Banking Activities and Local Output Growth: Does Distance from Centre Matter?

In this paper, the relation between local banking activities and local output growth is empirically studied in Turkey during the period 1991-2000. Although there is no legal restriction against regional banking, the banking sector is spatially concentrated in Turkey. In this institutional structure, the distance between headquarters and the local branches is argued to affect the role of financial intermediation in the development of provincial prosperity. Empirical findings suggest that banking activities have a significant positive impact on the per capita local output growth of regions, especially on those that are distant from the financial centre. However, when we adjust bank loans to the size of the local economy (provincial GDP), the relation between banking activities and the output per capita is found to be negative, suggesting that these loans are used to finance unprofitable and unproductive projects in distant provinces.

1. Introduction

A number of recent studies have shown that financial intermediation plays an important role in economic growth. These studies provide strong evidence of the relationship between financial development and growth at the firm level, industry level and cross-country level.[1] Nonetheless, the existing theoretical and empirical works have not emphasized the link between financial services and growth at the regional level. Recently, GUISO, SAPIENZA, and ZINGALES (2004) and HAO (2003) showed that provincial financial development significantly promoted regional growth in Italy and China. The paucity of research on the relationship between provincial and financial development is partly due to the assumption that financial capital is perfectly mobile among regions and thus plays a passive role in regional growth. However, the analyses by ROBERTS and FISHKIND (1979), MOORE and HILL (1982), DOW (1987), HUTCHINSON and McKILLOP (1990), HARRIGAN and McGREGOR (1997), AMOS and WINGERDER (1993) and GREENWALD, LEVISON and STIGLITZ (1993) show that financial activities have a spatial dimension and that capital is immobile in practice. The main argument in these studies is the existence of informational imperfections that create conditions under which regional interest rates may diverge from the national rates. Another line of literature emphasizes the existence of institutional segmentation that creates a spatially centralized financial system under which capital flows disproportionately among regions, although financial institutions do not compete on price (DOW, 1987; HUTCHINSON and McKILLOP, 1991; GENTLE, 1993; MARTIN and MINNS, 1995; PORTEOUS, 1995, 1999; and KLAGGE and MARTIN, 2005). This paper provides another evidence about the relationship between financial intermediation and regional economic growth by taking into consideration spatial dimension of financial capital. More precisely, we test

whether local banking activities spur per capita output growth using data from provinces in Turkey where there are no regional banks.

The formation of big banks through the consolidations and mergers of smaller banks has been widely observed in the banking sector in many countries. Although this trend may improve the operating efficiency of banks by exporting superior managerial skills, policies and procedures, the impact of the changing organizational structure of banks on local development has not been resolved theoretically and empirically. Yet, it can be argued that banks with centralized or hierarchical organization may hinder the positive impact of financial intermediation on economic growth. For example, decentralized or regional small banks are situated locally, near the consumers, whereas centralized large banks approach their clients by means of a network of branch offices or alternative distribution channels and establish local decision-making procedures that guarantee quick but satisficing rather than optimizing solutions.[2] Moreover, centralized large banks may have limited information about local investment opportunities. As a result, these banks may reject profitable local investment opportunities or use scarce resources in unproductive local investments (MARTIN and MINNS, 1995; ZAZZARO, 1997). Furthermore, local branch managers may lower the necessary monitoring mechanisms on loans that are approved by the head offices. Thus, as the distance between bank executives and local branch managers or among contracting parties increases, the agency problems might be exacerbated (PORTEOUS, 1995; BERGER and DEYOUNG, 2001).

Nevertheless, a centralized banking organization may have a positive impact on local growth. The credit decisions made at the centre are usually based on hard rather than soft information (BERGER, et al. 2005). Hard information is quantitative and easy to store and transmit in an impersonal way across physical distances, and its content is independent of its collection process. Credit decisions made using this information usually grant the credits to realistically high return projects. As a result, the available funds could be allocated to productive investment opportunities at the national level. However, this allocation may result in differences in regional development (PORTEOUS, 1995; McPHERSON and WALLER, 2000; KLAGGE and MARTIN, 2005). The second aim of this paper is to analyze how the geographical concentration of banks' head offices influences local welfare. More precisely, we examine whether or not the

distance between the geographically concentrated decision centres of banks and the local branches affects the relation between financial intermediation and regional economic growth.

Turkey provides a unique setting to analyze the dual role of distance and centralized institutional structure in regional growth. Unlike many European countries, the USA, or Japan, where there are a large number of comparatively small and locally based banks, Turkey has no regional banks.[3] The decision centres or headquarters of all private banks are located in one province, Istanbul (the financial centre). Banks operate through several branches located in different provinces throughout the country. Obviously, the centralized institutional structure of the Turkish banking system affects the provision of local banking services. In this structure, the findings of this paper would also provide evidence for understanding the effects of global banking on local economies. To our knowledge, the current study is the first to consider the interaction between the physical distance and the impact of banking services on local growth.

The results of the empirical analysis of Turkish provinces over the period 1991-2000 show that financial intermediation had a significant impact on local economic growth, controlling for other regional and macroeconomic factors. In line with the findings of cross-country studies, we observe a positive and significant effect of local loan provisions on per capita local output growth in Turkey. However, this relation between bank loans and the well-being of the local economy changed significantly when the geographical location of the provinces is taken into consideration. More precisely, we find that in absolute terms, increasing loan provisions to distant provinces contribute further to the per capita income of those provinces. Because provinces closer to the financial centre are better developed, economically and socially, than are those far away, it is observed that the additional provision of bank loans to distant provinces increases local growth rates further. However, when we adjust bank loans to the size of the local economy (provincial GDP), the increase in the banking activities is found to be associated with the lower levels of output per capita, suggesting that these loans are used to finance unprofitable and unproductive projects in distant provinces.

The next section of this paper summarizes the theoretical and empirical models that examine the relationship between financial development and economic growth and provides background

information about the Turkish banking system. The empirical model and the hypotheses are presented in the third section. The fourth section presents the results of the analysis. The last section concludes the paper with some policy implications.

2. Background

2.1 Financial Development and Economic Growth

The positive impact of financial development on economic growth is based on the idea that the services provided by financial intermediaries influence saving and investment decisions (capital accumulation), technological innovation (productivity), and long-run growth. Efficient functioning of the financial markets increases the possibility of choosing productive investments by managing the liquidity risk and diversifying the investor portfolios. Moreover, financial intermediaries can affect economic growth by providing financing to innovative investment opportunities and by managing the risks inherent in these new projects.

Typically, high-return projects require long-term commitments of capital. However, some providers of capital (i.e. small savers) prefer not to relinquish control of their savings for long periods. LEVINE (1991) and BENCIVENGA and SMITH (1991) constructed theoretical models in which financial contracts provided by financial intermediaries mitigate the idiosyncratic liquidity shocks of individuals and facilitate the mobility of savings to be invested in less-liquid but high-return projects. As the risk of premature termination of high-return, long-term investments is reduced, the models show that growth in capital accumulation through successful investments leads to output growth.

