

## **Economic Potential for Regional Integration of Armenia and Northeast Turkey**

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## **Overview of Turkish Economy**

Turkey's economy is an industry and traditional economy where agriculture sector that in 2005 still accounted for 30% of employment. In recent years, the Turkish economy has expanded particularly strongly, registering growth rates of 8.9% and 7.4% for the 2004 and 2005 fiscal years respectively.

### **Agricultural sector**

Turkey ranks seventh worldwide in farm output. Turkey has been self-sufficient in food production since the 1980s. The agricultural output has been growing at a respectable rate. Many old agricultural attitudes remain widespread, but these traditions are expected to change with the EU accession process. Turkey is dismantling the incentive system. Fertilizer and pesticide subsidies have been curtailed and remaining price supports have been gradually converted to floor prices. The government has also initiated many planned projects, such as the G.A.P project (Southeastern Anatolia Project). The advent of the G.A.P promises a very prosperous future for the southeastern agriculture.

Also, livestock products, including meat, milk, wool, and eggs, contributed to more than of 1/3 the value of agricultural output.

### **Industrial sector**

Turkey ranks twenty-first worldwide in factory output. Its industrial sector has 19% share in employment, 29% share in national production, and 94% share in total exports.

The largest industry is textiles and clothing (16.3% of total industrial capacity in 2005 according to the State Institute of Statistics), followed by oil refinery (14.5%), food (10.6%), chemicals (10.3%), iron and steel (8.9%), automotive (6.3%), and machinery (5.8%). Textiles and clothing also constitutes the largest share in total exports (19% in 2005), followed by automotive (18%), iron and steel (13%), white goods (10%), chemicals and pharmaceuticals (9%), and machinery (7%).

### **Natural resources**

Turkey ranks tenth in the world in terms of the diversity of minerals produced in the country. Around 60 different minerals are currently produced in Turkey. The richest

mineral deposits in the country are boron salts and Turkey's reserves amount to 63% of the world's total.

Turkey is an oil producer, but the level of production isn't enough to make the country self sufficient. As a result, it is a net oil and gas importer. Other natural resources include coal, iron ore, copper, chromium, uranium, antimony, mercury, gold, barite, borate, celestite (strontium), emery, feldspar, limestone, magnesite, marble, perlite, pumice, pyrites (sulfur), clay, arable land, hydropower.

Table 1 in the Appendix provides brief information on select economic statistics for Turkey.

### **What is in the Northeastern part of Turkey?**

The provinces of Turkey are organized into 7 census-defined regions. Regions that are closest to Armenia are:

1. Eastern Anatolia Region: encompasses the eastern provinces of Turkey. The region has the highest average altitude, largest area and lowest population density of all regions of Turkey.
2. Southeastern Anatolia Region: encompasses the south-eastern provinces of Turkey.
3. Eastern part of the Black Sea Region: encompasses the northerneastern provinces of Turkey.

