A Theoretical Appraisal of Elaborating a Stock Market Prudential Surveillance System Based on a Conceptual Model of Integration of the Financial Sectors and Market Risk Mitigation

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Abstract

This theoretical research investigates the integration process between the two most prominent financial sectors the stock market and the credit market and attempts to engineer an alternative prudential toolkit shaped for stock market resilience from systemic risk and financial instability and that complements the basic Basel II and III framework shaped for the credit market. An analytical study will be conducted for the purpose of engineering a stock market prudential surveillance system with both micro and macro-prudential instruments, taking into account the integration constraints and unveiling thereby the threats ensuing from excessive covariance between stock returns. It finds evidence of theoretical arguments implying amplification and offsetting of threats by interaction between prudential instruments deployed simultaneously across sectors, for instance the credit sector and the stock market sector and finds solutions to collusion of interaction within the framework of elaborating instruments related to the prudential engineering. This research holds that Pareto improvement in the prevalence of market frictions introduced by prudential surveillance instruments leaves room for resilience from the onslaught of market risk entailed by sentiment driven speculation. Prudential surveillance fashioned like Basel II and III for the scope of mitigating stock market vulnerability to excessive volatility harbours some highly challengable presumptions regarding the methodology to be persued for the sake of shaping the best methodological approach to prudential engineering of instruments. The interaction process between the proposed prudential scheme and monetary policy highlights one additional challenging scope for central banking while shaping monetary policy stance. This complementary prudential framework reinvigorates the Basel II and III agreements which is specific to the credit sector and might reveal in shortage of instruments providing

surveillance on the sources of systemic exposure whenever it is stemming from the stock market. This reinvigorating toolkit thereby reinforces the surveillance instruments aimed at mitigating financial instability in a more pervasive and comprehensive method.

Keywords

Overreaction, Under-Reaction, Volatility, Prudential Regulation,
Market Risk, Hedging, Efficiency, Investor Sentiment, Financial Stability,
Macroprudential, Microprudential, Collision

1. Introduction

The Stock market stability matters because a stock market's vulnerability in promptly responding to outside stimuli provides accurate and up to date information about the entire financial market and economy. These in turn affect commensurately global investor sentiment and their willingness to fuel capital inflows inside the country which constitute a leakage for the financial system overall to ensure availability of liquidity and credit for the various financial sectors; the credit sector, the insurance sector, the stock market sector.

These benefits are accompanied by real economic benefits tantamount to transfer of knowledge and combating joblessness.

Stock market prudential surveillance and intervention schemes have the main goal of mitigating Market risk pertaining to systemic exposure to excessive volatility and the repercussions of over-reaction and under reaction to earnings that exacerbate market excessive volatility and the resulting financial instability.

In this respect, there is a role to be played by prudential authorities in Stock markets.

This role consists in mitigating stock market instability and avoiding the contingency of occurrence of market crashes.

Stock market stability includes covariance between macroeconomic fundamentals relative to business cycle fluctuations and returns on equity as well as investor sentiment and risk appetite.

How far does prudential intervention and surveillance of the stock exchange fluctuations can stand for a role played by the government to ensure stock market stability and favor circumvention of excessive market risk?

What is the basic rule lying behind returns expectations and investment choice of trading and how far does investment sentiment and characteristics of firms affect the hindrance to financial stability and provide a way into improving prudential surveillance?

What instruments grasp most the basics of threats accompanying uncertainty, excessive fluctuations of equity prices, contagion and systemic market risk?

The macro prudential analysis as the one adopted in Basel II and III agreements deals with the soundness of the banking system supervision as being the

key systemic component of financial sector intermediaries' supervision. This conventional macro prudential framework of surveillance assumes implicitly that ensuring awareness and resilience of the banking system is sufficient to promote financial stability for the overall financial system and mitigate related financial vulnerabilities. It argues that taken into account the vast set of banking activities in syndicated loans, credit loans and securities underwriting, the conventional prudential framework that is targeted at banking supervision and credit market awareness and surveillance also to a major extent favors resilience of the whole financial system in terms of fulfillment of financial stability improvement and financial vulnerability mitigation.

These assertions should be subjected to criticism as stock market risk stands for a financial instability driver as much as the credit market.

Therefore, in this paper, we assume that this assumption does not hold and we make clear that there is a distinction between ensuring credit sector surveillance and stock market surveillance up to a certain limit not to neglect.

This is a more precise and realistic assumption that the one taken in Basel II and III frameworks because the role played by banks in the securities market is important but not pervasive. Thus ensuring resilience of the banking system to systemic exposure and financial vulnerability does not necessarily hold for the stock market.

By a way of consequence, there is an urgent call for setting an adequate prudential framework complementary to Basel II and III that ensures stability of the stock market.

2. Stock Market Stability and Efficiency

As long as the stock market is of commensurate importance for economic performance considerations, there is a longstanding interdependence between macroeconomic aggregates and stock market financial items emphasizing the channels through which a shock in the stock market propagates to the economy and affects economic performance as stated in Sajjad, Noreen, & Zaman (2013) that reiterated the main findings of a research undertaken by Pilinkus (2010) indicating while emphasizing on the dependence of stock market on the macroeconomic indicators by running co-integration tests such as Johansen and Vector autocorrection that: "Johansen co-integration tests signified that the stock market and the macroeconomic factors have a long term relationship and the stock market is somewhat dependent on the macroeconomic variables of the economy".

According to Shreya & Sangeetha (2019): "Irrespective of the country, the macroeconomic variables have a significant effect not only on the capital market but also on the businesses and the macroeconomic factors affect the investment risk in any country."

According to Son et al. (2009): "A stable stock market is essential to the entire financial system and economy stressing the significance of monitoring the stability of the stock market."

Therefore the requirement for shaping a prudential framework stems from the need of ensuring stability and preserving it with intervention in order to ascertain an adequate pattern of economic growth.

Indeed according to the super-multiplier theory firstly posited by P A Samuelson and J R Hicks which is an effect that results from the interaction between the financial accelerator and the Keynesian multiplier or a combined leverage effect: "the interaction of the multiplier and accelerator is capable under certain circumstances of generating continuous cyclical fluctuations. The effects of financial imbalances translate into greater effects on the macroeconomic situation. This is where acceleration principle stems from".

The issue of efficiency is of commensurate importance in describing the root cause of financial instability.

Some authors advocate that inefficiency justifies financial instability and that it is the rationale for requiring a prudential framework whose scope is to ascertain mitigated market risk in order to attenuate financial instability.

2.1. General Assertions on Market Risk, Volatility and Covariance between Stock Returns

Adrian & Rosenberg (2008) explore the cross-sectional pricing of volatility risk by decomposing equity market volatility into short- and long-run components. Their finding is that: "Prices of risk are negative and significant for both volatility components implies that investors pay for insurance against increases in volatility, even if those increases have little persistence. The short-run component captures market skewness risk, which they interpret as a measure of the tightness of financial constraints. The long-run component relates to business cycle risk. Furthermore, a three-factor pricing model with the market return and the two volatility components compares favorably to benchmark models".

2.2. The Structure of Trading Choice Making Based on Investor Sentiment and Firms' Characteristics

We attempt to provide two measures of stock market stability displaying two various purviews having various scopes.