Besides dealing with the idiosyncratic liquidity shocks of savers, financial intermediaries ease the risk associated with investing in a single project. Efficient risk diversification by financial intermediaries encourages small savers to increase their loanable funds in the financial system. LEVINE (1991) and SAINT-PAUL (1992) found that the productivity shocks that discourage risk-averse individuals from investing in a single firm could be diversified away by forming portfolios. Portfolio shifts towards high-return projects increase capital formation and accelerate

output growth.

Moreover, in the finance-led growth literature, it is argued that better risk diversification services provided by financial institutions bring increased technological change to the real economy. The papers by GREENWOOD and JOVANOVIC (1990) and KING and LEVINE (1993) showed how the ability to hold a diversified portfolio of innovative projects and the pooling risk of these investments accelerate technological change and economic profit. Because the risk of losing from innovative projects would also be diversified, financial intermediaries invest in growth-enhancing innovative activities.

Imperfect and asymmetric information may inhibit the mobility of capital and cause some differences in regional growth. As long as local investors and financial institutions have superior information about investment opportunities in their region, they have incentives to invest locally, and outside investors may be trapped with inferior investment opportunities, if it is costly to search for alternatives. Hence, the return on capital may vary significantly among regions. Moreover, institutional aspects of financial systems (such as branch-banking regulations, as in the USA), interest rate differentials among regions (due to differences in transaction costs of transferring funds), or risk premiums based on future conditions in the region may impede the free flow of capital among regions. The empirical analysis by GREENWALD, LEVISON and STIGLITZ (1993) supported the hypothesis of capital market imperfections in the USA, using regional data during the period 1972-1982. FAINI, GIANNINI and INGROSSO (1993) presented evidence on how informational barriers affected the existence of local financial intermediation in southern Italy. They concluded that southern Italian banks had special informational advantages that allowed them to extract monopoly rents from local firms. Both of these empirical analyses assess the relationship between financial development and regional growth when the institutional banking environment remains fragmented. In particular, they present evidence that companies are more likely to satisfy their financing needs at local banks than at banks with headquarters located in other regions.

The spatial structure of the financial system is also important in analyzing regional development. Financial institutions have become more concentrated in some regional centres since the

liberalization of financial regulations during the 1980s (for example, in Britain, GENTLE, 1993, p. 296). In spatially centralized financial systems, financial intermediaries may be biased towards firms in close proximity (PORTEOUS, 1995). As a result, the close regions will have an advantage over the peripheral regions in terms of availability of capital, and these centralized systems may result in uneven regional development. However, decentralized financial systems may provide financing to small- and medium-sized enterprises located in lagging and peripheral regions (KLAGGE and MARTIN, 2005).

2.2. Institutional Environment in Turkey

2.2.1. Banking Sector

The banking sector constitutes a large part of the Turkish financial system. DENIZER, GULTEKIN and GULTEKIN (2000) stated that the financial system and the banking system are synonymous in Turkey. Banks have dominated every aspect of financial activity in the country and have been responsible for the expansion of the financial system.

The size of the banking sector is relatively small in Turkey compared to developed economies,[4] although it has been improving. For example, the ratio of bank assets to the nominal GDP was 46.86 percent in 1991 and increased to 83.71 percent over a decade. Bank deposits were 26.40 percent of the GDP in 1991 and 54.94 percent in 2000. Credits provided by commercial banks increased from 20.56 percent of the GDP in 1991 to 27.46 percent in 2000.[5]

As seen in Table 1, there were 79 banks operating in Turkey, 61 of which were commercial banks and 18 of which were development and investment banks, which are not allowed to collect deposits but may engage in financial leasing services.[6] Commercial banks are not allowed to trade in goods, real estate or stock markets or to perform financial leasing activities. Four banks were state-owned, and foreigners owned 18. In 2000, 34.3 percent of the assets of the banking system was controlled by state-owned banks, whereas 49.5 percent was owned by private banks. Public banks support a variety of government-subsidized lending programs to such as agriculture, small- and medium-sized enterprises, and public foundations in Turkey. The largest bank in Turkey,

Ziraat Bank, is state owned. Since the 1980 financial reform, improvements in human capital and information technology in the sector made Turkish banks among the most sophisticated in their region (DENIZER, GULTEKIN and GULTEKIN, 2000).

INSERT TABLE 1 HERE

With the liberalization program in the 1980s, the rules and regulations to improve the structural weakness of the banking system had been also constructed. Table 2 presents the chronology of the major regulations in the banking sector and some financial developments in Turkey since the liberalization. The Treasury and the Central Bank were the principal institutions responsible for bank supervision and regulation. However, the lack of effective implementation of these rules and regulations and moral hazard created by extensive government guarantees to deposits resulted in lax regulatory environment (Celasun, Denizer, He, 1999). The programme developed with the IMF to address Turkey's chronic macroeconomic instability problem have also considered the problems in the banking sector. With the 1999 Banking Act, an independent Banking Regulatory and Supervisory Agency (BRSA) was established to supervise and regulate the Turkish banking sector. This agency took over these functions from the Treasury in September 2000.

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During the period 1991-2000, the average number of branches per bank did not change significantly, although half of the existing public banks in 1991 were privatized, and 15 banks (including a public bank) failed over this period. There were 7,786 domestic bank branches in the sector, as of December 2000. Compared to other banking systems in the world, the number of branches per bank is relatively high in Turkey; for example, in 2000, there were 99 branches per bank in Turkey, but only 24 branches per bank in the EU countries.[7] Current regulations set no limit on the number of branches for a private bank. Yet, state banks must obtain permission from the Ministry of Finance to open a new branch. Private banks are free to open new branches, but if they open more than ten branches within a year, they must have permission from the Treasury.

2.2.2. Regional Differences in Turkey

There are significant differences in economic development and banking activities among regions and provinces in Turkey. The provinces are grouped into seven regions according to their geographical locations: Marmara (11 provinces), Aegean (8 provinces), Central Anatolia (13 provinces), Black Sea (17 provinces), Southeastern Anatolia (7 provinces), Eastern Anatolia (15 provinces), and Mediterranean (9 provinces). Figure 1 shows a map of Turkey with several provinces and regions. The average growth rate of provincial real GDP per capita from 1991-2000 is shown in Figure 2. The richest region in terms of real GDP is Marmara, with a mean real GDP per capita of 3,554,083 TL; whereas Eastern Anatolia is the poorest region, with a mean GDP per capita of 285,617 TL.[8] Moreover, 37 percent of Turkey's GDP in 2000 was produced in Marmara (see Table A1 in the Appendix for the share of each region in GDP, population, banking activities and public expenditures). In 2000, 15 percent of Turkey's population was living in Istanbul and this province generated 22 percent of Turkey's output in that year. In the Marmara region the population grew, particularly in Istanbul at a rate of almost 35 percent during the period 1991-2000, whereas the population in Turkey grew only 18 percent over the same period. Because of this rapid increase in population, the real per capita GDP grew by only 2.18 percent per year on average in Marmara in this period. The Black Sea region had the highest average growth rate of 2.31 percent, whereas the average growth rate in GDP per capita was lowest in Eastern Anatolia, at 0.80 percent (see Appendix, Table A2 for the mean and median growth rates in these regions for the period 1991-2000). The average provincial per capita income growth rate was highest in Kilis (7.18 percent) and lowest in Osmaniye (-6.58 percent); notably, Kilis and Osmaniye are only 159 kilometres apart. When the growth rates in provincial GDP are compared, the lowest growth rate (-29.71 percent) was observed in Artvin in the Black Sea and the highest (32.11 percent) in Sirnak in Southeastern Anatolia. Not only do differences in growth rates exist among provinces, but KARADAG, ONDER and DELIKTAS (2005) show that productivity also differs among provinces. They found that total factor productivity declined in the highly industrialized provinces and increased in the newly industrialized provinces for the period between 1990 and 1998.

