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FOREIGN EXCHANGE RISK MANAGEMENT IN BANKS AND COMPANIES

Abstract

Today's market environment is global and inter-connected without any significant boundaries for doing business. We are evidencing growing presence of banks and companies existing on the international scene, offering products and services globally. Those entities expend their activities in many countries having local currency other than the mother company's one and by doing that the entities are exposed to a risk arising from the movement between the original and local currency, known as *foreign exchange risk (FX risk)*. Namely, foreign exchange risk represents a risk arising from the change in the value of the currency which is involved in the business activities. Together with the credit and interest rate risk; the foreign exchange risk is among the most significant risks that directly influence the profit & loss account of a company.

Hence, the *identification* of the foreign exchange risk is very important. Some banks and companies are very much aware about this risk and they have introduced and engaged separate units that are monitoring and managing FX risk on a daily basis, but there are plenty of companies, mainly existing in non-developed markets, which are fully ignorant of the FX risk.

As it was mentioned, the FX exposure does not originates just from the transaction, there are effects that are produced from the revaluation activities of the foreign exchange positions, which is known as translation exposure. So, *measuring the foreign exchange risk* is a crucial activity aimed to protect the company to face huge material loss. The need for protection led the banks and companies to develop a lot of *tools and models* for protection against foreign exchange risk.

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The protection against FX risk depends also on the risk appetite of the company- the higher risk appetite- the higher material effects, either negative or positive.

The most common used tool for protection is *hedging*- undertaking the parallel transaction that is aimed to neutralize the negative effects of the concluded deal. But also there are much more sophisticated tools like forwards, interest rate arbitrage, swaps and many more that gives different possibilities for protection. However, the usage of this models depends on the availability and allowance from the regulators to be used and on the knowledge of the companies.The empirical evidence shows that in not developed countries the banks and companies are lagging behind and are not aware about foreign exchange risk, therefore a lot of efforts should be put in overcoming of such situation.

Key words: foreign exchange risks (FX risks); identification of FX risks; measuring FX risks; tools and models; hedging.

Introduction

The evidence of financial globalization is everywhere. Capital flows are unprecedented large. The stocks of cross-border financial assets and liabilities are growing year by year.

The foreign exchange risk (hereinafter: FER) represents a probability any trade actor to be exposed to negative material effects due to the change in the value of the local currency compared with other international currency. Every country has its own national currency that serves as legal tender for executing and/or expressing all concluded deals. However, the transactions are not performed only in the framework of one national economy, but there are plenty of deals which are concluded in the currencies different than the national one.

Traditional explanations of foreign exchange exposure have generally suffered from two deficiencies: the failure to place the foreign exchange problem within the context of the firm trying to maximize shareholder wealth, and the attempt to deal with exposure management on a transaction by transaction basis.[1)]

The value aspect of the relations among currencies is called inter-parity relations, expressed as foreign exchange rates, which are essential for understanding the foreign exchange risk.

The relevant responsible persons (treasures, risk management officers or other relevant persons) need to step back and perform a comprehensive evaluation of the risks represented by these challenges. Most corporate treasurers and CFOs are primarily concerned, and rightfully so, with eliminating volatility risk and its effect on earnings. Nevertheless, the compliance aspect must be considered as well as operational and other economic factors.

From an economic perspective, beyond mitigating risk to earnings, it has to understand the cost-effectiveness of the currency program.[2)]

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1) Eaker, Mark R.- The numeraire problem and foreign exchange risk, The Journal of Finance, 1981, p.419

2) Koester, Wolfgang- Hope Is Not a Strategy for Managing FX Risk, Financial Executive, issue May / 2007

To measure the difference in pricing of exchange risk between foreign and local investors, one needs to distinguish between foreign and local investors in the same market. It is, however, impossible to differentiate between the two investor groups unless the market is separated by regulation, each group investing as a result in a segmented market. In general, foreign investors require different risk premiums for foreign exchange risk present in international investments than do local investors. The source (exchange risk of underlying share returns or currency translation risk) and magnitude (low or high premium) of differences in exchange risk pricing, however, vary significantly across countries.[3)]

This document is consisted of five parts. In the *first part* the foreign exchange exposure is defined, explaining the three FX types. The *second part* presents the manner of identification of the foreign exchange risk, while the *third part* briefly explains the measures for protection against foreign exchange risk. The *fourth part* is related to elaboration of tools and models and the *fifth-last part* is devoted to explanation of a hedging, as one of the widely used models for foreign exchange risk management, with the separate presentation of hedging of translation and economic exposure.

3) Kwon, Taek Ho - Do foreign investors price foreign exchange risk differently?, The Journal of Financial Research, 2005. p.558 and p.571

1. TYPES OF FOREIGN EXCHANGE EXPOSURE

Basically, there are three types of FX risk exposure:

1. **Translation exposure**, which originates from the accounting aspects of evidencing the deals. This exposure refers to already past actions.
2. **Transaction exposure**, which arises from actions contained in sales. For example, if the values of any future sales deals devalue, it will affect the profit/loss account of an economic agent.
3. **Economic exposure**, which is a combination of translation and transaction exposure.

The transaction exposure is very important, but it is hard predictable.

