

Sergiy Tsyganov

Doctor of Sciences (Economics),
Taras Shevchenko National University of Kyiv,
Institute of International Relations,
Professor of the Department of International Finance
Kyiv, Ukraine
s_tsyganov@ukr.net

Olga Zalisko

Taras Shevchenko National University of Kyiv,
Institute of International Relations,
PhD Student of the Department of International Finance
Kyiv, Ukraine
olga.zalisko@gmail.com

**INFLUENCE OF INTERNATIONAL INVESTMENTS
DIVERSIFICATION ON MNE CAPITAL STRUCTURE**

Abstract. This paper considers stock investing bias that results from exchange rate risk impact as a factor influencing MNE capital structure. This bias should be considered as a supply factor. International diversification theory recognizes the exchange risk to be one of the most influential factors of investment portfolios returns. It defines investment returns level as well as the total risk and return structure. The impact of this factor on MNE capital structure is theoretically proved from international investments diversification theory point of view. This hypothesis however requires empirical testing. Exchange rate risk affects portfolio investors' decisions thus creating financial resources supply and influencing corporate capital structure. Stock investing bias arises due to the appearance of exchange rate risks since they transform the risk-free debt securities into risky papers that unlike stocks have the most part of their risk accounting for exchange rate risk. The share of exchange rate risk in the total risk structure of equities is twice less compared to bonds. This decreases the investment attractiveness of debt securities and makes stocks more attractive all others equal.

Keywords: MNE capital structure, capital structure factors, Miller-Modigliani theory, Miller theory, international diversification of investment portfolios, direct investments international diversification, stock investing bias, exchange rate risk

Formulas: 3, fig.: 0, tabl.: 3, bibl.: 15

JEL Classification: F21, F23, G32

Introduction. The problem of MNE capital structure formation is important, relevant and interesting nowadays. To our mind this importance and relevancy is specified by three main factors. First, modern MNEs are global actors influencing and often defining most processes in international economy nowadays. Their resources under management are huge in terms of investing volumes as well as in terms of their influence on host countries financial markets. Second, unlike local corporations MNE operate in many countries and tax jurisdictions that enables them to use different types of arbitrage, uppermost tax arbitrage. They have opportunities to adequately respond to changes in fiscal and other environments moving corporate cash flows among countries and thus

optimizing the general level of tax burden on the overall MNE level. Third, contemporary MNE have much more opportunities to optimize their capital structure comparing to local corporations, they also have more factors influencing their capital structure, and thus more risks in the global scale.

In these terms, MNE capital structure policy substantially defines directions, volumes and goals of capitals mobility, influences the geography of debt and equity issuance, affects the relation between internal and external financing. By optimizing their capital structure, modern MNEs take financial decisions in the global scale that brings about the capital movements between countries, though from the corporate point of view such movements are often internal. That's why MNE financial flows being international geographically are not always external as to the corporate financial system.

The importance of different factors influencing the MNE capital structure analysis is also defined by the fact that directions of different factors influence are often differently explained by different theories of capital structure. Moreover, empirical research also suggests different and often controversial results. It often seems that capital structure is being formed individually in certain terms for every certain corporation. Furthermore, it is important to define the MNE specific factors that influence local corporations in much lesser extent.

Literature review and the problem statement. The problem of corporate capital structure has traditionally been paid much attention to in the contemporary scientific literature. The underlying paradigm is based on Nobel theory of capital structure developed in [Modigliani and Miller 1958]. It implies that the market value of a corporation that uses equity and debt in its capital structure is higher than that of a corporation with only equity capital. This is explained by a so-called tax shield effect that arises as a result of using debt in corporate capital structure since interest payments are deductible and are actually excluded from corporate taxable income. This is implied by most countries tax systems. Capital structure thus allows corporations optimizing the level of tax burden that is especially important for MNEs that operate in multiple tax jurisdictions and in many countries. According to Miller-Modigliani theory optimal capital structure is reached at complete debt financing. The basic version of the mentioned theory did not consider corporate taxes at all and thus asserted that the corporation market value did not depend on capital structure but only on income capitalization rate. Expected equity return depends on corporate indebtedness level that defines a so-called financial risk premium. [Miller 1977] theory made a step forward considering personal taxes on interest and dividend income besides corporate income tax. Since the average level of taxation is lower for dividend income than for interest profit investors tend to prefer investing in equities rather than in fixed income securities. Here it goes on a so-called equity investing bias that in turn alters corporate capital structure in favor of equity capital.