INSERT FIGURE 1 HERE

INSERT FIGURE 2 HERE

Figure 3 depicts the average provincial real bank credits per capita during the period 1991-2000. Bank activities were highest on average in the Marmara region. Over 50 percent of granted bank credits in 2000 were from this region (Appendix, Table A1). During the analysis period, bank credits per capita in Marmara grew annually at 1.7 percent as compared to a 1.2 percent annual growth rate in all of Turkey. At the provincial level, the financial centre, Istanbul and the national capital, Ankara, provided most of the credits. It is observed that the highest real credit per capita was 1,093,780 TL in Ankara, but was only 2,940 TL in Sirnak. Similarly, bank credit to GDP ratio shows high variation among provinces and years: for example, 0.26 percent in Sirnak (Southeastern Anatolia) in 1994 and 149.42 percent in Giresun (Black Sea) in 1992.

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Regions differ in terms of the number of bank branches as well. During the analysis period, it was observed that this number increased consistently in all regions, and that all banks had at least one branch in the Marmara region. Moreover, this region held an average of 36.34 percent of all bank branches in Turkey for the period 1991-2000, and its share increased from 33.66 percent in 1991 to 39.56 percent in 2000.

3. Empirical Model

3.1. The Basic Model

We study the following basic model (Model I) to assess the relationship between financial intermediation and economic growth at the provincial level in Turkey over the period 1991-2000:

$$Growth_{i,t} = \alpha_0 + \alpha_1 Banking\ Activity_{i,t} + \alpha_2 Control\ Variables_{i,t} + \varepsilon_{i,t}$$

where $Growth_{i,t}$ is the growth rate in real GDP per capita in province i at time t, calculated by taking the difference in the natural logarithm of GDP per capita. $Banking\ Activity_{i,t}$ is a measure of financial intermediation in province i at time t. $Control\ Variables_{i,t}$ represents a vector of

variables including the public investments, the urbanization rate, the schooling, the inflation rate, and the initial real GDP in province *i* at time *t* and a dummy variable indicating the economic crisis years.

In the estimation of the basic model, there are two main econometric problems. One is the province-specific effects. HSIAO (1986) shows that the omission of individual fixed effects in dynamic panel data will cause the ordinary least squares estimates to be biased and inconsistent. A second problem is the potential endogeneity of independent variables.. In order to tackle these issues, we use the dynamic Generalized Method of Moments (GMM) panel estimator proposed by ARELLANO and BOVER (1995) and by BLUNDELL and BOND (1998). This estimator has been widely used in cross-country studies, including CASELLI, ESQUIVEL and LEFORT (1996) and LEVINE, LOAYZA and BECK (2000). It controls for the presence of unobserved province-specific effects and for the potential joint endogeneity among explanatory variables by using the previous realization of explanatory variables as an instrumental variable.[9] With this method, consistent estimates were obtained of the impact of banking activity on the economic growth of Turkish provinces. The consistency of the GMM estimator depends on two conditions. The first is the validity of the assumption that the error term does not exhibit serial correlation as tested with the second-order serial correlation in error terms. The second is the validity of the instrument as tested with the Sargan test.

In the empirical model, local credit provisions are used to measure local banking activity. There is a large body of evidence indicating that the development of a country's financial sector greatly facilitates its economic growth. In contrast, there is a lack of research on the relationship between the banking sector and economic growth in the context of regional economies. Financial intermediaries increase the availability of local funds by providing liquid instruments to savers that provide higher returns than result from holding their assets out of financial system (a common saving behavior, especially in rural areas, is to keep gold or cash under a mattress) and by reducing transaction costs. Especially, in a regionally segmented banking system, banks are expected to turn these local funds into productive investment opportunities that will increase local output. However, in a centrally concentrated banking system, intermediation of local savings through local branches creates a pool of funds at the headquarters. Thus, regional credits could

be satisfied from this pool in a spatially centralized banking system without considering the regional deposit bases, as emphasized in several studies. For example, DOW and RODRIGUEZ-FUENTES (1997) state that "regions with a branch system face a horizontal supply of funds because regional bank branches are able to lend beyond their regional-deposit base." Hence, we concentrate on the asset side of banking activities and study the impact of local credits on local per capita output growth. However, it can be argued that the level of credits may not be important for the local development if credits are very small relative to the size of the local economy. Therefore, in addition to the local credits per capita, the loan provisions-to-GDP ratio is used to measure banking activity.

As specified in the basic model, several provincial characteristics have to be controlled for when analyzing the impact of banking activity on local economic development. Inflation is one of the control variables. Provincial inflation rate -- the change in the provincial GDP deflator -- is used to measure economic stability in a province. If inflation is high in the area, real growth will be low because of several reasons. For example, the interest rates on credits will be higher, and it may be difficult to repay the obligations. Thus, the demand for loans will decline because of the high cost of financing.[10] Also, the expected return on investments is required to be high because of high inflation. This will limit attractive investment opportunities (BARRO, 1997).

The public sector investments, the urbanization rate and the schooling rate of a province are the other control variables included in the model. Public sector investments are measured by the logarithm of the public expenditures in the province or the public expenditure-to-GDP ratio, depending on the measure of banking activity used in the model. Urbanization rate indicates the percentage of population living in urban areas. BLACK and HENDERSON (1999) argue that there is very high correlation between urbanization and economic growth especially in developing countries because transformation of economy to an industrial-service based economy with urbanization will contribute economic growth by promoting information spillovers amongst producers and more efficiently functioning of goods, labor and financial markets. Schooling rate is used as a proxy to measure the impact of human capital at the regional level and is expected to contribute growth in the region (BARRO and LEE, 1996). This variable is defined as the number of high-school teachers per high-school student in the province. The traditional measure of

schooling, i.e., the number of years of schooling is not used because of its unavailability at the provincial level.

