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МЕЗОНИННОЕ ФИНАНСИРОВАНИЕ: ОСОБЕННОСТИ И ИНСТРУМЕНТЫ

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АННОТАЦИЯ

Растущее число финансовых учреждений, не способных привлечь необходимое количество акционерного капитала, вынуждены привлекать средства через инструменты мезонинного финансирования. Если данные трудности продолжатся, то роль гибридных ценных бумаг может стать более существенной, так как их можно будет рассматривать в качестве замены обычным акциям в целях контрциклического буфера капитала, удовлетворению дополнительных требований увеличения капитала и т.д. Таким образом, важность мезонинного финансирования как для банковского сектора, так и прочих отраслей экономики очевидна и имеет потенциал для дальнейшего роста, однако нормативные аспекты и риски новых инструментов остаются до конца не исследованными. С этим связан интерес к такому методу финансирования участников российского финансового рынка, а задача обеспечения приемлемости уровня риска, передаваемого инвестору при структурировании мезонинного финансирования, в условиях кризиса приобретает особую остроту. В статье автор анализирует ключевые аспекты Базельских соглашений в отношении регулирования инструментов мезонинного финансирования, методологию рейтинговых агентств по оценке гибридных ценных бумаг и изучает влияние механизма конвертации на уровень риска гибридных ценных бумаг.

Ключевые слова: мезонинное финансирование; гибридные ценные бумаги; конвертируемые облигации; инвестиции; финансовые инструменты.

THE PUBLIC MEZZANINE CAPITAL: FEASIBILITY STUDY

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ABSTRACT

A growing number of financial institutions are unable to raise the required amount of equity and have to raise their own funds by means of public mezzanine. If these problems continue, the role of hybrids may become more significant, as they may be considered as a replacement of common equity for the purpose of counter-cyclical buffers, capital surcharges and so on. Thus, the importance of mezzanine capital for the financial system is already established and has a potential for further growth, while regulatory aspects and risk assessment of these relatively new instruments remain unsolved. In the article, the author analyses key regulatory concerns of Basel Accords in regards to mezzanine instruments, assesses the methodology of rating agencies to evaluate the risks incorporated in hybrid securities and compares the risk profiles of traditional convertible and recently developed contingent convertible bonds. The results articulate that measures applied by both Basel Committee members and rating

agencies (Fitch, Moody's, etc.) are not sufficient to manage risks incorporated in hybrid securities. The latter may contribute to the growth of financial failures we have observed in recent years.
Keywords: mezzanine financing; mezzanine debt; hybrid securities; contingent convertibles; investment; financial instruments.

I. INTRODUCTION

Mezzanine is a type of financing that has characteristics of both debt and equity. It has recently became an important part of the banks' regulated capital, while corporations are still free from regulatory constraints in deciding about their capital structures. Mezzanine is attractive to corporations because it offers flexibility without diluting equity capital — a cost-effective alternative to issuing equity since interest payments are generally tax deductible and dividends are not.

Given the deviant evolution of mezzanine financing instruments in the world, they have their own characteristics in the US, Europe, Asia [1] and, of course, in Russia. In the West, where capital markets are more developed, mezzanine instruments emerged as a kind of publicly traded bonds, and further their development has been followed by mezzanine loan. On the other hand, in Russia, where bank lending plays an increasingly important role in corporate financing, from all forms of mezzanine financing currently is commonly practiced only mezzanine lending. Thus, in general, mezzanine financing instruments can be classified as private and publicly traded (Vasilescu and Popa, 2006; European Commission, 2007) [10, 15]. Private instruments are subordinated and unsecured loans, loans with "silent participation", etc. Publicly traded instruments are option and perpetual bonds, contingent convertibles, preferred equity, i.e. — more often classified as hybrid securities (*Figure 1*). Where exactly they are located in the debt — equity spectrum is determined by their subordination, loss absorption, coupon deferral, perpetual nature (effective maturity date), conversion and additional investor protection. Generally, the equity-like characteristics allow hybrids to be loss absorbing and thus qualify as regulatory capital.

Hybrid instruments are experiencing rapid growth, driven by a market necessity to introduce equity-like instruments that will act as loss absorbers instead of common equity **[3]**. If there were no problems with raising common equity, these securities would not play such a significant role in Basel Capital Accords. A growing number of financial institutions are unable to raise the required amount of equity and have to raise their own funds by means of public mezzanine. If these problems continue, the role of hybrids may become more significant, as they may be considered as a replacement of common equity for the purpose of counter-cyclical buffers, capital surcharges and so on. Thus, the importance of mezzanine capital for the financial system is already established and has a potential for further growth, while regulatory aspects and risk assessment of these relatively new instruments remain unsolved.

II. BASEL I AND BASEL II SUPPLEMENTARY CAPITAL

Global regulation of banking activities began with introduction of Basel I (or Basel Capital Accord) in

<table>
<tr><td colspan="2">SENIOR DEBT</td><td rowspan="7"></td></tr>
<tr><td colspan="2">Subordinated and unsecured loans</td><td rowspan="6">MEZZANINE</td></tr>
<tr><td colspan="2">“Silent” participation loans</td></tr>
<tr><td>Option and perpetual bonds</td><td rowspan="3">HYBRID SECURITIES</td></tr>
<tr><td>Contingent Convertibles</td></tr>
<tr><td>Preferred equity</td></tr>
<tr><td colspan="2">EQUITY</td></tr>
</table>

Figure 1. **Mezzanine financing instruments**

1988. Basel I has fixed minimum capital requirements against the credit risk. It introduced the concept of risk-weighted assets (RWAs), against which banks were required to hold at least 8% of capital.