One measure relates to the macroeconomic purview of the definition of stability implications, whereas, the second one displays an efficiency purview.

1) The macroeconomic purview:

The compounded Stock market stability index is the inverse of the propensity of stock volatility computed as the product of two indexes one measuring the amplitude of the core industry where ignition of contagion in stock prices patterns originates from or the source of contagion powered by the extent of contagion or how volatility propagates and the other measuring covariance between stock prices volatility and the business cycle phase including stock market efficiency.

Indeed, as long as partial Pareto optimality means inexistence of idiosyncratic diversification, the pattern of volatility is commensurately covariant with irra-

tional sentiment based speculation whereby as market values are close to book values there is no arbitrage making whenever the market is efficient and henceforth efficiency measures the extent of instability.

It stands that as market values are nearly identical to book values the shape of business cycle matters and their effects on production capacity provides assessment of the volatility of market values of stock prices via the dividend channel of transmission of volatility that transfers fluctuations from production capacity to book and market values assuming that market values are exogenous somehow to traders when markets are efficient and supply of stock is dependent on production capacity.

Stock Market Stability Index = [(Market Value of Core Industry (Market sentiment))*OG*($\sum$ Market to book values)] $- 1$

As long as absence of arbitrage prospects is beneficial for speculators, irrational investors driven by sentiment guide market risk towards excess volatile profitability expected aspects of stock prices.

Hence, stock market stability goes in reverse direction with overall profitability of trading.

2) The Stock market efficiency purview:

The stock market stability index should be measured in terms of the dispersion of the impact effect of incremental modifications of factors of prominent relevance involving both stability and efficiency criteria.

As a matter of fact, as long as stability and efficiency in its semi-strong form represent a conundrum involving both arbitrage and sentiment due to the clear tradeoff between them and obvious must of affording both of them, it is obvious that fathoming one criterion either stability or efficiency should be conditional on the other in reference to the famous economic concept of opportunity cost.

Our fundamental figure grasping simultaneously most of aspects salient to these both issues and compromising both investor risk appetite and irrational sentiment is the price to earnings ratio.

Indeed, this ratio, although simple, provides accurate information about the nature of the firm whose stakes are traded. As the (price to earnings) ratio varies the qualification of traded stakes vary from most rationally based on arbitrage and historical accounting value analysis to the least rationally based on intuitive sentiment and gambling distinguished by determinants that are tough to grasp.

The price to earnings ratio informs also on the availability of information salient to the firm whose shares are traded but also whether the efficient market hypothesis holds or not. Most important of all it informs on the closeness of the market to the book value which is rudimental for a clear assessment of the willingness of investors to speculate and by a way of consequence assessed in sensitivity or impact effect of incremental variations of price to earnings ratio can provide an early warning scheme whereby we can gauge the extent to which there is salient threat of speculation compromising stability of the stock market.

Thus, by computing the elasticity of market to book value of shares to price to earnings ratio we can provide a tool of commensurate importance for stability

assessment which might be called; the dispersion of the opportunity cost between the willingness to speculate based on sentiment and the Pareto improvement affordable through arbitrage based trading in the stock market.

This is the standard deviation of the elasticity of market to book values of shares to price to earnings ratio.

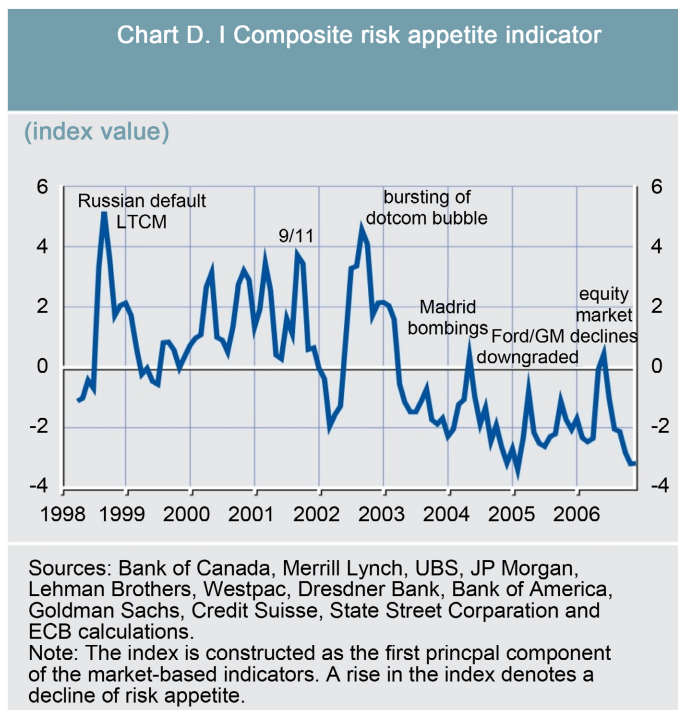Stability index = Standard deviation {e(MBV/(Price/Earning)}

2.3. Investor Risk Appetite: A General Appraisal

Investor risk appetite as shown in the following chart displaying its average shape world-wide, is following a pattern of alternations between pikes and troughs meaning that it is either pro-cyclical in phase with the business cycle or countercyclical but anyway not a-cyclical.

Therefore there is a strong correlation between business fluctuations in investor risk appetite suggesting a string relationship between market risk and instability and the business cycle fluctuations.

Therefore the consensus that the main trigger of volatility comes from new comes and research and Development industries and firms subjected to restructuration and bankruptcy is subject to criticism because as long as business cycle fluctuations affect considerably investor risk appetite there are skepticism about the role played by the main sources of excessive volatility causing financial instability that are found out in the literature to be unpredictable.

Indeed the main source of financial instability comes from those businesses whose profitability prospects are predictable if not investor confidence would have not been responsive to business fluctuations meaning cyclical. This is indeed not the case.

Chart D. I Composite risk appetite indicator

(index value)

Sources: Bank of Canada, Merrill Lynch, UBS, JP Morgan, Lehman Brothers, Westpac, Dresdner Bank, Bank of America, Goldman Sachs, Credit Suisse, State Street Corparation and ECB calculations.
Note: The index is constructed as the first princpal component of the market-based indicators. A rise in the index denotes a decline of risk appetite.

It is noteworthy to state here that investor risk appetite is inversely proportional to the pikes in the market based principal components.

As a matter of fact as there is a pike in the market based principal component following a conjectural event having an effect of an upswing or downswing in the market index, the investor risk appetite behaves cotrariwise to it.

With respect to the conjecture, investor risk appetite is countercyclical to most prominant conjectural events meaning that as volatility increases the predisposition of investors to bear excessive risk as defining their risk appetite declines contrariwise to the movement in fluctuations in either case a sharp increase or a sharp decline.

This can be interpreted that the commonsense risk appetite of investors has got a preference of periods of tranquility in the fluctuations of market indicators.

Indeed, in terms of forecasting the market behavior it is far better affordable to have a clear foresightedness of the market tendency although not necessarily true in periods of tranquility of market indicators than in periods of excessive volatility where it is far more difficult to give a clear foresifghtedness of how the market would behave and thereafter be likely to bear excesive risk or not depending on the risk appetite of the defined investor.

2.4. Stock Market Efficiency

Efficiency of equilibrium in the stock market is measured in terms of market value premium over book value. This means essentially that stock market efficiency is inversely proportional to its stability.