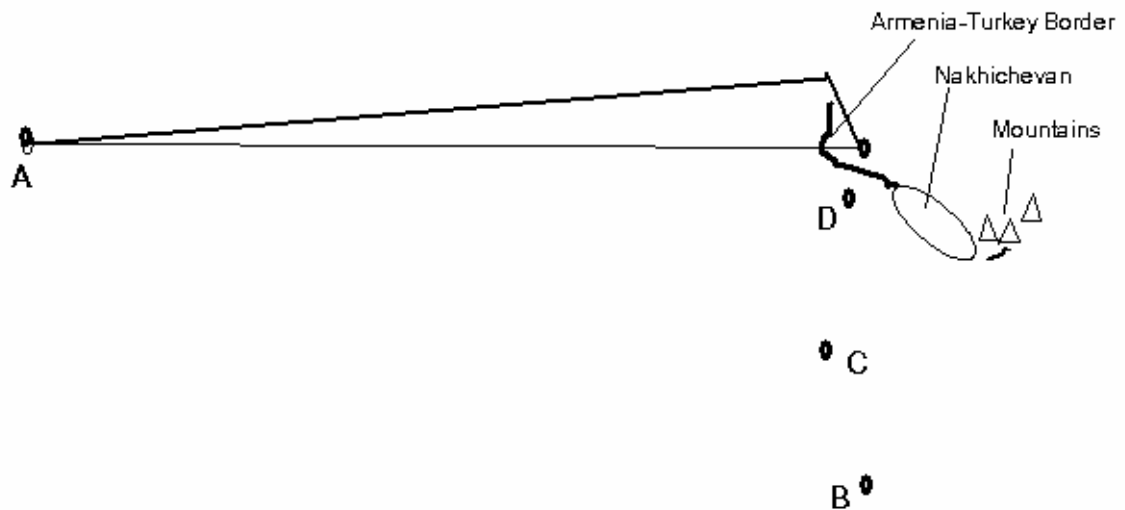
Figures 1-5 in the Appendix provide maps of these regions and Table 2 lists provinces in each of these regions.

## **Potential benefits of open Borders to Armenia and Northeastern Turkey**

In this section are discussed some of the trade benefits from border opening to Armenia and select Turkish provinces.

For overland transport, Armenia's access to the south southeast, to and through Iran, is severely impeded by mountain barriers. While some transport does occur to and from Armenia's narrow border with Iran, it is costly and its potential limited, particularly in winter. Access to the southwest is blocked by Nakichievan. And to the west, is Turkey. It is natural and correct to assume that opening the borders between Armenia and Turkey would improve access to the west and to anticipate the benefits of lower transport costs between Armenia and the great cities of central and western Turkey, such as Ankara and Istanbul, as well as with the Balkans and the rest of Europe. These gains, however, will be modest absolutely and as a percent of total transport costs.

The transport cost effect from opening the Armenian-Turkish border will be greatest for areas near to and south of that border. This is illustrated in diagram below. In the northeast corner of the diagram is a representation of the Armenian-Turkish border, Nakichievan, and the mountain barrier to the south southeast. The point labeled Y represents Yerevan. Between points A and Y are a solid angled line, which goes around the Armenian-Turkish border and a dotted line directly between the two. The former represents routings with closed borders (CBR) and the latter represents the routing if the borders were open (OBR). Corresponding routings between, on the one hand, points B, C, and D and, on the other hand, point Y are not explicitly drawn, but should be imagined.



Point A represents a location such as Istanbul or Ankara. The OBR between points A and Y is 5 percent shorter than the CBR. Point B represents a location such as Mosul, Iraq. Between points B and Y, the OBR is 30 percent shorter than the CBR. Moving closer to the border, point C represents a point such as Van, Turkey. The distance saving between this point and point Y is 45 percent if borders are opened. Finally, point D represents a location such as Iğdir, Turkey. Between points D and Y the OBR is 90 percent shorter than the CBR.

To predict potential changes in trade flows between Armenia and various Turkish provinces we use the estimates of volumes of potential trade flows between countries in the region after opening Armenia's border with Turkey obtained from "A Phased Strategy for Opening Armenia's Western Border". In that study we estimate a gravity model for a very specific sample of countries which includes Transition Economies (TEs) and a range of developed countries to infer how various important factors (such as resource endowments, transportation costs and other) affect industry level bilateral trade volumes between countries of interest.

If we view Turkish provinces as "countries", we can apply the results of this gravity model to estimate trade volumes between Armenia and each given province before and after border opening. This will allow projecting changes in trade volumes for each individual province that might be experienced with border opening.

