Basel II in question: the unfolding of the American real estate crisis

Marcos Antonio Macedo Cintra\(^1\) and Daniela Magalhães Prates\(^2\)

**Abstract:** This article aims to explore the interaction between changes in the US financial system – and therefore in the international financial system – and the Basel Accords (I and II). The following hypotheses shall provide the basis for an analysis developed in subsequent sections: (i) the emphasis on capital requirements in Basel I encouraged banks to employ, in ever greater numbers, securitization and credit derivatives as instruments of balance management. This process was known as regulatory arbitrage. It became one of major factors in the consolidation of the so-called ‘originate and distribute’ model and in a complex and opaque network of off-balance sheet instruments and institutions that increased, rather than diminished, the risks of a systemic crisis breaking out; (ii) the regulating guidelines of Basel II were put in question by the subprime crisis, even before the Accord was formally implemented, since the effects of this crisis on the health of large banks shed light on the deficiencies of methods of risk assessment by rating agencies and banks. They also rendered explicit the inadequacy of banks' internal models of risk monitoring and management – for credit, market and operational risks – defined by Pillar 1.

**Introduction**

The subprime crisis, which broke out in the United States in mid-2007, did not limit itself to that country or to its original segment, the market of high-risk real estate loans. The collapse of this market spread to other segments, demonstrating the high level of complexity and opacity of the American and international financial system, which is the result of the bursting financial innovations. Such innovations, and especially securitization and financial derivatives, have made it possible for a real credit pyramid to soar outside the bank balance sheets – related to mortgages and to other categories of receivables (credit cards, car financing, loans to students, etc.) – which interconnected different institutions as well as the credit and capital markets, on a national and international scale.\(^3\)

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\(^{1}\) Professor at the Institute of Economics in the State University of Campinas (Unicamp). Researcher at the National Counsel for Scientific and Technological Development (CNPq).

\(^{2}\) Professor at the Institute of Economics in the State University of Campinas (Unicamp). Researcher at the National Counsel for Scientific and Technological Development (CNPq) and at the State of São Paulo Research Foundation.

\(^{3}\) According to Belluzzo (2008), ‘capitalist economy is not a homogeneous space where the desires of utilitarian individuals get in harmony or, as a few misguided minds believe, a system of ‘production of goods for the sake of goods’, but a social organization that, for the better and for the worse, is dictated by the logic of the private accumulation of wealth. The private agents, in search for wealth, attempt to break – indeed break – the existing
According to Chick’s typology (1993), the organization of banking operations that underlies the contemporary financial system, called ‘originate and distribute’, is characteristic of the sixth stage in banking development. In this stage, the expansion of securitization and of other financial innovations (especially credit derivatives)\(^4\) made it possible to transform illiquid assets (originally generated bank loans) into liquid assets (negotiable securities distributed to the remaining financial institutions, mainly to institutional investors) by means of the sale of original loans or of income flows associated with a Special Purpose Vehicle (SPV), which is an Off-Balance Sheet Entity (OFSE). This expansion has also resulted in the preponderance of liquid assets on both sides of the balance sheet. Consequently, many different kinds of bearer bonds proliferate as the main resort for financing financial institutions, companies, families and governments.\(^5\)

As the other financial innovations, the advancement of securitization and credit derivatives has ambivalent consequences. On the one side, such innovations have created new possibilities of risk negotiation, transfer and mitigation, so that banks become less vulnerable to credit and liquidity risk. On the other hand, they have made banks more susceptible to fluctuations in the prices of assets, they have altered the structure of incentives in financial markets (thus stimulating banks to take on more risk, since they could transfer them to other agents) and contributed to diluting the responsibility across the risk management network, as well as to increasing its opacity, given the nature of the over the counter markets in which structured products (derivative-bound securities) tend to be negotiated. Thus, in the current stage of development, the financial system has compromised part of its essential functions: risk assessment and management (Guttmann & Plihon, 2008; Buiter, 2008).

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\(^4\) By means of the credit derivatives, a sort of insurance is set up. For a price, a bank offers (sells) protection against the possibility of default. According to Farhi (2002: p.26-27), the underlying presupposition of these contracts is the potential ability of payment, that is to say, the probability of default, defined through the evaluations emitted by the credit risk rating agencies. If a bank believes to be overexposed to a major borrower, it might resort to a credit swap to reduce the risk. Basically, the bank pays a small fee to its counterpart in this operation. Credit derivatives improve the management of uncertainty in relation to the return of the portfolios beyond the traditional methods available (diversification of the portfolio, collaterals, operational limits, etc.). As a consequence, by means of the credit derivatives, banks may render the illiquid loan portfolios more liquid. In the limit, the proliferation of these derivatives changes the traditional role of credit in banking. If the credit risk cannot be separated from the principal, the relationship between banks and their debtors is transformed: the possibility of default will no longer bind one to the other, changing the essence of banking. However, as will be discussed, the high level of leverage and of opacity in these operations introduce new risks in the system.

This article aims to explore the interaction between the transformations in the American financial system – and, consequently, in the international financial system – and the Basel Accords (I and II). Understanding the dynamics of these systems is crucial in order to give an answer to the fundamental question put by this Ford Foundation project, i.e., whether governing systems that are inefficient in democratic terms have managed to promote global financial stability (Carvalho & Kregel, 2007). The following hypotheses shall provide the basis for an analysis developed in the subsequent sections:

(i) the emphasis on capital requirements in Basel I encouraged banks to employ, in ever greater numbers, securitization and credit derivatives as instruments of balance management. This process was known as regulatory arbitrage. It became one of major factors in the consolidation of the so-called ‘originate and distribute’ model and in a complex and opaque network of off-balance sheet instruments and institutions that increased, rather than diminished, the risks of a systemic crisis breaking out;

(ii) the regulating guidelines of Basel II were put in question by the subprime crisis, even before the Accord was formally implemented, since the effects of this crisis on the health of large banks shed light on the deficiencies of methods of risk assessment by rating agencies and banks. They also rendered explicit the inadequacy of banks’ internal models of risk monitoring and management – for credit, market and operational risks – defined by Pillar 1.6

The discussion is structured in the following way. The first section explains the transition from Basel Accord I to Basel Accord II, against the background of the competition among financial institutions, of the introduction of financial innovations and of their interaction with the institutional and regulatory environment.7 The second section discusses the dynamics of the subprime mortgage crisis – anchored in the spread of securitization mechanisms which generate off-balance sheet records. The third section approaches the role

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6 See Stiglitz (2008): ‘Basel II is dead – at least as long as the memories of the current disaster last. Bankers – and risk rating agencies – believed in its alchemy. They thought that financial innovations could transform risky mortgages into good business, worthy of an AAA rating. (...) Banks did not understand the first principle of risk management: diversification only works when the risks are not correlated and macroshocks (such as those that affect the prices of real estate property or the borrowers’ capacity to pay their debt) affect the probability of default of all mortgages.’

7 The distinctive trait of banking competition is the irreconcilable conflict between the banks’ attempt to appreciate wealth and the monetary function’s – carried out by these institutions – nature as a public asset in capitalist economies. Due to this conflict, the space and the modalities of bank competition are circumscribed within the limits prescribed by banking regulation, which depends on each country’s institutional and juridical structure. However, these limits are not unchangeable, since banks react to changes in the macroeconomic, institutional and regulatory environment in which they act and thus generate changes in this environment (Minsky, 1986; Freitas, 1997).
played by credit-risk evaluation agencies and the weaknesses of risk-transfer systems and of the banks and agencies’ pricing models, mechanisms defined by Basel II. The fourth section puts forward a discussion agenda concerning the improvement of supervision and re-regulation of national and international financial systems.