Economic exposure measures how the value of an entity (i.e company and/or bank) present value of all future cash flows will be affected by changes in foreign exchange rates. While future foreign currency receivables / cash inflows or payables / cash outflows give rise to the transaction exposure to foreign exchange market uncertainties individually and respectively, these future foreign currency cash inflows and cash outflows give rise to the economic exposure of an entity to foreign exchange market uncertainties collectively and as a whole, accompanied by a changing economic environment that affects, among others, the discount rate applied. Yet, entities with economic exposure do necessarily have transaction exposure. Domestic cash flows can also be affected by foreign exchange risk, due to the effect of foreign exchange rate changes on foreign competition in the domestic market.

The empirical research in foreign exchange risk management investigates transaction exposure hedging activities of the companies and banks to assess their effectiveness in economic exposure management. However, economic exposure has implications beyond the reach of transaction exposure – the scope of economic exposure management is wide and the horizon of economic exposure management is distant. If transaction exposure management is tactical and technical, then economic exposure management is strategic and fundamental.[4)]

[4)] Wang, Peijie- The economics of foreign exchange and global markets, Springer Berlin, 2005. p.289

The economic exposure is correct measure for exposure, but there is a problem not only in quantifying it but also in using it as a basis for hedging risk action. For example, the accounting uses the currency value applicable at a particular time, and in case of devaluation, its new value from the moment when the currency devalues, without taking the possible offset coming in the future. In hedging the liabilities on the basis of the anticipated receipts, the company/bank could have to book a loss to reported earnings at the end of the year and wait until following year for the receipts and offset the profit. One solution to this problem might be the company/bank to allocate enough reserves until anticipated profit materializes.

In the innards of most used financial systems are cracks in the foundation. Using rigorous analytical tools and techniques, in nine cases out of ten, it is apparent that fundamental transaction data quality issues stem from two sources: underlying multicurrency accounting and system configuration issues. Basic multicurrency accounting processes are one of the most common culprits. Improperly recorded and relieved foreign currency transactions account for the kinds of errors that often go undetected by the finance team or treasury organization, unless or until the problem has a material impact on FX gains / losses. Examples include recording business transactions denominated in a foreign currency, in local currency or reconciling accounts in local currency and not transaction currency.

The other big issue stems from foreign currency-related re-measurement. Companies and banks, both large and small, use a combination of manual and systematic re-measurement as a part of the monthly close processes, many times in an uncoordinated fashion. Add a global multi-accounting / ERP system environment, and the issues increase geometrically. The process is further complicated by the re-measurement functionality in accounting / ERP systems, which require continuous maintenance and administration to keep up with changes within the enterprise. As a result, accounts that should be re-measured often are not, while accounts that are being re-measured shouldn't be. In most cases, companies are unaware of the problem and have no processes/controls or analytics to monitor the results[5)].

Several authors have viewed the foreign exchange exposure as the sensitivity of economic value or stock prices to change in relations to exchange rate changes. This approach emphasizes the valuation of cash flows rather than accounting balances and focuses on the total effect of exchange rate fluctuations taking into account coincident changes in prices, costs, and demand and production technology.[6)]

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5) Edens, Corey- Managing FX Risk from the Bottom Up, Financial Executive International, 2008, p.63

6) Heckman, Christine R.- Measuring foreign exchange exposure: Practical Application, Financial Analyst Journal, issue Sept/Oct 1983, p.59

But, there is some bias in the accounting profession related to FER. In the absence of adequate reserves, there are following possibilities: 1) to hedge the liability or the major part of it, or 2) to establish a meaningful compromise for certain items.

Foreign exchange rate fluctuations affect banks and companies both directly and indirectly. The direct effect comes from banks' holdings of assets or liabilities with net payment streams denominated in a foreign currency. Foreign exchange rate fluctuations alter the domestic currency values of such assets. This explicit source of foreign exchange risk is the easiest to identify, and it is the most easily hedged. The indirect sources of risk are more subtle, but just as important. A bank without foreign assets or liabilities can be exposed to currency risk because the exchange rate can affect the profitability of its domestic banking operations. For example, consider the value of a bank's loan to a U.S. exporter. An appreciation of the dollar might make it more difficult for the U.S. exporter to compete against foreign firms. If the appreciation thereby diminishes the exporter's profitability, it also diminishes the probability of timely loan repayment and, correspondingly, the profitability of the bank. In this case, the bank is exposed to foreign exchange risk: a stronger dollar decreases its profitability. In essence, the bank is "short" dollars against foreign currency. Any time the value of the exchange rate is linked to foreign competition, to the demand for loans, or to other aspects of banking conditions; it will affect even "domestic" banks.

Foreign exchange risk also may be linked to other types of market risk, such as interest rate risk.

The estimates of the market risk, interest rate risk and foreign exchange risk continue to be unstable. The estimates of risk differ by bank type and period. As interest rate risk declines, foreign exchange risk increases. Foreign exchange risk is positively related to foreign or less developed country loan exposure and negatively related to off-balance sheet exposure, implying foreign exchange risk explained by unhedged foreign loan activity. Market continues to reflect changes in the economic and regulatory situation of commercial banks in the pricing of bank stocks.[7)]

Interest rates and exchange rates often move simultaneously. So, a bank's interest rate position indirectly affects its overall foreign exchange exposure. The foreign exchange rate sensitivity of a bank with an open interest rate position typically differs from that of a bank with no interest rate exposure, even if the two banks have the same actual holdings of assets denominated in foreign currencies. Again, the vulnerability of the bank as a whole to foreign exchange fluctuations depends on more than just its holdings of foreign exchange.