The gravity model that we refer to is:

$$\begin{aligned} \log(PX_{aij}) = & \beta_0 + \beta_1 * \log(GDP_i) + \beta_2 * \log(GDP_j) + \beta_3 * \log(gdp_i) + \beta_4 * \log(gdp_j) + \\ & + \beta_5 * \log(Skill_i / L_i) + \beta_6 * \log(Land_i / L_i) + \beta_7 * \log(Dist_{ij}) + \beta_8 * \log(Mkt_{ij}) + \\ & + \gamma_1 * Brdr_{ij} + \gamma_2 * FTA_{ij} + \gamma_3 * Reg1 + \gamma_4 * Reg2 + \gamma_5 * Reg3 + \gamma_6 * Reg5 + \gamma_7 * Reg6 + \varepsilon_{ij} \end{aligned}$$

Where  $GDP_{i(j)}$  is exporter (importer) GDP,  $gdp_{i(j)}$  is exporter's (importer's) GDP per capita.  $Skill_i/L_i$  and  $Land_i/L_i$  are exporter's skill per worker and land per worker.  $FTA_{ij}$  is a dummy variable indicating the presence of free trade agreements (FTA) between exporter and importer, and  $Mkt_{ij}$  is EBRD markets and trade restructuring indicator used to proxy for trade restrictions.  $Dist_{ij}$  is distance between i's and j's capital cities, and  $Border_{ij}$  is a dummy variable for a common border or shoreline. Regional dummies are included to account for country specific differences in trade patterns not captured by other variables in the model. Transition economies are grouped into regions based on geographic proximity to each other as well as their transition speed and depth. Table 3 in the Appendix lists countries by regions.

Trade data used for the estimation are from the Supplement to the World Trade Annual, UN Statistical Division and UN COMTRADE database. Exporter and importer GDP and GDP per capita data are taken from World Development Indicators database. Exporter skill per worker is proxied by the Human Development Index (HDI) annually reported by the United Nations in its annual Human Development Report. Land per worker (measured in square kilometers) is the ratio of country land territory and the total number of people in the workforce, as reported by the World Development Indicators. Distance measures bilateral flying distance between capital cities in kilometers. Data on this variable are taken from the <http://www.etn.nl/distance.htm> website. The Markets and Trade index is an average of price liberalization, trade and foreign exchange system, and competition policy indicators developed by EBRD. Information on foreign trade agreements is from on WTO's list of Regional Trade Agreements notified to the GATT/WTO and in force.

Tables 4 and 5 contain robust (heteroskedasticity corrected) OLS estimation results for aggregate exports and imports between countries in the sample. For a more detailed description of the model, data, and the estimation procedures please consult the paper mentioned above.

Figures 1-5 in the Appendix provide maps as well as the list of Turkish provinces. We concentrate our analysis on a set of provinces that are either located close to Armenian border, or represent major destinations in Turkey. The list of these provinces with some general statistics for the year 2000 is provided in Table 6 of the Appendix. Province level population, GDP per capita (PPP, current international \$) data, and land area are taken from State Institute of Statistics in Turkey. GDP, PPP for 2000 is simply taken as GDP per capita times population.

Table 8 in the Appendix calculates changes in trade volumes for select provinces in Turkey when border with Armenia is open. As the Table demonstrates, the change in trade volumes is very dramatic for provinces that lie in Eastern Turkey. Our estimation of potential trade volumes between Armenia and Turkey was done using data for the year 2004. To estimate changes in trade volume with Eastern Turkish provinces due to border opening for the same year we need province level data for 2004. Unfortunately, province level data for that year are not available. To construct province level data on GDP and population for 2004, we use country level data from World Development Indicators which is then divided between provinces according to province/total shares calculated for the year 2000 for each of those variables. GDP per capita for 2004 is then calculated as GDP 2004/ Population 2004. These data are displayed in Table 7 of the Appendix.

GDP and GDP per capita are estimated in current international \$US, PPP adjusted. To proceed with the estimation of trade flows between Armenia and Turkish provinces, data need to be converted into units used in the original estimation of the model.