Contemporary scientific literature mostly explains corporate capital structure in terms of a trade-off theory, pecking-order theory, agency theory and signaling theory. The trade-off theory of capital structure was first suggested by [Kraus and Litzenberger 1973]. It affirms that corporate capital structure is defined by bankruptcy costs that can be to a certain extent considered as negative compensator for positive tax shield effect and bring about the decrease in debt financing level. Optimal capital structure thus should be reached on the basis of certain trade-off between tax shield advantages and potential bankruptcy costs. According to the pecking order theory, a corporation should

attract financial resources in compliance with certain hierarchy: internal funds or reinvestments, debt capital and then new equity. [Myers and Majluf 1984] consider that new equities will be issued only when they are overvalued in the market. This will promote attracting more funds.

Signaling theory was elaborated by [Stephen Ross 1977]. It explains the corporate capital structure in terms of information asymmetry that brings about managers having insider information on corporation development prospects. For example, information about positive prospects of corporate development promotes managers not to issue new equity but to attract additional debt funding since in this case future cash flows will be divided between smaller number of shareholders. These activities give certain signals to the market that responds by increasing the stocks market value. Corporations in turn should have relatively more equity capital in their capital structure in order to store certain standby facility for attracting debt funds.

Agency theory grounds on the idea that managers do not always act in favor of shareholders and creditors. According to [Jensen and Meckling 1976], top managers' activity must be under control that brings about additional expenses – a so-called agency expenses. It doesn't matter who bares agency costs directly as finally they become the shareholders' burden. That is why corporations tend to have relatively more equity capital and relatively less debt in their capital structure.

As one can see, different theories explain corporate capital structure by different factors. Much empirical research also explore the directions and magnitude of different factors influence on MNE capital structure. Moreover, they often draw different and sometimes opposite conclusions. For example, [Mokhova and Zinecker 2014] explored the influence of macroeconomic factors on corporate capital structure. [Malmendier et al. 2011] explained the capital structure by behavioral factors, particularly by a so-called overconfidence and optimism. [Jõeveer 2013] studied the country specific and firm specific factors as well as macroeconomic factors influencing corporate capital structure using the example of transition economies.

In our paper we put forward the hypothesis that apart from traditional factors of capital structure that have been widely studied in contemporary literature, a specific equity investing bias resulting from exchange risk existence also impacts the MNE capital structure. Unlike most known factors defining the capital structure of MNE as well as domestic corporations the mentioned bias impacts mostly MNE capital structure and is of a much less importance for domestic corporations.

Demand factors produce much more powerful effect on corporate capital structure than supply factors. The proposed bias should be considered as a supply factor since in this case the corporate capital structure is defined by external decisions of certain investors rather than by corporate managers' decisions. We in fact also explore the influence of exchange rate risk on this equity investing bias. Similar to Miller theory assuming the existence of personal taxes on profits from debt and equity securities we consider the same equity investing bias, but which arises under the influence of another factor that is an exchange rate risk. This bias cannot be regarded as a constant fact and it arises not under every condition. However, our approach seems to be theoretically grounded and can have substantial implications. As to its composition our approach is similar to Miller theory and has the common methodological base – it explores the influence of a specific investors' bias on corporate capital structure.

Personal taxes as well as exchange rate risks bring about that investors gain a special equity investing bias which being a supply factor alters in its turn the MNE capital structure.

Research results. The theory of international diversification of investments consists of two major components, both of which do not deal with corporate structure directly but to our mind can be successfully used to explain it. The first part of this theory is devoted to international diversification of MNE transactions. It is based in its main sense on the general idea of demand for capital if considering it in terms of capital structure. This theory implies that MNE create demand for debt resources being thus also the source of influence on equity capital. The second part is the theory of international portfolio diversification. It considers the demand for securities from international portfolio investors who thus create the supply of financial resources. This part of the theory should be regarded as a supply theory in terms of corporate capital structure. It explains the problem of capital structure formation from the point of view of certain investors that create the supply of debt financing for corporations.

As the theory of international diversification developed by [Donald Lessard 1979], that is the first part of the above mentioned theory and deals rather with foreign direct investments (FDI), argues, the main reason for MNE to be engaged in international activities is the decrease in risks. This decrease is achieved via international diversification and spread of capital via FDI [Lessard 1976] and [Rogach 2005].