1. The transition from Basel Accord I to Basel Accord II

The Basel Accord I (*International Convergence of Capital Measurement and Capital Standards*), developed by the Basel Committee, established minimum risk-based capital standards for banks. As noted by Carvalho (2005), the main purpose of this agreement was to minimize one source of competitive inequality between American banks on the one side, which had to maintain a relatively high level of capital, and Japanese and European banks on the other, which could operate with less capital. In Carvalho’s phrasing, ‘The 1988 Basel Accord mainly consisted in the transformation of capital demand into a regulatory norm that applies to all competitors. For this reason, the Accord aimed exclusively at internationally active banks’ (Carvalho, 2005: p.134). However, the Accord’s impact was much greater. Basel I became a new paradigm for prudential regulation, in substitution of the former strategy, which focused on the liquidity of deposits. Nevertheless, it still shared with this former model the tutelary nature of financial supervision.

The Accord recommended that banks should comply with uniform guidelines of capital adequacy, which would meet the prudential requirements that were deemed appropriate in the more liberal environment. For this purpose, the Accord defined a global minimum of 8% for the ratio between capital and the sum of assets as well as of some off-balance sheet operations, which were weighted according to their respective risks, a target to be met by 1992. Five categories of risk classification were defined. The rights over federal banks and the Organization for Economic Co-operation and Development (OECD), for instance, were weighted as zero, whereas many kinds of loans to private corporations and individuals were rated 1. Basel I was also concerned with the risks associated with the growing participation of banks in off-balance sheet operations (such as stand-by lines, interest and exchange rate swaps, options and futures markets). However, the inclusion of these

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8 The framework takes account of the credit risk on off-balance sheet exposures by applying credit conversion factors to different types of off-balance sheet instruments or transaction, with the exception of foreign exchange and interest rate related contingencies. These contracts ‘need special attention because banks are not exposed to credit risk for the full face value of their contracts, but only to the potential cost of replacing the cash flow if the counterparty defaults’. The credit equivalent amounts will depend on the maturity of the contract and on the volatility of the rates and prices underlying that type of instrument. The theoretical basis for assessing the credit risk on all of these instruments has consisted of an analysis of the behavior of matched pairs of swaps under different volatility assumptions (BCBS, 1988: p.19-21).
operations in the rules of capital supply proved to be counterproductive, as it ended up stimulating the development of new products and services which were not included in the rules of capital adequacy (such credit securitization), as explained below.

As Basel Accord I defined regulatory strategies limited to bank credit risk, therefore leaving relevant gaps to be filled, such as the absence of prudential rules for the growing activity of banks in the bonds market, it stimulated these institutions to modify their products and services, favoring the participation in the bonds markets, for which no obligations applied. The regulatory authorities reacted by incorporating the market risk of such operations in the capital demands (Amendment of 1996). The market risk could be measured by means of two models, the standardized model, defined by the regulatory authority, and the internal model, generally the VaR (Value at Risk), defined by each institution and subject to the approval of the supervising agent. The standardized model applied one procedure for risks associated with bonds and shares – the building-block procedure, in which general risks were calculated separately from specific risks – and another, different procedure for the risks involving price options – according to which the supervising agent could choose the method depending on the level of the bank’s engagement in these operations. The more engaged the bank was, the more sophisticated the method should be. The internal models of market risk measurement, on the other hand, were subject to the approval of the regulatory authority and could be the object of interventions. The banks were subject to capital charges, i.e., a sum of additional capital, since specific risks were not accounted for in their measurement models.

Besides contributing to the introduction of ever more complex financial innovations, so as to evade the rules of capital adequacy, the Capital Accord (1988), with uniform and simplified credit risk assessment, brought about the set-up of sophisticated risk evaluation and management systems, aimed at estimating the actual credit risks of each corporate loan and determining the respective risk prizes or collaterals. The innovations in information technology contributed to the development and the use of these new systems, which allowed banks to perfect data collection and processing about loans and borrowers. The new techniques use information on default rates according to the kind of debtor and loan, thus making it possible to establish correlations between the estimated losses and the minimum

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9 Banks started keeping riskier loans on their portfolios – whose regulatory capital was lower than the requirement set by the internal rating systems – and to search for protection against the risk of these loans by means of credit derivatives (Guttmann, 2006).

10 In 1997, the CreditMetric appeared, created by the JP Morgan and co-sponsored by the Bank of America, the Deutsche Morgan Grenfell, the Swiss Bank Corporation, the Union Bank of Switzerland, among others. In the same year the CreditRisk+ (CR+) was created by the Credit Suisse First Boston. Since then, innumerable models have been developed, including some that attempt to combine market risk and credit risk management.
capital supply to comply with the determinations of the Basel Accord. Such techniques might thus be understood as a kind of financial innovation as well. Banks grew less dependent on the subjective analysis and judgment of managers, since systematic and quantitative methods could provide better means of risk management (credit patterns and limits of risk exposure).

The banks responded, then, to the rules set forth by the Basel Accord by taking on more risks, which was allowed by the risk management and monitoring systems, by developing new mechanisms of protection and by giving birth to financial innovations, such as credit derivatives (credit default swap, total return swap, credit-linked notes etc.), the securitization of receivables, and structured products, which made risk transfer possible (in general to institutional investors)\textsuperscript{11}. Furthermore, the development of these instruments and techniques, by making the dispersion of implicit risks possible, contributed to ensuring the conditions for healthy bank balance sheets. Exchange rate and options swaps were employed to hedge the mismatch of deadlines and credit and price risks (interest rate, exchange rate, etc.). The counterparty’s derivative instruments credit risk was mitigated by the improvement of netting systems and collateral demands (named margin call).

As noted by Kregel (2008), the application of the minimum capital requirements of Basel I stimulated banks to increase their fees and commission-based incomes by employing off-balance sheet instruments. In this context, the process of regulatory arbitrage induced the creation of new kinds of institutions or off-balance sheet vehicles (OBSV), among which the Structures Investment Vehicles (SIV), conduits (SIVs that are strongly associated with a private bank), which invest in complex long-term securitized instruments, generally illiquid, obtaining funding in short-term markets, including the Asset-Backed Commercial Papers (ABCP). Banks transferred part of their credit portfolios to these vehicles, generally located in tax havens, so as to reduce capital demands and make resources available for new investments.

In this new model of financial organization, based on securitized finances, the large internationally active banks promoted the capital market as an income source instead of inhibiting it in favor of the traditional functions of commercial banks (Guttmann & Plihon, 2008; Kregel, 2008). They gradually became universal banks or ‘financial services supermarkets’, by developing a broad array of complex and diversified activities – retail,

\textsuperscript{11} According to Greenspan (2002: p.3): ‘these complex financial instruments have contributed to allow banks to transfer a significant part of the risks on their corporate loan portfolios to highly leveraged American and foreign insurance companies, foreign banks, pension funds, hedge funds and other organizations that defer their long-term liabilities.’
investment, insurance, asset management, pension fund management, etc. – either directly or through the off-balance sheet vehicles.

In principle, the capital markets would have the virtue of combining the advantages of the improved circulation of information, of reducing the operation costs and of the most rational risk distribution. However, these markets are subject to investors’ euphoria and pessimism waves, the ‘price correction’ being attained by means of stock devaluation, which makes the dynamics of the financial system much more unstable (Belluzzo, 1995). After the 1990s, the cycles of asset price characteristic of liquid and liberalized capital markets became more recurrent and assumed a new dimension. This is so because such markets, increasingly interrelated, came to be conditioned by the new style of resource management introduces hedge funds, which consist in investing in various kinds of financial derivatives and making loans in the banking system, thus multiplying the positions and offering the portfolio itself as collateral, enabling banks to operate growing volumes of assets, sometimes larger than the bank’s equity (Farhi, 2002: p.30).

Competition mechanisms rapidly led a growing number of portfolio managers to employ this new style of resource management, which might generate spectacular results. The other side of the coin is that potential losses are theoretically unlimited in a few of these operations and impossible to determine a priori. In the event of adverse change in the prices of the bonds and assets offered as collateral, the creditor might require a reinforcement of the collaterals (margin call) or demand the sale of the portfolio, so as to enable the reimbursement of the borrowed sums. In periods when the prices of assets are extremely volatile, the impact of forced liquidations of leveraged positions might be determinant. The use of such mechanisms tends to reach much higher levels in times of relatively normal volatility of asset prices, then to decrease after moments of crisis, when the liquidity of markets usually drops

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12 According to the ‘efficient market theory’, the values of bonds, shares and currencies would be efficient inasmuch as they reflected all the information available on the market. Andersen, 1983-84). This is so because available and evenly distributed information would eliminate, by means of arbitrage, in competitive financial markets, all the opportunities of extraordinary profit, i.e., those that are above average. The existence of a fundamental value is supposed, around which the investors’ ratings would fluctuate.