The Foreign exchange risk findings need to be announced for appropriate treatment. When managers choose not to disclose all the relevant information in their

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7) Wetmore, Jill.L. - Commercial Bank risk: Market, Interest Rate and foreign exchange, The Journal of financial Research,1994. p.594.

possession in their financial statements, there is an information gap between the managers and users, and consequently a lack of transparency.[8)]

2. IDENTIFYING FOREIGN EXCHANGE EXPOSURE

The first step in managing the foreign exchange risk is to acknowledge that such risk does exist and that managing it is in the interest of the company/bank and its shareholders. The next step, however, is much more difficult: the identification of the nature and magnitude of foreign exchange exposure. In other words, identifying what is at risk, and in what way. The task of gauging the impact of exchange rate changes begins with measuring its exposure, that is, the amount, or value, at risk. This issue has been clouded by the fact that financial results for an enterprise/ a bank tend to be compiled by methods based on the principles of accrual accounting.

Unfortunately, this approach yields data that frequently differ from those relevant for business decision-making, namely future cash flows and their associated risk profiles. As a result, considerable efforts are expended to reconcile the differences between the point-in-time effects of exchange rate changes on an enterprise in terms of accounting data, referred to as accounting or translation exposure, and the ongoing cash flow effects which are referred to as economic exposure. Both concepts have their grounding in the fundamental concept of transactions exposure. Transaction exposure is an exposure in a simple transaction.

The typical illustration of transaction exposure involves an export or import contract giving rise to a foreign currency receivable or payable. On the surface, when the exchange rate changes, the value of this export or import transaction will be affected in terms of the domestic currency. However, when analyzed carefully, it becomes apparent that the exchange risk results from a financial investment (the foreign currency receivable) or a foreign currency liability (the loan from supplier foreign bank) that is purely incidental to the underlying export or import transaction; it could have arisen in and of itself through independent foreign borrowing and lending. Thus, here are simply involved foreign currency assets and liabilities the value of which is contractually fixed in nominal terms.

While this traditional analysis of transaction exposure is correct in a narrow, it is really relevant for financial institutions, only. With returns from financial assets and liabilities being fixed in nominal terms, they can be shielded from losses with relative ease through cash payments in advance (with appropriate discounts), through the factoring of receivables, or via the use of forward exchange contracts, unless unexpected exchange rate changes have a systematic effect on credit risk. However, the essential assets of a bank have non-contractual returns, i.e. revenue and cost streams

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8) Marshal, Andrew et al., Modeling Transparency in Disclosure: The Case of Foreign Exchange Risk Management, Journal of Business Finance & Accounting, 2007. p.705

from the sale of the products and services which can respond to exchange rate changes in very different ways. Consequently, they are characterized by foreign exchange exposure very different from that of a bank with contractual returns.

The concept of accounting exposure arises from the need to translate accounts that are denominated in foreign currencies into the home currency of the reporting entity. Most commonly the problem arises when a bank has foreign affiliates keeping books in the respective local currency. For consolidation purposes, these accounts must somehow be translated into the reporting currency of the parent bank. In doing this, a decision has to be made on the exchange rate that is to be used for the translation of different accounts. While income statements of foreign affiliates are typically translated at a periodic average rate, balance sheets pose a more serious challenge.

To a certain extent this difficulty is revealed by the struggle of the accounting profession to agree on appropriate translation rules and the treatment of the resulting gains and losses. A comparative historical analysis of translation rules may best illustrate the issues at hand. Over time, U.S. banks have followed essentially four types of translation methods. These four methods differ with respect to the presumed impact of exchange rate changes on the value of individual categories of assets and liabilities. Accordingly, each method can be identified by the way in which it separates assets and liabilities into those that are "exposed" and are, therefore, translated at the current rate, i.e. the rate prevailing on the date of the balance sheet, and those whose value is deemed to remain unchanged, and which are, therefore, translated at the historical rate.

The current / concurrent method of translation divides assets and liabilities into current and concurrent categories, using maturity as the distinguishing criterion; only the former are presumed to change in value when the local currency appreciates or depreciates vis-à-vis the home currency. Supporting this method is the economic rationale that foreign exchange rates are essentially fixed but subject to occasional adjustments that tend to correct themselves in time. This assumption reflected reality to some extent, particularly with respect to industrialized countries during the period of the Breton Woods system. However, with subsequent changes in the international financial environment, this translation method has become outmoded; only in a few countries is it still being used.

Under the monetary / no - monetary method all items explicitly defined in terms of monetary units are translated at the current exchange rate, regardless of their maturity. No monetary items in the balance sheet, such as tangible assets, are translated at the historical exchange rate. The underlying assumption here is that the local currency value of such assets increases (decreases) immediately after a devaluation (revaluation) to a degree that compensates fully for the exchange rate change. This is equivalent of what is known in economics as the Law of One Price, with instantaneous adjustment.

