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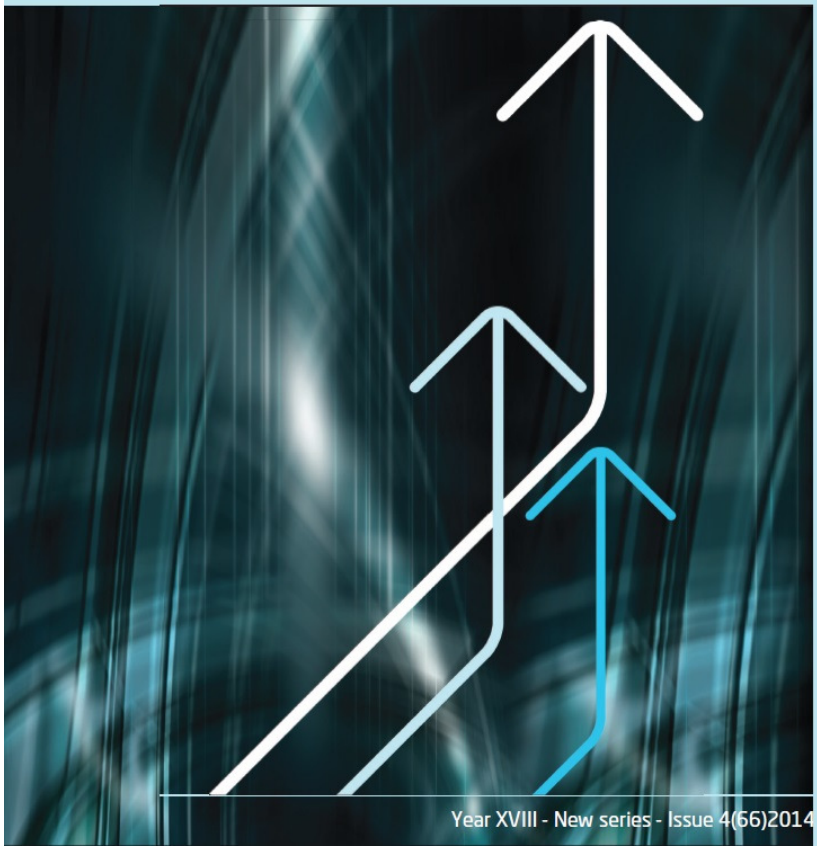
Financial Studies



Year XVIII - New series - Issue 4(66)2014

“VICTOR SLĂVESCU” CENTRE FOR FINANCIAL
AND MONETARY RESEARCH

FINANCIAL STUDIES

ROMANIAN ACADEMY
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CONTENTS

FINANCIAL INNOVATIONS AND PRUDENTIAL REGULATION - IMPACT OF NEW RULES OF BASEL III

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Abstract

The recent financial crisis, that has left its mark on the global economy, highlighted the problems of ensuring the stability of the banking sector. At the end of 2010 year, G20 meeting has determined the need of approval of new standards of banking regulation and international settlement named Basel III. The present study is an attempt to present the changes imposed to the new supervisory agreement and to determine the preparation of banking sector for implementation of new provisions.

Keywords: financial crisis, BASEL III committee, financial innovation, financial derivates.

JEL Classification: G01, G15, G18

1. Introduction

One of the many useful lessons that the crisis has taught to regulators and governments authorities from many countries was that regulatory models, at the national level, are doomed to fail in an integrated and interconnected global financial system, in case when financial institutions and the "shadow banking system" know no borders. (Berger, A. N., 2003).

Several factors can explain the rapid growth of the financial sector. First, technological progress in communications and information technology has given a fillip to the expansion of trade in financial services. The use of innovative processes and technologies in the financial sector has transformed its *modus operandi* (Financial Stability Board, 2011)

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Tendency of practical application of financial innovation continues with the growing use of banking services based on Internet. More, deregulation trends have dominated for a long period of time, while regulation highlights some niches in the financial sector, that led to a situation when considerable amounts of capital that have been directed towards such options.

Financial innovation is linked with prudential regulation when first may help to the latter. Such-called "regulatory arbitrage" has been one of the reasons why financial innovation has been criticized so much during the past three years. Taking into account the recent financial crisis, financial innovation was blamed for allowing prudential regulation to be bypassed.

Regulatory arbitrage and short-term profits were considered as one of the notoriously sad 'achievements' of financial innovation, at least in the last decade, enhancing the welfare of few to the detriment of the many.

Nonbank institutions were active in equally dangerous financial instruments, without having to comply with prudential requirements relating to capital adequacy or liquidity that banks abided by, thereby distorting competition and creating leverage in the world economy which proved to be disastrous.

The main arguments in favor of financial innovation were function of coverage, that means increasing the completeness of financial markets and investment function, the realization of which contribute to growing of the stable efficiency of the economy.

The importance of innovation for the contemporary financial market, characterized by a high degree of information asymmetry is mentioned by Stiglitz and Weiss (1981) remark seeing in them the only constructively way in forming the new economy, resistant to future hazards and exposures. The need of use the financial innovations is approached and in Principles of innovative access to finance resources made by G20 in order to remove barriers to financial services.

Research of specialized literature has shown that in case of evaluation of financial innovations is need to take into account their nature, that are observed in both negative and positive effect in the process of formation and development of competition in the banking system. Their essence is researched (studied) in such key aspect as: increasing the efficiency of the financial system, their role in risk

management and the degree of influence on changing of banking system.

New reality of the financial world is characterized by increasing interdependence between the banking sector and financial markets. That´s why, ensuring a correct regulation of the activity of commercial banks on the financial market requires a globally coherent legislation. This problem was solved by the BASEL I and BASEL II, but the financial crisis has forced the appearance of new and more stringent and actual regulations.

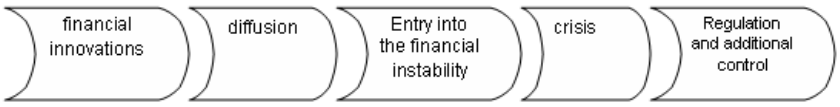
The financial crisis has led to the need for reform of market of financial derivatives as first financial innovation, which was started in the USA, which in 2010 approved the Law of Dodd - Frank about regulation of financial derivatives. The same measures were applied and in EU in 2012.

The Basel III standards are formulated requirements about the need of evidence of liquidity risk for derivative financial instruments and the need to ensure additional liquidity, taking into account changes in the market value of derivative contracts. Implementation on time (appropriate) of legislative changes and regulatory mechanisms of the world states will allow changes of off-balance derivatives market[1].

Most economists attribute to financial innovations the main role in financial crisis of 2007 - 2009, but do not forget about the influence of macroeconomic disproportions, of the cheap money, of increased financial leverage and failures of the regulatory authorities.

Next we try to present the development of financial innovation that will allow us to characterize further the need for and role of BASEL III.

Figure 1. Logistic chain of the development of financial innovations



[1] http://www.bis.org/list/basel3

Financial innovation has changed the risk profile of financial institutions and significantly contributes to increase the interconnection between financial institutions and among non-financial institutions. Following the crisis, prudential regulations are being revised and made more stringent in order to reinforce financial sector. The design of the regulatory framework for financial services is important because of speculative nature and complexity of the financial system, which emphasizes the significance of building trust and protection of reputation in this sector.

The important potential of financial innovation represents the efficient allocation of capital and risk of reduction the cost of capital, which is reflected in increased productivity and economies around the world.

2. The characteristics of BASEL standards

Rules of capital adequacy of BASEL I and II were not sufficient to cover risks arising from banks' exposures to the transactions and instruments, such as securitization or derivatives instrument and also, is not taking into account the systemic risk presented by the accumulation of leverage effect in the financial system.

Several non-banking institutions, on the outskirts of prudential regulation are guilty for excessive leverage effect. Pension funds and asset managers bought dubious financial products or were exposed in such way to the sellers of such products. Private companies caused increasing of financial leverage in the corporate sector, while credit rating agencies failed to quickly warn about the dangers of certain financial instruments. All these events suggest that prudential regulation should not focus exclusively on banks.

Following the recommendations of several study groups that have been established to examine possible responses to the crisis, the new framework of BASEL III sets higher requirements for capital and liquidity, both in terms of quantity and quality, to ensure that banks are better equipped to absorb losses such as those relating to the global financial crisis. BASEL III supposes a better risk coverage, especially on activities from capital market.

Of course, under BASEL III is charged continuation of provisions of BASEL II in direction of optimizing assessment of lending risk of bank's portfolio based on internal models of

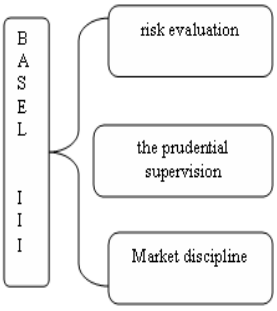
commercial banks, according to which, size of capital was determined according to VaR model credit as:

- Credit Metrics;
- Credit Risk+;
- Credit Portfolio View;
- Portfolio Manager.

General Secretary of the BASEL Committee for Banking Supervision affirms that "many thought that BASEL III is related to promoting models which are taking into account the entire credit cycle. In light of the recent crisis, during which financial institutions did not realized modeling correlations between bank risk assessment, especially in the mortgage market, I do not think we should continue with implementation of this model" (this is about application of VaR model). (Basel III and European Banking: Its Impact, How Banks Might Respond, and the Challenges of Implementation, 2010).

According with many scientists, BASEL III is "a combination, a symbiosis of new methods, innovative in ability to assess risks (operational, credit and market) and creating the necessary capital for prudential supervision of market discipline".

Figure 2. The elements of BASEL III



Only the combination of the three elements can be called supervision risk - oriented, which according to the ideas of Basel Committee on Banking Supervision, is able to ensure financial stability.

BASEL Committee, in collaboration with other organizations, has developed new regulatory standards that will be gradually implemented till 2019.

In the category of factors that influenced on new regulations are included financial innovations that we were talking about till now.

The main changes of BASEL III are relating to the tightening requirements for Tier 1 capital, which includes only simple actions and undistributed profit.

The capital is the resource attracted by the bank throughout its existence and will be used to cover bank losses. Much of the capital is made up of simple actions and undistributed profit. The Basel III makes clear distinction between capital and financial bonds. This separation is caused by market invasion with instruments of the financial engineering of second generation, meeting itself features both capital and debt and allow investors in good times for bank to make profits close to those of capital, but do not wear identical responsibility to shareholders.

Thus, Basel III increases the loss-absorbing capacity of banks and therefore their resilience to crises by introducing capital requirements which oblige banks to build up capital in good times, which can be used in periods of distress. Such capital buffers will allow cyclicality in the banking system to be mitigated. First, at a micro-prudential level, the Tier 1 capital requirement, which incorporates common equity and other financial instruments, increases from 4% to 6% (without taking the conservation buffer into account).

Furthermore, Basel III adopts a countercyclical buffer (between 0 and 2.5 per cent) which comprises common equity or other capital. This buffer is regarded as an extension of the conservation buffer range. The countercyclical buffer will alleviate the risk of less available credit due to capital requirements (European Commission, 'Proposal for a Regulation of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories', 2010).

During the implementation of provisions of Basel III, financial institutions are advised to cut dividends and awards paid to create the two forms of capital supporting.

Table 1

Minimum value reached at 1 January of each year

Indicators (%)	2013	2014	2015	2016	2017	2018	2019
Shareholding capital	3,5	4	4,5	4,5	4,5	4,5	2,5
The buffer			0,625	1,25	1,875	6,375	100
Shareholding capital - the buffer	3,5	4	4,5	5,125	5,75	8	9,875
Decrease the pillow of 15% for financial instruments that enter into the calculation of capital adequacy		20	40	60	80	4,5	2,5
Capital Adequacy Ratio	8	8	8	8	8	6,375	100
Capital Adequacy Ratio - the buffer	8	8	8	8,625	9,25	8	9,875

Source: European Commission, 'Proposal for a Regulation of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories', 2010

Non-banking institutions have been active in trading with dangerous financial instruments, without having to comply with the prudential requirements on capital adequacy and liquidity that banks have respected, distorting competition and creating leverage in the global economy, which proved to be disastrous.

Prudential regulation can negatively affect the scope and speed of financial innovation. However, this may also lead to a reorientation of financial innovation back to its initial, socially valuable function of managing risk and allocating capital. In the long term, well-designed prudential regulation and appropriate incentive mechanisms can delay, but will ultimately enhance well-thought out financial innovation. Be this as it may, financial innovation has come to the forefront and has drawn regulators' attention.

In USA, security and exchange commission created a new subdivision that deals only with innovations. Especially, was assessed risk of financial innovation and realized shining of complex financial instruments. As result, supervisory authorities around the world have been criticized for their failure to understand the mechanisms of derivatives markets and deployment of hedge funds.

In addition, the new regulatory framework for banks introduces minimum global liquidity standards. Two standards are central in this respect:

- the short-term liquidity coverage ratio (LCR), which aims at promoting short-term resilience of the liquidity risk profile of a given bank;
- the long-term (i.e. one year) standard, which is called the structural net stable funding ratio (NSFR), is expected to give incentives to banks to look for more stable sources of funding rather than rely too heavily on short-term wholesale funding. A transitional period ensures that the LCR will not be introduced until 2015 and the NSFR is to be introduced by 2018. (Basel III and European Banking: Its Impact, How Banks Might Respond, and the Challenges of Implementation, 2010)

An important development constitutes the strengthening of capital requirements and risk management in case of counterparty credit exposures stemming from derivatives, repo and securities. Thus, banks are required to have additional capital to cover possible risks caused by the deterioration of the credit quality of the counterparty. Regarding derivatives instruments, objective is to stimulate banks to move from over-the-counter (OTC) to central counterparty's (CCP) derivatives contracts.

Importantly, Basel III foresees the establishment of an internationally harmonized leverage ratio to constrain excessive risk-taking and to serve as a backstop to the risk-based capital requirement. The ratio will include both on- and off-balance sheet exposures and derivatives and will be tested at 3% from 2013 to 2017 (European Commission, 'Proposal for a Regulation of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories', 2010).

These activities with financial derivates will be affected in two main ways by introduction of BASEL III regulations.

First, the stressed value at risk, the incremental risk charge (IRC), and the comprehensive risk measure (CRM) for correlation trading under the European Union's Capital Requirements Directive III (CRD III) will require banks to hold more capital for market risk.

Second, the newly introduced credit valuation adjustments (CVAs) under CRD IV will require banks to hold more capital for counterparty credit risk. The CVA requirements remain high despite their mitigation in the July 2010.

Most affected will be transactions with counterparties with less rating and transactions with counterparties with limited capacity of placement. Sales of products of risk management to companies would be one of the solutions for these transactions. (Basel III and European Banking: Its Impact, How Banks Might Respond, and the Challenges of Implementation, 2010).

For banks, maintaining profitability would represent costs compensation through a combination of improved security and compensation arrangements, a more efficient management of the CCP, and the movement of enterprises and products for central compensations platforms in counterparty outside the bank.

For example, proposal of regulation Commission about OTC financial derivatives instruments, about CCP registers of transactions is in the process of being adopted (Degryse H.; Ongena S., 2004). This proposal introduces reporting requirements for OTC transactions, an obligation of compensation for certain categories of OTC derivatives, measures to reduce credit risk of counterparty for bilaterally cleared OTC derivatives; common rules for central counterparties and central registers and rules for establishment of interoperability between CCP.

Detailed information about OTC derivative transactions signed by financial companies from EU (such as banks, insurance companies and funds) and non-financial firms (for example, energy companies, airlines and manufacturers), with significant positions on OTC derivatives market should be reported by the central registers and accessible supervisors authorities.

More than that, central registers of transactions should publish aggregate positions by categories of financial derivatives instruments that should be available to all market participants. Given the systemic importance of CCP, the proposal provides that they must respect stringent capital requirements, organizational and business conduct standards (for example, disclosure of prices). CCP compensation for standardized contracts become compulsory, while are prescribed standards for risk attenuation, like exchange of collateral not cleared contracts by a CCP.

There are, however, a number of additional interventions, both general and specific to Basel III, which banks should consider:

- a set of interventions "no regret" to reduce capital and liquidity inefficiencies for effective implementation of the new rules;

- restructuring of balance sheet for improving the quality of capital and reducing capital needs generated from Basel III deductions and more efficiently management of balance limited resources;

- adjustments of creating capital model, models of efficient liquidity and new products.

Following those mentioned till now and in specialized literature, changes in Basel III and their consequences can be summarized in the following table.

Table 2

Rules and consequences of Basel III

Basic Changes	The Consequences
1. Increase the minimum requirements to tier 1 capital	The refusal of banks to use hybrids and quasi bonds
2. Balance requirements to Tier II with the exact determination of those scope	In conditions of keeping of growing return of capital and dividends
3. Partial renunciation of the hybrid components of Tier I capital including innovative tools	Using the conventional convertible instruments to achieve the requirements for additional capital
4. The pressure limit of bonds is fixed	Pressure limit debt is incentive: - strengthening bank capital positions; - applying maximum credit risk exposure and maximum profit.
5. Performance standards on liquidity management	Tough requirements for liquidity ratios will lead to changes of the business - model[1)]

Note 1): Business purpose of the model is determined by the unitary system of management of financial assets and is based on the connection of policies of bank liquidity management, of financial investments and bank risk.
Source: European Commission, „Proposal for a Regulation of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories", 2010

Finding the balance between the two goals, seemingly contradictory, of avoiding overregulation and strength ensuring for institutions, markets continuity, appetite for innovation and competitiveness of the financial system is back in the reflectors. This exercise seems to be more difficult in the present.

3. Conclusions

Finally, it is worth noting that financial innovation has remained somewhat neglected in recent attempts to reform, regulatory mainly because financial innovation, in the last decade, at least, served as regulatory arbitrage and tax evasion. Ethical values also should have a role in the new landscape. This refers not only to financial innovation, but touching and "mechanics" of the financial markets.

The crisis was not the result of non-conformity to certain rules, but rather the result of capitalization the advantages of gaps, ambiguities or deficiencies and omissions in the regulatory framework applied in time.

So, goal of BASEL III is to reduce the involvement of banks in excessively risky activities, reducing the probability of adverse effects of following crises and offering the possibility to face the shocks without relying on support from the state.

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ROMANIAN FINANCIAL MARKET'S REACTION TO FED TAPERING TALK DURING 2013[1]

Iulian PANAIT, PhD*

Abstract

This paper examines the reaction of the Romanian financial markets to the changes of monetary policies in the US during 2013. Using daily data for Bucharest Stock Exchange main equity index, EURRON exchange rate, 5 and 2 year government bond price index and 5 year government CDS (USD) price, we found a statistically significant negative reaction to the tapering news, similar in many respects with the reactions of other financial developed and emerging markets in the region. Also, we found that the reactions only manifested on the short term and were reduced in amplitude.

Keywords: monetary policy, financial markets, developing countries, stability, volatility

JEL Classification: F21, G15, E58

1. Introduction

Financial stability, macroprudential policy and instruments are relatively recent themes in financial literature and still needs further development and scientific investigation.

The effects generated by the monetary policies of developed countries on the emerging economies had generated important debate among economists and researchers during the past years and will continue to be of high importance during the following years as result of accelerated globalization. The expressions of this phenomenon are still insufficiently known to the scientific community and the policy makers.

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[1] *This paper was presented in the Annual International Conference "Financial and monetary economics" – FME 2014, 24 October 2014, Romanian Academy, Bucharest*

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So far there have been only few studies to address the reaction of capital market and foreign exchange market in Romania to the monetary policy decisions of the most important central banks.

This article studies the reaction of the Romanian financial market to the surprise announcement made by the US Federal Reserve officials on the 22nd of May 2013 regarding the begging and the pace of the transition from quantitative easing to monetary tightening. We investigated the behavior of the main stock market index, the EURRON exchange rate and the behavior of credit markets via CDS and government bond yields.

We concluded that the reaction was statistically significant but reduced in size and duration, similar with the one experienced by other emerging and developed financial markets in the European Union.

Our conclusions are relevant for money managers and investors since they show the importance of monetary policy events (surprises) for the financial assets performance and also because of their impact on financial markets stability as one of the important objectives of national interest in the current European and international economic and social context.

The rest of the paper is organized as follows: section 2 describes the data and the methodology that we have used; section 3 presents the results that we have obtained; and section 4 summarizes the most important conclusions.

2. Data and methodology

For our research purpose we have collected all the available daily data during January 2007 – August 2014 for Bucharest Stock Exchange BET Index, EURRON exchange rate, Romania 5y USD CDS prices, and the 5y and 2y government bond indices calculated by Bloomberg.