13 As from 2004, the Securities and Exchange Commission (SEC) began to demand information from some of these private investment funds, those with more than fifteen investors and assets above US$ 30 million. These funds, however, find many ways out of regulation. For example, for the SEC, the repurchase of a private fund might be done in up to two years; hedge funds determine that the repurchase of their assets takes place between five and seven years to avoid supervision. Between 1995 and 2006, assets managed by hedge funds jumped from US$ 100 billion to US$ 1.4 trillion. The number of hedge funds jumped from 6 thousand to 8.5 thousand.

14 After the Long Term Capital Management (LTCM) crisis, in September 1998, hedge funds had to provide more collateral when the value of the investment that collateralizes the loan drops.
and the effort of portfolio managers to reduce their leverage may become an additional pressure factor on prices.

In short, the banking system, its off-balance sheet vehicles (SIVs, conduits), the remaining institutional investors\(^{15}\) and the financial departments of corporations began imitating the investment strategies of hedge funds, thus increasing the volume of capital in the movements initiated by these agents. They thus came to determine the sense of the movements of valuation and devaluation of world financial assets (European Central Bank, 2005).

In face of the generalization of this new resource management paradigm, financial markets came to react in the same way in periods of euphoria and of pessimism. Banks and other institutions made growing use of the same models of risk management to price and manage their asset portfolios. In periods of stability, i.e., in conditions of little volatility in the prices of assets, investors increase their positions in higher-risk assets, thus promoting an increase in incurred risks. This is so because the little variation in prices promotes an increase in more speculative positions that seek higher returns. The managers of net wealth, anxious to beat the performance of their competitors, take on loans to amplify their positions. In moments of greater uncertainty, this movement might be rapidly reversed, since the lesser stability in the prices of assets makes positions structured according to the former parameters excessive. A frantic attempt to reduce the riskier positions comes about, with massive sale orders triggered by the models of risk evaluation and control, which results in an increase of volatility. As all relevant agents end up following the same strategy of risk evaluation to guide their investments, based on measuring the volatility of the assets that make up their investment portfolios, the global financial market becomes subject to euphoria waves, which might generate speculative bubbles and unforeseen turbulence waves.\(^{16}\)

The new shape of the American banking system, based on the financial supermarkets and on the ‘originate and distribute’ model, conditioned the transition from Basel Accord I to Basel Accord II. The definition of capital requirements by means of assessing assets according to credit risk as established by Basel I (with the later incorporation of market risks,

\(^{15}\) According to the BIS (2007), the assets of institutional investors – pension funds, insurance companies and investment funds – of the major industrialized countries added up to US$ 46 billion in December 2005.

\(^{16}\) Behind the dynamics of these minicrisis, triggered by the financial markets, persists the participation of the national treasuries as sources of autonomous expenditure (big government) and of monetary authorities as last resource lenders (big bank), modifying the nature and the extent of crises. According to Minsky (1986), ‘the economy and the financial markets (during the 1974/1975 crisis) showed strong resistance to the cumulative inflation of the prices of assets and to the risk of a deep depression. The shocks were absorbed and its repercussions were buffed.’
introduced by the Amendment of 1996) became insufficient to cover the implicit risks of banking activities. After many rounds of negotiation, in June 2004 the main guidelines of the so-called Basel Accord II – *International Convergence of Capital Measurement and Capital Standards* – were set up, having been subsequently discussed and tested until the end of 2007, when they were to be implemented by the G-10 countries, with an additional transitional phase of two years (with the exception of the United States, which put off its introduction until 2009).

The new proposal, contrary to the former one, aimed at formulating rules of prudential regulation that were more adequate to the new style of banking operations, growingly interrelated with the capital markets, so as to increase systemic stability and, at the same time, ensure safety and profitability to the institutions (Carvalho, 2005). The scope of the Basel Accord was also widened. Its new version was based on three pillars: minimum capital requirements, supervising review of capital adequacy and the strengthening of market discipline.

The first pillar deals with the calculation of the total minimum capital requirements for balance-sheet and off-balance-sheet operations. But, instead of Basel I, this calculation includes operational risk (besides credit risk and market risk) and a special treatment for securitization exposures (named securitisation framework), that established regulatory capital requirements on exposures arising from traditional and synthetic securitisations or similar structures that contain features common to both (like special purpose entities used as financing vehicles). So, this framework introduces enhanced guidance on the treatment by banks with regard to holding regulatory capital for securitised and OBSE exposures. But, the bank may not assess capital charges for these exposures only in the presence of the following conditions: significant credit risk has been transferred to a third party; the transferor does not maintain effective or indirect control over the transferred exposures; or the securities issued are not obligations of the transferor (paragraphs 554 of Basel II; IMF, 2008). The new

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17 The G-10 comprises the following countries: Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States.

18 Basle II defined traditional securitization as “a structure where the cash flow from an underlying pool of exposures is used to service at least two different stratified risk positions or tranches reflecting different degrees of credit risk” (paragraph 539) and synthetic securitization as “a structure with at least two different stratified risk positions or tranches that reflect different degrees of credit risk where credit risk of an underlying pool or exposure is transferred, in whole or in a part, through the use of funded (e.g. credit-linked notes) or unfunded (e.g. credit default swaps) credit derivatives or guarantees that serve to hedge the credit risk of the portfolio” (paragraph 540 of Basle II).
framework also allows a wider range of credit risk mitigants (as credit derivatives)\footnote{Banks use various techniques to mitigate credit risks, for instance: exposures may be collateralized by first priority claims, in whole or in part with securities or cash, or may be guaranteed by a third party; and bank may buy a credit derivative to offset several forms of credit risk (see paragraph 24 of Basel II).} to reduce regulatory capital requirements.\footnote{To be recognised for regulatory capital purposes, these techniques must meet the requirements for legal certainty: all documentation used in collateralized transactions and for documenting on-balance sheet netting, guarantees and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions. In addition, banks must have conducted sufficient legal review to verify this and have a well founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability (see paragraphs 117 and 118 of Basel II).}

In order to determine the capital coefficient related to credit risk, three different methods are proposed, the choice among which depends on the bank’s capacity to adopt more advanced methods of risk measurement and management. The first method, termed the standardized approach, is an adaptation of the criterion of capital adequacy of the 1988 Accord, which substitutes the credit risk classification matrix for the ratings of risk classification agencies. The second method, termed foundation internal ratings-based approach, combines data internally generated by the banks and guidelines established by regulatory authorities. The third method, called advanced internal ratings-based approach, is based on the banks’ internal risk-management systems.\footnote{The financial institutions will not enjoy full liberty to establish their risk assessment systems. There is a series of demands to comply with, such as the need of an independent structure for statistical control of models, the need to distinguish between credit, market and operational risk models. Credit risk must be assessed by means of four statistical components: exposure at default (EAD), loss given default (LGD), probability of default (PD) and maturity (M), which provides a medium-term measurement for a certain exposure. It presupposes the set-up of a data bank with at least five years’ data for PD and seven years for LGD. There must be statistical control of the value of the collaterals offered in credit operations. The credit portfolios are subdivided into corporate, sovereign, interbank, retail and patrimonial. The data bank for market risk must cover a year’s span. All these alongside other demands. (Chianamea, 2006; Castro, 2007).} There were no major changes in the calculation of market risk, the two alternatives having remained: the standardized and the value at risk (VaR) approaches. For operational risk, a new category that combines the risks of loss resulting from ‘inadequate or defective internal processes, people and systems or external events’, three methods were determined: the basic indicator approach (15% of the gross operational income), the standardized approach (in which banking activities are divided into eight lines of business) and the advanced measurement approach (in which banks are responsible for calculating their risk exposures, based on their internal measurement of operational risk in their internal management systems) (Carvalho, 2005; Cintra & Prates, 2007).