A similar but more sophisticated translation approach supports the so-called temporal method. Here, the exchange rate used to translate balance sheet items depends on the valuation method used for a particular item in the balance sheet. Thus, if an item is carried on the balance sheet of the affiliate at its current value, it is to be translated using the current exchange rate. Alternatively, items carried at historical cost are to be translated at the historical exchange rate. As a result, this method synchronizes the time dimension of valuation with the method of translation. As long as bank foreign affiliates compile balance sheets under traditional historical cost principles, the temporal method gives essentially the same results as the monetary / no - monetary method. However, when "current value accounting" is used, that is when accounts are adjusted for inflation, the temporal method calls for the use of the current exchange rate throughout the balance sheet.

The temporal method points to a more general issue: the relationship between translation and valuation methods for accounting purposes. When methods of valuation provide results that do not reflect economic reality, translation will fail to remedy that deficiency, but will tend to make the distortion very apparent.

The accounting model of exposure has many critiques. Even with the increased flexibility of accounting standards, users of accounting information must be aware that there are three system sources of error that can mislead those responsible for exchange risk management:

- Accounting data do not capture all commitments of the firm that give rise to exchange risk.
- Because of the historical cost principle, accounting values of assets and liabilities do not reflect the respective contribution to total expected net cash flow of the firm.
- Translation rules do not distinguish between expected and unexpected exchange rate changes.

Regarding the first point, it must be recognized that normally, commitments entered into by the bank in terms of foreign exchange, the offered or used banking product and services, for example, will not be booked until the deal is delivered. At best, such obligations are shown as contingent liabilities. More importantly, accounting data reveals very little about the ability of the bank to change costs, prices and markets quickly.

The second point surfaced in this discussion of the temporal method is that whenever asset values differ from market values, translation - however sophisticated - will not redress these shortcomings. Translation rules do not take account of the fact that exchange rate changes have two components: (1) expected changes that are already reflected in the prices of assets and the costs of liabilities (relative interest rates), and (2) the real products and services, the basic rationale for bank foreign exchange exposure management is to shield net cash flows, and thus the value of the bank, from unanticipated exchange rate changes.

This thumbnail sketch of the economic foreign exchange exposure concept has a number of significant implications, some of which seem to be at variance with frequently used ideas in the popular literature and apparent practices in business firms. Specifically, there are implications regarding (1) the question of whether exchange risk originates from monetary or no-monetary transactions, (2) a reevaluation of traditional perspectives such as "transactions risk," and (3) the role of forecasting exchange rates in the context of bank's foreign exchange risk management.

An assessment of the nature of the bank's assets and liabilities and their respective cash flows shows that some of them are contractual, that is to say fixed in nominal, monetary terms. Such returns, earnings from fixed interest securities and incoming payments for example, and the negative returns on various liabilities are relatively easy to analyze with respect to exchange rate changes: when they are denominated in terms of foreign currency, their terminal value changes directly in proportion to the exchange rate change. Thus, with respect to financial items, the bank is concerned only about net assets or liabilities denominated in foreign currency to the extent that maturities, actually "durations" of assets, are matched.

3. IDENTIFYING THE FOREIGN EXCHANGE RISK IN A COMPANY

Companies like banks are exposed to the foreign exchange risk when doing business internationally or are importing the raw materials for the products sold locally. The fix risk appears as a result of the possible change of the prices of buying and selling activities of the company. If the company have concluded agreements, in that case it can easy monitor and control the fix risk by matching the incoming and outgoing money flows or by using some hedge instruments that are explained bellow.

What is much more difficult, however, is to gauge the impact of an exchange rate change on assets with no contractual returns. While conventional discussions of exchange risk focus almost exclusively on financial assets, for trading and manufacturing companies at least, such assets are relatively less important than others. Indeed, equipment, real estate, buildings and inventories make the decisive contribution to the total cash flow of those firms. And returns on such assets are affected in quite complex ways by changes in exchange rates. The most essential consideration is how the prices and costs of the firm will react in response to an unexpected exchange rate change. For example, if prices and costs react immediately and fully to offset exchange rate changes, the firm's cash flows are not exposed to exchange risk since they will not be affected in terms of the base currency.

4. MEASURES OF FOREIGN EXCHANGE RISK IN BANKS

The direct sources of foreign exchange risk can be measured by tallying up the net positions on a bank's assets and liabilities that are denominated in foreign currencies. By itself, this measure of direct exposure can provide only a narrow assessment of the bank's exchange rate sensitivity since - as described above - the value of the bank's domestic assets will also vary with the exchange rate. The presented model is a standardized approach for measuring the foreign exchange risks, while in the banks that have bulk of the transactions, the measuring of this risk could and should be based on the model that inter-relates other aspects of the business as market risk, interest rate sensitivity, etc.

