Hidden Global Causes of the Global Financial Crisis

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Abstract: Hopes of ending the financial crisis did not materialize. Recent events (the problems of the euro zone, the threat of default in the U.S., the collapse of the financial market after a reduction of the credit rating of the U.S., debt problems in the world (Europe, U.S.), U.S. fiscal cliff, etc.) show that the crisis deepened, affecting new areas and taking on a systemic character.

It becomes clear that we need in-depth analysis of its general, systemic causes. This article examines recent results in this field, obtained by scientists of Finance University under the Russian Federation Government.

Keywords: Causes of global financial crisis.

INTRODUCTION

Analysts have called a lot of particular specific reasons that have led in 2008 to the financial crisis: the crisis in mortgage lending in the U.S., unscrupulous financial statements of a number of leading investment funds, problems in the booming derivatives market in recent years, and others.

A whole issues of journals are devoted to the global financial crisis. See, for example, (Applied Financial Economics, 2010), where there are a number of applied financial studies, covering a wide range of international and regional experience and a variety of applied techniques. Let us shortly discuss some of them.

Cheung, Fung and Tsai (Cheung, Fung and Tsai, 2010) examined the impact of the 2007–2009 Global Financial Crisis (GFC) on the interrelationships among global stock markets and the informational role of the TED spread (the difference between the interest rates on interbank loans and on short-term U.S. government debt ("T-bills")) as perceived credit risk. They point out that GFC originated from the dominant US market has a prompt and pervasive spillover effect into other global markets and that the interdependence among international stock markets becomes stronger in the crisis. The TED spread serves as a leading 'fear' indicator and adjusts to new information rapidly during the crisis. While the impact of orthogonalized shocks from the US market on other global markets increases by at least two times during the crisis, the impact of orthogonalized shocks from the TED spread on global market indices increase by at least five times. Overall, these findings shed light on the dynamics of international stock market linkage and the spillover effect of credit risk.

İmer-Ertunga (İmer-Ertunga, 2011) analyses the comovements of global financing conditions and sovereign debt yields of three emerging market countries having huge current account deficits. Instant effects of 10-year government bonds of G-3 countries and the United Kingdom may be important in calculating global financing conditions. Hence, global financing conditions can be derived by an index taking the daily 10-year government bonds of these countries into account. The index may help to understand the global linkages between the advanced and emerging market countries. Their results exhibit that when global economy was in disarray, advanced economies bond yields tended to fall (due to expectations of low inflation and low growth rate), and emerging bond yields tended to rise (due to global risk aversion).

Simpson (Simpson, 2010) pointed out that there have been significant costs attached to global banking financial integration and these costs were identified in a period prior to the 2008 Global Financial Crisis. Regression, correlation, cointegration, causality and variance decomposition analysis of daily bank price index data indicate that banking systems had achieved a high level of global integration, exemplified in the global involvement in the US sub-prime mortgage market. Integration implies interdependence, which in turn implies the existence of systemic risk or the threat of contagion. Re-focusing by banks on a culture of portfolio diversification of investments and borrowings is necessary. Greater involvement by a global banking regulatory authority such as the Bank for International Settlements (BIS) to monitor undiversified systemic interdependence may be inevitable (e.g. the

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administration of insurance schemes for interbank lines of credit).

Technology-related aspects of asymmetric information between corporate managers and outside investors has an adverse effect on the external financing activities of innovation-intensive firms. Chan (Chan, 2012**)** indicates that innovation-intensive firms are more likely to engage in equity financing when their valuation multiples are higher than those of their industry peers. This finding is more pronounced among firms with low institutional shareholdings and fewer brokers following them. The empirical evidence supports the misvaluation explanation, as well as the timing and type of security issuance if the agency problem is severe.

Li (Li, 2012) analyzed the US real estate finance data for the pre-crisis and post-crisis periods in 2008. He provides the in-sample estimation and evaluates the out-of-sample conditional mean and volatility forecast performance of the conventional Generalized Autoregressive Conditional Heteroscedasticity (GARCH), Asymmetric Power Autoregressive Conditional Heteroscedasticity (APARCH) and the benchmark RiskMetrics model. The empirical results show that the RiskMetrics model performed satisfactorily in the in-sample estimation but poorly in the out-of-sample forecast. For the post-crisis out-of-sample forecasts, all models naturally performed poorly in conditional mean and volatility forecast.

