known as Raghuram Rajan Report). In the absence of new and potential competitors, the existing banks do not have adequate incentives to improve. There is remarkable similarity between different banks in their ways of functioning and quality of service. This is, of course, partially due to uniform regulations imposed on all banks. But it is also because there is little innovation in the banking sector due to lack of effective competition. On the other hand, there has been remarkable improvement in financial markets as far as new products are concerned. Derivatives have evolved. Mutual funds come up with new and innovative products

(more on this later). Banks need to improve further, and reducing barriers to entry can help achieve this.

Restrictions on easy and quick recovery of loans

Recovery of loans has been a difficult process in India for very long. In the early 1990s, some attempts were made to address this issue by setting up debt recovery tribunals in India. Thereafter, the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI Act) was passed by the Parliament in 2002. However, even now debt recovery is difficult though there has been an improvement as compared to the situation in the past.

The textbook reason for banks accumulating non-performing loans (NPLs) is that the borrowing firms are unable to repay their loans. In India, we have witnessed other reasons. Borrowers do not repay their loans even if they can! They do so if the contract enforcement is weak, which it is in India. Ex-ante, nowadays banks tend to be cautious and lend to people whom they can 'trust'. There are difficulties with this. Decision making gets more subjective than it needs to be in a world of (near) perfect contract enforcement. The borrowing facility is confined to a smaller circle of known people. In practice, this means that people who are established and who have contacts have greater access to bank loans than new and emerging entrepreneurs. This restricts competition in the economy. It is true that in the absence of strong contract enforcement, alternative solutions can emerge to ensure recovery of loans. However, these are usually second best methods that cannot fully make up for legal enforcement of contracts.

This completes our discussion of important forms of financial repression in banks. Reducing financial repression can lead to higher output. But this is not the only effect. It can even increase overall stability. How? Repression in banking decreases effective returns for depositors and increases effective costs for borrowers. This leads many people to shift from banks to financial markets. To the extent that there is more instability in financial markets than in the banking sector, repression in banks is not simply a case of allocative inefficiency, it is also a case of a greater part of the financial system that is subject to volatility. So we need to reduce repression in banking for two reasons – increase allocative efficiency and decrease the size of the financial sector that is subject to volatility.

In this section, we have seen how there is a need to remove various regulations and restrictions in the banking sector that are repressive (though there is a need to tighten capital adequacy norms for many financial intermediaries). In the next section, we will discuss regulation of financial markets.

III Regulation of financial markets

Though most of the analysis in this section applies to financial markets in general, we will, for simplicity, consider stock markets only.

Efficient market hypothesis and behavioural finance

For a long time, the accepted paradigm for understanding price formation in stock markets was the one provided by efficient market hypothesis (EMH). Though there have always been reservations on this paradigm amongst practitioners, the mainstream academic literature in financial economics has, by and large, worked around EMH. However, in the last twenty years or so, a somewhat new branch of financial economics has evolved. This is behavioural finance. It challenged a key assumption of EMH viz., the assumption of rationality.

This new branch of finance shows how the assumption of rationality in the context of financial markets can be quite misleading. There is substantial and persistent participation in financial markets by the so-called *noise traders* whose behaviour is far from rational. It is true that their participation can throw up arbitrage opportunities for the more informed and rational participants. However, the new literature shows how it can be very difficult, if not impossible, to exploit such seemingly obvious arbitrage opportunities. The reason, in brief, is that the presence of noise traders creates a new risk in the market. This is usually referred to as *noise trader risk*.

If securities are under-priced due to considerable sales by noise traders who have become excessively pessimistic, there seems to be an arbitrage opportunity for rational traders. The latter can, it seems, buy at such times, make profits, and, in the process, also remove the under-pricing. The difficulty is that in future the noise traders may get even more pessimistic, sell even more, and drive the prices further down. Ex-ante, the possibility of this scenario creates a risk, which is now known as noise trader risk, and which limits the exposure of rational traders to the markets in the first place. So arbitrage opportunities cannot be fully exploited. The rational traders may be constrained by a short horizon over which they need to show results. They may have limited access to funds from uninformed investors who may judge them by their recent performance. The result of all this is that mispricing in financial markets can be substantial and can persist. See Shleifer (2000).