Table 1

Foreign exchange exposure- Balance sheet of a bank A

Assets	In local currency	In foreign currency	Total
Cash	121	151	272
Loans	550	320	870
Fixed assets	0	60	60
Other assets	15	20	35
Total	**686**	**551**	**1.237**

Liabilities	In local currency	In foreign currency	Total
Financial Institution deposits	15	140	155
Retail deposits	230	250	480
Corporate deposits	120	172	292
Credit lines	20	40	60
Other liabilities	12	15	27
Capital and reserves		223	223
Total	**397**	**840**	**1237**

FX Exposure= FX assets-FX Liabilities = 551 euro M-840 euro M = -289 euro M

Source: Personal example based on the practical knowledge

The internal models approach enables banks to take a broader view of their foreign exchange risk than does the standardized method. The internal models approach focuses on evaluating the risks arising from banks' trading activities. The approach is well-suited to incorporate the correlation between, say, the value of interest rate instruments and the value of foreign exchange. In principle, the internal models approach allows each bank to measure its exposure carefully enough to incorporate the relationships among even its non-trading operations. However, even at its best, the internal models approach is limited in its range of coverage.

An even broader approach to assessing banks' foreign exchange risks can be obtained from an analysis of banks' equity returns. Equity returns reflect changes in the value of the firm as a whole. So, if the value of a bank as a whole is sensitive to

changes in the exchange rate, the bank's equity returns will mirror that sensitivity. Whether from direct or indirect sources, foreign exchange exposure will be reflected in the behaviour of returns. Thus, the exchange rate sensitivity of a bank's equity returns provides a comprehensive measure of its foreign exchange exposure.

5. FOREIGN EXCHANGE RISK TOOLS AND MODELS

There is a significant difference in the level of education and recognition of the FX risk among the companies and banks and hence in the undertaken measures for protection.

Investors that are placing funds in the companies or banks have exposure to fluctuations in all kinds of financial prices, as a natural by-product of their operations. Financial prices include foreign exchange rates, interest rates, commodity prices and equity prices. The effect of changes in these prices on reported earnings can be overwhelming. Often, it can be seen that companies say in their financial statements that their income was reduced by falling commodity prices or that they enjoyed a windfall gain in profit attributable to the decline of their reporting currency.

One reason why companies attempt to hedge these price changes is because there are risks that are peripheral to the central business in which they operate. For example, an investor buys the stock in a company in order to gain from its management of the company's business. The investor does not buy the stock in order to take advantage of a falling currency, knowing that the company exports over 75% of its product to overseas markets. This is the insurance argument in favour of hedging. Similarly, companies are expected to take out insurance against their exposure to the effects of theft or fire. One of the most common used tools for protection against the foreign exchange risk is hedging.

By hedging, in the general sense, we can imagine the company entering into a transaction which sensitivity to movements in financial prices offsets the sensitivity of their core business to such changes. Hedging is not a simple exercise nor is it a concept that is easy to pin down. Hedging objectives vary widely from companies and banks, even though it appears to be a fairly standard problem, on the face of it. And the spectrum of hedging instruments available to the corporate treasurer is becoming more complex every day.

There is another reason for hedging the exposure to its financial price risk and that is to improve or maintain the competitiveness... Banka and companies do not exist in isolation. They compete locally and internationally.

Banks and companies that are the most sophisticated in this field recognize that the financial risks produced by their businesses present a powerful opportunity to add to their bottom line while prudently positioning so that it is not pejoratively affected by movements in these prices. This level of sophistication depends on the experience, personnel and management approach. It will also depend on their competitors. If there

are five banks or companies and three of them engage in a comprehensive financial risk management program, then that places substantial pressure on the more passive banks or companies to become more advanced in risk management or face the possibility of being priced out of some important markets. Entities that have good risk management programs can use this stability to reduce their cost of funding or to lower their prices in markets that are deemed to be strategic and essential to the future progress.

Most importantly, hedging is contingent on the preferences of the entity's shareholders. There are entities whose shareholders refuse to take anything that appears to be financial price risk while there are other entities whose shareholders have a more worldly view of such things. It is easy to imagine two entities operating in the same sector with the same exposure to fluctuations in financial prices that conduct completely different policy, purely by virtue of the differences in their shareholders' attitude towards risk.

6. HEDGING

Hedging is the most common and widely used tool for managing the FX risk. It presents a set of correlated instruments for limiting or neutralizing from the adverse movements of a deal. The risk aversion is an attitude where the economic actor is concerned with the negative impact of the shocks. From the perspective of the risk-averse producer, shocks can only have an adverse (or at best neutral) effect (a reduction in output, etc.). Consequently, risk aversion can be defined in terms of the concerns and outlook of the agent and not the derivatives of a utility function. Contrary to the traditional concept of risk-aversion, a major advantage of this framework is that the attitude toward risk is not a synonymous with the attitude toward wealth.[9)]

Hedging foreign exchange helps banks/companies to remove the uncertainty from their financial forecasts. The exchange rate may not be as favourable as last year, but at least it means that a more accurate budget can be drawn up with no nasty surprises at the end of the fiscal year.

6.1 Hedging the foreign exchange risk in companies

FX hedging is best when it is simple. For many companies buying simple forward contracts that will deliver the foreign currency in three to six months can be the most effective way to hedge FX exposure.[10)]

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9) Alghalith, Moawia - Hedging with a New Risk-Aversion Concept, International Atlantic Economic Society, 2008. p.80

10) See:(Feeling the FX volatility, www.financialdirector.co/uk/ 2154091).

A natural hedge is an investment that reduces the undesired risk by matching cash flows, i.e. revenues and expenses. For example, a company that opens a subsidiary in another country and borrows in the local currency to finance its operations, even though the local interest rate may be more expensive than in its home country: by matching the debt payments to expected revenues in the local currency, the parent company has reduced its foreign currency exposure.