Because the price time series are not stationary, we used the daily log returns for stock index and exchange rate series and the first difference for CDS and sovereign bond yields.

Also, for comparison, we have collected and analyzed similar data for other financial markets in EU: Bulgaria, Hungary, Poland, Czech Republic, Croatia, Austria, Spain, Portugal, Greece, Italy, Germany, France, United Kingdom, Norway and Denmark.

For all the above, we employed a number of methods in order to study the behavior of daily returns (or daily difference in prices), volatility and correlations.

First, we divided the sample period in two sub-periods: the investigated period from April 1st 2013 till August 31st 2013 (which includes the 22nd of May 2013, the day of the US FED first official announcement of tapering) and the observation period (for comparison) from January 1st 2007 till August 2014 but without the investigated period mentioned before. Subsequently, we studied the Kernel Density Estimate distributions (according to Epanechnikov) and the differences between the shapes of the distribution for each of the two sub-periods.

Second we modeled the conditional standard deviation of the stationarized series using GARCH(1,1) (according to Engle).

Third, we modeled the conditional correlations for each variable between Romania and other developed and emerging financial markets using DCC-GARCH(1,1) (according to Engle).

3. Results and interpretations

We have studied the basic stylized facts of all the financial market variables included in our research, separately for the investigated period and the observation period. Table 1 presented below show that, at least for Romania, they don't present significant differences to the characteristics that are already documented by the financial literature (near zero average daily returns, and non-normal distributions with excess kurtosis). The only noteworthy difference is the positive skewness during the investigated period (heavy left tail distribution) in contrast with the predominantly negative skewness (heavy right tail distribution) during the observation period.

Table 1

Descriptive statistics for the series

	Avg.	Std. Dev	Skewness	Kurtosis
Investigated period (April 1st 2013 – August 31st 2013)				
BET Index daily log returns	0.000	0.007	0.139	2.831
EURRON daily log returns	0.000	0.004	1.244	8.090
Ro 5y sovereign bond yield first difference	0.005	0.086	1.686	12.803
Ro 2y sovereign bond yield first difference	-0.008	0.056	1.150	7.301
Observation period (January 1st 2007 - April 1st 2013 and August 31st 2013 – September 15th 2014)				
BET Index daily log returns	0.000	0.013	-0.129	18.134
EURRON daily log returns	0.000	0.003	0.466	11.065
Ro CDS 5y USD first difference	-0.729	5.149	-0.250	27.069
Ro 5y sovereign bond yield first difference	-0.006	0.068	-14.427	359.10
Ro 2y sovereign bond yield first difference	-0.004	0.042	-0.037	16.845

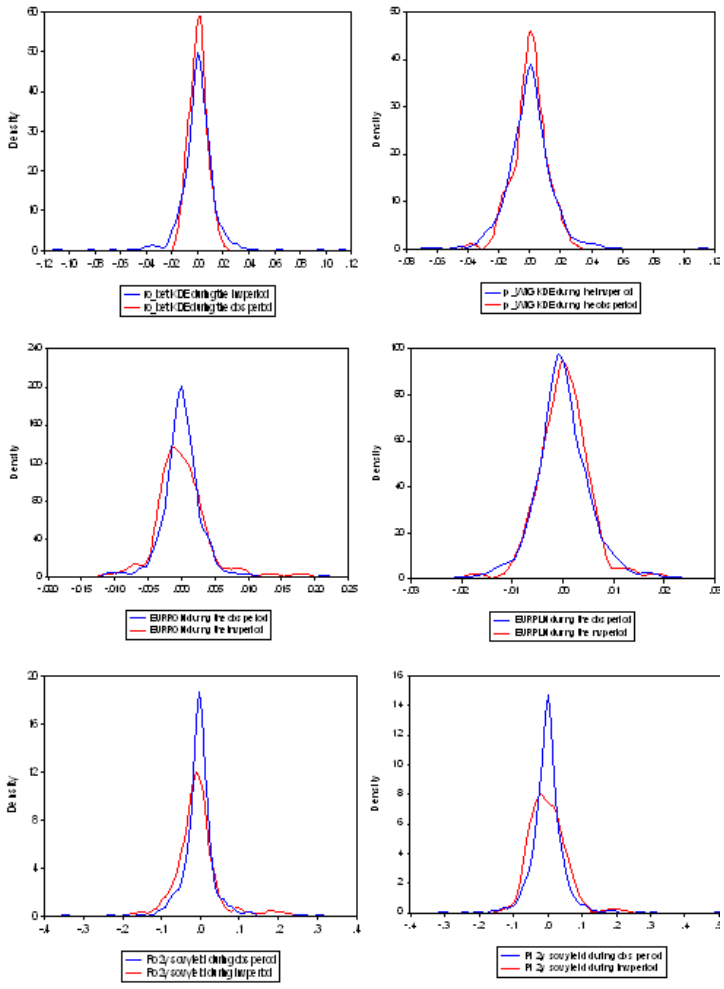
Source: Bucharest Stock Exchange, National Bank of Romania, Bloomberg, own calculations

A comparison between the distribution of daily returns (or daily differences in some cases) between the investigated period (April 1st 2013 till August 31st 2013 - which includes the 22nd of May 2013, the day of the US FED first official announcement of tapering) and the observation period (January 1st 2007 till August 2014, but without the investigated period mentioned before) show a similar behavior for all the Romanian financial market variables studied: in general heavier tails for the distributions of returns (or first differences) during the investigated period combined with lower kurtosis and higher positive asymmetry (the left tail is thicker in comparison with the right one).

Figure 1 presented bellow show that this finding is valid also for other financial neighboring financial markets (ex. Poland in the

figure below but the same finding was witnessed also for the other markets studied)

Figure 1. Distributions of daily returns (daily differences) during the investigated and the observed period



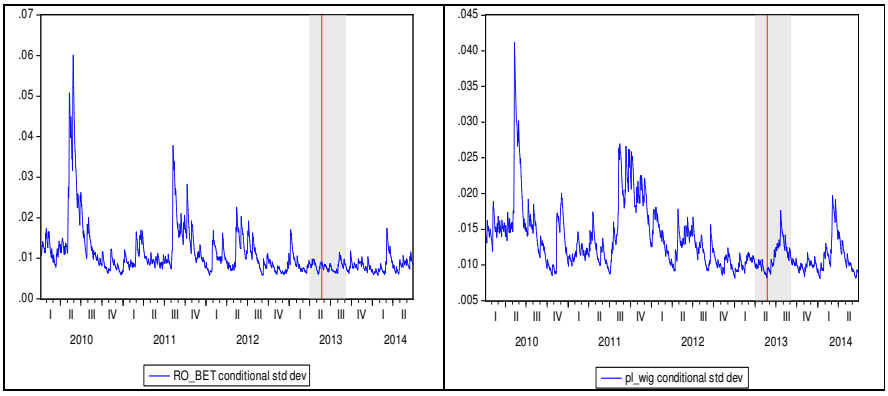
Source: Bucharest Stock Exchange, National Bank of Romania, Bloomberg, own calculations

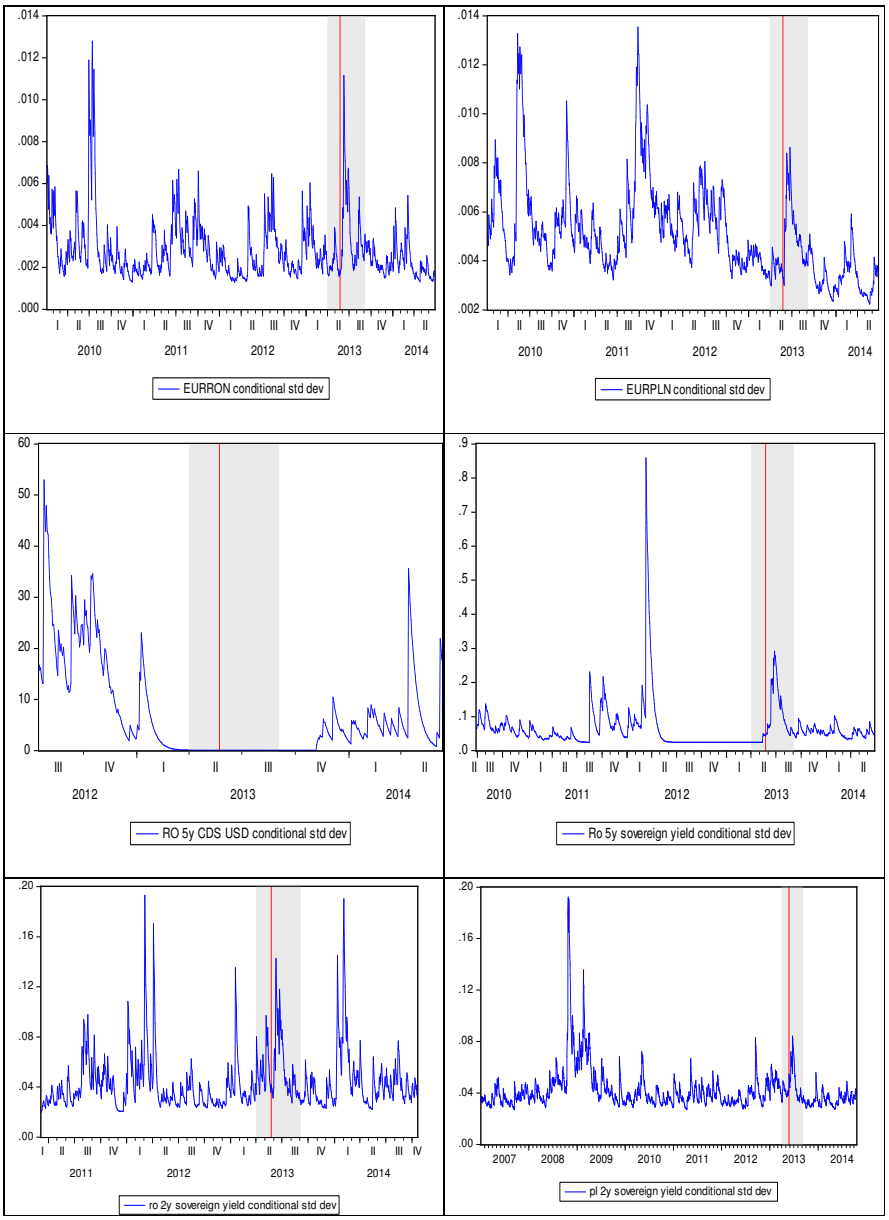
In order to highlight the behavior of volatility during the entire period studied, we used a Garch(1,1) model for the daily volatility of our time-series. In Figure 2 we present in parallel the behavior of various financial market variables for Romania and Poland. We have highlighted in gray the investigated period and we have marked with a red vertical line the exact moment of FED tapering announcement. It can be noticed that both in Romania and in Poland the FX market and the 2y sovereign bond market witnessed a significant increase in volatility during the investigated period, immediately after the tapering announcement.

It is also to be noticed that the behavior of the 5y Romanian sovereign market was not relevant due to its lack of liquidity.

Also, it is noticeably that the Bucharest Stock Exchange's volatility didn't show a significant increase during the investigated period, while the Warsaw Stock Exchange (and other emerging and developed markets) reacted significantly to the tapering announcement. The peculiar behavior of the Romanian stock exchange (not only from other exchanges in Europe but also in comparison with the Romanian FX and debt markets) can be explained by the fact that it has lower capitalization and liquidity and this could mean that foreign and institutional investors' participation is smaller and the capital outflows during the investigated period, as effect of the tapering announcement, was not significant and didn't influence market behavior.

Figure 2. Evolution of the volatility during the investigated and the observed periods

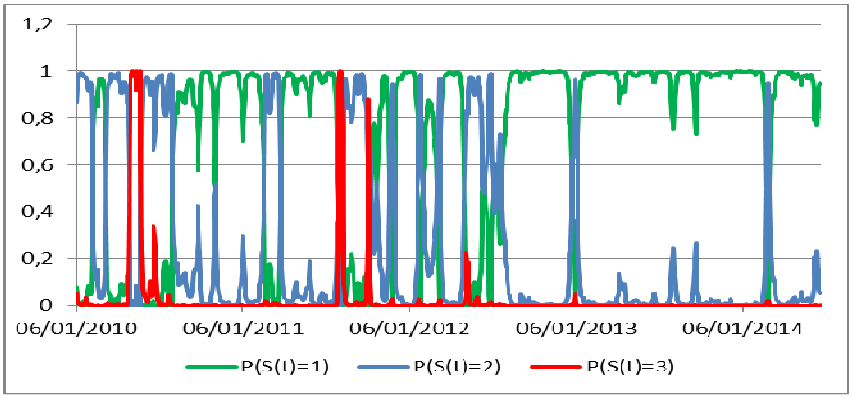




Source: Bucharest Stock Exchange, National Bank of Romania, Bloomberg, own calculations

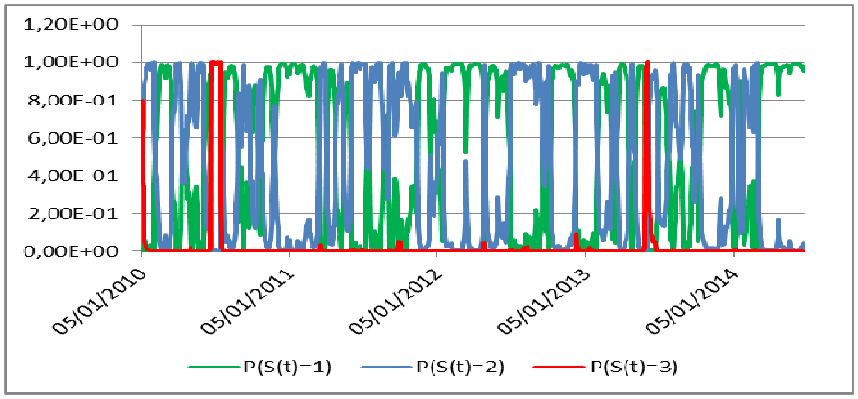
The same conclusions are also evidenced by the alternation of the Markov volatility regimes (Lam and Li, 1998). In Figures 3, 4 and 5 from below we show that Bucharest Stock Exchange main market index remained in a low volatility regime during all the investigated period, while the EURRON exchange rate and the 2y sovereign bond yield briefly entered a high volatility regime during the investigated period, in the immediate vicinity of the tapering announcement.

Figure 3. BET Index volatility regimes (Markov)



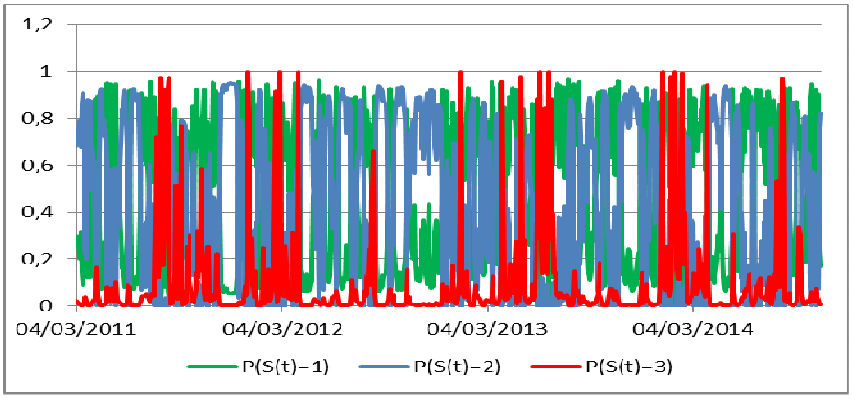
Source: Bucharest Stock Exchange, own calculations

Figure 4. EURRON volatility regimes (Markov)



Source: National Bank of Romania, own calculations

Figure 5. Romanian 2y sovereign bond volatility regimes (Markov)

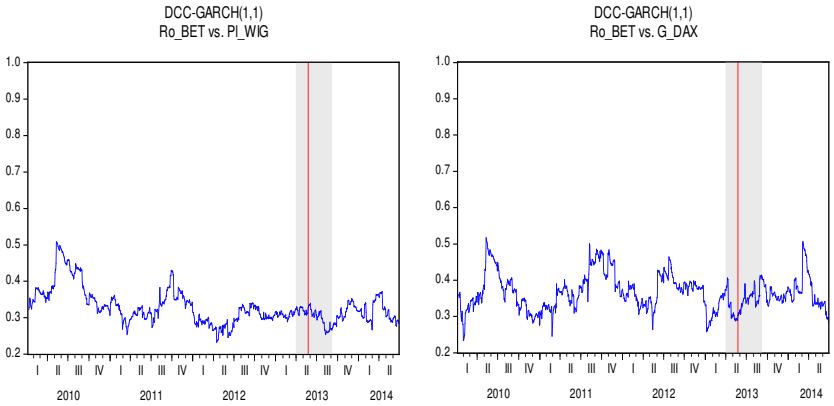


Source: Bloomberg, own calculations

We also studied the behavior of correlations between the Romanian market and other frontier, emerging and developed markets. In Figure 6 from below we show the evolution of the correlations between the main stock market indices of Romania and Poland, respectively between Romania and Germany. The correlations were modeled according with Chiang et al. (2007).

The results show that while the correlation between Romania and Poland stock markets decreased immediately after the tapering announcement, the correlation between Romania and Germany increased. The divergent behavior can be explained by the fact that usually the frontier and emerging markets are more correlated with developed markets (from where the foreign institutional investors are originating) than with similar or neighboring frontier or emerging markets. In other words our findings also show that size (capitalization) and liquidity matter when we are talking about the correlation between stock markets.

Figure 6. Romania vs. Poland and Romania vs. Germany stock market correlations



Source: Bucharest Stock Exchange, Bloomberg, own calculations

4. Conclusions

We studied the behavior of the Romanian financial market to the tapering announcement made by the US Federal Reserve officials on the 22nd of May 2013, using daily data for the BET index, the EURRON exchange rate, the 5y CDS (USD) and the 2y government bond yields.

We concluded that FX and debt markets witnessed statistically significant reactions, but reduced in size and duration, similar with the ones experienced by other emerging and developed financial markets in the European Union. Also, the results showed that the Romanian equity market didn't had a significant reaction, probably because of its reduced size, liquidity and participation of the foreign investors.

The research can be extended during in order to also capture other FED monetary policy decisions and announcements that occurred during 2014 and later.

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MEASURING THE FINANCIAL PERFORMANCE OF THE EUROPEAN SYSTEMICALLY IMPORTANT BANKS

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Abstract

This paper investigates the major determinants of bank performance in the European sector, taking into consideration the most important financial groups from this region. To account for performance, we have applied two fixed-effects regression models to a panel of European banks that covers the period 2004-2012, where profitability was assessed through two variables, namely return on average equity and net interest margin. The estimation results show that all bank-specific determinants affect bank profitability significantly, but not always in the anticipated way. Finally, the business cycle has a positive, albeit asymmetric impact on bank profitability, suggesting that profitability is pro-cyclical.

Keywords: : Profitability, crisis period, too-big-too-fail, static panel regression, Moore-Penrose

JEL Classification: G21, G28, C33

1. Introduction

Bank performance has been one of the main concerns of managers, researchers, investors and scholars in the last decade. This concern is related to the noteworthy influence of the profitability of corporate organisations in general, and banking institutions in particular, on the potential growth of the economy as a whole. In this respect a study regarding the determinants of corporate performance, consequently, could support managers, scholars and policy makers in establishing the best strategies to deal with the rising uncertainty of the globalised environment.

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The main objective of this research is to empirically investigate the main determining factors of bank profitability in the European banking sector, in this respect focusing on the largest 20 financial groups with their headquarter in Europe and operating at an international level.

In the literature there were observed several interesting papers with reference to the topic of this research. First of all, it can be mentioned the paper of Molyneux and Thornton (1992) who were among the first who investigated bank profitability determinants for 18 European countries between 1986 and 1989. Another significant work was the one of Goddard et al. (2004), who focuses on six European banking sectors between 1992 and 1998. More recently, Trujillo-Ponce (2013) has empirically examined the main determinants of Spanish banks' profitability for the period 1999-2009. Our paper is similar to the mentioned studies especially regarding the methodology employed, but it is also different in some parts. This study provides additional insights into the debates regarding the importance of the too-big-to-fail banks, because it focuses on the largest financial groups in Europe. Moreover, in this study it was extended the period analysed and it comprises the impact of both the global financial crisis and sovereign debt crisis.