The general idea and main principles of diversification are grounded on the trade-off between risk and return that is considered to be axiomatic in modern finance theory. The higher the risk, the higher must be the premium (return). This is actually true for any commercial activity like an investment project (in case of direct investments) or investing in securities (portfolio investments) etc. Otherwise, investors do not have any sense to invest money. On the other hand, the higher return an investor requires the higher risk she must accept. Finally, diversification gives such a portfolio, that has an optimal structure implying that certain risks will be compensated by other benefits as well as certain specific factors will be compensated by others. All in all investor (MNE) will have a constant investments set (affiliates) having an optimal system of factors, advantages and compensators. This part of international investments diversification theory considers the corporate funding from the point of view of demand for resources resulting from a corporate specific diversification strategy.

The theory of international diversification of investment portfolios is the second part of international diversification theory. It explores the supply of agents that are ready to invest money in corporate securities thus creating the supply of financial resources. This theory is traditionally not related to MNE capital structure but to our mind, it has a significant explanatory power in this sense. In these terms, our approach can be considered as innovatory. Diversification from investor's point of view implies not just the variety of securities and constructing an investment portfolio on this basis. A specific [Markowitz 1952]¹ diversification principle is of a crucial importance in this process. This principle asserts that one should construct a portfolio from those assets that have the least possible positive correlation. This statement follows from a special formula for calculating the risk of investment portfolio consisting

¹ Harry Markowitz is a Nobel Prize winner for his research in this field. He is considered to be the founder of portfolio theory.

of several assets that was elaborated by Markowitz:

$$V(R) = \sum_{i=1}^N \alpha_i^2 V(X_i) + 2 \sum_{i=1}^N \sum_{i>1}^N \alpha_i \alpha_j \sigma_{ij}, \quad (1)$$

where $V(R)$ – portfolio return variance,
 α_i – the share of i -th security in a portfolio,
 $V(X_i)$ – i -th security return variance,
 σ_{ij} – covariance between all possible pairs of securities returns.

According to Markowitz, portfolio risk is not just the weighted index of its components risks but the new fundamental ratio allowing for interrelation between portfolio components returns. This interrelation is traditionally measured by a covariance as it is in Markowitz formula or it can be a correlation ratio that is easily proved mathematically. Thereby the portfolio risk is directly dependent on all pair covariances (correlations) of its securities returns. As it results from formula (1) the higher these correlations are the higher the portfolio risk is. The clause on positive correlations is made in order to exclude potentially unprofitable assets from a portfolio. This clause however should not be considered as absolute. Sometimes such assets can be actually included into portfolio when their availability is analytically proved. This can be for example when the real probability of negative returns is rather low or acceptable for a given investor.

The theory of international diversification of investment portfolios was developed by [Solnik 1974] on the ground of Markowitz portfolio theory. In his pioneer paper Solnik proved that international diversification allows to substantially decrease the risk of even a well-diversified portfolio. Empirical testing of this fact was carried out using the data set on returns of more than 300 stocks from seven European countries and the USA listed on NYSE during the period between 1966 until 1971. Different quantity of portfolios with certain quantity of stocks was randomly constructed. Standard deviation was calculated for every portfolio and their average meaning was used in the analysis. The results assert that there is a minimum level of risk (systematic risk) that cannot be diversified away even in a well-diversified portfolio for every of eight countries (table 1).

Table 1 – Relative Level of Systematic Risk for Different Countries

Nº	Country	Risk, %
1	U.S.	27
2	U.K.	34.5
3	France	32.67
4	Germany	43.8
5	Italy	40
6	Belgium	20
7	Netherlands	24.1
8	Switzerland	44
9	International Portfolio	11.7

Notes:

1. Composed by the author based on [Solnik 1974, p. 50 – 51].
2. Risk is the relation of portfolio risk to the risk of randomly taken security of respective country.

The given data confirm the hypothesis on the existence of a systematic risk using the example of international portfolios and prove that in case of international diversification the absolute level of this risk is much lower compared to purely domestic investment portfolios. Table 1 shows that international portfolio risk is the lowest and therefore investors from any country should be interested in constructing international portfolios. The above-mentioned tests however did not consider exchange rate risks. Solnik also empirically determined that different countries equity markets often have lower correlations compared to different stocks in the same market. This is because different markets have different general and specific factors influencing returns. Furthermore, economic cycles in different countries can also mismatch. In terms of international investing, it means that investors should be eager to invest internationally rather than domestically.

