The Impact of Foreign Capital on Efficiency and Productivity of the Turkish Banking Sector

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Abstract

The ultimate objective of this academic venture is to investigate empirically the impact of cross-frontier new owners, representing the foreign capital as a consequence of a change in the shareholder structure, on the efficiency and productivity of the local banking industry over a period encompassing 2002-2011. Divided into two fiscal periods of 2002-2005 and 2006-2011 for technical measurement purposes, the discriminant analysis performed on the financial data pertaining to 10 banks exposed to foreign capital since 2005 revealed that they were significantly discriminated between the two disparate periods covered. In the subsequent stage of the analysis, productivity indicators were adopted as the dependent variable and the financial ratios as the independent variable, thereby enabling us to construct the methodological infrastructure for conducting a comprehensive "multivariate multiple regression" analysis, taking into account the dates of foreign capital injection. After accounting for the control variables, findings coerced us to infer the conclusion that a significant and positive transformation has occurred in fundamental performance benchmarks associated with scores relating to employees per branch and deposit-base per branch. In the concluding phase of the research, the "multivariate multiple regression" testing was implemented once again for a comparison between 10 banks accommodating foreign capital investment and the remaining nine banks with constant equity-ownership structure during the 2006-2011 era, as we discovered that particularly the large banks with non-resident equity participation demonstrated substantially plausible performance and achieved tangible efficiency and productivity gains relative to the small entities.

Key words: bank performance, discriminant analysis, foreign capital, multivariate analysis.

1. Introduction

Concepts such as efficiency and productivity are surmised to captivate priority attention and retain their significance for an imprecise time, going long forward, in view of the disquieting reality that resources are scarce in the world and are irretrievably vulnerable to steady depletion. Perceivably, there exist a crucial and substantial interaction and co-movement between productivity and competition. In the same context, productivity is among a cluster of notions that steadfastly vault to the foreground at times of crises (Emiral, 2002). Glanced through the specified perspective, the efficient and productive operation of a country's banking sector carries paramount importance in respect of a national economy. Attributable to the vital aspect of performing an intermediation function that basically determines and facilitates resource allocation in the economy, the banking segment is postured at a distinctively-discernible vantage position vis-à-vis the other contributing sectors (Atan, 2003).

Since the efficient and productive workings of the banks in a national economy would implicitly imply that the country's resources are utilized as warranted, it is evident that their operational success will definitely impart a plentiful contribution to growth.

Noteworthy structural and institutional changes have taken place in the Turkish banking sector as a consequence of liberalization, deregulation and reformation strides undertaken in the aftermath of the 1980s, accompanied with steps designed to open up the sector to cross-border forces under accelerating globalization. Nevertheless, the consecutive crises encountered in November 2000 and February 2001 engendered a pressing necessity to effect a revamped re-structuring and re-construction, thereby cultivating the seeds for colossal modifications and alterations in regard to capital ownership and equity configuration.

This paper, therefore, attempts to examine, ascertain and discuss what paradigms and whether, and to what extent, a material change in the capital ownership and equity structure of a bank, particularly realized through injection of funds by a foreign partner, will be eventually reflected on the efficiency and productivity indicators of the banks.

2. Literature Review

The study performed by Gormley (2010) tested the repercussions of the entry of foreign banks in India on over-all access to loans and profitability of the banking industry. The findings of the research revealed the phenomenon that foreign banks had opted out to venture into lending relationships on an extremely preferential basis and solely with profitable firms in restricted business fields. At the end, a withdrawal in the credit pool materialized. By inference, the study underscored the deduction that specifically the small- and medium-scale enterprises had encountered encumbrances and impediments in gaining access to loans and funding facilities.

In another scholarly survey, undertaken by Taşkın (2011), the dynamics and factors that influenced the performances of the deposit-accepting banks operating in Turkey during the 1995-2009 era were analyzed. Employing the panel-data-analysis methodology, the study utilized the interest margin, asset profitability and return on equity as the pivotal performance yardsticks for its incisive approach to the banking sector. According to the findings of the examination, it was vividly discovered that economies of scale was exceptionally and excessively effective on the successes of the banks, while the prevalent risks had imparted a negative impact on operations. Another noticeable end-result of the paper signified that the increase and expansion in off-balance sheet operations constituted a positive input in the bank performance.

The research co-drafted by Seyrek and Ata (2010) focused on the six-year data (2003-2008) pertaining to two deposit-taking banks based in Turkey to assess bank efficiency through the adoption of the DEA method. According to the end-results brought forth by the study, the basic determining variable, in respect of banking efficiency, entailed the Total Loans / Total Deposits ratio. At any rate, the paper attracted particular attention to the fact that, since the deposits collected by the banks would not be solely utilized in the form of loans, a separate investigation should be launched to examine how, and to what extent, the placement of funds in diverse fields would impact the banks' efficiency.

A study co-performed by Demirbaş and Sezgin (2010) aimed at the measurement of the efficiencies of publicly-held and privately-owned deposit-taking banks in the banking sector in comparison with the top 10 U.S. deposit banks and their peers operating in 10 EU countries, on the basis of aggregate asset-sizes, through the utilization of the data envelopment analysis (DEA). The research encompassed the 2006-2010 period. Particular emphasis was placed on observing the reshuffle in the rankings of bank efficiencies relating to the global pre-crisis and post-crisis circumstances, and it was found that the Turkish banks portrayed a higher ratio of non-efficiency for the year 2006, in regard to the U.S. and EU banks but the situation has undergone a markedly opposite shift in 2007 and thereafter, enabling the Turkish banks to depict ratios over and above their peers in the U.S. and across the EU bloc.

Lin and Zhang (2009) jointly evaluated the effects and ramifications of bank ownership on individual bank performances in a study embracing the period transpiring between 1997 and 2004. Static, selective and dynamic analyses were extensively made use of in the research, tackling and processing the facts and data compiled for private, public and foreign banking groups for the mentioned goals of the survey. Distinguishably, they have attained the conclusion that the four publicly-owned banking institutions proved less profitable, less efficient and possessed lower asset quality when benchmarked with the other comparable groups. Interestingly, a visible improvement and enhancement were detected in the performances of banks exposed to foreign ownership but this efficiency factor gradually receded after a certain while.

In a similar domain, Kılıç and Akın (2008) furnished another research concocted predominantly to analyze and identify the underlying direction of the impact instigated by bank takeovers and acquisitions on bank performances in the two year-term between 2005 and 2006, again resorting to the data enveloping methodology. The study was structured on a data set assembled from publicly-held commercial banks, privately-owned commercial banks, foreign banks branched out in Turkey and foreign banks fully incorporated in Turkey. Under the scope of the survey, profound observations were conducted on the performances of four banks acquired in 2005 and another six changing hands in 2006, cumulating to a total of 10 banking entities that wound up in non-resident foreign possession. At the termination of the study, it was explicitly articulated that no discernible efficiency improvement or enhancement was uncovered in the performance records and scores of the banks purchased by controlling foreign stakeholders.

Furthermore, Önal and Sevimeser (2006) approached the phenomenon of entry of foreign banks into Turkey on an annual basis, exclusively latching their focal point on the peak period of 2005 and 2006, in a study assigning priority to the sequence of events and developments that punctuated efficiency amelioration, in addition to their overall effects on the Turkish banking industry. Measurements spread across a wider time-frame, stretching for the period from 1980 until 2004, as it was lucidly enunciated that the banks owned by local capital were confronted with some constraints and drawbacks of efficiency; that the efficiency scores of state-owned banks ranged rather at a low altitude in regard to the foreign banks, and that the efficiency course between the foreign banking institutions and privately-held local banks displayed somewhat a parallel and connate route through years.

Within the same realm, a study penned by Kosmidou, Pasiouras and Tsaklanganos (2007) designated, as its foremost scientific objective, the identification of the discriminant, determinant and decisive factors in the profitability of both the multinational banks and the local banks by means of a uniquely developed model. The study was pillared on data culled from 19 Greek banks, covering their operations conducted during the 1995-2001 years. Predictably, the study reached the conclusion that native banks operating in foreign territories do foster a constructive impact on the local banking market. Additionally, the multinational banking conglomerates were found to possess comparatively more favorable indicators in crucial fields in the local market, such as the stock prices, cost efficiency, market share and concentration.

Approaching the theme of performances of commercial banks based on profitability in a different research enterprise, Tunay and Silpar (2006) discussed the resolutions drawn from measurements run on "panel-data regression techniques." The panel-data analysis entailed a testing approach, using techniques and dummies for separately-fixed effects and incidental-effects, applicable for three performance criteria – the return on assets (ROA), the return on equity /ROE) and the net interest margin (NIM). Among the end-products made available at the expiry of the test, the most striking element that deserved a poignant accentuation was the discovery that the estimations based on the NIM were stronger than those founded on the ROA and ROE.

Advancing further in the empirical terrain, Atan and Çatalbaş (2005) analyzed principally the capital structures of the banks with the goal of exposing and extricating the efficiency parameter by adopting the data-envelopment-analysis at the first stage, and, in the next phase, attempted to identify the factors that accounted for and contributed to the banks' efficiency through the Tobit regression analysis. Stimulated by an in-depth scrutiny of the coefficients of the dummy variables relating to private and foreign capital commitment, depending on ownership status, the rash of evidence illustrated abundantly that the technical efficiency of both the private and the foreign banks navigated at a higher platform in respect of the benchmarked banks possessing state-owned equity.

In a peripheral but inspirational study presented by Manjoni, Shankar and Varhegyi (2003), the dynamics behind the re-structuring of the banking industry in Hungary was brought to light, taking its cue from the role foreign ownership has played in the reform process. Likewise, the survey underscored the outcome that foreign capital entry through acquisition and takeovers was considerably functional in elevating operational efficiency.

Locking its spotlight on the post-deregulation era in Australia, stretching across a period over 1988 through 2001 when foreign entry accelerated markedly, a study by Sturm and Williams (2004) embarked upon the task of pinpointing the effects of such penetration on the local industry's efficiency. The research was pillared on the data envelopment analysis, the Malquist indices and the stochastic frontier analysis.

Invariably, the investigation confirmed that the efficiency of the foreign banks is far superior in relation to the local banks. Moreover, the banks' efficiency was further spurred by the steady surge in competition.

In a comparatively massive empirical enterprise, Claessens, Demirgüç-Kunt and Huizinga (2011) conducted a remarkably well-documented and diversified research project, encompassing an aggregate of 7,900 banks from 80 countries over a period covering 1988 through 1995. The study aimed at sifting through the disparities, divergences and differentiations among the local and foreign banks in key categories such as interest margins, profitability and tax payments. In the final analysis, the research divulged that the foreign banks operating in an emerging host country accomplished a higher profitability relative to their local peers, but it was vice versa in the developed countries. The summation of the empirical study expressed, in explicit terms, that any expansion in the asset-base of a foreign bank would eventually result in erosion of profitability of a bank in the host country.

