

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

Süheyla Özyıldırım and Zeynep Önder

Faculty of Business Administration, Bilkent University

Changing the Geography of Banking

Ancona, September 22-23, 2006

Research Questions

- (1) Is there a relationship between economic growth and loan provisions at the province level in Turkey during 1991-2000?
- (2) Does geographical proximity to financial center affect this relationship?

Motivation

Although there is no legal restriction against regional banking, the institutional structure of the banking sector is spatially concentrated in Turkey. In this setting, we argue that the distance between headquarters and the local branches would be an important factor to understand the relationship between financial intermediation and economic growth in Turkish provinces

Banking in Turkey

The banking sector constitutes a large part of the Turkish financial system. It is typically acknowledged that the financial system and the banking system are synonymous in Turkey. Yet, the size of the banking sector is relatively small in Turkey compared to developed economies:

	Turkey [†]		France [‡]	Germany [‡]	UK [‡]
	1991	2000	2000	2000	2000
Asset/GDP	0.47	0.84	2.52	3.82	3.49
Credits/GDP	0.21	0.28	0.93	1.85	1.67
Deposits/GDP	0.26	0.55	0.69	1.79	1.28

Source: [†]Turkish Banking Association, [‡]European Banking Federation.

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

Source: Turkish Banking Association.

Major Banking Regulations and Financial Developments in Turkey During 1980-2000:

Jul 1980 - Interest rates were deregulated.

Jul 1983 - The Savings Deposit Insurance Fund (SDIF) at the Central Bank was established.

May 1985 - The new Bank Act: 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.

Dec 1985 - Banks were required to keep specific loan loss provisions regarding to their past unpaid loans and general provisions for their loan portfolios.

Jan 1986 - The Istanbul Stock Exchange (ISE) was opened.

Jan 1987 - The interest rate restrictions of the corporate bonds by the Central Bank were removed.

Feb 1987 - Central Bank started its open market operations.

Jan 1987 - Banks were required to submit their independently and externally audited financial statements to the Central Bank.

Oct 1987 - Banks were required to satisfy the minimum capital adequacy outlined by the Bank for International Settlements.

Aug 1989 - Foreign exchange operations and international capital movements were entirely liberalized.

Jun 1991 - The secondary market for Treasury bond and bills market was established.

Apr 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).

Jun 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.

Sept 2000 - The BRSA became fully functional.



Regional Distribution of Various Variables

Between 1991-2000	Marmara	Aegean	Central Anatolia	Black Sea	Southeast Anatolia	Eastern Anatolia	Mediterranean
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
Branches	36.34	17.25	16.60	11.15	3.71	4.91	10.04
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
In 1991	Marmara	Aegean	Central Anatolia	Blacksea	Southeastern Anatolia	Eastern Anatolia	Mediterranean
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
Branches	33.66	17.61	17.52	12.69	3.62	5.28	9.61
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
In 2000	Marmara	Aegean	Central Anatolia	Blacksea	Southeastern Anatolia	Eastern Anatolia	Mediterranean
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
Branches	39.56	16.49	15.94	9.62	3.70	4.55	10.15
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

The Empirical Models:

Basic Model:

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

where

$Growth_i$ is the growth rate in real GDP per capita in province i

$Banking\ Activity_i$ is measured by bank credits per capita and credits per GDP in province i

$Control\ Variables$ 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 and a dummy variable indicating the economic crisis years, 1991, 1994, 1999.