Risk weighting is a complex system in which some assets account less against capital requirements than others. Under the Basel system total RWA were defined as:

$$RWA = 12{,}5(OR + MR) + \sum_{i=1}^{N} W_i A_i,$$

where: *OR* — operational risk; *MR* — market risk; *W* — an asset risk weight; *A* — an asset.

The purpose of capital requirements was to prevent internationally active banks from excessive risk exposure [15]. By implementing Basel I, banks were required to hold regulatory capital of 8% of their risk-weighted assets. A risk-weighting scheme was also defined. Basel I has introduced the concept of Tier 1, 2 and 3 of capital, where only Tier 1 accounted for the classical, strict definition of equity. Tier 1 capital (also referred to as 'core capital') consisted of common equity, reserves and non-cumulative preferred shares. Hybrid securities and subordinated debt instruments were eligible for Tier 2 (supplementary capital). These instruments have also qualified as 'mezzanine financing' according to Mantysaari (2010) [6] and Liberadzki (2016) [3].

Moreover, the Basel Committee has released The Basel II Accord in June 2004 where has clearly articulated that 'Upper' Tier 2 (Upper T2) may consist of mezzanine capital instruments — that is, '*a number of capital instruments which combine certain characteristics of equity and certain characteristics of debt.* (...) *where these instruments have close similarities to equity, in particular when they are able to support losses on an on-going basis without triggering liquidation, they may be included in supplementary capital* (...) '. Certain categories of instruments were named as constituting mezzanine or 'hybrid' capital: perpetual preference shares carrying a cumulative fixed charge, long-term preferred shares (Canada), *titres participatifs* and *titres subordonnés à durée indéterminée* (France), *Genussscheine* (Germany), perpetual debt instruments (UK) and finally US mandatory convertible debt instruments (Paragraph 49 [xi] of the Basel II Accord). Thus, one may assume that Upper T2 capital is to be formed by perpetual subordinated hybrid securities. Qualifying criteria for Upper T2 capital also were articulated in Annex 1a of the Basel II Accord. The essential requirements for hybrid capital securities are: (a) unsecured, subordinated and fully paid up; (b) no call option for bondholder or no call for issuer except where supervisory authority agrees; (c) loss absorbing without bank being obliged to cease trading (unlike conventional subordinated debt), and finally (d) 'although the capital instrument may carry an obligation to pay interest that cannot permanently be reduced or waived (unlike dividends on ordinary shareholders' equity), it should allow service obligations to be deferred (as with cumulative preference shares) where the profitability of the bank would not support payment'.

The last requirement on interest payment distribution is particularly important. Coupon deferral was allowed only in a situation of financial stress that calls into question the bank's ability to remain profitable. Thus, payment distribution on hybrid Upper T2 securities was left for the decision of the banking institutions. When designing Lower Tier 2 (Lower T2), the Basel Committee provided special attention to perpetual maturity of securities and to their loss-absorbing features. As a result, subordinated debt securities, with maturity of over five years at issuance (or five years to the first call date) have classified for supplementary capital and became a subject to adequate amortization agreements (Paragraph 49 [xii] Basel II Accord). The amount of this Lower Tier 2 securities was capped at 50% of the company' common equity items. Lower T2 securities were not designed to absorb losses, so coupons were paid on a mandatory basis if the bank had announced an annual profit.

Basel II also left it to discretion of national regulators if a Tier 3 instruments are to be allowed. The underlying logic of such a short-term subordinated debt was to allow a financial institution to meet the capital requirements for market risk (Paragraph 49 [xiii] Basel II Accord). Such securities had to meet certain minimal conditions:

(a) be unsecured, subordinated and fully paid up, (b) have an original maturity of at least 2 years, (c) no call except where supervisory authority agrees and (d) lock-up clause prohibits any distribution (even repayment on maturity) which would result in breaching of minimum capital requirements by the institution (Paragraph 49 [xiv] Basel II Accord).

To conclude, the equity-like characteristics allowed hybrid securities to be more loss absorbing and qualify as regulatory capital under the Basel I and Basel II Capital Accords. However, not all of them

can meet the requirements of Additional Tier 1 (Additional T1) capital under the more recent, post-crisis, Basel III.

III. BASEL III CAPITAL REQUIREMENTS

Drawbacks of the Basel II capital structure became evident in the financial crisis of 2008–2009.

Apparently, in many banks conventional equity amounted only to 1–3% of RWAs before the financial crisis. Therefore, regulators had to strengthen Capital Accords. The new Basel III regulation sets a minimum of 4.5% of RWA as core Tier 1 capital. Basel III introduces a 3% leverage ratio, defined as common equity to total assets, or more precisely total exposure taking into account off-balance sheet derivatives. Most important to notice, the Basel II hybrid T2 capital has proven by the credit crisis to be not truly loss absorbing. In other words, Basel II Tier 2 securities have failed to absorb losses. They ranked senior to the Core Tier 1 securities and were entitled to a fixed coupon. Coupons were discretionary but had to be paid if the bank made a profit or paid any ordinary dividend. Most coupons were paid throughout the credit crisis unless there was some form of state intervention (Lally, 2013). Besides the banks' unwillingness to defer coupons on Upper T2 hybrids, that could affect their credit history, and lack of ability to defer coupons on Lower T2 subordinated debt securities have contributed to the need of bail-outs. One may say that tight requirements on deferral applicable to Additional T1 hybrid securities were introduce to prevent this kind of situations. Investment Banks that strongly rely on Lower Tier 2 instruments have merely no tools to convert these securities to more loss-absorbing ones. This observation became a cornerstone for the new Basel III requirements. All the securities eligible for Additional Tier 1 capital (that have replaced the Basel II Upper T2) are subject to the contingent conversion into common equity. Under Basel III, Tier 2 capital is no longer separated into 'Upper' and 'Lower'. In fact, Tier 2 securities began to die out as Basel III implementation is forced in the countries, because financial institutions while trying to build up Tier 1 reserves sell off Tier 2 securities. Consequently, the trend in significant reduction of Tier 2 securities across all countries implementing Basel III, not just in Europe and the US, is to be continued (McNulty, 2013; Euroweek, 2014) [7, 8].