3. *Banking Sector and Efficiency Indicators*

Although the concepts of efficiency and productivity are most often confused when referred to interchangeably and used in an overlapping manner in the literature, creating a conundrum for measurement techniques, productivity could be defined succinctly as the ratio of the outputs to the inputs, while efficiency is tersely described as the ratio of the current values of the combined inputs and outputs to their optimal values (Kaya & Doğan, 2005).

 "Total productivity" will be valid only when measurement of productivity takes into account all production factors (workforce, machinery and equipment, tools and devices, raw materials, etc.). Total productivity could be defined as follows:

> Total Productivity = Outputs obtained at the end of production process / All production factors employed in the production process

However, in view of the hindrances and impediments observed in measurement, this type of productivity is not utilized to a great extent in practice, as more preference is accorded to partial (relative) productivity. The elementary approach in partial productivity comprises the combination of the homogenous production factors prevalent in the denominator when measuring the ratio of productivity. In this connection, the factor subject to measurement could be denoted separately in the denominator. For example; personnel productivity, branch productivity, materials productivity, total asset productivity could be classified as such. Thus, it would be conveniently possible to measure the productivity of a specific unit (Cihangir, 2004).

While productivity in the banking system is elaborated as the "accumulation of savings and their conversion into production," the fact that the "resource utilization of the intermediary institutions in the process of conversion of savings into productivity factors navigates at a minimum level" is directly correlated with productivity. For this reason, and observed from the viewpoint of the banks, it is anticipated that the expenditures realized for the existing units should be at a minimum level and the output at a maximum level (Cihangir, 2004).

Banks are economic decision-making units, harboring a plethora of inputs and outputs, and are institutions of intermediation, providing financial services with the purpose of maximizing their capitals gains. At any rate, determining the output vector in the banking industry is not a straightforward and trouble-free task. A variable accepted as an output in the measurement study of a bank could be recognized as input in the case of another banking entity. For this reason, methods and criteria employed in the measurement of productivity carry utmost significance in the results obtained (Yolalan, 2011[1]).

The numerical approaches appear to be in frequent use recently in the measurement of productivity. Adoption of such methods is destined to provide three types of benefit to the researchers or the decision-making units. First and foremost, a relative efficiency analysis could be conducted to facilitate the decision-making procedure through a comparison between the look-alike economic decision-making units. Secondly, the directional paradigms of efficiency relating to the decision-making units and their magnitude could be expediently ascertained.

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[1] Excerpted from the plenary speech delivered by Assoc. Dr. Reha Yolalan at the conference titled "*Productivity in Banking*," organized by the Turkish Banks Association on January 26, 2011.

And, finally, it would be feasible to generate policies designed to enhance and augment the efficiency, as obtained at the end of the analyses and denoted in associated parameters (Demir & Gençtürk, 2006). Measurements of efficiency are generally divided into three groups; the ratio analysis, and parametric and non-parametric analyses2.

The **Ratio Analysis** is assigned top priority among its peers, and stands out prominently as the most frequently resorted tool for the measurement of productivity. This ratio is patterned on a ratio created by the correlation of an input and an output run through a time matrix. Although it has found widespread adoption and use attributable to the consequences of its facilitated implementation and comprehensible interpretation, this method is handicapped by a distinct deficiency and constraint. It is both impractical and impossible to structure a judgment over a decision-making entity hosting a multitude of inputs and outputs, such as witnessed in the banking system, by merely peering into a single ratio and deduce a reliable conclusion on the bank's or the branch's efficiency. For that particular reason, and as a general practice, more than one ratio is analyzed simultaneously for the alleviation of the underlined predicament. But, in this instance, complex issues arise, traceable exclusively to failure to bundle the inspected ratios into a significant and meaningful cluster, consequently stymieing endeavors to perform a collective evaluation and produce viable inferences. In summary, it is imperative that, when appraising studies locked on performing efficiency examination founded on ratio analysis, such impediments and constraints should be taken under due consideration.

In **parametric methods**, there is generally a cluster of observations, as it is accepted that the best performance within this bundle is fixated on the regression line efficiency frontier; observations that do not demonstrate deviation from this path are deemed as efficient, while the remaining observations spotted to be failing are classified as inefficient. It is apparent, therefore, that an efficiency frontier where no observation is totally congruent with each other is possible. When referring to failure, it should be borne in mind that what is actually meant is the prevalence of high cost at the same output level and low output at the same input, and that the production units under observations are homogenous. Moreover, the approach also posits that there is a potentiality for the emergence of a random error. Observations exhibiting full efficiency, anyhow, signify annotations with virtually zero error. By reason of that fact, a final judgment on whether an observation is inefficient should be procured only after the elimination of the defects and oversights hampering measurement.

In this manner, it is possible to document that the variance and discrimination from the efficiency frontier in the parametric methodologies consists of two primary component s – i.e. inefficiency observation and the random error – as this result over-emphasizes that it is equally crucial for achieving a clear distinction between the two specified error constituents.

Non-parametric methods, on the other hand, strive to measure the distance to the efficiency frontier by employing techniques rooted in direct programming and mapping (optimization under constraints). As observed in the parametric approaches, since these methods are not compelled to indulge in behavioral assumptions in connection with the structure of the production unit, they tend to be relatively advantaged. Furthermore, the mentioned empirical models enjoy extra supremacy, owing to their capability for incarnating more than one explanatory exponent and proficiency to make use of the exponent variables. On the contrary, since they do not contain any random error term, they are inclined to transmit the data and measurement errors, as well as other errors cultivated by chance and such other pretexts to the model, and may therewith misrepresent the efficiency frontier. The most commonly-utilized of the oft-referred methods is the data enveloping analysis, incepted and developed by Charnes, Cooper and Rhodes in 1978. As such, the DEA model has become an increasingly popular analytical device for the assessment of financial ratios with the fundamental aim of effecting performance evaluation of individual banks and the banking industry, as a whole.

4. *Developments in the Capital Structure of the Turkish Banking Sector*

The oldest set of reliably compiled, complete, comprehensive and coherent data available in regard to the financial dimensions and stature of the Turkish banking industry dates back to 1958, as such records of information for that specific year report the share of foreign banks in the sector aggregate at 4.89% (TBA, 1958).

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[2] Information relating to the methods were extracted, in a summarized form, from the article, "*Measurement of Bank Efficiency and Efficiency in Banking Under Low Inflationary Environment*," authored by Emre Alpan İnan (2006), published in *The Bankers' Journal*, Issue No. 34.

Out of a total 59 banks active in the market during that particular year, the number of foreign banks stood at six. Although the number of foreign banks has multiplied through years, rather at a steady and slow pace up until the 1980s, these foreign banks operated solely as either with a single or few branches or prevailed as a branch/bank entity. In this setting, the portion that the foreign banks chalked up from the local sector has managed to survive intact without undergoing any concrete or momentous change.

In conformity with the global trend, as signified by accelerated commercial flows across the frontiers and the expansion of direct investment activities by the foreign capital, a remarkable transformation has transpired in the international banking universe. During this episode, the primary factors that motivated and encouraged the foreign capital movements within this context could be characterized as the liberalization, deregulation and reformation policies, regulatory approaches that invariably prodded the activities and operations of foreign banks, the banking and financial-sector crises that precipitated broad, far-reaching and radical reform and rehabilitation processes, as well as the restructuring of the entire system, along with the intensified participation in international economic cooperation and the breath-taking advances in technology and product innovation (TBA, 2005).

Fundamental reasons that stimulated intensified bank mergers and acquisitions (M&As) could be classified as pursuits to eventually attain productivity and efficiency, economies of scale, geographical proliferation and expansive branch network; creation of financial resources for investment outlays and benefiting from the advantages of magnitude (Kılıç and Akın, 2008).

The following table illustrates the share of foreign capital in the Turkish banking sector on an annual basis.

Table 1: Annual Breakdown of Foreign Capital Entry into the Turkish Banking Sector

Year	Number of Total Banks	Number of Foreign Banks	Sector Share of Foreign Banks
1970	43	5	3.62%
1975	39	5	3.55%
1980	40	4	3.16%
1985	47	15	3.83%
1990	66	23	2.52%
1995	68	18	2.89%
2000	79	18	5.41%
2005	47	13	3.74%
2010	45	17	13.46%
2011	44	16	14.09%

Source: The information and data were compiled by us from the *TBA*'s "*Our Banks*" issues for the years 1980, 1985, 1990, 1995, 2000, 2005, 2010 and 2011

The above Table explicitly depicts that a serious leap has occurred in the share of foreign banking entities in the Turkish territory from 2005 onwards. This phenomenon was not occasioned merely by global tides as the interest of and the subsequent propensity to invest by foreign capital in the Turkish banking industry intersected strategically with a time slice when the fruits of both macroeconomic re-structuring, financial rehabilitation, integration, consolidation and reform steps were abundantly reaped, constructing a conducive environment for new capital owners from abroad to venture and operate, whetting their business appetite.

Besides, the gradual development of the capital markets in our country consistently activated an incessant interest by non-resident foreign investors in the stocks of the banks quoted and transacted on the ISE – an outcome deduced from the market data disseminated regularly by the securities market regulators and the ISE. As a matter of fact, when we account for the portion of publicly-floated banking shares purchased by foreign portfolio investors, the share of foreign banking institutions in the overall Turkish banking market reaches 40.4%, as of 2010-end, as current estimations for 2011 imply a figure of 41.1% (BRSA, 2011).

Most studies conceived to identify and tackle the impact of foreign ownership on the local banking industry particularly stress the positive and corollary implications of the constitutional change in the shareholder configuration.There is still a polarity of diverse and disparate opinions concerning the benefits and costs (detriment?) unleashed by the foreign banks but, discarding the adversities, the plausible contributions that the shift in the capital structure hosting foreign investment may be summarized as follows:

- Facilitating the realization of cross-frontier capital movements,
- Facilitating smooth integration of the sector with the international system,
- Facilitating the access of the Turkish banks to external markets,
- Facilitating the dissemination and adoption of know-how, advanced technology and other sector-specific accumulated expertise and information, such as techniques used for lending assessment etc.
- Facilitating the enhancement of productivity in the sector,
- Facilitating the adoption of a pioneering role by the foreign banks in corporate governance and risk management,
- Facilitating quality improvement and product diversification in the sector,
- Facilitating efforts by the local bank to preempt prestige and prudential erosion through the protection provided by the foreign partner during times of crises,
- Facilitating aspirations of local banks without any foreign capital exposure to solicit and acquire a foreign partner, thereby augmenting brand and market values, and
- Facilitating the market values of the banks open to the public to reach their optimum required levels.

The potential adversities that could be unveiled as a consequence of the entry of foreign banks into the sector could be outlined as follows:

- Possibility of exposing the country's resources to the utilization of foreign companies,
- Possibility that foreign banks will be inclined to depart the host country with much ease and convenience at a time of crisis or political nuisance or vexation,
- Possibility that the foreign banks will be attuned more towards the top-tier clients and display an unwillingness to provide services to clients deemed prejudicially to generate restrained productivity, and
- Possibility that the foreign banks may inhibit the capability of competition of the Turkish banks owing to their low resource costs (Işık, 2006).