Under-investment in information, noise, noise traders, and government intervention

We have so far highlighted the negative role of noise traders. In the literature, there is a positive side too to the presence of noise traders. Suppose that there are no noise traders in the financial markets. In such a case, there is no incentive for collection of information by rational speculators and investors. To see this, suppose that the latter discover after their costly research that an asset is under-priced, which they buy. However, this can lead the seller to infer that the asset was under-priced. This immediately makes the seller reluctant to sell. The result is that price rises, there is no trade, and the speculator is unable to reap the benefits of his or her research. Ex-ante, there is little incentive for information collection. But it is investment in such information collection that makes the stock markets efficient. So the absence of noise traders makes informational efficiency impossible. On the other hand, when noise is present, buyers can use their information to buy without attracting attention. There is little or no inference by others about information. This enables the informed speculators to reap the benefit of their research. In this way, noise in stock markets can be useful.

The basic argument is that in the absence of noise, some traders can choose not to invest in information, and instead obtain information indirectly by making inferences from change in prices. In a sense, one group of traders (free rides) is effectively imitating another group of traders (who are spending on research). This, of course, in turn discourages others from making investment in information in the first place. So in equilibrium, there is under-investment in information in the absence of noise traders, and accordingly markets are not efficient. This argument raises several interesting issues.

It seems that we have a trade-off. The more the noise, the greater are the incentives for information collection by rational speculators. This is the positive impact. On the other hand, the more the noise, the more volatile are the prices. This is the negative impact. So it seems that we need 'optimal' noise – an amount of noise that balances the positive and the negative side. But it may be difficult to get the optimal noise once noise traders are allowed. We may get too much noise and hence too much volatility. If noise traders are absent, then is there an alternative way in which we can get optimal noise in the stock market?

Dow and Gorton consider a model in which there is an agency problem. Managers try to look for better investment opportunities. However, they may not always find them. In such a situation, it may be best that they do nothing. However, there is uncertainty for the investors. They cannot distinguish between "actively doing nothing" and "simply doing nothing". These authors argue that 'that churning by funds, which occurs when they do not become informed and want to pretend that they have, is "noise," in a setting where all market participants are rational. … Irrationality is not needed to explain significant amounts of noise.' (p. 4-5, Dow and Gorton, 2006)

We have two concerns with this argument. First, presumably, the significant amount of noise is less than that created by noise traders and is closer to being the optimal amount. But there is no assurance for this. Dow and Gorton are simply looking for an alternative source of noise. They are not concerned with optimal noise. Indeed, as far as this author is aware, the notion of optimal noise has not been used so far in the literature. Second, investors are themselves unable to distinguish between "actively doing nothing" and "simply doing nothing". However, they are rational. Given that they are rational, what prevents them from consulting an independent finance professional who can make such a distinction? So either they are not rational or consultants are not available for a reasonable fee. So the solution suggested by Dow and Gorton does not seem to be very satisfactory. Where do we go from here?

Let us begin with first principles. The problem is under-investment in information. Noise traders are a source of noise, which is a solution to the problem of under-investment in information. Dow and Gorton suggested another source of noise, as an alternative to irrational noise traders. But they are still looking at noise as a solution to the problem of under-investment in information. Can we solve the problem of under-investment in information in the absence of *any kind* of noise? Note that under-investment relative to optimal investment in any area requires government intervention – for example, in the

form of a subsidy. This argument applies to financial markets too. The government can subsidize information collection in financial markets so that there is no underinvestment. So a subsidy by the government can be an alternative to using noise as a means to ensuring that we do not have under-investment in information.