Optimum hedging theories postulate that hedging firms should be less exposed to foreign exchange rate movements than non-hedging firms. Since data on hedging activities are mostly incomplete and difficult to obtain – the exact nature of derivative positions is usually not disclosed – the variables are used of proxy firms' incentives to hedge in order to examine the relationship between hedging activities and estimated exchange rate exposures. Because managing foreign exposure entails high costs that offer operational, financial and informational economies of scale, firms have a motive to hedge if hedging benefits are greater than costs. Larger firms with economies of scale in hedging cost, therefore, are more likely to hedge than smaller firms. On the contrary, smaller firms face higher bankruptcy costs as their probability of financial distress is higher. Correspondingly, these firms have more incentives to hedge than larger firms and should be less exposed to foreign currency risks. Thus, the impact of firm size on exposure is ambiguous and has to be empirically verified.

According to some authors, there are three strategies for hedging exposure to foreign exchange risk: (1) to hedge always, (2) to hedge or not to hedge depending on the expected spot exchange rate, and (3) not to hedge always. The three strategies are applied to historical data involving three currencies to obtain results showing that there is no significant difference in the performance of the three strategies if the measure of performance is the domestic currency value of payables. In the long run, the three different strategies produce more or less similar results, indicating that there is no need to worry about hedging exposure to foreign exchange risk. Even the availability of perfect forecasts does not make any difference for the outcome.

The discussion leads to the following conclusion. If the company faces a regularly arising foreign currency exposure over a long period of time, and provided that on no occasion is the exposure significantly large, hedging will be irrelevant, since various hedging strategies will produce similar results. However, if the exposure is large and arises only infrequently, then hedging is imperative to avoid the consequences of adverse movements in exchange rates. If the sole objective is to eliminate risk, then forward hedging should be used in preference to money market hedging. However, the advantages of hedging via currency options must be considered against the costs of using the appropriate instrument[11)].

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11) Moosa, Imad A.- Is there a need for hedging exposure to foreign exchange risk?, Applied Financial Economics, 2004, p.283

Another way to measure a firm's probability of financial distress is its long-term debt ratio. Indeed, firms with higher debt ratios (DE) tend to be confronted with higher bankruptcy costs and have therefore more incentives to hedge, thereby reducing the expected costs of financial distress. As these firms have more incentives to engage in hedging activities, they are expected to be less exposed to foreign exchange rate risk. In addition, a firm can reduce its probability of financial distress and agency costs by maintaining a larger short-term liquidity position. By keeping a higher quick ratio or by deciding on a more restrictive dividend payout policy, a firm is therefore less compelled to hedge and hence more exposed to exchange rate risk.[12)]

There are many types of risk that are subject of hedging. Credit risk is the risk that money owing will not be paid by an obligor. Since credit risk is the natural business of banks, but an unwanted risk for commercial traders, naturally an early market developed between banks and traders: that involves selling obligations at a discounted rate. Currency hedging (also known as Foreign Exchange Risk hedging) is used both by financial investors to parse out the risks they encounter when investing abroad, as well as by non-financial actors in the global economy for whom multi-currency activities are a necessary evil rather than a desired state of exposure.

Currency hedging, like many other forms of financial hedging, can be done in two primary ways: with standardized contracts or with customized contracts (also known as over-the-counter or OTC).

The financial investor may be a hedge fund that decides to invest in a company in, for example Albania, but does not want to necessarily invest in the Albanian currency. The hedge fund can separate out the credit risk (i.e. the risk of the company defaulting), from the currency risk of the Albanian lek by "hedging" out the currency risk. Actually, this means that the investment is effectively a USD investment in Albania. Hedging allows the investor to transfer the currency risk to someone else that wants to take up a position in the currency. The hedge fund has to pay this other investor to take on the currency exposure, similar to insuring against other types of events.

Compared to other types of financial products, hedging may allow economic activity to take place that would otherwise not have been possible. The increased investment is assumed in this way to raise economic efficiency.

The foreign exchange exposure is increasing in inherent exposure. Also, exposure is decreasing in firm size. The larger firms may have lower inherent exposure due to their ability to use operational hedges. The financial hedges are effective in reducing firms' foreign exchange exposure. Financial hedging is associated with risk reduction for firms that use currency derivatives and/or foreign denominated debt. Particular

12) Muller, Aline - European Foreign Exchange Risk Exposure, European Financial Management, 2006. P.215

interest is directed towards the impact from transaction exposure hedges and translation exposure hedges respectively. This is of interest because translation exposure and transaction exposure tend to affect firms differently. The results suggest that there are risks reducing effects from transaction exposure hedges as well as from translation exposure hedges. A possible explanation for the latter is that translation exposure approximates the exposed value of future cash flows from operations in foreign subsidiaries (i.e. economic exposure). If so, by hedging translation exposure, economic exposure is reduced.[13)]

6.2 Hedging instruments in banks and companies

There are many hedging instruments that serve both banks and companies for hedging their positions like forwards, forward rate agreements, currency options, on-deliverable forwards, futures and others, which are briefly described hereinafter.