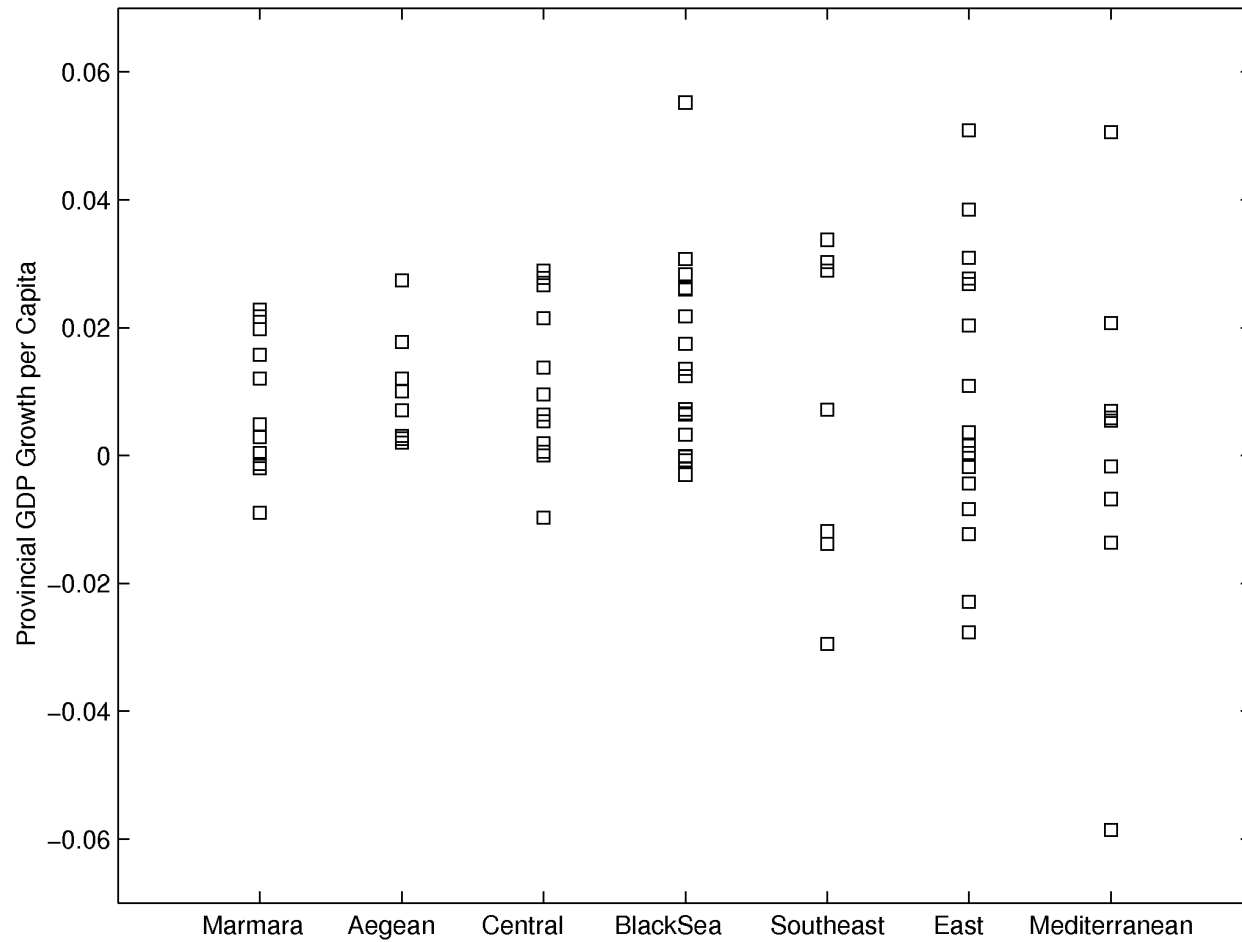
Model with Distance Variable:

$$\begin{aligned} Growth_{i,t} = & \beta_0 + \beta_1 Banking\ Activity_{i,t} \\ & + \beta_2 Banking\ Activity_{i,t} * Distance_i \\ & + \beta_3 Control\ Variables_{i,t} + \epsilon_{i,t} \end{aligned}$$