As mentioned already, it is not clear if investors in Dow and Gorton are rational. We may debate this. But one of their basic points is well taken. In the absence of noise traders, financial markets do not become perfect or noiseless. There will always be some noise. If that noise is adequate, then there is no further problem. If it is inadequate, then government intervention can be useful. We do not need irrational noise traders to make the financial markets efficient. Our argument for government intervention is not a substitute for that of Dow and Gorton. It only supplements their insight. The purpose is to ensure that financial markets are efficient. But why is all this important in the first place?

The financial sector and the real sector

Mispricing in the financial sector can lead to wrong investments in the real sector of the economy. Over-pricing of stocks can lead to capacity build up for producing goods that are not wanted in the first place – at least not on the scale on which the capacity is built. The result at some stage is lack of demand, inventories build-up, cut in production and in employment, defaults on debt, an eventual crash in stock price, demand by industry for bail-out by the government, and so on. All this is socially costly. Under-pricing also can lead to distortions in the real sector. So there is a need for correct pricing in the financial sector in the first place so that entrepreneurs and investors are not led to wrong investment decisions in the real sector.

Mispricing of assets in financial markets can also create difficulties for financial intermediaries. Till recently, we could talk about a classification of banks into commercial banks and investment banks. This distinction seems to be on its way out (though we may still need to retain the classification between investment banking and commercial banking). Important investment banks have closed down or got merged with commercial banks in the US. Volatility in financial markets led to havoc in balance sheets of investment banks and even those of most commercial banks. In a country like the US, the financial system is usually identified more with financial markets than with financial intermediaries. However, difficulties in financial intermediation can be problematic for the real sector even in a country like the US. Bernanke (1983) showed how this was true in the context of the Great Depression. It seems to be true even at present after the experience of the financial crisis. Any major disturbance in financial markets disturbs considerably financial intermediaries. This in turn can adversely affect the real sector. What is the solution?

Regulation of entry into finance profession

A solution to the problem of persistent mispricing and excessive volatility in stock markets is to have a license requirement to operate in these markets. This is similar to the actual requirement of a license in other walks of life in countries that are, otherwise, liberal. For example, there is a license requirement on driving an automobile, even though there is no restriction on purchase of an automobile. This is because safety of

other people is involved. Consider another example from the medical field. Having funds or access to funds is a necessary condition for purchase of medicines but this is not sufficient. The purchase must be done after a prescription is obtained from a licensed medical practitioner. Along the same lines, we could have a requirement that purchase of assets is possible only after a consultation with a certified financial analyst who makes an assessment of the customer (just as a medical practitioner diagnoses a patient). The analyst can then 'prescribe' a portfolio choice.

It is true that even at present we do have financial analysts in some countries like the US. However, consultation with such an analyst is not really mandatory at present for transactions in the financial sector. There may be reservations about the quality of such analysts at present. However, we can impose more stringent criteria for granting licenses to prospective financial analysts. We will return to this point later.

Before buying financial assets, we need to ask and answer some questions. What are the long term prospects of a particular industry? How will new technologies affect a given industry? What we can say about demand for products of a particular industry in view of changing tastes over time? Understanding of these issues requires two qualities. First, it helps to know and use quantitative techniques for analysis and inference. Second, it helps to have abilities that are quite general. Insight, vision and broad-based knowledge are very general qualities that can be extremely useful in investment decisions. However, these qualities are not common at all. Only very few are 'qualified' in this respect. The bottom line is that financial decisions are not easy. Accordingly, it is best left to experts. So we need barriers to entry so that the field is not open to everybody. Some noise traders perhaps just like to trade (Black, 1986). Others would not know that they are nose traders. If they did, they would not be participating! So barriers need to be imposed.

We have just argued how analysis of fundamentals, which are related to stocks, is difficult. It is true that, at present, analysis of fundamentals alone is not sufficient to operate or invest successfully in the financial markets. It may not even be necessary for many. There is a need for other qualities like judging how others view financial assets. This is the analog of Keynes's well known beauty contest (Keynes, 1936). Participants are ranked after they have been judged by a committee of 'experts'. There are two kinds of beauty contests. One is where the judges get a compensation that is not related to their judgement of participants. The other kind of contest is where the compensation of judges is related to their assessment of participants. The closer a judge is in his or her assessment to the overall assessment by the committee as a whole, the higher is his or her compensation. Now there is an incentive to be close to the general opinion of judges.