The initial level of wealth in each province is included in the model to control for convergence, as suggested by LEVINE, LOAYZA and BECK (2000). Finally, because the level of national and regional outputs would decline during the crisis periods, a dummy variable, which takes a value of 1 for the crisis years: 1991, 1994 and 1999, is also incorporated into the model. Although Turkey did not face economic crisis in 1991, the first Iraq war adversely affected the Turkish economy. Turkey had major banking and liquidity crises in 1994 and 1999. The Turkish Lira was devalued against the US dollar by 62.23 percent in 1994. In addition, the crisis in 1999 resulted in the failure of six private banks.

3.2. Model with Spatial Effects

In this paper, we argue that physical distance from the bank headquarters is important for the credit provision decisions of local banks. PORTEOUS (1995) finds that when the cost of monitoring increases with the distance between the bank and the borrowers, spatial credit rationing results. Because the institutional structure of banks in Turkey is centralized, credit approvals, especially large-denominated ones have to be obtained from the headquarters. For the provinces that are closer to the headquarters, the process of granting credit will be fast, and risks due to agency problems will be managed better. For example, loan officers at the headquarters are likely to know the investment opportunities in the nearby regions, so they would deal with adverse selection problems better (BERGER et al, 2005). Furthermore, if all funds are distributed from the headquarters, the availability of loanable funds might be higher around headquarters than in other parts of the country (PONTEOUS, 1995, 1999). As seen in the appendix, the Marmara region where Istanbul is located holds over half of the credits granted in Turkey, whereas the regions that are further away from Istanbul, for example, the Eastern and Southeastern regions, account for less than 2 percent of total credits. Because the headquarters of all private banks operating in Turkey are located in Istanbul, we define a variable, $Distance_i$, as the physical distance between Istanbul and a province *i* where the local bank operates. The distance per se does not affect the per capita output growth in the province, but it is hypothesised

to affect the impact of banking activity on local development. Therefore, the interaction variable between banking activity and physical distance is included in the basic model to examine whether the centralized structure of banks in Turkey affects the role of banks in the growth of local per capita output (Model II):

$$Growth_{i,t} = \alpha_0 + \alpha_1 Banking\ Activity_{i,t} + \alpha_2 Distance_i * Banking\ Activity_{i,t} + \alpha_3 Control\ Variables_{i,t} + \varepsilon_{i,t}$$

It is known in the literature that small firms rely on banks as a source of external finance, because of the lack of a publicly organized secondary market for their equities and debts (POLLARD, 2003; KLAGGE and MARTIN, 2005). In Turkey, most of the large firms are located in Marmara, and as we move out of this region, the number of large businesses declines. For example, 293 out of the 500 largest firms in Turkey are located in the Marmara region (ISTANBUL CHAMBER OF INDUSTRY, 2004). Large firms located close to Istanbul are better known nationally and able to raise equity from the stock market. Hence, the firms located far from Istanbul are argued to rely on banks for financing, and it is expected that the positive impact of banking activity on per capita income growth increases with physical distance from Istanbul.

Alternatively**,** the financial conditions of many loan customers, especially small businesses, are not easy to assess or monitor. Hence, loan decisions will depend on soft information, such as opinions, ideas, rumors, economic projections, statements of the management's future plans and market commentary, which the local bank branch managers would know. However, the quality of this soft information depends on the efforts of local officers in the local banks. It can be argued that increasing banking activities in the distant provinces leads to unproductive investments, because local banking officers or managers may be less inclined to collect information for loan requests and to monitor centrally granted loans. Knowing excessive information and agency costs inherent in the local loans, decision makers at the head offices might try to lower the content of the soft information in the local loan requests. It would be less risky for the banks to use codified knowledge, i.e., that which is explicit and standardized over these long distances. MORGAN (2004) argues that the significance of physical proximity depends on the complexity of the project (e.g. the degree of "tacitness" involved). Because of the increasing tacitness in the loan

transactions of distant regions, we expect that loans granted in the farther provinces may contribute less to the local development. Moreover, these loans may be used to finance working capital instead of investments. Yet, some banks, especially the large ones are prudent in lending, even to distant provinces. Considering all of these conflicting effects, how the relationship between banking activities and local prosperity will change with the distance from the headquarters is hard to predict.

It can be argued that physical distance is not important, because technology increases the speed of information flow between the headquarters and the local branches. If there is increased communication between the headquarters and the bank branches in a province, both hard and soft information will flow fast and accurately. Therefore, we define another measure of distance, *Distance per Branch***,** by dividing the physical distance between a province and Istanbul by the number of branches in that province. It is assumed that if there are many branches in a province, there will be much interaction between the province and the headquarters. Thus, physical distance is adjusted to account for the possible impact of increasing the flow of information about the potentials of the province.[11]

In addition to these two measures, a dummy variable, *Eastern,* is created that takes a value of 1 for the provinces located to the east of Ankara and we test the hypothesis that the relation between banking activity and local growth differs in the eastern provinces in Turkey. Although there is no formal division of the country into two parts, usually provinces located to the east of the national capital, Ankara, are considered to be less developed and less westernized. Like the other distance measures, no clear-cut sign is hypothesized on this interaction variable because of the unavailability of other sources of financing and the increase in asymmetric information.

3.3. Data and Sample

A panel dataset is constructed by employing annual data on provincial output and indicators of financial intermediation for the period 1991-2000. The beginning of the sample period is determined by the availability of data at the provincial level. The sample period ends in 2000, because the banking environment became more regulated in 2001 with the establishment of the

Banking Supervision and Regulation Agency. The Agency asked the banks to have internal control and risk management systems. This new regulation might change the responsibility of the units at the headquarters in granting credits.

There were sixty-seven provinces in Turkey at the beginning of the sample period, and fourteen new provinces were established during the sample period. Because these provinces were formed from the districts of the existing provinces, the GDP level will decline artificially in old provinces from which new provinces were constructed. Therefore, these old provinces were not included in the sample in the year when new provinces were formed.[12] Hence, data are unbalanced with 676 observations. All of the data about the banking activities are obtained from the Turkish Banking Association. The other variables are taken from the State Institute of Statistics. Table 3 shows the descriptive statistics of the variables.

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The descriptive statistics indicate the differences among provinces in terms of regional development, as explained in Section 2.2. Although the average GDP growth rate per capita in the provinces is 1.67 percent, it varies between -29.71 percent and 32.11 percent. Similarly, banking activity varies among provinces.

Provinces are different in terms of control variables as well. The inflation rate is very high. The average provincial inflation rate was 54.50 percent. Over half of the population lives in urban areas. Although there was one high-school teacher for 14 students on average (or 7 teachers per 100 high-school students), the schooling measure varies among provinces from one teacher per 50 students to one teacher per 5 students.

4. Empirical Results

We first analyze the impact of local bank loans per capita (measured in natural logarithms) on the economic prosperity of Turkish provinces. The results of the dynamic GMM estimations with this measure of banking activity are presented in Table 4. Our results support the previous findings in cross-country studies that provincial bank credits have a positive impact on the local

per capita growth, controlling for the other regional and macroeconomic factors.[13] However, when the interaction variable between distance and bank credits is included in the model, the direct impact of credits on local growth declines and becomes insignificant in general, suggesting that spatial distribution of local loans is important in analyzing the local per capita growth rates at the provincial level.

