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BENEFITS FROM INTERNATIONAL DIVERSIFICATION: INDIAN EXPERIENCES

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Abstract

Investing beyond border reduces risk compared to traditional domestic investment; this assertion is well founded by numerous researches in financial economics. The benefit virtually emerges from two sources. Increase in the number of investible countries that widen scope of international diversification and less than perfect correlation among world markets that essentially helps in risk reduction. Thus "widening scope" and nature of co movement among markets are the two main sources of benefit from international diversification. The study, however suggests that due to various restrictions coupled with "home bias", international investors still rely on domestic market that suggests diversification inefficiency.

Key words: *Portfolio investment, International financial markets, Diversification, Risk reduction, Co variance*
JEL Classification G 15 G10 F31

Introduction

There is a clear consensus among financial economists that return correlation among assets is the single most important factor to reduce risk for a given level of returns that make up the portfolio. Low as opposed to high correlation among international markets suggest, agenda of globalization yet to be completed and still any artful portfolio manager can enjoy the benefit of risk reduction by investing abroad. But this benefit is only achievable against higher transaction cost, tax, cost of collecting information and numerous other cost, finally it is truly a difficult task to asses "net benefit" of international diversification.

In many organizations, equity investing started as a domestic only affair with institutional investors investing in securities and companies that they "knew". Given the domestic focus of many investors' that is widely

known as “home- bias”, fascination to invest in the local market is not surprising. Risk reduction even with inclination for local market is possible if most of the revenue of domestic companies flow from foreign countries [Oleg Ruban and D.Melas2009], or a number of foreign companies enlist shares in the local market. “Invest locally-enjoy benefit of global economy”, this opportunity is truly achievable to an extent in developed markets. The benefits of course largely absent in the emerging markets those are in fact comparatively less integrated and ill developed. Poor ‘quality’ of functioning of emerging markets , unfavorable regulatory environment, informational inefficiency, high transaction cost discourage foreign investment and prevent investors of developing economy to enjoy benefits of international diversification. So financial economists those who adore internationalization of financial system suggest- “invest abroad”, “allow foreign portfolio investment” and enjoy benefits of diversification instead of relying on domestic market alone.

Scope of the Study

Declaration “invest abroad” though appears sound and simple but a number of crucial problems to be addressed carefully before responding to the current slogan -“go beyond the boundaries”. Goal of risk reduction by international diversification is undeniably important and rightly emphasized by financial economist. But neither it is possible to invest in all the available countries nor is it desirable too. It involves huge transaction cost, administrative expenditure or even it may be unmanageable. Instead of following any “careless policy”, “quality of the market” along with pattern of co movement of earnings to be considered. Financial economists of course find more interest to study - Should we construct simply debt or equity portfolio? If it is a combination of two, what should be the optimal mix? Should we follow passive or active portfolio strategy? What are the implications of country restriction on portfolio mix and performance? Country or industry sector which one is important? How to select benchmark portfolio? “To hedge or not to hedge” what strategy to be followed? How to manage currency risk? Financial economists are grossly engaged to answer above problems that disturb asset managers while investing abroad. Obviously nature and extent of the problem varies across countries or region such as currency risk is nearly irrelevant in Euro countries, in developed economy investors enjoy more freedom to decide over asset mix, alternatively concept of optimal portfolio is nearly unachievable in many emerging economies due to enormous restrictions.

Present thesis mainly attempts to answer some contemporary issues of international portfolio diversification. In fact there are two main factors that influence risk reduction, first, extent of opportunity available for investment in foreign asset, second, nature of co movement among assets. Such as, if scope of foreign investment is restricted, exactly what happens in closed economy, study of co movement becomes irrelevant. While correlation and risk reduction is widely discussed in the literature of financial economics, widening of scope and it s impact on performance of international portfolio is mostly ignored. As the present movement for internationalization is predominantly restricted in some developed economy thus there is wide scope of investing in relatively unexplored and less integrated economy to enjoy benefit of diversification .Firstly we attempted to measure benefit of widening scope of investing in the new era. Secondly, we tried to show risk –return relationship in the changing economic environment to attest attractiveness of overseas investment. This will help investor to decide should we invest domestically, regionally or globally. Of course, if all the investors hold the world market portfolio then only theoretically it would be possible to achieve global equilibrium.

Review of Literature

We reiterate, that the scope of this section is to measure the benefit of international diversification with no ambition to predict risk, to decompose sources of risk, to assign weight age to each source of variance and to measure risk premium objectively [Pollet and Wilson 2010]. There are outstanding research works showing correlation changes and its impact on risk-return relationship of portfolio and these can only be ignored at the cost of huge error. Study of regime-switching model developed by Ang and Chen [2005] along with

other notable researchers documented impact of asymmetric correlations [Butler and Joaquin 2002, Longin and Solnik 2001, Arouri2004] on equity portfolio. Between average correlation and average variance, it is the latter that dominantly influence portfolio risk. [See Pollet and Wilson 2010] .In our case we simply tried to show benefit of investing beyond national boundaries at a point of time relying on widely used mean variance concept first proposed by Markowitz[1952] followed by scores of researchers. Following earlier studies we followed passive instead of active strategy [Solnik 1994, Solnik et.al 1996, Bartram and Dufey 2001, Arun A. Kumar 2008, Ruban and Melas 2009] because it minimizes transaction cost and cost of rebalancing the portfolio.

For an international investor, the return on any foreign asset varies partly due to asset specific risk and the rest stems from fluctuations in exchange rates. Though the importance of each component of risk varies, grossly total risk of international investment may be defined as the summation of asset specific risk and currency risk while the latter constitutes only 10% of total risk [See Sohnke and Dufey 2001]. There are good number of research that has dealt with currency risk elaborately with robust econometric tools and no serious study can ignore these findings [Bhattacharya and Mukherjee 2003, Nath and Samanta 2003] Similarly, a wide group of researchers most probably due to fuzzy relationship between stock and exchange market, trivial contribution of exchange risk in the total risk, insurmountable problem of management and cost involved preferred to ignore this component of risk [See Odier and Solnik 1993 Froot 1993, Black1989]. We also ignored currency risk in the present writing.

There is a long standing debate –Is it country or industry effect that influences portfolio performance? Should portfolio manager follow “top down” or “bottom up” approach as it is conveniently known in modern finance? In emerging market, study suggests country effect is more prominent than industry [A. Kumar, 2008, Griffin and Stulz 2001].Thus we considered country level diversification ignoring industry effect in the present study.

Diversification Ratio and Risk Reduction: Methodology, Data Sources and Time Period

Investors who prefer to invest only in domestic market virtually restrict themselves to a smaller number of securities to choose from. Since they exclude the large set of foreign stocks, bonds and other securities, they limit the power of diversification a priori and forgo the possibility of further reducing portfolio risk by picking some foreign stocks that show low correlation with domestic portfolio.

One of the most popular findings in financial economics is sequential addition of stocks decrease in portfolio risk. Initially, the portfolio variance decreases rapidly as the number of investible country increases thereafter it reduces marginally. Statman [1987] concludes that most of the variance reduction can be achieved when the number of stocks in a portfolio reaches 30. Underlying assumption is, while individual security variance matters for portfolio with few stocks, portfolio variance is primarily driven by the average covariance when the number of securities becomes large. The lower the covariance between securities, the smaller the variance of a diversified portfolio becomes, relative to the variance of the securities that make up the portfolio. The primary motive for international diversification has been to take advantage of the low correlation between stocks in different national markets. Grubel [1968], Levy and Sarnat[1970] Solnik [1996] ,Goetzmann et.al. [2005] and others conclude that an internationally diversified portfolio enjoy a substantially reduced risk compared to the portfolio invested domestically. This is the point that we attempt to elaborate in this section with due attention to Indian investors.

A number of researchers considered individual stock return data to study the benefits of international diversification at the company level. But given that these benefits are largely driven by the correlation across markets, a simple analogue can be constructed by comparing the variance of a portfolio of country indices relative to the variance of portfolios that invest only in a single country. This will help to understand incremental benefits of diversifying internationally rather than investing in a single domestic market.

Benefits of international diversification mainly stem from two main sources. The first is the average covariance – or correlation –between markets. A lower covariance rotates the diversification curve downwards.

This is widely discussed, need little elaboration and we describe it as "qualitative aspect" of risk reduction. Stock market variance may be defined as a product of correlation among markets ρ_t and individual market variance σ^2_t.The stock market portfolio is the weighted portfolio of all stocks where w_j^t is the weight age defined as the fund invested in each country. The variance of the portfolio return is given by

$$\sigma^2_{s,t} = \sum_{j=1}^{N}\sum_{k=1}^{N} w_{j,t} w_{k,t} \rho_{jk,t} \sigma_{j,t} \sigma_{k,t}$$

We defined σ^2_t to be equal weighted cross sectional average variance for the N stocks,

$$\dot{\sigma}^2_t = \frac{1}{N}\sum_{j=1}^{N} \sigma^2_{j,t}$$

We let €jkt the pair wise stock specific deviations from the cross sectional variance average for variance

$$\xi_{jk,t} = \sigma_{j,t}\sigma_{k,t} - - \dot{\sigma}^2_t$$

and rewrite the expression from stock market variance

$$\sigma^2_{s,t} = \sum_{j=1}^{N}\sum_{k=1}^{N} w_{j,t} w_{k,t} \rho_{jk,t} (\dot{\sigma}^2_t + \xi_{jk,t})$$

$$= \dot{\sigma}^2_t \sum_{j=1}^{N}\sum_{k=1}^{N} w_{j,t} w_{k,t} \rho_{jk,t} + \sum_{j=1}^{N}\sum_{k=1}^{N} w_{j,t} w_{k,t} \rho_{jk,t} \xi_{jk,t}$$

Thus stock market variance is the sum of two terms. The first term is the product of the equal weighted average of individual stock return variances and the value weighted average of return correlations across all pairs of stocks in the portfolio. The second term depends on the cross sectional relationship weights, pair wise correlations, and cross product of standard deviations. When all assets have the same individual variance, the second term is equal to Zero and the expression can be simplified accordingly.

$$\sigma^2_{s,t} = \dot{\sigma}^2_t \sum_{j=1}^{N}\sum_{k=1}^{N} w_{j,t} w_{k,t} \rho_{jk,t} = \dot{\sigma}^2_t \dot{\rho}^2_t$$

This expression has two components: average variance and average correlation. We approximated stock market variance with the right hand side of the equation. For a detailed discussion and derivations see Pollet and Wilson [2010]

The second important factor is the implication of increase in the number of investible markets available to investors on portfolio risk. An increase in the number of available market allow investors to move down along a given diversification curve. Earlier studies unduly emphasized on how increased correlation among markets in the new regime limits benefit of diversification ignoring the offsetting impact of increasing investment opportunity that was not available earlier. We refer this aspect often ignored by economists as "quantitative" aspect of risk reduction. [See Goetzmann et.al. 2005]

We developed the following model to measure independent and joint impact of correlation with increase in international investment opportunity .Algebraically, the ratio of the variance of an equally – weighted portfolio to average variance of a single market is given by:

$$Var\frac{\left(\sum_{i=1}^{n} X_i / n\right)}{\frac{1}{n}\sum_{i=1}^{n} Var(X_i)} = \frac{\frac{1}{n^2}\sum_{i=1}^{n} Var(X_i)}{\frac{1}{n}\sum_{i=1}^{n} Var(X_i)} + \frac{\frac{1}{n^2}\sum_{i\neq 1}^{n} Cov(X_i, X_j)}{\frac{1}{n}\sum_{i=1}^{n} Var(X_i)}$$

using upper bars to indicate averages, this can be written as:

$$\frac{1}{n}+\left(\frac{n-1}{n}\right)\times\frac{\overline{Cov(X_i,X_j)}}{\overline{Var(X_i)}}$$

As the number of countries [n] becomes large, this simply converges to the ratio of the average covariance among markets to the average variance. If the correlations among individual markets were zero, virtually all risks would be diversifiable by holding a portfolio that combined a large number of countries. By contrasts, in times of high correlations, even a large portfolio of country indices would experience considerable volatility. With a limited number of international markets in which to invest, however, n may be small. Indian experience is satisfying in the sense; correlation of Indian market with the rest of the world is still encouraging from diversification perspective so possibility of risk reduction and scope of increasing the number of investable countries are wide. Our sample includes India, Japan, Singapore, Malaysia, Hong-Kong, South Korea, Thailand, Taiwan, along with two leading markets of the world U.S and U.K. Time period has been mentioned in the appropriate section. While constructing domestic portfolio we used Bombay Stock Exchange 200 (annualized daily log normal return) and long term Government Bond yield as reported in Reserve Bank of India Bulletin . We relied on mainly two international indices as sources of passive global investment opportunity and these are MSCI All Country World Investable Market Index[ACWI IMI] and MSCI Emerging Market Index [EM]

Empirical Findings

To calculate the separate impact of change in the correlations and secular increase of the investment opportunity set, we compute the above equations that gradually include

1] First, we consider two developed countries namely US and UK that are included in the sample.

2] Then we consider eight Asian countries that satisfy hypothesis of “proximity”.

3] In a sense we gradually increased the number and finally considered substantially large number of countries that is all ten counties that in a restricted sense represent world index [n = maximum available].

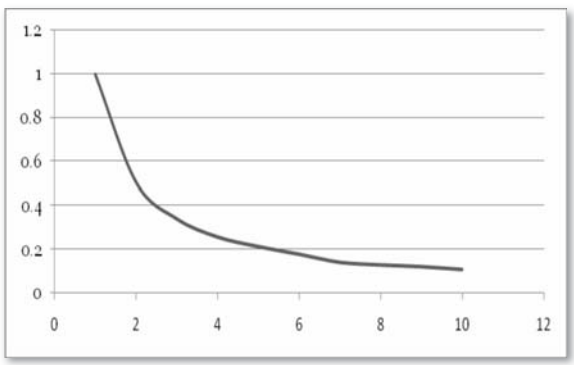
The Figuer-1 shows the ratio of variance of the equally weighted portfolio of country indices scaled by the average variance of the country indices, as a function of the number of countries in the portfolio. The ratio is computed as

$$Var\frac{\left(\sum_{i=1}^{n} X_i/n\right)}{\frac{1}{n}\sum_{i=1}^{n} Var(X_i)} = \frac{1}{n}+\left(\frac{n-1}{n}\right)\times\frac{\overline{Cov(X_i,X_j)}}{\overline{Var(X_i)}}$$

All returns are measured by capital appreciation and exclude dividends, converted to US dollars.

Figure: 1

REDUCTION OF EQUITY RISK: Country Effect



Number of Countries

Countries included are: India, Japan, Singapore, Hong Kong, Malaysia, South Korea, Thailand, Taiwan, U.S.A, U.K

Graph shows impact of change in the risk measured by correlation when investment opportunity set gradually increases. The final scenario gives the benefits of diversification for the full set of sample countries. In consonance with earlier studies ,findings of present work suggest " optimal portfolios are not necessarily well diversified"[Leavy and Sarnat 1970,Jorion 1985].Seven to eight countries are sufficient for maximum risk reduction as it is in our case there after it virtually remains constant. Seven countries portfolio reduces risk to the extent of more than 80 %.

Figure 2

RISK REDUCTION: RATIO OF PORTFOLIO VARIANCE AND VARIANCE OF INDIVIDUAL COUNTRY

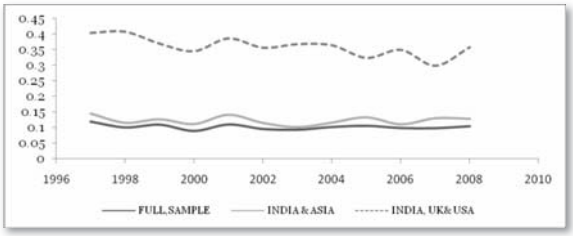


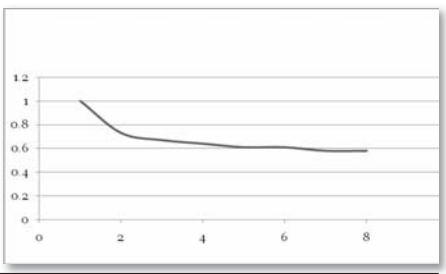
Figure 2 alternatively shows impact of diversification ratio on the portfolio variance and the average variance of the countries in the portfolio. Addition of new markets changes the variance structure; the influence can either be positive or negative depending on whether the additional markets increase or decrease average among markets. First, we consider two major economies [U.S, U.K] assuming Indian investors were allowed to invest only in these countries. Secondly we assume investment opportunity set was limited to only Asian countries and lastly all countries were considered. It is evident that the risk declines with increase in investment opportunity set but the benefit achievable is marginal when the opportunity set expands.

International bond investment strategy involves some unique features that widely differ from equity. Generally bond markets are more likely to be disintegrated and comparatively more susceptible to currency risk. Importance of bond market is gradually gaining importance in international investment as most of the pension funds in developed economy are primarily invested in bonds and those lessons may benefit us to manage pension fund in future. For bonds, can we observe identical trend of risk reduction or it deviates from equity. Earlier studies suggest low or even negative correlation among international bond market [See Bruno Solnik1994, Sohnke and Dufey 2001]. The reason emphasized is the national monetary policies are not fully synchronized among countries thus co movement of long term Government bond yield is surprisingly low. However, the correlation among bond markets is higher among countries with strong economic and monetary ties such as European Union countries [E.U]. The following graph suggests benefits of bond diversification among the sample countries which is closely similar to cross border equity investing.

Interestingly Fig. 3 shown below may provoke us to quesiotn - does bond diversification gives us slightly lower benefit than equity. Marginal difference in findings is partly due to variation in correlation of bond yield, variance of foreign currency and most importantly dissimilarities in sample countries for equity and debt portfolio. Latter includes all developed economy excepting India, countries that have incredible impact on world economy , that are closely integrated and scope of diversification benefit is minimum.In absence of reliable information on bond yield of Asian countries ,we were compelled to select some developed economy.

Figure 3

REDUCTION OF BOND RISK: COUNTRY EFFECT



Number of Countries

Countries included: India, Hong Kong, Japan,Germany, France, U.K, USA, Australia

The graph further shows only four contries are sufficient to enjoy bond diversification benefit to the extent of nearly 40%, though portfolio is not well diversified. Though initially it declines sharply thereafter risk reduction benefit is marginal.

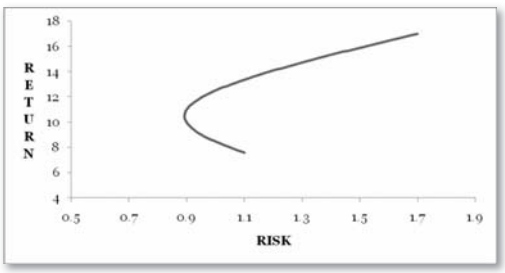
INTERNATIONAL INVESTMENT: THE DOMESTIC-INTERNAITONAL APPROACH

Reduction of risk is undneiably important that would help to optimize risk-return profile of investment. Costruction of such a portfolio is however not an easy task and we relied on a more practical and operaitonally manageble "passive approach".

Figure 4:

INDIAN INVESTOR: DOMESTIC DIVERSIFICATION -STOCK AND BOND [Rupee terms]

1997-2008



Efficient frontier for domestic diversification has been prepared that considered incremental allocation of 10% between the extremes: debt and equity. It may be reasonably argued "why stock –bond" instead of "large and mid cap" stock combine. There are studies suggesting implicaitons of large and mid cap stock combinations on efficient frontier [Ruban and Melas2009]. We relied on the popular belief supported by strong empirical evidences that portfolio should normally consist of atleast one importatant class of nonstock asset whose return covariance with the stock market is negatively related to the average variance of stocks. And this is mostly satisfied by long term government bond.We use local currency to calculate risk and return that represent hedged return. Alike many other emerging markets average return and risk of Indian market is too high-it is roughly 16% for equity and 7% for 10 year Government bond thus risk premium is about 9%. Whereas average world stock risk premium slightly exceeds 3 percent. Risk [α] return [r]relationship for an equally weihgted portfolio Is roughly 12.55 for India. Minimum risk portfolio (σ= .9) can fetch a return of 11% and risk return relatioship is 12.22 approximately. Allmost in each country there are restrictsions on asset mix,optimal equity investment is restricted for some funds, foreign investment for some fund is not allowed-so domestic diversification is only means for risk reduction.