In the first kind of contest, a judge needs to be an expert only in making an assessment of the beauty of a participant. In the second kind of contest, a judge needs to be an expert in two things. First, he or she needs to be an expert on assessment of the beauty of a participant. Second, he or she needs to have a sense of what other judges are thinking. The stock market resembles more the second kind of beauty contest than the first kind. How well an operator does depends on what he or she thinks of stocks, and what he or she thinks of others' opinions of stocks. So fundamentals alone do not matter at present.

But fundamentals alone do not matter, given the prevailing system or 'rules of the game'. At present, noise traders are present, and it becomes important for others to understand what these noise traders are thinking. After a possible removal of such noise traders, there is greater scope for focusing on fundamentals.

The suggestion made here to impose a license requirement is, in a sense, radical. It has not been done before. Moreover, the decision can affect a large number of people. Furthermore, it can change considerably the entire structure and functioning of the financial system. However, let us recall that financial crises are very costly, and they recur, every now and then, in some form or another, in some part of the world or another. Financial crises are closely related to mispricing of assets, and the latter is closely related to participation by noise traders. So the license requirement to discourage participation by noise traders can help in tackling a serious problem. It is true that reduction of noise trader risk does not imply that financial crisis will get eliminated. However, given the gravity of the situation in many a financial crisis, we need to improve a financial system in whatever different ways we can. One important way is reduction of noise trader risk, and one way to do this is to impose a licensing requirement on participation in financial markets.

Vested interests against a license requirement

This suggestion for a licensing requirement for participation in financial markets can face strong resistance because there is a large section in the economy that has a vested interest in the present system. The stock brokers and dealers, and the financial media have an interest in the present system with a high turnover. One reason we have a high turnover is that there is considerable churning by noise traders. This churning by noise traders, in turn, leads to changing prices and changing expectations of future prices, on a somewhat regular basis. The result is that even the more informed and rational participants trade more than they otherwise would have. There are commissions for brokerage houses and there is advertising revenue for the media. There is also interesting news about stock prices rising and falling. This attracts viewers and readers. This, in turn, attracts advertisers.

It is interesting that now there is a large literature on behavioural finance that analyses a financial system in which irrational traders participate on a large scale. Many such academics will possibly find it difficult to apply their analysis to a more rational system! So there can be vested interests that would like the present system to continue. It is interesting that not everybody is conscious that his or her vested interests are playing a role in their defence of the prevailing system. This adds to the difficulty of bringing about a change.

Imperfect licensing vis-à-vis no licensing

There is also the question of selection of deserving candidates for giving licenses for participation in the financial markets. Again this is a difficult task. But we could learn from experience in selection in other fields. Many countries have somewhat successfully evolved criteria for selection of bureaucrats in the government and executives in the corporate sector. Similarly, we can make an attempt at appropriate selection of

participants in financial markets. This is not an easy task. This only means that it will take some time before we can settle to a good selection mechanism. It does not mean that there is no case for making a beginning in having a license requirement for participation in financial markets.

Financial economics and physical/life sciences – A comparison

Mispricing in financial markets is often attributed to animal spirits. In the context of economics in general and financial economics in particular, we hear of animal spirits (at least since Keynes's General Theory), and the negative role that these can play. This raises an important question - why is it that animal spirits are absent in the context of other subjects such as engineering or medicine? Except in rare cases and in cases of new designs being tried, we do not hear that there is 'overshooting' or 'volatility' on a somewhat regular basis in engineering or in medicine. In the context of medical science, when a surgeon operates on a patient, we do not hear of animal spirits of the doctors or the hospital administrators having aggravated the problem, rather than having solved it (though in some less developed countries, this does happen because effectively quacks, rather than competent doctors, are in charge). The point is that animal spirits matter in finance because the field is open to just about anybody including unqualified people, whereas in physical sciences and in medicine, the field is by and large restricted to qualified people only – at least in developed countries. When only qualified people participate, there is hardly any scope for animal spirits in these other fields. However, when unqualified people participate in financial markets, there is considerable scope for animal spirits.