The rest of the paper is structured as follows. Section 2 positions the survey within the existing literature regarding bank profitability and efficiency. Section 3 discusses the methodological approach employed in this paper, namely a static panel regression with fixed effects. Section 4 presents the empirical results regarding the determinants of bank performance and efficiency in the European arena. Section 5 summarizes and concludes.

2. Related literature

The financial world is currently under the sign of extreme changes, produced in a high extend by the metamorphoses in the financial markets, and also by the legislative and institutional changes, noticing the redoubtable impact on the banking markets.

The notion of performance has been approached over the years in numerous studies and analyses, and in the academic writings, the concept of "performance" is associated with the concepts of "profitability" and "efficiency". In most of the studies, bank profitability is expressed by three representative indicators, namely Return on Average Assets, Return on Average Equity and Net

Interest Margin. In this respect we can observe the following papers, which considered at least one of the mentioned variables: Bourke (1989), Staikouras and Wood (2004), Park and Weber (2006), Pasiouras and Kosmidou (2007), Athanasoglou et al. (2008), Albertazzi and Gambacorta (2009), Millon Cornett et al. (2010), Dietrich and Wanzenried (2011), Kanas et al. (2012), among others. Despite the mentioned papers, there were identified studies where there were considered other variables for measuring profitability, such as the study of Molyneux and Thornton (1992), who included as a profitability indicator the net profit after tax with staff expenses and provisions for loan losses, or Lee et al. (2014a), who included the ratio of net non-interest income to net operating income as a non-interest income measure.

The recent events in the global financial markets draw the attention to the banking sector and its performance therefore most of the recent studies include the impact of the international economic crisis on the financial system. Given the severity of the global financial crisis and its repercussions, it was essential to study the impact of the recent economic recession on the banking sector, therefore the majority of the studies published from 2009 until now include issues related to this subject. For example, Millon Cornett et al. (2010) studied the implications of government ownership and government involvement in a country's banking system on bank performance, the period studied being 1989-2004. They found that state-owned banks operated less profitably, held less core capital, and had higher credit risk than privately owned banks prior to 2001, and the performance differences are more significant in those countries with greater government involvement and political corruption in the banking sector. On the other hand, Beltratti and Stulz (2012) outlined that large banks with higher Tier 1 capital levels and more deposit financing at the end of 2006, exhibited considerably larger returns during the crisis. Beside these papers there were also noticed the studies of Dietrich and Wanzenried (2011), Erkens et al. (2012), Aebi et al. (2012), Beltratti and Stulz (2012), Bourkis and Nabi (2013) etc.

Following the early work of Short (1979) and Bourke (1989), a number of recent studies tried to identify some of the major determinants of bank performance. In most of the cases, the researchers selected the variables by following CAMELS model (Capital strength, Asset quality, Management quality, Earnings,

Liquidity and Sensitivity to market risk). Despite this, the number of variables differs noticeably among studies. For example, in the literature it strongly examined the relationship between asset quality and bank performance, observing that an increase in doubtful assets requires a bank to assign an important portion of its gross margin to provisions to cover expected credit losses; as a result the profitability level will be inferior. Among the studies that state a direct link between profitability and asset quality are Angbazo (1997), DeYoung and Rice (2004), Hernando and Nieto (2007), Athanasoglou et al. (2008) and Chiorazzo et al. (2008). Nonetheless, if the financial system is well remunerated, riskier loans could determine an enhancement of interest income, with a positive influence on profitability (Iannotta et al., 2007; Kasman et al., 2010).

Moreover, capitalization is also one of the most commonly used determinants of bank profitability. Overall, there are several reasons to believe that a better capitalized bank is more profitable. In this respect, Berger (1995) outlines that the expected bankruptcy costs hypothesis is considered as a consequence of all or a part of the observed positive relationship between capital and profitability. He stated that a bank with capital below the equilibrium level, should register a higher level of expected bankruptcy costs; moreover a growth in capital ratios raises expected profits, by diminishing interest expenses on uninsured debt.

Another intensely discussed factor in the speciality literature is the one regarding bank size. Generally, the relationship between bank size and bank performance is considered positive (i.e. Iannotta et al., 2007; Mercieca et al., 2007), but there are several studies where it was suggested that the impact of size could be non-linear with profitability growing with size and falling for bureaucratic and other reasons (i.e. Athanasoglou et al., 2008).

An important strand of the literature has focused on the impact of the economic environment on bank performance, taking into consideration the business cycle, inflation, interest rates, monetary policy and other aspects. One of the most frequently used macroeconomic determinants of bank performance, which allows for controlling business cycle fluctuations, is GDP growth rate or GDP per capita. Bernake and Gertler (1989) state that in recession, the quality of loans declines and firms borrow at higher margins, thus is expected a negative link between spread and economic growth. Moreover, Claeys and Vander Vennet (2008) outline that the

prevailing business cycle conditions influences significantly net interest margins.

On the whole, the above mentioned empirical studies reflect controversial results, following the particularities of the analysed countries, the different macroeconomic conditions, the used dataset, but also the covered period of time.

3. Methodology and data

In this section we discuss the empirical model used to assess the level of bank profitability across the biggest 20 financial groups in Europe.

3.1. Methodology

A vast empirical literature employs *panel data regression* in assessing bank performance. This technique is known for its advantages, respectively: a low multicollinearity, increased efficiency of econometric estimates and results of a higher accuracy. More specifically, panel data are better able to study complex issues of dynamic behaviour (Raj and Baltagi, 1992).

Among the papers that applied this type of analysis, it can be observed that the focus was on a geographic distinction, thus a large part oriented to the European space, such as: Diaz et al. (2004), Staikouras and Wood (2004), Pasiouras and Kosmidou (2007), Athanasoglou et al. (2008), Koutsomanoli-Filippaki and Mamatzakis (2009), Dietrich and Wanzenried (2011), Chortareas et al. (2012), Mirzaei et al. (2013), Jackowics et al. (2013) and Rughoo and Sarantis (2014).

The scientific approach from our paper involves a static panel regression approach, where the estimation technique used was ordinary least squares. More specifically, our paper is based on several studies among which we can notice the following: Fang et al. (2013), Alper and Anbar (2011), Molyneux et al. (2010), Hass and Lelyveld (2011), Berger and Bouwman (2011), Baltzer et al. (2008), Pasiouras and Kosmidou (2007), Havrylchyk and Jurzyk (2006), Baltagi (2005) etc.

The general linear regression model employed in this paper is:

$$Y_{it} = \alpha_0 + \beta_{mit} X_{mit} + \beta_{dit} X_{eit} + \varepsilon \quad (1)$$

Where i refers to an individual bank; t refers to year; j refers to the country in which bank i operates; Y_{it} the dependent variable that refers to the return on average equity or net interest margin (ROAE or NIM) and is the observation of a bank i in a particular year t; X_m represents the internal factors/determinants of a bank; X_e represents the external factors/determinants of a bank; ε is an error term.

Following we continued by testing the appropriate effects applicable, namely fixed or random, pointing out that random effects model is relevant in the case of isolated events that can generate implications. The consistency of the model is determined through Hausman specification test[1], so in case that the null hypothesis is not accepted the test has a Chi-square distribution, with the degrees of freedom equal to the controlled variable in the model. Continuing we are applying stationary tests and in order to provide more accurate results we have selected three types of tests, namely Levin, Lin and Chu, Harris-Tzavalis, and Breitung test. These unit root tests are considered to be first generation tests and their null hypothesis presumes that all the panels contain a unit root. The assumption of normality is tested with Jarque-Bera test, and the test for heteroskedasticity is available for the fixed-effects model using Breusch-Pagan / Cook-Weisberg test. Breusch-Pagan / Cook-Weisberg tests the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables (a large chi-square would indicate that heteroskedasticity was present). In the case of serial correlation it was applied the Wooldridge test for autocorrelation in panel data. However, in the case of our research it was used a user-written program to perform this test.

3.2. Data

The dataset used in our research is composed of individual data for the biggest financial groups operating in Europe. We restricted the investigation to the largest 20 European financial groups being classified after their assets. The data were obtained from financial and annual reports of the banks from our sample and

[1] The Hausman statistic is: $H = (b_1 - b_0)' (Var(b_0) - Var(b_1))^{\dagger} (b_1 - b_0)$, where † denotes the Moore-Penrose pseudo inverse. Under the null hypothesis, this test has asymptotically the chi-squared distribution with the number of degrees of freedom equal to the rank of matrix $Var(b_0) - Var(b_1)$. If we reject the null hypothesis, it means that b_1 is inconsistent.

from BankScope database. The data referring to macroeconomic variables were mined from World Bank and ECB reports.

The period selected to be analysed is 2004-2012, using annual data for nine years, and the most important selection criterion used was the one referring to data availability.

According to the literature, bank performance is expressed by three representative indicators, namely Return on Average Assets (ROAA), Return on Average Equity (ROAE) and Net Interest Margin (NIM). In this paper it was used the first rate, namely ROAE which indicates the returns generated by bank's assets and is calculated as a ratio between the net income and average total assets, as a percentage. It was also used the net interest margin (NIM) which is defined as the net interest income expressed as a percentage of average earning assets and reflects the profit obtained by a bank from interest-earning activities. More specifically, this paper considered the two mentioned factors as dependent variables due to the enlarged efficiency and more accurate statistical results obtained.

The set of independent variables taken in our study includes several determinants of bank performance and stability, which refer to bank-specific factors, but also to aspects particular to the banking industry and macroeconomic environment. In this research we have used eight proxies as performance determinants.

Capital requirement is the amount of capital a bank or a financial institution has to hold as required by the monetary authority or financial regulator. In our paper we have chosen to proxy capital requirement through capital adequacy rate (CAR), which clarifies what proportion of bank's total assets is financed by its shareholders. Moreover, we have chosen a second core measure of a bank's financial strength from a regulator's point of view, namely TIER 1. This variable is composed of core capital, which consists primarily of common stock and disclosed reserved, but may also include non-redeemable non-cumulative preferred stock. It was observed that several studies have focused on the relationship between capital and bank profitability. For example, Berger (1995) examined the relationship between the return on equity and the capital asset ratio for a sample of US banking groups for the period 1983-1992. He showed that the return on equity and capital adequacy ratio tend to be positively interconnected. Similarly, Abreu and Mendes (2002) evaluated the determinants of bank interest margins and profitability in an European framework, reporting that well-capitalized banks faced

lower bankruptcy and funding costs and this advantage translated into better profitability.

In order to measure *asset quality* we have chosen the ratio of impaired loans to total loans (IL). An increase in the doubtful assets, which does not accumulate income, obliges financial entities to assign a significant portion of its gross margin to provisions in order to cover expected credit losses, consequently profitability may be affected.

Management quality is a major aspect that influences the soundness of a bank. In most of the studies, the proxies used to sketch the operational efficiency, or more specifically the quality of the management, were the cost-to-income ratio (CIR) and the non-interest expense over total assets ratio. In this study it was selected the first one, which reveals the aptitude of a bank to cover its operating expenses from the obtained income and is expected a negative relationship on bank performance. In addition, in the academic writings it was identified a positive and highly significant impact of management quality on bank profitability, i.e. Athanasoglou et al. (2008), Dietrich and Wanzenried (2011), Garcia-Herrerro et al. (2009), Pasiouras and Kosmidou (2007) etc. The effect suggested implies that operational efficiency is a prerequisite for improving bank profitability, with the most profitable banks having the lowest efficiency ratios.

The following determinant selected refers to asset structure and it can be perceived the common thinking that bank's profitability is projected to increase as its portfolio of loans progresses in relation to other more safe assets, taking into consideration the connection between risk and return. The ratio of loans to total assets (LR) refers to the fact that loans are risky assets, and their large share in bank's assets means a growth of the bank's exposure to risks. Thus, a high value of this indicator could also mean a possible weakening of the bank's assets quality with a negative effect upon stability. On the other side, we consider the fact that banking loans are the main income source for a bank, therefore, a high level of this indicator is expected to have a positive impact upon profitability and stability, since the bank registers a growth in the interest income.

The relationship between bank size (BS) and profitability is perceived to be positive, outlining that a larger size could allow the bank to register economies of scale but there were observed several studies that obtained mixed results (see Sufian, 2009; Pasiouras and

Kosmidou, 2007; Dietrich and Wanzenried, 2011). The relationship between bank size and profitability it's generally considered to be positive, outlining that a larger size should allow a financial institution to obtain economies of scale; in this respect there can be distinguished various studies, such as Iannotta et al. (2007) and Mercieca et al. (2007). Still, there is unanimity in the reviewed studies which says that the average cost curve in banking has a fairly flat U-shape, with medium-sized banks being somewhat more scale efficient than large or small banks.

The last group of determining factors is formed of external determinants, namely the ones referring to the business cycle. In this respect, economic activity was proxied by annual real GDP growth rate (GDPG). In the literature it was shown that there exists a strong relationship between economic activity and bank profitability. Consequently, an economic recessionary slide can affect in a negative manner the quality of the loan portfolio, determining credit losses and amplifying the provisions that banks must have, as a result reducing bank profitability. Contrariwise, a development of the economic activity will generate an improvement of the borrowers' solvency, and also an increasing of the demand for loans, which has a positive effect on bank profitability (Demirgüç-Kunt and Huizinga, 1999; Mendes and Abreu, 2003; Naceur, 2003; Pasiouras and Kosmidou, 2007).

Secondly, in the academic writings it was revealed that the effect of inflation (INF) on bank profitability depends on the way that inflation influences both salaries and the other operating costs of the bank. The positive relationship between inflation and profitability is confirmed by various studies, such as Molyneux and Thornton (1992), Claessens et al. (2001), Staikouras and Wood (2004), Athanasoglou et al. (2008), Claeys and Vander Vennet (2008), Garcia-Herrerro et al. (2009), among others. However, Naceur and Kandil (2009) find that the inflation rate negatively influences interest margins. It can also be argued that the negative influence may be related to the slower adjustment of banks' revenues compared with the costs for inflation.

4. Empirical results

Preceding analysis itself, it shall be performed the descriptive statistics procedure for the variables taken into the study, with the purpose of describing the main feature of the data collection, using

some commonly measures of central tendency, namely the mean and some measures of variability, which includes the standard deviation (see Table 1).

Table 1

Summary statistics

	2004-2008		2009-2012	
	Mean	**S.D.**	**Mean**	**S.D.**
ROAE	12.23	9.62	3.43	10.45
NIM	1.30	0.61	1.42	0.62
CAR	11.42	1.56	14.12	2.18
TIER1	8.36	1.60	10.81	2.52
IL	3.00	1.92	4.71	2.65
LR	43.94	15.68	44.42	14.35
CIR	61.34	13.88	61.75	9.59
BS	20.74	0.56	20.94	0.56
GDPD	0.59	0.54	-0.42	1.06
INF	2.14	0.8	2.21	1

Note: S.D. stands for the standard deviation.
Source: authors' calculation

Regarding the descriptive statistics it can be observed that the mean, which is one of the most common measures of central tendency, is higher in the case of return on average equity, capital adequacy rate and annual growth of GDP, for the period 2004-2008, compared to 2009-2012. In this respect it can be stated that during the crisis, the economic activity has severely declined, thus influencing bank activity, or more specifically bank profitability.

Continuing we have applied the stationary tests mentioned above, namely Levin, Lin and Chu, Harris-Tzavalis, and Breitung test, being considered first generation unit root tests (see Table 2).

Table 2

Stationary tests employed in the analysis

	Levin, Lin and Chu	**Harris-Tzavalis**	**Breitung**
ROAE	-7.98	0.15	-1.30
	(0.00)	(0.02)	(0.09)
NIM	-15.02	0.30	-0.91
	(0.00)	(0.41)	(0.17)
CAR	-11.69	0.23	-2.73
	(0.00)	(0.16)	(0.01)

	Levin, Lin and Chu	Harris-Tzavalis	Breitung
TIER1	-9.12	-0.39	-5.75
	(0.00)	(0.00)	(0.00)
IL	-18.36	-0.47	-5.71
	(0.00)	(0.00)	(0.00)
LR	-22.42	0.24	-0.36
	(0.00)	(0.21)	(0.35)
CIR	-16.37	-0.20	-2.62
	(0.00)	(0.00)	(0.01)
BS	-15.32	0.42	0.30
	(0.00)	(0.90)	(0.61)
GDPD	-8.46	-0.09	-6.28
	(0.00)	(0.00)	(0.00)
INF	-16.95	-0.32	-4.14
	(0.00)	(0.00)	(0.00)

Note: it was included the time trend; in () is represented the p-value. There are represented the following: for Levin, Lin and Chu test is represented the adjusted t, for Harris-Tzavalis test is represented rho statistic and for Breitung lambda statistic.
Source: author's calculation

From the results obtained we distinguished the fact that all the variables included are stationary at least for one of the tests applied.

Table 3

Hausman test for ROAE and NIM

Dependent variables	ROAE		NIM	
Independent variables	**Coefficient**		**Coefficient**	
	Fixed	**Random**	**Fixed**	**Random**
CAR	0.10	0.11	-0.43	-0.04
TIER1	-0.37	-0.51	0.06	0.06
IL	-1.96	-1.62	0.02	0.02
LR	-0.22	-0.20	0.03	0.03
CIR	-0.41	-0.39	-0.01	0.01
BS	0.27	-1.13	-0.01	0.01
GDPG	3.29	3.23	0.01	0.01
INF	-1.07	-1.14	-0.11	-0.11
Chi^2	4.11		0.46	
Prob. > Chi^2	0.84		0.99	

Source: authors' calculation

The result of Hausman, showed us that there are no significant differences between the two types of effects (see Table 3).

The results show that there are significant differences regarding the influence of various factors on the two dependent variables selected, namely return on average equity and net interest margin (see Table 4).

Table 4

Empirical results for panel data analysis

	Dependent variables		
	ROAE	**NIM**	**ES**
c	7.4***	0.93***	
	(0.69)	(0.19)	
CAR	-0.61**	0.03**	**+/-**
	(0.32)	(0.01)	
TIER1	-1.02***	0.06***	**+/-**
	(0.24)	(0.01)	
IL	-0.38***	-0.02	**-**
	(0.08)	(0.02)	
LR	-0.01*	0.02***	**+/-**
	(0.01)	(0.03)	
CIR	-0.02***	0.01	**-**
	(0.01)	(0.001)	
BS	0.31***	-0.09**	**+/-**
	(0.11)	(0.04)	
GDPG	0.07**	-0.01	**+**
	(0.03)	(0.01)	
INF	0.11**	-0.07***	**+/-**
	(0.05)	(0.02)	
R-sq. within	0.53	0.38	
Rho	0.31	0.74	
Obs.	153	178	

*Note: ES stands for the expected sign; Absolute value of t statistics * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent. In ( ) we have standard deviations. R-sq. stands for R square and Obs. for the number of observation.*

Source: author's calculations

In the first case, capitalization was expressed through two variables, namely capital adequacy rate (CAR) and core measure (TIER1). In the case of the financial groups selected this issue is a major concern, mainly because they are internationally exposed. In the literature there were observed mixed results, some of the studies

evoked a positive relationship between capital adequacy and bank profitability and some of them a negative one. The results of our research are in line with the literature in the case of net interest margin. Though in the case of return on equity both of the variables have a significant and negative impact on bank profitability aspect that can be explained through the mutations in the banking market from the recent period. Contrariwise, regarding the influence on net interest margin it was perceived a significant and positive impact, result that is in line with those obtained by Goddard et al. (2004), Athanasoglou et al. (2008), Dietrich and Wanzenried, (2011) and Trujillo-Ponce (2013).

Following, asset quality is expressed in our model by the ratio of impaired loans (IL), which, as it was expected, has a negative impact on banking profitability in all the financial groups studied. The negative relationship specifies that banks with a high level of credit risk displays lower levels of profitability. It's important to observe that the damage is not uniform between financial entities, so larger institutions recorded a higher level of this indicator. However it must be perceived that arbitrage prudential measures taken by central banks and/or the relaxation of pro-cyclical prudential standards in order to maximize short-term profits, influences on a medium-term the portfolio quality. Our results suggest a direct and strong relationship between bank profitability and asset quality consequently they are in line with those obtained by Angbazo (1997), DeYoung and Rice (2004), Hernando and Nieto (2007), Athanasoglou et al. (2008) and Chiorazzo et al. (2008).