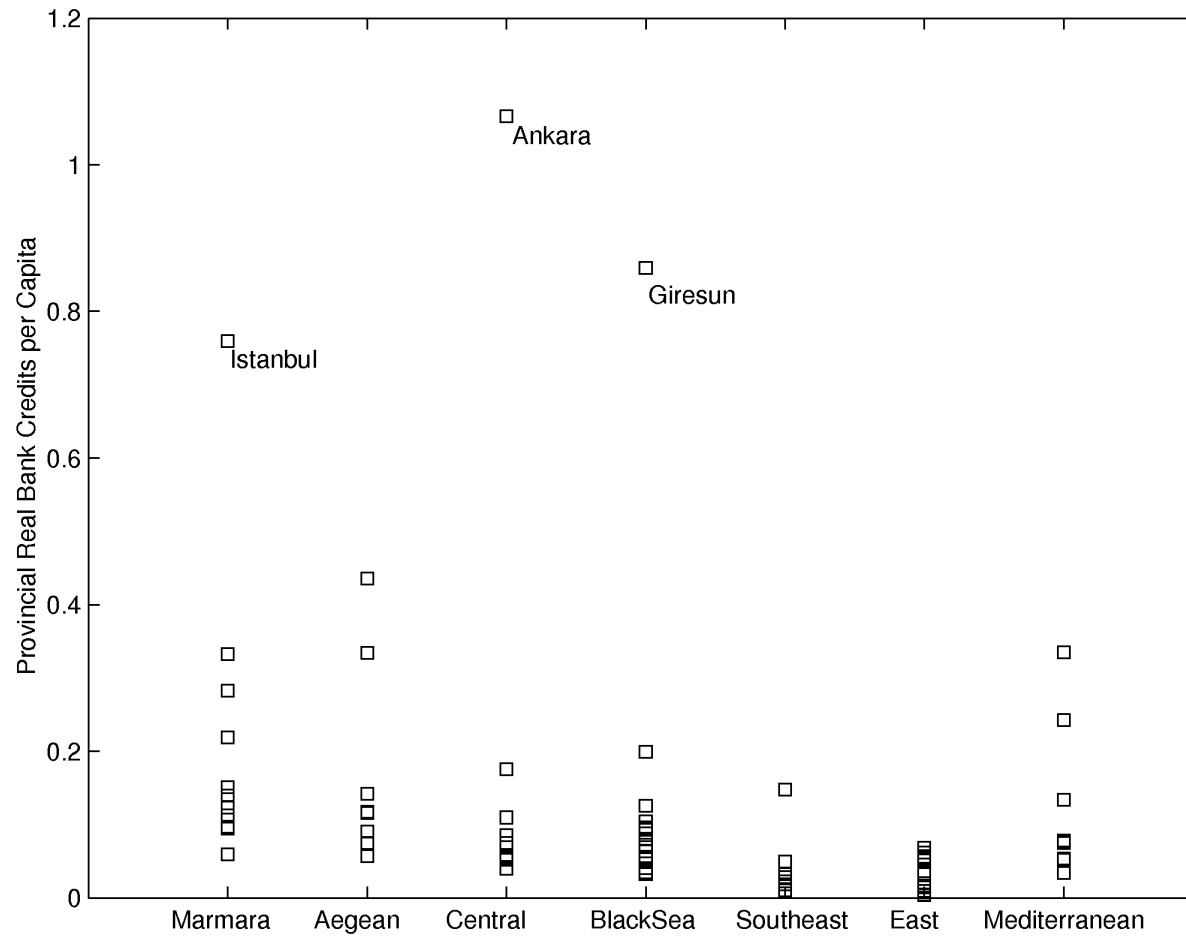
where

$Distance_i$ is defined as

- physical distance between Istanbul (financial center) and a province i
- distance per branch (physical distance divided by the number of branches)
- a dummy variable which takes a value of 1 for the provinces located located to the east of Ankara (capital city)



Average provincial growth of real per capita GDP in the different provinces located in seven geographical regions of Turkey during 1991-2000.



Average real credits per capita (in million TL) in provinces located in seven geographical regions of Turkey during 1991-2000.

Provincial Growth Rates and Banking Activity by Regions (t=1991-2000)

Regions	Growth Rate of		Credits per capita		Credit/GDP	
	Real GDP per capita					
	Mean	Median	Mean	Median	Mean	Median
Marmara	2.2	2.6	215.4	134.7	10.2	6.13
Aegean	2.1	3.3	175.1	116.3	9.1	7.5
Central Anatolia	2.1	1.9	161.0	63.8	11.0	6.8
Black Sea	2.3	2.6	120.6	69.7	13.2	6.1
Southeastern Anatolia	0.8	0.4	43.8	28.6	4.1	2.9
Eastern Anatolia	0.8	0.5	29.8	21.3	5.1	4.1
Mediterranean	1.0	1.0	128.8	55.8	9.1	6.8