Far and wide, the two-year period covering 2002-2004 is recognized as the comparatively brief episode when economic stability began to entrench itself effectively, enabling the economic units to benefit from the propitious environment that eventually contributed to the mitigation of the ambiguities and better forecast and project the operational horizon, and prompted a change in the risk perception – all this transformation dynamics procreated modifications in the behavior moulds and patterns (İnan, 2004). Within this framework, 2005 could be appropriately designated as the milestone year when the interest of the foreign capital owners and entrepreneurs in the Turkish banking sector assumed a material and conspicuous size and volume. From that year onwards, a sizeable amount of foreign capital exhibited serious enthusiasm for participating in the Turkish banking sector, as the developments that took place from that date up until current times can be observed from the following Table:

Table 2: Foreign Capital Entry into the Turkish Banking Sector
In the Period Since 2005

Banks	Commencement Date of Foreign Partnership	Ratio of Foreign Capital	Foreign Partner
Türk Ekonomi Bankası	2005	42.125%	BNP Paribas
Türkiye Garanti Bankası	2005	26%	General Electric
Şekerbank	2005	34%	Bank Turan-Alem
Akbank	2006	20%	Citigroup
Yapı ve Kredi Bankası[3]	2006	57%	UniCredito
Finans Bank	2006	46%	National Bank
Denizbank	2006	75%	Dexia
ING Bank	2007	100%	ING Bank N.V.
Eurobank Tekfen	2007	70%	Eurobank EFG Holding
Turkland Bank	2007	50%-41%	Arab Bank plc-BankMed

Source: Information and data appearing in the Table were compiled from the annual reports of the specified banks.

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[3] Koç Finansal Hizmetler ("Koç Financial Services"), a joint venture featuring an equal capital commitment between UniCredito and the Koç Group, purchased the 57.42% stake in the SDIF's possession from the SDIF in 2005. Subsequently, the entirety of Yapı ve Kredi Bankası was merged with Koçbank, itself bearing a 50% foreign partnership, formalized on October 1, 2006. For this reason, 2006 was taken as the actual date of commencement of operations in conjunction with a foreign partner.

5. *Analysis of Contributions of Foreign Capital via Discriminant and Multivariate Multi Regression Testing*

As underlined also above, the predominant weight of the foreign capital on the partnership structure in the Turkish banking sector began to assert itself in a tangible manner beginning specifically from 2005. At this juncture, it is natural that a certain lag period should transpire for the foreign capital to effectively impact the structural traits and limbs of the banks under their new ownership and their performances, conditional upon the completion of an adaptation, adjustment and penetration phase.

Table 3: Foreign Capital Entry into the Turkish Banking Sector, Bank Scales and Correlate Dates of Impact

Banks	Commencement of Foreign Partnership	Correlate Date of Foreign Capital's Impact on Efficiency	Bank Scale on Basis of Asset Size
Türk Ekonomi Bankası	2005	2006	Medium scale
Türkiye Garanti Bankası	2005	2006	Large scale
Şekerbank	2005	2006	Medium scale
Akbank	2006	2007	Large scale
Yapı ve Kredi Bankası3	2006	2007	Large scale
Finans Bank	2006	2007	Medium scale
Denizbank	2006	2007	Medium scale
ING Bank	2007	2008	Medium scale
Eurobank Tekfen	2007	2008	Small scale
Turkland Bank	2007	2008	Small scale

Source: Information and data appearing in the Table were compiled from the annual reports of the specified banks.

5.1 Methodology Employed in the Study

The first stage of investigation entailed testing whether there existed a variance and discrimination in the financial structures of the banks hosting foreign capital injection over the 2005-20011 period with a specific focus attached on the pre-partnership and post-partnership phases. The discriminant analysis in the SPSS program will be adopted in the verification of this variance and discrimination. The variance and discriminant analyses examine how two or more dummies are at variance and cause discrimination vis-à-vis each other through the aid of pre-identified variables and, if variance and discrimination occurs, the variables that instigate variance and discrimination effect, as well as the hypotheses tests in connection thereof.

Utilizing the multivariate multi regression analysis, the second segment of the research is structured to explore the direction of efficiency and productivity indicators of the banks forming foreign partnership -- effective from the date of such a partnership is formally established. The data of the banks undergoing an extensive and considerable change in their shareholder structure, as a consequence of more than one dependent and more than one independent variable, will be subjected to testing. In the final stage of the study, the banks exposed to foreign capital inflow and banks lacking such a foreign partnership will be rendered together to the multivariance multi regression analysis, effective from the period when propensity towards such capital inflows first erupted materially.

5.2 Data Set Used in the Study

The data set4 of the analysis embodies the information and data composed of 30 different ratios, incorporated into Annex 1, and relating to 10 deposit banks whose partnership structure has undergone a change and nine multi-branch banks with constant shareholder configuration over a period covering 2005 through 2011. While performing the study, banks with a single branch, the banks under the takeover custody of the Savings and Deposit Insurance Fund (SDIF) and branches of banks permitted to launch retail operations in Turkey and authorized to take deposits were excluded from the scope of assessments.

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[4] 10 years x 10 banks x 30 ratios = 3,000 pieces of data, six years x nine banks x 30 ratios = 1,890 pieces of data, cumulating to a total of 4,890 pieces of data.

As may be anticipated, with much ease, it was presumed that they could breed a misleading technical ingredient and instill a distortion effect on the analysis results because of their divergent and disparate5 structures. Forming the backbone of our study, the data set will be derived from the "Our Banks" periodical published by the Turkish Banks Association on an annual basis, and rely on the year-end data for the period over 2002-2011.

5.3 Dependent and Independent Variables Used in the Model and Their Definitions

The dependent variables to be implanted into the scope of the analysis will incorporate five ratios, consisting of total assets per branch, total deposit per branch, total loans and receivables per branch and net profit per branch.

As for the independent variables, for use in the research, a total of 25 ratios were identified, bundled under eight different and variant groups, divided into balance-sheet structure, asset quality, liquidity, profitability, revenues-expenditures structure, sector shares and field of activities. The pertinent information and explanations on the entire range of ratios as well as the associated codes referred to in the analysis are furnished in Annex 1.

5.4 Productivity Analysis via Discriminant and Multivariance Multi Regression Testing

The zero hypothesis of the study is that "the foreign capital imparts virtually no impact on efficiency and productivity."

In the first stage of the present investigation, testing focus was directed towards verifying whether there existed a variance and discrimination in the financial information and data of 10 banks undergoing a change in their capital structure as a result of foreign capital injection during the course of the covered period with analytical spotlight fixated on the pre-partnership and post-partnership phases. The discriminant analysis was performed within this context.

The 30 ratios pertaining to the mentioned 10 banks over a period stretching between 2002 and 2011, and patterned on the episodes prior to and after the admission of a foreign owner (see Annex 1 for the ratio definitions) constituted the samples points in this study.

Discriminant Analysis

The analysis was performed by the SPS cluster and bundling program, as the decomposition obtained at the end could be summarized as follows:

Statistically significant variances and discriminations were observed in the 22 ratios out of the aggregate of 30 covered under the analysis (at the significance levels of 5% and 1%). It was further detected that extremely important and positive developments were recorded in the ratios of the specified 10 banks in the aftermath of their partnership with foreign capital owners (see Table 2).

The variances and discriminations of the 10 banks during the terms prior to and after their acquisition by a foreign partner were depicted as outstandingly significant according to the statistical evidence furnished by the Wilks' lambda and its equivalent Ki-square tests.

Particularly, considering all of the ratios denoting the balance-sheet structure; in the entire range of bank branch ratios and in a predominant portion of the asset quality and revenues-expenditures benchmarks, these ratios were perceived as statistically significant, among the ratios that provide an opinion on the capital adequacy, while an acceptable significance outcome was registered only in the capital adequacy ratio.6

The coefficients of the linear discriminant equality, classified as the most crucial correlate in the discriminant decompositions, are provided in the Table below.

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[5] Banks branching out in Turkey are small in respect of their product diversification and business turnover, and also provide financial and banking services only in limited regions and restricted geographic locations. The ratios of single-branch banks are also observed to be fraught with misleading qualities and attributes. The present motive of a so-called "SDIF bank" is not practically and in reality relates to performing conventional banking activities.
[6] In the calculation of the Capital Adequacy Ratio, both the balance sheet and off-balance sheet risks are equally weighted, and thereby are correlated with the shareholders' equity.

Table 4: Standardized Coefficients of the Linear Discriminant Correlates
(in pecking order)

Coefficients of Function	Function	
Total Loans and Receivables / Total Assets	1.121	Most effective
Total Assets per Branch	0.747	
Employee per Branch (person)	-0.537	
Interest Expenditures / Total Expenditures	0.529	
FC Assets / Total Assets	0.398	
Non-Performing Loans (gross) / Total Loans and Receivables	0.361	Least effective

It has been successfully demonstrated that the six ratios securing this variance and divergence (as an absolute value) was successful in the segregation and dissociation of the two groups, certainly from a statistical viewpoint, at the rate of 95%.

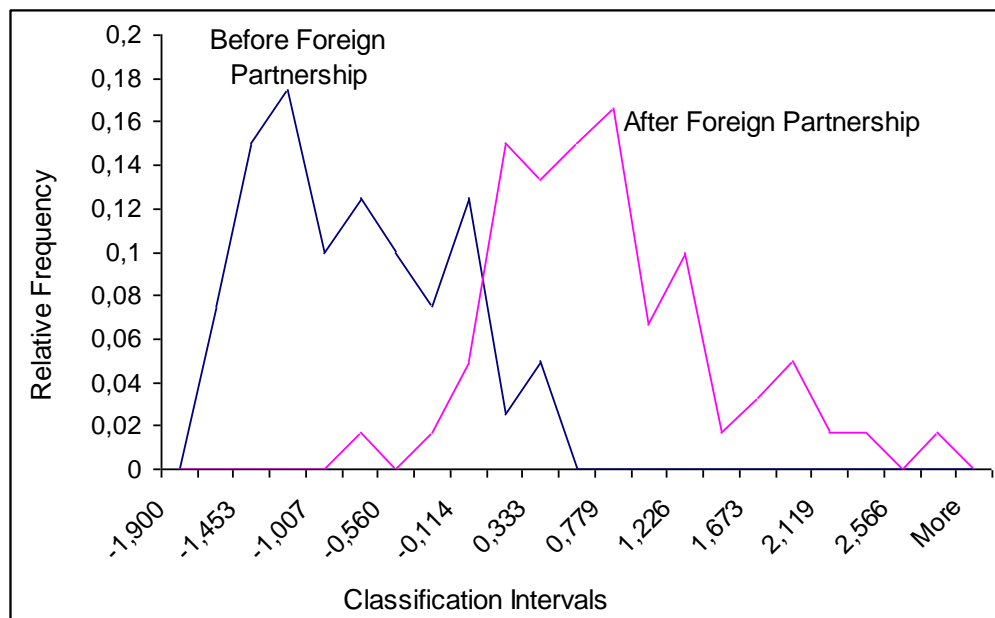**Figure 1. Discriminant Values of Banks with Foreign Partner, 10 Banks**