INSERT TABLE 4 HERE

The impact of the spatial structure of the banking system in Turkey on the local development is examined with three distance measures. When the physical distance between Istanbul and the province is used (Model IIa), we find a negative but insignificant coefficient on the absolute level of bank loans and a positive and significant coefficient on the interaction variable between physical distance and the amount of local bank loans**,** i.e. the farther the province is from Istanbul (headquarters), the higher is the positive impact of credits on local growth. These results suggest that although bank loans in the provinces close to the financial centre do not significantly affect the well-being of the residents, the bank loans granted in the peripheral provinces contribute greatly to per capita income. This finding can be explained by the segmentation of financial markets, especially limited access to capital markets from remote regions. Because most of the small firms are located outside of Marmara region, these firms may be dependent on bank loans as a source of financing their investments.

The second distance measure is calculated by dividing the physical distance from Istanbul by the number of branches in the province. It is assumed that if there are more branches in the province, there will be more communication between the province and those at the decision centre of banks. As seen in the third column of Table 4 (Model IIb), although the provision of local loans had a positive and significant effect on the local per capita income growth rate, the coefficient on the interaction variable is not found to be significant. More precisely, we can say that the physical distance of the province adjusted with the provincial bank concentration did not change the impact of banking activities significantly, suggesting that geographical location of the provinces is crucial to estimate the impact of banking activities on local development.

As seen in the fourth column of Table 4 (Model IIc), the positive effect of loans on local growth is higher in the east than in the west, although credits per se did not significantly increase local growth. This finding indicates that additional loan provisions to the eastern provinces have a greater impact on the growth rate, than provisions to those in the west. The coefficient on this variable also supports our interpretation that bank loans may be the only alternative for the small firms located in the eastern provinces of Turkey.

The role of bank credits might change when we consider the size of the credits relative to the size of the local economy. In Table 5, we present the results of the model, where banking activity is measured relative to the GDP of a province. It is found that the availability of local credits relative to the GDP of a province has no significant effect on the per capita local well-being. However, the impact of the banking activities is found to be positive and significant when its interaction with several measures of distance is included in the model. When the spatial structure of the banking system is controlled, an increase in bank credits with respect to a given local GDP is found to improve the local per capita output significantly. The change in the coefficient on the credit-to-GDP ratio can be explained by the negative impact of banking activity on local growth in the provinces far from Istanbul. The first model does not take into account the spatial distribution of loans. Moreover, there is a significant and negative correlation between distance measures and this ratio (the correlation is -0.14, -0.18 and -0.10 for the physical distance, the physical distance adjusted with the number of branches, and the eastern dummy variable, respectively). Hence, the ratio of the provision of bank credits to the size of the local economy is less for the provinces far from Istanbul**.**

INSERT TABLE 5 HERE

Our estimations indicate that the farther the province is from Istanbul, the less is the impact of banking activities on local growth. Some distant provinces may even worse off. This finding is consistent regardless of the distance measure included in the model. The other two distance measures also yield the same results, indicating that the improvement of local bank credits to the provinces significantly contributes to the per capita local growth, but that the impact of the banking activities significantly declines when a province is located far from the financial centre.

The negative coefficient on the interaction variable can be explained in several ways. Because information and agency costs may exagerbate in the distant provinces, the approved loans to those provinces may not be used to finance investments with positive expected returns or they might only be used as working capital. Thus, these loans will not contribute to the prosperity of the local economy. Moreover, our measure of banking activity includes all types of credits granted by state and private banks. State banks have been used as agents to distribute credits to certain favored groups.[14] Some of these credits are used to finance public enterprises and municipalities. Two major state banks -- Ziraat Bank and Halk Bank -- were established to provide subsidized loans to farmers and small firms in less developed regions. For example, Marmara region received more than half of total loans granted in Turkey, but only 9 percent of agricultural loans were given in this region in 2000, whereas the Eastern and Southeastern regions received 26 percent of the agricultural loans, although they received only 2.4 percent of the total loans granted. These credit allocations may suggest that bank funds were mainly used not to finance productive investments in distant provinces.

In both sets of regression models summarized in Tables 4 and 5, we control certain regional and macroeconomic factors, which are hypothesized to affect the local per capita output growth rates in Turkey. In the first set of regression analysis, we observe that initially low-income provinces experience significantly high growth rate that generally is characteristic of developing areas. Moreover, we find that the urbanization of the provinces and the increasing public expenditures to them improved the local prosperities significantly, supporting the mainstream theory on growth, which predicts a positive effect (BARRO, 1997). However, our human capital measure, schooling[13] had a positive but insignificant impact on the local per capita output growth. Furthermore, both persistent increases in local prices and economic crises affected regional development adversely. In the second set of regressions, where banking activity is measured relative to the GDP in a province, the sign and the significance of the control variables are similar. However, when the impact of public expenditures is examined relative to GDP in the province, it is not found to affect the local well-being significantly.

5. Conclusion

This paper reports the results of an empirical study that examines whether local banking activities influence local output growth in Turkey during the period 1991-2000. Although there is no legal restriction against regional banking, the institutional structure of the banking sector is spatially concentrated in Turkey. In this setting, it is argued that the distance between headquarters and the local branches is an important factor to understand the effect of financial intermediation on the economic growth of the provinces. In line with the cross-country analysis, we observe a positive and significant relationship between local loan provisions and per capita local output growth. However, the impact of bank loans on the well-being of the local economy changed significantly with the consideration of the geographical location of the provinces. More precisely, we find that in absolute terms, increasing loan provisions to distant provinces contributes further to the per capita income of those provinces. A positive relationship is observed between the provision of bank loans to the distant provinces and local growth rates. This finding can be explained by the fact that provinces closer to financial centre are more developed, economically and socially than those far away. However, when we adjust the impact of bank loans to the size of the local economy (provincial GDP), increases in banking activities are found to lower the output per capita as the distance from the headquarters increases, suggesting that these loans are used to finance unprofitable and unproductive projects.

Our findings support the recent arguments in the literature about spatial dimension of financial systems. For example, similar to PORTEOUS (1995), the regions close to the financial centre are found to have advantage over peripheral regions in terms of availability of bank credits and local economic growth. Moreover, distant provinces where small-sized borrowers reside also benefit from bank funds because of unavailability of other sources of capital, supporting KLAGGE and MARTIN (2005).

The results of this study have several policy implications. First, in order to improve the well-being of residents in distant regions, the regulators should require banks to change their organizational structure from the centralized system. For example, the establishment of regional headquarters may lower information and agency costs in granting credits to finance projects of small firms and banks might help local development. The second policy implication would be to increase incentives for the development of microfinance sector. The credit demand of the

unbanked borrowers, i.e., small and opaque borrowers, can be satisfied through microfinance institutions. Moreoever, these borrowers may have a record of loan transactions to apply for obtaining bank loans in the future. Otherwise, the empirical results of this study suggest that poor utilization of financial services never leads to economic development in those regions. Third, the Banking Supervision and Regulatory Agency may ask banks' headquarters to delegate some responsibility to local managers in granting credits in order to facilitate local development.