Descriptive Statistics of Variables

Variable	Mean	Std Dev	Min	Max
<i>Growth Variables</i>				
GDP growth rate (%)	2.57	7.42	-62.75	35.56
GDP per capita growth rate (%)	1.67	7.84	-29.71	32.11
<i>Banking Variables</i>				
Bank Credits/GDP (%)	8.53	13.06	0.26	149.42
Credits per capita (million TL)	120.73	189.40	0.84	1,716.44
<i>Distance Measures</i>				
Distance from Istanbul (x1000km)	0.83	0.44	0.00	1.82
Distance from Istanbul per branch	36.29	47.30	0.00	296.25
Eastern Dummy Variable	0.66	0.47	0.00	1.00
<i>Control Variables</i>				
Public Expenditure/GDP (%)	2.45	4.16	0.09	42.19
Inflation rate (%)	54.50	11.38	6.57	122.34
Urbanization Ratio (%)	52.53	13.03	20.18	92.71
Schooling (Teacher per pupil)	0.07	0.02	0.02	0.21

Dependent Variable: Growth rate in provincial real GDP per capita

	Model I	Model IIa	Model IIb	Model IIc
Log(Credits per capita)	0.0439 (0.0086)	-0.0036 (0.8946)	0.0370 (0.0484)	0.0063 (0.7599)
Interaction Variables:				
Distance*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	-0.1127	-0.1195
χ^2 (Sargan test)	0.00	0.00	0.00	0.00

Notes: p-values are in parentheses. ρ represents 2nd order autocorrelation in error terms.

Dependent Variable: Growth rate in provincial real GDP per capita (cont'd)

	Model I	Model IIa	Model IIb	Model IIc
Initial Log (GDP)	0.8512 (0.0001)	0.8103 (0.0001)	0.8415 (0.0001)	0.8029 (0.0001)
Urbanization	0.1849 (0.1070)	0.2700 (0.0196)	0.2021 (0.0923)	0.2460 (0.0253)
Schooling	0.3229 (0.2017)	0.1853 (0.4670)	0.3039 (0.2332)	0.1875 (0.4710)
Log (Public Expenditures)	0.0160 (0.0078)	0.0156 (0.0114)	0.0156 (0.0095)	0.0188 (0.0012)
Inflation	-0.1117 (0.0010)	-0.1177 (0.0005)	-0.1124 (0.0009)	-0.1051 (0.0016)
Crisis Dummy	-0.0417 (0.0001)	-0.0427 (0.0001)	-0.0419 (0.0001)	-0.0413 (0.0001)

Notes: p-values are in parentheses. ρ represents 2nd order autocorrelation in error terms.

Dependent Variable: Growth rate in provincial real GDP per capita

	Model I	Model IIa	Model IIb	Model IIc
Log(Credits/GDP)	-0.0972 (0.3503)	0.3451 (0.0456)	0.2990 (0.0246)	0.1851 (0.0763)
Interaction Variables:				
Distance*Log(Credits/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 2nd order autocorrelation in error terms.

Dependent Variable: Growth rate in provincial real GDP per capita (cont'd)

	Model I	Model IIa	Model IIb	Model IIc
Initial Log (GDP)	0.9117 (0.0001)	0.8975 (0.0001)	0.8692 (0.0001)	0.9005 (0.0001)
Urbanization	0.2347 (0.0488)	0.1833 (0.1328)	0.1472 (0.2039)	0.1802 (0.1384)
Schooling	0.3348 (0.1794)	0.2937 (0.2344)	0.2499 (0.3097)	0.2899 (0.2455)
Public Expenditures/GDP	-0.0656 (0.6728)	-0.0566 (0.7145)	-0.0135 (0.9261)	-0.0591 (0.7027)
Inflation	-0.1780 (0.0001)	-0.1801 (0.0001)	-0.1888 (0.0001)	-0.1779 (0.0001)
Crisis Dummy	-0.0504 (0.0001)	-0.0495 (0.0001)	-0.0498 (0.0001)	-0.0493 (0.0001)

Notes: p-values are in parentheses. ρ represents 2nd order autocorrelation in error terms.

Summary

- In line with the cross-country analysis, we observe a positive and significant relationship between local loan provisions and per capita local output growth.
- 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.
 - We find that in absolute terms, increasing loan provisions to distant provinces contributes further to the per capita income of those provinces.
 - 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.

Policy Implication

- The organizational structure might be decentralized. 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.
- Incentives might be increased for the development of alternative lending institutions such as microfinance sector. The credit demand of the unbanked borrowers, i.e., small and opaque borrowers, can be satisfied through microfinance institutions. Moreover, 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.