As may be followed sufficiently also from the Figure below, the averages of histogram distributions and the standard deviations of the 10 banks ranged respectively at -2.21 and 1.12 in the period before taking on a foreign partner, and were realized successively as 1.47 and 0.91 in the aftermath of foreign capital entry.
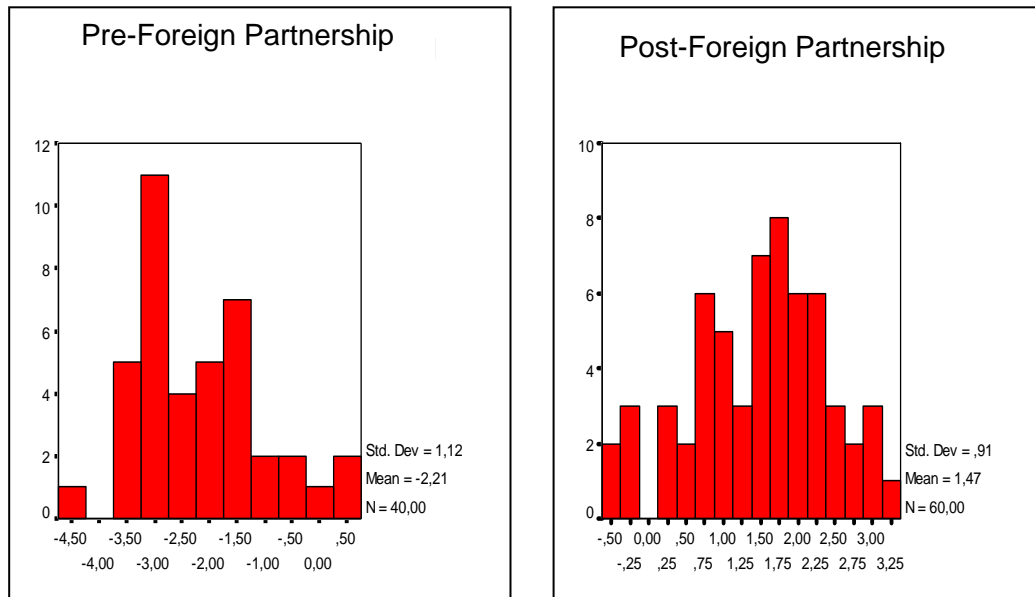
Figure 2. Discriminant Distributions of 10 Banks Before and After Foreign Partnership

The specified parameters validate the finding that the discriminant values of the 10 banks have shifted, on average, more to the right (a positive aspect) following the acquisition of a foreign partner and that the standard deviation also encountered a decline, emerging at the rate of 18.75%[7]. Resorting to plain terms to elucidate this point, the rather scattered and diffused structure among the banking community prior to the episode when the foreign partnership was non-existent was replaced with a noticeable consolidation in operations and corporeal recovery in the aftermath of the debut of a foreign shareholder.

5.4.2 Multivariance Multi Regression (for 10 Banks)

The discriminant analyses above illustrate how the 10 banks are at a variance and differentiated in the episodes before and after the infusion of controlling foreign capital. The divergence demonstrates manifestly the inference that these banks were subjected to a specific structural transformation. Nevertheless, no precise conceptualization has been advanced so far on whether the partnership structure or any other factor disregarded in the analyses was instrumental in the dissociation and disentanglement of the banks under investigative coverage.

At any rate, the assumption that this disengagement and unbundling was achieved as a corollary of foreign partnership does not appear to be an incongruous and incompatible deduction. In a quest to discover a stronger justification to underscore this issue, banks that have formed partnerships portraying a variable shareholder structure with foreign capital were subjected to the multivariate multiple regression analysis.
The model could be expressed as:

$$Y = X\beta + \Xi$$

where, the following definitions will apply:

Y: Column vector composition matrix incorporating the dependent variable observations,
X: Column vector composition matrix of the independent variable observations,
β: Coefficient matrix of column vector composition, and
Ξ : Vector composition matrix incorporating error terms.

In the ensuing phase of the study, planning for approach involved the selection of asset per branch, deposit per branch, loans per branch, employee per branch and profit per branch as applicable benchmarks for the measurement of efficiency and productivity from among the cluster of 30 ratios. At this intersection, we deem it worthwhile to take a glance into the correlation among the dependent variables before we progress further in the testing – a task that would conveniently substantiate the accuracy of the findings and conclusions of the analysis. The correlation coefficients among the dependent variables are provided in the following Table:

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[7] $(P_t / P_{t-1}) - 1 = (0.91/1.12) - 1 = 18.75\%$

Table 5: Correlation Matrix of Dependent Variables

	BR1-Asset per Branch	BR2-Deposit per Branch	BR3-Loans per Branch	BR4-Employee per Branch	BR5-Profit per Branch
BR1-Asset per branch	1				
BR2-Deposit per branch	0.961735	1			
BR3-Loans per branch	0.876723	0.822046	1		
BR4-Employee pr branch	0.294028	0.337835	0.168895	1	
BR5-Profit per branch	0.563077	0.526797	0.463396	0.15253	1

By taking into account the correlation coefficients among the dependent variables, the ratios depicting the highest figures (BR1 and BR3) in the group of five dependent variables were extricated from the data set, thereby leaving behind three dependent variables (BR2, BR4 and BR5) for processing in the analysis.

At the same time, a correlation matrix was mapped for the 25 ratios destined to be utilized in the analysis as independent variables (see Annex 3), as no excessive degree of correlation was discovered among the information and data, possessing the potential of impacting the consistency of the analysis, apart from the value that signify solely the sector shares. In this manner, three more ratios (active sector share SS1, loan sector share SS2 and deposit sector share SS3) were left out of the scope of our investigative pursuit.

On the other hand, the ratio standing for the Total Operational Revenues / Total Assets item was also omitted from the context and coverage of the study, owing to its close resemblance and similitude to the Asset Profitability ratio.

Thus and so, 21 ratios from among the bundle of 25 ratios designated as independent variables were incorporated into the procedural set of the analysis as control variables.

A total of 10 dummy variables were defined for the purpose of factoring the foreign capital entries, as values of Dk=1 and Dk=0 were assigned respectively for the start-up year and the subsequent years for the k bank to commence from the date when foreign capital is firmly recognized to be active and assertive.

While the estimations for the beta coefficients were performed through the proverbial multi regression approach, parameter tests were generally conducted via the Wilks' Λ, Roy's θ, Pillai's V and Hotelling U, as these statistics more often than not yield similar results (Rencher, 1995).

The determinant and discriminate coefficients of the three performance coefficients under consideration here reveal that BR5, from among the dependent variables, is adequately explained and elucidated (0.96), to a great length, and that the explanatory power of the variance and discrimination disclosed for the other two dependent variables navigates at proportions (0.83 and 0.68) – figures that deserve due account and close attention.

Notwithstanding the fact that the purpose of the foregoing study is to determine and specify the efficiency of foreign capital and ownership, an examination of the variables relating to bank dummies is also imperative.

Table 6: Summary of Multivariate Multi Regression Parameter Estimations (for 10 Banks)[8]

Dependent Variables	Foreign Capital Dummy Variables	B	Standard Deviation	t	Sig.
BR2 -	Large-scale bank	33.2032	4.8130	6.8987	0.0000
Deposit per	Medium-scale bank	11.6942	5.0650	2.3088	0.0240
Branch	Large-scale bank	24.3350	5.9105	4.1173	0.0001
Adj-R-square=0.833	Small-scale bank	12.6034	6.0078	2.0978	0.0396
BR4-	Medium-scale bank	-4.9355	1.3842	-3.5655	0.0007
Employee per	Large-scale bank	2.9627	1.5539	1.9067	0.0608
Branch	Large-scale bank	-5.2372	1.7642	-2.9686	0.0041
Adj-R-square=.68	Medium-scale bank	-6.3085	1.7959	-3.5127	0.0008
	Medium-scale bank	-2.9905	1.9950	-1.4990	0.1385
BR- 5	Large-scale bank	1.4403	0.1632	8.8231	0.0000
Profit per Branch	Large-scale bank	0.4312	0.1853	2.3264	0.0230
Adj-R-square	Medium-scale bank	0.3935	0.1718	2.2908	0.0251
==.96	Large-scale bank	0.8623	0.2005	4.3013	0.0001

A quick browse-through at the Table will steadfastly extricate, for the aims of the study, the whole spectrum of significant variables between the 95% reliability gap. Based on the statistical analytical findings linked to dependent variables, following conclusions were drawn:

- In regard to deposit per branch indicator, a significant increment was observed in two large-scale banks, one medium-scale bank and one small-scale bank, cumulating to a total of four banking entities.
- In terms of the criterion relating to employee per branch, a significant and meaningful change was detected in two large-scale banks and three medium-scale banks, aggregating to a total sum of five banks. However, at this juncture, an important point involved the fact that one of the large-scale banks, featuring foreign capital presence, recorded an increase in the number of staff per branch in contravention of general perceptions and expectations relating to the post-foreign capital episode.
- As for the yardstick concerning profit generation per branch, significant enlargements were discovered in three large-scale banks and one medium-scale bank, amounting to four banks in entirety. In congruity with consensus opinion, net profitability per branch scored significant and considerable elevation as a by-product of foreign capital inflow into a bank's prime controlling shareholders' equity. This expansion was unmistakably perceptible in both the large-scale and medium-scale banks.

5.4.3 Multivariate Multi Regression (10 banks and 9 Banks Combined)

Reaching the climaxing echelon of the analysis, a comparison was performed between the banks undergoing a change in terms of controlling foreign fund addition to their equity capital and those without any such exposure over nearly a decade-long period spreading from 2001 until 2011, structured this time on the processing of pertinent information and data belonging solely to the 2006-2011 era. With this asserted goal under excusive spotlight, the information and data concerning 10 banks exposed to a substantial restructuring in their shareholders' equity stemming from foreign capital accommodation and nine multi-branch deposit banks devoid of such a partnership reshuffle were aptly put to multivariate multi regression testing. The Table 7 presents a synopsis of the dummy variables recognized as significant and meaningful (see Annex 5 for detailed analytical findings).

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[8] Detailed version of the Table is provided in Annex 4.