The hindrance of gathering both efficiency and stability in the stock market raises the debate of incompatibility between prudential aspects and efficiency aspects in equilibrium.

Prudential surveillance should be constrained by the task of favoring an optimal efficient market value of stocks if not the distortions introduced by Prudential instruments become too expensive for stock market efficiency considerations and for the effect of efficiency of the stock market on economic performance.

As a matter of fact the market value of firms is a driver for performance added value and future expansionary capacity that promotes economic growth.

Can stock market efficiency be considered as a prudential instrument or an early warning instrument enabling to provide forward guidance for market risk expectations and future patterns?

Stock market efficiency is closely linked to Pareto optionality a situation where we can't improve a situation of one dealer without deteriorating the situation of one other.

Indeed stock market instability comes from the deterioration of the situation of several factors that propagates to others until there exists a market crash.

Thus in other words stock market efficiency goes in the same direction with stock market instability.

The optimal situation would be a situation where we can improve the position of some speculators without deteriorating that of others.

Market sentiment and irrational decision making about trading based on absence of arbitrage further exacerbates the pattern of fluctuations and volatility with speculation based on rumors and lack of information that triggers limitation and motivates excess volatility.

In the case on non Pareto optimality the fact that the situation of some traders improves without deteriorating that of others slows down the excess volatility reigning over the stock market trading because the latter can be better off without imitating the former. By a way of consequence stock prices fluctuations are average and volatility is not excessive.

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Indeed as efficiency improves there is more room for Pareto optimality. Which means that we can less improve the situation of several traders without deteriorating that of others? This can be achieved viewed macro economically whenever the market to book value decreases to less than one.

This also stands for a prerequisite of increased instability or deteriorated stability because as efficiency improves and book value is close to market value, volatility of stock market is very sensitive to business cycle fluctuations and irrational investors are more driven by sentiment as long as the difference between market value to book value stands for an rationally based indicator of future earnings prospects. This means that through increased trading of speculators driven by irrational sentiment volatility of stock prices increases and by a way of consequence stock market stability deteriorates.

Stock market efficiency is measured in terms of degree of partial optimality in other words how far several traders can be better off without deteriorating other traders' earnings situation.

The more the Stock market is efficient the fewer traders are better off without deteriorating other traders' earnings.

According to Dimson & Massoud (1998): "The available theory of market efficiency involves defining an efficient market as one in which trading on available information fails to provide an abnormal profit. A market can be deemed to be efficient therefore only if we posit a model for returns. From this point tests of market efficiency become joint tests of market behavior and models of asset pricing. But long term mispricing however could constitute a serious violation of market efficiency. Stocks which have underperformed the most over a three to five year period average the highest market adjusted return of the subsequent period and vice versa.

A return reversal is overreaction to market in which stock prices diverge from fundamental values. There is short run positive correlation among stock returns and long run negative correlation which leads to overreaction and under-reaction".

A theoretical normative explanation of efficiency and inefficiency is given by Joseph (1982) in his theoretical work. Entitled: "The inefficiency of stock market equilibrium" where he provides an analytical proof of the inefficiency of market equilibrium

According to him: "the widespread view that the market equilibrium is efficient is only true fort the special case when there is one commodity because any changes n the allocation of investment on the distribution of ownership shares in the efficient assets will change the distribution in prices. Hence, the nature of risky assets which are marketed changes. Since there are incomplete risks markets, this change in the nature of risky assets which are available has welfare effects which need to be taken into account. There are two sets of restrictions on preferences which will guarantee that the market will be efficient. The distribution of ownership claims has no effect on price distribution only if individuals have identical homotetic indifference curves. But changes in the allocation of investment have no effects only if there is no trade because all individuals are identical or when there is no effective risk because all individuals have the same demand curve with unitary price elasticity. These assumptions are inelastic therefore market equilibrium is inefficient".

Hence, these statements affect the relationship of stock market prices volatility patterns covariance with the business cycle. Indeed, as long as stock market is more efficient, market values of stocks close to book values. This makes trading affect commensurately production capacity as long as stock prices are inversely proportional to dividends that are a trigger of shareholders willingness to inject equity in firms. By a way of consequence, the more stock market is efficient the more the pattern of stock tradings is covariance with the business cycle.

Stated otherwise, as stock market becomes more efficient stock demand higher share prices and by a way of consequence lowers dividends and increases demand for credit.

This is how the credit market is compromised.

But as long as prices rise in the stock market credit risk does the same accordingly.

As credit risk increases so does the willingness of the banking system to bear more risk and NCPS. So from the ISLM representation output gap becomes lower and business cycles are shorter when demand of stocks is in excess and share prices are rising.

Contrariwise when supply of stocks is higher and share prices are declining business cycle length is higher.

Seen otherwise, increased covariance between business cycle phase and stock prices makes expansionary phases increase production and book value and with increased stock market efficiency market value in parallel which decreases divi-

dends and increases NCPS and thereby shortens the business cycle or decreases output gap.

PROOF:

We refer to the aggregate demand aggregate supply equilibrium and adjustment in the IS-LM Keynesian backed theory for a closed economy to simplify the analysis.

As a matter of fact, for increases in money market rates for a certain level of real interest rate, inflation is assumed to increase, which is interpreted in the IS-LM model as an increase in the price level. The adjustment in the equilibrium between aggregate demand and aggregate supply makes them shift to the right and shows a decrease in output gap for increases in propensity to invest that steepen the aggregate demand curve.

The slope of aggregate demand is computed as follows according to Keynesian theory:

By totally differentiating the IS and LM curves equations we find that:

$$Y = c\left(y - t\left(y\right)\right) + i\left(r\right) + g$$

By differentiation: $\mathrm{d}y = c'\left(1 - t\right)\mathrm{d}y + i'\mathrm{d}r + \mathrm{d}g$

$$M/P = l\left(r\right) + k\left(y\right)$$

By differentiation: $1/p\,\mathrm{d}M - M/p^2\,\mathrm{d}P = l'\mathrm{d}r + k'\mathrm{d}y$

So that: $\mathrm{d}r = \left(1/\left(l' * p\right)\right)\mathrm{d}M - \left(M/\left(l' * p^2\right)\right)\mathrm{d}P - \left(k'/l'\right)\mathrm{d}y$

Substituting into dy leads to:

$$\mathrm{d}y = c'\left(1 - t\right)\mathrm{d}y + i'\left(\left(1/\left(l' * p\right)\right)\mathrm{d}M - \left(M/\left(l' * p^2\right)\right)\mathrm{d}P - \left(k'/l'\right)\mathrm{d}y\right) + \mathrm{d}g$$

Therefore, the aggregate demand slope which is equl to $\mathrm{d}y/\mathrm{d}P$

is $\mathrm{d}y/\mathrm{d}P = -\left(\left(i'/l'\right)M\right)\Big/\left(\left(1 - c'\left(1 - t'\right)\right) + i'\left(k'/l'\right)\right)$

This slope increases with increases in i' which is the propensity to invest.

Therefore, when the aggregate demand slope increases, the aggregate demand curve becomes steeper and OG lower or decrease the propensity to invest increases and so does investment.