Following earlier discussions we attempt to show how risk-return profile changes while investing abroad and the strtegy to be followed to accomodate currency risk. For an international investor, the return on any foreign asset varies not only because of asset specific risk, but also because of unpredictable fluctuations in exchange rates. Currency risk is relevant not only for optimal portfolio construction but also for determination of international assets equilibrium returns. In euro region an investor is aware of high likelihood of disappearance of the currency risk component of the total risk of his investment and concentrate on "fully hedged" asset risk. To make the argument slightly more formal, we denote with r the continuously compounded [or log] exchange rate change. Then,

$$r_k^c = r_k^k + x_k^c = r_k^k + X_k^c + X_s^c$$

While rkc is the return on country k portfolio denominated in currency c, and X_k^c the log of the changes in the exchange rate between currency k and currency c. The first part of the equation is the well known decomposition of foreign investment returns in local asset returns and currency returns. The second equality reflects the no-triangular arbitrage condition for exchange rate.

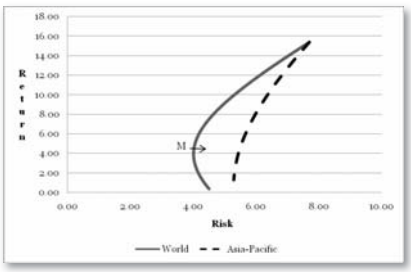
We ignored currency risk as it is comparatively insignificant compared with market risk. A diversified European portfolio, such as the MSCI Europe index has a very small currency risk component. The curren-

cy risk contribution of non-EU countries is larger than those EU currencies, but it is still small compared with market risk. In a global portfolio [the MSCI world index], market risk is ten times larger than currency risk [Solnik 1994]. While importance of currency risk is negligible, hedging is very costly in the long run because of the transaction costs and administrative burden of constantly monitoring and rebalancing the forward currency position. Often it is beyond the capacity of sophisticated investment manager to deal with the complex financial instruments that hedging involve.

Investing in global index in true sense provide the benefit of world diversification of fund.This section presents risk-return tradeoffs of internaitonal diversification, the opportunity that are widely available now. We followed passive portfolio strategy and considered MSCI ACWI index that is considered as a most comprehensive index. We assumed no constrain in investing abroad, though this assumpiton may be conveniently relaxed. India –World efficient frontier includes 16 portfolio along with two extremes.

Figure 5:

INDIA- WORLD , INDIA –PACIFIC STOCK ALLOCATION
[in $ terms, 1997-08]



In the equally weighted portfolio, risk/return ratio of globally diversified investment is 1.7, while minimum variance portfolio [M] would consist of 20% India and 80 % invested in global index. Though time period varies study of Robeco Group [1997] also suggests optimal portfolio allocation must rely more on international and less on local market and the ratio varies from as high as 90% for Germany to 50% for US. It may be questioned while correlation is time varying is there any possibility that expected gain from world portfolio diversification to decrease over time. Since the degree of market segmentation is constantly changing over time through a dynamic integration process, there exist conceptual problems that are based on static assumptions of completely segmented or partially integrated market. The argument is equally applicable to India and the possibility of shift in the efficient frontier with change in the covariance cannot be ignored.

Following theoretical assumptions both return and risk of world index is much lower in comparison with Indian index. Virtually ten year annualized return from world index was negative as reported by MSCI Barra, for the period understudy it was slightly positive. Interpretation is the variation of Indian stock index return which is not explained by the world index is diversifiable in the context of a world market portfolio. Hence, in an aggregate perspective, expected return from global investment can be stated as follows:

$$R_{mt+1} _ r_{f.t+1} = \beta_0 + \beta_1 Var_t[r_{mt+1}] + \lambda_{xt} + \epsilon_{t+1}$$

Where β_1 is positive $Var_t[r_{mt+1}]$ is the conditional variance of world market returns, $_{xt}$ represents other potential sources of variation in expected return $\epsilon_{t+1 = 0}$. Campbell [1993] derives this relationship for a representative agent with Epestein- Zin preferences under fairly general conditions. It is often assumed that the market portfolio satisfies a variance in mean relationship for excess log market return where λ is 0 in equation.

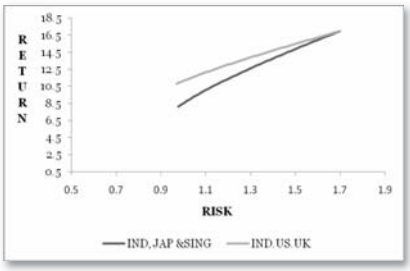
But our finding of investing in world index is incomparable with the result of domestic diversification that includes both stock and bond. For a comparative study of efficient frontier line and to analyze few theoretical underpinning it would be wise to consider India and Asia Pacific combination along with the case of Indian investors investing globally. Both are all equity portfolio simply scope of diversification is restricted to Asia –Pacific region in the second case. Ten years average annualized return from Emerging Market was positive but far less than Indian market.

Return of Indian market is more correlated with the market of Asian region represented by MSCI Emerging Market indices, thus the benefit of investing in neighboring Asian market is comparatively lesser. The efficient frontier line clearly explains the situation. Generally bondage among stock markets of the country that are geographically close to each other remains high that reduces scope of achieving diversification benefit [See Bartram and Dufey 2001]. Any solution in dashed line is suboptimal which is eminent from the above graph drawn from experiences of Indian investor investing in Asia pacific index. Same return can be earned with lower risk if funds were internationally diversified. In an equally weighted portfolio: when fund invested in global market risk –return relationship is 1.7 where as in case of Asia it is 1.38 that shows nearly 19% improvement in the performance of the global fund.

For a detailed analysis to study the impact of level of unification among markets, portfolio risk and efficient frontier we further consider two cases: Indian investors investing in Asian market namely Japan and Singapore, alternatively in U.S and U.K market. Both are three stock portfolios.

Figure 6:

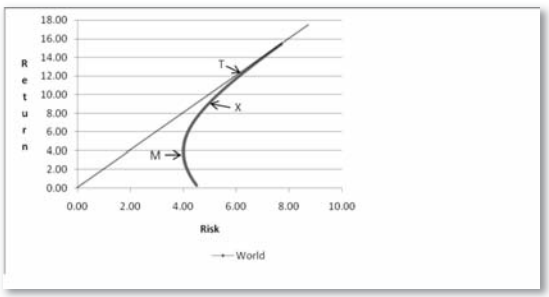
INDIA –ASIA & INDIA, USA, UK ALLOCATION
(local currency, 1997-2008)



It is clearly visible that investment in USA and UK is a better option than Japan and Singapore. Strikingly India maintains insignificant correlation of return with other four countries of our sample; the relationship varies in different time period but never reaches at a point that may be treated as statistically significant. But variance of return of say Japan is at least 21% higher than both U.S. and U.K, the countries that have nearly same variance that are 1.174 and 1.162 respectively. Similarly variance of Singapore is approximately 10% more than two leading markets of the world. Implication of this analysis is, average correlation and average variance together account for almost all variation in stock market variance and that average variance is the dominant component which affects stock market return. Dynamism of correlation and its impact on risk is a widely discussed issue and the researchers may be benefitted from the brilliant writings of Pollet and Wilson 2010.

Conjecture

GEOMETRY OF EFFICIENT SET



Above figure illustrates a classical minimum variance frontier derived from the data used to construct efficient frontier while Indian investor investing in world index. The minimum variance portfolio M and the tangent portfolio T with highest ratio of μ/α. Minimum variance portfolio includes 20% and 80% funds invested in Indian and world equity index respectively. If short sales are allowed, any portfolio X on the efficient set can be written as weighted average of two fixed portfolios: the minimum variance portfolio M and the tangent portfolio T with the highest ratio μ/α. With risk –free lending at zero rate of interest, this tangent portfolio is

the optimal choice for all investors. For N assets under consideration, the vector of portfolio weights q can be written as [Jorion 1985]:

$$q = x\frac{\sum^{-1} I}{I'\sum^{-1} I} + (1-x)\frac{\sum^{-1} u}{I'\sum^{-1} u} = xqm + (1-\bar{x})qr$$

Where μ is the vector of expected returns, 1 is a vector of ones, and ∑ is the variance –covariance matrix of asset returns. We have derived portfolio M from our own estimation. The weights of the minimum variance portfolio depend only on the sample covariance matrix; alternatively classical tangent portfolio relies on sample mean. Minimum variance portfolio at present is virtually unachievable due to various restrictions in all countries around the globe and "home bias" that induce investors to invest a fairly small proportion of their assets in foreign markets. Any discussion on minimum variance portfolio is relevant in Indian context particularly in the backdrop of current debate over privatization of pension fund. Aggregate ceiling for overseas investment by Indian mutual fund, registered with S.E.B.I, was enhanced from US 4 billion dollar to U.S $7 billion in April 2008. Gradual relaxation of current restrictions would help to minimize the differences between actual shares of foreign investment and the share of foreign assets that would be held in a "borderless" global portfolio. If asset managers are allowed to follow this principle, portfolio investments might be less prone to "boom and bust" cycles relative to other assets, being driven by long-term economic fundamentals.

Conclusions

Most serious defect of the classical approach is the poor out –of- sample performance of the optimal portfolios. Performance measure always deteriorates substantially outside the sample period, and the supposedly optimal choice is sometimes dominated by a crude approach. Furthermore, if the impact of time varying variances and co variances is not adequately accounted for both optimal choice and risk premium will be subject to miscalculation. The problem can be avoided to an extent if average correlation is considered to measure risk, the approach which has been followed in the present writing.

Another problem is the instability of the optimal portfolio: the proportions allocated to each asset are extremely sensitive to variations in expected returns, and adding a few observations may change the portfolio distribution completely. Also optimal portfolios are not necessarily well diversified. Often a corner solution appears where most of the investments are zero and large proportions are assigned to countries with relatively small capital markets and high average returns. Indian market is a classic example where both return and risk is comparatively too high in comparison to other markets of the sample. It's a major problem of practical application of mean variance analysis that warrants a closer examination.

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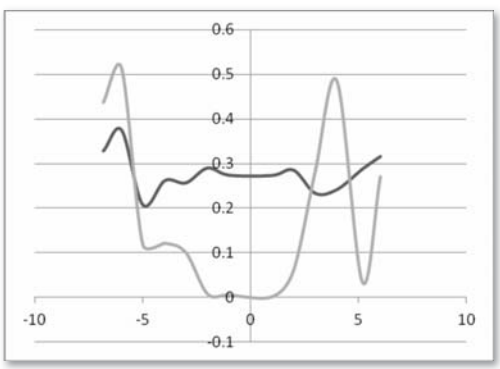
Appendix

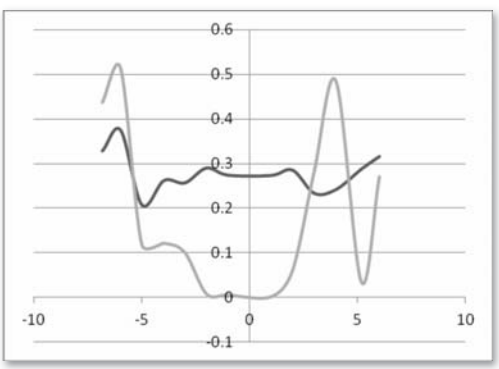
All earlier struggles for unification started with enthusiasm, ended up with frustration and culminated at protectionism; hence concept of "flat world" finally delivered some unpleasant experiences. But this time, advocacies of this precept suggest –"we learned from our experiences", "we are cautious, careful and determined to persuade this policy to create a new and prosperous world order". Among all factors of production, it is probably freewheeling and fast moving funds that have truly proved that the concept of "borderless economy" has some relevance. India with some initial hesitation finally joined in the saga of globalization. Virtually our policy makers at present are victim of the dogma that the change process is "irreversible" and "irresistible" that ushered in a mammoth increase in flow of fund to and from India. Central theme of the present study is to analyze 1] Impact of the volt –faced change in the policy on activities of capital market 2] much needed newer outlook of asset management to successfully navigate in the rough terrain of international finance.

Informational efficiency allow "invisible hand" to operate, control and discipline market, thus, minimize the scope of market failure and government intervention which is essentially counterproductive. Old institutional structure with a set of well defined rules, regulations within which individuals and firms operate may not be appropriate to achieve objective of the new regime. While change is essential, the mode, extent and speed may vary across the countries. Brilliant research in institutional economics point that informational efficiency and relevance of the concept of "equilibrium price" largely depends on "level of corruption," "state of rules and regulations", "property rights", "reporting practices," " corporate governance", "level of disclosure" etc. that ensures free flow of relevant and comparable information. No investor who cares about "market failure", be it domestic or international, can ignore above characteristics of market while deciding destination of investible fund. Of course it would be a wild thinking that market failure simply results from "poor institutional" structure. Instead present thesis emphasizes even with robust structure "break" is possible but in its absence failure is likely to be more frequent, pronounced and devastating. The concept was thrusted upon us by frequent massacre in international finance that we witnessed in the recent past resulting enormous suffering of investors. In the backdrop of above theoretical framework, a comparative analysis of the merits of the sample countries is given below.

A] Higher the opportunity of international investments more is the possibility of asset market development. By definition, emerging markets are comparatively less attractive destination of foreign funds, hence less attractive and mostly immature. Frontier markets for obvious reasons are virtually neglected by world community hence look haggard. But as a whole, growth of financial integration for developing economy is encouraging.

B] Institutional structure and "quality" of functioning of developed markets are superior to emerging market





UDC 339.743.053(497.7)"1992/2009"

NOMINAL EFFECTIVE EXCHANGE RATE NEUTRALITY: THE CASE OF MACEDONIA

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Abstract

This paper uses quarterly data on Macedonian nominal effective exchange rate for the time period 1992 to 2009 along with six other variables to investigate the nominal effective exchange rate neutrality. SVAR and Impulse response functions had been used to prove the hypothesis. Empirical evidence in this paper supports the nominal exchange rate neutrality in the case of Macedonia.

Keywords: *NEER, SVAR, Impulse response functions*

1. Introduction

Currently, the exchange rate regime in the Republic of Macedonia is what is refered to as a "managed float." The exchange rate of the denar is established on the basis of supply and demand of foreign exchange markets. The denar exchange rate against the euro serves as a fundamental of the Republic of Macedonia monetary policy. Money supply and interest rates are dictated by the exchange rate target. This paper uses Structural Vector Autoregression method to find empirical evidence for the nominal exchange rate neutrality concept for the case of macedonia. In particular, it examines whether Macedonian real GDP is neutral to changes in the nominal exchange rate as predicted by the macroeconomic theory.

Baxter and Stockman (1988), found little evidence of systematic differences in the behavior of other macroeconomic aggregates or international trade flows under alternative exchange rate systems. This is contra-

dictory to the claims that existed before this paper was published.[1] This is known as **Baxter-Stockman** neutrality of exchange rate regime puzzle. In this paper we will test the neutrality of the nominal effective exchange rate. Germany is our biggest trade partner so in the SVAR model we test influence of German Real GDP relative to Macedonian Real GDP.

This paper is divided as follows, Part 2 Theoretical and empirical literature on neutrality, here we set the theoretical foundations and empirical findings in this literature, in Part 3 we give data definitions and their sources, in Part 4 we set the SVAR model, in Part 5 we are interpreting the results from our models and in Part 6 we make conclusions.

2. Theoretical and empirical literature on neutrality

Neutrality is a condition in which one variable does not change as a result of changes in another variable (Geweke,1986). Geweke comments on structural and stochastic neutrality. First neutrality is when one variable has no effect on other variables in the model, while the second neutrality is when the change in the mean of the exogenous variable does not have impact of the value of a mean of an endogenous variable. Fisher and Seater (1993), define long run super neutrality. Let say nominal effective exchange rate is long run super neutral if

$$LRD_{y,\Delta neer} = \mu$$

Where LRD is long run derivative y is some real variable(let say Real GDP), is some change in nominal effective exchange rate μ should be equal to one if y is the nominal exchange rate and $\mu=0$ when y is real variable. Fisher and Seater (1993),claim that super neutrality applies to those variables that $LRD_{y,\Delta neer}=o$, so long run neutrality is necessary but not sufficient condition for super neutrality. Since the paper by Lucas (1972), money neutrality became one of the central issues in macroeconomics (Lucas tried to resolve Gurley paradox).[2] Nowadays, economists use VAR (Vector Auto Regressions) and SVAR (Structural Vector Autoregressions) techniques generally found some evidence of neutrality (Cogley 1993). In this study, the neutrality is refered to a situation, in which real GDP in Macedonia is neutral with regards to changes in the nominal exchange rate. Caporrale and Pittis (1995), they used the exchange rate neutrality to refer to the effect of the nominal exchange rate determination regime. As Papel (1992), points out the literature on nominal exchange rate neutrality is dominated by examinations of the neutrality of the exchange rate determination regime.

3. Data source and definitions

In this paper we use quarterly data derived from Econstats™,[3] and from the OECD data base,[4] and State statistical office of Macedonia[5] in the Table 1 these variables are summarized

1) Large class of theoretical models before implied that the nominal exchange rate system has important effects on a number of macroeconomic quantities, but Baxter and Stockman proved opposite.

2) John Gurley wrote the following parody of Friedman's monetary views: "Money is a veil, but when the veil flutters real output sputters." He meant, in theory, the money supply should only determine the number of zeros on price tags; it should not have real economic effects. In practice, however, wild swings in the money supply can produce wild swings in real output

3) http://www.econstats.com/ifs/NorGSc_Mac2_M.htm

4) Data on the German real GDP are gathered from OECD data base

5) Data on Macedonian Real GDP are collected from this source

Table 1 **Summary statistics**

Variable	description	Obs	Mean	Std.Deviation	Min	Max
realgdpmacedonia	Macedonian real GDP (quarterly data)[6]	24	12.5	7.071068	1	24
neermacedonia	Nominal effective exchange rate of Macedonia (quarterly data)	71	33.19718	20.33197	1	68
inflation	PPI index (quarterly data)	55	87.34418	15.43846	30.69	104.4
ir	Lending interest rate (quarterly data)	63	27.05957	48.68202	9.6	380.7
M1 macedonia	Monetary aggregate M1 (quarterly data)	27	14	7.937254	1	27
M2 macedonia	Monetary aggregate M2 (quarterly data)	27	14	7.937254	1	27
germany GDP	German Real GDP	71	95.25592	7.039186	83.46	108.2

All series will be transformed into logs for analysis except for interest rates and inflation.

This study uses quarterly data over the period from 1992 to 2009 encompassing 72 observations utmost (on some variables observations are missing).The use of 18 year horizon is short to international studies. Now, we will briefly explain the variables. The price of one currency in terms of another is called exchange rate. Here we use as a proxy for the exchange rate nominal effective exchange rate (NEER) variable, which adjusts all the individual bilateral rates for their share of total trade. This variable covers period from 1992quarter 1 to 2009quarter3. The relationship between nominal effective exchange rate and Real GDP is in the focus of our research. Gross Domestic Product data are calculated according to the new National Classification of Economic Activities NACE Rev.2.Money supply is included to capture the impact on other variables in the model, M1 the includes physical money such as coins and currency, it also includes demand deposits which are checking accounts, and all cash and assets that can quickly be converted in to currency. M2 is a category within the money supply that includes M1 in addition to all time-related deposits, savings deposits, and non-institutional money-market funds.These tvo variables cover period from 2003quarter 1 to 2009quarter3.Inflation as Producers price index is in the data set. Interest rate is another important variable in the macroeconometrics models, in our data it is the lending rate it covers period from 1994quarter 1 to 2009quarter 3.