Chalamandaris and Tsekrekos (Chalamandaris and Tsekrekos, 2010) studied the problem of predictability of exchange rate volatility during financial crisis. They pointed out that the liquidity crunch and the ensuing financial crisis have unambiguously affected all national economies and global currency exchange rates. They ask whether the cross-currency correlation structure has changed since 2007. Using an extensive set of volatility surfaces implied from over-the-counter options on 11 different exchange rates, as well as recent advances in static and dynamic factor models, they were able to show that the number of factors that innovate the correlation structure has not changed in the last two and a half years. It is the volatility, the persistence and the significance of global systematic factors, *vis-à-vis* regional or economy-specific ones, that appear to have changed dramatically. The implications for the risk management of currency exposures and for the predictability of exchange rate volatility are also outlined.

Les Coleman and Sean Pinder (Coleman and Pinder 2010) studied the decision-making processes followed by corporate executives.They pointed out that the impact of the Global Financial Crisis (GFC) on capital markets has demonstrated that corporate stakeholders (including shareholders, lenders and independent board members) need to be far more aware of the decision-making processes followed by corporate executives. Gaining insight into these processes is difficult at any time, yet attempting to uncover (in any meaningful sense) how executives reached critical decisions in the lead-up to the GFC is almost impossible in hindsight. The article were designed to elicit granular explanations for the rationale underpinning major corporate finance decisions, and their timing and subjects provide a unique *ex ante* profile of the perceptions of senior executives in large firms as the GFC developed. The most significant finding is that the corporate executives shared a decision framework with core features similar to those of financiers that are thought to have contributed to the GFC, particularly permanently increasing asset prices, easy liquidity and safety in powerful risk management techniques. Their findings have implications for independent board members who – at least in hindsight – failed to identify and mitigate risks from systemic reliance on appreciating markets and the inevitability of mean reversion.

As one can see from the discussion above investigators study some particular causes and consequences of GFC. But, as recent researches by Russian scientists show, there are also global, fundamental causes of the current and future financial crises. And one important cause of this is the wrong long-term systematic assessment of key financial parameters of companies: their capitalization, the value of attracting funds, including the cost of equity and weighted average cost of capital. To illustrate the importance of a correct evaluation of financial parameters we give only one example, associated with a reduction of the credit rating of the United States.

When the agency Standard & Poor's said to the Obama administration about the decision to lower credit ratings, the White House has pointed out to representatives of S & P an errors in its calculations in the trillions of dollars. After the official downgrade of the U.S. credit rating government have publicly stated about these errors. The representative of the U.S. Treasury Department stated: «Built on an error in the $ 2 trillion in the analysis of S & P, which led to a decrease in the rating speaks for itself». Last month, S

& P warned that only spending budget cuts by $ 4 trillion will be able to prevent a fall. However, Congress approved the plan, which included a reduction by only $ 2.4 trillion over 10 years. According to the estimates S & P, this means that U.S. foreign debt could reach 74% of GDP by the end of 2011, 79% by 2015 and 85% by 2021. Moody's and Fitch Ratings, in turn, affirmed the top rating U.S. after Barack Obama signed the bill, prevented default on August 2.

Thus, we have on the one hand the White House, President Obama (stated that America always will be the country with the AAA rating), agency Moody's and Fitch, and on the other hand agency Standard & Poor's, whose decision brought down the markets on August 8,2011 and the difference in the assessment of about $ 2 trillion.

Leaving aside the question of a possible trade insider information, we note that this is a striking example which demonstrates the great importance of quantitative assessments in the finance areas and the utmost responsibility in financial calculations.

Let us pose the rhetorical question: **whether it is possible to manage by the finance, being unable to properly consider them.**