The second pillar refers to the supervision methods and promotes the Anglo-Saxon model of continuous revision. The third pillar is an attempt to include market discipline in this
complex equation, giving participants such as shareholders and clients enough information to enable an evaluation of the management of risks taken by banks and of their levels of capital adequacy. The information disclosure includes securitization operations, requiring, for example, qualitative discussions of the bank’s securitization activities and the extent to which they transfer credit risk away from the bank, the accounting treatment for synthetic securitization, and the separation of underlying assets held by OBSEs by type and quality of assets (Carvalho, 2005; Cintra & Prates, 2007; IMF, 2008).

As summarized by Guttmann (2008: 19), ‘this initiative will put into place a new global regulatory regime which can best be characterized as a regime of “supervised self-regulation” with banks expected to manage credit, market, operational, and other risks while setting the own capital requirements based on their risk calculations. Regulators will evaluate risk-management models and verify adequacy of capital provisions while investors (shareholders, depositors etc.) will have access to a lot more information from the banks about their positions in order to exercise their “market discipline” function’.  

In this way, the revision of the Basel Accord I (Basel II, 2004) established new systems of risk management and sought to incorporate the supposed improvements reached in these systems. In principle, banks with more advanced measurement techniques would have the benefit of operating with smaller minimum capital requirements, which would result in a feedback process. The decrease in regulatory capital would compensate the banks that invested in advanced methods of risk management and would stimulate the others to follow suit.

2. Inflation and deflation in the American real estate financial system

As from 2002, competition among financial agents active in the mortgage market led to the proliferation of different kinds of contracts aimed at attracting higher-risk – and consequently higher-return – borrowers. Subscription requirements were reduced and a series of contracts were proposed, such as the balloon mortgages, also called interest-only loans (in this contract, during the interest-only period, only interests are paid; after this period, besides interests, the principal must also be amortized) or hybrid mortgages, which, at the

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22 Towards self-regulation, one can also observe the movement promoted by the hedge funds – Hedge Fund Standards: Final Report (Hedge Fund Working Group, 2008) – e dos private equities – Guidelines for Disclosure and Transparency in Private Equity (Walker Working Group, 2007), including the demand for the regular publication of information concerning its operations. See also Financial Stability Forum (2007).

23 Termed ‘subprimes’, these mortgages, together with Alt-A (Alternative A) – real estate loans granted to individuals with a good credit history but without proof of income – comprise the non-prime sector of the American real estate market. This means that they do not have the governmental guarantee of the Federal Housing Administration (FHA).
beginning, consist in the payment of pre-fixed values and later become post-fixed contracts (Cagnin, 2007). According to Kiff & Mill (2007), approximately two thirds of real estate credit concessions granted in the United States in 2005 and 2006 combined a fixed interest rate in the first two years and a fluctuating rate for the remaining 28. In general, the interest rate fixed for the first two years was below the market rate. Besides, a large portion of the subprime mortgages issued in this two-year period was risk-layered, using a combination of various benefits to make the operation more interesting and, consequently, more risky.

These real estate credit portfolios were quickly packed and securitized (mortgage-backed securities or residential mortgage-backed securities). In these transactions, loans for buying residences were aggregated and transferred to a set of investors (investment funds, pension funds, etc.) that purchased bonds with a certain profitability, whose collateral was the real estate itself (and the payment of the installments) and that might be negotiated in the secondary market for this kind of bond.²⁴

Mortgages were also packed into a diversified set of financial assets, the collateralized debt obligations (CDOs), and resold. These CDOs aggregated mortgages of different risks, credit card receivables, car loan receivables, etc. These papers were structured by commercial and investment banks and were composed of many tranches, with different levels of risk assessed by the credit risk rating agencies (Moody’s, Standard & Poor’s and Fitch).²⁵ The size of each tranche and its return risk were calculated by statistical methods and by the determination of risk evaluation indexes.

The implicit logic of these sets (pools of mortgages and assets) was the reduction of default risk through the diversification of supposedly non-correlated assets. In this way, in an authentic process of alchemy, many financial instruments of differing levels of risk were combined by the rating agencies and by the deal issuers with the risk of the assets included in its composition. The combinations were made in such a way that some of these subprime mortgage-backed assets ended up being re-assessed as being of excellent risk or of investment level.

The re-packaging of high-risk mortgages, with the approval of the credit risk rating agencies, enabled their purchase by the least risk averse investors, but also by the institutional

²⁴ A large part of the mortgage backed securities issued by the government-sponsored enterprises are bought by the major universal banks. A traditional residential mortgage implies a capital requirement of 4%, whereas a standardized mortgage issued or guaranteed by Fannie Mae and Freddie Mac requires only 1.6%, which makes it possible to carry more liquid instruments, thus reducing risks and capital (Basel Accord, 1988).

²⁵ It is estimated that 40% of the American rating agencies’ profits (Standard & Poor’s and Moody’s) comes from evaluations for structured products (CDOs and others).
investors that comply with rules of prudency, such as pension funds and insurance companies. Thus, the lower-risk tranches – the so-called ‘senior’, classified between A and AAA – were purchased by institutional investors, such as pension funds and insurance companies. The holders of these shares would only have losses if all the other shareholders had suffered total losses. It was, therefore, an extremely safe line of investment and, for this very reason, it yielded a smaller return compared to what was paid to the other investors. In medium-risk shares – so-called ‘mezzanine’, classified from B to BBB – financial derivatives that improved these credits’ risk ratings were incorporated, which made their transfer easier. An important portion of these packed credits was exported to investment funds in Korea, Taiwan, Australia, China, France, Germany and the United Kingdom, among others. Given the excess of accumulated financial wealth (international reserves of the Asian countries and of the oil exporters), the Wall Street banks’ operators were told to purchase any American debt classified at (non-speculative) investment level.

The higher-risk tranches – named equities – which took on the first losses caused by delays or defaults, were transferred to the hedge funds by means of leveraged operations financed by the banks themselves. In this case, the hedge fund invests, for example, US$ 10 to buy US$ 100 of riskier tranches of a CDO, and the securitizing bank finances the remaining US$ 90. The holders of these riskier shares had a higher return rate and therefore served as risk-buffers for the other investors. If losses ever surpassed the gains with equities, the surplus automatically felt upon the investors of the nest class of risk – in this case class B – and thus subsequently. They were also transformed into components of new CDO issues (CDOs of CDOs). Once again, tranches – senior, mezzanine and equities – were created on the bases of grades issued by the credit risk rating agencies that contained highly risky residues (equities), in a successive process. A payment collateral was aggregated to a few of these instruments, whether by the originator bank, by a credit derivative (a credit default swap subscribed by another bank), or by the monoline insurance companies (Freitas & Cintra, 2008; Torres Filho, 2008).

The expansion of these structured products generated large volumes of highly risky residual tranches – known in the investors’ jargon as ‘toxic washes’ – difficult to be passed on to other investors, which ended up being transferred to the SIVs. To carry these papers, the SIVs issued asset-backed commercial papers (ABCP), short-term asset-backed debts (CDOs, classified as equities, with a very low rating), counting on a contingent credit line supplied by the controlling financial institutions to ensure the papers’ liquidity. At first, this risky management of the ‘toxic washes’ – a long-term debt financed through short-term papers –
enabled extraordinary gains arising from the differences in the interest rates of both markets. This spread was further amplified through the leverage in the commercial papers market. According to the IMF (2007: p. 18), subprime mortgages were 25% of the SIV actives and 100% of the SVI lites assets, a recent modality of SPE that operates at a high leverage (from 40 to 70 times, depending on the collateral, according to Parisi-Capone, 2008). With the rise in the short-term interest rates in the United States, the excessive liquidity pushed a fall in the long-term interest rates, thus reducing these spreads and the profitability of these operations.