Regarding asset structure, the variable selected was the liquidity ratio (LR) and as we mentioned in the theoretical part of our study, the impact of this variable on profitability is unpredictable. Our results reveal, in particular, a negative and statically significant coefficient for the return on average equity, which can be explained by the fact that the banks in those countries registered a high value of this indicator in the pre-crisis period, which caused an increase in banks income, with a positive impact on profitability. However, due to the financial crisis, these banks recorded a significant increase in the level of impaired loans and loan loss reserves, which had a negative impact on profitability. In the case of net interest margin the impact was positive and statistically significant, aspect that is in line with the results obtained by McKenzie and Thomas (1983), Angbazo (1997), Barros et al. (2007), Chiorazzo et al. (2008), DeYoung and Rice

(2004), Goddard et al. (2004), Iannotta et al. (2007), Molyneux and Thornton (1992), Pasiouras and Kosmidou (2007), and Wagner (2007).

Management quality is exposed in this research through the cost-to-income ratio and we can easily observe that it's statistically significant just in the case of return on average equity, where an increase in the ratio will generate a decrease in profitability, in line with our expectations.

As we mentioned before, the impact of *bank size* (BS) on profitability is ambiguous. Empirical results show that this variable is statistically significant in the case of both variables, but in one case has a positive impact and in the other a negative one. Larger banks obtain a larger share of their income in the form of non-interest income such as trading income and fees so large banks appear to be relatively active on the capital markets on both the assets and liabilities sides of the balance sheet. In various studies it was noticed that banks with large absolute size tend to be more profitable, while they also have a higher bank risk (larger size should allow the bank to obtain economies of scale). Moreover, Elsas et al. (2010) conclude with the fact that economies of scale, which may imply larger size, are pronounced in banking sector conducting to a higher profitability while Barros et al. (2007) suggests that bigger and more diversified banks are more likely to perform poorly, consequently smaller and specialized banks can reduce asymmetric information problems associated with lending.

In our research the economic activity was represented by the annual growth of GDP and also by the inflation rate. GDP is a significant external factor that influences banks profitability, although it's worth mentioning that the sign of the coefficient is different in the two cases. Several studies reflect the fact that it exists a significant relation between the business cycle and bank profitability, suggesting that each contraction of real GDP, especially during recessions are found to have a persistent negative effect on bank profitability. Contrary the relationship between GDP and bank profitability could be sometimes pro-cyclical. There were noticed some reasons why the effect of growth in GDP can affect profitability in a negative or positive manner, for example bank credit could decrease during economic down swings. In this respect we observe some studies that found the same results as our analysis, namely, Naceur et al. (2003), Athanasoglou et al. (2008) and Munyambonera (2009).

Inflation (INF) is often cited as one of the main macroeconomic determinants of bank profitability, so the effect of inflation depends on whether banks operating expenses are increasing faster than the inflation rate level. Inflation implications on profitability of a bank depend on the capacity of bank's management to forecast inflation (Perry, 1992). Our results show mixed results, aspect that it's in line with the speciality literature. We observed that in the related literature inflation is generally positively related to bank profitability, which could suggest that during the period studied the level of inflation were anticipated by bank management, and a correct predicting of it gave banks the opportunity to adjust the interest rates accordingly and consequently to earn higher profits.

Overall, we observed that the best results were obtained in the case of the return on average equity therefore all the variables were statistically significant in this case compared to net interest margin where only five of the independent variables were statistically significant.

5. Concluding remarks

The international crisis radiography reveals ample implications of the recession on the banking sector in terms of deceleration in lending, deteriorated level of bank performance indicators, and tightened banking regulations. This study aimed to sketch a picture of the European banking context, in order to determine and monitor the main determinants of the "health" and performance of European financial institutions.

The empirical results of our research, outlines the fact that the analysed variables had a rather heterogeneous impact on bank profitability, due to the particularities of each country and to different macroeconomic environments in which banks operate. Among the internal factors, our study showed that a significant impact on bank profitability in most of the financial groups analysed, had capitalization, asset structure and asset quality, management quality and also bank size, in line with the results observed in the related literature. Regarding external determinants, namely annual GDP growth rate and inflation, we have registered an essential influence on bank profitability and efficiency, in line with our expectations.

Despite the insights that this paper brings, it also has some limits, therefore future research directions are following a well-defined

path, targeting an extension of the time period studied and of the sample analysed.

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COMPARATIVE ANALYSIS REGARDING THE ENTERPRISES TAXATION IN ROMANIA AND SOME EUROPEAN UNION MEMBER STATES

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Abstract

The main difficulties that SMEs meet in the current tax context is the tax burden, tax legislation lack of predictability and stability and bureaucracy. Compared with the Member States of the European Union, Romania is in the lead in terms of labour taxation (with an aggregated statutory rate for social contributions of 44%), in the middle of EU ranking when talking about security contributions, and on the last places as regards the consolidated budget revenues from security contributions.

In this paper we are trying to make a comparison, in terms of taxation, of enterprises in Romania and other EU Member States and to propose some solutions for them to develop in a healthy and competitive economic environment.

Keywords: taxes and duties, small and medium enterprises, EU member states, fiscal legislation

JEL Classification: H25, H27, H32

1. Introduction

Taxation is one of the areas that has passed through the most important changes in recent years; these changes have occurred either too slow or too sudden, determining the taxpayer's certainty to interpret tax legislation as a factor of instability in the development of the Romanian economy.

The business environment recognizes however the progress made in fiscal legislation, such as harmonization with the European regulatory framework or introduction of the flat tax. However, the weak link of the Romanian tax system remains the poor administrative capacity of the authorities. The taxation‘s efficiency

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and certainty, the stability and predictability of the tax system represent essential principles for a viable economy, and it also should be highlighted the need for fiscal policy yield and solutions for a balance between this and the taxpayers' tax burden.

2. Aspects concerning the EU Member States taxation

According to the study conducted by Mazars Company, "Central Eastern European Tax Brochure 2014", the fiscal environment changes within the period 2013-2014 in Central and Eastern Europe indicate that at the region's level it has been preserved a slight tendency of reduction in direct taxation, in parallel with the attenuation of the VAT increase. According to the mentioned study, the average profit tax rate is currently about 17% and the average VAT rate remains at about 21%.

During 2013-2014, two countries in the region decreased by one percentage each the level of profit tax - Slovakia to 22% and Ukraine to 18%. At European Union level, apart from Slovakia, another two Member States have decided to ease the direct taxation in the same period. According to the latest Eurostat report, the greatest reduction of 2 percent was applied by Great Britain (from 23% to 21%), followed by Slovakia (from 23% to 22%) and Denmark (25 % to 24.5%).

Romania still remains the country with the one of the lowest profit tax rate (16%), both in the European Union and in Central and Eastern Europe. The average adjusted rate of 17.2% at regional level is at present with nearly 6 percentage points below the EU average (23.1% in 2014).

Among the countries included in the Mazars study, Romania is most closely to Poland, both as level of applied rate (Poland - 19%) and as variation, the two countries maintaining the tax rate unchanged in the last five years. It should also be taken into account the possibility that on medium term Romania to change the details of this comparison, if the mediatized transition to progressive taxation will become a reality. Compared to the European Union, where profit tax varies between 10% (Bulgaria) and 38% (France), Central and Eastern Europe is characterized by smaller variations of the applied quotas from one state to another. The lowest level of 9% is in Montenegro, and the highest, 26%, in Greece.

The tendency of increasing VAT, manifested since 2009 as a result of attempts to reduce the national budget deficits, alleviated in

the period 2013 - 2014. Within this interval, two countries in the region have raised by 2% the VAT: Montenegro (to 19%) and Slovenia (to 22%), but this change did not significantly influence the average rate calculated for the 16 countries, of 21%. The level is similar to the European Union one (21.5%).

The VAT remains a significant tax burden in Central and Eastern Europe, Romania being placed the 3rd in terms of the level of this quota, after Hungary (27%) and Croatia (25%).The 24% rate maintains Romania on one of the first places at entire European Union level, only four states having a higher VAT: Hungary, Croatia, Denmark (25%) and Sweden (25%). On the opposite side there are Luxembourg (15%) and Malta (18%).

The income tax system in the 16 countries analysed in Central and Eastern Europe has not changed in the interval 2013-2014. Montenegro is still the country with the lowest income tax rate in the region, of 9%, while the highest rates are in Austria and Slovenia (maximum rate of 50%).

Table 1

Taxation rates in Central and Eastern Europe- 2014 (%)

Country	VAT(standard/ reduced)	Profit tax	Income tax	Total employer's contributions
Austria	20/10	25	0-50	21,83
Bosnia and Herzegovina	17	10	10	10,5/no
Bulgaria	20	10	10	17,9
Croatia	25/13/5	20	12/25/40	15,2
Czech Republic	21/15	19	15	34
Greece	23/13/6,6	26	22/32/42	27,46
Hungary	27/18/5	10/19	16	27
Macedonia	18/5	10	10	No
Montenegro	19/7	9	9	9,8
Poland	23/8/5/0	19	18/32	21
Romania	24/9/5	16	16	28
Russia	18/10/0	20	13/30	30/10
Serbia	20/10	15	10/15/20	17,9
Slovakia	20/10	22	19/25	35,2
Slovenia	22/9,5	17/15	16/27/41/50	16,1
Ukraine	20/7/0	18/0	15/17	36,76-49,70

Source: Mazars Company , "*Central Eastern European Tax Brochure*"

The flat tax system is applied in eight of the 16 countries, while in the other eight states the progressive rate system functions. Eurostat data indicate that neither at EU level have intervened changes: apart from Finland and Sweden, which have operated income tax increases, no other Member State has changed tax rates in the interval 2013-2014.

In European Union the lowest level is of Bulgaria's (10%) and the highest ones, of more than 55%, are applied in Sweden and Denmark. With the 16% rate, Romania is within the echelon of EU countries with the lowest income tax rates, along with Bulgaria, Lithuania and Hungary.

Romania has a relatively low corporate tax, which is of interest to investors. However, one of the permanent difficulties is represented by frequent legislative changes, both in the spheres of direct and indirect taxes. Although the challenges of government to maintain budget revenues during this difficult time are obvious, an increased stability of tax legislation would bring many benefits to business environment and to the economy as a whole. Entrepreneurs need to plan their activities on medium and long term and taxes that are to be paid should be clear. Unexpected changes may produce undesirable effects in the business environment.

3. Enterprises taxation in Romania and some EU member states. Total tax rate

Enterprises tax system, presently in force, begins to stop functioning in a globalized world. Therefore, there are two opinions: either enterprises pay too small profit taxes or they find subterfuges in order to avoid paying taxes in systems where these are too high.

Taxation of companies is seen differently by administrations: if taxes are too high, investors are moving to places where the tax system is more friendly - with lower levels or exemptions. Therefore, the representatives of the 20 largest economies in the world have asked the OECD to examine how corporations avoid paying profit taxes.

The institution noted that different tax systems of the countries and the lack of interaction between them, or the application of certain bilateral treaties on taxation, determined the income from cross-border activities to remain untaxed or to pay very low taxes.

Romanian State has one of the highest tax burdens in Europe. According to World Bank, in 2014 Paying Taxes report, for a

Romanian firm, the overall rate of taxation (including profit tax, labour taxes and other taxes) reaches almost 43% of profit. OECD average is 41.3%, to the state being returning, through various taxes and duties, much less from the firms profits, even in very rich economies.

In comparison, total tax rate of a company in Great Britain is 34%, in Switzerland, 29.1%, in the northern states - 27% in Denmark, 39.8% in Finland and 40.7% in Norway. We mention that these percentages do not include value added tax, excise duties, the new 1.5% special tax on firm's construction.

Thus, these states compensate the high level of taxes and contributions with a slight taxation in other areas, reducing, in addition, to minimum the bureaucracy and administrative additional costs the taxpayers transfer. In fact, the number of taxes that must be paid each year by Romanian entrepreneurs is among the highest in the continent: 39, compared to only 4 in Norway and Sweden, 7 in France, 10 in Denmark.

Regarding the time required for paying taxes, a local firm needs 200 hours each year, compared to only 83 hours in Norway, 93 in Finland and 110 in Britain.

Table 2

Total taxation rate (% of profit corporation)

Country	Total taxation rate (%)
Bulgaria	27,7
Croatia	19,8
Denmark	27
Switzerland	29,1
Germany	49,4
Italy	65,8
Latvia	35,9
Great Britain	34
Norway	40,7
Poland	41,6
Romania	42,9
Sweden	52
Europe and Central Asia	41,3
OECD	41,3

Source: World Bank, 2014 Paying Taxes report

A corporation does not pay the profit tax only, and the PricewaterhouseCoopers's study "Paying Taxes" shows that the profit

tax is not even the biggest part of the obligations the companies pay to the state. In fact, in average, companies pay more labour taxes and social security contributions for employees than the profit tax . To these are added property and environmental taxes and other similar financial obligations.

On average, a global company pays about 43.1% of income taxes, divided as follows: 16.3% labour taxes, 16.1% profit tax, 10.7% other charges. Corporations in North America are, on global average, with 41.4% of revenues for taxes: 17% labour taxes, 19.5% profit tax, 4.9% other charges. By comparison, Europe has significantly higher labour taxes, but lower profit taxes than America: 26.5% labour taxes, 12,9 % profit tax, 1.7% other charges.

In Romania, the taxation of enterprises can be divided as follows: 10.3% profit tax, 31.5% labour taxes and 1.1% other taxes (a total of 42.9%).

Leaders of this hierarchy are Croatia (taxes of 19.8%), Luxembourg (20.7%), Cyprus (22.5%), Ireland (25 %), Denmark (27%), Bulgaria (27.7%) and Switzerland (29.1%). In the bottom of the table are: Hungary (49.7%), Sweden (52%), Austria (52.4%), Belgium (57.5%), Spain (58.6%), France (64.7) and Italy (65.8%).

PwC shows that "the current tax regime was conceived when economies were based mainly on the exchange of tangible goods" when companies were more nationally and foreign trade represented less of GDP. In present, the modern economy depends on services and intangible goods, that easily exceed the boundaries.

4. The Romanian firm fiscal obligations

Even though in the last two years in Romania paying taxes has become easier by reducing the payments frequency from quarterly to every six months, our country is still at the end of the ranking in terms of costs and ease of paying taxes to the state, according to Doing Business Report, conducted this year by the World Bank. According to this indicator, the cited document places us in 134 rank (out of 189 analysed countries), which means that the tax environment is still unfriendly, entrepreneurs losing more time and money for starting and developing a firm.

Most entrepreneurs do not only proclaim the large number of taxes to be paid to the state or their amount, but also their implementing chaotic way, which cause the exponential growth of necessary tax compliance costs.

According to the Fiscal Code, the tax liabilities of the entity are: corporate tax, wage tax, dividend tax, value added tax, excise duty, contribution to social security, unemployment insurance, health insurance, accident and occupational diseases insurances, guarantee fund to pay salary receivables, stamp tax, buildings and auto taxes.

Among these, taxes for certain activities are added: taxes on gambling, the contribution for tourism, advertising taxes, annual different taxes for authorization, licenses, fines, penalties, and delay increases for failure to pay them in time.

As regards the local taxes, starting with January, the 1th, 2014, legal entities are required to pay the specific building tax mentioned in the Catalogue first group about the classification and normal operation periods for fixed assets, other than those for which the tax on constructions is due. This tax is calculated by applying a rate of 1.5% on the value of building existing in the taxpayer's heritage on December 31 last year.

Thus, the profit tax is 16%, dividend tax 16%, income tax is 16% and is applied on taxable income corresponding to each source in each category to determine the income tax from: independent activities, salaries, investments, pension, agricultural activities, awards or other sources.

Enterprises' income tax is 3%.

The VAT standard rate is 24%; the reduced rate of 9% applies to the tax base for certain services and / or supplies of goods; the reduced rate of 5% is applied to the tax base for the delivery of housing as part of social policy, including the land on which they are built. The land on which the house is built include the footprint of the house.

Contributions to the State Social Insurance Budget

Employee contributions

Contributions to the state social insurance (SIC): 10.5%
Contributions to unemployment: 0.5%;
Contributions to social health: 5.5%.

Employers' contributions

Starting with October 1, 2014, entered into force the reduction of employer's SIC by 5 percentage points. Therefore, new quotas for social insurance contribution are: 15.8%; 20.8%; 25.8%, depending on working conditions (capped);

The contribution to health insurance: 5.2%;

Contribution for holidays and health insurance benefits: 0.85% (capped);

Contribution to the guarantee fund for payment of wage claims: 0.25%;

Contributions to unemployment: 0.5%;

Contribution for of insurance against accidents at work and occupational diseases: 0.15% - 0.85%, differentiated according to the working conditions.

The current economic context represents a challenge for the Romanian SMEs. Basically, in the arsenal of firms that can successfully cope with any problem there should be three attributes that make the difference: financial discipline, transparency and predictability. Moreover, firms that demonstrate diligence in terms of payment to suppliers and creditors - here is also included the State, payment of taxes, that are conducted properly in the area of taxation, have the biggest chances to be able to access, in good condition, the financing from banks, a very important aspect in this period.

Lately, reducing the tax burden was encouraged through coherent measures such as introducing the holding legislation or introducing provisions concerning the reinvested profit, measures that are expected to have significant positive effects on the business environment.

Also, the tax burden may be reduced by decreasing tax rates or the tax base; in terms of reducing tax bases, it might be introduced measures that provide exemptions from wages taxation below a certain threshold or increase the personal deduction granted to persons from maintenance of employees. In terms of reducing tax rates, the specialist Biris Goran considered appropriate the reduction of tax burden by decreasing the social security contributions, both at employee and employer, but also by reducing the standard rate of VAT.

Reducing tax rates and ceiling the tax base for contributions to social health securities are not the only proposals stated by specialists to improve the tax system. Transparency of this system also became a necessity, not only a desire.

5. Proposals and recommendations

Romanian State has one of the highest tax burdens in Europe, according to the World Bank and the European Commission,

especially because of labour taxes . Specifically, for a Romanian firm, total tax rate (including profit tax, labour taxes and other taxes) reaches almost 43% of profit. OECD average is 41.3%, so to the state returns, through various taxes and duties, much less from the firms profits, even in very rich economies.

In order for a company to grow in a favourable economic environment, two ingredients are necessary: a fiscal "cleaning" that every company needs to do in its own home and, secondly, the comfort of the fiscal code, meaning the legislative predictability to determine the focus on the business itself.

We believe that the efficiency of a tax system involves the system's capacity to stimulate the economy, nationally taxing the international business, stimulate the interest for investments, create an open, friendly, stable business environment.

In this regard, we believe that the first key element that should be amended is the Tax Code, by changing, for example, definitions of terms and acceptance for modern and structuring principles. It takes a clear and simple tax legislation that could be easily applied both by taxpayers and tax authorities.

In assessing the Romanian fiscal system efficiency, it presents importance factors in the direction to which we consider that tax authorities would take measures in order to increase the competitiveness and attractiveness of the economy.

Two of the factors to be considered are the predictability and stability of the tax system, features that have missed Romania in recent years. Tax legislation has changed numerous times by laws and emergency ordinance, whose provisions were applicable within a few days from the publication, or even retrospectively, there were no implementing rules for them and, in some cases, they were abrogated a few months after the entrance into force, creating confusion and dissatisfaction among taxpayers. For example, the tax code has changed 22 times in 2013 and in the first nine months for 9 times!

A third element is the administrative process and the ease with which it can perform tax obligations. According to the Paying Taxes report, Romania ranks 134 out of 183 economies analyzed in terms of fiscal attractiveness. This inferior position in the ranking is mainly due to the number of payments (39) that must be made during the year, and the large number of hours required for the fulfilment of tax obligations (200 hours).

We believe that measures are needed to increase the efficiency of the tax system, such as the reduction in the number of statements (or introduction of a single statement), social contributions ceiling, granting fiscal functional facilities.

An important issue of fiscal policy remains the revenue collection to the state, in regard to this issue being reported three major deficiencies: law enforcement, its costs and efficiency.

The last period was characterized by an insufficient collection of state revenues, the high cost of collecting in many cases compared to the income obtained, low tax compliance degree, favorable conditions for tax evasion and shadow economy.

In order to avoid an increasingly low degree of tax compliance for enterprises , we believe that:

- a reduction of social security contributions could be a significant incentive to transfer a substantial part from the informal economy into the formal one;
- improved legislation, its adaptation, and its strictly enforcing to those applied in the EU area. In this regard, it will be pursued, on one hand, the increase of control efficiency and the evidence system of labour and taxation areas, as well as strictly application of penalties and sanctions in case of detection informal activities;
- simplification of taxes and duties system, while reducing bureaucracy;
- reduction of certain taxes and duties system that prevent work in the formal sector, investment or private initiative, while increasing others that are currently undersized in Romania, such as wealth or capital tax;
- introduction a complex system of tax deductions and inducements and its effective application, after the model of Western countries.