To obtain GDP PPP in real 1995 \$US, we use the US Consumer Price Index from U.S. Department of Labor, Bureau of Labor Statistics. Values of CPI for select years are reported in the table below (1995 being base year):

**CPI values for select years**

<b>Year</b>	<b>CPI</b>
1996	1.03
2000	1.13
2004	1.24

Source: U.S. Department of Labor, Bureau of Labor Statistics

Trade values are also converted into constant 1995 US\$.

Labor force is calculated based on working/total population ratio for Turkey. This ratio is multiplied by each province's population to estimate province level workforce. This approach assumes that labor force participation ratio is the same throughout Turkey. We assume the same level of HDI across Turkey. Finally, we calculate differences in distances before and after border opening as distances between Yerevan and province capital cities.

Results of our estimation in Table 8 are grouped in regions: North-Eastern Turkey, Central-Eastern Turkey, and South-Eastern Turkey. We selected 6 provinces to represent each of these regions, and listed them in the order of increasing distance from Armenia.

As it becomes obvious from our estimation, there is significant unused trade potential between Armenia and Turkey due to the closed border. This is particularly true for Central and South-Eastern provinces which are located closer to Armenian border. For example, in South-Eastern direction Armenian exports to Kars might increase 6 times, while imports from Kars might go up almost tenfold compared with closed border scenario. The effect becomes weaker as we move away from Armenian border, but it is still sizeable even for such remote provinces as Ankara, where trade volumes are expected to double due to border opening.

The same level of trade intensification is expected for South-Eastern provinces with effect being the strongest for Van, and becoming less prominent as we move away from Armenia. The furthest destination listed in this direction is Antalya, where trade flows are expected to rise by 78% for exports from Armenia and 107% for imports to Armenia. An important observation for this direction is the fact that with open border not only trade with Turkish provinces will intensify, but transit trade to third countries will rise as well. As was mentioned above, due to open border road distances to Syria, Lebanon, and other countries to the South will become shorter, which will result in intensification of trade in this direction. In addition to shortening road distances, Gyumri passage will also allow access to Turkish railroad system which link to railroad in Syria and Lebanon. Access to Mersin, a major seaport, will further facilitate Armenian transit trade via Turkish territory.



In the North-Eastern direction, gains from border opening are somewhat smaller but still sizeable. Trade with closer provinces is expected to rise 3-4 times, while trade intensity with more remote provinces, such as Samsun and Istanbul might double. In addition, better access to North-Eastern Turkey ensures more convenient passage of Armenian goods to several Black Sea ports and better conditions for transit trade to third countries.

## **Industry Level Trade Potential**

Province level data limitations did not allow us performing industry level estimation of anticipated trade changes with open border between Turkey and Armenia. This analysis could be an important contribution of future research on this topic.

Below we discuss some general features of the current industrial structure of production in the northeast Turkey and its potential as Armenia's trade partner in case of open border.

Agricultural sector in Turkey is highly protected. High tariffs (above 100%) exist for imports of meat, fish, dairy products, sugar, fruits, and some other agricultural products. In addition to high protection level, producers in this sector also enjoy generous input subsidies, output price support and supply control measures that might become a big impediment in competing with Turkish agricultural producers, particularly in certain sensitive products.

While exports of agricultural products into Turkey might face some difficulties due to mentioned factors, their imports from Turkey have good potential. Even with low levels of productivity in agriculture in Turkey many agricultural products from Turkey will have low cost of production and provided feasibility and reasonable cost of transportation their flow to Armenia might substantially benefit our consumers as well as food processing industry.

In manufacturing Turkey has relatively low or zero import tariff rates on almost all product categories. More investigation needs to be done to determine what is the share of manufacturing output by northeastern provinces in Turkey in total manufacturing output. Also, it is important to study its structural composition and final usage within or outside

Turkey. Our conjecture here is that northeastern Turkey does not have very strong industrial production, and that Armenia could potentially become a supplier of a range of manufacturing goods into this region. An additional benefit to Armenian companies from expanding market to include northeastern Turkey could be cost savings due to increasing returns to scale in production. This statement is intuitive and it needs further research of the issue.