Last but not least, Tier 3 capital was abandoned though the very concept of Tier 3 securities has not totally disappeared **[4]**. Kamil and Marcin Liberadzky in their study of hybrid securities (2016) prove a strong market demand to mitigate the uncertainty introduced by the contingent conversion trigger event, or 'regulatory trigger', defined in Bank Recovery and Resolution Directive. The idea of Tier 3 regulatory capital is to separate the hybrid securities that may provide the solution under Tier 3 from the hybrid securities that are beyond the scope of the solution **[3]**.

IV. ANALYTICAL CONSIDERATIONS

Capital Requirements Regulation has introduced CoCos, among other Additional T1 instruments, to legal systems of all EU member states. Important to notice that Capital Requirements Regulation contingent conversion/ write-down provisions and 'bail-in' provisions of the newly introduced Bank Recovery and Resolution Directive do overlap. That brings confusion about conversion mechanisms to the point of non-feasibility. When compared to traditional company law, which is heavily shaped by EU Directives, CoCos conversion mechanism may disturb the principle shareholders' pre-emptive right to subscribe to new shares issued by a company. Before Capital Requirements Regulation and EU Second Capital Directive, this right was considered to be essential for the corporate structure as a tool to protect shareholders against dilution of their rights [15]. Any company's tool that would aim to exclude this right was forbidden [6]. Apparently the contingent conversion results in dilution of control. This fact raises some regulatory concerns: (i) on the relation between pre-emptive rights and issuance of CoCos, (ii) whether issuance of CoCos has the same consequences as admission to trading of shares and conventional convertible bonds and, of course, (iii) to what extent the corporate structure of financial institutions is unique in comparison to an ordinary joint-stock company.

V. EVALUATION OF HYBRID SECURITIES

The first to develop a common approach to assess the risks of hybrid securities were the rating agencies such as Moody's, S&P and Fitch. Apparently, it was due to the need for transparent approach in rating hybrid securities. Thus, rating agencies introduced new criteria — "equity credit" — for the unified assessment of such securities.

A. EQUITY CREDIT

"Equity Credit" is analytical indicator defining the degree to which hybrid security possess equity or

debt characteristics adjusted to the level of issuer's risk of capital. Hybrid securities are assessed for their likely impact on the financial stability of the issuer and senior debt obligations of the issuer in terms of financial stress and the likelihood of bankruptcy. «Equity credit» is assigned regardless of the issuer's credit rating (source: Fitch).

«Equity credit» reflects the financial flexibility of the security during financial stress of the issuer. For instance, the flexibility can be provided in the structure of a hybrid security by allowing the deferral of interest payments without the occurrence of the issuer default or redemption of the security.

«Equity credit» also depends on the possibility to reduce the investor losses in the event of the issuer's bankruptcy or refinancing, and the extent to which the hybrid securities are subordinated to the senior unsecured creditors or their equivalents.

Agencies generally assume that the presence of deeply subordinated securities in the issuer's capital structure may reduce the risk of the issuer defaulting on senior debt and increase financial flexibility. The presence of "safety cushion" in the form of convertible debt, the interest payments on which can be deferred or avoided in the event of financial stress, increases the credibility of the senior lenders to the issuer [11].

Classification of hybrid securities based on "equity credit" criteria is given below:

Equity Classes/Baskets (%)	Equity	Debt
Class/Basket E – Superior Equity Content	100	0
Class/Basket D – High Equity Content	75	25
Class/Basket C–Moderate Equity Content	50	50
Class/Basket B – Low Equity Content	25	75
Class/Basket A – Debt; No Equity Content	0	100

Figure 2. **Equity Credit classification**

Sources: Fitch, Moody's.

In general, the more equity-like is the structure of hybrid security the higher the equity credit assigned by the rating agencies. Fitch defines a range of five classes; Moody's has five baskets [2, 11]. At one spectrum end there is class/basket A, which is 0% equity and 100% debt; at the other end there is class/basket E, which is 100% equity and 0% debt. This classification is important, because hybrids assigned high equity credit allow the issuer to raise capital without increasing its leverage. Higher leverage may negatively affect a firm's credit rating and increase the interest rates on its future debt issuances. By contrast, from a corporate taxation perspective, it is better for an issuer that the instrument is classified as interest-generating debt rather than dividend-generating equity. The interest on debt capital is tax deductible, while the return on equity capital is not. Thus, issuers often favor hybrids that are half-debt, half-equity (class/basket C). If properly structured, such securities may increase equity capital component while at the same time generating tax-deductible interest cash flows.