Contrariwise, during contraction phases production decreases and book value of firms decreases but with increased stock market efficiency market value decreases which augments dividends and decreases NCPS and by a way of consequence augments output gap. This makes business cycles longer.

Therefore, as stock markets are more efficient expansionary phases are shorter and recessionary phases are longer.

In conclusion stock market efficiency is harmful for economic performance.

As long as stock market efficiency is opposed to stock market stability, it follows that stock market stability is beneficial for economic performance.

Therefore stock market stability has to be promoted. This can be purportedly achieved through prudential surveillance whose instruments are shaped to motivate increased stock market stability and whose aim is to promote stock market stability.

2.5. Appraisal of the Rationale of Setting a Prudential Toolkit

Market inefficiency through overreaction and under-reaction discussed above, is the main root of the onslaught of systemic excessive volatility leading to financial instability and the risk of the onslaught of stock market hindrances to tranquility and eventually meltdowns. And stock crashes.

This is the fundamental reason justifying the requirement of setting a prudential framework aiming at engineering surveillance instruments whose purpose is to ascertain complete resilience from financial instability or at least containing it at the maximum in order to avoid dangerous financial meltdowns and the risk of outburst of stock crashes.

So the first reason for setting a prudential toolkit is comprehensive and relates to the inability of Basel II and III agreements which are specific to the credit sector surveillance to be valid for ascertaining stock market prudential surveillance.

And the second reason is analytical and relates to the fact that stock market inefficiency which has been discussed above exacerbates financial instability in a way that dismays resilience from financial meltdowns which requires setting a prudential framework targeting the stock market anomalies specifically.

3. Prudential Instruments Engineering

The structural form of prudential instruments is inspired from both the ratio based structure of Basel II and III framework and the complementary method of sensitivity analyses proposed by Marzouki M in his phd dissertation (2022): "A theory of strategic financial foresight and prudential engineering: Case of Tunisia."

3.1. Research Methodology

The structural form or mathematical formula matters a lot as will be shown as each formula plays a certain role having specific economic and financial implication.

The root market generator of speculation and systemic market risk exposure that is the basic source of market risk fluctuations that are not pertaining to arbitrage and trigger most of market volatility and uncertainty is a certain combination of the key industries in extreme dependency to volatility and contagion.

Index of market risk = Index of market sentiment volatility * index of intensity of propagation of contagion from the root industry where volatility originates.

The issue of randomness of stock prices volatility seldom heralds opportunities of optimal diversification and represents a major cause of market risk and threat to stock market stability and the risk of a collapse.

This issue heralds in unpredictability and high covariance of fundamental items pertaining to the stock market making contagion through excessive volatility and hence likely exacerbation of meltdowns or collapse and other troublesome scenarios of undesirable implications of commensurate importance and

relevance to investors' earnings occur.

Macro prudential instruments should take the form of ratios because they are intended to grasp the covariance between the business cycle fluctuations and investor sentiment implications on market volatility which reveals to be dependent on caps and ceilings of proportions including firms' production and dividend policies as major factors drawing a wedge between market valuation and business cycle dependent production demand fluctuations whereas micro prudential instruments should take the form of elasticity because as long as investor sentiment is irrational and implies concern with excess volatility, its irrationally based volatility should be fathomed through impact effects involving causality, interconnectedness and interdependencies.

The difference between methodologies adopted in both frameworks is due to the shape and extent of covariance between interdependent volatilities whereby the stake of volatility plays a prominent role in determining the mathematical formula of the restriction that fits better to unveil the threat involved and that reveals compromising to market stability and build adequate resilience from it in both frameworks.

By a way of consequence, the Macro prudential framework methodological approach is "Up to Bottom" based; and focuses on covariance between business cycle and market prices expectations about production policy that affects the shape of stock market and share prices as being commensurately dependent on production and economic activity performance and fluctuations across the business cycle

Whereas, in the micro prudential framework, the methodological approach is

«Bottom to Up» and focuses on that bothers irrational investors or traders that mainly are not rational arbitrageurs rather they are characterized by irrationally based decision making driven by sentiment for whom determinants and fundamentals are difficult to grasp or model.

As a matter of fact, according to Baker & Wargler (2007): "The top down approach focuses on the measurement of reduced form aggregate sentiment and traces its effects to market returns and individual stocks. Whereas, the new direction in the top down approach build on the two broader and more influential assumptions of behavioral finance namely sentiment and limits to arbitrage to explain which stocks are likely to be most affected by sentiment rather than simply pointing out the level of qtock prices in the aggregate depends on sentiment . In particular, stocks of low capitalization, younger, unprofitable, high volatility, non-dividend paying growth companies or stocks of firms in financial distress are likely to be disproportionately sensitive to brad waves of investor sentiment".

Therefore, restrictions in this framework should focus on binding sensitivity of certain items to others because excess volatility is mainly fathomable through impact effect of the sort that is graspable by the elasticity that is a best mathematical measure of the excesses of financial volatility.

3.2. Prudential Surveillance and Instruments

Prudential instruments are aimed at motivating Stock market stability. They are restrictions comparable to the Basel II and III agreements setting prudential toolkit for the financial system restrictions framework.

They aim at mitigating Stock market volatility and better shaping interdependency between volatile stocks and sentiment impact on key root industries where contagion of excess volatility propagates from. In addition they provide a framework of resilience from speculative attacks that result from mass purchases or sell offs that are badly intended to affect the overall information available for traders.

Shaping a prudential scheme for prudential intervention whose scope is to enhance resilience from these effects is an endeavoring task entitled to engineer instruments taking the form of ratios or elasticity fashioned with respect to the same methodology as in Basel II and III agreements pertaining to financial sector prudential surveillance.

The issue of volatility and contagion can be adequately assessed exclusively through a mathematical tool that measures impact effects of incremental variations which is the elasticity. Macro prudential intervention might be related to covariance between business cycle and market behavior while Micro prudential intervention is essentially related to the dividend policy and rent of capital issues that exert an effect on expectations of future returns.

The macro-prudential instruments engineering method derives from the empirical findings about the determinants of stock returns as explained by Fama & French (1992) where Daxhammer & Kappler (2016) reiterated that: "According to the CAPM only one single risk factor the market beta is sufficient to determine stock returns. But Fama and French in their empirical work examined the effect of several factors on average stock returns and come out to the conclusion that beta does not seem to help explain the cross section of average stock returns. In contrast, they found significant evidence that the combination of firm size and book to market equity (BE/ME) absorbs the role of the other tested variables which are financial leverage to earnings to price ratio for determining stock returns"

We emphasize the role of these factors in shaping macro-prudential instruments while capping them or ceiling them accordingly to whether their increase affects financial stability negatively or positively respectively.

3.3. Implications of the Interaction between Stock Market Stability and Monetary Policy

The impact of monetary policy stance on investor wealth either positively or negatively contributes to their risk aversion and irrationality or affects considerably their sentiment and trading decision making.

This in turn affects market values and volatility of prices.

Sentiment changes with wealth and during periods of high speculation. It be-

comes during these periods highly volatile.

This pattern suggests that the relative influence of fundamentals and sentiment on market returns changes over time.

In the absence of rational arbitrage general tendency orienting the market, key industries like new small ones with high breakthroughs prospects and financially distressed ones lead overall speculation.