4. Structural Vector Auto Regression (SVAR)

Since Sims(1980) VAR approach is very popular in the macroeconomic literature. In VAR modes all of the variables are considered endogenous and can impact other variables in the model. VAR representations are given in their structural or reduced form (Stock and Watson 2001)

$$Y_t = C(L)Y_t + \varepsilon_t$$

6) All these are quarterly data i.e. realgdpmacedonia (2004q1,2009q4), neermacedonia(1992q1,2009q3),inflation(1993q1,2006q3),ir(1994q1,2009q3),M1macedonia(2003q1,2009q3),M2macedonia(2003q1,2009q3),germanyGDP(1992q1,2009q3)

Where C represents the lagged values of the variable and other variables in the model, Yt is the vector of the variables in the model. SVAR model imposes restrictions on the VAR model. These restrictions that have the effects of assuming no causal relationship either contemporanesly or through lags are used as assistance in the identification of the model (Stock and Watson 2001).German Real GDP it is used in the model since Germany is our biggest trade partner. German GDP it is assumed it is not affected by Macedonian events; That is due to the fact that Macedonian economy is small size relative to the German economy.

Macedonian Interest rates are assumed to be influenced by the world economy, similar as Macedonian inflation. Macedonian money supply is related to the inflation, interest rates. Macedonian Real GDP is influenced by the all of the variables.

***Table 2* Contemporaneous Relationships among Variables**

DEPENDENT VARIABLES	INDEPENDENT VARIABLES					
	germanyGDP	inflation	ir	M1 or M2 macedonia	neermacedonia	realgdpmacedonia
germanyGDP						
inflation	*					
ir	*	*				
M1 or M2 macedonia	*	*	*			
neermacedonia	*	*	*	*		
realgdpmacedonia	*	*	*	*	*	

5. Interpretation of the results

When conducting VAR analysis standard procedure is to perform unit root test, to verify the stability of the system. There a number of different types of test each of them with different null hypothesis. For example Dickey-Fuller test and Philips Perron test (Phillips and Perron 1988),starts with the null hypothesis of unit root while KPSS test (Kwiatkowski at. el. 1992) tests stationarity rather than its absence. In this paper all three tests are conducted and are reported in the Table 3.

As it is common in this literature the tests gives mixed results regarding stationarity. Hence, some judgment about the nature of the series and transformation required to make it stationary is required in the estimation. The summary for the conclusions and the method of transformation are given in the Table 4.

***Table 3* Summary of Unit Root test results**

Variable	Augmented D-F test (test statistic vs crtitical value at 95% confidence level)	Philips-Perron test (test statistic vs crtitical value at 95% confidence level)	KPSS	Conclusion
realgdpmacedonia	trend stationary (-6.461> -3.600)	trend stationary (-27.642 >-17.900	Trend stationary	Trend stationary
neermacedonia	trend stationary (-6.257>-3.480)	trend stationary (-43.174>-20.160)	I(1)	trend stationary
inflation	trend stationary (-8.265>-3.496)	I(1) (-25.584>-19.854	I(1)	I(1)
ir	trend stationary (32.048>-3.488)	trend stationary (-46.743 > -20.016)	I(1) or I(2)	trend stationary
M1macedonia	I(1) (-7.213 > -3.600)	I(1) (-34.196 > -17.900)	I(1) or I(2)	I(1)
M2macedonia	I(1) (-5.266>-3.600)	I(1) (-27.891 > -17.900)	Stationary	I(1)
germanyGDP	I(1) (-5.971>-3.481)	I(1) (-47.673 >-20.142)	I(1,2)	I(1)

Monetary aggregates are trend stationary Macedonian Real GDP is also trend stationary, same as nominal effective exchange rate other variables are I(1) variables.

***Table 4* Summary of conclusions regarding stationarity and transformation**

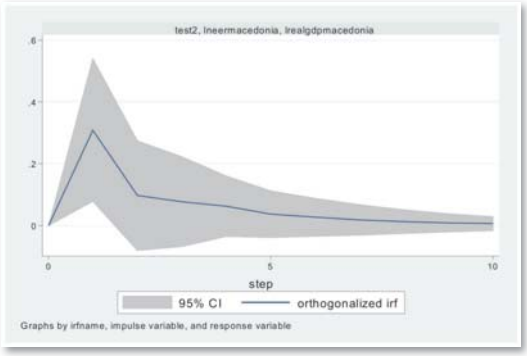
Variable	Test statistic	Transformation required
realgdpmacedonia	trend stationary	detrending
neermacedonia	trend stationary	detrending
inflation	I(1)	First difference
ir	trend stationary	detrending
M1macedonia	I(1)	First difference
M2macedonia	I(1)	First difference
germanyGDP	I(1)	First difference

Impulse Response functions

For the sake of brevity, we report only the responses of Macedonian real GDP to a shock in the nominal exchange rate.

Figure 1:

Impulse Response Functions-Impact on Real GDP to a shock to the effective exchange rate



Findings from our models clearly support nominal exchange rate neutrality fo Macedonia. As expected, some responses are found in the short-run, but they dissipate quite quickly and revert back to the base line level implying no impact on the long run equilibrium real GDP.From the Figure 1 one can tell that Real GDP responds to a shock in nominal effective exchange rate but only in the first five quarters and the effects afterwards dissipate slowly. Son the impact on Real GDP on a shock of the nominal effective exchange rate lasts 1 year in three months(5 quarters).

SVAR reuslts are presented in the following tables .As it can be seen from the table 1, 1% change in the nominal effective exchange rate for Macedonia affects Macedonian Real GDP by 6.4% but on a long run the effect is zero. A -matrix shows negative impact of -0.12 (12%) but on a long run the effect is zero.

***Table 5* SVAR of Nominal effective exchange rate as impuse function and Real GDP as reposnse**

	lrealgdpmacedonia	lneermacedonia
lrealgdpmacedonia	-0.0465	0
lneermacedonia	0.0640474	0.2288

$$A = \begin{pmatrix} 1 & 0 \\ -0.12691 & 1 \end{pmatrix} \quad B = \begin{pmatrix} 0.504 & 0 \\ 0 & 0.228 \end{pmatrix}$$

Macedonian and German GDP

On a short run 1% growth in German GDP influences the growth of Macedonian GDP by 0.2% .A-matrix shows that this impact is negative on short run but on a long run the effect is zero.

$$A = \begin{pmatrix} 1 & 0 \\ -0.00482 & 1 \end{pmatrix} \quad B = \begin{pmatrix} 0.449 & 0 \\ 0 & 0.005 \end{pmatrix}$$

	lrealgdpmacedonia	lgermangdp
lrealgdpmacedonia	0.4492	0
lgermangdp	0.0021	0.005

6. Conclusion

Nominal exchange rate neutrality is the situation where variations in the nominal exchange rate have no impact upon real GDP. It is generally defined for the long-run allowing some short-run variations during the period of adjustment. Empirical results presented in this paper support the nominal exchange rate neutrality for the case of Macedonia.

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WHAT ABOUT THE RELATIONSHIP BETWEEN BANKING COMPETITION AND FINANCIAL STABILITY? CASE OF ALBANIA

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Abstract

The banking sector serves as a key instrument through which instability may be transmitted to other sectors in the economy. The scare due to banking fragility caused by upper concentration, has usually strained policymakers to focus on developing policies which sustain stability of banking sector. Currently, we faced to global financial crisis and consequences of it. That's one more reason to be more careful at this time, particularly, concerning banking sector.

Banking competition is more complicated by the requisite of maintaining financial stability. Increasing competition may be good for efficiency, but bad for financial stability. Some theoretical and empirical results emphasized that more concentrated banking markets are associated with greater risk of bank failures. Various cases provide empirical evidence of a positive relationship between banking market concentration and bank risk-taking. The article examines the empirical nature of the correlation between bank concentration, as an indicator to assess competition, and financial stability, using unique datasets of Albanian banking system.

JEL Classification: *C 13, G 32, D 53*
Keywords: *Bank Competition, Financial Stability, Z score, Non Performing Loans*

1. The slight view about Albanian Financial System

The structuring of financial system has been the key element of transition reforms. Over 20 years, the transition of Albanian financial system has undergone dramatic changes due to successes and failures of macro and micro reforms, changes of institutional framework. The main features of structure about Albanian financial system are:

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The market structure of the Albanian Banking Sector has changed obviously in recent years. On 1990s, our country has practiced deregulation, foreign bank penetration, an accelerated process of consolidation and competition in the banking sector.

The banking sector remains the largest and most developing segmentation of Albanian financial market. Actually, there are 16 second level banks on banking market. After two decades of transition process, the Albanian financial system belongs to model of *the financial system dominated by the bank sector*.

Capital market is under-developed and non- estimating. Capital markets barely exist and regulatory capacity remains weak. Albania's capital markets remain embryonic. The Tirana Stock Exchange was established in 1996, but no companies have been listed so far. There is a well-developed primary market for government securities, where most banks 'park' their excess supply, but the secondary market for government treasuries is poorly developed.

The more sophisticated market is foreign exchange market. Furthermore derivatives are not almost ever used by corporations, but they show up once in the commercial banks' balance sheets at foreign exchange sections.

Debt markets are hugely underdeveloped and hardly exist. Credit is constrained by difficulties to assess credit-worthiness, the lack of collateral (especially land titles) and limited institutional framework.

The lack of sophisticated financial market destined on limited sources for investment/speculation. The common savings managed to treasury bills so far. The spectrum of financial services has enlarged slowly.

The diversification of banking sector is almost non-existent. Instead, the banks afford soaring interest rates for loans with mortgages or invest to treasury securities.

The banking sector seems quite solid strong until now, mostly due to the lack of investing to foreign assets. The banks have focused to domestic market, and only 10% of their portfolio invested to global markets. The return on capital was 11.4% in 2008; lower compare to 20.7% in 2007, but it remains quite high again. Approximately 62% of deposits have been reinvested in loans. On the average banks are holding about 17.2% of capital.

The non-developed financial markets in Albania related to under-developed of non-banking intermediaries.

This article is organized as follows. Section 2 related to theoretical and empirical literature about banking competition and financial stability. Section 3 gives a view about Albanian case. Finally, Section 4 concludes remarks.

2. Theoretical backgrounds

Various studies related to concentration and fragility depends on the two controversial streams: concentration either increases stability or decreases stability. We distinguish a similar outline related to the literature[9] on competition and stability. Matutes and Vives (1996) based on the Diamond and Dybvig (1983) model argue the instabilities which it can arise in any kind of market structure like propensity of depositors to run, is determined exogenously. Smith (1984) puts ahead a theoretical explanation how increasing competition for bank deposits goes up vulnerabilities in the system. Matutes and Vives (2000) also examine bank risk taking behavior and deposit insurance. Moreover, they consider social costs related to bank failures and find out the excessive competition increases to maximal bank risk due to the lack of risk-based deposit insurance. Except study of Matutes and Vives (1996), above-mentioned theoretical studies denote a positive relation between competition and fragility. Contrary to Caminal and Matutes (2002) expose that monopoly banks with intermediate monitoring costs have a propensity to initial risky loans which it increases probability of consequent failure. Using a dynamic duopolistic model, Perotti and Suarez (2002) investigate potential failure of financial firms due to competition. They argue that the failed institution can be either closed or merged with another agent,

9) Carletti and Hartmann (2003) afford an in-depth survey and assessment of this literature.

stress the trade-off between stability and competition. They confirm that an active merger policy by the regulatory authority which encourages takeovers of failed institutions, contributes to banking stability.

However Allen and Gale (2004) demonstrate the trade-off between competition and stability thus the relationship is comprehensive and inappropriate. Rather, they make out the efficient levels of both competition and stability relying on various theoretical models. Finally, they emphasize that fragility also depends on the structure of the interbank market. Also Boyd and others (2004) focus on the probability of observing a banking crisis and conclude it does not only dependent on the degree of competition. As well monetary policy is a main determinant. Monopolistic banking markets are found to be more fragile if the rate of inflation is under a confident verge, while more competitive banking markets are more exposed if inflation is over this verge.

Passing on the empirical studies according to the "competition–fragility" versus "competition – stability" literature is more ambiguous.

If banks benefit from higher franchise value resulting due to their market power, they possibly will keep this value from the higher loan risk with other methods. In particular, they are able to compensate the higher risk exposure through more equity capital, reduced interest rate risk, sales of loans or credit derivatives, a smaller loan portfolio, or other risk-mitigating techniques. Thus, when a bank charges higher rates for business loans and has a riskier loan portfolio, the bank may still choose a lower overall risk. Relying on this argument it is significant to distinguish theories on reflecting both loan risk and bank risk. Whereas some previous researches used the Z-index as an inverse proxy for overall bank risk, other researches focused on nonperforming loans, which only measure loan risk. No prior study which has estimated the effects of market power or measures of competitiveness on both loan risk and overall bank risk using the same model. Few studies have also examined the effect of competition on banks' capital ratios. Schaek and Cihak (2007) show that banks tend to hold higher capital ratios in more competitive environments inside framework of European banking.

The core issue of these disparate theories is the measurement of market power. Some studies use the assessment of concentration, such as HHI (Herfindahl – Hirschman index) or n-firm concentration ratio, to indicate market power, but they have shown to be ambiguous indicators[10]. Beck, Demirguc-Kunt, and Levine (2006) find out that concentration might not be an appropriate indicator for banking competition. Some studies use H-statistic to assess the banking competition[11]. We considerate some issues referring to it, particularly, it requires that banks operate in long-run equilibrium (Shaffer 2004). The Lerner index uses to analyze the effect of concentration on bank loan risk (Jimenez, Lopez, and Saurina 2007). In the circumstance of Spanish banks, the authors make a Lerner index based on bank-specific interest rates as an indicator of market power in the commercial loan market. They find out a negative correlation between loan market power and portfolio risk. Additionally they confirm the negative correlation between nonperforming loans and market power in the loan market, thus promoting financial stability. Various studies use several assessment of banking competition to check for robustness of them.

We use dissimilar risk disclosure indicators as dependent variables to proxy for financial stability: the volume of nonperforming loans (NPLs) to total loans, Z-index as an inverse indicator of overall bank risk, and equity to total assets (E/TA) for the bank's capitalization level. The Z-index is a converse replacement for the firm's probability of failure. It combines profitability, leverage, and return volatility in a single computation. It is given by the ratio:

$$Z_i = \frac{ROA_i + E/TA_i}{\sigma_{ROA\,i}}$$

where ROAi is the period-average returns on assets for bank i, E/TA represents the period-average equity to total assets ratio for bank i, and σ ROAi is the standard deviation of return on assets over the period under study. Z-index increases with higher profitability and capitalization levels, and decreases with unstable earnings reflected by a higher standard deviation of return on assets.

10) e.g., Berger, Demirguc-Kunt, Levine, and Haubrich (2004).

11) e.g., Claessens and Laeven (2004), Schaeck, Cihak, and Wolfe (2006), Molyneux and Nguyen-Linh (2008).

3. Case of Albania

Banking sector contain the main share to total financial system's assets. At the end of 2010[12], its assets accounted for about 94.4 percent of total financial system's assets, and about 80.9 percent of GDP.

After 1997 crisis, the macroeconomic environment led to important changes in Albanian banking sector which was involved in liquidation, restructuring, privatization and acquisition activities of some banks. Albanian banking sector has been recently characterized by important structural developments. The most important of them are:

(i) the enlarged number of banks; (ii) restructuring and privatization of state-owned banks; (iii) establishment of domestic capital banks; (iv) entrance of powerful foreign banks through acquisitions of the existing ones; which have changed the Albanian banking sector into a dynamic environment. There are more and more efforts made by banks to be better positioned in the market.

Referring to Panzar-Rosse model[13], we conclude that the Albanian banking sector operates actually in monopolistic competition market. In recent years, the Albanian banking sector is characterized by a steady increase, both in terms of number of banks as well as in enhancing the banking activity. It has been evident in recent years who are accompanied by high growth and expansion of credit activity range of products offered by banks. These developments have had major impact on market concentration. Empirical data (Table 1) emphasize that market of assets and deposits in Albania have high concentration ratios, CR3 and CR5, respectively. Also, the high values of index Herfindahl – Hirschman (HHI) strengthen this fact, because they are away from their optimal value. While according to the empirical results, credit activity is one less concentrated among other activities in our country. Values of CR3 and CR5, and also HHI, indicate a moderate concentration of this activity.

Table 1. **Concentration ratios of assets, deposits and credits**

Concentration Ratios (%)		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Assets	CR_3	80	75	72	70	69	64	62	56	55	56	56
	CR_5	89	87	86	85	83	78	76	72	74	72	71
	HHI	0.44	0.37	0.32	0.30	0.27	0.21	0.18	0.15	0.15	0.14	0.14
Deposits	CR_3	84	80	77	75	73	68	65	60	62	60	58
	CR_5	92	90	88	87	85	81	79	76	79	75	74
	HHI	0.50	0.43	0.37	0.35	0.31	0.24	0.20	0.17	0.17	0.16	0.15
Credit	CR_3	78	69	62	54	46	43	43	45	47	44	43
	CR_5	91	86	83	79	69	63	64	66	68	65	64
	HHI	0.27	0.20	0.17	0.15	0.11	0.10	0.11	0.11	0.12	0.11	0.11

Source: Author calculations based on database of BoA.

Additional factors such as foreign bank penetration, information technology, and asymmetric information may also affect banking competition. Foreign bank penetration is found to be positively associated with banking competition in the Albanian banking sector.

Empirical results of several authors confirmed that the banking default probabilities would occur probably in a weak macroeconomic environment characterized by slow GDP growth and high inflation. Also banking crises depend not only on macroeconomic variables; meanwhile depend on structural characteristics of

12) Source: Financial Stability Report, 2010, Bank of Albania.

13) See Note (2006).

economy and particularly financial sector. In times of banking crises, complex interactions arise between banks and macro determinants. Due to the specific characteristics of banking sector, other significant factors are adverse selection and moral hazard. Asymmetric information can also be a source of banking crisis. Stiglitz and Weiss (1981) confirm that higher interest rates may increase the riskiness of loan portfolios because of adverse selection and moral hazard problems. While increased funding costs discourage safer borrowers, other borrowers are stimulated to choose riskier projects and are likely to face a higher probability of default. The volume of nonperforming loans would enhance, adding to the bank's risk exposure and undermine financial stability.

Empirical results of Albania case[14] show a significant relation between components of bank concentration and Z-index as an inverse indicator of overall bank risk and other factors. This analysis focused on indicators of concentration (Herfindahl-Hirschman index (HHI) for assets of banking system) and risk taking (Z-index) during first quarter of 2003 until second quarter of 2010[15]. The components of risk taking on banking sector depend on other indicators, macroeconomic indicators especially inflation rate (π). Empirical results examines through the following estimation of linear model:

$$Z = 0.244 + 4.911 * H^2 + 0.299 * \pi$$
$$R^2 = 0.876 \quad p(0.000) \quad p(0.33)$$

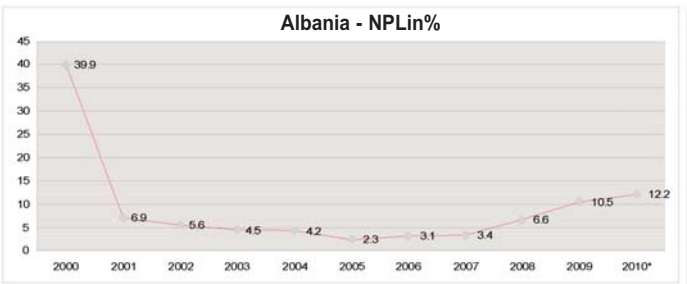
The results of estimation and variables' coefficients are significant. We conclude that HHI (***H***) for assets has a positive impact on Z-index (***Z***). This positive impact of HHI on Z-index related to higher bank concentration ratios. More concentrated market reflected higher prices according to the economic theories; in banking market reflected higher interest rate. Thus growing up of interest rate defined more costs for borrower. This behavior inclined the moral hazard problem; some borrowers will have a less possibility to pay the loan. The lack of repayment increased the Z-index due to default probabilities of borrowers. Results of linear model rely on competition hypotheses based on theoretical background.

Also the model confirms the positive correlation between inflation rate (***π***) and Z-index. If the inflation rate increased, it means higher nominal interest rate which it reflects rising costs of loan. This trend linked to the prospect of clients' behavior towards lacking of repayment which stimulates going up risk taking.