If the security is rated D, for example, (hybrid on 75% has equity properties and on 25% debt properties) its price will be adjusted to the 75% of equity risk and to the 25% of the company's credit risk. For debt service coverage ratio, however, this classification does not apply. Instead, the debt service coverage ratio is calculated first for all possible payments, and then only for the mandatory payments. To rate the hybrid securities agencies rely on the following characteristics:

I. LOSS ABSORPTION

Hybrid security structured as a bond can be converted into preferred or common shares in the event of losses or payment default. In other cases, subordinated loans can get the priority right for repayment in the case of, for example, lowering the rating of the company. Hybrid securities may also include the condition of reduction of their nominal value in the case

of reduction of underlying assets value. This characteristic is called «loss absorption» since it allows to absorb the losses of the company; in some cases, this characteristic of the securities may even help companies to avoid bankruptcy **[11]**. Moreover, the capital buffer hybrids provide can also decrease the credit risk associated with senior debt. Holders of senior debt will bear a lower risk than before the introduction of a hybrid into the issuers' balance sheet [2]. This fact is be supported by an increase of the senior debt market price right after the issue of hybrids is announced to the public and a decrease in the senior debt credit spread [2, 3].

II. CONVERTIBILITY

The conversion can be classified as mandatory or optional. Only securities with mandatory conversion satisfy the agencies' criteria for the «equity credit». Such hybrids are assessed in regards to the shares characteristics received upon the conversion, the conversion ratio and the time to conversion. In the case of relatively short period to conversion, high «equity credit» will be assigned; in the case when conversion is dependent on certain event, «equity credit» will be reduced.

III. DEFERRAL OF INTEREST PAYMENTS

An important feature of non-convertible mezzanine instruments is the ability to delay or avoid payments during the period of financial stress. So-called «coupon deferral mechanisms» and «alternative coupon settlement mechanisms» are structured specifically for this purpose. For instance, preferred shares without obligation on dividend payments have the greatest flexibility for deferral. This would lead to an increase in "equity credit".

IV. ADDITIONAL STEP-UP INTEREST RATE

Additional incremental increase in interest rate is considered by rating agencies as a reduction in the flexibility of issuer's obligations. This feature usually lowers «equity credit» for one class in the ranking.

V. COVENANTS

Some mezzanine instruments (convertible into shares) include covenants, for example, prohibiting the issue of additional company bonds for the purpose of shares redemption. As a rule, it does not affect the rating of these securities.

VI. EFFECTIVE MATURITY DATE

A common feature of hybrid securities with a long maturity, or perpetual, is to have a call option. The option does not imply any contractual obligations to execute it in a certain period and, consequently, makes it possible in periods of financial instability to avoid refinancing risk for the issuer, i.e. to take the advantage of unlimited funding. Nevertheless, the presence of certain characteristics, such as a step-up interest rate, can exert excessive pressure on the issuer and motivate him to exercise the option and to refinance the loan even at the time of financial stress. Moreover, quite often, the price of hybrid securities at the issue already incorporates the «call» option future execution; thereby issuers commit themselves to its implementation. As a rule, this leads to a reduction of «equity credit» when assigning a rating to the hybrid securities.

VII. CHANGE OF CONTROL AND «PUT» RIGHT

The issuer may have the right to implement the «call» option in the case of control change in the company, such as the case of divestiture. If the issuer does not implement the option, then the interest rate of hybrid security may significantly increase. The logic of this condition is linked to protection of investors' rights from the disadvantage position in the case of divestiture. If the hybrid security enables the investor to realize the «put» option or possess an obligation of the issuer to repay it in the case of company's divestiture, the rating agencies will lower the «equity credit».

VIII. ADDITIONAL INVESTORS' «PROTECTION»

Some hybrid securities include special covenants or special conditions in order to protect the interests of investors, what in some cases; can lead to bankruptcy of the issuer, if he does not fulfill these conditions. Hybrid securities may receive the «equity credit» only if there is no more than 2–3 such covenants or conditions.

Apparently, the size of "equity credit" depends on the structure of each hybrid security and their evaluation remains highly subjective. Moreover, assignment of «equity credit» may be affected by differences in legal regulation of stock exchanges in different countries, in particular, in the execution and interpretation of the contractual obligations of the issuer. For exam-

ple, in some countries regulatory authorities may forbid the issuer to redeem the securities before the official redemption date, if such option is not provided for at the time of issuance of hybrid securities. Thus, the degree of «equity credit» assigned to hybrid securities may also vary from country to country.

B. COMPONENTS OF RISK: CASE STUDY

This section describes the analytical considerations arising from a common approach and methodology proposed by the rating agencies. Based on the methodology for assessing the hybrid securities, it is logical to assume that the price change of hybrid securities (say convertible bonds — ΔC) will be correlated with the stock price change (ΔS) and the corporate bond price change (ΔB) of the same issuer. Let's test the hypothesis on Capitaland mandatory convertible bonds and see how changes in stock prices and the corporate bonds prices actually explain the change in the price of convertible bonds. Characteristics of convertible bond is shown in *Figure 3*.

Thus, distribution of the convertible bond price change can be defined as leptokurtic. Volatility of price change is higher for the stock than for the convertible bond as can be concluded from *Figure 4*.

In the case of a linear relation between ΔC and ΔS we expect that ΔC varies as changes ΔS, and call it a variation, which can be explained by the regression. The residual variation must be as small as possible. If so, most of the variation ΔC will be explained by ΔS regression, the points will lie close to the regression line, i.e. line will fit the data well.