These types of firms are very sensitive to the monetary policy stance indeed.

They need credit as well as equity.

They are specifically sensitive to inflation.

They have only few tangible assets and more intangible assets.

This in turn further exacerbates their contribution to market risk in presence of tightening monetary policy.

Credit conditions become highly costly and scarce and rational arbitrage do not find enough background and fundamentals to proceed to their arbitrage.

So, monetary policy effect on sentiment is twofold. Firstly it affects investors' wealth and secondly it exacerbates new firms and financially distressed firms situations at that point that only investors driven by irrational sentiment can afford trading their shares.

Equity return fluctuations affect business cycle fluctuations that compromise monetary policy conducting and result in an indirect effect of transmission empowered by the alternation between debt and equity as financing sources of corporate investments.

Thus, sensitivity based instruments of surveillance help prevent contagion and is an adequate way for ensuring resilience once set as a restriction taking the form of a cap or a ceiling depending on the situation.

Newly established firms and financially distressed ones are those for whom volatility of prices are the highest.

Therefore, there has to be a sort of reserve requirements for the volume of trading for these types of firms that are highly compromising for market risk firstly because of their high volatility and secondly because they attract irrational investors that are neither risk averse nor arbitrageurs and by a way of consequence eliminates any possibility of scientific prediction of the behavior of prices like in the capital asset pricing model as the market beta is variable and can be whatever not necessarily of a positive sign.

The so called reserve requirement is intended to offset or attenuate the excess volatility involved by absence of reliable data for an adequate assessment of arbitrageurs like past dividends or clarity of performance and expected earnings.

The form of the elasticity is a cap like $e(D/\Omega)$ where Ω is the monopoly mark up.

As a matter of fact these two types of firms under consideration can be taken as monopolies because they are the only actors in their markets. They are expected to supply shares for investors in a market where they are the only ones to act.

So they are expected to fulfill the requirement of a monopoly to equate marginal revenue with marginal cost.

The instrument might be called: Warrant of stabilization for strategically volatility compromising firms.

The markup has to be functional on the Reserve Requirement pegging or restricting in volume of trade and is variable in function of the mark up.

The more the firm is new comer with unpredictable shape of expected earning or the more the firm is financially distressed the higher is the markup and the more demand it can tolerate once the restriction is imposed.

Macro prudential instruments are methodologically set up to bottom because mainly macro prudential framework is related to the covariance between the business cycle and the stock prices and therefore implies policy and restrictions on items related to firms' management with respect to both the corporate profitability depending on the phase of the business cycle and the corporate dividend policy binding the asset prices whose volatility is in congruence with business cycle implications on production capacity. Instead, micro prudential instruments relate to attenuating volatility implied by irrational investors neither acting like arbitrageurs nor like risk adverse investors.

3.4. Engineered Macroprudential Instruments

Instrument 1:
- Caps on (Dividends/Cost of borrowing) or so the called "cost of capital ratio".

If (dividends/cost of borrowing) ratio increases then the management team decision making will be sensitive to stakeholders investment sentiments. This in turn will induce a bias in the volatility of the share prices and their covariance with overall share prices that affect stakeholders' decision making about arbitrage related to equity distributed among the various firms. Share prices when assessed by their book value that is set through the expectations and financial accounting of the firm's managers and for a given efficiency of the stock market that mainly affects the market to book value, an increase in the ratio will make volatility and covariance between stocks increase far beyond tolerable by the prudential authority.

Therefore it has to cap it through a restriction to avoid excess volatility to exacerbate financial instability.

Instrument 2:
- Caps on (Equity/Expected return on industry) or the so called "sensitivity of stakeholders to profitability of companies".

This instrument is based on the principal that whenever stakeholders are too responsive to increases in expected returns in an industry they are attracted in, there will be a bias in amplification of volatility of stock prices and excessive cross correlation between firms acting in the same industry generating thereby a hindrance to financial stability.

Therefore, prudential regulation should consider alleviating this hindrance through capping or limiting the ratio of equity of firms to the expected return of the industry they are acting in.

Instrument 3:

- Ceilings on (Tangible assets/Equity) or the so called "volatility induced allocation of equity".

Now from the standpoint of the management teams of corporations, there should be more concern about diminishing subjectively priced assets or those whose value is cross correlated to an issue pertaining to the same industry or the business cycle. Instead, tangible assets are secure assets in the sense they are like a store of value for the book value of the firm and are least subject to fluctuations whenever there is a case of considering the gap between the market value and the book value. As a matter of fact intangible assets are more likely to be assessed by their market values than tangible assets. Eventually there is a hindrance in having market and book values too close drawing a wedge of traceability for speculators that can make sure about the rationale lying behind the discrepancies between book and market values and correct their behavior correspondingly o what should be done to avoid to be driven by sentiment or speculation based decision making more than having a clear idea about what is happening when book and market values are far from each other.

Instrument 4:

- Ceiling on Covariance between External borrowing and internal borrowing or what is called "countercyclical financial accelerator buffers".

This instrument is comparable to the first instrument as it helps diversify the source of volatility and cross correlation between the determinants of internal borrowing that mainly are fundamentally related to correlation to other stock prices whereas external borrowing is dependent on credit market conditions whose volatility is dissipated in the banking sector and retraceable only through the banking decision making through the search for yield channel whenever they hold a vast proportion of assets in the form of shares in other corporations but at least not depending on the credit market conditions where most correlation stems from monetary policy conditions.

The principal is comparable to the countercyclical capital buffers of the Basel Framework for credit market prudential surveillance but it applies to the notion of financial accelerator explained more in depth later in the research in the reference by Fender (2000) in the next chapter.

3.5. Engineered Microprudential Instruments

Adopting agreed upon profitability ranking of securities to be an essential for speculation to avoid manipulation of echoing mass purchasing and selling with bad intensions.

There should be a margin of the range of quantity of stock to be traded that is complying with the ranking of the security and a smaller margin into be subject

to irrational sentiment based decision making.

This aims essentially at promoting stock market stability and resilience to contagion and badly intended speculation as a micro prudential surveillance instrument consisting in putting into equation quantity to be purchased or sold so that it is dependent up to a certain limit on rational ranking of the security and to irrational sentiment based decision making in such a way that the sentiment based decision making determines the range within which quantity traded should evolve and the median of the range is the quantity corresponding to the agreed upon ranking of the security to be determined by the prudential authority of the stock exchange board of Prudential policy makers.

The Interaction between monetary policy and stock market stability is assessed in terms of moderation of fluctuations of returns and market risk and predictability of future patterns of asset prices conditional of attenuating the volatility triggering effect of the credit and inflation transmission mechanisms of monetary policy conducting on stock prices volatility.

Instrument 1:

Dividend volatility control e(Div/MMR)

As long as according to the CAPM stock prices are inversely related to their dividends, in order to control price volatility, dividend volatility has to be controlled accurately.

This might be achieved through restricting key financially meaningful elasticity such as e(div/MMR) as indeed MMR has a role to play in setting the average loan rate or the cost of borrowing. As corporate managers proceed to an arbitrage between debt and equity financing of their production projects, it follows that the cost of borrowing is indirectly affected by book prices and dividends and also market prices that are endogenously shaped by the supply side of the firm.