Based on the last developments, Albanian banking sector is characterized by high levels of non – performing loans ratio. Enlargement of banking sector disclose to credit risk due to rising of loan portfolio by total assets. On the other hand, the rising of non – performing loans, associated with the restriction of loan portfolio by banks, induce high level of non – performing loans ratio. Graph 1 demonstrates the trends of non – performing loans during years in Albanian banking sector.

Graph 1

Albanian Non – Performing Loans (gross) to total loans, in percent (%)



Source:
Bank of Albania, Data up to June 2010*

14) Empirical analysis related to banking sector due to financial system dominated by banks. Z-index is calculated to whole banking sector.

15) Source: Dataset of Bank of Albania and authors' calculation.

Empirical results of Albania case illustrate a significant relation between components of bank concentration and non-performing loans and other factors. This analysis focused on indicators of concentration (Herfindahl-Hirschman Index (HHI) for assets of banking system) and risk taking (Non–performing loans (NPL)) during first quarter of 2003 until second quarter of 2010[16]. The components of risk taking on banking sector depend on other indicators, macroeconomic indicators especially inflation rate (π) and efficiency indicator, equity to total assets (E/TA) for the bank's capitalization level. Empirical results examines through the following estimation of linear model:

$$NPL = -0.137 + 1.184 * H^2 + 0.52 * \pi + 0.114 * E$$

$$R^2 = 0.765 \qquad p(0.000) \quad p(0.000) \quad p(0.000)$$

Analysis emphasize that the results of estimation and variables' coefficient are significant. The model confirms the positive correlation between HHI for assets (***H***) and non-performing loans. This positive impact of HHI on NPL related to higher bank concentration ratios. The data[17] related to performance of lending activity in 2009 demonstrate that four banks of the system have recorded the largest contribution to 2009 credit growth, accounting for 57% of this growth.

Linear model demonstrate the positive correlation between inflation rate (π) and non-performing loans. This effect caused by the impact of inflation rate on nominal interest rate due to growing up costs of loan. Also inflation rate includes effects of exchange rate which reflects exchange rate risk on loans. Meanwhile, non-performing foreign-currency credit unheeded against exchange rate risk accounts for about 49.9% of the total non-performing foreign-currency loans. About 70.5% of household credit and 49.6% of business credit is unheeded against exchange rate risk[18]. Small-sized banks are assessed to better hedge against foreign exchange rate risk, arising from granting foreign-currency loans when borrowers' income is in ALL.

Indicator of efficiency, equity to total assets (***E***) for the bank's capitalization level, has a positive effect on non-performing loans. If banks reflect high level of equity to total assets (***E***) means higher profitability due to earning assets as long as banks' perception of credit risk. As a result of it, banks will take the lower loan portfolio deterioration rate. The banking sector has shown stability throughout 2009 in terms of investing in earning assets and collecting paying liabilities.

Let's see now the relation between banking crisis and concentration ratios through empirical estimation of Albanian case, particularly probability of banking crisis.

Asli Demirguc – Kunt and Enrica Detragiache (1998) estimated the probability of a banking crisis *probit model* using a multivariate logit model. The probability that a crisis will occur at particular time in particular country was hypothesized to be a function of a vector of n explanatory variables *X(i,t). P(i,t)* denoted a dymmy variable that took the value of one when a banking crisis occurred in country i and time t and the value of zero otherwise. β is a vector of n unknown coefficients and *F(β'X(i,t))* is the cumulative probability distribution function evaluated at *β'X(i,t)*. Then, the log–likelihood function of the model is:

$$\text{Ln L} = \sum_{t=1..T} \sum_{i=1..n} \{P(i,t)\ln[F(\beta'X(i,t))] + (1-P(i,t))\ln[1-F(\beta'X(i,t))]\}$$

They used the logistic functional form in modelling of the probability distribution. In this case, it is important to emphasize that the estimated coefficients do not indicate the increase in the probability of a crisis given a one unit increase in the corresponding explanatory variables. The coefficients reflect the effect of a change in an explanatory variable on ln *[P(i,t) / (1 – P(i,t)]*.

Based on these theoretical and empirical approaches, we estimated a relation on banking crisis in Albania. In modeling of Albanian banking crises, we used the probity model due to it is more comfortable according

16) Source: Dataset of Bank of Albania and authors' calculation.

17) Supervision Annual Report, Bank of Albania, 2009.

18) Supervision Annual Report, Bank of Albania, 2009.

to Albanian case. According to theoretical background included macroeconomic and structural variables and examined them at period 2002 until 2010.

$$The\ probity\ model\ estimated\ is\ Banking\ crisis = \alpha + \beta_1 HHI_{i,t} + \beta_2 GDPi,t + \beta_3 Inflation_{i,t} + \varepsilon_{i,t}$$

The dependent variable is a crisis dummy that takes on the value of one if there is a systemic and the value of zero otherwise. Inflation (INFL) is the rate of change of consumer price index. Real GDP based on quarterly data. Banking concentration is calculated by Herfindalh - Hirschman index (HHI) for assets in banking sector over the sample period. Bank data refer to Bank of Albania dataset and authors' calculations.

Variable	HHI2	INFL	GDP
	42.004	15.938	- 2.84 E-05
	(0.0645)*	(0.0138)**	(0.0111)**

** and * indicate statistical significance at 5 and 10 percent, respectively.

The results of above model reveal a positive effect of concentration on probability of banking crisis. It is consistent with theoretical (concentration-fragility views) and other empirical results. Allen and Gale (2004), and Beck et al (2004) argue that more concentrated banking systems would be in better condition to avoid a crisis because large banks hold more assets and financial resources than the smaller ones. Similarly, large banks would perform better incorporating international regulation and risk sharing than small banks.

4. Concluding Remarks

There is no consensus related to the probable risk effect of bank competition. Theoretical and empirical results are ambiguous predictions. Albanian case supports the competition – stability hypotheses. Less competition of banking sector induce higher loan rates and more rents earned by the bank. Meanwhile, a higher loans rate will increase the default probabilities of the borrowers. While the loan market is more affected by moral hazard on the part of borrowers, a higher loan rates charged by banks, will induce them to adjust their investment policies in favor of more risk. Albanian banking sector is characterized by a high level of concentration in spite of the underlined downward trend over the years. Decreasing trends of concentration in banking sector is attributed to reorganization of the sector. Banks of G2[19] group are benefiting from losing ground to major banks of G3 group. The market concentrations have linked to banks consolidation.

Meanwhile, Albanian banking sector is characterized by increasing non – performing loans ratio, showing that financial institutions have not been attentive, taking excessive risk. Referring to empirical results of relation between banking concentration and risk taking on Albanian case, we emphasize a tough relation between them.

Thus, analysis of risk taking depends on structural components of banking market and other significant variables, macroeconomic and financial variables. The higher rate of non-performing loans overcomes due to more concentrated banking market. There is one of reasons for rising of non-performing loans, also rely on theoretical background. The non- performing loans show an upper trend. This detail should take into consideration by banking supervisor authorities. It is one of the most essential determinants that caused the fragility of banking sector, particularly financial crises. Albanian empirical results demonstrate that the banking crises would occur probably in a weak macroeconomic environment characterized by slow growth of GDP and high inflation rate.

Finally, we conclude that Albanian case on assessment of concentration effects on bank crisis is consistent with concentration – fragility views. Otherwise, financial stability was focused on banking stability in this article due to the circumstances of Albanian financial market, has been reliable so far, but it should be monitor in the future.

19) Classification of Bank of Albania: G1- small banks, G2 – medium banks, G3 – large banks.

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WHAT DETERMINES THE NON-PERFORMING LOANS RATIO: EVIDENCE FROM TURKISH COMMERCIAL BANKS

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Abstract

In this paper I investigate the determinants of non-performing loans (NPLs) ratio for commercial banks in Turkey by incorporating bank specific and macroeconomic variables. I find that banks with a higher equity to total assets ratio and a higher net interest margin are expected to have a higher NPLs ratio whereas an increase in net loans to total assets ratio is expected to reduce the NPLs. The results also reveal that public banks and foreign banks are expected to have a higher NPLs ratio. In terms of macroeconomic variables GDP growth shows its effect on NPLs with a lag and a domestic currency depreciation is expected to deteriorate the loan portfolios of commercial banks.

JEL Codes: *G21, E44*
Keywords: *Non-performing Loans, Turkish Banking Sector*

1. Introduction

The 2001 economic crisis was an important turning point for Turkish banking sector. During 1990s the Turkish banking sector, surrounded by an unstable macroeconomic environment characterized by high inflation and large budget deficits, was unable to perform its fundamental business that is providing credit to the economy. Due to the high level of public sector borrowing requirement the main business of the banking sector was to finance these deficits. After the 2001 economic crisis macroeconomic environment changed significantly and the banking sector was subject to a large scale consolidation. Many insolvent banks were either liquidated or were subject to mergers and acquisitions. As shown in Figure 1 the fiscal discipline significantly decreased the public sector borrowing requirement and the reduced interest margins caused banks to focus on loans instead of keeping most of their assets in the form of government securities. Figure 2 shows that in 2001 only 20% of total assets is composed of loans whereas this number has increased to

more than 50% by the end of 2010. Loan-deposit ratio which was as low as 27% in 2001 increased to 80% by the end of 2010. The increase in the share of loans in total assets has been particularly remarkable after 2005. Despite the considerable increase in loans-assets ratio banks have been able to successfully manage the quality of loans and as can be seen in Figure 2 the NPLs ratio stayed at relatively low levels.

In this paper I investigate how the non-performing loans (NPLs) evolved in the banking sector during this period and analyze the bank specific and macroeconomic determinants of NPLs ratio for commercial banks. The paper takes the quarterly data for the 15 largest commercial banks[20] in terms of their share in total loans and investigates the determinants of NPLs ratio for the period from 2005q1 to 2010q4. In terms of bank specific determinants of NPLs ratio I look at the ratio of net loans to total assets, the ratio of equity to total assets, log of real assets, and net interest margin. I also put two dummies representing the public banks and foreign banks respectively to analyze whether there is a systematic difference in the loan quality of these banks. To see the effect of macroeconomic developments on NPLs ratio I put the GDP growth as an explanatory variable to sort out the influence of business cycles on NPLs. Also as some loans are indexed to foreign currency I put the log of foreign exchange rate to investigate whether it has a significant impact on loan quality.

I find that banks with a higher equity to total assets ratio and a higher net interest margin are expected to have a higher NPLs ratio whereas net loans to total assets ratio has a negative impact on NPLs. Public banks and foreign banks are found to have higher NPLs ratios while bank size does not seem to be an important bank specific variable. In terms of macroeconomic determinants GDP growth influences the NPLs ratio with a lag. Specifically a negative GDP growth leads to a deterioration in loans after two quarters. As some loans in the Turkish banking sector are indexed to foreign exchange the movements in domestic currency has an influence on loan quality. I find that a depreciation of domestic currency tends to increase the NPLs ratios of Turkish commercial banks.

The effect of macroeconomic and bank specific variables on loan quality has been a widely investigated subject of research for many economists and policy makers. Louzis, Vouldis, and Metaxas (2010) investigate the determinants of NPLs for Greek banking sector and find that macrofundamentals namely GDP, unemployment, and interest rates and management quality play an important role. They also analyze the influence of these factors for different loan segments and find that mortgages are the least responsive towards changes in macroeconomic variables. Quagliarello (2007) investigates the NPLs for Italian banking sector for the period 1985 to 2002 and find that the business cycle plays a significant role on NPLs ratio. Cifter et al (2009) investigated the Turkish banking sector for the period from January 2001 to November 2007 and find that industrial production has a negative impact on the number of NPLs but it shows its effect with a lag. Lawrence (1995) incorporates probability of default in a life-cycle consumption model and finds that the default rate is higher for borrowers with low incomes.

In terms of exploring the effect of bank specific variables on NPLs, Berger and DeYoung (1997) look for the relationship among loan quality, cost efficiency, and bank capital for U.S. commercial banks. They find that there is a negative relationship between cost efficiency and NPLs and low capitalization of banks leads to a higher NPLs ratio which they named as "moral hazard" hypothesis. Podpiera and Weill (2008) also investigate the relationship between cost efficiency and NPLs for Czech banks for the period from 1994 to 2005 and they find that managerial performance in the form of cost efficiency is important for loan quality. Ahmed, Takeda and Thomas (1999) find that there is a negative correlation between bank loan loss provisions and future earnings changes and stock returns.

The rest of the paper is organized as follows: Section II gives a brief description of the data and Section III presents the estimation results. Section IV concludes.

20) These banks account for more than 90% of the total loans in the industry.

2. Data

The data for bank specific variables is obtained from unconsolidated financial statements of commercial banks covering the period from 2005Q1 to 2010Q4. The ultimate data source is Banks Association of Turkey database. The data includes the largest 15 commercial banks in terms of their share in total loan market and these banks comprised more than 90% of the total loans in commercial banking industry.

The NPLs ratio is calculated as the amount of non-performing loans divided by total loans. The net interest margin is the difference between the interest rate on Turkish Lira denominated loans and the interest rate on Turkish Lira deposits. The real assets is calculated as nominal assets divided by the value of consumer price index for the respective period. The exchange rate is TRY/USD rate and an increase in the exchange rate implies a depreciation of domestic currency.

The cross-correlations among the bank specific variables namely NPLs ratio, the ratio of net loans to total assets (NLTA), the ratio of equity to total assets (ETA), net interest margin (INT), and log of real assets (LRA) are shown in Table 1. It can be seen that one does not need to worry about the multicollinearity problem as the correlation among the variables is not strong.

3. Estimation Results

3.1 Feasible Generalized Least Squares (FGLS) Estimation

In order to investigate the determinants of NPLs ratio for Turkish commercial banking industry the following equation is estimated using pooled feasible generalized least squares estimation:

$$NPL_{it} = \beta_0 + \beta_1^{'} * BSV_{it} + \beta_2 * L_GDP_{it} + \beta_3 * LFX_{it} + \beta_4 * PD_{it} + \beta_5 * FD_{it} + \varepsilon_{it} \quad (1)$$

where *BSVit* is a vector of bank specific variables which includes the ratio of net loans to total assets *(NLTA)*, the ratio of equity to total assets *(ETA)*, log of real assets *(RLA)*, and net interest margin *(INT)*. *L_GDP* stands for the lag of GDP growth and *LFX* is the log of TRY/USD exchange rate. *PDit* and *FDit* are the two dummy variables representing public banks and foreign banks respectively.

Table 2 shows the estimation results. I include the GDP growth and its first and second lags as an explanatory variable in different regressions. The results reveal that as the share of loans in total assets increases, the banks are expected to have reduced NPLs ratios. The argument behind this result is that as loans keep a higher share in total assets banks could have a better diversified loan portfolio which leads to a decline in non-performing loans. The positive sign for the ratio of equity to total assets implies that highly capitalized banks are expected to have a higher NPLs ratio. This finding is in contrast with the findings of Berger and DeYoung (1997) who claim that banks with a lower equity to total assets ratio have a higher NPLs ratio which they name as "moral hazard" hypothesis. Their argument for this hypothesis is that when the bank is lowly capitalized then the bank managers are more likely to extend loans to riskier customers which will generate higher NPLs ratios. For Turkish commercial banking industry the results show that the reverse is true that is highly capitalized banks tend to extend riskier loans and therefore have higher NPLs ratios.

The net interest margin *(INT)* has a positive sign meaning that banks with a higher net interest margin are expected to have a higher NPLs ratio. Banks with a higher interest margin generally charge a higher interest rate on loans and therefore these banks are more likely to attract riskier borrowers who are unable to borrow from other banks. Hence, it is quite normal to see that these banks are likely to have more non-performing loans.

The bank size does not seem to be a significant bank specific variable in determining the NPLs ratio. This is in contrast with the findings of Salas and Saurina (2002) who investigate the non-performing loans for Spanish commercial and saving banks and they find that larger banks tend to have lower NPLs ratios. Their

argument here is that larger banks have more opportunity in diversifying their loan portfolio and therefore they have fewer problematic loans.

The two dummies for public banks and foreign banks both have positive signs indicating that public banks and foreign banks tend to have a higher NPLs ratio.

In terms of macroeconomic determinants of non-performing loans I include the GDP growth rate and its first and second lags as an explanatory variable in separate regressions. I find that the GDP growth itself and its first lag are not statistically significant in explaining the non-performing loans ratio. It is seen that the GDP growth has a negative impact on loan quality but it shows its impact after two quarters. That is a slowdown in an economy will lead to a deterioration in banks' loan portfolios two quarters later.

The other macroeconomic variable that is included in the model is the log of foreign exchange rate which is measured as TRY/USD rate. The motivation behind including the exchange rate as an explanatory variable is that some loans in the banking industry are indexed to foreign exchange and a change in the exchange rate may affect the loan portfolio of commercial banks. The results reveal that an increase in exchange rate meaning a depreciation of Turkish Lira is expected to increase the NPLs ratio. A depreciated domestic currency increases the installments of the borrowers which leads to a decline in their loan payment ability and therefore an increase in the non-performing loans of commercial banks.

3.2 Dynamic Panel Data Estimation

Taking into account the persistence in non-peforming loans of the banking industry an alternative estimation approach namely dynamic panel data estimation is also considered. In fact panel data estimation is commonly used in banking studies. Louzis, Vouldis, and Metaxas (2010) estimate the determinants of NPLs for Greek banks using dynamic panel data estimators. Salas and Saurina (2002) investigate the determinants of problem loans of commercial and savings banks for Spanish banking industry using dynamic panel data approach. Merkl and Stolz (2009) also use dynamic panel data regression in analyzing the effects of banks' regulatory capital on the tranmission of monetary policy in a system of liquidity networks. Beck and Levin (2004) investigate the effect of stock markets and banks on economic growth using dynamic panel data models. The dynamic panel data model involves the inclusion of the lagged dependent variable as an independent variable along with other explanatory variables:

$$NPL_{it} = \alpha_i + \beta_1 * NPL_{i,t-1} + \beta_2^{'} * BSV_{it} + \beta_3 * L_GDP_{it} + \beta_4 * LFX_{it} + \beta_5 * FD_{it} + \varepsilon_{it} \quad (2)$$

where *NPLit-1* is the first lag of the dependent variable and α_i stands for the individual bank specific effects. The dummy variable for public banks, *PDit*, is dropped in order to avoid the perfect multicollinearity problem. As the lagged dependent variable depends on α_i regardless of whether one treats α_i as fixed or random, the standard OLS estimation will give biased and inconsistent estimators. To solve this problem I use the GMM estimator proposed by Arellano and Bond (1991). The results are given in Table 3. As in FGLS estimation as the ratio of net loans to total assets increases in the banking industry the NPLs ratio is expected to decline. As banks increase the share of loans in total assets they have better opportunity to diversify their loan portfolios which leads to lower non-performing loans. In dynamic panel data estimation the ratio of equity to total assets is not a significant bank specific variable affecting the NPLs ratio whereas the net interest margin has a positive impact NPLs. That is banks with higher net interest margins are more likely to have more problematic loans as they attract riskier borrowers due to their high lending rates. In accordance with the results obtained in FGLS estimation bank size does not influence the loan quality of the commercial banking industry.

In terms of macroeconomic variables the GDP growth has a negative impact on NPLs but this time not only its second lag but the first lag is also statistically significant. That is if the economy slows down this will affect

the NPLs ratio of the banking industry for the next two quarters. As in FGLS estimation the results for dynamic panel data estimation reveal that the log of foreign exchange rate has a significant impact on loan quality. A depreciation in domestic currency tends to increase the problematic loans of Turkish commercial banking industry.

4. Conclusion

In this paper I investigate the determinants of NPLs for Turkish commercial banking industry. In terms of bank specific determinants of NPLs I include the ratio of net loans to total assets, the ratio of equity to total assets, log of real assets, net interest margin, and two dummies for public banks and foreign banks. I find that banks with a higher net loans to total assets ratio tend to have less problematic loans. The argument here is related with diversification as banks with a larger share of total assets occupied by loans have a better opportunity to diversify their loan portfolios. The results also reveal that well capitalized banks and banks with a higher interest margin are more likely to have higher NPLs ratios. The former finding is in contrast with the "moral hazard" hypothesis of Berger and DeYoung(1997) who claim that banks with poor capital tend to extend riskier loans and therefore have higher NPLs ratios. It is also seen that public banks and foreign banks tend to have more non-performing loans.