A broad diversity of future high-risk mortgage agreements was also created, such as the agreements based on a non-performing loan index (called ABX index). In the Chicago Mercantile Exchange (CME) alone, which merged with the Chicago Board of Trade (CBOT), thus creating the world’s largest futures exchange, US$ 400 million have been negotiated in mortgage-backed derivatives since the creation of these instruments in mid-2006. This does not include the over the counter market (OTC), in which buyer and seller negotiate directly without the intermediation of the stock exchange, whose real estate credit contracts of high risk were estimated in US$ 500 billion in 2006 (Pinheiro, 2007). In summary, the mortgage credit spree, along with its securities (MBS, CDO, ABCP, backed on doubtful loans) lent support to the real estate market euphoria, leading investment funds, hedge funds and banks to erect actual credit derivatives pyramids, spreading risk on a planetary scale.

However, as from mid-2006, the American real estate market started giving signs of shrinkage in prices and quantities. The appreciation of real estate property lost momentum in the third quarter of 2006, when prices increased approximately 10.31% in relation to the same period in the previous year. Ever since, the tendency of deceleration has been maintained; in the second quarter of 2007, prices rose by a mere 3.2% in relation to the same period in 2006. According to the Bureau of Economic Analysis (http://www.bea.gov), between September 2006 and September 2007, the number of constructed residences dropped 30.8% and sales of new residences dropped 23.3%.

The impacts of the deceleration of real estate prices were more strongly felt by the riskier sectors of the home loan market. These more flexible loans, contracted mainly by higher-risk borrowers (subprime and Alt-A), counted on the hypothesis that, over a few years, borrowers would be able to improve their credit risks and thus renegotiate their mortgages. However, in face of higher interest rates and of the economic agents’ fear of a more intense deceleration in American economy, the conditions for renegotiating these contracts became stricter. (The Economist, March 8th 2007) Besides, many borrowers were overindebted (an
average US$ 191 thousand in 2006, according to Standard & Poor’s), having little equity to offer as collateral for the loans.

The shrinkage of the real estate market revealed an increase in the higher-risk debtors’ default rate, with repercussions across the entire global financial system, due to its ample ramifications.\textsuperscript{26} It also revealed that \textit{circa} 90\% of subprime mortgages involved some kind of fraud. More than 50\% of borrowers overestimated their incomes by more than 50\%. The financial agents falsified information in the electronic credit score in order to make the operation possible and to cash their commissions. In face of the promise of unlimited gain, ‘infectious greed’ frequently tends to prevail over prudency.

Since February 2007, there were losses for the managers of these contracts (such as HSBC, American Home Mortgage Investment Corp., Countrywide Financial Corp.). In June, the credit risk rating agencies began lowering the classification of mortgage-backed securities (subprime mortgage-backed securities) and of collateralized debt obligations (CDO). Some hedge funds managed by Australian banks and by Bear Stearns had losses on real estate assets and suspended the repurchase of the applications. In July \textsuperscript{30th}, the German investment bank IKB revealed losses on structured applications involving subprime mortgages of the American real estate market. In August \textsuperscript{9th}, the BNP Paribas, the largest French bank, suspended the repurchase of three investment funds that were facing problems in the American high risk mortgage market. At this point, the liquidity of these higher-risk sectors (MBS, CDO and ABCP) evaporated, making it impossible to evaluate the price of some assets. The uncertainty regarding the value of the assets on which these papers were based led to a steep fall in stock (investors decided not to roll over the commercial papers) and to an increase in the interest rate in European and American interbank markets, entailing a liquidity crisis.

As suggested by Guttmann (2008: p.21, our emphasis): ‘\textit{in some of the markets the volume (of issuance and trading) is down by 80\%, with hard-to-know prices probably down by similar amounts. In many instances, where trading has ceased altogether, they are no prices anymore. Without trading, no price...but also without price, no trading. The collapse of confidence in any fixed-income instrument containing subprimes has also meant the utter disappearance of liquidity.}’

The liquidity crisis struck back the banks, which had transferred the higher-risk tranches, involving subprime mortgages, to the SIV/SPVs, with a contingent credit line. As

\textsuperscript{26} It is estimated that between 30 and 40\% of subprime credits will not be paid. The accounting records of part of these losses have already entailed steep drops in the value of the major global banks’ shares.
part of the asset-backed commercial papers was not rolled over, in order to avoid default (or
the selling up of the entire portfolios), banks were forced to guarantee contingent credit lines
and to put the assets back on their balance sheets.\footnote{There is an attempt to avoid that institutions with papers based on unsalable mortgages or whose market value is below face value have to dispose themselves of bonds at any cost and all at once, registering the loss (resulting from imprudence during the real estate credit spree) on the balance sheets.} In this manner, higher risk assets, which
banks had eliminated from their balance sheets, came back when they were supposed to
provide liquidity for the off balance sheet structures.\footnote{As noted by Guttmann (2008: p.19), mark to model of devalued assets (with no markets and no prices) resulted in heavy losses for the banks and competitive pressure to register them quickly, further devaluing bank assets: ‘It must also be recognized that in the current crisis context mark-to-market accounting has its own specificities which afford banks a bit more flexibility than meets the eye. First of all, a lot of the damage for the banks has happened in special-purpose vehicles (e.g. SIVs, CDOs) outside of their balance sheets, and the banks have some degree of freedom as to the timing of bringing those back onto their balance sheets and recognizing losses in the process. When they do so, they are often not able to measure the losses precisely in the absence of exact price information. Hence they have to estimate valuations, using in the process their computational models. Much of their write-offs are hence more mark-to-model calculations, and those let them stretch out their losses to write them off more gradually. What we have thus seen so far, over the last year, are the banks declaring a bunch of losses every quarter and announcing that there will be more to come. This gives them the time to organize capital infusions (notably nowadays from the sovereign wealth funds of Eastern Asia and OPEC). There is, of course, competitive and shareholder pressure to be forthright and expeditious about loss declarations and restructuring, and there is a lot of reputational risk at stake if those issues are mis-handled’.} In this process, many banks had to
raise new resources to increase their risk-weighted capital, especially from sovereign wealth
funds (the contribution to capital in financial institutions was estimated at US$ 135.8 billion
until the end of March 2008).\footnote{For an overview of sovereign funds, see Cagnin; Cintra; Farhi & Almeida (2008).}

In late February and early March 2008, banks also started requiring higher margin
deposits (haircut contagion) to reflect the new prices of assets. As suggested, hedge funds and
other highly leveraged investors borrowed resources from a lender (including resources to buy
residual or toxic tranches), offering assets from their portfolios as collateral. When the value
of the assets dropped, the leverage went up, and it may have gone beyond the limit established
by the lender, who required its reduction through the sale of the assets or an increase of the
margin. The compulsory sales, aimed at readjustment to the rules that apply for leverage
funding, have led to an increase in the volatility that was passed on to other markets. If the
investment fund still has to deal with investors’ requests of repurchasing, it will be necessary
to sell more assets, which will entail a deflationary spiral of prices and/or the closing of the
fund (as occurred to the Carlyle Capital Corporation) (Locatelli, 2008). The devaluation of
prices forces other funds to acknowledge losses, since they have to register the value of the
assets at the level of market negotiations by means of the mark to market model, thus
encouraging other investors to repurchase their shares (part of the pension funds managed by
the hedge funds). This might result in vicious circles of forced sales of assets, as well as in the increase of interest rates in many markets (to enable margin calls).

Banks still carry subprime mortgages’ and structured products’ credit derivatives – whose total notional value was estimated at US$ 62 trillion.30 The same happens to many insurance companies that guarantee the issuing of bonuses in American States and municipalities, a market of US$ 2.2 trillion. These insurance companies might have their ratings, which are transferred to the secured bonds at a lower value. The devaluation of bonds may force investors that can only carry assets classified as investment grade to resell them, which might create a new source of deflation in the prices of assets. Monoline insurance companies, on their turn, will have to meet the obligations of real estate property whose prices are dropping and whose default rates are raising.31 Since the value of structured products tends to converge to the value of the underlying asset, this value might in some cases get close to zero, amplifying the losses of this sector (Kregel, 2008: p.20). Eventually, the crisis reaches the classic dimensions of an asset deflation process, in which positions must be sold to meet the obligations, i.e., to pay the financial agents and the investors’ withdrawals (Fisher, 1933; Minsky, 1986).