The regression results are presented in *Figures 5–6*. The proportion of the total variance ΔC, which is explained by the regression is called determination coefficient and is usually expressed as a percentage and denoted R^2 (in simple linear regression is the value r^2, the square of the correlation coefficient). It allows the analyst to assess the quality of the regression. As we can see below, the change in stock price explains only 41% of the change in the price of a convertible bond, and the change in bond prices even less, only 3%.

Difference (100-R2) is the percentage of variance that cannot be explained by the regression. In other words, 56% of the price change of the convertible bonds is not explained by the change in share prices or/and the change in bond prices. In this case, the criteria for the regression coefficient ΔC confirms that ΔC is strongly associated with ΔS ($p < 001$).

This case study shows that attaching the price as well as the risk of mandatory convertibles to the price/risk of stocks and bonds is far from ideal. The determination coefficient confirms that there are other factors (or a combination of factors), which must also be taken into account when evaluating hybrid securities. Equity risk is certainly not the only important factor. Moreover, Figure 10 shows some interesting movement of the convertible bond price that deserve our attention. For example, in the period from November to December 2014, despite the rise in stock and bond prices, the price of the convertible bond was declining. Moreover, as shown in Figure 10, the volatility of convertible bonds is actually lower than the volatility of both stocks and corporate bonds, although, according to the theory, the volatility should be somewhere in between. In order to study these phenomena it is necessary to construct a more accurate model for assessing hybrid securities.

Mandatory convertible issued by CAPITALAND, June 19, 2013			
ISIN	XS0935605401	SEDOL	B9YRS72
ISSUE DATE	19.06.2013	ISSUE PRICE	100
ISSUE SIZE	650 000 000	RANKING	Class D (75% Equity component)
COUPON TYPE	Fixed: Plain Vanilla Fixed Coupon	MATURITY	19.06.2020
OPTION	Convertible, Special Call	MARKET OF ISSUE	United States
CURRENCY	SGD	COUNTRY OF RISK	Singapore (SG)
COUPON	1,85	FREQUENCY	Semiannually

Figure 3. **Characteristics of mandatory convertible bonds issued by CapitaLand**

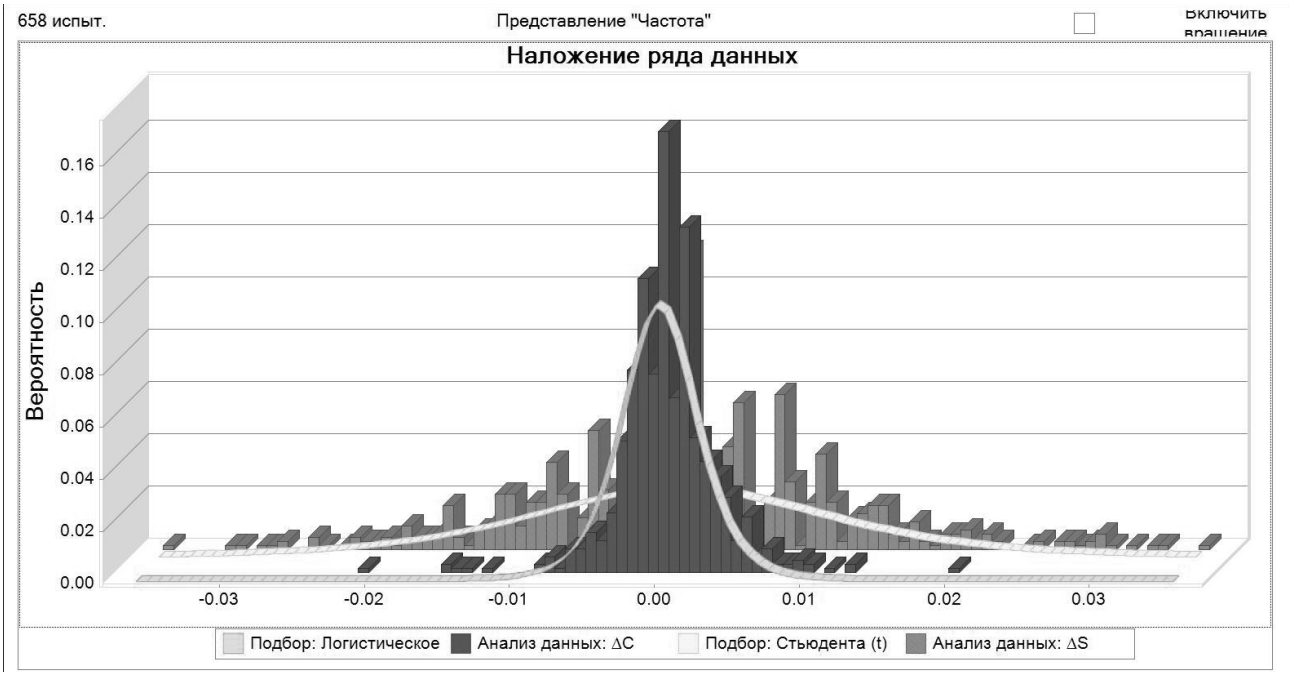

Figure 4. **Comparing distributions of changes in prices of convertible bond (ΔC) and equity (ΔS) of Capitaland 2013–2016**

Data Source: Thompson Reuters.