Finally, energy sector provides some potential for trade between two sides. Currently, northeastern Turkey experiences insufficiencies in the supply of electric energy. Provided Armenia has excess supply of electricity, there can be cross border trade in this product. However, import of electricity from Armenia might have short-term nature, since Turkey is currently implementing a very large scale project that, among other things, includes construction of numerous hydro stations in the region of interest. This might eliminate currently existing demand for electro energy. Below we discuss the details of the mentioned project and its potential affect on development in the eastern regions of Turkey.

The Southeastern Anatolia Project (Turkish: Güneydoğu Anadolu Projesi, GAP) is a multi-sector integrated regional development project based on the concept of sustainable development for people living in the region.

Current activities under GAP covers such sectors as (1)irrigation, (2) hydraulic energy production, (3) agriculture, (4) urban and rural infrastructure, (5) forestry, (6) education and (7) health.

The water resources development component of the program envisages the construction of 22 dams and 19 hydraulic power plants and irrigation of 17,000 square kilometers of land. The water resources part of the project is expected to be completed by 2010 and the total cost of the project is estimated at \$32 billion USD. The total installed capacity of power plants is 7476 MW and projected annual energy production reaches 27 billion kWh. The GAP also consists of 17 hydroelectric power plants. These will supply the energy equivalent of 22% of the anticipated total nationwide energy consumption in 2010. Providing 8,900 gigawatt hours (32 PJ), it is one of the largest series of hydroelectric power plants in the world.

GAP's basic aim is to eliminate regional development disparities by raising people's income level and living standards; and to contribute to such national development targets as social stability and economic growth by enhancing the productive and employment generating capacity of the rural sector. It is important to take into consideration the scope of these changes and their potential effects on regional trade when discussing trade potential between Armenia and eastern Turkey.

## **Conclusion**

This paper is devoted to studying trade between Armenia and northeastern Turkey. Using province level data for select provinces in Turkey we apply gravity model estimates obtained earlier to assess the volume of trade with each particular province before and after border opening. We observe that the impacts of the Closed border on trade are magnified the closer the origin and/or destination is to the border and the further south the origin and/or destination is relative to the northwest corner of Armenia.