This movement occurs in an illiquid market, in which the economic agents seek refuge in public bonds with higher market safety. The asset buyers – mortgages, corporate credits, structured products, derivatives – disappear from the market precisely when the liquidity crisis generates the need for many institutions to sell them to generate cash (to attend to

30 The repurchase of the investment bank Bear Stearns by the Federal Reserve, by means of the JP Morgan Chase, was related to its positions in the market of derivatives. The notional volume of its financial derivatives operations was estimated at US$ 13.4 trillion, approximately the United States’ GNP. This notional volume represented a default risk estimated at US$ 270 billion by its counterparties, since the gross market value corresponds to 2% of the notional value. The Federal Reserve, besides compromising US$ 29 billion in the repurchase operation, open a line of credit of US$ 200 billion for investment banks. See Bernanke (2008: p.2): ‘Our financial system is extremely complex and interconnected, and Bear Stearns participated extensively in a range of critical markets. The sudden failure of Bear Stearns likely would have led to a chaotic unwinding of positions in those markets and could have severely shaken confidence. The company's failure could also have cast doubt on the financial positions of some of Bear Stearns' thousands of counterparties and perhaps of companies with similar businesses. Given the exceptional pressures on the global economy and financial system, the damage caused by a default by Bear Stearns could have been severe and extremely difficult to contain. Moreover, the adverse impact of a default would not have been confined to the financial system but would have been felt broadly in the real economy through its effects on asset values and credit availability. To prevent a disorderly failure of Bear Stearns and the unpredictable but likely severe consequences for market functioning and the broader economy, the Federal Reserve, in close consultation with the Treasury Department, agreed to provide funding to Bear Stearns through JPMorgan Chase. Over the following weekend, JPMorgan Chase agreed to purchase Bear Stearns and assumed Bear's financial obligations.

31 Compromised with the subprime mortgage market, the insurance companies, Ambac Financial Group and MBIA, registered massive losses in the last quarter of 2007 (US$ 8.5 billion), due to the rise of default and to the drop in the classification of many CDOs. Since the publication of these results, such companies have faced a decrease in the value of their shares and/or a lowering in their risk rating (Ambac lost the AAA rating given by Fitch agency, and the rating of both companies is being reevaluated by Standard & Poor’s and by Moody’s).
margin calls and carry out redemption from investors). At this point, it becomes practically impossible to identify the value of certain assets in the institutions’ portfolios (especially the complex and little negotiated ones). If an asset is frequently negotiated for instance in a stock exchange, the prices are public and their daily evaluation becomes a reference for the agents. If there is no negotiation, but there are assets with similar characteristics, such as credit risk and deadline, the prices of these other assets are taken as reference. There is still an attempt of evaluation, called mark to model, in which one searches for a model that, based on the information available, may ascribe a price to the asset in question. In a paralyzed market, however, it becomes extremely difficult to produce ‘exact’ measurements of these assets’ values.

In short, the difficulty to foresee how much certain agents are compromised with papers whose collateral are subprime mortgages (whose stock has been estimated at US$ 1.3 trillion) also contaminated other bond markets when statements about the drop in the profitability of major banks and institutional investors were made and when withdrawals from some investment funds were suspended. It is worth saying that investors steered clear of subprime mortgage-backed bonds – as well as of those backed by other assets. In a few cases, the risk prize soared, entailing the need of a revaluation of risks on a global scale.

3. The subprime crisis and the weaknesses of self-regulation

The subprime crisis revealed the level of complexity and opacity of securitized finances and their intimate relationship with banks. It also revealed the problems associated with internal monitoring and risk transfer systems and with the banks and rating agencies’ risk assessment models, all sanctioned by Basel Accord II. In this sense, the crisis put into question the prudential regulation guidelines of this Accord, and especially of its Pillar 1.

The process of securitization fundamentally altered the structure of incentives in financial markets. In the prevailing organization of banking finances, anchored on the originate and distribute model, the agents responsible for giving credit (originators) no longer

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32 This process was, to a large extent, anticipated by Carvalho (2007: p.166): ‘the regulator’s attempt to put himself in the shoes of the banking institution can thus lead to the worst of the worlds: complex and expensive regulatory systems, due to the attempt to imitate complex decision-making processes as that of private financial decision-making, but largely useless, since, no matter how complex the formalization of the agreement is, it will always remain far too distant from that of the real world of financial institutions. It is possible that the result of the implementation of Basel II ends up being rendering financial operations more expensive, given the need to comply with regulation, with no positive effect on the systemic security of the banking sector. As a matter of fact, worse scenarios can be imagined, if one takes into account the responsibilities put on the backs of the new text’s supervisors. Under these circumstances, it might be appropriate to ask: then what? The possible failure of Basel II might lead to a return to the simpler dispositions of Basel I (...) In an even more radical turn, one could imagine a return to the regulation of liquidity, on a broader basis and with criteria better suited to the conditions of a less-regulated banking sector.’
take on the risk of such operations, inasmuch as they waive these rights to investors by means of complex securitization operations. This promotes a reduction in the incentives for lenders to be diligent when granting credit, particularly regarding the collection and analysis of information on their potential debtors. Besides, securitization promotes distance between the economic agents that would theoretically be in hold of information concerning the debtors’ ability to pay and the agents that ought to retain the credit risk (agents that invested in securitized bonds). In the traditional system of bank credit, these two functions merged in the bank itself, which would carry the operation until it was finished. In the new model, any information gathered by the loan’s originator on the value of the assets’ collateral and on the borrowers’ credit worthiness is not efficiently shared with the institutions that will carry the debt. The different securitization layers, by involving various of the financial markets’ participants and segments and thus structuring an actual credit pyramid, actually amplify this problem. Credit and market risks might end up with those that are the most willing to carry them, but who have the least objective conditions of doing so (Buiter, 2008; Partnoy & Skeel Jr., 2006).

Thus, securitization and off balance sheet instruments, especially derivatives, withdrew from banks their former role as financial intermediaries and made them predominantly brokers and dealers in the capital market. Given the possibility of selling a large portion of their assets, banks ceased worrying about making proper risk assessment, which they expected to be carried out by others. In this manner, the new organization of banking finances entails a necessary tendency of underestimation of risks. Furthermore, the proliferation of opaque techniques of risk transfer, negotiated in over the counter markets (credit derivatives, contingent-liability guarantees), makes a proper evaluation of risks harder and render financial agents more vulnerable, since they incur in unknown risks.

As previously mentioned, the creation of most off balance sheet instruments and institutions was motivated by regulatory arbitrage. It is however worth mentioning that the

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33 Besides, in this new financial system, the activity of federal banks as lender of last resort became insufficient. They must act as market makers of last resort, accepting illiquid assets as collateral for repurchase operations, just as the Federal Reserve and the Bank of England began to do in March 2008 in an attempt to halt the deflation of prices (Buiter & Sibert, 2007). See Buiter (2008): ‘The old Lender of Last Resort model of providing funding liquidity to solvent but illiquid banks, at a penalty rate and against collateral that would be good in normal times but may have become impaired in disorderly market conditions, may be appropriate in a relationships-based financial system or traditional banking system. It is not capable of dealing with market illiquidity – the kind of liquidity problem likely to arise in a transactions-based model of financial capitalism, that is, a system in which a large share of intermediation occurs through the capital markets rather than through conventional ‘originate and hold’ banks. In a transactions-based financial system, the Market Maker of Last Resort function complements or even substitutes for the Lender of Last Resort function as the instrument of choice for pursuing financial stability.’
proliferation of these mechanisms was also associated with the dynamics of competition inherent to banking and financial systems, in which the introduction of innovations is not limited by technological barriers, as it relies more on the human ability to design and structure new products and their respective markets, involving low sunk costs. But financial innovations are easily copied, which results in a relatively short lifecycle. They also lead to the creation of ever more complex and exotic products and supposedly of products that are hard to be copied, as happens with financial structured products (Buijten, 2008; Guttmann & Plihon, 2008).