We do not hear of 'engineering crisis' or 'medical crisis' the way we do regularly hear of 'financial crisis'. There can be various reasons for this. One reason is that the government has allowed just about anybody to operate in financial markets without licenses. This mistake has been avoided in other fields such as engineering and medicine.

This is not to say that there is no difference between physical sciences and economics (or more specifically, financial economics). At the same time there is some scope for learning from physical sciences. Also the claim is not that with a licensing requirement, the financial markets will completely avoid mispricing and excessive volatility. We must remember that participants in the financial sector face a very difficult task. Pricing of financial assets and investment decisions requires a rare quality. Participants need vision and foresight, apart from intelligence and analytical skills. So the task is not an ordinary task and errors are likely. However, there is scope for reducing these.

Fancy or complex products

There have been complaints about growing complexity in financial markets and how this increased complexity has contributed to making the financial crisis more serious than it would otherwise have been. Observe that increasing complexity is not a feature of financial products alone. With improvements in science and technology, there is increasing complexity just about everywhere. And yet, there are hardly any complaints elsewhere. The reason is simple. In engineering or medicine, complexity is taken care of by qualified people who are the only participants. Similarly in finance, the solution is to

restrict the field to qualified and competent people only. The solution is not to ban increased complexity.

Limitations of mutual funds

It may be argued that mutual fund industry has developed over time, and that investment in financial markets through this 'professional' route is already available for investors. The implication can be that there is no need for financial analysts outside of these mutual funds to help investors. This argument is not quite correct. *First*, there is a substantial fraction of funds that does continue to get invested directly in financial markets. *Second*, the mutual funds offer a variety of schemes. This can be good, provided an investor can rationally choose amongst these. An uninformed investor is at a loss in selection of schemes. Often the selection is effectively arbitrary. This is particularly the case when it comes to a selection from within the category of sectoral funds. People with hardly any knowledge (leave aside expertise) of a particular sector in an economy take bullish or bearish positions on a particular sector. So the variety is, in practice, not very useful. We are not arguing against variety offered by mutual funds. We are only saying that investors need to consult a financial analyst in order to choose meaningfully from amongst the vast variety of funds available.

Third, it is well known that it is difficult to time investment (and withdrawal) decisions in financial markets. Often mutual fund investors get caught into buying when the market is at high levels, and into selling when the market is at low levels. So the presence of mutual funds does not help investors in this respect. The decision to enter and withdraw is left to the investor. In many cases, the mutual funds themselves tend to introduce and actively market new schemes in times of a boom. So far from helping investors avoid getting swept with the waves, the mutual funds may be possibly making it worse than if investors had taken timing decisions on their own. There is a tendency to over-invest in equity in boom times and under-invest in equity in bad times. This can be avoided to some extent, if there are mandatory consultations outside the mutual funds.

Fourth, recall the distinction made by Dow and Gorton (2006) between two types of fund managers – those who are "actively doing nothing" and those who are "simply doing nothing". An ordinary investor cannot distinguish between these two cases.

The point is that mutual funds have their limitations. The above criticism should not be misunderstood. We are not saying that mutual funds are not useful. We are only saying that there is a role for an independent financial analyst. There are decisions other than on choice of an equity portfolio or a debt portfolio. To begin with, a financial analyst can advise an investor on how much to save or dissave at any stage of life, how to divide this between real and financial assets, how to choose within the category of financial assets between bank deposits and instruments in financial markets, how to allocate between debt and equity given the amount to be invested in financial markets, how to choose between different equity schemes given the amount to be invested in equity schemes, and so on. Last but not the least, a professional finance practitioner outside a mutual fund can help an investor distinguish between managers inside mutual funds who are "actively doing nothing" and "simply doing nothing".