International investing brings to a portfolio investor besides others two important things. First, access to much wider circle of financial instruments particularly Euromarket instrument denominated in Eurocurrencies. Many of these instruments are issued by MNE. Second, that greatly follows from the first, is the existence of exchange and thus inevitability of exchange rate risks. Exchange rate risk is a new type of risks that appears as soon as an investor enters international markets. While inflation that brings about the decrease in purchasing power of cash flows has traditionally been the main source of risks for domestic investors, exchange rate risk becomes the main source of risks for international investors [Solnik 1974(2)]. It actually affects the purchasing power of investment profits in the same manner.

In our opinion, this fact defines international portfolio investors' investment policy influencing the MNE capital structure. This influence is realized since the existence of an exchange risk brings about the substantial changes in separate securities risk structure. Under the absence of an exchange risk debt securities are considered by the finance theory to be risk-free securities since their return at maturity is known (default risk is ignored). Equities instead are risky securities since their return at maturity is unknown because their price is permanently changing and dividend payment are not mandatory. Exchange risk applies to stocks as well as to debt securities. Its existence brings about that debt securities also become risky.

This is confirmed by numerous empirical research such as [Eun & Resnik 1994]. They explored the case when an American investor measuring her return in USD invested in a foreign asset abroad. The total return of such an investment in USD ($R_{I\$}$) consists of three components: foreign currency return (R_I), percentage change in the exchange rate between USD and foreign currency, and a special component ($R_I e_I$), characterizing the influence of the first component on the second:

$$R_{I\$} = (1 + R_I)(1 + e_I) - 1 = R_I + e_I + R_I e_I. \quad (2)$$

In formula (2) the value of the second and thus of the third component can be positive as well as negative. The positive value of e_I means that the local currency (USD) is depreciating as to the currency of investment. Its negative value means the appreciating of USD. This formula is actually the decomposition of dollar return of an investment in a foreign currency denominated asset. Risk can also be decomposed in the same way since every type of return is associated with the respective type of risk:

$$\text{Var}(R_{I\$}) = \text{Var}(R_I) + \text{Var}(e_I) + 2\text{cov}(R_I, e_I) + \Delta\text{Var}. \quad (3)$$

Such decomposition in formula (3) allows drawing the following conclusion: in case of investing in debt securities the exchange rate risk accounts for major part of the total risk while in case of investing in equities it accounts for much lesser but still significant part (table 2).

Table 3 – Percentage decomposition of variance of dollar return of stocks and bonds for different countries

Country	Var($R_{I\$}$)	Var(R_I)	Var(e_I)	2cov(R_I, e_I)	ΔVar
Bonds					
Canada	15.29	70.76	11.25	17.46	0.52
France	16.48	17.11	77.31	3.64	1.94
Germany	21.53	12.03	64.28	22.82	0.88
Japan	24.70	12.27	61.26	24.66	1.82
Switzerland	21.16	5.39	83.36	11.06	0.19
U.K.	27.67	32.09	44.78	21.97	1.16
U.S.	10.24	100.00	0.00	0.00	0.00
Stocks					
Canada	37.70	81.11	4.56	14.24	0.08
France	59.75	72.02	21.32	6.28	0.38
Germany	43.82	66.80	31.58	0.00	1.62
Japan	41.47	47.24	36.48	14.06	2.56
Switzerland	34.81	57.66	50.68	-10.80	2.47
U.K.	40.96	71.46	30.25	- 3.71	2.00
U.S.	21.16	100.00	0.00	0.00	0.00

Notes:

1. Calculated by the authors using the data presented in [Eun & Resnick 1994].
2. The monthly returns data between January 1978 and December 1989 were used.
3. Returns were estimated from American investor's perspective.

As we can see under the exchange rate risks existence debt securities being risk-free before become risky while the major part of the total risk accounting for the exchange risk. Simple calculations using the table 2 data allow to estimate the average shares of an exchange risk in the total risk that equals to 29.15 % for stocks and 57.04 % for bonds. Risk-free debt securities as we can see have become risky securities under the influence of exchange risks. Although the absolute value of debt securities risk is still lower compared to stocks the differential has shortened substantially.

These results let us conclude that for an international investor acting under exchange rate risks investing in bonds becomes less attractive than investing in stocks compared to the case of domestic markets where exchange rate risk is absent. Appealing to the mentioned conclusion, particularly to the explanation of an investment decision by risk and return considerations, we should mention that the increased risk of any security must be balanced by respective increase in its return. However, while the fact of debt securities risk substantial increase under exchange rate risks is obvious, the fact of considerable increase of debt securities returns in international market is far from being definite and well

defined. Moreover, considering the fact that international financial market is actually unregulated, interest rates in this market are often even lower than in domestic markets. This does not allow asserting that the increased risk of debt securities is balanced by respective additional return and thus the above raised hypothesis on relatively higher investment attractiveness of stocks under exchange rate risks cannot be denied.