The current system of assessment of key financial parameters of the companies goes back to Nobel Prize winners Modigliani and Miller (Modigliani and Miller, 1958, 1963, 1966), who a half a century ago, replaced existed at that time empirical intuitive approach (let's call it by traditional). The theory of Modigliani – Miller has been established under a number of limitations, which obviously had a rough model character and had a very weak relationship to the real economy. Among the limitations it is sufficient to mention the lack of corporate and individual income taxes, perpetuity (infinite lifetime) of the companies, the existence of perfect markets, etc. Some restrictions (such as a lack of corporate and individual income taxes, etc.) were removed later by the authors themselves and their followers, while others (such as perpetuity of companies) remained in the approach of Modigliani – Miller, until recently. However, since the theory of Modigliani – Miller (Modigliani and Miller, 1958, 1963, 1966) was the first quantitative theory, and since finance are essentially a quantitative science, the theory has become widely used in practice, since it gave even inaccurate, even rude, but at least some quantitative estimates of key financial parameters of companies, thus it was necessary as an air for forecasting activities of the companies and to make informed management decisions. Widely spread of the Modigliani – Miller theory, as usual, led to the neglect of the restrictions which it is based on, and the absolutization of the theory.

As it has been shown by Brusov–Filatova–Orekhova (Brusov *et al*. 2011a, 2011b, 2011c, 2012), the theory of Modigliani–Miller (Modigliani and Miller, 1958, 1963, 1966), to put it mildly, does not adequately evaluate the most important financial indicators of the company. It yields significantly lower estimates of weighted average cost of capital and of the value of its equity, compared with the actual estimates. This underestimation leads to the overestimate values of capitalization of the company.

Such Overestimate of the Mortgage Companies Capitalization by Rating Agencies was one of the Important Cause of GFC

More theory by Brusov–Filatova–Orekhova can be seen, for example, in the following papers (Brusov *et al*. 2011a, 2011b, 2011c, 2012).

The first researcher, who drew attention to the fact that the calculations of weighted average cost of capital in the theory of Modigliani–Miller are inaccurate, was Myers (Myers, 2001), who derived a formula for the average cost of capital for one-year project. He suggested that the estimate given by the theory of Modigliani–Miller, is a lowest bound estimate of average cost of capital.

The general solution of the problem of weighted average cost of capital for companies with an arbitrary finite lifetime was first obtained by Brusov–Filatova–Orekhova (Brusov *et al* 2011a, 2011b, 2011c, 2012). Note that the results of their theory is applicable not only to companies with a finite lifetime, which had completed their activity, but also to existing companies, giving the opportunity to assess the real value of equity cost and its weighted average capital cost, supposing that the company existed to date *n* years.

Let us give a couple graphic illustrations of their results, for equity cost and for weighted average capital cost.

From Figure **1** it is easy to see that Modigliani–Miller theory ($n = \infty$ line) underestimates the cost of equity capital of companies, k_e (note, that it gives the right result in the absence of corporate taxes, only). One gets the biggest value of k_e for one–year company

(note, that this result has been obtained from Brusov–Filatova–Orekhova theory (Brusov *et al*. 2011a, 2011b, 2011c, 2012), while Myers (Myers, 2001) has calculated only the WACC for one–year company.

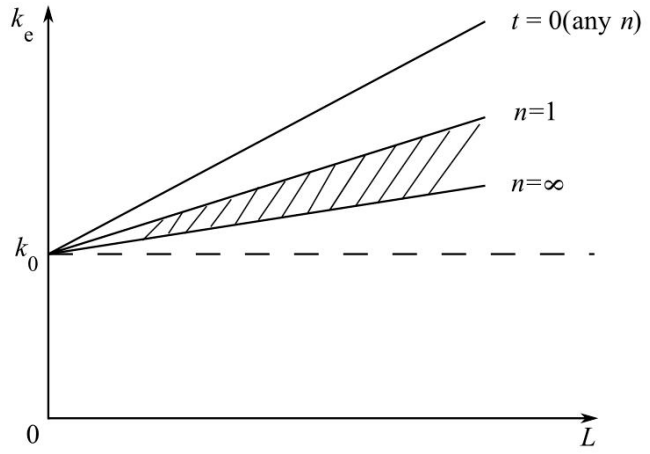

Figure 1: Dependence of the equity cost, k_e, on leverage ***L*** in the absence of corporate taxes (the upper line (t = 0)), as well as in the presence of corporate taxes (for one–year (n = 1) and perpetuity companies ($n = \infty$)). Dependences of the cost of equity capital of companies, k_e, on leverage ***L*** with an intermediate lifetime ($1 < n < \infty$) lie within the shaded region.