It is true that many investors invest in mutual funds through some distributors who can provide some advice. However, these distributors typically get commissions from mutual funds to market their products. So there is a conflict of interest. What is required is an analyst or advisor who is independent. Again to consider an analogy, in medical field, a patient consults a doctor who only prescribes medicines, which are then purchased from a separate chemist. This is done to avoid a conflict of interest. We would not like to see a doctor who receives commissions from a chemist. Similarly, we would not like to see an advisor or a financial analyst who receives commissions from a mutual fund.

Professional finance practitioners, and their education

There is evidence to show that managers in banks and those in non-bank finance companies are themselves not fully rational. This can be taken to mean that the idea of complete delegation by households to finance managers is somewhat misplaced. This argument is not quite correct for two reasons. First, the question is not whether finance managers are completely rational. Instead, the question is whether or not they are relatively far more rational than ordinary households. If they are, then there is a case for delegation. Second, we may broadly classify risk into two categories – fundamental risk and noise trader risk. It is possible that finance managers make relatively more mistakes in taking care of noise trader risk than in case of fundamental risk. In such a scenario, finance managers are themselves somewhat contributing to noise trader risk by their decisions. However, to the extent that noise trader risk originates from participation by agents other than finance managers, and to the extent that the noise trader risk is primarily due to participation by ordinary investors rather than by finance managers, then licensing requirement is useful. It will reduce participation by noise traders, there will be less noise trader risk, finance managers will make few errors, and there will be improvement in the performance of finance managers. But what if finance managers have difficulties in tackling even fundamental risk?

It is proposed here that financial decision making can be done by ordinary households but only in consultation with finance managers. It is true that finance managers themselves may not be fully informed. In the context of India, this is true to a large extent. However, the reason lies less in incompetence than in lack of proper education in general and that in financial economics in particular. Financial economics is hardly taught at the undergraduate level in India in degree courses that deal with economics/commerce/management. At the post graduate level, the conditions are better but there is considerable heterogeneity. There have been changes in the recent past but we still need to go a long way in meaningfully including financial economics as a subject in economics/commerce/management degree courses. For a long time, chartered accountants have been employed in finance jobs in India at senior levels, as if there is no difference between accountancy and finance! It may not have mattered if the training of chartered accountants included a good amount of financial economics but this was not the case for long. So as far as Indian experience goes, the performance of finance managers is affected not only by their competence but also by their education. So it is important to look at some seemingly unrelated issues like education in universities (and possibly even in schools) in the context of regulation of the financial sector.

It is true that the problem of inadequate exposure to financial economics is somewhat peculiar to India (and possibly other developing countries) and cannot be taken to be a general problem in the world economy at large. Developed countries do not face this problem. Financial economics is routinely taught there. However, they face another problem. Most of what is taught in financial economics in the developed countries is of the 'traditional' variety. It is based on the assumption of rationality. Whether we take standard undergraduate textbooks or postgraduate books, financial economics that is based on rationality dominates. We may even say that it rules. It is true that in the last twenty years or so, there have been significant advances in the field of behavioural finance. This is reflected in academic journals (and even in academic conferences). However, this is confined to research and has still not trickled down to college education. It is the latter which is relevant for most practitioners. And we need to go a long way in imparting a more meaningful education in financial economics in developed countries.

Watertight division between behavioural finance and 'other finance'

Even amongst academics, behavioural finance has come up as a separate subject within financial economics, rather than as something that is integrated with the more mainstream literature. Though there are academics who work in both fields (behavioural finance and 'mainstream finance'), we still have predominantly a somewhat watertight division between behavioural finance and, what we may call, non-behavioural finance. So even at the level of academics and research, behavioural finance has not been integrated with non-behavioural finance (Shiller, 2003). This may have contributed to the lack of a trickle down of research work to college education. Though there are still debatable issues in the new field of behavioural finance, the latter has made a dent and made itself useful in explaining behavior of traders and investors, and in explaining the working of financial markets. But most practitioners rely on the education they received in college, which is primarily of the 'traditional' variety. So though in the developed countries, financial economics is commonly taught, there are limitations of this knowledge in understanding financial markets (and financial crisis).