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THE IMMINENT HOUSING COLLAPSE - WILL HISTORY REPEAT ITSELF?

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Abstract

Human being is not particularly good at learning from history. Either we haven't lived long enough to live through every moment of it, or we just forget what we have lived through. Today, many analysts' cranky critiques are still very bullish, and are trying hard to explain intuitively why Hong Kong property prices can't drop, and how much healthier the market is. However, a remarkably stagnant property market in terms of transaction volume, even though prices are still holding up for the time being, is far more sceptical about markets' inherent rationality. There is very little doubt that home prices are among the most expensive on earth; Demographic trend is working against the market; Economic uncertainties of U.S fiscal cliff increase; Mainland China slowdown curbs Hong Kong growth; Interest rates on the only way up; Government's moves to check speculation and the Illusion of supply shortage etc. This is the prerequisite to call anything a "bubble", and the property market in certainly meets these criteria. The purpose of this paper is to use an econometric model and descriptive statistical analysis to illustrate Hong Kong resident property prices correction is imminent today.

Keywords: Housing, Property, Bubble, Resident, Hong Kong

JEL Classification: F3

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1. Introduction

General market overview - The volatility of Hong Kong property prices is world famous. Before the Asian financial crisis, the Hong Kong property market rose continuously for nearly a decade. But when the crisis hit and the government mishandled its reaction, property prices sunk precipitously until 2003, losing 50% of their peak 1997 values. Equally astonishing, the subsequent comeback - though interrupted by the US financial crisis in 2008 - was so powerful that residential property prices rose 29% in 2009, rose 21% in 2010, rose 18% in 2011 and rose another 15% in 2012. Overall, residential housing prices rose about 78% from the bottom in late 2008 after the Great Financial Crisis. Consequently, home prices in Hong Kong are now back to the most expensive in the world.

"This is not the end, though it is not even the beginning of the end. It is perhaps the end of the beginning"– Sir Winston Churchill, 1942. Time flies, particularly the happy one. As property prices are getting more and more expensive, we find less and less reasons why we should stay bullish. "Beginning of the end" or "end of beginning", this is not the question. The thing is it is going to the end, and now we are observing some signs of key risks factors that would trigger a huge housing correction. Before conducting the empirical analysis, it is important to understand the theoretical relationships between the economic fact and home price.

Theoretical background - The key to call for the end of bull market in Hong Kong real estate is to identify something that could trigger property bubble to burst. Since the home price in Hong Kong have risen over 10% to surpass 1997 peaks at their record high, and, on the other hands, property gloom spreads on mainland China in the Q2 of 2013, all those have made Hong Kong property market more risky to us than it was, here are some vital reasons why I turn from slightly cautious to downright bearish:

a) Hong Kong property prices are really expensive

Home price in Hong Kong are the highest it's ever been, the Centa-City Leading Index (CCL), which tracks resident property market prices - with the level in July 1997 set at 100 - shows flat prices rose to an index level of 114.57 on 9 Dec 2012. This surpassed the previous record high of 102.93 in October 1997. Even though properties look very affordable, according to the 8th Annual Demographical International Housing Affordability Survey 2012, Hong

Kong continued to be the most unaffordable market out of 81 major metropolitan areas.

b) Illusion of supply shortage

The most frequently cited reason for high home prices are the supply shortfall, though some pundits has debunked this myth: Hong Kong private residential market has about 210,000 excess flats relative to the true demand, which should well be able to buffer any alleged supply shortfall for 2-3 years. In fact, should the property market correct, the same group of people who are arguing for the shortage of supply probably argue that there are too many flats around.

c) Demographic trend is working against the market

Demographics have a weird relationship with asset prices. Real estate markets all over the world will face demographic headwinds, and there is no different for China and Hong Kong. Similar to China, the ratio of working-age population to total population in Hong Kong peaked in 2010, and population ageing will happen at an even faster rate than China. By 2050, the population aged 15 to 59 will account for less than half of total population, down from about 70% in 2010 according to UN Population Division's forecast.

Population growth is very slow. Worse still, like many other parts of the world, the population is ageing, and that is going to be negative for real estate market. Property market volatility aside, Hong Kong will face a strong demographic headwind, which means that the long-term trend is more likely to go downward.

d) Interest rates on the only way up

The Federal Reserve Board announced, once again, that it was committed to maintaining its extremely low interest rate policy through 2014. Nearly four years have passed since the Fed adopted the policy. What began as an emergency measure to support the entire financial system in late 2008 has seemingly become permanent policy at the Fed.

Interest rates in Hong Kong do not always move with that of the United States. As long as funds are flowing away from Hong Kong, market interest rates will probably rise even the Federal Reserve was keeping interest rates low. The increasingly clouded economic outlook may trigger some funds flowing away from Hong Kong, which will decrease money supply and put upward pressure on interest rates.

Everyone knows that interest rates cannot remain low forever. Banks in Hong Kong have raised mortgage interest rates marginally, not because of any earlier-than-expected interest rates hikes in the United States, but to increase net interest margin. Although not consequential by itself, this gives a signal that interest rates cannot be at record low forever.

e) Mainland slowdown spills over into Hong Kong economy

Our neighbour, Mainland China, is fighting with inflation and tightening policy. More-aggressive-than-expected monetary tightening in China will inevitably slow down the economy, and that will be negative for Hong Kong real estate. The World Bank cut its forecast for China's economic growth this year to 8.2%, down from 8.4% previously, saying external weakness amid Europe's lingering debt crisis and further domestic property market adjustment would weigh on the world's second largest economy.

Hong Kong is no longer a fast-growing economy. It's registered lowest rate of economic growth in more than 2 years in the 1Q, with a slowdown on mainland having a knock-on effect. The GDP grew just 0.4% from a year ago, sharply down on the 3% growth recorded in the 4Q of 2011. These data showed Hong Kong economic activity was slackening. As a reminder, unless "China is fixed" and quite soon, the situation will first get worse before it gets much worse.

f) Mainlanders stay away

The Hong Kong Government's moves to check real estate speculation and prevent the housing bubble from bursting are working. Mainlander property buyers have almost disappeared from the Hong Kong property market since the government introduced then Buyer's Stamp Duty (BSD), targeting non-permanent residents and company buyers.

Mainland visitors coming to Hong Kong to buy property have plunged 70% since the measure was introduced, while those who actually invested in property in Hong Kong fell to almost zero. Obviously the proportion of mainlanders among property buyers in Hong Kong has been falling since last year, even before the government's cooling measures.

g) Eurozone uncertainties increase

The Organization for Economic Cooperation and Development (OECD) warns of risk of Eurozone falling into 'severe recession'. Back in those days when the US subprime crisis emerged, many people

thought it was just a blip. Now, many people think that the Eurozone debt crisis is merely going to be a blip. However, the market is genuinely worried about the potential disorderly default and exit by Greece and what that means in terms of contagion risks.

1. Literature review

Because of the Federal Reserve Board announced, once again, that it was committed to maintaining its extremely low interest rate policy through 2014. Andrew (Nov 2011) of Barclays Capital was the first buy-side analyst and turned bullish on Hong Kong property sector at almost the same time as Lawrence (Oct 2011) of Morgan Stanley, they came out and published their analysis report which stayed that the low interest rate environment would not wreaks havoc, but also stimulates business investment and enables consumers to more easily finance big ticket purchases such as housing. “The low interest environment in Hong Kong is pushing more local residents to buy properties for the preservation of their purchasing power said by Hong Kong Monetary Authority (HKMA) Chief Executive Officer, Norman Chan (April 2012).

We have already aware about something very obvious but Andrew and Lawrence didn't thought so: Federal Reserve does not determine interest rates in Hong Kong, but the Hong Kong banking system does. With the monetary tightening in China as well as increasing macro risks, we have long expected that these factors would tighten monetary condition. Indeed, we have seen gradual tightening of monetary condition in Hong Kong over the past a year, yet we can still see quite a few people not getting it despite the latest monetary statistics from HKMA showing that all money supply measures have dropped year-on-year while loan-to-deposit ratio continued to surge.

Although Federal Reserve Chairman Ben S. Bernanke promises to continue his near-zero interest rate policy, everyone knows that interest rates cannot remain low forever. Banks in Hong Kong have raised mortgage interest rates marginally, not because of any earlier-than-expected interest rates hikes in the United States, but to increase net interest margin. Although not consequential by itself, this gives a signal that interest rates cannot be at record low forever.

A recent study conducted by Yu Jincui and Wang Lei (June 2011) of the university of southern California, which published in the journal Proceedings of the National Academy of Economics,

concluded that the Hong Kong property market has been resilient so far despite the fact of the macro environment is getting increasingly unfavourable. This is not too surprising, as the buyers, analysts and pundits alike are still playing their bullish horns by emphasizing that the property market in Hong Kong is a market for 1.3 billion people, and the supply in Hong Kong is limited, thus there is no way that property prices can correct.

The methodology of this report is too superficial. By looking at the annual supply, combined with the wishful thinking that Chinese buyers will continue to pour in for ever and ever, one is ignoring the fact that Hong Kong economy is extremely sensitive to external shocks, and so does the Hong Kong property market. We should be bearish stance on Hong Kong property right now has been based on the fact that the Chinese government and People's Bank of China are tightening policy, which, as a side-effect, also tighten monetary condition in Hong Kong.

Dennis Lim (June 2012), co-chief executive officer of Templeton asset Management (Asia), sees there is going to be a soft landing, as opposed to a hard landing in China. He defines growth of 7% or more as a soft landing. China came through the 2008-2009 crisis better than any other country in the world, and he thinks China will this time, too. Therefore, this kind of soft landing with at least 7% growth would not trigger the housing correction in Hong Kong.

Much of the slowdown in Hong Kong can be traced to the mainland China, where consumer inflation eased with the CPI rising 3.4% in March 2012, and HSBC manufacturing PMI in May 2012 declined to 48.7 from 49.3 in April. It was a bigger decline than we expected, albeit recent data have indicated increasing downside risk. The official China Manufacturing PMI finally reverted to the reality that HSBC Manufacturing PMI has been arguing for and fell for the first time in six months in May 2012. The drop is the largest since February 2010. While still above 50, the lowest level of expansion in five months, or 50.4 technically, down from 53.4, and missing expectations of 52.0, it seems another engine of global growth just sputtered finally.

Chinese economy leads us to believe that a hard landing in Chinese economy is becoming increasingly likely. A hard landing of the Chinese economy will probably spill over to Hong Kong as Hong Kong is increasingly dependent on the economic growth of mainland China. Thus, in the event of hard landing, expect Chinese buyers to

stop buying properties in Hong Kong, or even start selling properties in Hong Kong to save their own businesses in China.

"The current price hike reflects the property market is dominated by home buyers who bought houses for residential use. I predict the home price, in terms of CCL, will rise further for the near future, reflecting the local property market's buoyancy," Centaline Property Agency Research Director Wong Leung Sing (March 2012) predicted. He believe prices will keep rising this couple of years for reason that the supply shortage in Hong Kong, local and foreign investors seems to be finding Hong Kong property to be an attractive investment, therefore, pushing them to buy properties for the preservation of their purchasing power.

The most frequently cited reason for high home prices are the supply shortfall, though I have debunked this myth: Hong Kong private residential market has about 210,000 excess flats relative to the true demand, which should well be able to buffer any alleged supply shortfall for 2-3 years. In fact, should the property market correct; the same group of people who are arguing for the shortage of supply (e.g. pundits, politicians, and some analysts) will probably argue that there are too many flats around.

A more plausible reason to think the market may be close to its peak is a looming shift in government policy. C.Y. Leung, who takes over in July as Hong Kong's new chief executive, has made it clear that he wants to end the expensive-land policies pursued by the outgoing administration. He wants to speed up the rollout of subsidized housing, which will dampen the private market. More important, he promises to make more land available: for example through zoning changes, the redevelopment of old residential sites and land-reclamation projects.

An IMF working paper develops a structural macro econometric model of the world economy, disaggregated into thirty five national economies. “A variety of monetary policy analysis, fiscal policy analysis, spillover analysis, and forecasting applications of the estimated model are demonstrated, based on a Bayesian framework for conditioning on judgment.”

"Somebody tell that, now the bull market is entering the second period. The so-called first phase of the bull market is increasing price, but the rental return is above the rate of increase in property prices. When it comes to the second period, prices rose above the rental rate." says Patrick Chovanec (April 2012), a business professor at Tsinghua University. "Historically it's also quite

interesting, if encountering a U.S. recession when the Hong Kong property market is bearish, it will turn to be bullish in one or two years. There has been like this in the past 30 years. If encountering a U.S. recession when it's the bull market in Hong Kong property market, it will turn to the second phase from the first phase of the bull market period. Take the 1990s for example, if not encountering the U.S. recession, we wouldn't have encountered the crazily increasing property. Now, if not encountering a recession in the U.S. after Lehman, the Hong Kong property market should not be so crazy. In short, basically, it's time to buy a property now." he added.

Katrina Ell (February 2012), an economist at Moody's analytics in Hong Kong has developed a structural macro-econometric model of Hong Kong real estate market, which stated that Real estate prices in Hong Kong will certainly fall in short term only, the long term atmosphere of Hong Kong real estate market has not been adjusted. "Despite the moderate downtick in recent amount of transaction, this is a stellar jobs report and paints a very unhealthy picture of the property market," said Ell.

Some economists are still not sceptical for the long term scenario. There is already massive overcapacity, but they are still saying everything is going to be fine for the long terms. Hong Kong today looks like Japan in 1990. Low birth rate and population ageing will have negative impact on residential housing demand, which are certainly somewhat similar to what we see in Japan today. Japan started to implement increasingly tough real estate market regulation in the late 1980s with no effect, until they became effective. As there is a big lag between the implementation of policy and the policy taking effect, the impact became somewhat catastrophic for Japan (as we know it) when they finally became long lasting negative effect.

Hong Kong risk is increasing by the day. This is because of the government's repeated introduction of real estate market regulations. This is similar to what happened in Japan. Various regulations were introduced during the late 1980s to rein in the overheating real estate market. Because of the upward momentum in real estate prices, initially there is no effect regardless of how many regulations are introduced. However, this is simply because of the time lag until the effects materialize. Nevertheless, since regulators desire swift results, they rapidly implement a succession of regulations. When the effects of these regulations take times to build up, the real estate market collapses.

A Richmond Fed paper investigates changes in structural correlations between housing price and either the new government regulation (SSD) and bank loan (mortgage) policy in Hong Kong during both the unusual periods. The correlation between price and either of the two other series exhibits a remarkably weak co-movement. The report holds that Real estate prices will certainly fall in short terms with 5% to 10% only, because government regulation is to start directly from the loans, those who lack the financial capital will be affected the most, and with the greatest deterrent effect, for they simply cannot move without the loan. But for group speculators, those are the main factor to drive the price up, the influence may be relatively small.

"While it seems that rents are rising at the expense of home values, the opposite is true. A thriving rental market will stimulate home sales, as investors snap up low-priced inventory to convert to rentals. That, in turn, will lower the number of homes on the market, which will eventually help put a floor under the value of all homes," says Zillow chief economist Stan Humphries (March 2012). However, more supply of rental homes, especially single family, could slow the upward trajectory of rent rates, which in turn would make renting more attractive and buying less so. It just raises a red flag to see home affordability at a record high, investors rushing in, and rents so strongly outpacing home values.

Right now investors are rushing to get in on cheap foreclosures, hoping to turn them around for quick rental income. So what exactly is the tipping point, given that mortgage availability is still tough, consumer confidence in housing is still weak, and employment, while improving, is still not where it needs to be to spur strong buyer demand.

A Universal Investments LP working paper by Mark Yip (October 2011) investigates the effect of fiscal transparency on market assessments of sovereign risk, as measured by credit ratings. "Our results suggest that a one standard deviation improvement in fiscal transparency index is associated with a significant increase in credit ratings: by 0.7 and 1 notches in advanced and developing economies respectively."

Neil Monnery (April 2012), Senior Vice President and Director of Boston Consulting Group, In his recent research "Safe as Houses? A Historical Analysis of Property Prices", he presents data from an array of nations going back several centuries. What he discovers is that real house prices have generally been flat over time, or have

increased by at most 1% a year. Rather like gold, then, house prices have been a good store of value rather than an automatic route to riches.

Many people think that owning a house in Hong Kong is a certain money-maker, but this is not the historical experience among the world. The exception is the period of the past 15 years or so, when real house prices took off in a few countries. In Germany and Switzerland the trend has been flat-to-lower. In Japan there has been a decline which has pretty much wiped out the rise in house prices that occurred between 1970 and 1990. So there are really three types of market to explain: America and Japan, where real prices rose sharply then corrected; those where they rose sharply but have yet to lose all their gains; and those where the markets have been flat in real terms.

The latest Case-Shiller home price data is out and it beat analysts' expectations as home prices rose 0.67% versus the 0.3% rise which was expected. Higher price data in recent months has led some - like Business Insider deputy editor Joe Weisenthal - to call a bottom in the housing market. Major risks to such calls include rising foreclosure starts. Some experts like Gluskin Sheff chief economist David Rosenberg think the housing market has lower to go. Regardless, what is observable is that many major cities around the United States are seeing rapid increases in both the amount of homes being sold and the prices at which they are selling. And other markets could soon follow.

Martin Fieldstein (September 2012) of Swire Properties Asia estimates the fiscal cliff multiplier effect of the pending tax and spending measures is close to zero, while Willem Buiter (November 2012), global chief economist of Citi, estimates they are not robust and without economically significant on the price of Hong Kong property.

The U.S. fiscal cliff is the combination of more than $600 billion in automatic tax increases and spending cuts scheduled to take effect at the beginning of 2013. The combination of spending cuts and tax increases scheduled to take place at the outset of 2013 stands to hinder economic growth due to substantial income effects and liquidity constraints. The results may be worsened by distribution concerns. There is no consensus among economists about the efficacy of fiscal multipliers under most circumstances and the level of precision in predicting behavioural changes among households has eluded the dismal science for years.

The likelihood that policy makers will permit all of the scheduled fiscal changes to occur is low. Based on Robert Barros' academic working paper, the full fiscal shock of $600 billion, estimated a simple fiscal multiplier of 0.75, it would result in real GDP being 3.1% less than what it otherwise would be.

The Hong Kong government imposed a Special Stamp Duty (SSD) and minimum down payments ranging from 10% and 50% imposed on foreign buyers acquiring a property priced not lower than HK$6 million and HK$10 million, respectively. Mainland investors belonging to the elite, millionaire circle are still keen increasing their property investments overseas next year, according to a Citibank consumer survey (October 2012) recently released indicating the investment trends of the Chinese city's affluent class. The survey said that 55% of the wealthy Mainland residents with at least a million in liquid assets cited that their preferred investment is in Hong Kong property market because of the relative strength of the CNY.

Another interview-survey report, which was done, after government introduced the BSD, by the University of Hong Kong Social Sciences Research Centre (December 2012) among 4100 mainlanders aged 20 to 70 between Oct-.Nov. 2012, revealed that over 90% will not place their investments on Hong Kong property assets next one or two years. The remaining 10% of the respondents have cautioned against property market investments.

The report added that, at the moment, impact of BSD, mainlanders wealthy segment is very conservative, thus, only less than 5% bought property by mainlanders in 2013. This perceived investment trend had been influenced by the restrictions set by the Hong Kong government to ease the strain in the property market.

2. Methodology and data

Price of property goes up & down is one of the most difficult phenomena for economists to understand. At the theoretical level, many models are available as a framework for applied analysis. However, the models tend to contain a limited number of variables, and these are normally the proximate determinants of property price. They are probably not the underlying determinants. It might be necessary to go behind the proximate determinants if we are to understand why property price has grown so fast. This could be particularly important in the case of a transition economy. In the movement from a centrally planned economy towards a market

economy, many institutional variables are changing rapidly, in a way which would not be true of advanced market economies.

No single methodological approach on its own can explain something as complicated as real estate. Accordingly, we adopt and encompass several approaches: economic theory, international history, econometric and technical analysis. We regard this as a particular strength of our contribution. It corresponds closely to what IMF Research Reports (Dec 2010 and Nov 2011), which analysis sharp house price increase in Hong Kong, have termed 'analytic narrative', that is, a country study which is explicitly informed and framed by growth theory and growth econometrics. However, whereas IMF objective is primarily to improve our understanding of property price climbing using the country analytic narrative as a backdrop and secondarily to understand the growth of the country being studied, our priorities are reversed.