Regression statistics (ΔC, ΔS)								
Multiple R	0,642							
R-square	0,413							
Normal R-square	0,412							
Standard error	0,010							
Observations	619							
Dispersion analysis								
	df	**SS**	**MS**	**F**	**Significance F**			
Regression	1	0,0396	0,0396	433,3954	0,0000			
Residue	617	0,0564	0,0001					
Total	618	0,0961						
	Coefficient	**Standard error**	**t-statistics**	**P-significance**	**Lower 95%**	**Upper95%**	**Lower 95,0%**	**Upper 95,0%**
Y-intersection	0,0002	0,0004	0,4198	0,6748	–0,0006	0,0009	–0,0006	0,0009
ΔC	2,3680	0,1137	20,8182	0,0000	2,1446	2,5913	2,1446	2,5913

Figure 5. **Regression output (ΔC; ΔS)**

Regression statistics (ΔC, ΔB)								
Multiple R	0,1640							
R-square	0,0269							
Normal R-square	−0,0055							
Standard error	0,0915							
Dispersion analysis								
	df	SS	MS	F	Significance F			
Regression	1	0,0069	0,0069	0,8294	0,3697			
Residue	30	0,2509	0,0084					
Total	31	0,2578						
	Coefficient	Standard error	t-statistics	P-significance	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Y-пересечение	−0,0079	0,0162	−0,4878	0,6292	−0,0409	0,0251	−0,0409	0,0251
ΔC	−0,7025	0,7714	−0,9107	0,3697	−2,2780	0,8729	−2,2780	0,8729

Figure 6. **Regression output (ΔC; ΔB)**

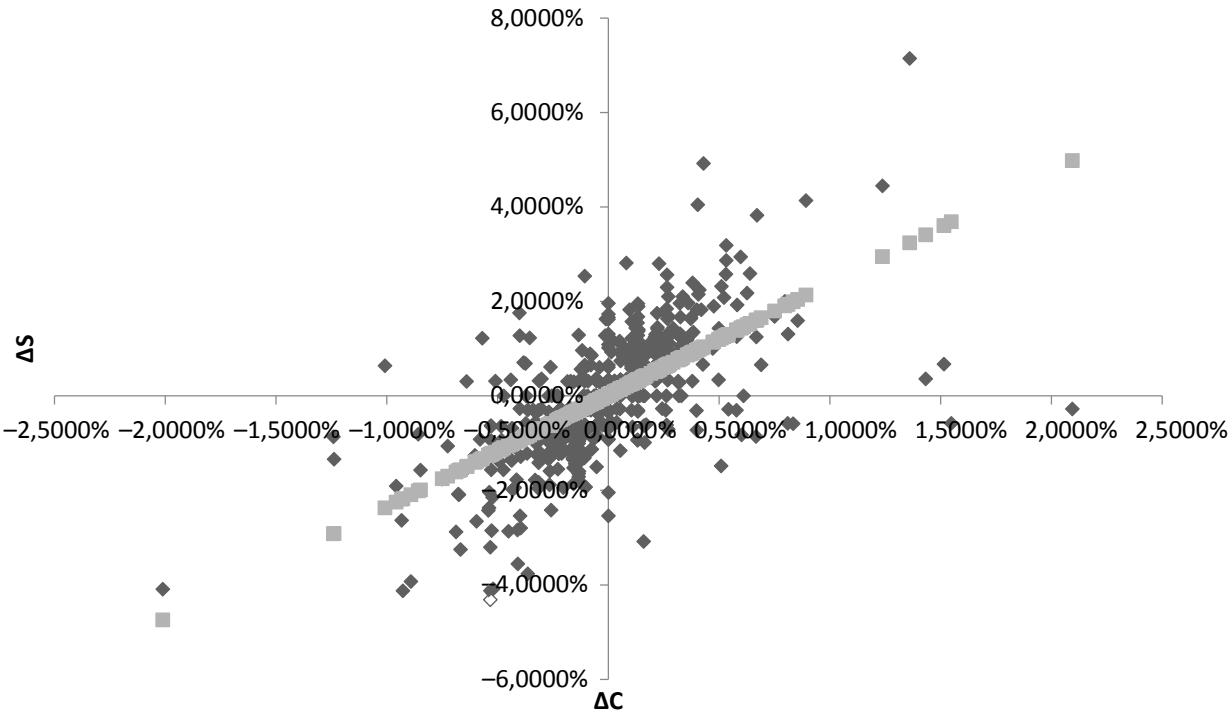

Figure 7. **Price change of mandatory convertible bond ΔC versus price change of underlying shares ΔS**

C. CONVERSION MECHANISM MATTERS

At first glance convertible bonds (CB), reverse convertible bonds (RC) and contingent convertible bonds (CoCo) are quite similar hybrid securities: their structure is based on a straight fixed coupon bond and all of them possess equity conversion mechanism. Let us ignore at the moment effective maturity, coupon deferral and bond call/put options and solely focus on

the impact of various conversion mechanisms of CB, RC and CoCo.

A convertible bondholder is entitled, at certain dates, to choose between converting into a fixed number of issuer's shares and not converting, thus, to continue receiving CB coupons and principal. While the CB investor holds a portfolio of a straight bullet bond and a long call stock option.