In terms of macroeconomic variables that could affect the NPLs ratio for the commercial banking industry I include the GDP growth in order to capture the business cycle implications of problematic loans. I find that GDP growth affects the NPLs ratio with a lag. In the FGLS estimation the results reveal that a negative GDP growth shows its effect on NPLs after two quarters. On the other hand, in the dynamic panel data estimation both the first and second lags of the GDP growth has a negative impact on loan quality. The log of the foreign exchange rate is also included as a macroeconomic variable. The argument here is that as some loans are indexed to foreign currency a change in the exchange rate could affect the loan payment ability of the borrowers and therefore can change the NPLs ratio. The results show that a depreciation in domestic currency tends to increase the non-performing loans of the commercial banking industry.

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Table 1: **Cross-Correlations for the Bank-Specific Variables**

	NPLs	NLTA	ETA	INT	LRA
NPLs	1.0000	-	-	-	-
NLTA	-0.2944	1.0000	-	-	-
ETA	0.1544	0.2990	1.0000	-	-
INT	0.3382	-0.3150	-0.0128	1.0000	-
LRA	-0.0009	-0.4652	-0.2063	0.2124	1.0000

Table 2: **FGLS Estimation Results**

Coefficients	NPLs	NPLs	NPLs
NLTA	- 0.070***	- 0.074***	- 0.076***
ETA	0.213***	0.214***	0.208***
INT	0.001***	0.001***	0.001***
LRA	- 0.001	- 0.001	- 0.002
PD	0.026***	0.026***	0.025***
FD	0.018***	0.017***	0.016***
GDP	0.000	-	-
L_GDP	-	- 0.000	-
L2_GDP	-	-	- 0.000***
FX	0.030***	0.026***	0.022***
const. 0.003	0.016	0.027	
#obs. 360	360	360	

Notes: In terms of the statistical significance of the coefficient estimates denotes the significance at 10% level, ** denotes significance at the 5% level, and*** denotes significance at the 1% level. The regression equation also includes seasonal dummies which are not reported here.*

Table 3: Dynamic Panel Data Estimation Results

Coefficients	NPLs	NPLs
NPL(-1)	0.743***	0.719***
NLTA	-0.037***	-0.041***
ETA	0.030	0.020
INT	0.001***	0.001***
LRA	-0.002	-0.001
FD	0.004	0.004
L_GDP	-0.000***	-
L2_GDP	-	-0.000***
FX	0.010***	0.011***
const.	0.040	0.040
#obs.	330	330

Notes: In terms of the statistical significance of the coefficient estimates denotes the significance at 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level. The regression equation also includes seasonal dummies which are not reported here.*

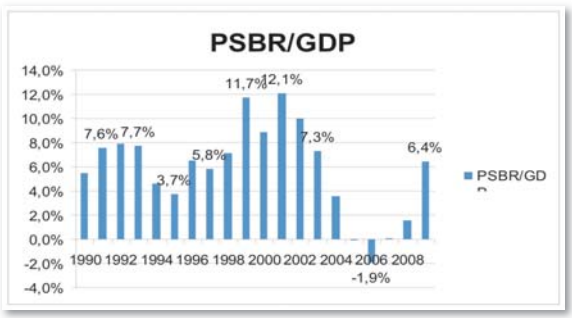

Figure 1:

Public Sector Borrowing Requirement As a Percentage of GDP

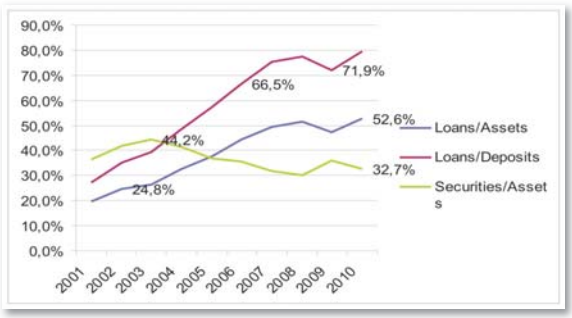

Figure 2:

Some Selected Balance Sheet Ratios

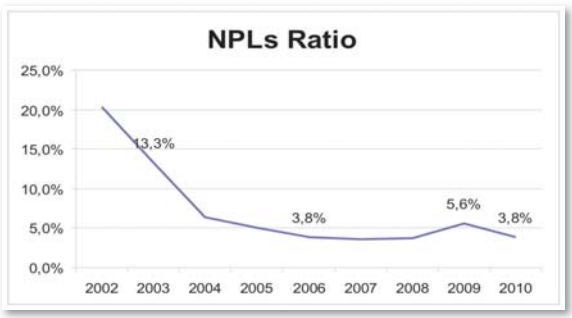

Figure 3:

The Evolution of Non-Performing Loans Ratio

UDC 336.77:338.43(497.7)

AGRICULTURAL CREDIT DISCOUNT FUND – AGRIBUSINESS SUPPORT CREDIT LINE IN MACEDONIA

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Abstract

The main objective of this study is to emphasize the importance of creating special governmental refinancing institutions targeted towards strategic economic sectors. Such institution in Macedonia is Agricultural Credit Discount Fund, a separate unit within the Macedonian Bank for Development Promotion that administers a credit line meant to support the agribusiness. As it is commonly known agriculture is one of the most important economic sectors of the country. The ACDF ***modus operandi*** *is a guideline to every similar potential fund, having in mind that it creates prerequisites of sustainable financial investments and substantial growth. The outstanding portfolio performance, fulfillment of the objectives and good impact on stakeholders is strong confirmation to this claim.*

Keywords: *refinancing institutions, Agricultural Credit Discount Fund, Macedonian Bank for Development Promotion, agribusiness, sustainable financial investments*

INTRODUCTION

The Agricultural Credit Discount Fund (ACDF) has been established in 2002, as a separate unit within the Ministry of Finance for the purpose of administration the Agricultural Financial Services Project (AFSP) or Second Loan Intervention of the International Fund for Agricultural Development (IFAD) in Macedonia (IFAD Loan 545-MK or IFAD II). IFAD has provided to Macedonia a Loan amounting SDR 6.2 mil. (USD 8 mil.) of which SDR 5.5 mil. (USD 7 mil.) i.e. the Incremental Credit Fund was for on lending to qualifying target group borrowers.[21]

As a result of ACDF's increased on lending activities, in 2005 the Macedonian Government capitalized the Fund with SDR 0.7 mil. (USD 1 mil.), remained from South and Eastern Regions Rural Rehabilitation Project

21) For IFAD 2 see: Official Gazette of Republic of Macedonia No. 107/2000

(SERRRP) or First Loan Intervention of IFAD in Macedonia (IFAD Loan 428-MK or IFAD I), previously administered by Sparkasse Banka Makedonija.[22]

In 2006, the volume of ACDF refinancing operations has increased rapidly, achieving significant portfolio growth, which resulted in overcoming the projections and faster disbursement of the Incremental Credit Fund. The biggest challenge ACDF faced at the beginning of 2007 was the insufficient amount of refinancing capital. This situation had significant consequences on ACDF refinancing operations. Suddenly, lending volume was reduced in a situation when Participating Financial Institutions (PFIs) had learnt to utilize the ACDF services as an instrument of expanding their rural finance operations and had ambitious plans to increase their rural outreach.

Fortunately, Government of Republic of Macedonia acknowledged the crucial role ACDF has played in the process of rural development. Especially having in mind that provision of affordable and at the same time economically viable agricultural loans is a significant element in strengthening the rural economy and reducing poverty in rural areas.[23] It has reviewed the possibilities of identifying additional funds for providing low-interest loans for the agricultural sector. Subsequently, the Government has decided to supplement the existing ACDF funds (from IFAD I and II sources) with the revolving funds from the two World Bank Private Sector Development Loans (PSDL I[24] and II[25]), previously administered by the National Bank of Macedonia (NBM) in order to increase the available funds for further agricultural lending. Following the Government decision, in November 2007 ACDF took over the whole responsibility for administration the PSDL I and II credit lines, consisted of EUR 8.2 mil. liquid funds and EUR 13 mil. outstanding portfolio i.e. receivables.

Due to excellent performance, the Government again in 2008 has decided to enrich the existing ACDF funds (now IFAD I, IFAD II, PSDL I and PSDL II) with the revolving funds from the European Investment Bank (EIB) APEX Global Loan, formerly also administered by NBM.[26] The transfer meant additional EUR 7.6 mil. liquid funds and EUR 9.7 mil. receivables. On the paramount of its operations at the end of 2008, ACDF revolving fund worth EUR 42 mil. of which EUR 12 mil. liquid funds and EUR 30 mil. receivables.

As of mid-2010, ACDF unit has been operating within the state owned Macedonian Bank for Development Promotion (MBDP).

OPERATIONS

The ACDF credit line is mainly targeted to agribusiness stakeholders i.e. individual farmers, rural households, agricultural, agro-processing and agro-export SMEs as well as Instrument for Pre-Accession Rural Development Program (IPARD) beneficiaries. The credit line's main objectives are:

- to create a framework for a sustainable agricultural finance sector within the Macedonian banking system;
- to integrate the smallholder agricultural SMEs and population in the banking system both as depositors and borrowers and
- to reduce the risk to agricultural sector financiers and borrowers through institutional and capacity building programs in support of sustainable commercial lending.

22) For IFAD 1 see: Official Gazette of Republic of Macedonia No. 7/97

23) Efimija Dimovska – *Bringing Finance to Rural People – Macedonia's Case (working paper)*; EastAgri Annual Meeting; Istanbul, 2010; p. 1

24) For PSDL 1 see: Official Gazette of Republic of Macedonia No. 47/1996

25) For PSDL 2 see: Official Gazette of Republic of Macedonia No. 58/1997

26) For EIB APEX Global Loan see: Official Gazette of Republic of Macedonia No. 4/2002 and 102/2008

ACDF is administered as discount or refinancing facility. Its refinancing operations are co-financing activities undertaken by both ACDF and selected PFIs. Twelve PFIs (10 banks and 2 saving houses) are utilizing ACDF revolving fund today. PFIs are eligible to draw down refinancing for a percentage of a sub-loan to qualifying beneficiaries at a rate of 80% that is set by the ACDF. PFIs are required to pre-qualify loans with the ACDF. They pay interest for the discounted amount at a level of 0.5% annually that serves as a financial incentive for them to expand agricultural lending activity.

The credit risk in on-lending operations is with the PFIs and there are absolutely none fiscal implications to the state budget. PFIs also provide a portion of the investment capital from their own funds (at least 20% of the loan amount) which is huge incentive for them to insist on-time repay by their beneficiaries. Each PFI is allowed to apply their own lending policies to sub-loans (i.e. collateral requirements, forms and documentation, repayment period, fees, etc.). For example, the operation fees vary between 0.5% and 3% of the loan depending the PFI, loan amount, investment type or repayment period. Only the interest rates are cupped and defined in the Subsidiary Loan Agreement signed between the PFIs and the Ministry of Finance. Beneficiaries are required to contribute a minimum of 20% to the cost of investment. The contribution is not mandatory to be in financial assets but in assets correlated to the investment credited. PFIs will then repay the discounted portion of the sub-loan to the ACDF in constant EUR terms and in accordance with the repayment schedule set for each sub loan. Individual sub-loans may also be indexed in foreign currency.

ACDF refinances a range of credit products defined in 3 categories:

- *Primary production loans* of max EUR 100,000 per borrower for investments and working capital meant for primary agricultural production (viticulture, horticulture, floriculture, livestock etc.);
- *Agro-processing loans* of max EUR 300,000 per borrower for investments and working capital meant for agro-processing industry (dairies, mills, wineries, fruit, vegetables and meat processing capacities etc.) and
- *Agro-export loans* of max EUR 300,000 per borrower for investments and working capital meant for primary and processed agro-products exports.

The best competitive advantage of this credit line is the interest rate cap for the beneficiaries. The interest rate is fixed and set to 4% annually (through banks) and 6% annually (through saving houses) for the first credit category and 5% annually (through banks) and 6.5% annually (through saving houses) for the second and third credit categories. These interest rates are the lowest on Macedonian credit market at the moment.

ACDF provides quality lending by continuously promoting it as commercial, not Government subsidized under the circumstances. The ceiling on interest rates lower than actual capital market rates was voluntary concession by the PFIs in negotiations with the Government. They received funds from ACDF under much favorable terms than the capital markets regime, which allows them a reasonable margin.

PORTFOLIO ANALYSIS[27]

By Credit Category

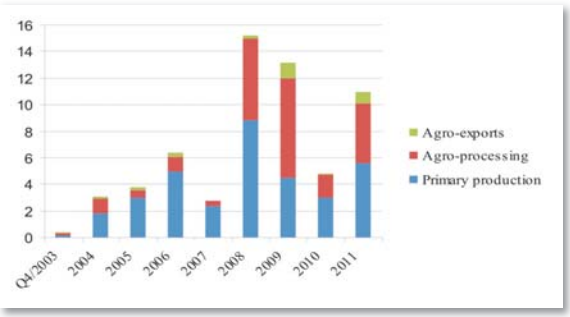
A total of 5,208 loans in amount of EUR 60.6 mil. have been approved from ACDF funds for the period October 2003 – December 2011 (*Chart 1*). This capital injection into the rural economy represents a substantial contribution to rural development from a scheme that has been fully operational for only eight full years. The overall amount of loans underestimates the total value of induced investment, since borrowers' own equity contributions to the associated businesses are not included.

27) Macedonian Bank for Development Promotion is a sole source of data presented in this subtitle.

Chart 1

ACDF Loans

Disbursement by Years (in million EUR)



The tendency of using credit funds for agro-processing i.e. for producing added value in the last 4 years is evident. This indicates that Macedonian agro-stakeholders are more and more oriented towards finalization, rather than producing primary agricultural goods.

Around 56% of the total credit portfolio ended for primary agricultural production, 38% were utilized for investments in agro-processing, while only 5% supported agro-export activities (Table 1). Unfortunately, the average loan size of EUR 11,629 is still too low and not according the requirements for intensive agriculture.

ACDF Loans Disbursement by Credit Category as of December 31st, 2011

Table 1

Credit Category	Number of Loans	%	Amount (EUR)	%	Average Loan (EUR)
Primary Production	4,854	93	34,113,515	56	7,028
Agro-processing	303	6	23,294,051	38	76,878
Agro-export	51	1	3,157,922	5	61,920
Total	**5,208**	**100**	**60,565,488**	**100**	**11,629**

By Regional Distribution

The regional disbursement of the ACDF funds is diverse. On-lending activities are far more intensive in the Southeastern compared to Southwestern statistical region (*Map 1*).

Map 1

ACDF Loans
Disbursement by
Statistical Regions
(in million EUR)

0-3
3-6
6-9
9-12
12-15

In 2009, ACDF unit has analyzed the disturbances in regional lending. The study showed that imbalances in credit demand are as a result of several factors:

- Mentality of the population in statistical regions with lesser lending activities is oriented towards friends and family financing (FFF), rather than commercial lending;
- Climate differences between regions cause the significance of agriculture in southern and eastern parts of Macedonia to be stronger. Population in these regions is more agriculturally active than others;
- The northern part of the country is predominantly urban, oriented towards industry and services, rather than agriculture. Three out of four biggest cities are far north. This causes necessity for additional financing in agri-business there to be limited;
- Southwestern and Polog population is traditionally oriented towards mid-term economic immigration in other countries. As a result, the remittances sent to these regions are high, hindering the demand for commercial credits.

ACDF Loans Disbursement by Statistical Region as of December 31st, 2011

Table 2

Statistical Region	Number of Loans	%	Amount (EUR)	%	Average Loan (EUR)
Pelagonija	633	12	7,749,598	13	12,243
Skopje	268	5	4,681,042	8	17,467
Vardar	1,285	25	11,190,686	18	8,709
Southeast	1,041	20	13,754,411	23	13,213
Northeast	743	14	5,295,154	9	7,127
Polog	125	2	3,847,324	6	30,779
Southwest	116	2	2,390,539	4	20,608
East	997	19	11,656,733	19	11,692
Total	**5,208**	**100**	**60,565,487**	**100**	**11,629**

As it can be seen in *Table 2*, about 23% of the loans have been approved in Southeast and only 4% in Southwest, creating ratio of 5.7 to 1. What seems to be more interesting is that average loan of Polog region (EUR 30,779) is the highest and the one of Northeast (EUR 7,127) is the lowest (ratio 4.3 to 1). This is an indication that economic strength of Polog farmers and agro-businessmen is 4.3 times stronger than Northeastern, showing the gap in economic performances between regions at the same time.

By PFIs

As said before, the role of PFIs in disbursement ACDF funds is crucial. The beginning of ACDF in 2003 was supported by 3 banks only (Sparkasse Banka Makedonija, Komercijalna Banka and NLB Tutunska Banka), all of them mainly oriented towards SME's rather than individual farmers. The big breakthrough in lending to farmers happened in 2004 when saving houses Moznosti and FULM were introduced to the Program. Their flexibility in on-lending activities opened ACDF funds to individual farmers on great cheers by the later. This was actually for first time ever small individual agricultural producers to have access to favorable loans on the Macedonian capital market. Finding their own interest in attracting this focus group to their banking operations, other banks also signed Sub-Loan Agreements with the Ministry of Finance and joined ACDF refinancing activities (2 in 2005, 2 in 2008 and 3 in 2011). This action dramatically expanded the outreach of ACDF refinancing on level of some of the smaller Macedonian banks.

The best performed PFI in using ACDF refinancing is by far NLB Tutunska Banka, disbursing 32% of the number of loans and 33% of the refinanced capital, followed by Sparkasse Banka Makedonija (26% and 27% respectively) and others (Table 3).

ACDF Loans Disbursement by PFIs as of December 31st, 2011

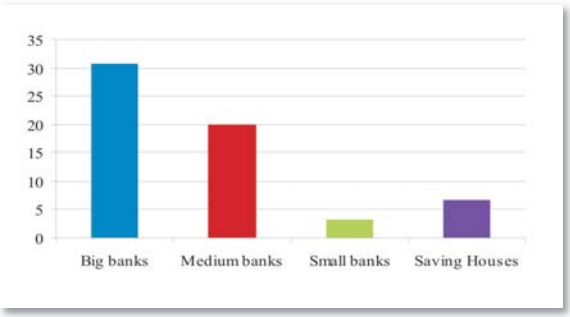
Table 3

PFI	Number of Loans	%	Amount (EUR)	%	Average Loan (EUR)
Komercijalna Banka	130	2	9,919,368	16	76,303
Sparkasse Banka Makedonija	1,364	26	16,101,857	27	11,805
UNI Banka	5	0	476,677	1	95,335
NLB Tutunska Banka	1,650	32	20,200,742	33	12,243
Ohridska Banka SGG	2	0	578,836	1	289,418
Stopanska Banka Bitola	32	1	1,333,981	2	41,687
CKB Banka	185	4	1,926,684	3	10,415
FULM	241	5	563,497	1	2,338
Moznosti	1,537	30	6,157,201	10	4,006
ProCredit Bank	61	1	3,265,994	5	53,541
TTK Banka	1	0	40,650	0	40,650
Stopanska Banka Skopje	0	0	0	0	0
Total	**5,208**	**100**	**60,565,487**	**100**	**11,629**

Analyzing average loan size, it is noticeable that PFIs with small percentage of approved loans (Ohridska Banka SGG, UNI Banka and to some extent Komercijalna Banka) have high loan average i.e. they exercise conservative lending policy oriented towards selected key clients. On contrary, PFIs with lower loan average (Sparkasse Banka Makedonija, NLB Tutunska Banka, Moznosti and FULM) have far more relaxed credit policy and mainly credit individual farmers and small agricultural enterprises.

Chart 2

ACDF Loans Disbursement by PFI Size (in million EUR)



As it can be expected, big banks have the biggest portion of refinanced loans of EUR 30.7 mil. or 51% (*Chart 2*), followed by medium banks (EUR 19.9 mil. or 33%), saving houses (EUR 6.7 mil. or 11%) and small banks (EUR 3.3 mil. or 5%).[28] Seeing this chart and considering total assets value compared to ACDF refinancing, it can be concluded that saving houses are more farmer friendly in lending than small banks and medium banks are more than big banks.