As the cost of borrowing increases accordingly to a tightened monetary policy, managers of corporations increase incentives for stakeholders' to shift their financing source from debt to equity. They indeed do so continuously for the sake of the yield and profitability with the ongoing time dependent changes in the credit market conditions and monetary policy stance.

Therefore dividends are volatile. They depend on the business cycle phase; the credit market conditions the monetary policy stance and also eventually the fiscal policy.

As long as elasticity or vulnerabilities are subject to surveillance and caps, covariance between credit market conditions monetary policy stance and the volatility of stock prices in the stock market is better subjected to surveillance.

This nevertheless restricts the alternatives of corporate managers whose optimal profitability function becomes more constrained by the prudential caps or other restrictions.

Instrument 2:

- Covariance between business cycle fluctuations and stock market fluctuations:

e(average price to earnings ratio/average MBV of traded securities).

MBV is an indicator of the stance of deviation of the contribution of an individual investor from actual to potential added value.

It is consented that economic activity fluctuations and stock market values fluctuations should be cointegrated and asymptotically convergent with a lower volatility for output gap variations than market values.

As a matter of fact In the consumption based wealth model framework stock market values are ensuring from wealth in the basic asset pricing model where consumption stands for actual output level and its fluctuations stand for output gap and wealth indicates asset values.

Therefore this consumption wealth induced asset pricing model shows theoretically a co-integration between business cycle economic fluctuations and stock prices fluctuations.

We assume that the more this covariance is strong in the short and medium run the more there is threat induced by excess volatility of market prices to financial or stock market stability.

So micro prudential intervention should consider capping for an individual investor the impact of MBV on the average price to earnings ratio which serves as a gauge of the sensitivity of market volatility to business cycle fluctuations at a disaggregated level and as a gauge for avoiding that the stake of contribution of the individual investor to fluctuations of sum of added values as indicated by price to earnings ratio does not exceed the business cycle fluctuation indicator as partially correlated with MBV because market values stand for actual output whereas book values stand for potential output.

Instrument 3: The effect of investor sentiment on the cross correlation between stock prices:

e(SD average MBV/investor sentiment)

A wave of investor sentiment has larger effects on securities whose valuations are highly subjective and difficult to arbitrage. Consistent with this prediction, we find that when beginning-of-period proxies for sentiment are low, subsequent returns are relatively high for small stocks, young stocks, high volatility stocks, unprofitable stocks, non-dividend-paying stocks, extreme growth stocks, and distressed stocks. When sentiment is high, on the other hand, these categories of stock earn relatively low subsequent returns.

Classical finance theory leaves no role for investor sentiment. Rather, this theory argues that competition among rational investors, who diversify to optimize the statistical properties of their portfolios, will lead to an equilibrium in which prices equal the rationally discounted value of expected cash flows, and in which the cross-section of expected returns depends only on the cross-section of systematic risks. 1 Even if some investors are irrational, classical theory argues, their demands are offset by arbitrageurs and thus have no significant impact on prices.

Modern finance theory argues that investor sentiment may have significant

effects on the cross-section of stock prices. We start with simple theoretical predictions. Because a mispricing is the result of an uninformed demand shock in the presence of a binding arbitrage constraint, we predict that a broad-based wave of sentiment has cross-sectional effects (that is, does not simply raise or lower all prices equally) when sentiment-based demands or arbitrage constraints vary across stocks. In practice, these two distinct channels lead to quite similar predictions because stocks that are likely to be most sensitive to speculative demand, those with highly subjective valuations, also tend to be the riskiest and costliest to arbitrage. Concretely, then, theory suggests two distinct channels through which the shares of certain firms—newer, smaller, more volatile, unprofitable, non-dividend paying, distressed or with extreme growth potential, and firms with analogous characteristics—are likely to be more affected by shifts in investor sentiment.

4. A Conceptual Model of Integration of the Financial Sectors

The integration of the financial market sectors is the result of financial globalization, development accompanied by an intensification of cash flows, active innovation which is of paramount relevance specifically for the scope of this research, a growing need for efficient financial instruments and a need for risk hedging along with an accelerating interaction of international and national financial systems.

In this respect, it is needless to state that accurate consideration should be conveyed to shaping a synergistic pre-requirement of the integration process which is basically a financial sector constrained setting of a prudential framework for engineering surveillance instruments purporting at regulating in synchrony prudential restrictions for each sector.

Indeed, besides the requirement of relying on a prudential framework for the sake of mitigating the relevant market risk, this prudential framework should be shaped conditional on the side effects of other prudential frameworks relevant for other financial sectors.

As far as our research is concerned, the case under scrutiny is the synergistic pre-requirement of adapting or synchronizing Basel II and III agreements instruments of prominent relevance to the credit sector to the proposed prudential framework of surveillance in the stock market.

The prudential ratios in various financial sectors should be set conditional on accurate synchronization is adopted whenever there is conflicting effects on financial stability relative to each sector.

The prudential ratios in various financial sectors should be set conditional on accurate synchronization is adopted whenever there is conflicting effects on financial stability relative to each sector.

In the credit sector financial stability is expressed in terms of liquidity risk, credit risk, requirement risks and contagion. In the stock market sector it is expressed on implied volatility.

So whenever these elements compromise each other the relative instruments should be set conditional to each other across sectors.

Chalova, Gromova, & Voronkova (2019) introduced the concept of the "Cascade Network Modeling" of the financial market functioning, according to which, it is a potential form of its organization in which changes in the individual segments are synchronized with the purview of integrating the world financial markets or various sectors in one local financial market.

According to them: "The financial market formed in the modern economy is a unified functioning mechanism of its monetary, credit, currency, stock and insurance segments and is determined by the shared trading objects the interdependence of market institutions the interaction amog the dynamics of price indexes, the authorities regulating and the unified patterns of supply and demand generation for financial assets".

According to our view, this should be accurately shaped for the purpose of annihilating likely side effects of financial restrictions having implications that eventually offset each other whenever they are deployed simultaneously.

The prudential framework proposed to be engineered for the sake of mitigating stock market financial vulnerability and instability and its equivalent prudential framework of Basel II and III shaped for the purpose of mitigating systemic risk relative to the credit market should expand their purviews beyond the direct pre-requirements of mitigating excessive volatility which is of prominent relevance for the stock market risk and controlling liquidity risk, credit risk, capital adequacy and operational risk of prominent importance for the credit sector.

4.1. The Concept of Collision

Alongside prudential restrictions collision between various prudential instruments targeting different sectors of the financial system are of commensurate importance because they play a paramount role in setting share prices of corporations.

Indeed, collision of instruments can result in either offsetting each other's prudential role or amplifying it depending on the instruments and how they interact.

These affect volatility of share prices stability of the financial sector and its efficiency which affect indirectly share prices through investor sentiment making of irrational investors and eventually arbitrage of more rational investors and thereby affect market prices.

4.2. Case Studies of Collision

We can propose as a case study providing an appraisal of likely threats of simultaneous deployment of restrictions in various prudential frameworks within the framework of integration; a basic scenario where LTD ratio or liquidity risk ratio and LTV ratio have conversing effects on volatility.

This indeed would provide a clear proof of the obligation of further scrutiniz-

ing cross effects between various prudential frameworks relative to various financial sectors for whom constrained optimization should be deployed to avoid that negative side effects of amplification of threats through simultaneous implementation of volatility containment and credit risk systemic exposure occurs.