For further study, enriching the measurement of distance would improve our understanding of the effect of organizational structure in the banking sector on local per capita output. For example, social distance -- the intimacy between the managers in the head office and local branch managers -- may influence judgments on the quality of soft information collected at the local branch. Thus, the allocation of loans may depend on social closeness instead of physical proximity. Moreover, the decision criteria for the approval of credits are generally different for public and private banks. Typically, private banks provide credits based on the risk structure of the projects, however, public banks may be asked to allocate credit to certain sectors below their cost and without considering the profitability of the projects. Hence, credits from different types of banks may affect the local well-being in a different way. Furthermore, commercial banks are not the only institutions that grant credits. The activities of other financial institutions such as finance companies have been increasing, especially in rural areas. People who are credit-rationed by banks can receive credits to finance their projects from these institutions. For example, pawnbrokers may provide credit, especially in areas where there is an excess demand. When the data are available, the impact of legal and non-legal financial intermediaries on local growth might be another avenue for further research.

Finally, we suggest that empirical modeling of the paper can be used to study the impact of loan provisions by foreign banks on local economies. With a similar organizational structure to that of Turkey, branches of foreign-based banks will experience informational and agency costs in geographically different markets. Although these costs will exacerbate with cultural differences, advanced informational technology and the risk management practices of these banks might enhance economic growth of host countries.

NOTES

1. The direction of the causality between financial intermediation and growth has been debated for a long time. Taking one side of this argument, SCHUMPETER (1962) claimed that financial systems are important for growth and that the economies with more efficient financial systems grow faster. Alternatively, ROBINSON (1952) stated that economies with good growth prospects need financial institutions for the provision of funds. Hence, first, the economy grows. Then, financial institutions develop. For detailed survey, see LEVINE (1997).

2. This is called the Cyert, March and Simon model of decision making. It is the organizational analog of the bounded rationality approach at the individual level.

3. The Turkish banking system is highly centralized, similar to Australia, Canada, and Chile (PORTEOUS, 1995), and Hungary (GAL, 2005).

4. For example, in 2000, bank deposits were 179%, 128% and 69% of the GDP in the U.K., Germany and France, respectively. The bank credits-to-GDP ratios were higher than their deposit-to-GDP ratios; 185%, 167% and 93% in these countries. Moreover, bank assets were 3.82, 3.49, and 2.52 times higher than their GDPs in the U.K., Germany and France in 2000. These figures are calculated using the statistics obtained from the European Banking Federation (2000).

5. These figures are calculated using the data from the World Bank World Development Indicators (GDP) and the Turkish Banking Association (total assets, deposits and credits).

6. In addition to deposit banks, there are five special finance houses (SFHs) that are allowed to collect funds and to grant credit in Turkey. Unlike deposit banks, they do not provide interest to the depositors as a return, but they distribute positive or negative returns that they get from the investment of these funds. SFHs operate as Islamic banks in Turkey. In 1995, their shares in assets, deposits and credits in the banking sector were only 1.87%, 2.43% and 3.46% respectively. However, their shares have increased slightly: 2.1%, 2.6% and 4.8% in 2000. Because of the unavailability of provincial data about their activities, their impact on local development is not analyzed in the current study.

7. Source: EUROPEAN BANKING FEDERATION website, General Statistics on the European Financial Sector as of December 31, 2000 (www.fbe.be)

8. The mean GDP per capita was $3,490 in the Marmara region and $280.5 in the Eastern Anatolia region during the period 1991-2000.

9. This method assumes that explanatory variables are weakly endogenous, i.e., they can be affected from the past and current realization of the growth rate, but future unanticipated shocks to growth do not affect the current banking activity. For a detailed explanation of this estimation, see, for example, LEVINE, LOAYZA and BECK (2000).

10. Unfortunately, the data on interest rates are not available. We assume that interest rates were different across regions and banks offer different interest rates depending on the riskiness of

borrowers. If there is no difference in regional interest rates, those who borrow from the regions with high inflation rates will experience lower real interest rates. We would like to thank the anonymous referee for pointing out this issue.

11. PORTEOUS (1995) also defines another distance: organizational distance, which comes from the lack of understanding on the part of large banks of the environment in which small businesses operate. However, it is very difficult to measure**.**

12. For example, Igdir and Ardahan were districts of Kars and became provinces in 1993. The GDP figure for Kars in 1992 included the GDP generated from these two districts (in terms of 1987 prices, it is 228,076 million YL), but the 1993 GDP did not include these new provinces and declined to 170,275 million TL, whereas the GDPs in Ardahan and Igdir were 46,485 and 59,085 million TL. The alternative to the exclusion of old (mother) provinces from the sample is to calculate the true GDP figures for the old province by adding the GDPs of the new provinces. However, Ardahan and Igdir were exceptions, because they were formed from one city. Most of the new provinces were formed by villages or districts from at least two cities.

13. Our instruments are valid, and our GMM estimator is consistent, because the second-order serial correlations in error terms are low, and we fail to reject the over-identification restriction with the Sargan test (χ^2).

14. State banks carry large amounts of non-performing loans arising from these operations and the stock of these loans was about US$12 billion in 1998, almost 5 percent of Turkey's GDP (DENIZER, GULTEKIN and GULTEKIN, 2000).

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Figure 1 – A Map of Turkey with its provinces and regions.

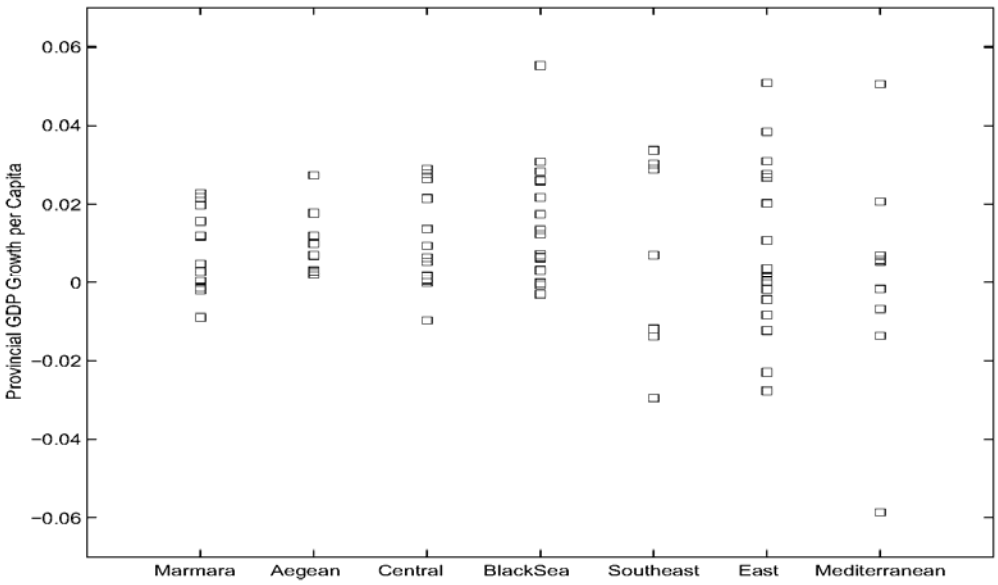

Figure 2 – Average Provincial Growth of Real per capita GDP in Provinces Located in Seven Geographical Regions in Turkey, Period 1991-2000.