28) According to NBM regulations, "Big Bank" is considered every bank with assets of MKD 15 bil. (EUR 244 mil.) and over (here: Komercijalna Banka, Stopanska Banka Skopje, NLB Tutunska Banka and Ohridska Banka SGG). "Medium Bank" is considered every bank with assets between MKD 2 bil. and 15 bil. (EUR 33 mil. and 244 mil.), here: Sparkasse Banka Makedonija, UNI Banka, ProCredit Bank and TTK Banka. "Small Bank" is considered every bank with assets of MKD 2 bil. (EUR 33 mil.) and less (here: Stopanska Banka Bitola and CKB Banka).

By Gender

ACDF strongly supports equal opportunities in funds availability to beneficiaries. In 2003-2011, exactly 4,340 loans amounting EUR 46.4 mil. (77%) were disbursed to male beneficiaries and 868 loans amounting EUR 14.2 mil. (23%) were disbursed to women. The average loan size (EUR 10,682 for male and EUR 16,366 for female beneficiaries) indicates that women have "more courage" when deciding to borrow than men and that they perform better when lending and repaying. ACDF is continuously informing PFIs that lending to women borrowers should be prioritized and increased to the satisfactory extent, having in mind that in some cases they are carriers of the households' rural and agricultural activities.

By Credit Amount

Macedonian primary agricultural production is mainly small and fractious. Therefore, it's not surprising that a share of 82% of the disbursed loans and a share of 30% of the disbursed funds are EUR 10,000 and less (*Table 4*).

ACDF Loans Disbursement by Individual Loan Amount as of December 31st, 2011

Table 4

Individual Loan Amount	Number of Loans	%	Amount (EUR)	%	Average Loan (EUR)
up to 10,000	4,277	82	17,823,816	30	4,167
10,001-50,000	704	13	16,399,082	27	23,294
50,001-100,000	151	3	11,807,952	19	78,198
100,001-200,000	64	1	10,739,263	18	167,801
over 200,000	12	0	3,795,374	6	316,281
Total	**5,208**	**100**	**60,565,488**	**100**	**11,629**

Note: The anomaly of higher average loan of EUR 316,281 than maximum limits of EUR 300,000 is due to higher temporary limits of EUR 700,000 for wineries and EUR 500,000 for the rest of agro-processors allowed for working capital procurements in the period 2009-2011, as well as EUR 400,000 for greenhouses in 2011.

It is noticeable that few agribusinesses can sustain credit exposure of over EUR 200,000. Thus, the capacity of borrowing in Macedonian agro-industrial complex is limited on loans between EUR 5,000 and EUR 100,000 which is highly unfavorable for the efforts of improving the sector competitiveness.

By Beneficiaries of National Financial Support Programs for Agriculture

In the analyzed period, 693 beneficiaries of national financial support programs for agriculture also used loans from ACDF. Compared to ACDF portfolio this is a share of 13% of the total number of approved loans. The structure shows that 508 beneficiaries were users of Direct Payments, 163 were participating in the Rural Development Program, while 22 were supported by the IPARD Program. All of these 693 beneficiaries are to be congratulated since they benefited from some or all Government incentives to agribusiness, showing therefore a strong entrepreneurial spirit.

ACDF unit operations also carry an obligation of analyzing quarterly reports from PFIs considering ACDF loans cumulative repayment rate, portfolio quality, collateral requirements, reasons for rejections with PFIs credit committees and rejection rate.

Cumulative Repayment Rate

The full credit risk of all ACDF-refinanced loans is with the PFIs. Their obligation is to repay the refinanced principal plus interest back to ACDF revolving fund even in cases when the final borrowers delay their repayments. While the credit risk of individual loans is with the PFIs, it is of interest for ACDF to follow-up the actual repayment by clients.

Above all expectations, the cumulative repayment rate of ACDF loans is more than satisfactory. The worst, but still bearable result was notified in 2009 (94.5% cumulative repayment rate) when global financial crisis sharply stroke nearly everyone including agribusiness itself (*Table 5*). Fortunately, in 2011 only 2.9% of ACDF loans were default. This near excellence was partly a result of accelerated recovering or writing off in the banking system in general after the crisis. Considering that percentage of defaulters in Macedonian banking sector varied between 8% at the end of 2009, 9% end of 2010 and 9.5% end of 2011,[29] it is clearly evident that ACDF beneficiaries are far more sustainable and serious in fulfilling their repayment obligations than the rest of economic operators in the country.

ACDF Loans Cumulative Repayment Rate (in %)

Table 5

End of Year	2006	2007	2008	2009	2010	2011
Repayment Rate	96.1	96.3	95.4	94.5	96.1	97.1
Default	3.9	3.7	4.6	5.5	3.9	2.9

Portfolio Quality

In addition to cumulative repayment rate, ACDF also analyses the portfolio quality of loans disbursed (*Table 6*).

ACDF Portfolio Quality Progress (in thousands of EUR)

Table 6

Days in Arrears	End of 2008	%	End of 2009	%	End of 2010	%	End of 2011	%
Up to 30	16,825	92.4	23,347	81.0	19,803	92.3	20,580	94.8
31-180	1,217	6.7	5,151	17.9	932	4.3	746	3.4
181-270	94	0.5	144	0.5	364	1.7	180	0.8
Over 270	71	0.4	179	0.6	356	1.7	199	1.0
Total outstanding	**18,207**	**100.0**	**28,821**	**100.0**	**21,455**	**100.0**	**21,705**	**100.0**

As it can be seen, the outstanding portfolio with up to 30 days in arrears varies between 81% in 2009 and 94.8% in 2011. This is considered to be highly satisfactory. Namely, due to the specific nature of agriculture and agro-processing industry, up to 30 days delay is not considered risky. Furthermore, it is commonly known that PFIs not always follow the sector's inflows and outflows when creating repayment schedules. Therefore, an up to 30 days delay in repayment is practically unnoticeable.

The burden of 2009 financial crisis is also evident in this aging portfolio analysis. High percentage of almost 18% of portfolio between 31 and 180 days in arrears in 2009 created a peak of 1.7% nonperforming loans (over 270 days in arrears) in 2010. As a result, the PFIs in 2010 introduced more conservative approach in lending by reducing the outreach and orienting towards feasible and profitable investment projects. This

29) UtrinskiVesnik – *No. 866* of April 26th, 2012; p. 6

credit policy caused total outstanding decrease by over EUR 7 million, but desirable credit risk reduction. The improvement came in 2011, manifested by a highest percentage of non-risky portfolio up to 30 days in arrears (94.8%) as well as bearable portfolio between 31 and 180 days in arrears (3.4%).

As an addition, ACDF within its authority has continuously monitored clients' lending performances in order to determine whether its funds were used properly and according to the criteria, policy and procedures. As of the end of 2011, ACDF unit has monitored 2,761 beneficiaries and discovered only 60 misuses and fouls, or about 2%. Considering number of clients inspected as well as total number of loans lent, this is a very small percentage of misuse indeed. The logical conclusion that indicates beneficiaries' responsibility, seriousness and honesty in using credit funds is therefore inevitable.

Collateral

Since PFIs carry the risk of loans repayment, they have full discretion of loan collateralization according to their own policies and procedures. In this process all available instruments provided by law - tangible collateral (mortgages and pledges) and soft collateral (personal guarantees, cash cover, insurance policies, bills of exchange etc.) are used. Having this in mind, ACDF loans with PFIs were covered as following*:

- 1,109 loans with mortgage on housing and production facilities, 699 of which in urban and 410 in rural areas;
- 523 loans with mortgage on agricultural land;
- 269 loans with pledge on tangible assets (equipment, mechanization, herds, vehicles);
- 3,766 loans with personal guarantees (guarantors) mainly supported by bills of exchange,
- 196 loans with cash cover and
- 3 loans with insurance policies.

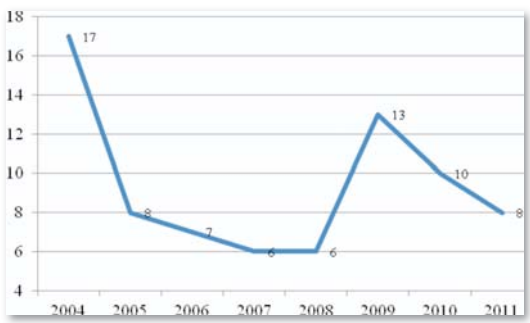
**) Note: Some loans were covered by two or more collateral instruments.*

Applications Rejection

The decision making for ACDF loan applications is bi-leveled, with the PFIs' loan decision bodies and later with the ACDF Credit Committee. The risk of default requires a specific in-depth analysis of loan applications mainly articulated by both quantitative and qualitative parameters. Unfortunately, sometimes one, several or all of these required performances are not fulfilled by the applicants, creating therefore grounds for rejection. *Chart 3* shows the rejection rate of loan applications by PFIs Credit Committees.

Chart 3

Rejection Rate by PFIs Loan Decision Bodies (in %)



The cumulative loan applications' rejection analysis indicates that 474 out of 5,836 loan applications received have been rejected by the PFIs' credit committees, which is 8.1% rejection rate. In Chart 3 is shown how the rejection rate followed the investment risk anticipated by the banking sector through years. For instance, the country's recovery from 2001 insurgencies and restraints in agricultural lending caused 17% rejection rate in 2004. The global and national economic and financial expansion lowered this rate to 6% in 2007 and 2008, but the opposite tendencies again brought it to 13% in 2009. The stabilization was seen in 2008 with bearable 8% of rejected projects for financing by the PFIs.

The most common reasons for rejection of the loan applications by PFIs' credit committees are presented in Table 7. It is noticeable that insufficient collateral is still an "open wound" for potential agricultural investments to be lent. Fortunately, compared to previous years PFIs have relaxed their collateral policy as one of the major obstacles in lending in general and they have put bigger emphasis on the businesses themselves.

Reasons for Loan Applications Rejection by PFIs as of December 31st, 2011

Table 7

Reason	Applications Rejected	%
Incomplete Documentation	57	12
Insufficient Collateral	172	36
Cancelation by Applicants	50	10
Indebtedness	42	9
Insufficient Business Volume	60	13
High Risk	54	12
Potential Misuse	35	7
Other	4	1
Total	**474**	**100**

The ACDF Discount Credit Committee on the other hand, has rejected 154 out of 5,362 loan applications received from PFIs, mainly because of potential misuse and non-compliance to ACDF refinancing credit criteria. This is less than 3% rejection rate, or by far better approvement flow than PFIs' credit committees.

IMPACT

On Beneficiaries

ACDF's most obvious impact on beneficiaries is *decrease of rural poverty*. The refinancing operation, with over EUR 34 mil. invested in primary agricultural production, successfully reached smaller-scale, asset poor households. The outcomes from the regular monitoring and assessment show that these borrowers develop their businesses and become economically stronger with the realized investments.

The ACDF borrowers also benefited from the *improved competitiveness* of their businesses, manifested by modernization of equipment and production technologies as well as improved products' quality and value added. The value of assets and equipment together with production capacities of agro-processing industry increased with the investment in equipment and working capital. Over EUR 15 mil. was used to buy working capital, mainly from domestic suppliers (individual farmers), who at the end of the day benefited from these lending arrangements. At the same time, the agro-processors spent over EUR 7 mil. to buy production equipment and restructure their production techniques in order to keep pace with the modern technologies, hence to improve their competitiveness.

ACDF operations also *influenced the unemployment rate* by increasing the engaged labor at the farm level and agro-processing companies. Individuals are engaged on longer term basis in agriculture, having larger income and feeling more secured. The number of employees in agro-processing companies had also permanently risen. The very poor, including those without agricultural assets, gained access to seasonal employment arising from production increases, enhanced marketing and hence increased employment requirements for product handling, sorting and packaging at the processor level. Exactly 14,266 new jobs were supported by ACDF loans in the analyzed period.

Last, but not least crucial importance of the ACDF credit line is *increased income* to beneficiaries. Considering the 2% average agricultural BDP growth in the period 2004-2011, the investments in primary agricultural production resulted in total value added of EUR 5.4 mil. The investments in agro-processing industry on the other hand resulted in total value added of EUR 16.1 mil. (considering 8% average agro-processing industry BDP growth).

ACDF strategy was the recognition of the family farm as the core entrepreneurial unit in the emerging market-oriented rural economy in Macedonia. By directing agricultural financial support to such, it was expected not only to improve the standard of living of farm families, but also to impact favorably on other rural poor without access to agricultural assets. Farmers and other rural entrepreneurs have become increasingly connected to the formal financial sector on a systematic and commercially viable basis. Greater production entailed an increased labor requirement and contributes to absorbing new entrants to the labor force. Intensification of production has increased the demand for on-farm labor and suppliers of inputs, while increased output offered scope for private investments in processing and trading enterprises, thereby creating further employment opportunity and means to enhance linkages in the rural economy. The appropriateness and success of the ACDF approach can be measured not only in terms of the absolute number and amount of loans refinanced, but also in terms of the wider effects induced among PFIs and the target population.

On Participating Financial Institutions

The provision of financial services to the rural and agricultural sector in Macedonia was rather limited until few years ago. The banks' perception of high risks in agricultural lending combined with high delivery costs as well as profits enjoyed in lending to other sectors, inhibited formal financial services' penetration into the agricultural financial market. Poor loan recovery with several donor-financed rural lending operations compounded bank concern. Most banks had limited experience in dealing with small and medium-scale agricultural producers and their enterprises and few trained staff to deal with rural clientele. In that environment, when the country's banks lent to agriculture, they tent borrowers to be large, commercial farming and agro-processing enterprises with well-established marketing channels for their products.

One of the basic objectives of the ACDF was to *create a framework for a sustainable agricultural finance sector within the Macedonian banking system*, through establishment an agricultural refinancing facility. After nine years of operation, ACDF has undoubtedly achieved it. Various PFIs now actively use the ACDF scheme to start their lending operations to small rural clients from their branch offices for the first time and have started to compete of clients by offering ACDF-refinanced loans.

The *increased competition between PFIs* in attracting new clients made the loans more available to individual farmers i.e. the loan terms (interest rates, repayment periods, collateral requirements, fees etc.) became more favorable. While there was an interest rate cup for ACDF loans, the repayment periods finally followed the specific needs in agriculture, the collateral policy was by far relaxed towards accepting mortgage on rural housing/production facilities, agricultural land, pledge on agricultural mechanization/equipment and fees have also been lowered. This "positive transfer" of appropriate approaches to service delivery and products between banks is among the key measures originally identified for ACDF success.

ACDF has succeeded in convincing PFIs to understand the unnoticed financial potential of agriculture. As a result, *the PFIs agribusiness credit portfolio has dramatically expanded*. In 2009, ACDF unit has conducted a survey asking PFIs about the impact its credit line has on their operations between 2003 and 2008. According to their responses, the results were positively astonishing:

- The share of agricultural credit portfolio in their total credit portfolio increased from 13.4% to 35.9%;
- The agriculture credit portfolio rose by 168%;
- The network of branches included in receiving and processing loan applications for agriculture expanded from 2 to 74;
- The number of credit officers included in agriculture lending rose from 18 to 189;
- Average annual interest rate for loans supporting agriculture plummeted from 15.7% to 9.2%;
- Most of the PFIs had experienced increased customer interest for loans in agriculture.

The achievement of the objectives set was a long process of joint cooperation between ACDF, PFIs and other involved partners. A number of activities were taken to this manner. ACDF has organized and implemented significant number of capacity building and training programs for PFIs' staff performed by highly respectable international financial training institutions, which had strong impact on increasing PFIs activities. This has included better involvement of their branches in the loan processing operations, mitigating credit risk, improving quality in processing loan applications etc. For example, in the above mentioned questionnaire, PFIs have responded that thanks to these trainings, duration of loan application processing was cut from 20 to 13 days. At the end of 2011, this figure has dropped to 11 days.

The excellent repayment rate of the ACDF refinanced loans is also having direct effect on the increased PFIs interest to expand their agricultural lending. Today, the financial institutions clearly see the potentials of the agricultural sector, as well as the effects from investing in it. This is pretty evident in the change of the loan portfolio of the financial institutions, where the share of the agricultural portfolio in the total portfolio is continuously increasing.

On Macedonian Economy

To assess the impact of ACDF lending to country's agro-industrial complex and economy in general, it is of crucial importance to present a brief analysis of sub-sectorial loan disbursement (Table 8).

Loan Disbursement by Agribusiness Sub-sectors as of December 31st, 2011

Table 8

Sub-sector	Number of Loans	%	Amount (EUR)	%	Average Loan (EUR)
Livestock	1,961	38	13,144,911	22	6,703
Fruit	459	9	3,662,017	6	7,978
Viticulture	883	17	5,030,147	8	5,697
Horticulture	1,551	30	12,276,441	20	7,915
Dairies	51	1	2,913,945	5	57,136
Meat Processing	14	0	1,472,368	2	105,169
Mills	83	2	6,962,967	11	83,891
Vegetables Processing	69	1	4,369,764	7	63,330
Fruits Processing	15	0	1,499,530	2	99,969
Vineries	44	1	4,766,569	8	108,331
Other Agro-processing	27	0	1,308,907	1	48,478
Primary Agro-products Exports	50	1	3,082,922	5	61,658
Processed Agro-products Exports	1	0	75,000	0	75,000
Total	**5,208**	**100**	**60,565,487**	**100**	**11,629**

As it can be observed from the table, the highest interest the beneficiaries had for livestock purchases. Out of listed 22% of the loan amount, 9% went for cattle, 4% for sheep and goats, 3% for pigs, 2% for poultry and the rest 4% for other livestock. These funds were mainly used to purchase:

- 32,632 sheep, lambs, goats and kids (6% of the nation's sheep/goats livestock)
- 11,034 cattle (6% of the nation's cattle livestock),
- 6,011 pigs (2% of the nation's pig livestock),
- 164,773 heads of poultry (6% of the nation's poultry) and
- app. 10,000 tons of fodder.

About 20% of the funds were used for horticulture, mainly to construct 177 ha of plastic tunnels and 6 ha of greenhouses. Practically, 40% of plastic tunnels and greenhouses in the country were built or reconstructed with ACDF funds. The loans for viticulture were used for raising 684 ha of vineyards (5% of the nation's vineyards) and those for fruit growing, for raising 574 ha of fruit yards (mainly apples, peaches and plums), or 4% of the fruit yards in the country. About 449 ha of agricultural land were covered with irrigation systems. The rest of the funds were used to buy 421 tractors (1% of the tractors in the country), 6 harvesters, 274 pieces of additional auxiliary mechanization and 72 ha of agricultural land.

The lending to agro-exporting companies influenced the *agricultural exports boost*. Nearly EUR 3.2 mil. went in purchasing domestic agricultural products for export purposes that resulted in net exports of approximately EUR 10 mil. added to the country's capital account.

One of the key roles of ACDF was *strengthening the supply chain connections*. Having in mind that the three loan categories form a supply chain circle, ACDF operations are an excellent example of how these three supply chain stakeholders should be financially supported. Besides direct supporting of new jobs, ACDF helped in supply chain integration of 64,291 individual suppliers of agricultural products by lending to agro-processors and agro-exporters. As mentioned before, the latter used the loans to purchase agricultural goods, expanding therefore their network of individual suppliers.

At the end, ACDF as a separate unit within the Ministry in Finance and latter within MBDP, in its operations strongly insisted in including farmers and other beneficiaries to formal channels of the economy, thus creating basis for taxation and *increased revenues to national budget*. Transferring loan assets directly to the banking accounts of the suppliers, insisting on payment by invoices and contracts registered with the notary and mandatory attachment of all necessary licenses and approvals to loan applications, narrowed the possibilities of tax evasion and other "grey economy" activities.