Forward is a simple derivative and it is assumed that one party has long position and agrees to buy the underlying asset at a certain specified date in the future at today's agreed price. The other party has the opposite position i.e. short position and agrees to sell the asset at the agreed price. Here, we must distinguish between the forward price and the delivery price. Forward price is the market price that would be agreed today for the delivery of the assets. It is usually based on the spot market price corrected with the interest rate differentials of the contracted currencies. [14)]

There is a large literature that documents the existence of significant differences between the forward exchange rate and its ex post realisation. The bias of the forward exchange rate as a predictor of the future spot exchange rate can be viewed as evidence of market inefficiency; or the existence of time-varying risk premia in a rational expectations world; or of irrational expectations, or possibly a combination of the above. Much of the literature is trying to explore the statistical properties of the ex post foreign exchange risk premium on the assumption of market efficiency. Any test of market efficiency needs to assume a specific equilibrium model, and therefore, will be a joint test of market efficiency and validity of the equilibrium model.[15)]

A Forward Rate Agreement is a contract agreement specifying an interest rate amount to be settled at a pre-determined interest rate on the date of the contract. This is also known as FRAs.

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13) Hagelin, Niclas et al.- Hedging Foreign Exchange Exposure: Risk Reduction from Transaction and Translation Hedging, Journal of International Financial Management and Accounting, issue 15:1 2004, p.15

14) Hull, John, C. - Options, Futures and other derivatives, Prentice Hall, 2000. p. 437

15) Panigirtzoglou, Nikolaos- Implied Foreign Exchange Risk Premia, European Financial Management, Vol. 10, No. 2, 2004, p.321–338

Currency option is a contract that gives the owner the right, but not the obligation, to take (call option) or deliver (put option) a specified amount of currency at an exchange rate decided at the date of purchase. The advantages of the options are the following: they control more assets with less money, trade with the leverage because the costs are low, the position is much more sensitive to the underlying stock's price movements and hence percentage returns might be much higher, trade for income if the designed strategy is channeled for constant income generating, reduce or eliminate risk.

Having in mind all above advantages, one might ask the questions why traders are not using options to eliminate the risk. The answer to this question is the fact that entry barriers are quite high and the options are very complex instruments and it is quite hard to understand them.[16)]

In considering whether an option should be perceived as a hedge or as a speculative instrument, a hedger's main concern is the value of the option at maturity. For this reason, any fluctuation of the option's intrinsic value during its life is important, but any change in its time value is largely irrelevant. Also, as the option is itself a hedge, no further hedging is required and therefore there are no extra costs.[17)]

Non-Deliverable Forwards (NDF) is strictly risk-transfer financial product similar to a Forward Rate Agreement, but only used where monetary policy restrictions on the currency in question limit the free flow and conversion of capital. NDFs are, as the name suggests, not delivered, but rather, these are settled in a reference currency, usually USD or EUR, where the parties exchange the gain or loss that the NDF instrument yields, and if the buyer of the controlled currency truly needs that hard currency, he can take the reference payout and go to the government in question and convert the USD or EUR payout. The insurance effect is the same, it's just that the supply of insured currency is restricted and controlled by government.

Interest rate parity and Covered interest arbitrage is a simple concept that two similar investments in two different currencies ought to yield the same return. If the two similar investments are not at face value offering the same interest rate return, the difference should conceptually be made up by changes in the exchange rate over the life of the investment. IRP basically gives the math to calculate a projected or implied forward rate of exchange. This calculated rate is not and cannot be considered a prediction or forecast, but rather is the arbitrage-free calculation for what the exchange rate is implied to be in order for it to be impossible to make a free profit by converting money to one currency, investing it for a period, then converting back and making more money than if you had invested in the same opportunity in the original currency.

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16) Cohen, Guy- The bible of options strategies, FT Prentice Hall, 2005. p.33

17) Shani Samah- A Currency Options Primer, John Willey& Sons, Ltd, 2004. p.44

Hedging equity & equity futures - Equity in a portfolio can be hedged by taking an opposite position in futures. To protect the stock picking against systematic market risk, one might short futures when buying equity.

The perfect hedge can be created using the money market. That hedge eliminates the random element in money market hedge and is the appropriate hedge to compare with a forward exchange hedge. The choice of hedging techniques depends on the validity of the interest parity relationship for a particular hedger.[18)]

7. HEDGING TRANSLATION EXPOSURE IN A BANK

Balance sheet risk is largely made up of foreign investments or debt structure of the bank. On a daily basis, there are a large number of deals that affect the balance sheet positions, or it is affected by the simple change of the fixing rate at which the booking should be done. Therefore, the ideal situation for a bank is to have squared balance sheet position at any time. However, this is neither possible nor real situation, so many banks have introduced their own policies how to manage the balance sheet position, which instruments to use and how frequent.

In case of a currency structure mismatch, the best possible hedging scenario is to make the opposite deals at rates that provide profit for the bank. For example, if a bank has approved loan, it has to sell amount equal to the approved loan for neutralizing the position, and opposite, to buy foreign currency when the loan is collected.