We completely realize that unlike equities there is no strict system of defining debt securities risk. It can be only estimated by international rating agencies primarily based on direct subjective criteria or indirect objective or unbiased ones. However even considering the existence of such estimates, exchange rate risks substantially alter not only the structure of debt securities risk but the structure of their return as well. Moreover, one can theoretically face the situation when debt securities risk would be equal quantitatively (if the strict system of its identification existed) but differ substantially in terms of its structure uppermost as affected by exchange rate risks. Different investors perceive different risk components differently and being ready to invest in one asset would not will to invest in another because of different risk types underlying with the total risk being equal². In this case, the system of risks evaluation and investment decisions taking would be much more complicated promoting the increase of international investors stocks investing bias³.

It should also be mentioned that we have considered only the conceptual framework of investment operations. Still another issue of a technical character should be paid attention to. Investment operations having the above-mentioned motivation underlying should not be associated with investment operations in general. Technically, they are only those transactions that imply an investor measuring returns in domestic currencies⁴. On the other hand, it means that the security denomination currency must not be domestic for an investor. Investors measuring return in currencies other than domestic ones would have different motivation underlying the above-mentioned investment decisions. Foreign bonds for example are issued on certain countries domestic markets and are denominated in respective domestic currencies. It means that local investors do not actually meet the direct exchange rate risks and thus their bias to invest in a certain asset class can no longer be explained by exchange rate risk factor. The returns measurement currency can not even be domestic for an investor. It can be for example one of main currencies. The main prerequisite of exchange rate risk appearance is the difference between the currency of investing and the currency of investor returns measurement.

This factor can also be considered as significant among other factors affecting the capital structure of MNE and domestic corporations. The latter obviously enter international markets to attract financing much less frequently and that's why investors in their securities seldom face exchange rate risks. As to MNE, this motivation can mostly be regarded by minority shareholders and creditors. The first would have higher bias to invest in the given MNE equities considering the above mentioned conditions. The second would decrease their

² International agencies' ratings are not basically quantitative ratios but rather qualitative estimates. However in this case one can assert that Eurobonds with the same ratings let's say AA could have completely different risk structure. The issuing country as such would substantially define this structure, which would also be affected by its currency stability.

³ In this sense by «stocks» we don't mean equities only but also ownership securities and equity related securities like depositary receipts etc.

⁴ This assumption is typical of most models in the framework of international diversification theory.

demand to corporate debt securities.

Finally, we must note that our approach should be considered as a hypothesis since it requires further empirical testing that cannot be carried out in the present study for two crucial reasons. First is the absence of necessary statistical data particularly regarding the ownership structure and creditor's data, as well as the data on exchange rate risks and the whole chain of currency exchange while investing in MNE securities. Second is the impossibility to define how investors really measure their returns as such. This test could be carried out either based on several assumptions concerning the currency of returns measuring or by investors questioning and defining this currency empirically. However, we still consider the conceptual architecture of our approach to be similar to Miller theory that explains corporate capital structure not by corporate financial decisions but by investors' decisions. Thus, the factor explored in our study should be considered rather as a supply than as a demand factor.

Conclusions. Exchange rate risk brings about the existence of equity investing bias among investors that affects the MN capital structure. Most international investment portfolios differ from domestic ones by the existence of exchange rate risks. Moreover, exchange rate risk affects international portfolios cash flow much more than does inflation in domestic markets portfolios.

MNE capital structure varies under the influence of exchange rate risk via the supply of financial resources provided by investors. Exchange rate risks bring about the changes in individual securities risks and returns. Given the absence of exchange risks, debt securities are considered risk-free while default risks are ignored. Equities instead are regarded as risky securities. The existence of exchange risks results in debt securities also becoming risky while the exchange risk accounting for major part of the total risk equaling to almost 57 % for debt securities and 29 % for stocks.

Given the exchange rate risks, debt securities thereby become less attractive for investors who are becoming biased to invest in equities. Among MNE capital structure influencing factors this bias should be classified as a supply factor. In terms of its composition, the suggested approach is similar to Miller theory that considers personal taxes factor also influencing the increase of equity investing bias. Our approach however should be regarded as a hypothesis only and it still requires heavy empirical testing.

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