CONCLUSION

For Beneficiaries

ACDF is the most favorable credit line on the capital market. Nevertheless, during the analyzed period, ACDF has refinanced 4.369 loans to individual farmers which is less than 1% of people included in agriculture (according to 2007 Macedonian Agriculture Census). At the same time, 839 SMEs used ACDF funds which accounts about 25% of the enterprises registered to be working in the agro-industrial complex. This data appoint to certain lack of information among agribusiness stakeholders about the possibilities of gaining cheap finance to their businesses. Even the ones who are aware of the existence of such finances are reluctant to fulfill policy conditions required for granting a loan.

It is of great importance for farmers and agribusiness SMEs to be in constant search of improvement their competitiveness. One of these efforts is permanent and on time gathering information about availability, criteria, preconditions and innovative concepts of financing. Once these finances are located, next effort is to do all the best to meet their prerequisites in order to obtain these finances.

For PFIs

Between 2003 and 2009, the author of this paper made a survey on the problems beneficiaries faced when applying for ACDF credit at PFIs. On a sample of 509 beneficiaries a sole question has been posed: "*What was your biggest problem in the process of applying and getting ACDF loan*? The responses were as following:

- High collateral requirements – 198 beneficiaries (39%);
- Long process of approval – 112 beneficiaries (22%);
- Inadequate terms of repayment – 81 beneficiaries (16%);
- High interest rate - 31 beneficiaries (6%) and
- Did not have serious problems - 87 beneficiaries (17%).

This result suggests that PFIs still have strong, yet conservative approach in terms of collateral requirements. Even though ACDF credit line "has persuaded" PFIs to accept farmers as relevant business partners and therefore to accept their rural premises (agricultural land, rural housing and production facilities, equipment, mechanization, herds) as collateral it is clearly evident that PFIs' collateral policy needs further relaxation in order to expand their outreach.

It is also noticeable that remote, mountainous, border villages are under-represented in commercial lending. Financial institutions commonly justify their lack of operations to these rural areas with poor profitability that cannot generate the cash flows needed for adequate debt-servicing, high transaction costs, poor infrastructure, low value and unregistered property with unidentified ownership that generates high lending risk.

ACDF illustrates that with appropriate, tailored, commercially driven support measures in place, confidence of financial institutions in rurally based lending can be generated, including in the perceived "high risk" areas of lending to individuals in remote rural areas. The ACDF results also showed quite clearly that rural farmers and small-scale entrepreneurs are able to invest successfully on the basis of commercial borrowing and thereby markedly improve their incomes.

While initially offering incentives to all interested financial institutions to expand their rural operations, the longer-term objective of these interventions has been that the banks and other financial operators would increasingly start to consider rural small and medium-scale producers and enterprises as a part of their mainstream clientele that would in the future be served wholly with the banks own resources.

For the Country

The Macedonian Government acknowledges the crucial role ACDF has played in the past nine years and sees the role ACDF can play in the future regarding the usage of EU pre-accession funds. In short to medium-term, the Macedonian Government's emphasis on rural development as part of the EU convergence process is expected to ensure that preferential refinancing rates continue to be available through ACDF in order to encourage higher levels of PFI investment in agriculture and related industries and serve rurally-based customers.

Providing agricultural sector with preferable credit lines under terms and conditions acceptable to each farmer and SME will became a challenge for using favorable funds for achieving EU goals and standards. These loans would ensure resources for financing agriculture and rural development projects, thus preparing them to use pre-accession IPARD fund in near future.

POLICY RECOMMENDATIONS

ACDF refinancing activity is an original method of soft subsidy to interest rates not in contrary to WTO Agreement on Subsidies and Countervailing Measures. This operation prevents direct subsidies on interest rates (forbidden by WTO) and states them as a voluntary concession by the PFIs in order to expand their outreach. It is evident that this was very effective way to encourage lending to agribusiness.

Recognizing the quality of ACDF operations, Macedonian Government decided as of July 1st, 2010, ACDF unit to be transferred from Ministry of Finance to MBDP and to continue administering the revolving credit fund on commission principle (on behalf of the Ministry of Finance) in best practice. However, foreign credit lines of which ACDF revolving fund is consisted are in deep process of repayment to the creditors. This creates continuous decrease of available funds for further lending to target groups. At the end of Q1/2012, ACDF account had balance of only EUR 0.9 mil. liquid funds and EUR 26 mil. receivables. Because of the importance the credit line has to all stakeholders (beneficiaries, potential borrowers, PFIs, the country) as well as huge financial potential of EU Pre-accession Funds for Agriculture and Rural Development designated to Macedonia it is our suggestion that:

ACDF revolving credit fund should be capitalized with at least EUR 10 mil. In order not to overpressure the national budget, this can be realized by annual transfers of EUR 2 mil. from state to ACDF account in the next 5 fiscal years. Practically, a new sustainable Fund would be created to meet the financial needs of the target group, once majority of liabilities to foreign creditors are repaid.

Along with the financial strengthening it is of great importance that human resources of ACDF unit should also be enhanced so it can appropriately respond to increased demands.

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THE ROLE, SIGNIFICANCE AND TREND OF CONSTRUCTION SECTOR IN MACEDONIA

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Abstract

The theory has concluded, and the practice has confirmed numerous times, that the dynamic trends in construction influence the general economic activity of a country with a multiplier effect. More specifically, growth in the construction sector activity stimulates a revival of the total economic activity. Hence, the growth in this sector stimulates a faster economic growth of a country. The governments of many countries, including Macedonia, through macroeconomics policies, encourage and stimulate construction activities with an ultimate goal to sooth recession trends in the economy. In order to reduce unemployment and strengthen aggregate demand, especially in crisis times,[30] governments often engage in financing and building public objects.
First in this paper we give a short review of why and how the developments in construction are usually analyzed, with an emphasis on the methodology implemented by the State Statistical Office of the Republic of Macedonia; further we make an analysis of the role and significance of the construction sector in Macedonia and finally we review the EU experiences. Having this in mind and considering the fact that thus far a more serious and detailed analysis of the construction sector in Macedonia has not been done, with this paper we aim at giving a humble contribution, which would clear the way for further analyses and researches of this relevant sector of the economy.

Keywords: *construction, cost index, Macedonia, EU.*

30) Such projects in Macedonia are 'Skopje 2014', as well as the project for subsidizing loans for purchasing or renovating dwellings.

1. Introduction

The construction costs index (CCI) (sometimes referred to as contruction input price index) is an indicator of business cycles which shows the trend of costs of construction companies that occur in the process of construction of new buildings. It is a composite index which combines the index of material costs and the index of labour costs, which actually comprise the leading group of expenses of construction companies in the process of construction of residential buildings.[31]

The construction costs index (CCI) measures the development trends of input prices paid by construction companies during the construction process. Therefore it is necessary to distinguish this index from the output price index, which shows changes in prices paid by the client to the construction contractor. The output price index includes changes in productivity as well as changes in profit margins of construction companies. Also, the CCI index differs from the selling price index, which shows changes in prices paid by final owners, which vary substantially in time and place, depending on market conditions and competition.[32]

From the beginning of 2011, the State Statistical Office of the Republic of Macedonia (SSO) began calculating and regularly publishing the construction cost index, taking 2005 as a base year. A special methodology for calculation of the construction cost index was developed for that purpose, which is completely adapted to the appropriate methodology of short term statistics of Eurostat.

The results of the research are presented in this paper. The paper continues as follows: the second part explains the basic reasons and needs for following the construction costs; the third part presents the basic ways - indices for calculation of construction costs; the fourth part gives a review of possible approaches for calculation of construction indices, and a separate part is dedicated to the methodology for calculation of the construction cost index used by the SSO; the fifth part analyses the construction sector and construction costs in RM and the sixth part reviews the construction sector trends in EU. The last part of the paper presents the conclusions from the research and certain recommendations for calculation of new indices related to market prices of buildings.

2. Why calculate and analyze construction costs

Having in mind the significance and role of the construction sector in an economy, it is logical to find the need for establishing a system for an overall following of the activities and growth dynamics of this sector. The theory has concluded, and the practice confirmed numerous times that the dynamic trends in construction reflect multiplicatively on the general economic activity of a country. More specifically, the заживувањето of the construction sector activity stimulates a revival of the total economic activity. Hence, the growth in this sector stimulates a faster economic growth of the country. The governments of many countries, including Macedonia, through macroeconomics policies encourage and stimulate construction activities with an ultimate goal to sooth the recession trends in the economy. In order to reduce unemployment and strengthen aggregate demand, especially in crisis times, governments often engage in financing and building public premises.[33]

This imposes the need for calculation of construction price indices, in order to provide following of the real changes in the output of construction sector activities. These indices do not provide information about the

31) Eurostat “Construction cost index overview”

32) See Eurostat **Methodological manual**, p.75-77

33) Until recently, in Spain, the government aimed at achieving a higher growth by providing incentives in the residential construction. However, due to the latest economic crisis, which reflected also on a slow down of real sector activities, the positive effects of such a policy lack behind. In Macedonia, the projects ‘Skopje 2014’, and the project for subsidizing loans for purchasing or renovating individual dwellings, among others, have the goal of stimulating the country’s economic growth through dynamyzation of the construction sector activities.

situation on the real estate markets, but give basis for forming prices in the purchase contracts, as well basis for indexation of insurance companies'needs.

The statistical practice of analyzing construction sector prices uses the following types on indices: index of output prices in construction, index of selling prices in construction and index of construction costs. The construction cost index is most commonly used to follow the construction of new residential dwellings. This index measures the relation between costs, at constant technology and input mix at constant volume of construction work and it shows the price changes of the factors of production which are used by the construction sector.[34] The construction cost index incorporates the costs for energy and fuel, machines and equipment, transport etc. The costs of architectural projects are not included in the calculation of the construction costs index.

The main goal of the calculation of CCI is the opportunity to follow costs that appear in the construction of new individual dwellings process. This enables the involved construction companies, as main users of this index, to include the changes in construction costs on time when signing contracts for construction of new buildings.

The significance of this index will be even higher when the analysis of changes in construction costs trends are to be connected with the analysis of changes in selling prices of dwellings on the real estate market. Taking into account that the latest financial crisis of 2007 erupted on the mortgage loan market, where the basis for credit risk trade was the uncontrolled demand for residential dwellings, which on the other hand stormed the housing price up to unrealistically high ceilings, then it is essential to follow the correlation between construction costs changes and market price changes of dwellings. This information would help banks and insurance companies to make more careful business decisions.

The information gathered from the analysis of the trend of changes in construction costs are an important factor in creation and evaluation of the effects of macroeconomic policy aimed at stimulating the economic growth rate of a country.

3. How to follow construction costs and trends

The term construction covers a variety of activities from residential and nonresidential dwellings, building of bridges, roads, damns, to small construction works that include repairs, restorations, and maintenance of existing objects. This variety of construction activities presents one of the main problems in composing construction price indices, which renders the international comparison of data more difficult. Different countries use different rules and standards for calculation of these indices. Namely, some countries take into account (while others don't) costs related to land acquisition, acquiring building licenses, transport costs, costs of consulting services, energy costs etc.

There are basically three main approaches to composing construction prices indices: input price index, output price index and seller's price index.[35] The scope and structure of each of these is different and corresponds to the place of origination and the activity subject burdened with the costs.

The input price index measures changes in the prices of inputs used in the building process, by monitoring separately the cost of each factor. In fact, this index represents a weighted index of material costs and labour costs (otherwise known as construction cost index or construction factor price index). This index does not provide information on the movement of market prices of built objects, since it does not incorporate data on the changes in productivity, profit margins and trade conditions in the real estate market.

The output price index measures changes in the price of output produced by companies involved in construction activities. Those are the costs paid by the client to the engaged enterprise for the performed construction activity. This index incorporates costs for materials, equipment, labour, land preparation costs, architect's fees and other costs.

34) Eurostat, Methodological Manual, pp.76.

35) Sources and Methods – Construction Price Indices, p.12

The seller's price index measures changes in prices of built dwellings paid by purchasers or final users of these objects. This index includes the total purchase price of a completed construction, which beside material and labour costs, includes land costs and other direct or indirect costs, such as the profit margin of the seller.

4. Methodology used by the SSO to calculate construction costs in Macedonia

The methodology for calculation of construction cost indices used by the State Statistical Office is entirely prepared according the relevant methodology of short term statistics of Eurostat. As most EU countries, Macedonia uses the method of construction input price index. From this reason, we will refer to the procedure for calculation of the construction cost index for dwellings just dryly/drily/laconically.

The index of costs of construction of new dwellings (CCI) is a composite index composed of two parts: construction materials cost index and labour cost index. CCI is calculated as a weighted average of these two indices:

$$CCI = w_1 * CTM + w_2 * CTL$$

where CTM represents the construction materials cost index, CTL the labour cost index, and w1 and w2 are the corresponding weights.

The weights for calculation of the construction cost index for new dwellings are based on the data from the 'Annual accounts of business subjects', which are classified by their main activity in the Construction sector according the National classification of activities Rev.2.

Data sources for calculation of the construction material cost index are the existing data on prices of sellers of industrial products on the domestic market for materials used by construction companies. The index includes 92 different products sorted in 27 classes according to the National nomenclature of industrial products from 2008. The necessary data for calculation of the material cost index are received from selected data providers which are obliged to inform the SSO, by filling forms on a monthly basis, about their prices of a selected group of products. The weights for calculation of the construction material cost index are based on the value of used materials from the 'Annual report on used construction materials' in 2005.

The labour cost index shows the trend of paid average gross salaries per employee in the construction sector. The average gross salary per employee includes net salaries, calculated/estimated contributions and calculated tax. Data from labour market statistics which refer to monthly data on paid average gross salaries per employees in the construction sector by departments are used for calculation of this index. The classification by departments is according the 'Nomenclature of construction objects and construction works' and the structure of the value of performed activities in the 'Annual report on construction objects which have been worked on' in 2005.

The calculation of the material cost index and the labour costs index is done the use of the Lasper formula, taking 2005 as base year. Starting in 2011, the SSO calculates and publishes CCI quarterly.

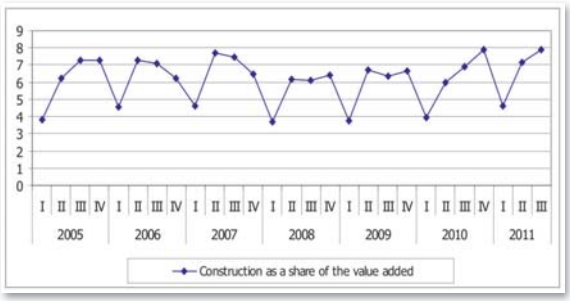
5. Analysis of construction trends in the Republic of Macedonia

The following of the trends of construction indices in the Republic of Macedonia is to a certain degree handicapped, because the time series of data on construction indices that the SSO disposes starts in 2005.

Figure 1:

Share of construction in the value added

(in %)



Source: SSO

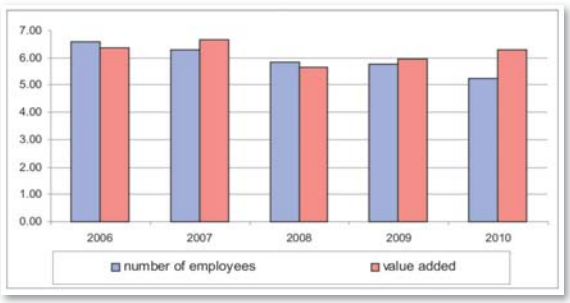
The data on Figure 1, from the first quarter of 2005 to the third quarter of 2011, shows the seasonal character of the construction activity, noticeable by the lower activity level in the first quarter of each year.

In almost the entire period (I.2005 - III.2011) the construction sector in the Republic of Macedonia, as a share of the value added, registers a stable trend. The lowest registered level is 3,7% in the first quarter of 2007, while the highest level is 7,9% in the third quarter of 2011. In the years after the financial/economic crisis (which started in the USA in 2007) a small annual decrease can be noticed in the construction share in the gross value added, having the largest fall on an annual basis in 2008 (14,7%). Yet, data for 2010 (6,3%), as well as on the first three quarters of 2011 (6,6%) show a return on the pre-crisis level (2006 – 6,4% and 2007 – 6,6%).

If we compare the data from 2007 with data on value added in the European Union members, we can notice that the share of the construction sector in the value added is almost by one third higher than in the Republic of Macedonia. While in the EU countries the construction contributes approximately 9% in the value added, in Macedonia its share is 6,6%.

Figure 2:

Value added and employees in the construction sector (in %)



Source: State Statistical Office

The analysis of the number of employees in the construction sector shows an average fall of 4,5% in the last five years. However, this reduction can't be directly related to the beginning of the financial/economic crisis from 2007, since the trend of reduction of the number of employees in the construction sector begins earlier, in 2005,[36] having the largest annual fall of 7% in 2010 (compared to 2009). The persistent decrease in the employee number in the construction sector caused a decrease in its share in the total number of employees in the economy. So, if in 2005, 7% of the total number of employees belonged to the construction sector, in 2010 this share was reduced to 5%. It should be emphasized that salaries in construction continually lack behind the average salaries on the level the total economy. On average, construction sector salaries are around 25% lower than the average gross salaries in the economy. Despite this, the salaries in the construction sector have risen in the past 6 years at almost the same pace as the average gross salary in the economy.

36) The available data series for construction sector employees is from 2005 onward.

Figure 3

Gross salaries

Source: State Statistical Office of the Republic of Macedonia

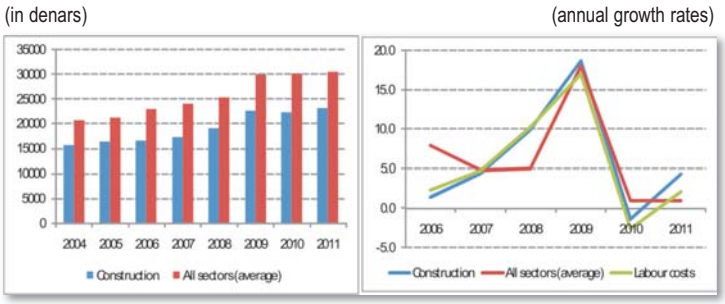


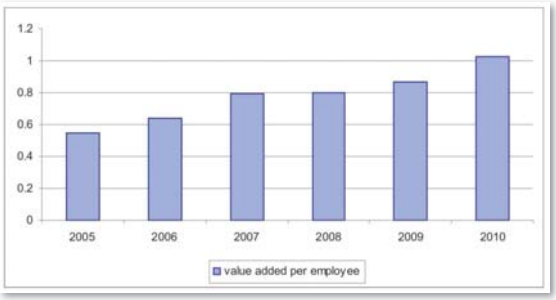
Figure 4 below shows the value added per worker for the period of 2005 to 2010. Following the previously said, as a result of a relatively steady/stable level of value added in construction, and with a persistent reduction of the number of employees in the same sector, we can conclude from figure 4 that the value added per worker in construction registered a continual increase (on average by 13,6% annually).

Figure 4:

Value added per employee in construction

(in million denars)

Source: State Statistical Office

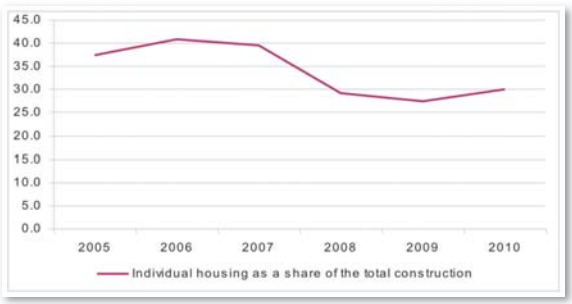


Similar to EU countries, in Macedonia, a significant place of total construction work belongs to activities related to construction of individual dwellings. On average, for the period 2005-2010, the share of activities related to construction of individual dwellings in total construction activities was 34,1%. If we look at the data series, we can notice thata these activites had the most significant influence in the first three years, that is the period 2005-2007 (39,3% on average), while in the following three years this share began to decline. The largest annual fall was in 2008 (10,3%). Considering the fact that the construction indices in those years remained relatively on the same level, or increased, in a situation of decrease in individual dwellings construction, we can assume that in these years (2008-2010) other construction activities had a higher influence on the increase in construction activities, amongst which are the ones related to the project Skopje 2014 of the Government of the Republic of Macedonia, which started in that period.