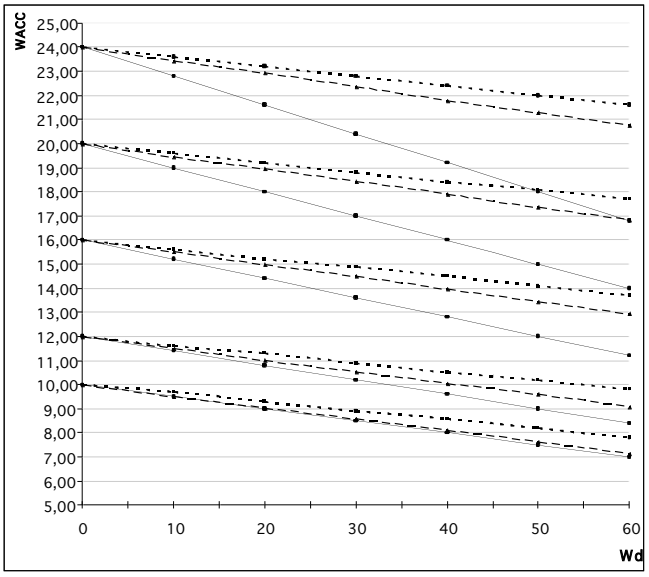

Figure 2: The dependence of the WACC on debt share w_d for companies with different lifetimes for different cost of equity, k_0 (in each triplet upper curve corresponds to $n = 1$, middle one – to $n = 2$, and bottom one – to $n = \infty$).

As it follows from Figure **2** Modigliani–Miller theory (the bottom line ($n = \infty$)) underestimates the WACC value of the companies. The biggest value of WACC one gets for one–year company Myers (Myers, 2001). And Brusov–Filatova–Orekhova results (Brusov *et al* 2011a, 2011b, 2011c, 2012) give the dependence of the WACC on debt share w_d for companies with arbitrary lifetimes.

Below (Figure **3**) we show the dependence of the WACC on leverage level ***L*** for companies with different lifetimes.

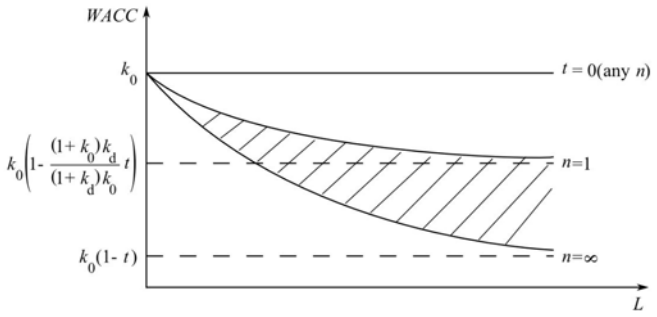

Figure 3: The dependence of the WACC on leverage level for companies with different lifetimes. Horizontal line corresponds to the case of absence of corporate taxes, middle curve–to one–year company, and bottom one – to perpetuity company ($n = \infty$). k_0 is the equity cost at ***L***=0, k_d is the debt cost, t is the tax rate.

Let us give also the dependence of the equity cost of the company and its WACC on the company lifetime for different leverage levels.

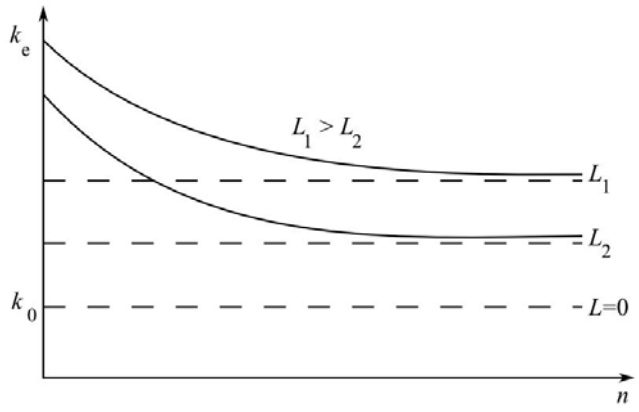

Figure 4: The dependence of the equity cost of the company on its lifetime for two different leverage levels $L_1 > L_2$. Horizontal line (k_0) corresponds to the case of financial independent company (L=0).

One can see from Figures **4** and **5**, that both costs of capital decrease with company lifetime but the curve corresponds to lower leverage level lies higher for WACC(L) dependence and below - for $k_e(L)$ dependence. This means that account of the finite lifetime of the company is very important.