First case:

This is a case of collision between the Basel III instrument of Credit market LTD with the proposed stock market surveillance instrument (Dividents/Cost of borrowing).

Capping LTD for the sake of avoiding liquidity risk in the credit market results in a relative excess generated in credit demand. The excess in credit demand is eventually according to the basic supply and demand theory met by an excess supply. But as long as there is a LTD restriction, that would translate by higher average loan rates.

Management of corporations operates a continuous arbitrage for the sake of minimizing the cost of capital. It proceeds to an arbitrage between the cost of equity and the cost of debt to assess whether their operational projects or expansions should be debt or equity financed.

The increase in average loan rates would exert an effect on this arbitrage making the demand for equity higher, fact that would put an upward pressure on dividends prices.

Depending on the business cycle phase and the resulting expected profitability of the corporations production activities, the effect of increasing average loan rates on dividends would fluctuate accordingly which generates a certain business cycle dependent volatility that translates accordingly to share prices and contributes in increasing share prices volatility and the overall volatility of the stock market.

Therefore, this case is an instance where deploying LTD restrictions in the credit market translates into an excess volatility in the stock market and compromises stock market systemic vulnerability.

To avoid that synchronization failures across various prudential surveillance frameworks occur, the LTD ratio should be set constrained in optimization by the requirement of offsetting the detrimental effect on excess volatility of dividends.

Second case:

The second case of collision is that between LTV ratio as a Basel III instrument and the stock market surveillance instrument (Tangible assets/Equity).

LTV restrictions are mainly caps on LTV ratios.

We propose to study the effect of its variations on the book to market value of stock.

The prudential restriction in the credit market consists in lowering average LTV ratios which depresses property values.

Depressing property values by exerting a downward pressure on their prices will expand the discrepancy between market values and book values of shares.

As a matter of fact, among corporate assets, tangible assets are mainly property assets of corporations. So whenever their market value is depressed the tangible assets have lower value and so does the book or accounting value of the firm.

By a way of consequence, the difference between the market value and the book value of the firm is wider.

According to the review of the literature, there is a close relationship between stock market efficiency and market to book value from one side and an inverse relationship between market efficiency and market stability from the other.

This implies mainly that wider difference between book and market values of the firm exert a negative effect on stock market efficiency and by a way of consequence a positive effect on stock market stability.

So for this case, the effect of the implementation of the credit market prudential restriction on stock market stability is an amplification or a positive side effect whereby proceeding to mitigating credit market risk contributes in mitigating stock market risk.

5. Monetary Policy, Derivatives and Prudentiality

5.1. Introduction

In terms of integration must of portraying a prudential scheme and rendering interaction across financial sectors permissible, the stock market sector presents the specificity of encompassing a stock options feature that compromises the purview of the true scope of the key market risk fundamental which is volatility on which we based our fundamental justification of market risk and that does not hold in this instance.

According to Sajjad and Zamman:" Derivatives enable firms to hedge against systemic risks".

As long as prudential surveillance is related to systemic risk mitigation, it follows that hedging does play a prudential role of hedging against systemic risks and financial instability as much as prudential instruments like the ones displayed in the framework of the engineering we proceeded to in this article.

Indeed, as long as stock options cancel any possibility of loss, excess volatility does no longer imply necessarily as a main cause for market risk and instability.

The basic framework set sofar does no longer hold and requires further extensions concerning either the concepts of efficiency or stability which reveal a compromising further purview in terms of prudential surveillance instruments engineering.

It is considered that derivatives increase the efficiency of the financial system. By a way of consequence they deteriorate stability. Here surges a conundrum whereby from one side derivatives hedge from losses and by a way of consequence market risk and from the other side by deteriorating stability they call the urge for further Prudential intervening. But as long as the most prominent role of prudential intervention is ensuring more stability. It is consented that prudential instruments are mainly purporting at mitigating the very source of

market risk which is excess volatility.

But given the nature of hedging of derivatives, excess volatility does not necessarily compromise market risk for investors in the sense of presenting a source of loss.

So where does the threat from derivatives to stability really come from?

Corporate hedging affects directly Stock market stability through the risk management related issue affecting equity and henceforth valuation either book or market one and indirectly through its effect on the credit transmission mechanism of credit that by affecting monetary policy stance exerts an impact on overall financial stability and in special stock market stability.

According to Fender (2000), "Derivatives enable their users to separate value and transfer market risks. Risks are securitized and thus gain fungibility which in turn allows the unbundling and repackaging of market risks embodied in underlying assets. The use of derivatives therefore enhances the possibilities for active corporate risk management which is likely to have an impact on macroeconomic and monetary issues".

The threat from derivatives to stock market stability comes from the financial accelerator. Indeed, by hedging interest rates, the wedge between internal and external financing for corporations vanishes. Therefore, equity becomes less necessary. Hence, stakeholders exert less power and become by a way of consequence less sensitive to projects outcomes. Therefore, dividends are less volatile and so are stock prices, what proves that derivatives are a main cause for stock market stability.

By ensuring more stability they compromise efficiency.

Therefore, there are two opponent views on the way derivatives affect stock market stability.

Information asymmetries and the skepticism about Modigliani's theory raises a concern about how far the credit channel of transmission of monetary policy does affects stock prices volatility.

5.2. The Financial Accelerator

According to Fender (2000), "The concept of financial accelerator derives from informational asymmetries in the credit markets which drive a wedge between the costs of external and internal finance. In particular the higher cost of external finance reflects the agency costs of lending under asymmetric information. In such a situation internally generated funds enable firms to reduce their demand for costly external finance. Hence a fall in a borrower's net worth or cash flow raises the demand for external finance and subsequently reduces investment".

Given that negative shocks affect cash flows individually the effect of an initial shock to the economy is amplified. Small shocks might therefore create large cycles hence the term financial accelerator

A contractionary monetary policy shock now reduces investment spending

through the traditional cost of capital effect and given that changes in interest rates affect corporate cash flows lowers a firm's cash flow and its ability to borrow. Consequently monetary policy impulses are reinforced by cash flow effects.

In the way literature the Modigliani & Miller (1958)'s theorem states that financial structure is irrelevant to corporate investment decisions. More recent research however has questioned the assumption of perfect substitutability of external and internal funds by pointing to the existence of capital market imperfections. The most common argument posits that asymmetric information and problems of contract enforcement lead to the emergence of agency costs thereby driving a wedge between the cost of external and internal finance. As outside investors require a premium for unobservable uncontractable risks, external finance becomes more costly than internal finance.

5.3. The Balance Sheet Effect

The simple framework of a financial accelerator has strong implications for the functioning of the monetary transmission mechanism. Given that firm investment is an increasing function of internally generated funds and with cash flow and market interest rates being negatively correlated a credit channel effect arises.

According to Oliner & Rudebusch (1996), an increase in interest rates will affect investment spending not only by changing the cost of capital. In addition cash flows will decrease and therefore enhance the impact of a given change in interest rates.

This is what Oliner & Rudebusch (1996) call the broad credit channel and what is otherwise termed the balance sheet channel of monetary transmission.