When a bank has a “long position” in a foreign currency, it has surplus of assets in that currency versus its base or home currency. A sale in a foreign currency generates a receivable and consequently contributes to a long position or exposure in that currency until it is paid and converted. A bank can offset that asset and the related currency risk exposure without entering into a forward FX contract or option by creating a counter liability. Such a counter liability, for foreign currency purposes, would be borrowing an amount of money in that foreign currency equal to that receivable. When the foreign buyer pays the receivable, the company can use the proceeds to pay off the foreign currency loan. However, there are costs associated with this type of hedging, such as those related to the loan itself as well as legal or other possible costs. This type of hedging is best suited for banks that engage in numerous foreign transactions and investments.[19)]

Usually, the banks dispose with the software applications that provide correct data on the position, so they close them at the end of day.

In some cases, where the rates are not favorable, the banks might intentionally leave open position, which becomes speculative position.

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18) Eaker, Mark R.- Covering foreign exchange risk, The Journal of Finance, 1980, p.65

19) Diana, Tom- How to hedge the foreign exchange risk, Business Credit, issue April 2007

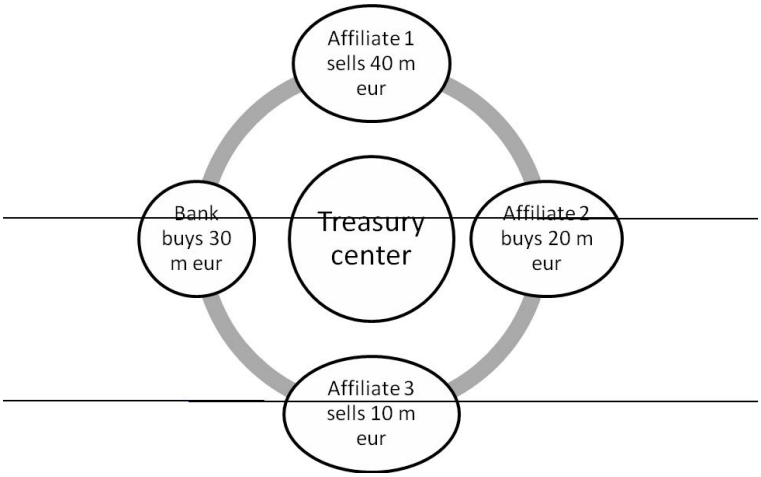
8. HEDGING ECONOMIC EXPOSURE OF A BANK

Economic risk reflects the degree to which the present value of future cash flows might be affected by exchange rate movements. Exchange rate moves are themselves related trough purchasing price policies to differences in inflation rate. For example, if the costs are in line with the exchange rate move, the original value is restored in line with purchasing price parity and economic exposure does not matter. However, cost inflation differs from general inflation rate, which in turn affects the competitiveness relative to competitors of the banks, so in this case economic exposure does matter and the best way to hedge it is to finance operations in the currency to which the bank's value is sensitive.

The reliance on the Treasury Centres to manage exchange rate hedges on a centralised basis is the "classic" approach adopted by most multinational companies. Such "netting" allows the reduction of the foreign exchange risk basis by taking advantage of natural hedges to enhance the efficiency of internal control by specializing and concentrating the expertise at treasury centre level obtaining in that way one single entity in the market that results in a better and fairer distribution of operations among banks.

The problem of netting opposite positions becomes apparent in a strategy model of the Cash Flow Hedge type. [20)]

Figure 1. Netting



Source: Masquelier, François, July-September 2005, p.19

[20)] Masquelier, François- Centralization of foreign exchange risks under IAS: Problems of netting foreign exchange risks at the level of treasury centers, Treasury affairs, Vol.1 (3), July-September 2005, p.19

This model is mainly used by the banks having many branches or affiliates and by netting of all individual position, the bank is focused to hedge just the net position because individual deals are hedged internally and what remains is just residual part.

Conclusion

Doing business internationally has a lot of advantages for both-banks and companies offering products and services and for the customers who are the final users. But international business exposes the providers of products and services to a risk coming from different inter-currency relation between the currency of a mother company and the local currency, where the business is opened. So, the most important fact in such cases is identification that this risk exists and undertaking appropriate measures for prevention from unwilling effects.

From the presented material it is evident that there are three types of risk-transaction, translation and economic FX risk out of which the last two are more crucial and need attention to be monitored and managed.

The level of protection against the foreign exchange risk depends on the awareness of the companies / banks that are somehow connected with the international activities and the risk appetite willing to be accepted. There is evidence that less educated companies and banks without introduced treasury units are much more exposed to the foreign exchange risk than the ones who are paying much attention to it. The negligence of such behavior might severely deteriorate the financial results of the entity even to the level to the closing the business. And on the contrary, even in the banks with established advanced treasury departments, there is evidence that due to big risk appetite have materialized huge fx losses to the level that jeopardizes the further existence in the market.

The practice shows that there are a lot of tools and models designed for identification, measuring and managing the foreign exchange risk. Which tool and model will be selected depends on the decision of each bank/company i.e. the size and the type of the business, the international financial instruments used, the accounting standards etc. Banks with pretty simple international activities and financial instruments are using plain vanilla hedges, while the ones who have big FX positions and are using different financial instruments must protect themselves with a range of available hedging tools like: swaps, forwards, futures, non-deliverable forwards etc. However, international connection gives the full benefit to all stakeholders only if all connected risks are identified, measured and managed.

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