Besides enabling the transformation of illiquid assets into negotiable bonds and introducing less disputable ‘barriers to entry’, the new financial instruments and the new off balance sheet vehicles have also become important income sources for the major banks, associated as they are with commissions generated along the many layers of the originate and distribute process. According to Kregel (2008: p.17), SIVs were created precisely to sustain this process: ‘In order to sustain the increase in originations, another set of special entities – known as structured investment vehicles or SIVs – was created to ease distribution by acting as buyers of the senior securities of the collateralized mortgage obligations.’

The dynamics of the SIVs became quite similar to those of a small commercial bank (quasi-banks): they went on to grant long-term loans on short-term liabilities, in a classic process of mismatched deadlines, without regulation or supervision. (Kregel, 2008: p.23) There are however relevant differences from the point of view of financial weakness. Commercial banks create deposits and they have direct access to the reserves of the federal bank. In ‘SIV banks’, the ability to generate liquidity is inexistent. The stability and the liquidity of the SIVs depend, therefore, on market liquidity: the sale or the substitution of the commercial paper for bank loans. In a period of turbulence, the assets that are transferred to the SIVs have to be sold, refinanced by the banks or returned to the banks’ balance sheet, given the contingent line of credit that exists between them (the same may happen to operations leveraged through hedge funds). This means that, if commercial papers are not renewed, the bank will have to take on a loan or bring assets to its balance sheet, which will result in an increase in risk-weighted capital.

The result of concentrating the credit risks off the banks’ balance sheets was therefore their transference not only to the assets of institutional investors, but also to off-balance sheet institutions – indirectly (through lines of credit such as the SIVs) or directly (such as the conduits) – associated with them, which tend to have little or no capital, little or no transparency and opaque governance. When opaque institutions invest in opaque financial
instruments, systemic risk tends to increase. It also increases because both the *de jure* and the *de facto* exposures are maintained by the bank that created them (the sponsoring bank). Exposure is called *de jure* when the bank is a shareholder or a creditor of the off balance sheet institution (which is the case of the conduits), when this vehicle has a line of credit with the bank or when the bank guarantees some of the vehicle’s liabilities (which is the case of the SIVs). Exposure is called *de facto* when, because of reputation, it would be a problem for the bank to let the off balance sheet institution with which it is identified to go bankrupt (Buiter, 2008). Put differently, the growing leverage of the financial system was processed off the balance sheets, through the use of a set of new instruments and institutions, a process that was not identified by the monetary and regulatory authorities.

Furthermore, given the generalization of the new asset management model, banks, off balance sheet institutions and institutional investors tend to dispose of their assets, following market prices and not their economic foundations. Thus, the daily movements in the prices of the companies’ shares and bonds directly affect the estimate of default risk. At times of marked instability, for instance, the prices of shares and bonuses drop and, as a result, the odds of the corporations’ bankruptcy rise. The search for hedge impels institutional investors to sell the assets (bonuses and shares) of the correlated companies that carry a credit derivative, thus reinforcing the downward trend of rates and creating a vicious circle (Persaud, 2002). In the former model of organization of banking operations – ‘originate and hold’ – banks kept loans on their portfolios in periods of fluctuation in the prices of the shares and bonds of the companies on the market, given the relations they had with the corporations. In other words, their activity tended to attenuate the volatility of rates.

In this new form of organization of banking finances, the assessment of credit risk is increasingly performed by rating agencies which substitute the banks’ credit departments (which were responsible for making this assessment in the previous system). The separation of the originator and the investor brought about by the process of securitization entails the need for specialized agents that might help to fill in the informational gap created in the process of securitization. The role of risk rating agencies was reinforced by Basel II, since the ratings determine the risk-weighting of an ample variety of assets that banks keep on their balance sheets and distribute to other investors.

The three main credit risk rating agencies (S&P, Moody’s and Ficht) were responsible for the rating of the complex and exotic financial instruments (ABS, CDO, MBS, etc.) and played a key role in spreading them. As noted by Kregel (2008), in order for bonds issued by the SPEs to be purchased by institutional investors, they have to be rated according to the
degree of investment, a task performed by one of these agencies. These companies also supplied consulting services for establishing the financial instruments for the same clients that purchased the service of credit risk rating.

The agencies thus became entangled in various conflicts of interests. On the one hand, they participated in issuing papers, giving ‘advice’ on the best way to get a triple A rating. On the other hand, the commission they received for providing their service (the risk rating of bonds) is paid by the seller (the issuer of the bond), and not by the buyer (the investor). According to Buiter (2008), this last conflict might be unacceptable given the complexity of some financial instruments, which demands a joint work of the agencies and the designers of the bonds. In addition, the agencies only assess the default risk (the probability of default and the expected loss if it occurs), not taking into account market and price risks (including liquidity risk).

The subprime crisis also revealed the shortcomings of the banks’ risk management and monitoring models, another fundamental cornerstone of the new organization of banking finances sanctioned by Basel II. The presupposition of these models is that the past will continue to reproduce itself in the future, that is to say, these models are backward-looking. Thus, for instance, to rate the credit risk of CDOs, the risk pricing models employed historical default series for the different assets included in this bond, given the inexistence of empirical observations about the performance of this new financial instrument. This means that the models presuppose a relative normality in the business environment.

In periods of turbulence, however, the sophisticated risk management systems become inadequate. The statistical concepts employed to measure risk – distribution of probabilities, arithmetic means indicating the most likely results in the form of expected values, the standard deviation of actual results on the basis of a (medium) expected value, the co-variance that measures the manner in which the returns of different assets are interrelated – no longer apply at moments of financial crisis. In unpredictable movements of rupture or in times of violent adjustment of portfolios, as occurred during the CDO and ABPC crisis, models are of very little help. The well-behaved standards of predictability suggested by the statistical theory of asset portfolio diversification disappear34.

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34 See Greenspan (2008): ‘in line with the time-honoured observation that diversification lowers risk, computers crunched reams of historical data in quest of negative correlations between prices of tradable assets; correlations that could help insulate investment portfolios from the broad swings in an economy. When such asset prices, rather than offsetting each other’s movements, fell in unison on and following August 9 last year, huge losses across virtually all risk-asset classes ensued. According to Greenspan (2008, our emphasis), the most credible explanation for such a poor performance of risk management based on state-of-the-art statistical models is that (...) “negative correlations among asset classes, so evident during an expansion, can collapse as all asset prices
In summary, the new model of organization of finances – anchored on securitization and on off balance sheet operations, on the assessment of credit risk by rating agencies and on internal models of risk monitoring and transfer – reduced liquidity risks, which were always characteristic of banking, but it simultaneously made banking vulnerable to the evolution of the prices of assets and led to the underestimation of risks. Its net result was the increase of systemic risk, and not its mitigation as supposed by the supporters of self-regulation.

4. Discussion agenda for perfecting the regulatory system

The subprime crisis appears to be not simply another minicrisis, resulting from the dynamics of securitized finances, but a crisis of larger proportions, which not only revealed the anomalies in contemporary financial markets, but also the inadequacy of the current governing systems, at both a national and an international scale, among which must be counted the Basel Accord. According to Basel’s criteria of capital adequacy, on the verge of the breakout of this crisis, the large banking conglomerates were more diversified and more capitalized. Between 1993 and 2003, the Basel index remained at an average 12%, i.e., above the minimum 8% established by the Accord, thus signaling a healthy situation for the American and global banking system, even in a scenario of growing credit risk.

In Basle II, the definition of risk-weighted assets include OBSE (SIVs and conduits) which is exactly where the riskiest tranches were discharged. But this accord had not been implemented yet in the US and even if it had been in place, the securitization framework establishes capital charges for the banks exposure to this entities only under certain conditions (as pointed in section 2). In addition, as Basel II encourages the use of techniques to mitigate the credit risk to lower risk weights on asset holdings, it stimulates the use of credit default swaps, instruments negotiated in the opaque OTC markets where the counterparty risk is high. The breakout of the subprime crisis, in mid-2007, laid bare the growing weakness of financial structures. The systems of risk management could not stop the banking institutions’ strong involvement with and exposure to the credit pyramid erected on the basis of real estate loans to borrowers with no credit records or with bad ones. On the contrary, these systems, associated with the complex techniques of financial engineering, made possible, and even fall together, undermining the strategy of improving risk/reward trade-offs through diversification. If we could adequately model each phase of the cycle separately and divine the signals that tell us when the shift in regimes is about to occur, risk management systems would be improved significantly. One difficult problem is that much of the dubious financial-market behavior that chronically emerges during the expansion phase is the result not of ignorance of badly underpriced risk, but of the concern that unless firms participate in a current euphoria, they will irretrievably lose market share’.
stimulated, the creation of new financial products structured during the American real estate market boom between 2002 and 2006.