The place of mainstream financial economics

In view of the financial crisis and recession at present, the mainstream financial economics stands somewhat discredited in the eyes of the 'informed' public, the press, many policy makers, students, economists who do not specialize in finance, and finally many financial economists themselves. It is unfortunate that one event such as the recent financial crisis (or a few events) can have so much effect on perception of many people regarding the accomplishments in a discipline. After all, there is considerable accumulated work of very high standards. And yet, there is perhaps a good reason why there is loss of confidence in financial economics as a subject. After all, there have been difficulties in prevention of and mitigation against the financial crisis in the recent past.

One key assumption in mainstream financial economics is that agents are rational. In other words, the assumption is that noise traders are absent, and hence, noise trader risk is absent. Note that many standard textbooks in financial economics still do not include noise trader risk in their long list of various types of risks. In this section, we have made a

case for a licensing requirement that attempts to reduce participation by noise traders in the financial sector, and, more generally, in the economy as a whole. The less the participation by noise traders, the less is the noise trader risk. In the extreme case where noise trader risk is completely absent, we are possibly in a world in which mainstream financial economics is applicable.

Given the present financial system which includes noise traders, there is, indeed, some reason to be skeptical about the teachings of standard financial economics. The way out is not to discard the mainstream subject. Instead, there is a need to reduce participation by noise traders. Thereafter, we can more comfortably derive our lessons from the mainstream finance books.

IV Concluding Remarks

It is difficult to achieve perfect regulation of the financial sector. Some errors are inevitable for various practical reasons. That is not the worrisome part. However, often dogmatic positions take over. Some tend to favour controls and regulations, while many others tend to emphasise liberalization only. We have seen in this article how we can have both lacunae in financial regulations alongside financial repression. It is under-regulation that has drawn the attention of politicians and the media in the midst of the recent financial crisis and recession. However, there are also cases of over-regulation. India has experienced this for a long time. Furthermore, not all areas of under-regulation have received attention in this financial crisis. Some important areas of under-regulation, as far as this author is aware, have been left untouched.

A quick overview of over-regulation, or financial repression, in India is as follows. Given that LLR, deposit insurance, capital adequacy and supervision of banks are in place already, there is hardly any need to impose *further restrictions* like the CRR and SLR for the purpose of prudential regulation. It is also important to ensure that banks do not face restrictions or hurdles in recovery of their loans. Barriers to entry into banking can be relaxed considerably. Some of these changes can have implications for the government's finances in India. So removal of over-regulation of banks will need to go along with reforms in the government's budgetary position.

A quick overview of under-regulation is as follows. At present, operating in financial markets is open to just about anybody with funds. We have proposed that it is made mandatory that people consult certified financial analysts before any financial decisions can be executed. This may seem radical. However, there are several parallels already in place. By law, people cannot buy medicines on their own even if they have funds and feel sick. They are required to consult doctors. It is mandatory to have a prescription. There are restrictions on entry into the medical profession. Similarly, we need restrictions on entry into the finance profession. The point of these barriers is not to let only a few enter. That will be elitist. Instead, the point is to let only the qualified enter, no matter how many they are.

Under-regulation of financial markets can make an economy vulnerable to a socially costly financial crisis. On the other hand, over-regulation, or financial repression, in the banking sector creates distortions in an economy, adversely affects allocative efficiency, and decreases the output level in the economy. So, just as there is a rationale for removing the lacunae in financial regulations, there is also a case for removal of financial repression. Of course, we need to take care that, in the process of restructuring, we do not take a narrow view and confine reforms to the financial sector alone. A lot of other considerations need to be kept in mind in the process (e.g. the state of teaching and research in financial economics, and the credibility of certification process).

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