Table 7: Summary of Multivariate Multi Regression Parameter Estimations (for 10 Banks)[9]

Dependent Variables	Foreign Capital Dummy Variables	B	Standard Deviation	t	Sig.
Deposit per Branch Adj-R-square = ,714	Medium-scale bank	-21.0996	7.9014	-2.6703	0.0094
	Large-scale bank	31.1586	8.6580	3.5988	0.0006
	Large-scale bank	24.7755	8.9170	2.7784	0.0070
	Large-scale bank	14.1834	10.4012	1.3636	0.1771
Employee per Branch Adj-R-square = ,615	Medium-scale bank	-9.4043	3.1664	-2.9701	0.0041
	Large-scale bank	-6.0716	4.1681	-1.4567	0.1497
	Small-scale bank	-7.1723	3.6026	-1.9909	0.0504
Profit per Branch Adj-R-square = ,934	Medium-scale bank	-0.4962	0.1655	-2.9978	0.0038
	Large-scale bank	1.3722	0.1814	7.5658	0.0000
	Large-scale bank	0.7260	0.1868	3.8864	0.0002
	Large-scale bank	0.6812	0.2179	3.1266	0.0026

Now, juggling all the facts and figures amassed so far for the 2002-2001 term, related to the 10 banks that established foreign partnerships and the remaining other nine with constant capital architecture, the following observations were gathered:

- In terms of deposits per branch (signifying an explanatory power of 0.714, which denotes rather a high figure), three large-scale banks recorded significant increments in respect of the other nine banks, while the modification in the one medium-scale bank was significant but in the direction of a decrease.
- Looking at the employee per branch (signifying an explanatory power of 0.615, which denotes a high figure), one large-scale, one medium-scale and one small-scale bank displayed significant reductions.
- As for the profit per branch (signifying an explanatory power of 0.934, which denotes rather a high figure), significant enhancements were detected in three large-scale banks in comparison with the other nine banks, while the profit-per-branch volume in a medium-scale bank sustained a significant erosion

In studies attempting to measure the banks' performances, profitability analyses are purported to capture the top-tier rank in importance, in a general context (Çetin & Bıtırak, 2010). Data relating to employees per branch are also another key ingredient frequently employed for running performance analyses (Kozanoğlu, 2007). Plainly, the analyses have explicitly re-confirmed the conclusion and essence that the banks subjected to partnership conversions and variations have undergone through significant and generally positive transformation pursued in the two productivity indicators during the time interval under scrutiny. In addition to the specified data, significant and positive increment-oriented inclinations were noticed in the employee-per-branch benchmark.

6. *Summary and Concluding Remarks*

Productive and efficient operation of banks in a national economy is crucially important as a key component for accomplishing a sound, plausible and sustainable growth. There is no doubt that competition is stiffening with an astonishing intensity and speed in the banking segment, epitomizing a distinguished weight in the services sector, at least as much as witnessed in and on par with the other sectors. While unproductive banks managed to survive at times when competition was not so powerful and aggressive, the contractions inflicted on profit margins encountered under strong competitive tides make it difficult and equally challenging for the banks to endure the hard times unscathed and prevail intact (Cihangir, 2005).

In our country's economy, the banking sector accounts for 87% of the GDP (TBA, 2012). Efficiency measurement entails the assessment of the results attained through the utilization of the resources in a specific time and under certain circumstances in comparison with the projected and targeted conclusions (Behdioğlu & Özcan, 2009). Glimpsed with this perspective in mind, the efficiency and productive operation of the banking industry surface as two primary elements that would also invariably boost employment and make solid and strong contributions to growth.

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[9] Detailed version of the Table is provided in Annex 5.

The sequenced strategic re-structuring and overhaul steps embarked upon both in the macroeconomic architecture and the banking market in the aftermath of the November 2000 and the February 2001 crises that besieged and beleaguered our country were prominent drivers for prodding the external world's attention towards the Turkish banking sector. As a matter of fact, particularly the flurry of enquiries for partnership that surfaced and diverted to the Turkish banks trailing the milestone year of 2005 were mostly materialized, in due course of time. During the 2002-2011 term, equity structures of 10 banks underwent changes in favor of foreign capital owners.

As underlined on several occasions herein, the fundamental target of the study is to analyze the impact of the change in the partnership structure to the benefit of foreign capital on the efficiency and productivity of the banking enterprise.

In the most comprehensive research undertaken so far, Claesesens et al. (2001) have investigated the banking sectors of 80 developed and emerging countries over a period covering 1988-1995, in terms of cost and profitability, and harvested the conclusion that the foreign banks were more efficient relative to their local counterparts (Korkmaz, 2008).

Constituting our initial action in this study, a discriminant analysis was implemented to view whether the variation in the partnership composition brought forth a discrimination or differentiation. At the end of the core tests, it was observed that the banks chronicled generally positive and upbeat modifications in their key productivity and efficiency benchmarks following the admittance of foreign partnership.

The data utilized in the banks' efficiency and productivity analyses generally are composed of aggregates per branch. For the purposes of this study also, fundamental yardsticks such as asset per branch, loans, deposits, employees and profit values were deemed worthy to be adopted as performance indicators. From among the specified data, those tagged with values carrying a propensity of indulging in interaction and effecting each other inter alia were eradicated, as three dependent and 21 independent variables were picked for the multivariate multi regression approach.

The foremost and momentous finding gained from the analysis conclusions implied, in unambiguous phraseology, that the foreign capital was most effective specifically in large-scale banking institutions in regard to efficiency and productivity.

The other point that deserves attention and exquisite gloss is the realization that, among the indicators forming the key components of efficiency and productivity, foreign capital's impact was most visible on profitability, assuming priority for obvious reasons, and that its influence is directed towards attaching an exclusive emphasis on the deposit-base in the equity-resources structure. Yet, its bearing on some other banks was in the form of optimization of the number of employees.

At the termination of both of our disriminant and multivariate multi regression analyses, we have come across solid and irrefutable evidence that deposit banks accepting foreign capital into their shareholders' equity with controlling aspect have accomplished positive developments and tangible progress in their overall performances and financial architecture. Such noteworthy conclusions specifically bring forth simultaneously the advantages of scale.

Glanced within a general construct, there is a profuse amount of empirically-substantiated proof and research results that confirm the fact that large-scale banks operate more efficiently when compared with other banks of other varying scales, and that bank efficiency accelerates in tandem with the elevation in scale sizes (Kaya & Doğan, 2005 – Yaşa, 2008).

Combining all the data, facts and figures relating to researches conducted in this field and the conclusions attained therein, and taking into account also the actual realization that transpired over the 2005-2011 period, we may comfortably surmise that a bank endowed with foreign capital induces an enhancement and increase proliferating most extensively across large-scale banks. One particular reason behind this phenomenon could be suitably explained by a thorough and profound analysis initiated by the aspirant foreign investor of the equity resources retained by the target bank, incorporating local capital, as the emergent synergy effect raised from these advantageous components will be distinctly greater in large-scale banks.

A final point that warrants exclusive accentuation is the scholarly deduction that the efficiency-enhancement impact of foreign banks venturing into a specific sector is manifested in either straight or circumlocutory manner (Azizov, 2008). Furthermore, the far-reaching benefits and concrete contributions foreign partners generate throughout the banking sector are most discernible in the advanced technology they usher in, facilitating the introduction and diffusion of innovative, brand-new, quality and favorably-priced and diversified financial products and sophisticating and refinement of every aspect of services supplied to clients.

References

(English translations are provided solely for information, elaboration and explanatory purposes and should not be construed necessarily as an authentic replication or representation of the original versions in Turkish)

Conference on "*Productivity in Banking*," organized by the Turkish Banks Association on January 26, 2001, *www.tbb.org.tr/konferanslar*.

Akbank Annual Report, 2006.

Altıkulaç, Ertan (2006), "Kamu Bankalarının Özelleştirilmesi ve Türkiye'de Performanslarının Özel ve Yabancı Bankalarla Karşılaştırılmasına İlişkin Kantitatif Bir Analiz" ("*A Quantitative Analysis on the Privatization of Public Banks and Comparison of Their Performances in Turkey with Private and Foreign Banks*"), Marmara University, Banking and Insurance Institute, Banking Department, doctoral dissertation.

Atan, Murat (2003), "Türkiye Bankacılık Sektöründe Veri Zarflama Analizi ile Bilançoya Dayalı Mali Etkinlik ve Verimlilik Analizi, Ekonomik Yaklaşım" ("*Financial Efficiency and Productivity Analysis of Turkey's Banking Sector Based on Data Envelopment Analysis and Balance Sheet, An Economic Approach*"), *Ekonomik Yaklaşım ("Economic Approach")*, Gazi University, Economics Department, Quarterly Journal, 48 (14), pp.71-86.

Atan, Murat (2006), "Seçilmiş Kamu, Özel ve Yabancı Ticaret Bankalarında Karlılığı Etkileyen Faktörlerin Ekonometrik Analizi" ("*An Econometric Analysis of Factors Impacting Profitability in the Selected Public, Private and Foreign Commercial Banks*"), *http://muratatan.info/academic/article/14.pdf*.

Atan, Murat & Çatalbaş, Gaye (2005), "Bankacılıkta Etkinlik ve Sermaye Yapısının Bankaların Etkinliğine Etkisi" ("*Efficiency in Banking and Impact of Capital Structure on Banks' Efficiency*"), *İktisat İşletme ve Finans Dergisi ("Economics, Business Administration and Finance Journal")*, vol. 20, issue 237, pp. 49-62.

Atasoy, Hakan (2007), "Türk Bankacılık Sektöründe Gelir-Gider Analizi ve Karlılık Performansının Belirleyicileri" ("*Revenues-Expenditures Analysis in the Turkish Banking Sector and the Determinants of Profitability Performance*"), professional dissertation for CBRT specialization.

Azizov, Aloyi (2008), "Bankacılık Sektöründe Yabancı Yatırımlar ve Türkiye Örneği" ("*Foreign Investments in the Banking Sector and the Case of Turkey*"), University of Istanbul, Social Sciences Institute, Department of Economics, Economic Theory Chair, graduation thesis.

BRSA, Financial Markets Report, December 2011.

Behdioğlu, Sema & Özcan, Gözde (2009), "Veri Zarflama Analizi ve Bankacılık Sektöründe Bir Uygulama" ("*Data Envelopment Analysis and An Application in the Banking Sector*"), *Süleyman Demirel University, Economics and Administrative Sciences Faculty Journal*, vol. 14, issue 3, pp.301–326.

Budak, Hüseyin (2011), "Veri Zarflama Analizi ve Türk Bankacılık Sektöründe Uygulaması" ("*Data Envelopment Analysis and its Application in the Turkish Banking Sector*"), *Marmara University, Physical Sciences Journal,* 23 (3) pp. 95-110.

Cihangir, Mehmet (2004), "Türkiye'de Banka Birleşmeleri ve Birleşen Bankaların Verimlilik ve Etkinliğinin Ölçülmesi Üzerine Karşılaştırmalı - Uygulamalı Bir İnceleme" ("*A Comparative-Practical Analysis of the Bank Mergers in Turkey and Measurements of the Merged Banks' Productivity and Efficiency*"), Ankara University, Social Sciences Institute, Business Administration Department, doctoral dissertation.