5.4. The Effect of Assymetries and Exchange Positions on Stock Market Efficiency and Stability in the Case of Hedging

Stock market efficiency and stability in the absence of hedging:

Basically, the issues of stability promotion and efficiency improvement are contradictory and represent a conundrum because on the one hand; they are both of paramount importance what means that there is a need for promoting stability of the stock market and simultaneously improving efficiency in the sense of Pareto optimality.

On the other hand; with an efficient stock market book values converge to market values because efficiency is bound to Pareto optimality what means we cannot improve the situation of one agent or investor without deteriorating the situation or expected earnings of the other.

Indeed, in this case, stability of the stock market does not hold because with attenuation of information asymmetries that deepen the gap between book values and market values of stock, prices volatility of stocks increases considerably with increasing correlations between stock prices in similar entrepreneurial activities.

This in turn deteriorates stability with increased covariance between stock prices volatility is increased considerably.

Stock market stability and efficiency in the presence of hedging:

But it is possible for stability promotion and efficiency of allocation in the Pareto sense hypotheses to hold simultaneously in the case of the introduction of derivatives.

As long as hedging assumes guaranteeing absence of losses for a part of investors so by hedging we break the pattern of volatility and covariance between stock prices whenever hedging in itself is not systemic or does not hold for all similar stock securities.

So we will find a scenario where stability is improved and also efficiency is improved because efficiency is based on convergence between book and market values if stock prices what would require attenuation of information asymmetries. This feature is mostly subject to improvement in the case of hedging where information about expected returns is better affordable by investors that ensure impossibility of incurring losses.

In definitive, using hedging derivatives resolves the conundrum of having both musts of promoting stability and improving efficiency.

Yet, according to another view, it is commonly argued in literature on the impact of derivatives on stock market efficiency that derivatives promote stock market efficiency and outcome on stock market stability is suggestible to many skeptical views as to whether it is positive or negative.

Indeed, by induction, as long as the impact of derivatives on efficiency is positive and that it is consented in the referred to literature that efficiency is inversely related to stability, this holds for both stock market analytics and banking system analytics, then the impact on stock market stability should be negative.

But from another standpoint taking into consideration the effect of derivatives on the agency problems and the fact that the financial accelerator theory contradicts the Modigliani Miller theorem, there are cases where indeed, adopting derivatives leads to a situation where both effects on efficiency and stability of the stock market are positive.

For further scrutiny of this case, let us consider that usually stakeholders have a certain supply power of internal sources of financing and that due to this power, their sensitivity to affordable information about the future outcome of projects either expansionary or development projects varies accordingly to their power. Henceforth, the effect of an increase in elasticity due to increased power as external financing is higher than internal financing because agency problems lead their dividends to be highly volatile. As dividends are highly volatile and inversely proportional to stock prices, it follows that stock prices are also highly volatile which is detrimental to stock market stability.

But as for our instance the introduction of derivatives as an option for corporate managers expands the purview of predictability of cash flows it provides by a way of consequence more accurate information which decreases agency prob-

lems in such a way that attenuates the discrepancies between the cost of external and internal financing.

In this special case, the power stakeholders exert on corporate management decreases and so does their elasticity of supply of funds. Therefore dividends are less volatile and so are stock prices.

In definitive, this is the case where the option of buying derivatives by corporate managers leads to less volatile stock prices and hence enhanced stock market stability once the issue is aggregated from the individual firm level to the stock market level.

In this case, both effects of introducing derivatives on stock market efficiency and stability are positive.

Dodd discussed in depth the issue of the effect of derivatives on financial markets and came out to a conclusion that basically derivatives improve stability and efficiency provided by certain conditions on exchange markets.

Dodd (2002) stated that: "Derivatives play a double role in an economy; one of which is economically useful role played in hedging and risk management and enables capital inflows to developing countries; and the other is the role of price discovery and establishment of standard market prices that helps reduce uncertainty and promotes stability and efficiency of the market".

But Dodd (2000) stated that: "Derivatives can play a significant role in the creation of financial crises if conditions of speculation exist. He further noted that during possible reduction of currency costs after getting to a profitable exchange position an attack toward fixed or floating exchange rate regime indicates the creation of a crisis. Thus systemic risk is created in financial markets and the tendency of contagion across countries increases. In conclusion financial markets with derivatives can become ineffective because of speculative attacks on exchange rate variations of positions".

5.5. The Prudential Role Played by Hedging

The issue of prudential surveillance is especially concerned by the use of derivatives.

As a matter of fact; on the one hand by improving efficiency and stability the use of hedging instruments alleviate burdens on the task of prudential surveillance by making it easier to promote financial stability and efficiency; but on the other hand by helping create crises and increasing systemic risk in the case of speculation and speculative attacks on exchange positions the use of derivatives worsens the situation and urges the call for contagion targeting prudential instruments.

Hedging does play a macro prudential role by capping the riskiness of expected returns that are fundamental in increasing volatility of stock returns.

As a matter of fact volatility of stock returns is the core source of systemic risk in stock market as it is pro cyclical with its own industry average behavior of returns and the business cycle and determines the pattern of systemic exposure of

the stock market because stock returns determine stock prices.

So by hedging we break the pattern of volatility and covariance between stock prices whenever hedging in itself is not systemic or does not hold for all similar stock securities.

Certainly hedging plays a macro prudential role but cannot be taken for a macro prudential instrument as it is not intended at mitigating financial vulnerability but at ensuring minimizing losses on returns.

As long as the objectives of hedging and prudential surveillance are different they cannot be taken for holding as fulfilling the same task.

6. General Conclusion

Investor risk appetite as being inversely proportional to the principal component of market indicators fathoming the general tendency of market fluctuations is seemingly stimulated during tranquil periods of volatility.

Systemic risk is therefore pervasive in the meaning it is either excess volatility borne or investor behavior born.

In either cases, the efficient market hypothesis that does not hold according to the literature holds as a main source of overshooting and undershooting that further exacerbate the market risk and motivate the paramount importance of setting a prudential framework with its both aspects.

The macroprudential instruments are expected to regulate the market risk aspect whereas the microprudential instruments are expected to regulate the individual investor hindrance to financial stability.

Both aspects commingle to set a prudential surveillance framework aiming at containing the threats to financial stability.

Additional aspects of collision between monetary policy instruments and prudential instruments besides interaction aspects between prudential instruments from the credit sector and the stock market sector better shape the general overview of how interventionally borne resilience should be shaped in order to implement the most enhanced prudential surveillance in the stock market.

Within the scope of the complementary stock market Prudential toolkit, the macroprudential instruments that have been proposed as taking ratio forms imposing regulations in caps or ceilings are: the cost of capital ratio, the volatility induced allocation of equity the countercyclical financial accelerator buffers and the sensitivity of stakeholders to profitability of companies.

For the microprudential toolkitwhise instruments are taking the form of elasticities we proposed the dividend volatility control instrument, the covariance between business cycle fluctuations and stock market fluctuations and the effect of investor sentiment on the cross correlation between stock prices.

All these proposed instruments are assumed to unveil major hindrances to financial instability stemming from stock prices excess volatility and to provide comprehensive surveillance reinvigorating the Basel framework that has been specific to mitigating the credit sector threats to financial stability with a pervasively prevailing threat to financial stability stemming from the stock market sector.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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