Figure 1: Regions of Turkey

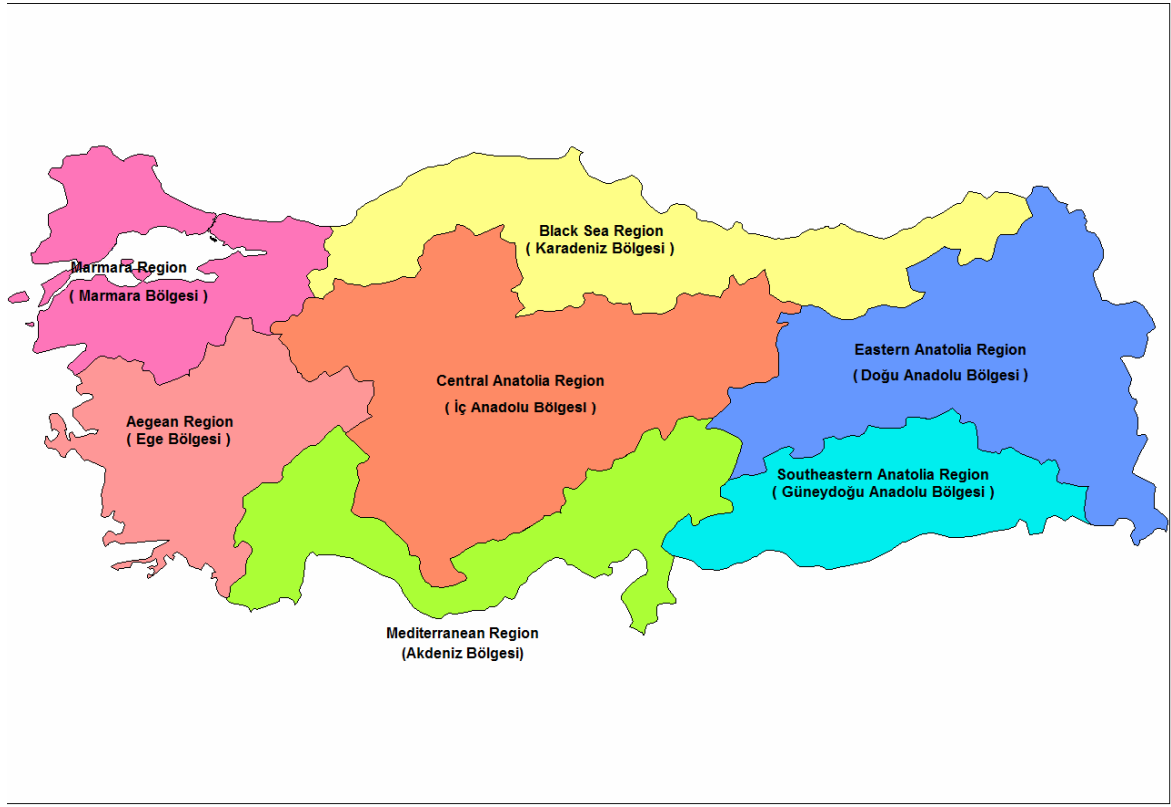


Figure 2: Provinces of Turkey



1 Yalova	15 Denizli	29 Cankiri	43 Nigde	57 Bayburt	71 Van
2 Kocaeli	16 Mugla	30 Ankara	44 Nevsehir	58 Erzincan	72 Bitlis
3 Istanbul	17 Antakya	31 Kirikkale	45 Yozgat	59 Tunceli	73 Mus
4 Kirklareli	18 Burdur	32 Kirsehir	46 Corum	60 Bingol	74 Agri
5 Edirne	19 Isparta	33 Konya	47 Kastamonu	61 Elazig	75 Igdix
6 Tekirdag	20 Afyon	34 Karaman	48 Sinop	62 Malatya	76 Kars
7 Canakkale	21 Eskisehir	35 Mersin	49 Samsun	63 Adiyaman	77 Erzurum
8 Balikesir	22 Bilecik	36 Adana	50 Amasya	64 Urfa	78 Rize
9 Bursa	23 Sakarya	37 Hatay	51 Ordu	65 Mardin	79 Artvin
10 Izmir	24 Buzce	38 Osmaniye	52 Tokat	66 Diyarbakir	80 Ardahan
11 Manisa	25 Zonguldak	39 Kilis	53 Sivas	67 Batman	81 Aksaray
12 Kutahya	26 Barun	40 Gaziantep	54 Giresun	68 Siirt	
13 Usak	27 Karabuk	41 Kahraman Maras	55 Trabzon	69 Sirmak	
14 Aydin	28 Bolu	42 Kayseri	56 Gumushane	70 Hakkari	