Figure 5:

Individual housing as a share of total construction (in %)

Source: State Statistical Office



According to the available data, construction costs for new individual dwellings, in the period 2005-2011 have a continuing rising trend (except for 2010). The total (cumulative) growth rate of these costs in the analyzed period is 21,4%, or on average 3,6% annually. The two main components (material costs and labour costs) also increased, labour costs having higher growth intensity than material costs. Namely, the cumulative increase in labour costs in the period 2005-2011is 34,0% (5,7% annual growth) and it is more than double the increase in material costs for the same period, which was 17,1% (2,8% annual growth).

Figure 6

Annual growth rates of new residential buildings (in %)

Source: State Statistical Office of the Republic of Macedonia

Despite the higher increase in labour costs, the direction and intensity of movement of construction costs for new individual dwellings, on average, is almost equally determined by the movement of both components - material and labour costs. This is due to the relatively higher share of material costs (about 73%), compared to the 27% share of labour costs in the total construction costs for new individual dwellings.

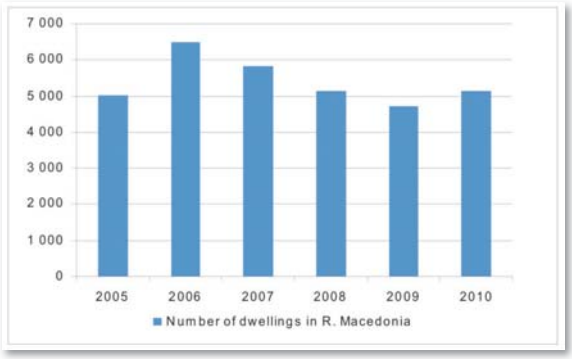
Dynamically analyzed (by separate years), up to the first quarter of 2007, the trend of material costs has been the main and dominant determinant of the movement of total construction costs for new dwellings. In this period, material costs registered a more significant annual increase with an average growth rate of approximately 10%. At the same time, the average annual growth of labour costs has been more moderate at around 2%. However, starting with the second quarter of 2007 labour costs register more significant quarterly increases (on an annual basis) compared to material costs, due to which in most of this period they appear as the main determinant of the movement of total construction costs for new dwellings. This was especially pronounced in 2008 and 2009, when labour costs registered relatively high annual growth rates of about 10% and 17%, respectively, against the moderate growth of material costs of about 3% and 2%, respectively.

2010 should be pointed out as an year with annual decrease in material costs (around 2%) and labour costs (around 3%), which determined also a decrease in total construction costs for new individual dwellings (around 2%). The decrease in these costs in 2010 mostly corresponds to the lower aggregate demand which resulted from the world recession trends and their spillover/преносни effects on the Macedonian economy. In 2011, under the influence of increased demand, there is a certain increase in construction costs for new individual dwellings, mainly because of higher labour costs.

Data on total built dwellings in the Republic of Macedonia (figure 7) show a higher level of built dwellings in 2006, when the total number of new dwellings was 6.493. Right after the beginning of the financial crisis in 2007, there is an annual fall from this peak of 10,4% and the fall continues in the following years (2008 and 2009). /the decreasing trend continues to last until 2010, when compared to 2009, the number of built dwellings increased by 9,4%, but was still on a far lower level than the one in 2006 (lower by 20,6%).

Figure 7:

total number of built dwellings in the Republic of Macedonia

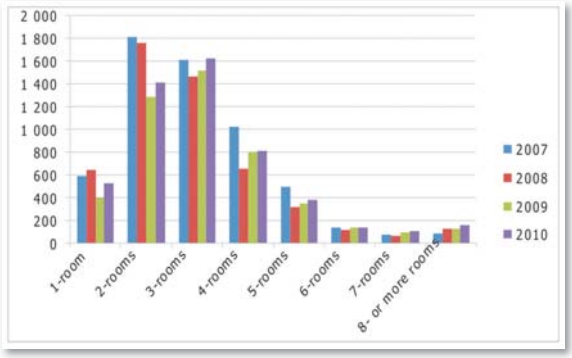


Source: State Statistical Office

If we analyze the built dwellings by room numbers (figure 8), in the period 2007-2010, we can notice that in all years there was a larger offer of two roomed and three roomed dwellings (the average share for this period was around 30%). However, if we look at the dynamics of movement of the type of built dwellings by year, we can notice an increase in larger dwellings (6 roomed, 7 roomed and 8 and more roomed), as well as in three roomed.

Figure 8:

Number of build dwellings by number of rooms



Source: State Statistical Office

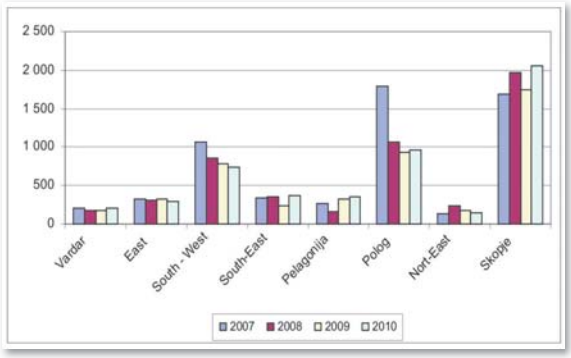
Analyzed by regions, the highest intensity in regard to construction of individual dwellings is registered in Skopje. This corresponds to the data on internal migrations, which show highest intensity of people moving to Skopje. In 2007 the number of built dwellings in the Skopje region participates with as much as 29% in the total built dwellings in the Republic of Macedonia. This percentage increases in the following years. In 2010 it was as high as 40%, stating this region as far most attractive in regard to dwelling offer.

The second most significant region is the Polog region, with a share of 31% in total built dwellings in 2007, and it registered a significant decrease of around 12p.p. in 2010. Compared to the other regions, this decrease is the largest decrease of built dwellings offer for the period 2007-2010. The fall results from the decrease in built dwellings in all municipalities in the Polog region.

In the same period the number of built dwellings in the southwest region also registered a continual decrease. In 2007, the share of this region in the total number of built dwellings was 18%, while in 2010 it fell to 14%. We can recognize the lower dwelling offer in Ohrid (which continually falls) as the main reason. One of the reasons behind this could be the continuous high number of emigrants from the municipality of Ohrid, beginning from 2008.

Figure 9:

Number of built dwellings in the Republic of Macedonia – by regions



Source: State Statistical Office

The data allows for a conclusion that beside the decreasing trend of total built dwellings in the period starting from 2007, the Skopje region as a whole shows signs of continuing maintenance or growth in the offer of finished dwellings. This only confirms the attractiveness of the Skopje region as a place of living (internal migration of the population) or as a place that the people recognize as a possibility for a long-term capital investment.

6. International experiences - EU

Construction indices represent significant indicators for determination of the trend of costs incurred by construction companies in the process of construction of buildings. Construction indices are calculated through labour costs and material costs, weighted accordingly. Therefore any distortions in the labour market or material prices used in construction affect changes that would appear in the construction indices.

The analysis of construction indices has really become important, especially in the last decade, when, from year to year, they registered a significant increase. Thus, starting from 1998, construction activities data show a significant and stable growth in all countries in the Union. In the last years construction activities have been especially significant in Spain, Poland and Cyprus. Txyc, in 2007, as much as one quarter of non-financial sector employees in Poland worked in the construction sector.

An analysis of types of construction activities shows that a higher influence on the growth trend of construction activities is due to the growth of residential and nonresidential buildings, rather than to general construction works, such as road, bridges, damns etc. Thus, in EU-27 the construction of residential and nonresidential buildings accounts for 78% of total construction activities, leaving only 22% for other types of construction activities.[37]

Eurostat data show that the relative contribution of the construction sector in the value added in 2007 was 19,4% in Cyprus, 18,1% in Poland and 17,6% in Spain, while the least specialized EU countries in the construction area were Slovakia and Hungary, with a share of the construction sector between 4,7% and 5,5%.

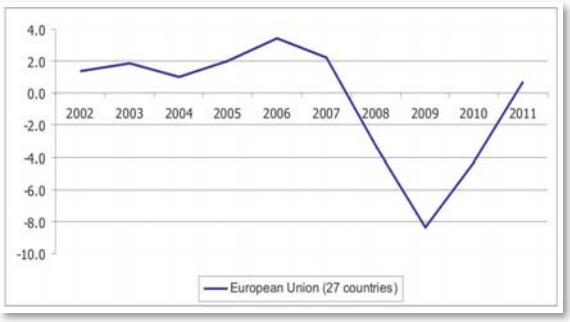
Regarding the number of employees in the construction sector, starting from 1999, the construction sector in Spain, Portugal and Ireland is most important among all EU countries. In 2007 the total number of employees in the construction sector in Spain was 13,3% of the total number of employees, which is also 15,1% of the total number employees in the construction sector in all countries of the European Union (EU-27).[38]

37) http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/

38) Eurostat database

Figure 10:

Construction index in EU-27, annual percentage change



Source: Eurostat database

The rising trend in the construction sector lasted until the beginning of the financial crisis of 2007, when in three years the construction index fell to the pre-1999 level.[39] One of the reasons for this was the structure of types of construction activities, which were actually the main reason for the previous growth. Namely, since most of the construction activities were related to residential and nonresidential buildings, the beginning of the financial crisis at the same time marked the beginning of the decreasing trend of construction activities, which simultaneously marked a decrease in employment rates in a large number of EU countries. On the other hand, remaining types of construction marked very small deviations even in the years of financial crisis. This can partly be a consequence of the determination of governments for maintaining the level of costs intended for public infrastructure projects.

In a number of countries the decreasing trend began as early as 2006 and had a slower intensity in the following few years (for example, France and Hungary), while in other countries the fall appeared later, but in an instant, as was in Lithuania, which registered an annual fall in the construction index in 2009 of 48,5%.

Among the countries with most severe consequences from the financial crisis on the construction sector was also Spain, which, after having a strong rise/ascent in this sector in the pre-crisis years, starting from 2007 registers a continuing noticeable fall of 14,1% on average in the years since the beginning of the crisis (2007-2011).

Table 1 presents the annual relative changes in the construction index in several countries which registered largest decreasing trends after the beginning of the crisis in 2007. The table shows that some countries had a relatively high growth of the index in the pre-crisis years, while after the crisis took off; they had a significant decreasing trend. This is especially the case in Spain and Ireland. Another group of countries experienced consequences from the crisis with a certain time lag, from 2008 (Estonia) or 2009 (Bulgaria, Latvia, Lithuania, Romania and Slovenia).

Table 1: Percentage annual change in construction indices for selected EU countries (in %)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bulgaria	3.8	4.6	35.3	31.8	24.8	26.7	12.6	-14.2	-17.9	-12.7
Denmark	-1.2	2.2	-0.2	2.8	3.2	-5.2	7.5	-12.2	-9.9	:
Estonia	22.6	6.1	12.5	22.4	26.9	13.5	-13.3	-29.8	-12.4	:
Ireland	1.9	7.3	24.9	10.3	3.0	-13.8	-29.1	-36.2	-30.4	:
Greece	39.1	-5.7	-15.9	-38.7	3.6	14.3	7.7	-17.5	-31.6	:
Spain	0.6	7.2	2.3	10.9	2.2	-4.3	-16.3	-11.3	-20.2	-18.4
Latvia	12.1	13.1	13.1	15.5	13.3	13.6	-3.1	-34.9	-23.4	12.5
Lithuania	21.7	27.9	6.8	9.9	21.7	22.2	4.1	-48.5	-7.7	22.2
Portugal	-1.1	-8.6	-4.4	-4.5	-6.3	-4.0	-1.2	-6.6	-8.5	-9.4
Romania	4.5	3.2	1.4	6.6	15.6	33.1	26.7	-15.2	-13.4	3.1
Slovenia	7.5	9.6	0.7	2.0	15.7	18.5	15.5	-20.9	-16.9	-25.4

Source: Eurostat database

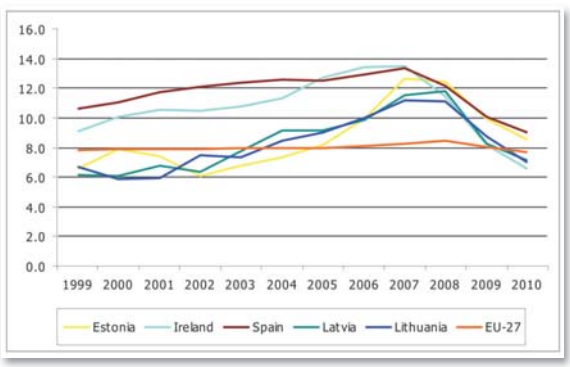
39) Eurostat database

If we look at the annual data on number of employees in the construction sector as a share in total number of employees (figure 11), the countries with the largest shift in construction index, experienced a reduction in the number of employees in the construction sector, with a small time lag. The downward trend is most evident for Spain and Ireland, which in 2007 had the largest number of construction sector employees, compared to other EU countries. Therefore, by comparing this data for 2007 with the data for 2010, we can see that in Spain there was a reduction in the share of construction sector employees in the total number of employees by 4,3 p.p., and in Ireland by 6,9 p.p.

An analysis of the same data on an aggregate level for EU-27 shows that, beside the significant decrease in some countries, on the Union level this indicator does not vary drastically, i.e. for the same period it decreased by only 0,5 p.p. Still, it is a fall of 6,5% of the share of construction sector employees. This reduction comes from the reduction in the number of employees of 7,7% in times of a reduction of the total number of employees of 1,2%.

Figure 11:

Share of number of employees in the construction sector in the total number of employees in selected countries (in %)



Source: Eurostat database

7. Concluding remarks and recommendations

The following of the trends of construction indices in the Republic of Macedonia is to a certain degree more difficult because the time series of data on construction indices that the SSO disposes starts in 2005.

The share of the construction sector in the value added in the European Union is almost by one third higher than in the Republic of Macedonia. While in the EU countries the construction contributes approximately 9% in the value added, in Macedonia its share is 6,6%.

In the entire period (I.2005 - III.2011) the construction sector in the Republic of Macedonia, as a share of the value added, registers a stable trend. The lowest registered level is 3,7% in the first quarter of 2007, while the highest level is 7,9% in the third quarter of 2011. In the years after the financial/economic crisis (which started in the USA in 2007) a small annual decrease can be noticed in the construction share in the gross value added, having the largest fall on an annual basis in 2008 (14,7%). Yet, data for 2010 (6,3%), as well as on the first three quarters of 2011 (6,6%) show a return on the pre-crisis level (2006 – 6,4% and 2007 – 6,6%).

The analysis of the number of employees in the construction sector shows an average fall of 4,5% in the last five years, which can be directly related to the beginning of the financial/economic crisis from 2007. The largest annual fall of 7% appeared in 2010 (compared to 2009). The persistent decrease in the employee number in the construction sector caused a decrease in its share in the total number of employees in the economy to 5%. On the other hand, salaries in construction continually lack behind the average salaries on the level the total economy (on average by 25%). Despite this, the salaries in the construction sector have risen in the past 6 years at almost the same pace as the average gross salary in the economy.

The value added per worker in construction registered a continual increase (on average by 13,6% annually), as a result of a relatively steady/stable level of value added in construction, in time of a persistent reduction of the number of employees in the same sector.

Similar to EU countries, in Macedonia, a significant place of total construction work belongs to activities related to construction of individual dwellings. On average, for the period 2005-2010, the share of activities related to construction of individual dwellings in total construction activities was 34,1%.

The largest annual fall was in 2008 (10,3%). Considering the fact that the construction indices in those years remained relatively on the same level, or increased, in a situation of decrease in individual dwellings construction, we can assume that in these years (2008-2010) other construction activities had a higher influence on the increase in construction activities, amongst which are the ones related to the project Skopje 2014 of the Government of the Republic of Macedonia, which started in that period.

Construction costs for new individual dwellings, in the period 2005-2011 have a continuing rising trend (except for 2010). The total (cumulative) growth rate of these costs in the analyzed period is 21,4%. The two main components (material costs and labour costs) also increased, labour costs having higher growth intensity than material costs. Namely, the cumulative increase in labour costs in the period 2005-2011is 34% and it is more than double the increase in material costs for the same period, which was 17,1%.

The highest level of built dwellings was in 2006, when the total number of new dwellings was 6.493. Right after the beginning of the financial crisis in 2007, there is an annual fall from this peak of 10,4% and the fall continues in the following years (2008 and 2009). /the decreasing trend continues to last until 2010, when compared to 2009, the number of built apartments increased by 9,4%, but was still on a far lower level than the one in 2006 (lower by 20,6%).

In the Republic of Macedonia, we can notice that in all years (2007-2010) there was a larger offer of two roomed and three roomed apartments (the average share for this period was around 30%). However, if we look at the dynamics of movement of the type of built apartments by year, we can notice an increase in larger apartments (6 roomed, 7 roomed and 8 roomed and more), as well as in three roomed.

The highest intensity in regard to the construction of individual dwellings is registered in Skopje. This corresponds to the data on internal migrations, which show a highest intensity of people moving into Skopje. In 2007 the number of built apartments in the Skopje region participates with as much as 29% in the total built apartments in the Republic of Macedonia. This percentage increases in the following years. In 2010 it was as high as 40%, stating this region as far most attractive in regard to apartment offer.

The second most significant region is the Polog region, with a share of 31% in total built apartments in 2007, and it registered a significant decrease of around 12p.p. in 2010.

A third most significant region is the southwest region, which accounted for 18% of the total built dwellings in 2007, and 14% in 2010.

The other regions have by far smaller contribution in the number of built dwellings in the Republic of Macedonia, which indicates the lower attractiveness of these regions as a place of living (internal migration of the population) or as a place for a long-term capital investment.

We offer several recommendations in order to enable a more detailed following of the activities and growth dynamics of this sector in R. Macedonia:

- Development of a sellers price index in construction, which would measure changes in sellers prices of new built dwellings;
- Development of indices for measurement of changes in real estate market prices for individual dwellings. The need for this index is especially pronounced after the start of the latest economic crisis in USA and EU. The IMF and the Bank for International Settlements both point to the emergence of the need for

development of this type of index, which would be used as an indicator of the real conditions on real estate markets, and for avoidance of the risk from an irrational rise in market prices of dwellings;

- The development of these two indices, together with the construction cost index will provide solid indications for an overall following of the activities and dynamics of the construction sector development on one side, and on the other side would create conditions for a more realistic following of market conditions on the real estate market and avoidance of creation of price bubbles in this market segment. Banks and insurance companies would also be supplied with real and consistent information necessary for making business decisions related to investments and insurance in the construction sector, especially in the new dwellings segment.

According to types of construction activities, we can conclude that a higher influence on the growth trend of construction activities is due to the growth of residential and nonresidential buildings, than to general construction works, such as road, bridges, damns etc. Thus, in EU-27 the construction of residential and nonresidential buildings accounts for 78% of total construction activities, leaving only 22% for other types of construction activities.

EU data show that the relative contribution of the construction sector in the value added in 2007 was 19,4% in Cyprus, 18,1% in Poland and 17,6% in Spain, while the least specialized EU countries in the construction area were Slovakia and Hungary, with a share of the construction sector between 4,7% and 5,5%.

Regarding the number of employees in the construction sector, starting from 1999, the construction sector in Spain, Portugal and Ireland is most important among all EU countries. In 2007 the total number of employees in the construction sector in Spain was 13,3% of the total number of employees, which is also 15,1% of the total number employees in the construction sector in all countries of the European Union (EU-27).

Since most of the construction activities were related to residential and nonresidential buildings, the beginning of the financial crisis at the same time marked the beginning of the decreasing trend of construction activities, which simultaneously marked a decrease in employment rates in a large number of EU countries. This is especially the case in Spain and Ireland. Another group of countries experienced consequences from the crisis with a certain time lag, from 2008 (Estonia) or 2009 (Bulgaria, Latvia, Lithuania, Romania and Slovenia).

An analysis of the number of employees in the construction sector on an aggregate level for EU-27 shows that, beside the significant decrease in some countries (most evident in Spain and Ireland), on the Union level this indicator does not vary drastically, i.e. for the period 2007-2010, it decreased by only 0,5 p.p. Still, it is a fall of 6,5% of the share of construction sector employees. This reduction comes from the reduction in the number of employees of 7,7% in times of a reduction of the total number of employees of 1,2%.

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