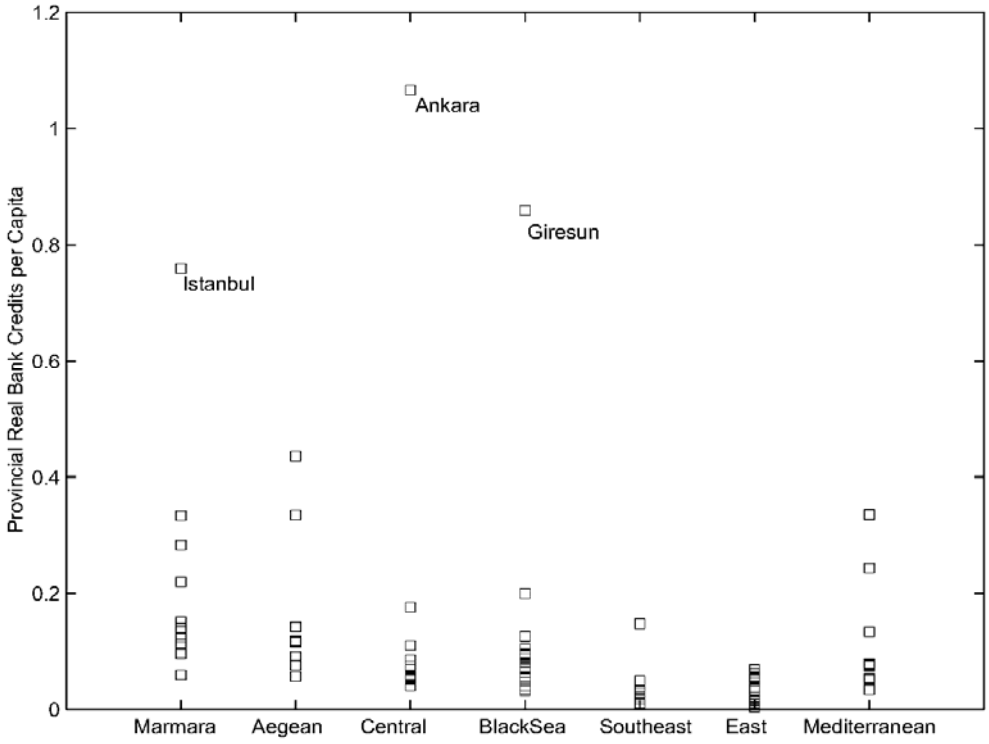

Figure 3 - Average Real Credits per capita (in million TL) in Provinces Located in Seven Geographical Regions in Turkey, Period 1991-2000.

Table 1 - Number of Banks and Branches in Turkey.

	Number of Banks		Number of Branches	
	1991	2000	1991	2000
Public Banks	8	4	3019	2834
Private Banks	26	28	3313	3783
Banks in the Savings Deposit Insurance Fund (SDIF)	-	11	-	1073
Foreign Banks	21	18	113	117
Investment and Development Banks	10	18	17	30
Total[†]	65	79	6462	7837

Note: [†]20 and 51 bank branches are located abroad in 1991 and 2000 respectively.
Source: Turkish Banking Association.

Table 2 – Major Bank Regulations and Financial Developments in Turkey During 1980-2000.

Date	**Events**
July 1980	Interest rates were deregulated.
July 1983	The Savings Deposit Insurance Fund (SDIF) at the Central Bank was established; a nominal upper limit for each saving account was set for deposit insurance.
May 1985	The new Bank Act was enacted to solve structural problems of the banking system by providing a legal basis for prudential regulation and supervision of banking system; banks were required to have a standard accounting system and to be audited by the independent external auditors; government was authorized to change the management of banks in trouble; limits were introduced to the extension of credit to a single customer and the related parties.
December 1985	Banks were required to keep specific loan loss provisions regarding to their past unpaid loans and general provisions for their loan portfolios.
January 1986	The Istanbul Stock Exchange was opened.
January1987	The interest rate restrictions of the corporate bonds by the Central Bank were removed.
February 1987	Central Bank started its open market operations.
January 1987	Banks were required to submit their independently and externally audited financial statements to the Central Bank.
October 1987	Banks were required to satisfy the capital adequacy ratio determined in line with the Bank for International Settlements (BIS) guidelines.
August 1989	Foreign exchange operations and international capital movements were entirely liberalized.
June 1991	The secondary market for Treasury bond and bills market was established.
April 1994	The SDIF was reorganized; the partial deposit insurance was converted to full insurance in order to improve public confidence in the banking sector; Two institutions became responsible from the supervision and regulation of banks: the Treasury (on-site examination of banks) and the Central Bank (financial positions of banks through off-site surveillance system).
June 1999	The new banking law was enacted to strengthen the financial structures of banks and the supervision of banks; An autonomous Banking Regulation and Supervision Agency (BRSA) was required to be established; banks are required to establish internal control and risk management systems.
September 2000	The BRSA became fully functional.

Table 3. Descriptive Statistics of Variables

Variable	Mean	Std Dev	Minimum	Maximum
Growth Variables				
GDP growth rate (%)	2.57	7.42	-62.75	35.56
GDP per capita growth rate (%)	1.67	7.84	-29.71	32.11
Banking Variables				
Bank Credits/GDP (%)	8.53	13.06	0.26	149.42
Credits per capita[†]	120.73	189.4	0.84	1,716.44
Credits per branch (TL)	1,152.12	1,425.53	27.88	13,538.91
Distance Measures				
Distance from Istanbul (x1000km)	0.83	0.44	0.00	1.82
Distance from Istanbul per Branch (km)	36.29	47.30	0.00	296.25
Eastern Dummy Variable	0.66	0.47	0.00	1.00
Control Variables				
Public Expenditure/GDP (%)	2.45	4.16	0.09	42.19
Inflation rate (%)	54.5	11.38	6.57	122.34
Urbanization Ratio (%)	52.53	13.03	20.18	92.71
Schooling[††]	0.07	0.02	0.02	0.21

Notes: [†]In million TL, [††]The ratio of the number of high-school teachers per high-school student. Bank credits are measured at the end of the year, whereas the GDP is calculated over the year. In order to eliminate this measurement error, the average credit values are calculated using their beginning and ending balances in each year.