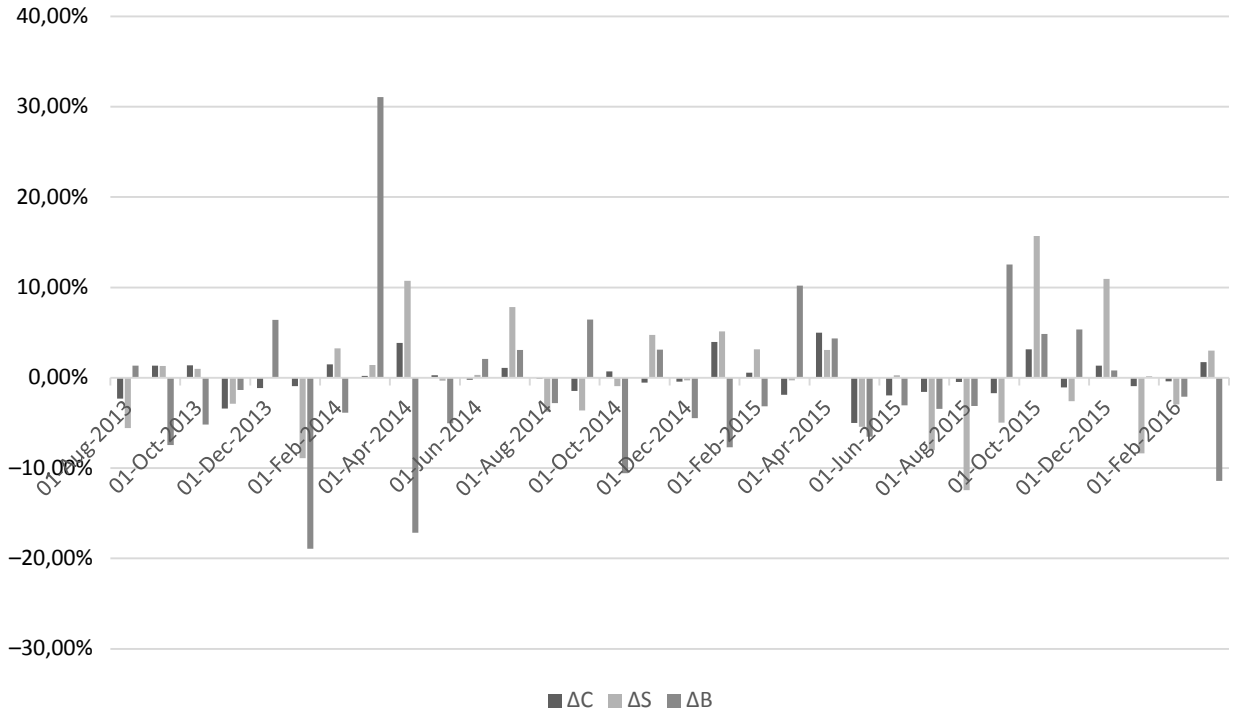

Figure 8. **Price volatility of mandatory convertible bonds (ΔC), shares (ΔS) and corporate bonds (ΔB) of CapitaLand**

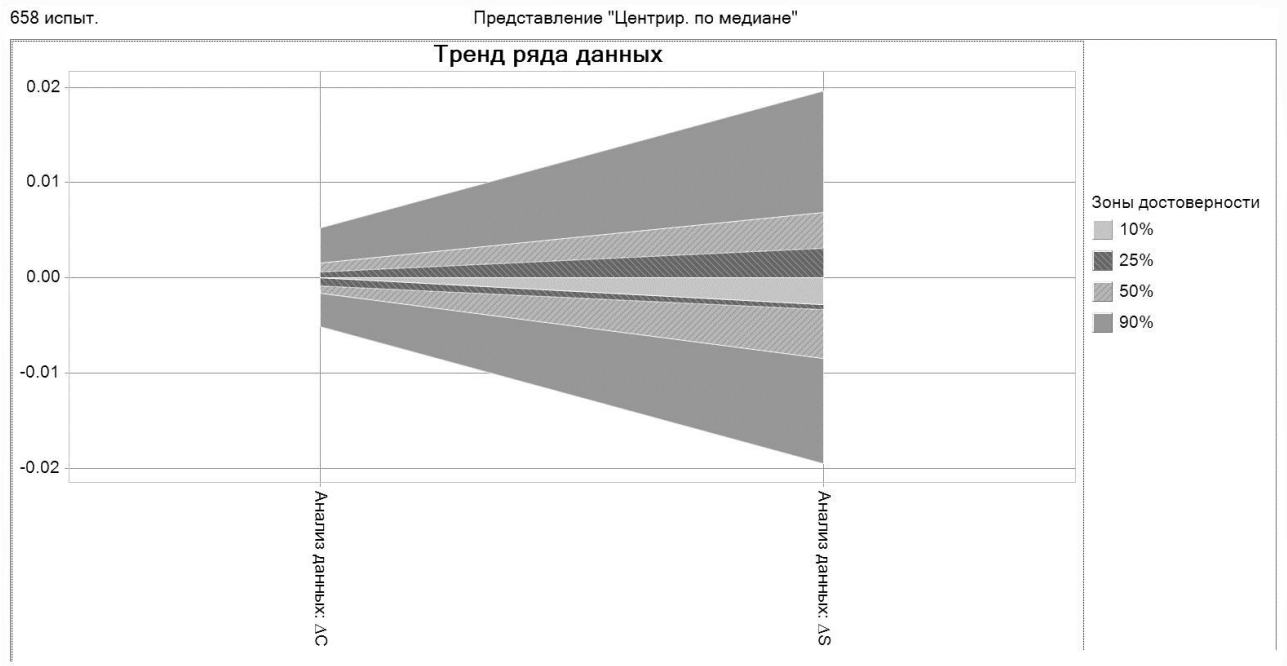

Figure 9. **Trend line of price changes of convertible bonds (ΔC) and shares (ΔS) of CapitaLand 2013–2016. Data Source: Thompson Reuters Eikon**

The option strike price is equal to future convertible bond value divided by the number of shares received at conversion [14]. Therefore the CB holder has a limited loss potential to straight bond value (called investment value), and an unlimited profit potential when the underlying shares price rises (*Figure 10*). The loss cap may be one of the factors explaining low volatility of CapitaLand mandatory convertible in *Figure 8*.