The mathematical toolbox that people use to work with historical data is somewhat grandly called historical time-series analysis. Thick books have been written about it, but we will use only a couple of ideas out of that toolbox. The first of them, our vital analytic model, is linear regression, which used to establish a relationship between two or more time series. Ever since the dawn of modern portfolio theory in the 1950s, academic researchers have used multiple regression model to relate returns on investment to returns on the market as a whole.

- **Factor Analysis**

Before we perform the regression analysis, factor analysis will be executed that is a technique to identify factors the statistically explain the variation and covariation among measures. From this perspective, factor analysis can be viewed as a data-reduction method since it reduces our large number of overlapping measured variables to a much smaller set of factors. More specifically, the factors can correspond to constructs of a theory that helps us understand behaviour of Hong Kong property market.

Our factor analysis requires two stages, factor extraction and factor rotation. The primary objective of the first stage is to make an initial decision about the number of factors underlying a set of measured variables. The goal of the second stage is twofold: (1) to statistically manipulate the results to make the factor more interpretable and (2) to make final decisions about the number of underlying factors.

A single assumption underlies factor analysis extraction in general, while an additional assumption is required for maximum likelihood methods.

Assumption 1: the measured variable is linearly related to the factors plus error.

This assumption is likely to be violated if items are factor-analyzed, particularly our data items have very limited response scales, and the item distribution vary in skewness. Violation of this assumption may lead to the identification of spurious factors.

Assumption 2: the X test for the maximum likelihood solution assumes that the measured variables are multivariate normally distributed.

This assumption is problematic when the factor analysis is conducted on items.

- **Stepwise Multiple Regression**

Stepwise multiple regression analyses are used to explore the statistical relationships between house price index and meteorological parameters. It is a way of choosing predictors of a particular dependent variable on the basis of statistical criteria. The stepwise technique permits screening of a large number of potentially useful spectral observations (predictors) to isolate those few that contribute most to the explanation of the variance of a particular meteorological parameter. Essentially the statistical procedure decides which independent variable is the best predictor, the second best predictor, etc.

There are a number of multiple regression variants in our research. Stepwise is usually a good choice though one can enter all variables simultaneously as an alternative. It combines the best of forward and backward selection. Thus, one can enter all of the variables simultaneously and gradually eliminate predictors one by one if elimination does little to change the overall prediction. The emphasis is on finding the best predictors at each stage. When predictors are highly correlated with each other and with the dependent variable, often one variable becomes listed as a predictor and the other variable is not listed. This does not mean that the latter variable is not a predictor, merely it adds nothing to the prediction that the first predictor has not already done. Sometimes the best predictor is only marginally better than the second predictor and minor variations in the procedures may affect which of the two is chosen as the predictor.

3. Data and model description

Our empirical analysis is based on worldwide aggregate series, including Hong Kong Housing Society, Rating and Valuation Department, Census and Statistics Department, Land Registry, International Monetary Fund, The World Bank, and National Bureau of Statistics. We have collected annual data for the period of 1995 to 2012. And we will also use latest monthly data of Q1 2013 for our technical analysis.

In our multiple regression model we have one dependent variable (ŷ) and several independent variables (β) which are potential predictors of the former. The best model is one that makes sense to us and which explains as much variation of Y with as few as possible βs. The reason we want few variables is that if we are only guided by a desire to increase the R2 and thoughtlessly add or remove variables into the model, then the equation will be impossible to interpret. The statistical equation is:

$$\hat{y}=\beta 0+\beta 1(RENT)+\beta 2\ (COMPL)+\beta 3\ (VACAN)+\beta 4\ (GDPcap)+\beta 5\ (DHno)+\beta 6\ (DHsize)+\beta 7\ (DHinco)+\beta 8\ (SPreg)+\beta 9\ (SPval)+\beta 10\ (AFF)+\beta 11\ (M1)+\beta 12\ (M2)+\beta 13\ (M3)+\beta 14\ (HKD/CNY)+\beta 15\ (UNEM)+\beta 16\ (CPI)+\varepsilon$$

The model provides updated estimates of housing price index using information about changes of the market environment.

- ŷ: Price Indices - The overall price index of private residential units, It uses the 1999 price level as the base point of 100.
- (RENT): Rental Indices - It reflects the movements of rent paid by households in Hong Kong.
- (COMPL): Newly completed residential flats.
- (VACAN): Vacancy - The percentage of all units or space that is unoccupied or not rented.
- (GDPcap): GDP per Capita - A measure of the total output in Hong Kong that takes the GDP and divides it by the number of Hong Kong people.
- (DHno): Number of Domestic Household
- (DHsize): Average Domestic Household Size
- (DHinco): Median Domestic Household Income
- (SPreg): Sales and Purchase Number of Registration
- (SPval): Sales and Purchase Value of Consideration
- (AFF): Home affordability ratio - the household monthly income ratio that is used in the calculations of home mortgage loans repayment.

- (M1): Money Supply - Contains transactional balances and currency.
- (M2): Money Supply - Contains consumer savings accounts and other interest-bearing consumer accounts. M2 includes M1 plus short-term time deposits in banks.
- (M3): Money Supply - Includes M2 plus longer-term time deposits.
- (HKD/CNY): Current exchange rate Hong Kong Dollar to China Yuan Renminbi.
- (UNEM): Unemployment Rate.
- (CPI): Consumer Price Index - y-o-y price movements of commodity/service sections which is useful for analysis the inflation that affects consumers.
- ε: Residual - the difference between the observed value of independent variable (y) and the predicted value ($\hat{y}$).

The problem of multicollinearity

In our multiple regression analysis procedure enters and removes variables in turn until the regression equation is satisfactory, but we may face the problem that if two or more of the independent variables are highly correlated, then it becomes difficult to estimate reliably their slopes and the slopes' standard errors. Indeed, it is possible that we might fail to reject the null hypothesis that one of the slopes is equal to 0 when in fact it should be rejected, because the effect of that particular β is masked by the effect of the other one with which the former is highly correlated. There are 3 things we can do to avoid the problem of correlated independent variables.

- Do a correlation matrix analysis of all the variables.
- Produce a measure of multicollinearity called tolerance (TOL).
- Compute a statistic called the variance inflation factor (VIF).

4. Empirical results

4.1. Factor analysis

We have run techniques designed to classify measured variables with reference to relatively few hypothetical reference variables or factors, which are taken to represent underlying substantive characteristics. In exploratory factor analysis, our aim is to ascertain the minimum number of factors needed to generate reasonably close approximations to the correlations in the original R-matrix. Another important aspect of exploratory analysis is rotation, whereby the factors, viewed as mathematical axes with respect to

which each variable can be plotted as a point in space, are rotated in order to achieve the 'simple structure' needed to interpret the factors.

Factor Extraction

The output showing the initial statistics and the scree plot from the principal components analysis is shown in Figure 1 and Figure 2.

In Figure 1, the eigenvalues are listed for component 1 through 18. These are important quantities. The total amount of variance of the variables in an analysis is equal to the number of variable. The extracted factors account for the variance among these variables. An eigenvalue is the amount of variance of the variables accounted for by a factor. An eigenvalue for a factor should be greater than or equal to zero and cannot exceed the total variance (in our studies is 18). The percent of variance of the variables accounted for by the factor, as shown in the output, is equal to the eigenvalue divided by the total amount of variance of the variables times 100.

Figure 1

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.032	61.290	61.290	11.032	61.290	61.290
2	4.734	26.299	87.589	4.734	26.299	87.589
3	1.143	6.347	93.937	1.143	6.347	93.937
4	.597	3.317	97.253			
5	.183	1.019	98.272			
6	.130	.720	98.992			
7	.082	.455	99.446			
8	.039	.216	99.662			
9	.029	.163	99.825			
10	.012	.069	99.894			
11	.009	.049	99.942			
12	.005	.030	99.973			
13	.003	.014	99.987			
14	.001	.006	99.992			
15	.001	.005	99.997			
16	.000	.003	100.000			
17	8.582E-005	.000	100.000			
18	1.002E-013	1.012E-013	100.000			

Extraction Method: Principal Component Analysis.

Eigenvalues are helpful in deciding how many factors should be used in our analysis. Many criteria have proposed in the literature for deciding how many factors to extract based on the magnitudes of the eigenvalues. One criterion is to retain all factors that have eigenvalues greater than 1. This criterion is the default option in

SPSS. It may not always yield accurate results. Another criterion is to examine the plot of the eigenvalues, also known as the scree test, and to retain all factors with eigenvalues in the sharp descent part of the plot before the eigenvalues start to level off. This criterion yields accurate results more frequently than the eigenvalue-greater-than-1 criterion. Based on the scree plot in Figure 2, we concluded that two factors should be rotated.

Figure 2

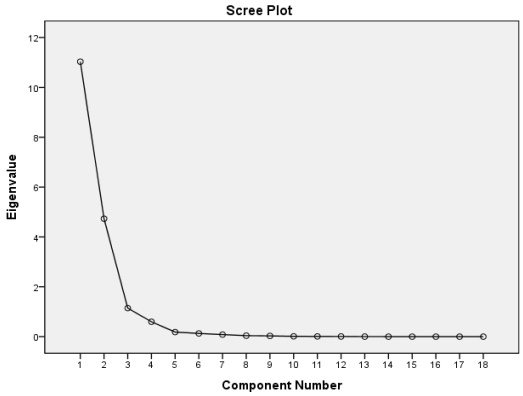


Figure 3 shows the unrotated component matrix containing the loading of the 18 variables on the two factors extracted.

Figure 3

Component Matrix[a]

	Component	
	1	2
RENTAL_INDICES	.564	.756
COMPLETIONS	-.813	-.205
VACANCY	-.410	-.858
GDP	.995	-.019
Per_capita_GDP	.989	.082
CPI	.662	.425
Exchange_rate_HKD_CNY	.970	-.034
No_of_Domestic_Households	.866	-.474
Average_Domestic_Household_Size	-.841	.451
Median_Domestic_Household_Income	.940	-.117
Population	.865	-.469
Unemployment_Rate	-.374	-.842
Sale_and_Purchase_Registrations	.276	.641
Sale_and_Purchase_Value	.657	.598
Affordability_Ratio	-.220	.950
Money_supply_M1	.958	-.151
Money_supply_M2	.943	-.289
Money_supply_M3	.972	-.213

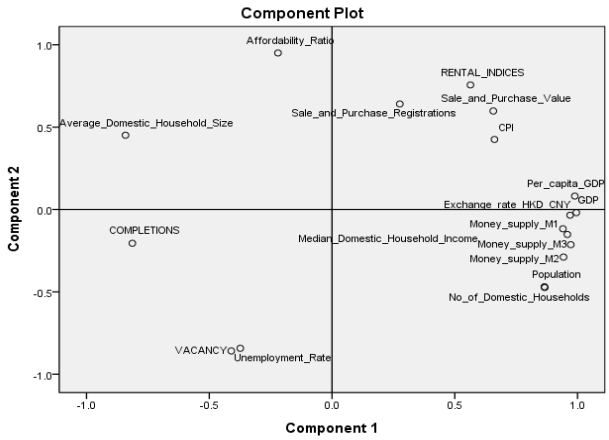
Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Since the components or factors can be thought of as graphical axes, each test can be plotted as a point on the graph with its loadings on the factors as coordinates. It has been done, the graph appears as in Figure 4.

Figure 4 Plot of the unrotated factor matrix, in which each of the 18 variables in the battery appears as a point in space with its loadings on the axes (factors) as coordinates

Figure 4



It can be seen that, in agreement with impression given by the correlation matrix, our factor analysis has extracted two factors. On the other hand, it is not easy to interpret the unrotated factor matrix. Both groups of tests show substantial loadings on both factors, which is not in accord with the obvious psychological interpretation of the pattern of correlations in the original R-matrix.

Factor Rotation

Figure 5

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.032	61.290	61.290	11.032	61.290	61.290	10.184	56.578	56.578
2	4.734	26.299	87.589	4.734	26.299	87.589	5.582	31.012	87.589
3	1.143	6.347	93.937						
4	.597	3.317	97.253						
5	.183	1.019	98.272						
6	.130	.720	98.992						
7	.082	.455	99.446						
8	.039	.216	99.662						
9	.029	.163	99.825						
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11	.009	.049	99.942						
12	.005	.030	99.973						
13	.003	.014	99.987						
14	.001	.006	99.992						
15	.001	.005	99.997						
16	.000	.003	100.000						
17	8.582E-005	.000	100.000						
18	1.002E-013	1.012E-013	100.000						

Extraction Method: Principal Component Analysis.

The proportion of variance accounted for by each of the rotated factors is frequently reported in articles to indicate the relative importance of each factor. Our SPSS reports these statistics in the right side of the table labelled Total Variance Explained. As reported, the first and second factors accounted for 56.578% and 31.012% of the variance of the 18 variables. In total, the two factors accounted for 87.589% of the variable variance. Note that this percentage must be identical to the percent of variance accounted for by the unrotated factors (labelled Extraction Sums of Squared Loadings).

Figure 6 (see the Appendix) shows the reproduced correlation matrix of coefficients, computed from the extracted factors (components), together with the residuals, which are the differences between the values in R-matrix and the corresponding values in the reproduced matrix. The residuals are small, indicating that the two factors extracted give a good account of the correlations in the R-matrix.

The residuals are the differences between the actual and reproduced correlations. Footnote b gives the number and proportion

of residuals that are greater than 0.05. We found there are only 35 (22%) such residuals.

The diagonal values labelled a in are the communalities listed in Figure 7 below. Each communality is the sum of the squares of the loadings of a test on the two factors extracted. Notice that, except the variables CPI (61.9%) and Sales & Purchase Registrations (48.7%), all other communalities are very large – at least 70%.

Figure 8 shows the rotated factor matrix, which should be compared with the unrotated matrix in Figure 3.

Figure 7

Communalities

	Initial	Extraction
RENTAL_INDICES	1.000	.889
COMPLETIONS	1.000	.704
VACANCY	1.000	.905
GDP	1.000	.990
Per_capita_GDP	1.000	.984
CPI	1.000	.619
Exchange_rate_HKD_CNY	1.000	.941
No_of_Domestic_Households	1.000	.975
Average_Domestic_Household_Size	1.000	.911
Median_Domestic_Household_Income	1.000	.898
Population	1.000	.968
Unemployment_Rate	1.000	.849
Sale_and_Purchase_Registrations	1.000	.487
Sale_and_Purchase_Value	1.000	.789
Affordability_Ratio	1.000	.952
Money_supply_M1	1.000	.942
Money_supply_M2	1.000	.972
Money_supply_M3	1.000	.991

Extraction Method: Principal Component Analysis.

Figure 8

Rotated Component Matrix[a]

	Component	
	1	2
RENTAL_INDICES	.247	.910
COMPLETIONS	-.682	-.489
VACANCY	-.067	-.949
GDP	.933	.347
Per_capita_GDP	.890	.439
CPI	.459	.638
Exchange_rate_HKD_CNY	.915	.324
No_of_Domestic_Households	.980	-.123
Average_Domestic_Household_Size	-.948	.111
Median_Domestic_Household_Income	.918	.236
Population	.977	-.119
Unemployment_Rate	-.039	-.921
Sale_and_Purchase_Registrations	.022	.697
Sale_and_Purchase_Value	.391	.797
Affordability_Ratio	-.554	.803
Money_supply_M1	.947	.211
Money_supply_M2	.983	.077
Money_supply_M3	.983	.158

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 3 iterations.

Now we have a pattern that is much easier to interpret: there are two groups of variables, and the variables in each group are loaded upon on factor only. Our purpose of rotation is not to change the number of components extracted, but to try to arrive at a new position for the component that is easier to interpret in substantive terms.

According to the rotated output, we found there are 9 variables now have high loadings on one factor only (Component 1),

which are the GDP [.933], Per capita GDP [.890], Exchange rate HKD/CNY [.915], Number of domestic households [.980], Median domestic household income [.918], Population [.977] and Money supply M1;M2;M3 [.947; .983; .983]; whereas Rental indices [.910], Affordability ratio [.803], Sale & Purchase value [.797] and Sale & Purchase registrations [.697] have high loadings on the other factor (Compoenent 2).

Figure 9

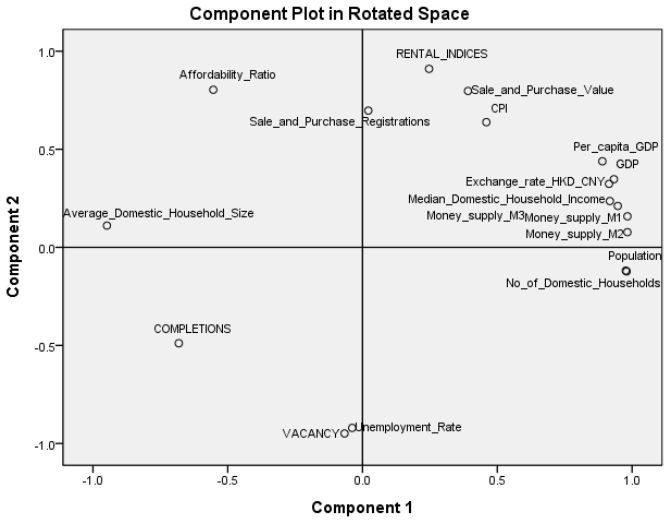


Figure 9 is a graph of rotated F-matrix, in which each of the 18 variables is plotted as a point in space with its new loadings on the rotated axes as coordinates. It can be seen from the graph in Figure 9 that the rotated factor matrix is much easier to interpret than the unrotated matrix in Figure 4. Since the rotation was orthogonal, that is, the axes were kept at right angles, the two factors are uncorrelated. This is quite consistent with that we concluded from our inspection of the original R-matrix, namely, that the correlations among the 18 variables in our battery could be accounted for in terms of two independent economical dimensions of impact.

Vriables with high loadings on one factor only are said to be indicators of the factor concerned. Clearly, as mentioned previously, Figure 9 shows nine variables are indcators of Factor 1; whereas four variables are indicators of Factor 2.

4.2 Multiple Regression

Multiple regression is an extension of bivariate correlation. Our result of regression is an equation that represents the best prediction of a dependent variable from 18 independent variables. Moreover, in stepwise regression, the number of independent variables entered and the order of entry are determined by statistical criteria generated by the stepwise procedure.

Figure 10

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25246.106	1	25246.106	93.851	.000[b]
	Residual	4304.032	16	269.002		
	Total	29550.138	17			
2	Regression	28223.171	2	14111.586	159.517	.000[c]
	Residual	1326.967	15	88.464		
	Total	29550.138	17			
3	Regression	28601.022	3	9533.674	140.627	.000[d]
	Residual	949.115	14	67.794		
	Total	29550.138	17			
4	Regression	29018.825	4	7254.706	177.506	.000[e]
	Residual	531.313	13	40.870		
	Total	29550.138	17			
5	Regression	29250.083	5	5850.017	233.958	.000[f]
	Residual	300.055	12	25.005		
	Total	29550.138	17			
6	Regression	29383.094	6	4897.182	322.485	.000[g]
	Residual	167.044	11	15.186		
	Total	29550.138	17			

a. Dependent Variable: PRICE_INDICES

b. Predictors: (Constant), RENTAL_INDICES

c. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1

d. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY

e. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI

f. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI, Sale_and_Purchase_Value

g. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI, Sale_and_Purchase_Value, Sale_and_Purchase_Registrations

The output shown in Figure 10 informs us that the final model was built in six steps; each step resulted in a statistically significant model. The df column shows us that one variable was added during each step. We can also deduce that no variables were removed from the model since the count of predictors in the model steadily increases from 1 to 6.

Figure 11

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	RENTAL_INDICES	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Money_supply_M1	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Exchange_rate_HKD_CNY	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	CPI	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	Sale_and_Purchase_Value	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	Sale_and_Purchase_Registrations	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: PRICE_INDICES

This latter deduction is verified by the display shown in Figure 11, which tracks variables that have been entered and removed at each step. As can be seen, (1) RENTAL_INDICES, (2) Money_supply_M1, (3) Exchange_rate_HKD_CNY, (4) CPI, (5) Sale_and_Purchase_Value, & (6) Sale_and_Purchase_Registrations have been entered on steps 1 to 6, respectively, without any variable having been removed on any step.