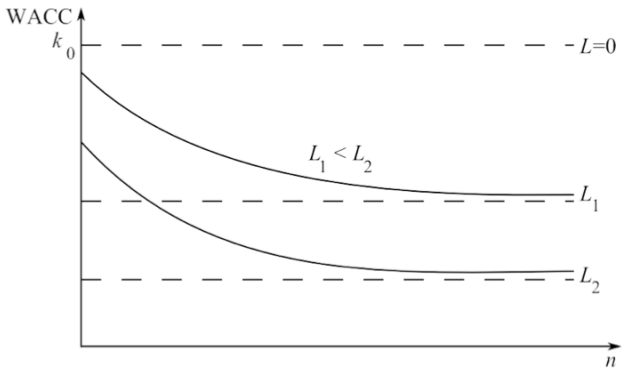

Figure 5: The dependence of the WACC on the company lifetime for two different leverage levels $L_1 < L_2$.

Obtained by Brusov–Filatova–Orekhova results (Brusov *et al.* 2011a, 2011b, 2011c, 2012) show that the theory of Modigliani–Miller (Modigliani and Miller, 1958, 1963, 1966), due to its perpetuity underestimates (and often significantly) an assessment of weighted average cost of capital, cost of equity of the company and inflating (also often significant) estimate of the capitalization of leverage companies as well as financially independent companies.

Such incorrect estimations of the basic financial parameters of companies lead to an underestimation of the financial risks, the impossibility, or severe difficulties in making appropriate management decisions, which is one of the implicit reasons for the financial crisis

Let us give an example from the real economy. Brusova A.P. (Brusova, 2011) has made a comparative analysis of the calculation of the cost of equity and weighted average cost of capital of one of the leading telecom companies in Russia by three methods: traditional, Modigliani–Miller method and Brusov-Filatova-Orekhova one. She has shown that the least accurate is the traditional approach. Better results are obtained by the method of Modigliani – Miller (and this determined his half-century of use in the world). And the most relevant results and provides by the Brusov – Filatova–Orekhova method (Figure **6**).

Note that the existing methods of estimating of the main financial parameters of companies are a blend of the traditional approach and the method of Modigliani–Miller. If we will continue use the existing system of evaluation of financial indicators, it will inevitably be the hidden global cause of new financial crises because it does not allow make adequate management decisions. The danger of the situation is that the found by us causes for the crisis do not lie on the surface, they are implicit, hidden, though no less important and significant. Therefore, the problem of their identification, disclosure is extremely important and relevant. Informed - so protected.

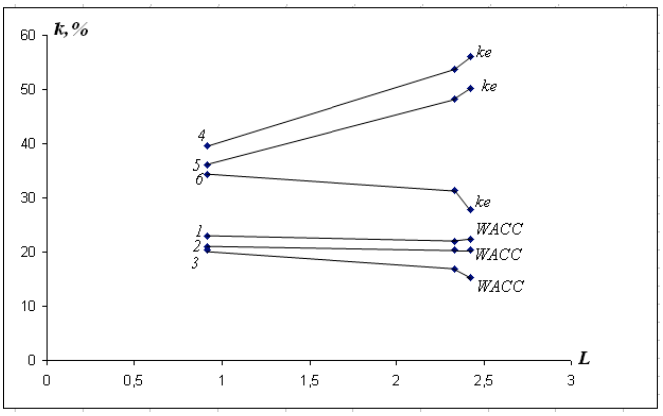

Figure 6: Dependence of the weighted average cost of capital of the company, WACC, equity cost, k_e , on leverage ***L*** by traditional method (lines 3,6), by Modigliani — Miller method (lines 2,5), and by Brusov–Filatova–Orekhova method (lines 1,4).

Authors are working now on development of methodology for assessing the key financial parameters of the companies on the basis of the Brusov – Filatova – Orekhova theory.

The conclusion is that we must globally transform the system of assessment of key financial parameters of companies: their capitalization, the cost of equity and weighted average cost of capital, in order to lower the financial risks. This will lower the dangerous of global financial crisis.

The transformation should relate, in particular, to IFRS (the International Financial Reporting Standards) as well as other financial reporting standards. The authors are aware of the complexity of the task - to transform the world system of evaluation of the basic financial parameters of the companies to a new, more realistic basis, it will take years and years, but there is no other way for the world economic community.

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