Claessens, S., Demirgüç-Kunt, A. & Huizinga, H. (2001)," How Does Foreign Entry Affect Domestic Banking Markets," *Journal of Banking & Finance*, vol. 25, issue 5, pp. 891-911.

Çetin, Ali Cüneyt & Bıtırak, İbrahim Anıl (2010), "Banka Karlılık Performansının Analitik Hiyerarşi Süreci İle Değerlendirilmesi Ticari Bankalar İle Katılım Bankalarında Bir Uygulama" ("*Assessment of Bank Profitability Performances via Analytical Pecking Order Process – An Application in Commercial Banks and Participation Banks*"), *Alanya İşletme Fakültesi Dergisi* ("*Journal of the Alanya Faculty of Business Administration*") 2/2, p. 75-92.

Demir, Yusuf & Gençtürk, Mehmet (2006), "İMKB'de İşlem Gören Yerli ve Yabancı Bankaların Göreli Etkinliklerinin Veri Zarflama Analizi İle Ölçümü" ("*Measurement of the Relative Efficiencies of the Local and Foreign Banks Traded on the ISE Through the Data Envelopment Analysis*") *D.E.Ü.İ.İ.B.F. Dergisi (Journal of the DEUIIBF")*, vol. 21 issue 2, pp.49-74.

Demirbaş, Mahmut & Sezgin, Funda H. (2010), "Likidite Krizi Sürecinde Amerika Birleşik Devletleri, Avrupa Birliği'ne Üye Ülkeler ve Türkiye'deki Bankacılık Sektörünün Karşılaştırmalı Etkinlik Analizi : 2006-2010 Dönemi" ("*An Efficiency Analysis of the Banking Sectors in the United States of America, Member Countries of the European Union and Turkey During the Era of Liquidity Crisis: 2006-2010 Period*"), *Gazi University, Journal of Economic and Administrative Sciences Faculty* 12/3, pp. 135-158.

Denizbank Annual Report, 2006.

Doğru, Cengiz (2011), "Karlılığın Belirleyicileri Analizi: Teori ve Orta Ölçekli Bir Banka Uygulaması" ("*Determinant Analysis of Profitability: Theory and the Case of A Medium-Scale Bank*"), *Maliye Finans Yazıları ("Fiscal and Finance Essays")*, year: 25, issue 91, pp. 47-75.

Emiral, Fatih (2002), "Türk Bankacılık Sisteminde Etkinlik Analizi (Veri Zarflama Analizi Uygulaması)" ("*Efficiency Analysis in the Turkish Banking System" (Performance of Data Envelopment Analysis)*"), *Activline* May-June.

Erçel, Gazi (2000), "Bankacılıkta Son Gelişmeler, Türk Bankacılık Sisteminin Swot Analizi ve 2000 Yılındaki Muhtemel Profili" Semineri ("*Seminar on 'Recent Developments in Banking, the SWOT Analysis of the Turkish Banking System and the Projected Profile in 2000'*"), Istanbul 1999, Discourses, CBRT Publication, Ankara,

Eurobank Tekfen Annual Report, 2007.

Finans Bank Annual Report, 2006.

Gormley, T.A. (2010), "The Impact of Foreign Bank Entry in Emerging Markets: Evidence from India," *Journal of Financial Intermediation*, vol. 19, issue 1, pp. 26-51.

ING Bank Annual Report, 2007-2008.

Işık, Mustafa (2006). "Yabancı Bankaların Türk Bankacılık Sektöründeki Payı ve Ekonomik Gelişmeye Katkısı" ("*Share of Foreign Banks in the Turkish Banking Sector and Their Contributions to Economic Development*"), Marmara University, Banking and Insurance Institute, Banking Department, postgraduate master's thesis.

İnan, Emre Alpan (2004), "Dezenflasyon Süreci ve Düşük Enflasyon Ortamı: Türkiye'de Makroekonomi ve Bankacılık Üzerine Etkileri" ("*The Disinflation Process and Low Inflation Environment: Effects on Macroeconomy and Banking*"), *Bankacılar Dergisi ("The Bankers' Journal")*, issue 50.

İnan, Emre Alpan (2000), "Banka Etkinliğinin Ölçülmesi ve Düşük Enflasyon Sürecinde Bankacılıkta Etkinlik" ("*Measuring Bank Efficiency and Efficiency in Banking Under Low Inflationary Process*"), *Bankacılar Dergisi ("The Bankers' Journal")*, issue 34, pp.82-96.

Karabulut, Gökhan (2003), "Bankacılık Sektöründe Sermaye Karlılık İlişkisi: Türk Bankacılık Sistemi Üzerine Bir İnceleme" ("*The Correlation Between Capital and Profitability in the Banking Sector: A Study on the Turkish Banking System*"), *Journal of the U.I. Political Sciences Faculty*, no.: 28, pp.169-177.

Kaya, Yasemin Türker & Doğan, Ela (2005). "Dezenflasyon Sürecinde Türk Bankacılık Sektöründe Etkinliğin Gelişimi" ("*Development and Progress of Efficiency in the Turkish Banking Sector During the Disinflationary Process*"), BRSA, Working Papers 10.

Keçek, Gülnur & Cinser, Volkan (2008). "Türkiye'de Faaliyette Bulunan Ticaret Bankalarının Performanslarına Göre Sınıflandırılmasında Etkili Olan Değişkenlerin Belirlenmesi ve Bir Uygulama Denemesi" ("*Determination of Discriminant Variables Influencing the Classification of Commercial Banks Operating in Turkey According to Their Performances and an Application Test*"), *Dumlupınar University, Social Sciences Journal,* issue 22, ss.189-206.

Kılıç, Merve & Akın, Ahmet (2008), "Banka Satın Almalarının Hedef Bankaların Performansına Olan Etkileri: Türk Bankacılık Sektörü Üzerinde Ampirik Bir Çalışma" ("*The Impact of Bank Acquisitions on the Performances of Target Banks: An Empirical Study Patterned on the Turkish Banking Sector*"), *Gazi University, Journal of Economic and Administrative Sciences,* 10 / 3, pp. 229-255.

Korkmaz, Tuba (2008), "Gelişmekte Olan Ülkelere Yabancı Banka Katılımı: Türkiye Bankacılık Sektörü Değerlendirmesi" ("*Foreign Bank Participation in Emerging Countries: Assessment of Turkey's Banking Sector*"), Marmara University, Banking and Insurance Institute, Banking Department, doctoral dissertation.

Kosmidou, K., Pasiouras, F. & Tsaklanganos, A. (2007), "Domestic and Multinational Determinants of Foreign Bank Profits: The Case of Greek Banks Operating Abroad," *Journal of Multinational Financial Management*, vol. 17, issue 1, pp. 1-15.

Kozanoğlu, Hayri & Bora, Selçuk (2007), "Yeniden Yapılandırma Sonrası Türk Bankacılık Sistemi" ("*The Turkish Banking System in the Aftermath of Re-Structuring*"), *Marmara University, Journal of the Social Sciences Institute*, 7(28), pp. 225-243.

Lin, X. & Zhang, Y. (2009), "Bank Ownership Reform and Bank Performance in China," *Journal of Banking & Finance*, vol. 33, issue 1, pp. 20-29.

Majnoni, G., Shankar, R. & Varhegyi, E.,(2003), "The Dynamics of Foreign Bank Ownership: Evidence from Hungary," World Bank Policy Research Working Paper No. 3114.

Önal, Yıldırım Beyazıt & Sevimeser, Nuri Cemhan (2006), "Yabancı Banka Girişlerinin Türk Bankacılık Sistemine Etkileri: Yerli ve Yabancı Bankaların Etkinlik Analizi" ("*Effects of Foreign Bank Penetration into the Turkish Banking System: An Efficiency Analysis of Local and Foreign Banks*"), *Ç.Ü., Journal of Social Sciences Institute,* vol. 15, issue 2, pp. 295-312.

Rencher, Alvin C. (1995), "Methods of Multivariate Analysis," Brigham Young University, A John Wiley & Sons, Inc. Publication.

Selvi, Gülay (2010), "Türkiye Bankacılık Sektöründe Yabancı Sermaye Analizi ve Avrupa Birliği Ülkeleri Karşılaştırması" ("*Foreign Capital Analysis in the Banking Sector of Turkey and A Comparison with European Union Countries*"), Kadir Has University, Social Sciences Institute, Business Administration Department, Finance and Banking Chair, doctoral dissertation.

Seyrek, İbrahim Ata & Halil, H. Ali (2010)," Veri Zarflama Analizi ve Veri Madenciliği ile Mevduat Bankalarında Etkinlik Ölçümü" ("*Efficiency Measurement in Commercial Banks Through Data Envelopment Analysis and Data Mining*"), BRSA, *Bankacılık ve Finansal Piyasalar Dergisi* ("*Banking and Financial Markets Journal*"), vol. 4, issue 2, pp.67-84.

Sturm, J., & Williams, B. (2004), "Foreign Bank Entry, Deregulation and Bank Efficiency: Lessons from the Australian Experience," *Journal of Banking & Finance*, vol. 28, issue 7, pp. 1775-1799

Şekerbank Annual Report, 2005-2006.

Şen, Selma Aktaş (2006), "Bankacılık Sektörü ve Devlet Müdahaleleri: Politik Devresel Dalgalanmalar Çerçevesinde Türk Bankacılık Sektörü Etkinlik Analizi" ("*Banking Sector and State Intervention: Turkish Banking Efficiency Analysis in Context of Political Cyclical Volatility*"), *Sosyoekonomi Dergisi ("Socioeconomic Journal")* / 2, pp. 11-30.

Taşkın, F. Dilvin (2011), "Türkiye'de Ticari Bankaların Performansını Etkileyen Faktörler" ("*Factors Impacting the Performances of Commercial Banks in Turkey*"), *Ege Akademik Bakış ("The Aegean Academic Perspective")*, volume 11, issue: April 2, pp. 289 - 298

TBA, "*Our Banks*," 1958.

TBA, "*Our Banks*," 1970.

TBA, "*Our Banks*," 1975.

TBA, "*Our Banks,*" 1980.

TBA, "*Our Banks*," 1985.

TBA, "*Our Banks*," 1990.

TBA, "*Our Banks*," 1995.

TBA, "*Our Banks*," 2000.

TBA, "*Our Banks*," 2005.

TBA, "*Our Banks*," 2010.

TBA, "*Our Banks*," 2011.

TBA, "*Our Banks*," March 2012.

Tunay, K. Batu & Silpar, A. Murat (2006), "Türk Ticari Bankacılık Sektöründe Karlılığa Dayalı Performans Analizi-II" ("*Profitability-Based Performance Analysis on the Turkish Commercial Banking Sector - II*"), Araştırma Tebliğleri Serisi ("*Research Papers Series*"), issue 2006 – 02.