Figure 12

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.924[a]	.854	.845	16.4013	.854	93.851	1	16	.000
2	.977[b]	.955	.949	9.4056	.101	33.653	1	15	.000
3	.984[c]	.968	.961	8.2337	.013	5.574	1	14	.033
4	.991[d]	.982	.976	6.3930	.014	10.223	1	13	.007
5	.995[e]	.990	.986	5.0005	.008	9.249	1	12	.010
6	.997[f]	.994	.991	3.8969	.005	8.759	1	11	.013

a. Predictors: (Constant), RENTAL_INDICES

b. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1

c. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY

d. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI

e. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI, Sale_and_Purchase_Value

f. Predictors: (Constant), RENTAL_INDICES, Money_supply_M1, Exchange_rate_HKD_CNY, CPI, Sale_and_Purchase_Value, Sale_and_Purchase_Registrations

Figure 12, the Model Summary, presents the R Square and Adjusted R Square values for each step along with the amount of R Square Change. In the first step, as cn be seen from the footnote beneath the Model Summary table, RENTAL_INDICES was entered into the model. The R Square with that predictor in the model was .854. Not coincidentally, that is the square of correlation between RENTAL_INDICES and PRICE_INDICES (.9242=.854), and is the value of R Square Change.

On our second step, positive affect was added to the model. The R Square with both predictors in the model was .955, thus, we gained .101 in the value of R Square (.955-.854=.101), and this is reflected in the R Square Change for that step. By the time we arrive at the end of the 6th step, our R Square value has reached .991. Note that this value is very close to but identical to the R2 value we obtained under the standard method.

Figure 13

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-81.752	20.665		-3.956	.001		
	RENTAL_INDICES	1.850	.191	.924	9.688	.000	1.000	1.000
2	(Constant)	-69.501	12.037		-5.774	.000		
	RENTAL_INDICES	1.533	.122	.766	12.525	.000	.801	1.249
	Money_supply_M1	.041	.007	.355	5.801	.000	.801	1.249
3	(Constant)	80.113	64.243		1.247	.233		
	RENTAL_INDICES	1.696	.128	.848	13.290	.000	.564	1.774
	Money_supply_M1	.092	.022	.788	4.122	.001	.063	15.937
	Exchange_rate_HKD_CNY	-191.342	81.049	-.489	-2.361	.033	.053	18.692
4	(Constant)	-.782	55.931		-.014	.989		
	RENTAL_INDICES	1.413	.133	.706	10.631	.000	.313	3.191
	Money_supply_M1	.093	.017	.794	5.349	.000	.063	15.940
	Exchange_rate_HKD_CNY	-218.826	63.514	-.559	-3.445	.004	.053	19.041
	CPI	1.427	.446	.221	3.197	.007	.290	3.448
5	(Constant)	-35.011	45.173		-.775	.453		
	RENTAL_INDICES	1.180	.129	.590	9.139	.000	.203	4.923
	Money_supply_M1	.076	.015	.653	5.221	.000	.054	18.486
	Exchange_rate_HKD_CNY	-175.773	51.657	-.449	-3.403	.005	.049	20.587
	CPI	1.545	.351	.239	4.399	.001	.286	3.491
	Sale_and_Purchase_Value	.030	.010	.143	3.041	.010	.383	2.608
6	(Constant)	18.096	39.513		.458	.656		
	RENTAL_INDICES	.978	.122	.489	8.038	.000	.139	7.194
	Money_supply_M1	.053	.014	.450	3.778	.003	.036	27.625
	Exchange_rate_HKD_CNY	-151.545	41.081	-.387	-3.689	.004	.047	21.438
	CPI	1.242	.292	.192	4.253	.001	.251	3.978
	Sale_and_Purchase_Value	.137	.037	.644	3.718	.003	.017	58.299
	Sale_and_Purchase_Registrations	.000	.000	-.373	-2.960	.013	.032	30.847

a. Dependent Variable: PRICE_INDICES

The Coefficients table in Figure 13 above provides us the details of the result. We note that the values of the regression coefficients are different from those associated with the same variables in the standard regression analysis. That the differences are not large, because of the fact that these six variables did almost the same amount of predictive work in much the same configuration as did the eighteen predictors accomplished using the standard method. If economy of model were relevant, we would probably be appreciated with the trimmed model of six variables replacing the full model containing eighteen variables.

By the time we reach the 6th step, there is no variable of the excluded set that has a statistically significant partial correlation for entry at 7th step, thus, the stepwise produce ends after completing the 6th step. The relative magnitudes of the beta weights in the standardized equation are more helpful than the regression coefficient from the unstandardized equation in indexing the relative importance of the variables in predicting the value of dependent variable within the context of the other independent variables in the equation.

Our regression equation is based on standardized scores, the constant disappears because of the mean of all z-distributions is zero. For the data shown in Figure 13, the standardized regression equation is found to be Equation 1:

$$PRICE\_INDICES = 0.489_{xRENTAL\_INDICES} + 0.45_{xMoney\_supply\_M1} - 0.387_{xExchange\_rate\_HKD\_CNY} + 0.192_{xCPI} + 0.644_{xSale\_and\_Purchase\_Value} - 0.373_{xSale\_and\_Purchase\_Registrations}$$

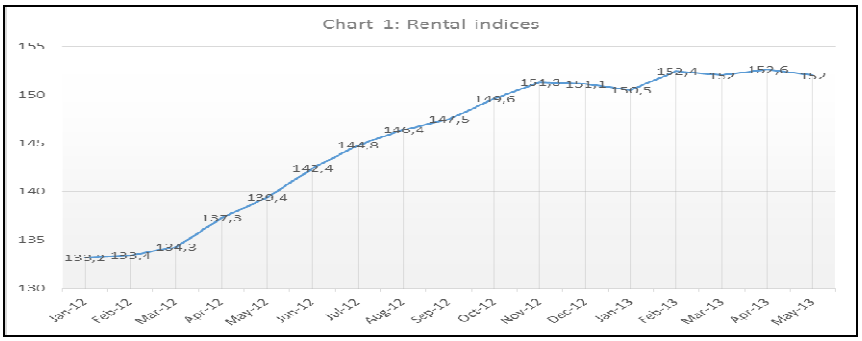
4.3 Technical Trends Analysis

Rental price, money supply (M1), exchange rate of HKD/CNY, CPI, sale & purchase value and registrations were used in a stepwise multiple regression analysis to predict house price in Hong Kong. The model was statistically significant, $F(6, 11) = 322.485$, $p < .001$, and accounted for approximately 99% of the variance of house price ($R2 = .994$, Adjusted $R2 = .991$). We are now focusing on current market performance with latest primary data to forecast how price indices to be affected by the six independent variables on equation 1.

Rental indices

The cooling measures implemented by the government on the residential sector actually led to an immediate volume contraction in 1st quarter of 2013. Upward price momentum stalled and housing rents fell 3% year-to-year as corporate tenants downgraded themselves to more affordable premises. Looking ahead, the current trend of rental price is going to be sustained except in the residential sector which is predicted to consolidate by 10%.

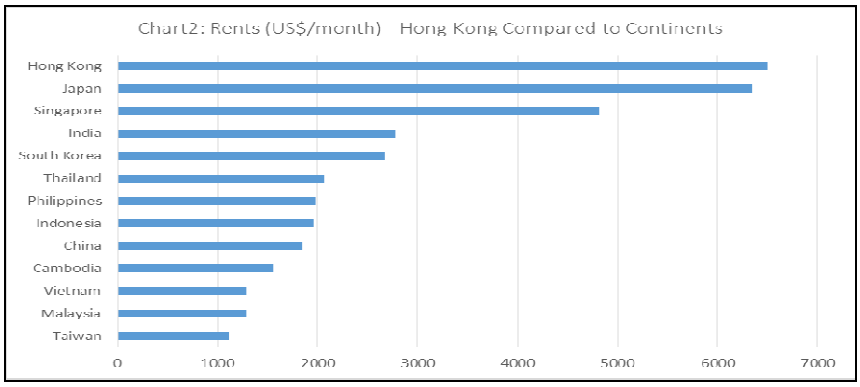
Chart 1



Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

Hong Kong expatriate apartment rents world's most expensive. Rents for high-end flats of the type commonly let by expatriates are the most expensive in the world. Property prices are some of the most expensive in the world. Both renting and buying a property is normally the largest expense that an expatriate will encounter. Once the economic slump has hurt the crucial expatriate sector, therefor, demand dropped, rental price will drop further.

Chart 2

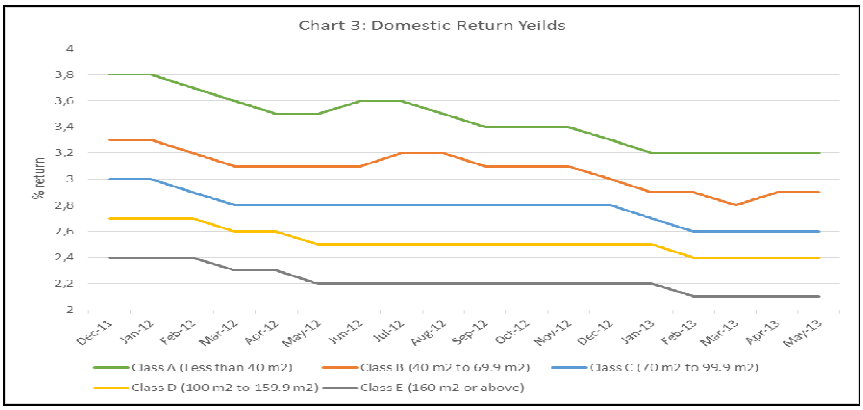


Source: Global Property Guide Q1 2013

For investment purpose, Hong Kong's rental yields are low. For the latest figures announced recently from Rating and Valuation Department, gross rental yields for property Class A; B; C ranged from 2.6% to 3.2%, and Property Class D; E are around 2.4% and

2.1% respectively. Such extremely low rental returns reflect the abnormal high house prices.

Chart 3



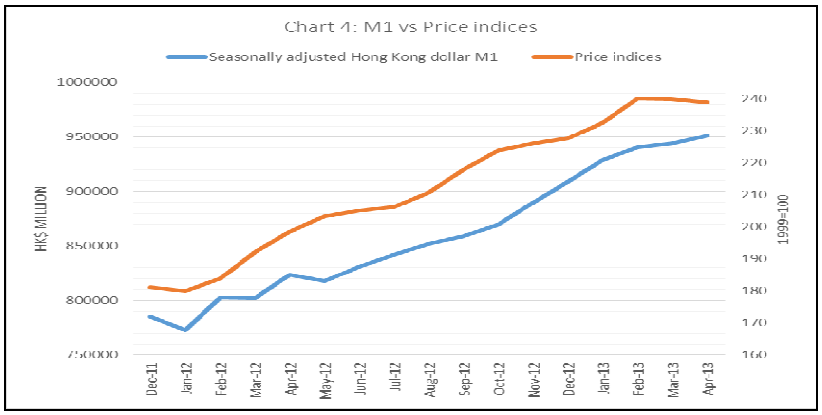
Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

The worsening economic environment could see further decline in the rental market. If landlords continue to be alerted in demand for residential properties has become weaker, they are willing to offer incentives to attract, and maintain, tenants. Occurrence of vicious circle that may also cause the rental price decrease or collapse.

Money Supply M1

The two monetary policies from USA and China drove property prices up. First of all, it was the monetary policy of quantitative easing (QE) from USA, in the three rounds of QE since the financial crisis in 2008, the US government has aggressively pimped cash into economy and kept interest rates low as a way of boost investment. Second, it was the monetary policy of China, which was exaggeratedly loose because Chinese government's desire to keep highly growth after the world financial crisis, leading to an overheating Chinese economy and increased number of Mainland investors jump into the Hong Kong property market. The chart 4 shows how money supply M1 has been driving home prices in Hong Kong.

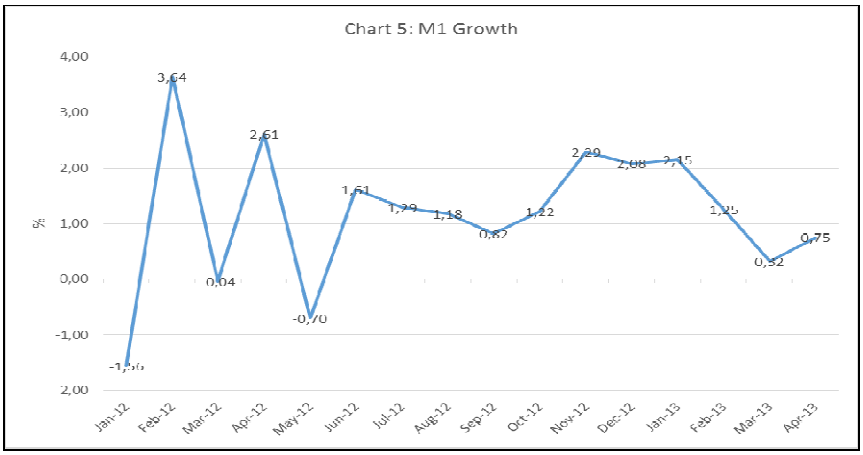
Chart 4



Source: HKMA Quarterly Bulletin. June 2013

Obviously it's good with the fact that it is pretty clear in the chart 5 shows money supply M1 growth has been slowing. Although monetary policy will still be loose in the USA, after second round of quantitative easing expires without any extension. However, the reality is that both Hong Kong dollar M1 peaked in 2011 to 2012, and it has been gradually dropping.

Chart 5



Source: HKMA Quarterly Bulletin. June 2013

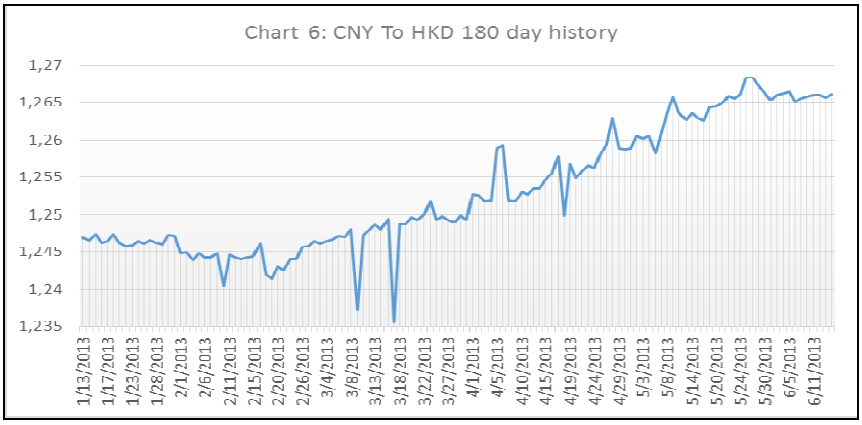
There are two other developing factors are motivating liquidity out. The first development is a dwindling of Hong Kong dollar

deposits. Due to the expectation of appreciation of CNY, depositors seem to favour CNY deposits over HKD deposits. Second, the People's Bank of China (PBC) continue to halt its regular bill auctions and bond repurchase (repo) agreement sales even as a cash crunch in the banking system started to ease. This means it won't drain or inject cash into the banking system, these monetary tightening in China is spilling over to Hong Kong.

Chinese Yuan Renminbi (CNY) To Hong Kong Dollar (HKD)

According to the equation we found in stepwise regression, CNY-to-HKD comes with a negative effect to the house price of Hong Kong, therefore, when other factors being constant, CNY rise the house price drop. Chat 4 shows CNY still stay at the record high against the HKD, further appreciation can be predicted.

Chart 6



Source: Rating and Valuation Department

"A higher Yuan may damp investment in Hong Kong's residential real estate because it would mainly benefit CNY-denominated assets", Cusson Leung and Joyce Kwock (Feb 2013), Credit Suisse research analysts, said in the report.

PBOC deputy governor Yi Gang (Apr 2013) said "it is generally presumed that CNY appreciation will be good for real estate in Hong Kong since home prices will look discounted, but there has also a downside for this argument…CNY appreciation is essentially a tightening policy from the Chinese perspective, If tightening in China

continues, it might be a real risk of a spill over to Hong Kong property market".

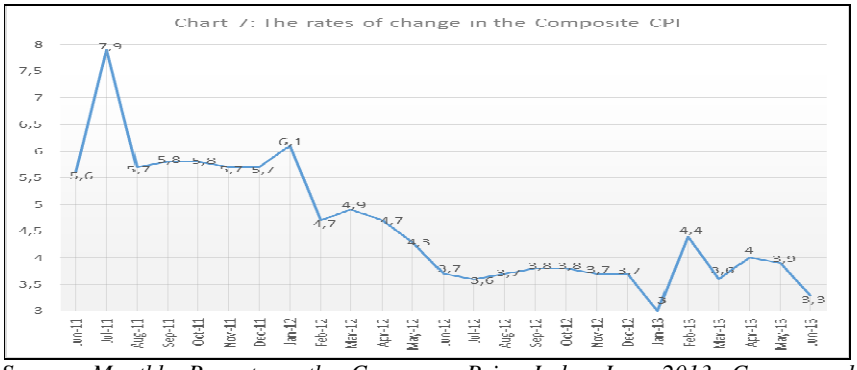
China, no doubt, is a currency manipulator, CNY appreciation this year, against strong USD. China's plan is likely to hit U.S. shoppers in the pocketbook, meanwhile making the stocks of firms with goods targeted at Chinese consumers more attractive as well, it shows that the CNY appreciation will be allowed endlessly.

When the pressure of CNY appreciation is about to happen, mainland investors demand might shift from Hong Kong property to CNY-denominated assets, thus, mainland investment demand for HKD-denominated assets during a period of appreciation is likely to be unhurried.

Consumer Price Index (CPI)

The latest available figures for the CPIs and their rates of change as well as the related rates of change upon removing the effects of Government's one-off relief measures are summarized in Chart 7.

Chart 7



Source: Monthly Report on the Consumer Price Index June 2013, Census and Statistics Department

For analysing the latest trend in consumer prices, it is useful to study the year-on-year changes in the original CPI series and the month-to-month changes in the seasonally adjusted series together. Since July 2011, the month-to-month changes still tend to decline due to recent economic factors. The trend of the CPIs may be more clearly discerned by looking at the Hong Kong Government "First Quarter Economic Report 2013" (released on May 2013) and "IMF 2013 global growth forecast" (released on July 2013).

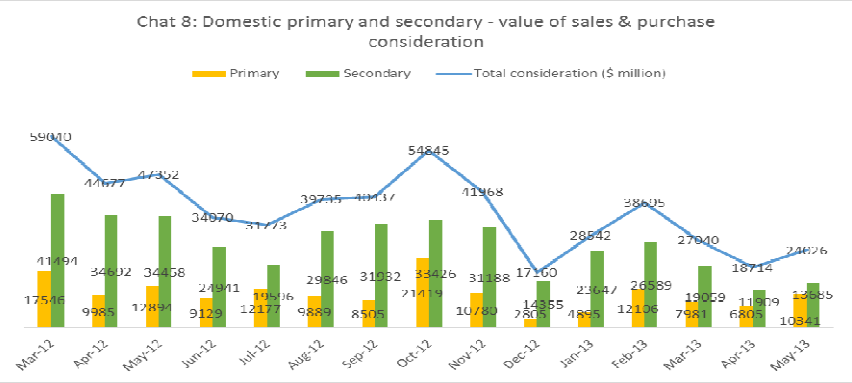
World Economic outlook - Hong Kong First Quarter Economic Report 2013, the Government Economist, Mrs. Helen Chan, described the economic situation in the first quarter of 2013 and provided the latest GDP and CPI forecasts. She warned that the China liquidity tightens and the declining of local housing rentals may pull down inflation for the coming years.

The IMF has cut its global economic growth forecast, citing new downside risks in key emerging market economies and a deeper recession in the euro zone. It warned that the global economy will grow 2.9% this year, down from its earlier estimate of 3.2%. It added that China and Hong Kong now face the possibility of a longer growth slowdown.

Sale and Purchase Value of Consideration

The Hong Kong Government's restrictive property measures have had a remarkable impact on number of transaction and the value of consideration. Hence, from Chat 8, the value of consideration in May of 2013 was HKD 24,026 million, drop 49.26% compared with HKD 47,352 in May of 2012.

Chart 8

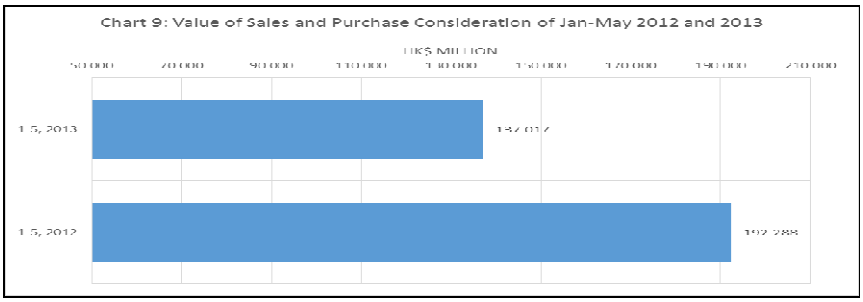


Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

The further tightening policy measures – the new BSD along with the revised SSD to prevent overseas investors from speculating in Hong Kong – aiming at mainland buyers who are more focused on high-end luxury properties, will lead to a price correction.