As previously noted, universal banks introduced the process of asset management into conglomerates. This led to the development of highly sophisticated mechanisms for credit and market risk classification, monitoring, mitigation and transfer to other financial agents. Nevertheless, risks did not disappear; they were simply segmented and redistributed. By means of credit derivatives and other instruments, the many risks were sliced, securitized and sold. Such expansion of risk transfer mechanisms actually represented the mirror image of the low risks accounted for on the banks’ balance sheets.

The complexity and the sophistication of the new instruments masked uncertainties and the interlocking of risk, as much for the banks as for the regulatory authorities. In the case of the more risky collateralized debt obligations and of mortgage-backed securities, transferred to the SIV/SPVs by means of a line of credit, in the absence of liquidity, the assets and therefore the risks went back to the banks’ balance sheets. This demands constant monitoring (by the banks themselves and by the authorities), because there is no safety mechanism that can halt a movement of risk perception on a single direction; a downward movement of assets sale. There are no forms of preventing bad credit assessments, asset concentration and overleveraged by the banks themselves in moments of euphoria. Furthermore, American banks still concentrate too many positions in derivatives, some of which might not be associated with mechanisms of risk transfer, but rather with a search of returns, which has a systemic effect.³⁵

The consequences of the crisis for the governance of the international financial system are still uncertain. Some agents (such as the Institute of International Finance – http://www.iif.com) fear a radicalization of regulation, which would exceedingly inhibit the activity of banks and of other financial institutions. The technical weakness of this governance is far from having been surpassed: the inexistence of a global regulatory organism. The regulators and institutions of financial markets are organized on national bases. Whereas regulation is national, finances are multinational, which entails a deficit of global governance. However, even within the current status quo, it is possible to put forward a few proposals for perfecting the regulatory mechanisms of this system.

First, it would be necessary to consolidate the different regulatory agencies, both in Europe and in the United States. The subprime crisis showed how obsolete the structure of decentralized supervision is, given the degree of interconnection among the various financial institutions (banks, pension funds, insurance agencies, investment funds) and markets (credit, capital and derivatives). It is worth mentioning that this problem has already been acknowledged by the American government. One of the cornerstones of the proposal for the restructuration of the American financial system’s regulatory structure, announced in late March 2008 by the Secretary of the Treasury, Henry Paulson, is exactly the consolidation of the various regulatory agencies in the country. Besides, according to this proposal, the Federal Reserve’s powers would be extended and, alongside the financial holdings, it would also supervise investment banks, insurance agencies and investment funds (including hedge funds).

Second, a few initiatives should put limits to the advance of securitization, among which: (i) regulators could set restrictions to the complexity of instruments that may be issued and acquired by the regulatory entities; (ii) federal banks could accept only sufficiently transparent classes of ABS as collateral in committed operations or rediscount windows; (iii) a regulatory request procedure could be established, forcing the originator to retain the equity tranche, since when the originator of the loan is too distant from the investor, incentives for a careful origination are fewer – a means of mitigating this problem would be to have the originator retain the riskiest tranche; (iv) a re-intermediation could be promoted, by incorporating the off balance-sheet institutions (conduits, SIVs, quasi-banks) on the banks’ balance sheets.36

Third, the role of risk-assessment agencies and of banks’ internal rating models ought to be reconsidered. The subprime crisis laid bare the weaknesses of these two models of Basel II’s Pillar 1. As suggested by Buiter (2008), the regulatory role of rating agencies and internal models of credit risk valuation should be eliminated. As for the agencies, such institutions should become one-product firms, i.e., only offer the service of credit risk rating. The potential conflicts of interest when an agency supplies consulting and accessory services in bond structuring are inevitable. Even the sale of products and services that do not enter in

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36 In Unctad’s opinion (2008: p.2): “the problem with these investment vehicles is that they had a built-in maturity mismatch, and once they lost access to the market for asset-backed commercial paper, the parent banks had to step in and provide the necessary liquidity. Thus, a liquidity crisis which originated outside the banking sector immediately spilled over into the sector. This suggests that the involvement of banks with lightly regulated agencies that could conceivably transmit liquidity and solvency problems to the banking system should be either prohibited or reported in a fully transparent way”. 
direct conflict with the rating process is undesirable, since it might generate an incentive to alter ratings in exchange for business opportunities in other fields. The existence of specialized firms should also reduce barriers to entry and promote competition. Payment by the issuer should be abolished. Payment by the investor is not an ideal solution, for it would eliminate the conflict of interests, but it would create a problem of collective action, or free rider. In a possible solution, ratings would be paid by a representative organism of institutional investors, financed by a fee paid by these agents and by the issuers of securities. Thus, the conflicts of interest would be avoided, inasmuch as no individual issuer would pay for its rating.

UNCTAD (2007, emphasis in the original), on the other hand, suggests the creation of an organism that would regulate the agencies: ‘rating agencies are not fully subject to market discipline that would increase the accuracy of their ratings. Reform the role of such agencies in evaluating complex financial instruments is an unavoidable step towards increasing transparency. Proponents of market-based discipline suggest that conflicts of interest could be eliminated by not requiring the use of credit ratings to determine the type of assets that can be held by regulated institutions. An alternative view favors the establishment of a regulatory agency that would supervise the functioning of credit rating agencies and certify that AAA assets have indeed a minimal probability of default.’

As for the internal models of risk assessment, they are of little use in times of turbulence, since they are based on parameters estimated on the basis of previous information. They presuppose, in the first place, that the prices of assets are not correlated, and, in the second place, that variations are relatively mild. However, when the crisis breaks out, the prices of assets become correlated and variations abrupt, resulting in major losses. Besides, ‘the risk sensitivity approach is upside down. Statisticians need to stand back a little and look at the broad sweep of financial history. Financial market crashes do not emerge randomly, but follow booms. What fuels the boom are market estimates that risks are low. This optimism encourages imprudent lending, which eventually leads to the next crash. Boom-time is the best time for financial institutions to make provisions, but the incentives are for banks to respond to falling margins of a maturing boom by chasing after the marginal borrower. Current regulations do not pull them back but let them run ahead. Market-price-based, risk-sensitive models tell banks in the up-cycle that risks have fallen and capital is sufficient for more risk-taking’ (Goodhart & Persaud, 2008).

To attempt to halt the exacerbation of the cycles of financial assets, triggered by bank credit, Goodhart & Persaud (2008) put forth the following proposal: ‘that bank capital
requirements should not only be contra-cyclical but also related to the rate of change of bank lending and asset prices in the relevant sectors. The capital adequacy requirement on mortgage lending could be linked to the rise in both mortgage lending and housing prices, and lending to construction and property companies to the rise in such lending and in commercial property prices. Where there are less reliable guides to asset prices, more weight would be placed on the growth of bank lending by itself, perhaps supplemented by prices in the relevant equity market sector. The purpose of the exercise is not to end the cycle, but to build up reserves and to restrain bank lending during asset price booms, so as to release them during asset price depressions.’

Finally, a broad discussion agenda on the international financial system’s governance deficit – comprising public (national and multilateral) and private institutions, rules and guidelines related to the assessment of wealth – should be set up on the basis of the discovery of the weaknesses of the financial structures created by the banking conglomerates seeking new clients without the means to pay their debts. The need to reduce the ‘democratic deficit’ of regulatory and supervisory institutions in the national and international financial systems comes again to the fore, which might be accomplished, for example, by allowing Non-Governmental Organizations (NGOs) to take part in the decision-making structures with a view to reinforcing the role of such institutions as well as by consolidating mechanisms to prevent the exacerbation of financial and productive cycles.

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