Turkland Bank Annual Report, 2007.

Türk Ekonomi Bankası Annual Report, 2005-2006.

Türkiye Garanti Bankası Annual Report, 2005-2006.

Türkiye'de Yabancı Bankalar ("*Foreign Banks in Turkey")*, TBB Bankacılık ve Araştırma Grubu ("*TBA Banking and Research Group*"), *Bankacılar Dergisi ("Bankers' Journal")*, issue 52, 2005, pp. 3-9.

Ünsal, Aydın & Duman, Sibel (2005)," Türkiye'deki Bankaların Performanslarının Temel Bileşenler Yaklaşımı İle Karşılaştırmalı Analizi" ("*A Comparative Analysis of Bank Performances in Turkey Through the Underlying Components Approach*"), VII. National Econometrics and Statistics Symposium, May 26 – 27, University of Istanbul

Yapı ve Kredi Bankası Annual Report 2006-2007.

Yaşa, Ahu (2008), "Bankacılık Sektöründe Etkinlik ve Veri Zarflama Analizi Yöntemi İle Ölçülmesi" ("*Measurement of Efficiency and Productivity in the Banking Sector by Means of Data Envelopment Analysis*"), UA, PSF, postgraduate master's thesis.

Annex 1. All Ratios and Codes Used in the Analysis

Group Name	Code	Decomposition
Capital Adequacy	CA1	Shareholders' Equity / (Loans + Market + Underlining Amount Exposed to Operational Risk)
	CA2	Shareholders' Equity / Total Assets
	CA3	(Net Balance Sheet Position + Net Memorandum Account Position / Shareholders' Equity
Balance Sheet Structure	BSS1	TP Assets / Total Assets
	BSS2	TP Liabilities / Total Assets
	BSS3	Total Deposits / Total Assets
Asset Quality	AQ1	Financial Assets (Net) / Total Assets
	AQ2	Total Loans and Receivables * / Total Assets
	AQ3	Non-Performing Loans (gross) / Total Loans and Receivables
	AQ4	Fixed Assets / Total Assets
Liquidity	L1	Liquid Assets / Total Assets
	L2	Liquid Assets / Short-Term Liabilities
Profitability	P1	Net Period Profit (Loss) / Total Assets
	P2	Net Period Profit (Loss) / Shareholders' Equity
Revenues-Expenditures Structure	RE1	Non-Interest Income (Net) / Total Assets
	RE2	Interest Income / Interest Expenditures
	RE3	Non-Interest Income / Other Operational Expenditures
	RE4	Interest Income / Total Assets
	RE5	Interest Expenditures / Total Assets
	RE6	Interest Income / Total Revenues
	RE7	Interest Expenditures / Total Expenditures
Sector Shares	SS1	Total Assets
	SS2	Total Loans and Receivables
	SS3	Total Deposits
Branch Ratios	BR1	Total Assets per Branch
	BR2	Total Deposits per Branch
	BR3	Loans and Receivables per Branch
	BR4	Employee per Branch (person)
	BR5	Net Profit per Branch
Operational Ratios	OR	Total Operational Revenues / Total Assets

Annex 2. Tests on Group Average Variances of 10 Banks
With Exposure to Foreign Partner

	Wilks' Lambda	F	Sig.	
CA1	0.935	6.825	0.010	**
CA2	0.977	2.304	0.132	
CA3	0.962	3.857	0.052	*
BSS1	0.614	61.676	0.000	**
BSS2	0.702	41.557	0.000	**
BSS3	0.878	13.563	0.000	**
AQ1	0.984	1.613	0.207	
AQ2	0.567	74,977	0,000	**
AQ3	0.961	3.989	0.049	*
AQ4	0.710	39.999	0.000	**
L1	0.833	19.694	0.000	**
L2	0.864	15.435	0.000	**
P1	1.000	0.001	0.974	
P2	0.996	0.359	0.551	
RE1	0.783	27.118	0.000	**
RE2	0.961	4.001	0.048	*
RE3	0.961	4.012	0.048	*
RE4	0.795	25.310	0.000	**
RE5	0.812	22.744	0.000	**
RE6	0.931	7.235	0.008	**
RE7	1.000	0.033	0.856	
BR1	0.768	29.563	0.000	**
BR2	0.788	26.331	0.000	**
BR3	0.611	62.324	0.000	**
BR4	0.878	13.571	0.000	**
BR5	0.940	6.294	0.014	**
OR	0.813	22.475	0.000	**
* %5 significant **%1 significant				

Annex 3. Correlation Matrix of Independent Variables

	SY1	SY2	SY3	BY1	BY2	BY3	AK1	AK2	AK3	AK4	L1	L2	K1	K2	GG1	GG2	GG3	GG4	GG5	GG6	GG7	SP1	SP2	SP3	FR
SY1	1,00																								
SY2	0,66	1,00																							
SY3	0,13	0,23	1,00																						
BY1	-0,07	0,06	0,18	1,00																					
BY2	0,01	0,06	0,23	0,88	1,00																				
BY3	-0,10	-0,15	-0,31	-0,21	-0,18	1,00																			
AK1	0,21	-0,13	-0,24	-0,13	0,07	0,02	1,00																		
AK2	-0,40	0,00	0,30	0,57	0,33	-0,25	-0,58	1,00																	
AK3	0,11	0,08	-0,27	0,03	0,12	0,30	0,27	-0,40	1,00																
AK4	0,00	0,14	-0,16	-0,44	-0,31	0,16	0,11	-0,50	0,44	1,00															
L1	0,47	0,16	0,10	-0,36	-0,26	0,07	0,17	-0,53	-0,10	-0,11	1,00														
L2	0,24	0,00	-0,61	-0,32	-0,32	0,16	0,31	-0,52	0,23	0,07	0,42	1,00													
K1	0,24	0,14	0,03	-0,12	-0,14	-0,04	0,11	-0,03	-0,12	-0,10	0,18	0,06	1,00												
K2	0,13	0,03	-0,04	-0,06	-0,10	-0,03	0,07	0,00	-0,12	-0,13	0,12	0,06	0,96	1,00											
GG1	0,41	0,37	-0,17	-0,32	-0,23	0,30	0,13	-0,42	0,42	0,43	0,13	0,16	0,15	0,06	1,00										
GG2	0,11	0,26	0,31	0,25	0,06	-0,13	-0,27	0,49	-0,02	-0,41	-0,05	-0,19	0,20	0,11	-0,18	1,00									
GG3	0,39	0,23	-0,08	-0,39	-0,22	-0,02	0,36	-0,38	0,09	0,23	0,27	0,19	0,39	0,27	0,73	-0,21	1,00								
GG4	0,18	-0,03	-0,29	-0,18	-0,15	0,57	0,15	-0,46	0,39	0,28	0,08	0,28	0,09	0,08	0,21	-0,22	-0,17	1,00							
GG5	0,07	-0,17	-0,45	-0,24	-0,14	0,50	0,25	-0,59	0,32	0,44	0,05	0,36	-0,03	0,01	0,24	-0,62	-0,02	0,88	1,00						
GG6	-0,28	-0,31	0,03	0,30	0,18	-0,09	-0,07	0,24	-0,18	-0,28	-0,13	-0,07	-0,10	-0,02	-0,84	0,14	-0,84	0,25	0,13	1,00					
GG7	0,03	-0,29	-0,25	-0,21	-0,06	-0,18	0,53	-0,46	-0,07	0,17	0,17	0,25	0,31	0,35	-0,15	-0,64	0,17	0,33	0,56	0,26	1,00				
SP1	0,10	-0,01	0,08	-0,37	-0,19	-0,16	0,40	-0,09	-0,19	0,06	0,06	0,00	0,24	0,12	0,04	0,01	0,53	-0,27	-0,20	-0,22	0,29	1,00			
SP2	0,05	-0,02	0,09	-0,39	-0,23	-0,13	0,34	-0,06	-0,19	0,13	0,01	-0,04	0,25	0,13	0,06	0,00	0,52	-0,25	-0,18	-0,22	0,27	0,99	1,00		
SP3	0,09	-0,02	0,07	-0,38	-0,20	-0,13	0,41	-0,11	-0,18	0,08	0,05	0,00	0,23	0,11	0,05	-0,01	0,53	-0,25	-0,17	-0,23	0,29	1,00	0,99	1,00	
FR	0,46	0,42	0,03	-0,17	-0,20	0,41	-0,02	-0,21	0,45	0,15	0,14	0,06	0,27	0,14	0,69	0,35	0,28	0,51	0,18	-0,37	-0,33	-0,13	-0,10	-0,11	1,00

Annex 4. Multivariate Multi Regression Parameter Estimations (for 10 Banks)

Dependent Variable	Constant and Independent Variables (inclusive of Dummies)	B	Standard Deviation	t	Sig.
BR2 Deposit per Branch Adj-R-square=0.833	Intercept	56.5741	49.6447	1.1396	0.2585
	CA1	0.2678	0.3608	0.7422	0.4605
	CA2	-0.4423	0.6717	-0.6584	0.5125
	CA3	0.0354	0.0538	0.6585	0.5125
	BSS1	-0.3528	0.2554	-1.3810	0.1718
	BBS2	0.1677	0.2505	0.6694	0.5055
	BBS3	0.0900	0.2032	0.4428	0.6593
	AQ1	0.1743	0.1481	1.1769	0.2433
	AQ2	0.2773	0.2599	1.0669	0.2898
	AQ3	0.5199	0.4455	1.1669	0.2473
	AQ4	0.5656	0.6298	0.8982	0.3723
	L1	-0.2306	0.1808	-1.2752	0.2066
	L2	-0.0104	0.0447	-0.2325	0.8168
	P1	2.7187	2.9784	0.9128	0.3646
	P2	-0.3046	0.2305	-1.3220	0.1906
	RE1	-5.7942	2.2188	-2.6114	0.0111
	RE2	0.1429	0.0991	1.4416	0.1540
	RE3	0.1034	0.1680	0.6153	0.5404
	RE4	-2.2462	1.4023	-1.6018	0.1138
	RE5	1.5520	1.6276	0.9535	0.3437
	RE6	-0.7295	0.6868	-1.0622	0.2919
	RE7	0.4307	0.5312	0.8107	0.4204
	DŞKR	-4.0053	4.2876	-0.9342	0.3535
	DTEB	1.9028	4.2431	0.4484	0.6553
	DGRNT	33.2032	4.8130	6.8987	0.0000
	DYKB	7.0310	5.4644	1.2867	0.2026
	DDNZ	-7.3725	5.5626	-1.3254	0.1895
	DEUR	4.7918	6.1182	0.7832	0.4362
	DFNS	11.6942	5.0650	2.3088	0.0240
	DING	1.9803	6.1794	0.3205	0.7496
	DAKB	24.3350	5.9105	4.1173	0.0001
	DTURK	12.6034	6.0078	2.0978	0.0396
BR4 Employee per Branch Adj-R-square =.68	Intercept	72.5843	16.0277	4.5287	0.0000
	CA1	-0.1230	0.1165	-1.0558	0.2948
	CA2	0.1488	0.2169	0.6860	0.4951
	CA3	-0.0039	0.0174	-0.2228	0.8243
	BSS1	0.1671	0.0825	2.0261	0.0467
	BSS2	-0.2976	0.0809	-3.6797	0.0005
	BSS3	-0.2670	0.0656	-4.0701	0.0001
	AQ1	-0.0143	0.0478	-0.2998	0.7652
	AQ2	0.1204	0.0839	1.4344	0.1560
	AQ3	0.1752	0.1438	1.2180	0.2274
	AQ4	0.5344	0.2033	2.6284	0.0106
	L1	0.0512	0.0584	0.8773	0.3834
	L2	-0.0160	0.0144	-1.1098	0.2710
	P1	-0.6415	0.9616	-0.6672	0.5069
	P2	0.0371	0.0744	0.4988	0.6195
	RE1	-1.0348	0.7163	-1.4446	0.1532
	RE2	-0.0152	0.0320	-0.4749	0.6364
	RE3	-0.0254	0.0542	-0.4687	0.6408
	RE4	1.0652	0.4527	2.3529	0.0215
	RE5	-0.7154	0.5255	-1.3616	0.1778
	RE6	-0.4623	0.2217	-2.0847	0.0409