Yet the CoCo conversion is triggered automatically when the issuer's regulatory capital ratio drops below a specified level, thus, the bondholder receives a predetermined number of issuer's shares and the bond disappears. The share price drop of say below a level of S_1 would accompany the distress scenario. Therefore, the CoCo holder has a position equivalent to holding a straight bond and short put stock option. As a result, the CoCo value range is capped by the straight bond value and is backed by zero (*Figure 13*), with strong sensitivity to underlying stock price downturn. In fact, a reverse convertible bond has a very similar conversion mechanism to CoCo. RC pays off interest and principal unless the underlying share price (or pool of selected stocks value) drops below a specified strike level at bonds maturity. If so, the RC bondholder receives payoff of an amount equivalent to the underlying shares depreciated value. As a result, the RC value versus the price of the underlying shares is practically identical to the one of the CoCo (*Figure 11*).

Thus, while convertible bond offers investors the safety of fixed income security during distress periods and profitability of equity at prosperous times, Co-

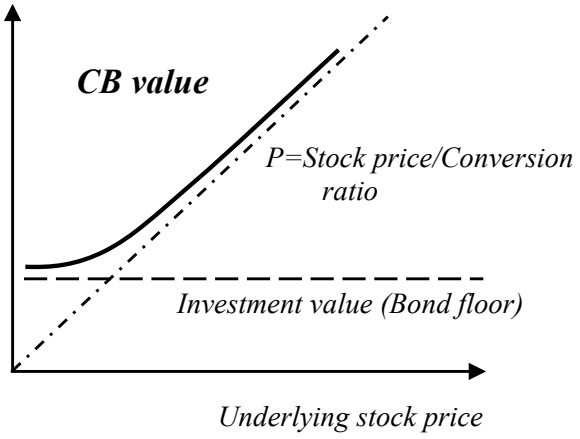

Figure 10. **Theoretical value of a convertible bond (CB) versus the price of the underlying share**

Source: Kamil and Marcin Liberadzki (2015).

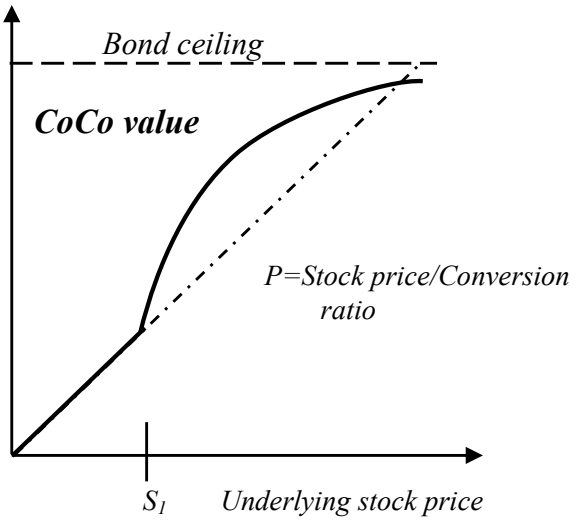

Figure 11. **Theoretical value of a contingent convertible (CoCo) versus the price of the underlying share**

Source: Kamil and Marcin Liberadzki (2015).

Cos and RCs are high-risk investments because of the short put option embedded. Therefore, the risk has to correspond to a higher coupon. There is a danger for the investors attracted by high CoCos' yields for the risk underestimation. A violent underlying stock price may rapidly reduce CoCo's value to zero [12, 13]. These problems of the market performance of CoCos and their ability to absorb loss are crucial when assessing the capital requirements of Basel III. However, there is still a lack of structural methods to assess the risk of Coco's precisely [17]. Moreover, another important issue is contagion risk incorporated in hybrid securities. A hard lesson from the most recent financial crisis is that innovative financial instruments do not eliminate risk, but rather transfer it elsewhere. The complexity and interconnectedness of the credit derivatives market has made this transfer a dangerous channel of transmitting price shocks to markets that had been considered to be diversified **[16]**. This calls for the assessment of Coco's ability to transfer risk and regulatory measures able to identify and control the degree of risk transferability of such innovative securities.

The family of hybrid securities is still growing, reinforced by financial engineering of market participants and — interestingly — regulators. Nevertheless, there is still a room for innovation in both the design of hybrid securities and regulation of financial markets. One the most discussed issue remains the ability to properly assess and manage the risks incor-

porated in hybrids for both state and market participants.

VI. CONCLUSION

To sum up, mezzanine capital combine features of both debt and equity. This description reflects the character of financial instruments in the Basel II Capital Accord, but is not designed to meet the requirements of Additional Tier 1 capital under the Basel III. Further studies and observations of hybrids' performance are crucial for assessment of these securities. One of the key analytical consideration arising from feasibility study is to what extent the corporate structure of financial institutions is unique in comparison to an ordinary joint-stock company. Low yields elsewhere encourage new investors to buy hybrids; it was the same with CDOs a decade ago. Then the question arises as to whether all investors are able to properly assess or manage the risks involved and to whether the rating agencies can properly assess the risks while rating such securities. Uncertain loss-absorption hierarchy and complex conversion or coupon cancelation mechanisms may pose a risk beyond individuals' assessment capabilities. This issue remains of particular importance to both public and private participants.

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