Table 4. GMM Results with Bank Credits Per Capita as a Measure of Banking Activity

	I	IIa	IIb	IIc
Intercept	-0.0023	-0.0021	-0.0023	-0.0022
	(0.3669)	(0.4125)	(0.3636)	(0.3830)
Log (Credits Per Capita)	0.0439	-0.0036	0.0370	0.0063
	(0.0086)	(0.8946)	(0.0484)	(0.7599)
Initial Log (GDP)	0.8512	0.8103	0.8415	0.8029
	(0..0001)	(0..0001)	(0..0001)	(0.0001)
Urbanization	0.1849	0.2700	0.2021	0.2460
	(0.1070)	(0.0196)	(0.0923)	(0.0253)
Schooling	0.3229	0.1853	0.3039	0.1875
	(0.2017)	(0.4670)	(0.2332)	(0.4710)
Log (Public Expenditures)	0.0160	0.0156	0.0156	0.0188
	(0.0078)	(0.0114)	(0.0095)	(0.0012)
Inflation	-0.1117	-0.1177	-0.1124	-0.1051
	(0.0010)	(0.0005)	(0.0009)	(0.0016)
Crisis Dummy	-0.0417	-0.0427	-0.0419	-0.0413
	(0..0001)	(0..0001)	(0..0001)	(0.0001)
Interaction Variables:				
*Distance Measure *Log (Credits Per Capita)*				
Distance		0.0346		
		(0.0184)		
Distance per Branch			0.0799	
			(0.3715)	
Eastern Dummy Variable				0.0432
				(0.0019)
Adj. R^2	0.8604	0.8630	0.8606	0.8653
N	676	676	676	676
ρ	-0.1116	-0.1213	-0.1129	-0.1195
χ^2 (Sargan test)	0.00	0.00	0.00	0.00

Notes: p-values are in parentheses. ρ represents second-order autocorrelation in error terms. . It is used to test the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Sargan test is used to test the hypothesis that the instruments used are not correlated with the residuals.

Table 5 – GMM Results where Bank Credits-to-Provincial GDP ratio is used as a Measure of Banking Activity.

	I	IIa	IIb	IIc
Intercept	-0.0024	-0.0023	-0.0017	-0.0024
	(0.3539)	(0.3698)	(0.5180)	(0.3595)
Credits/GDP	-0.0972	0.3451	0.2990	0.1851
	(0.3503)	(0.0456)	(0.0246)	(0.0763)
Initial Log (GDP)	0.9117	0.8975	0.8692	0.9005
	(0..0001)	(0..0001)	(0..0001)	(0..0001)
Urbanization	0.2347	0.1833	0.1472	0.1802
	(0.0488)	(0.1328)	(0.2039)	(0.1384)
Schooling	0.3348	0.2937	0.2499	0.2899
	(0.1794)	(0.2344)	(0.3097)	(0.2455)
Public Expenditures/GDP	-0.0656	-0.0566	-0.0135	-0.0591
	(0.6728)	(0.7145)	(0.9261)	(0.7027)
Inflation	-0.1780	-0.1801	-0.1888	-0.1779
	(0..0001)	(0..0001)	(0..0001)	(0..0001)
Crisis Dummy	-0.0504	-0.0495	-0.0498	-0.0493
	(0..0001)	(0..0001)	(0..0001)	(0..0001)
Interaction Variables:				
*Distance Measure * (Credit/GDP)*				
Distance		-0.5080		
		(0.0051)		
Distance per Branch			-21.9883	
			(0.0001)	
Eastern Dummy Variable				-0.3170
				(0.0020)
Adj. R^2	0.8559	0.8575	0.8628	0.8571
N	676	676	676	676
ρ	-0.1149	-0.1086	-0.0893	-0.1125
χ^2 (Sargan test)	0.00	0.00	0.00	0.00

Notes: p-values are in parentheses. ρ represents second-order autocorrelation in error terms. It is used to test the null hypothesis that the errors in the first difference regression exhibit no second order serial correlation. The Sargan test is used to test the hypothesis that the instruments used are not correlated with the residuals.

Appendix: Table A1 – Shares of Regions in Banking Activity, GDP, Population and Public Expenditures in Turkey (%).

Between 1991-2000	Marmara	Aegean	Central Anatolia	Black Sea	Southeastern Anatolia	Eastern Anatolia	Mediterranean
Bank Branches	36.34	17.25	16.60	11.15	3.71	4.91	10.04
Credits	46.00	11.20	25.81	5.88	1.59	1.24	8.27
Deposits	47.85	11.56	24.93	5.61	1.53	1.86	6.66
GDP	36.63	15.50	15.98	9.60	5.39	4.62	12.27
Population	25.05	13.48	16.53	13.05	8.93	10.12	12.84
Public Expenditure	26.33	14.65	19.06	10.47	9.01	10.37	10.11

In 1991	Marmara	Aegean	Central Anatolia	Black Sea	Southeastern Anatolia	Eastern Anatolia	Mediterranean
Bank Branches	33.66	17.61	17.52	12.69	3.62	5.28	9.61
Credits	39.96	11.18	27.66	7.34	1.55	1.49	10.82
Deposits	42.82	12.19	27.78	6.60	1.75	2.19	6.67
GDP	36.65	15.44	16.27	9.63	5.67	4.73	11.60
Population	23.77	13.47	16.92	14.17	8.73	10.45	12.49
Public Expenditure	22.22	20.88	16.55	9.58	12.41	9.48	8.90

In 2000	Marmara	Aegean	Central Anatolia	Black Sea	Southeastern Anatolia	Eastern Anatolia	Mediterranean
Bank Branches	39.56	16.49	15.94	9.62	3.7	4.55	10.15
Credits	51.20	10.02	21.16	7.24	1.81	1.61	6.95
Deposits	52.26	9.95	24.47	4.24	1.19	1.37	6.53
GDP	37.04	15.28	16.30	9.46	5.09	4.64	12.19
Population	25.51	13.21	16.58	12.50	8.94	10.25	13.02
Public Expenditure	27.00	12.36	11.21	17.19	8.76	8.24	15.25

Source: Authors' calculation from the data obtained from Turkish Banking Association (www.tbb.org.tr) and State Planning Organization (www.dpt.gov.tr/bgyu/bgyu.html).

Appendix: Table A2 – Yearly Credits Per Capita (in terms of 1987 prices) and yearly growth rate of real GDP per capita (in terms of 1987 prices) in Provinces, classified by Regions, Time period:1991-2000

	Credits Per Capita (1987 prices, in million TL)		Growth Rate of Real GDP Per Capita (in percentage)	
Regions	Mean	Median	Mean	Median
Marmara	215.4	134.7	2.18	2.61
Aegean	175.1	116.3	2.10	3.27
Central Anatolia	161.0	63.8	2.11	1.92
Black Sea	120.6	69.7	2.31	2.56
Southeastern Anatolia	43.8	28.6	0.83	0.40
Eastern Anatolia	29.8	21.3	0.80	0.51
Mediterranean	128.8	55.8	0.98	1.03

*Monetary values are in terms of 1987 prices. ($1 = 1,021 TL; £1 = 1,897 TL)
Source: Authors' calculation from the data obtained from State Planning Organization (www.dpt.gov.tr/bgyu/bgyu.html).