	RE7	-0.0054	0.1715	-0.0318	0.9747
	DŞKR	-4.9355	1.3842	-3.5655	0.0007
	DTEB	-1.3015	1.3699	-0.9501	0.3454
	DGRNT	2.9627	1.5539	1.9067	0.0608
	DYKB	-5.2372	1.7642	-2.9686	0.0041
	DDNZ	-6.3085	1.7959	-3.5127	0.0008
	DEUR	-1.7860	1.9752	-0.9042	0.3691
	DFNS	0.1428	1.6352	0.0873	0.9307
	DING	-2.9905	1.9950	-1.4990	0.1385
	DAKB	0.6385	1.9082	0.3346	0.7389
	DTURK	-2.1024	1.9396	-1.0839	0.2822
BR5 Profit per Branch Adj-R-square =.96	Intercept	-0.6386	1.6838	-0.3793	0.7057
	CA1	-0.0193	0.0122	-1.5754	0.1198
	CA2	0.0403	0.0228	1.7673	0.0817
	CA3	0.0016	0.0018	0.8691	0.3878
	CA1	-0.0094	0.0087	-1.0854	0.2816
	BSS2	0.0118	0.0085	1.3874	0.1699
	BSS3	-0.0044	0.0069	-0.6424	0.5228
	AQ1	0.0025	0.0050	0.4988	0.6195
	AQ2	-0.0013	0.0088	-0.1517	0.8798
	AQ3	0.0007	0.0151	0.0446	0.9646
	AQ4	-0.0096	0.0214	-0.4479	0.6556
	L1	-0.0042	0.0061	-0.6802	0.4987
	L2	0.0025	0.0015	1.6286	0.1080
	P1	0.3661	0.1010	3.6244	0.0006
	P2	0.0105	0.0078	1.3473	0.1824
	RE1	-0.1711	0.0753	-2.2732	0.0262
	RE2	0.0070	0.0034	2.0833	0.0410
	RE3	0.0080	0.0057	1.4054	0.1644
	RE4	-0.0663	0.0476	-1.3937	0.1680
	RE5	0.0638	0.0552	1.1559	0.2518
	RE6	-0.0135	0.0233	-0.5793	0.5643
	RE7	0.0160	0.0180	0.8888	0.3773
	DŞKR	-0.1521	0.1454	-1.0456	0.2995
	DTEB	0.0914	0.1439	0.6352	0.5274
	DGRNT	1.4403	0.1632	8.8231	0.0000
	DYKB	0.4312	0.1853	2.3264	0.0230
	DDNZ	-0.0298	0.1887	-0. 1581	0.8748
	DEUR	-0.1311	0.2075	-0.6319	0.5296
	DFNS	0.3935	0.1718	2.2908	0.0251
	DING	0.1291	0.2096	0.6158	0.5401
	DAKB	0.8623	0.2005	4.3013	0.0001
	DTURK	-0.0073	0.2038	-0.0360	0.9714

Annex 5. Multivariate Multi Regression Parameter Estimations (for 10 - 9 Banks)

Dependent Variable	Constant and Independent Variables (inclusive of Dummies)	B	Standard Deviation	T	Sig.
	Intercept	93.2245	91.2748	1.0214	0.3106
	CA1	-0.5603	0.5399	-1.0377	0.3030
	CA2	-1.9106	1.1003	-1.7365	0.0869
	CA3	-0.0602	0.1303	-0.4622	0.6453
	BSS1	-0.1421	0.3362	-0.4226	0.6739
	BSS2	0.4145	0.2221	1.8666	0.0661
	BSS3	0.8350	0.2213	3.7730	0.0003
	AQ1	-0.2750	0.3131	-0.8782	0.3828
	AQ2	-0.2581	0.3653	-0.7067	0.4821
	AQ3	3.9742	0.9270	4.2873	0.0001
	AQ4	-5.9212	1.5314	-3.8664	0.0002
	L1	-0.3156	0.3916	-0.8058	0.4231
	L2	0.1541	0.1948	0.7910	0.4316
	P1	13.7864	9.1171	1.5122	0.1350
	P2	-1.5982	1.0175	-1.5707	0.1208
BR2	RE1	-9.2765	6.0763	-1.5267	0.1313
Deposit per Branch	RE2	-0.1105	0.1687	-0.6548	0.5148
Adj-R-square = ,714	RE3	0.2610	0.2956	0.8830	0.3803
	RE4	-1.3394	3.3445	-0.4005	0.6900
	RE5	-0.0886	5.2311	-0.0169	0.9865
	RE6	-0.1197	0.8728	-0.1372	0.8913
	RE7	-0.1536	0.7484	-0.2053	0.8380
	DŞKR	-21.0996	7.9014	-2.6703	0.0094
	DTEB	-8.5280	7.1244	-1.1970	0.2353
	DGRNT	31.1586	8.6580	3.5988	0.0006
	DYKB	24.7755	8.9170	2.7784	0.0070
	DDNZ	-0.4649	7.4672	-0.0623	0.9505
	DEUR	-6.5018	10.6352	-0.6113	0.5429
	DFNS	-5.3181	7.0724	-0.7520	0.4546
	DING	-9.4776	8.7795	-1.0795	0.2841
	DAKB	14.1834	10.4012	1.3636	0.1771
	DTURK	-4.4457	8.9902	-0.4945	0.6225
	Intercept	43.5199	36.5766	1.1898	0.2381
	CA1	-0.7686	0.2164	-3.5524	0.0007
	CA2	0.5930	0.4409	1.3451	0.1830
	CA3	-0.0229	0.0522	-0.4392	0.6619
	BSS1	0.0475	0.1347	0.3524	0.7256
	BSS2	-0.0227	0.0890	-0.2551	0.7994
BR4	BSS3	0.0674	0.0887	0.7600	0.4498
Employee per Branch	AQ1	-0.0917	0.1255	-0.7306	0.4675
Adj-R-square = ,615	AQ2	-0.2835	0.1464	-1.9371	0.0568
	AQ3	1.2230	0.3715	3.2923	0.0016
	AQ4	-2.9193	0.6137	-4.7570	0.0000
	L1	0.0904	0.1569	0.5762	0.5663
	L2	-0.1032	0.0780	-1.3219	0.1905
	P1	2.0532	3.6535	0.5620	0.5759
	P2	-0.1037	0.4078	-0.2544	0.7999

	RE1	0.4939	2.4349	0.2028	0.8398
	RE2	0.0148	0.0676	0.2192	0.8271
	RE3	-0.0242	0.1185	-0.2042	0.8388
	RE4	-1.4646	1.3402	-1.0928	0.2782
	RE5	3.0900	2.0962	1.4740	0.1450
	RE6	0.0523	0.3498	0.1494	0.8816
	RE7	-0.1237	0.2999	-0.4123	0.6814
	DŞKR	-9.4043	3.1664	-2.9701	0.0041
	DTEB	-2.5387	2.8550	-0.8892	0.3769
	DGRNT	1.7079	3.4695	0.4922	0.6241
	DYKB	3.7579	3.5733	1.0517	0.2966
	DDNZ	1.6251	2.9923	0.5431	0.5888
	DEUR	-5.2633	4.2618	-1.2350	0.2210
	DFNS	-1.0187	2.8341	-0.3594	0.7204
	DING	-3.0401	3.5182	-0.8641	0.3905
	DAKB	-6.0716	4.1681	-1.4567	0.1497
	DTURK	-7.1723	3.6026	-1.9909	0.0504
BR5 Profit per Branch Adj-R-square = ,934	Intercept	-0.3512	1.9120	-0.1837	0.8548
	CA1	-0.0126	0.0113	-1.1135	0.2693
	CA2	-0.0011	0.0230	-0.0495	0.9607
	CA3	-0.0010	0.0027	-0.3674	0.7145
	BSS1	0.0074	0.0070	1.0561	0.2946
	BSS2	0.0001	0.0047	0.0275	0.9782
	BSS3	0.0029	0.0046	0.6168	0.5394
	AQ1	0.0039	0.0066	0.6011	0.5497
	AQ2	0.0022	0.0077	0.2902	0.7725
	AQ3	0.0547	0.0194	2.8181	0.0063
	AQ4	-0.0669	0.0321	-2.0843	0.0408
	L1	0.0030	0.0082	0.3695	0.7129
	L2	0.0046	0.0041	1.1292	0.2627
	P1	0.7434	0.1910	3.8926	0.0002
	P2	-0.0161	0.0213	-0.7534	0.4538
	RE1	-0.1008	0.1273	-0.7917	0.4312
	RE2	-0.0031	0.0035	-0.8669	0.3890
	RE3	0.0057	0.0062	0.9231	0.3591
	RE4	0.0032	0.0701	0.0459	0.9635
	RE5	-0.0852	0.1096	-0.7779	0.4393
	RE6	-0.0031	0.0183	-0.1679	0.8671
	RE7	0.0095	0.0157	0.6064	0.5462
	DŞKR	-0.4962	0.1655	-2.9978	0.0038
	DTEB	-0.0419	0.1492	-0.2806	0.7799
	DGRNT	1.3722	0.1814	7.5658	0.0000
	DYKB	0,7260	0,1868	3,8864	0,0002
	DDNZ	-0.0089	0.1564	-0.0571	0.9546
	DEUR	-0.2495	0.2228	-1.1199	0.2666
	DFNS	-0.0392	0.1482	-0.2643	0.7923
	DING	0.0562	0.1839	0.3056	0.7608
	DAKB	0.6812	0.2179	3.1266	0.0026
	DTURK	-0.0377	0.1883	-0.2003	0.8418