With Chat 9 point out that the total consideration of $137,017 million for the first five months of 2013, down 28.74% at the same period of 2012.

Chart 9



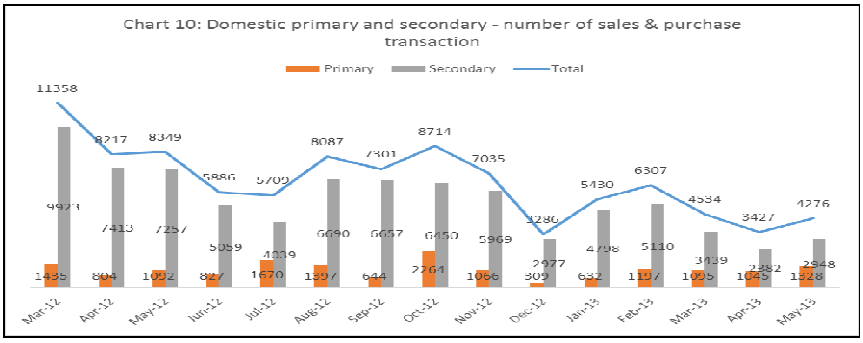
Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

Consideration of sales and purchase in residential property market continued to trend down on critical fundamentals.

Sale and Purchase Number of Transaction

Number of transactions fell to the bottom since 1996 after the government doubled stamp duty taxes on property deals in February 2013 to suppress concerns that an asset bubble is establishing.

Chart 10



Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

According to the July monthly supplement from the Rating and Valuation Department, Hong Kong's property cooling scheme did able to curb price hikes, even shortage of supply wasn't addressed. But we found that the Government's restrictive property measures have had a notable impact on value of consideration but have had mild

outcome on number of transaction, it's most likely because some homeowners willing to cut prices in a weak market.

5. Historical Prospective

5.1. Hong Kong Property Market History

To understand the relationship of government housing policy and Hong Kong property prices, in Chart 11 (see the Appendix) it is plotted 32-year property prices history along with major economic and political events, as well as major government policies. As we can see in the chart, the truth is that, in spite of government has tried to restrain home prices in bullish market and maintenance home prices in bearish market, most of the time the policies unsuccessful, instead, quite the opposite.

5.2. Japanese Plaza Concord

In 1985, the governments of the US, Japan, the UK, Germany and France had signed the famous Plaza Concord to depreciate the US dollar, which by and large caused the Japanese Yen to appreciate. Few years after the signing of the Plaza Concord, the value of yen against the dollar had increased by nearly 300%.

The revaluation of yen had made the Japanese unprecedented wealthy as the yen they held could exchange for a lot more US dollars. Actually it was around that time that the US assets had become much cheaper to the Japanese. What they could not afford in the past were now within their reach.

Giddy with their new wealth, the Japanese began their purchases in the US, starting from commercial products to the entire companies and assets. Some newspapers heading has a saying that Japanese could afford to buy the entire US real estate and made it become the 41st provinces of Japan.

Such a massive shopping spree had triggered the social discontent. Some described it as the second invasion after the attack of the Pearl Harbour while others believed the Japanese would eventually take home their Statue of Liberty.

The US government was urged to stop the Japanese's expansion for the sake of the national interest and to prevent Japanese from pushing up the property price. But the Japanese, at the height of their national pride, were more than happy to go on and on with the shopping spree.

Nevertheless, partly because of their extreme opulence and partly due to poor management and an unfamiliar market, the Japanese suffered from consecutive losses in the real estate they had invested. Following the burst of its bubble economy, Japan had entered its lost decades and finally led to the retreat of Japanese capital from the US.

A recent academic paper reports that under the tightened government policy to regulate the property market, investment environment changes arise in the hot property market of Beijing and Shanghai. Mainland Investors are shifting their focus to overseas property markets with relatively less strict property restrictions.

While China is a huge consumer market, the "purchase restriction order" has accelerated Chinese consumers' decisions to opt for other investment channels. Besides, the persistent high property prices in Beijing have changed the mindset of some high-income groups who have turned their eyes to real estate in foreign countries. They are now purchasing the properties around the world, especially keen on buying in Hong Kong. Are they doing a repeat as what Japanese did in the last century?

5.3. Lessons from US market

We examined the US market and its uniquely well-developed real estate finance context to draw lessons from the causes of the credit crisis of 2007-2009 and the consequences for the real estate cycle in that market from 1950 to 2010. We believe we can extrapolate Hong Kong generalization from this history.

Real estate in the US, as in most countries, is cyclical. In general, cycles appear to repeat themselves every 17 years approximately, although the causes of the cyclical pattern have changed over time. In the US, we can identify three distinct upturns that were followed by severe downturns in the modern era of real estate investment since 1970. In each case, an abundance of capital directed to real estate created a situation whereby investors were willing to invest far more in the asset class than previously. This abundance of capital led to an increase in the general level of real estate values, inducing developers to introduce more space to the market than was needed.

Starting in 1970, the following pattern has repeated itself three times.

- ✓ Market values of existing property exceed replacement value (the cost of construction), and developers expand the supply of real estate, sell buildings at completion, and earn a profit.
- ✓ Large amounts of debt and equity capital flow into the real estate industry.
- ✓ Development activity increases, creating jobs in real estate and related sectors (construction and lending)
- ✓ Additions to supply exceed tenant demand for space
- ✓ With a glut of property, rents fall as tenant options expand (usually in conjunction with an economic downturn).
- ✓ Property values fall, ultimately dropping below replacement value.
- ✓ Given the long lead time to develop real estate, supply continues to be introduced to the market as projects that have been started are completed.
- ✓ New development stops, eliminating jobs in real estate and related industries, leading to further economic deterioration.
- ✓ Over time, the economy recovers, sometimes very slowly.
- ✓ As the economy recovers, jobs are created, increasing the demand for office space, and incomes rise, increasing the demand for retail and other space.
- ✓ Rents ultimately increase with expansion of the economy and absorption of space by tenants.
- ✓ Because replacement value exceeds market value, developers cannot profit by adding new supply to the market and a supply shortage forms.
- ✓ As rents increase, market values ultimately rise above replacement values.
- ✓ Development slowly starts again.
- ✓ Capital flows into real estate as investors seek outsized returns based on expectations of continued value appreciation.
- ✓ Market values of existing property exceed replacement values, so developers can expand the supply of real estate, sell buildings at completion, and earn a profit.
- ✓ And the cycle repeats itself.

From the safety of a retrospective position, most observers would agree that by 2007 overpricing had become established in property market in the UK, the US and elsewhere. The causes of this are well documented. The global financial crisis of 2007-2008 had its

roots in property speculation, facilitated by the packaging and repackaging of equity, debt and risk.

The systemic risk that had become endemic to the market did not reduce interest in new products. While this frenzy continued, professional responsibility appeared to take a back seat to the profit motive. Those who had been previously objective became self-interested and boardrooms lacked the detached yet experienced voice hat advances in information and research should have made available. But to argue that this was a failure of those engaged in objective analysis presumes that there were obvious warning signs. Is this true? Was the overpricing in 2007 evident?

Those of greater-than-average age should certainly have had inkling that a correction was imminent. We remember 1997 and 2003, and simple extrapolation forecasts a property crash in 2008. This smack is not mere superstition, and it suggests that a 17-year cycle is inevitable in Hong Kong.

4 Conclusions

Time flies. We are half way through 2013, in a past rollercoaster years for the property market, it's time for Hong Kong people or global investors to ask questions: where is Hong Kong property market heading to? Is history about to repeat itself? Was the crash predictable...etc?

A bubble will always follow its own rhythm, fundamentally unchanged in character throughout the centuries. Whether you agree the methodology or not, there is very little doubt that Hong Kong home prices are among the most expensive on earth. This is the prerequisite to call anything a "bubble", and the property market in Hong Kong certainly meets this criteria. Of course, being expensive by itself does not mean that prices are going to drop. The key is that fundamentals are not as strong as people think.

Based on our finding from technical trends analysis which given the likelihood of rental; money supply M1; CPI and value of Sale & Purchase are going down. However, CNY appreciating and number of Sale & Purchase increasing as well. We noted that all the 6 factors on equation 1 are unfavourable to property price.

Since 2009, more than 30 curbs have been imposed by Hong Kong government: from raising minimum down payment on flats to slapping an extra tax, SSD and BSD, on buyers. Nevertheless, US has issued a tentative timetable to end quantitative easing, it means that flood of liquidity into the global and Hong Kong asset markets will

gradually come to an end. However, the government and the Hong Kong Monetary Authority have been issuing warnings for some time that key risks concerning the property market are external, and now the Fed has made the inevitable move. No matter whether it's possible to predict future policy measure, we are entering an era of higher interest rates once the US Federal Reserve's curbs its stimulus.

Whatever cannot go on forever must come to an end. Over the past 24 years, mortgage rate in Hong Kong has averaged 6.2%, with an affordability ratio of 45.7%. If mortgage rates increase from their current 2.3% to 6%, home prices would has been severely hurt with drop 27% in order to maintain an affordability ratio of 45.7%. Moreover with the government stepping up measures to calm down the market, average monthly transactions in the property market could drop to 4,500, a level close to that during SARS in 2003.

Property prices are at a record high, not only increased by some 50% over the last 3 years but also exceeding the territory's property crash in 1997. Is history about to repeat itself—with an imminent fall in prices? Overall, these may mark the beginning of the end of the epic Hong Kong property bull market 2009-2012. Although we don't expect any immediate huge drop in property prices, we believe the property market is now reaching its peak with very limited upside. History tells us in the worst scenario, home prices are going to drop by as much as 60%. What it needs now is something to trigger the burst of it.

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Appendix

Figure 6

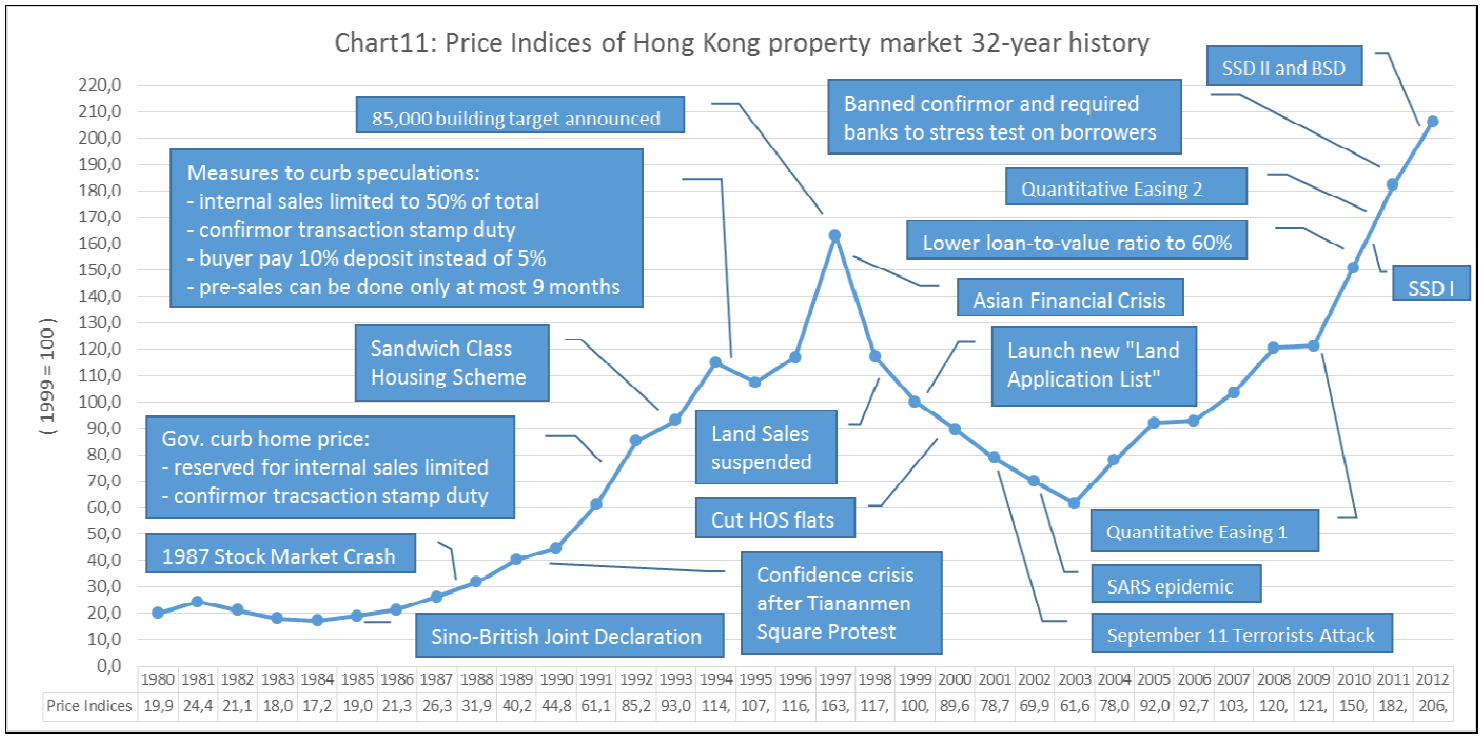
		RENTAL_INDICES	COMPLETIONS	VACANCY	GDP	Per_capita_GDP	CPI	Exchange_rate_HKD_CNY	No_of_Domestic_Households	Average_Domestic_Household_Size	Median_Domestic_Household_Income	Population	Unemployment_Rate	Sale_and_Purchase_Registrations	Sale_and_Purchase_Value	Affordability_Ratio	Money_supply_M1	Money_supply_M2	Money_supply_M3
Reproduced Correlation	RENTAL_INDICES	.889[a]	-.613	-.880	.546	.619	.694	.520	.130	-.133	.441	.133	-.848	.640	.822	.595	.426	.313	.387
	COMPLETIONS	-.613	.704[a]	.510	-.805	-.821	-.625	-.782	-.608	.592	-.741	-.608	.477	-.356	-.657	-.016	-.749	-.708	-.747
	VACANCY	-.880	.510	.905[a]	-.392	-.476	-.637	-.368	.051	-.042	-.285	.047	.876	-.663	-.783	-.725	-.264	-.139	-.216
	GDP	.546	-.805	-.392	.990[a]	.982	.650	.965	.871	-.846	.938	.870	-.356	.262	.642	-.237	.957	.943	.972
	Per_capita_GDP	.619	-.821	-.476	.982	.984[a]	.689	.956	.818	-.795	.920	.817	-.438	.325	.698	-.140	.935	.909	.944
	CPI	.694	-.625	-.637	.650	.689	.619[a]	.627	.372	-.365	.572	.373	-.606	.455	.689	.259	.570	.501	.553
	Exchange_rate_HKD_CNY	.520	-.782	-.368	.965	.956	.627	.941[a]	.856	-.831	.916	.855	-.333	.245	.616	-.246	.934	.924	.950
	No_of_Domestic_Households	.130	-.608	.051	.871	.818	.372	.856	.975[a]	-.942	.870	.971	.075	-.064	.286	-.641	.902	.953	.943
	Average_Domestic_Household_Size	-.133	.592	-.042	-.846	-.795	-.365	-.831	-.942	.911[a]	-.844	-.939	-.065	.057	-.283	.614	-.875	-.923	-.914
	Median_Domestic_Household_Income	.441	-.741	-.285	.938	.920	.572	.916	.870	-.844	.898[a]	.868	-.253	.184	.548	-.318	.919	.920	.939
	Population	.133	-.608	.047	.870	.817	.373	.855	.971	-.939	.868	.968[a]	.072	-.062	.288	-.636	.900	.951	.941
	Unemployment_Rate	-.848	.477	.876	-.356	-.438	-.606	-.333	.075	-.065	-.253	.072	.849[a]	-.643	-.749	-.718	-.231	-.109	-.184
	Sale_and_Purchase_Registrations	.640	-.356	-.663	.262	.325	.455	.245	-.064	.057	.184	-.062	-.643	.487[a]	.564	.548	.168	.075	.132
	Sale_and_Purchase_Value	.822	-.657	-.783	.642	.698	.689	.616	.286	-.283	.548	.288	-.749	.564	.789[a]	.424	.539	.446	.511
	Affordability_Ratio	.595	-.016	-.725	-.237	-.140	.259	-.246	-.641	.614	-.318	-.636	-.718	.548	.424	.952[a]	-.355	-.482	-.417
	Money_supply_M1	.426	-.749	-.264	.957	.935	.570	.934	.902	-.875	.919	.900	-.231	.168	.539	-.355	.942[a]	.947	.964
	Money_supply_M2	.313	-.708	-.139	.943	.909	.501	.924	.953	-.923	.920	.951	-.109	.075	.446	-.482	.947	.972[a]	.978
	Money_supply_M3	.387	-.747	-.216	.972	.944	.553	.950	.943	-.914	.939	.941	-.184	.132	.511	-.417	.964	.978	.991[a]
Residual[b]	RENTAL_INDICES		.109	-.001	.024	.030	.113	.043	-.041	.072	.054	-.034	-.016	-.196	-.103	.014	.021	.021	.011
	COMPLETIONS	.109		.069	.037	.034	.254	.019	-.035	.101	.113	-.001	.098	-.092	-.012	.036	.034	.002	.005
	VACANCY	-.001	.069		.011	.013	.026	-.039	.025	-.017	.028	.028	.025	.090	.082	.020	-.023	-.031	-.010
	GDP	.024	.037	.011		.011	.037	.000	-.005	.021	.023	-.001	-.004	-.040	-.019	.006	-.004	.002	.002
	Per_capita_GDP	.030	.034	.013	.011		.030	.003	-.006	.022	.018	-.003	-.016	-.053	-.026	.008	-.006	.005	.004
	CPI	.113	.254	.026	.037	.030		.026	-.040	.125	.144	.004	.110	-.212	-.103	.061	-.006	.001	-.005
	Exchange_rate_HKD_CNY	.043	.019	-.039	.000	.003	.026		-.029	.032	-.009	-.032	.006	-.091	-.061	-.004	.027	.019	.009
	No_of_Domestic_Households	-.041	-.035	.025	-.005	-.006	-.040	-.029		-.033	-.014	.022	-.002	.086	.050	.001	-.022	-.015	-.007
	Average_Domestic_Household_Size	.072	.101	-.017	.021	.022	.125	.032	-.033		.063	-.012	-.002	-.147	-.088	-.002	.004	.019	.008
	Median_Domestic_Household_Income	.054	.113	.028	.023	.018	.144	-.009	-.014	.063		.011	.012	-.084	-.035	.002	-.021	-.015	-.010
	Population	-.034	-.001	.028	-.001	-.003	.004	-.032	.022	-.012	.011		.003	.072	.043	-.001	-.028	-.017	-.010
	Unemployment_Rate	-.016	.098	.025	-.004	-.016	.110	.006	-.002	-.002	.012	.003		.092	.080	.032	.036	-.017	-.007
	Sale_and_Purchase_Registrations	-.196	-.092	.090	-.040	-.053	-.212	-.091	.086	-.147	-.084	.072	.092		.309	-.038	-.019	-.066	-.027
	Sale_and_Purchase_Value	-.103	-.012	.082	-.019	-.026	-.103	-.061	.050	-.088	-.035	.043	.080	.309		-.006	.001	-.050	-.018
	Affordability_Ratio	.014	.036	.020	.006	.008	.061	-.004	.001	-.002	.002	-.001	.032	-.038	-.006		.006	.003	.004
	Money_supply_M1	.021	.034	-.023	-.004	-.006	-.006	.027	-.022	.004	-.021	-.028	.036	-.019	.001	.006		.016	.010
	Money_supply_M2	.021	.002	-.031	.002	.005	.001	.019	-.015	.019	-.015	-.017	-.017	-.066	-.050	.003	.016		.014
	Money_supply_M3	.011	.005	-.010	.002	.004	-.005	.009	-.007	.008	-.010	-.010	-.007	-.027	-.018	.004	.010	.014	

Extraction Method: Principal Component Analysis.

a. Reproduced communalities

b. Residuals are computed between observed and reproduced correlations. There are 35 (22.0%) nonredundant residuals with absolute values greater than 0.05.

Chart 11



Source: Rating and Valuation Department - Hong Kong Property Review Monthly Supplement July 2013

Financial Studies

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