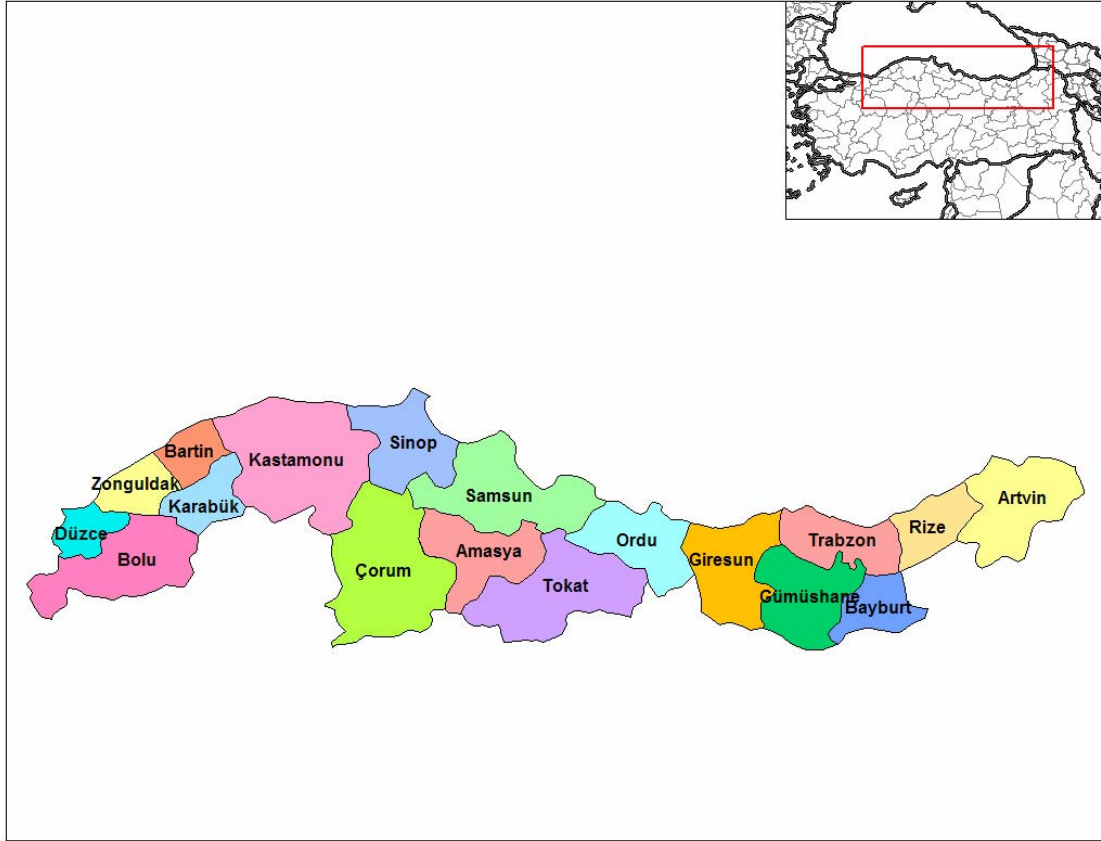
Figure 3: Eastern Anatolia Region



Figure 4: Southeastern Anatolia Region



Figure 5: Black Sea Region



**Table 1: Brief Statistics on Turkish Economy**

<b>GDP (PPP)</b>	\$612.3 billion
<b>GDP growth</b>	5.6% (2005 est.)
<b>GDP per capita</b>	\$8,200 (2005 est.)
<b>GDP by sector</b>	agriculture: 11.7%, industry: 29.8%, services: 58.5% (2005 est.)
<b>Inflation (CPI)</b>	8.2% (2005 est.)
<b>Pop below poverty line</b>	20% (2002)
<b>Labour force</b>	24.7 million (2005)
<b>Labour force by occupation</b>	agriculture: 35.9%, industry: 22.8%, services: 41.2% (3rd qtr. 2004)
<b>Unemployment</b>	10.2% plus underemployment of 4% (2005 est.)
<b>Main industries</b>	textiles, food processing, autos, electronics, mining (coal, chromite, copper, boron), steel, petroleum, construction, lumber, paper
<b>Exports</b>	\$84 billion f.o.b. (2006 Nov.)
<b>Export goods</b>	apparel, foodstuffs, textiles, metal manufactures, transport equipment
<b>Main partners</b>	Germany 13%, UK 8.2%, Italy 7%, US 6.9%, France 5.1%, Spain 4.2% (2005)
<b>Imports</b>	\$133.7 billion f.o.b. (2006 Oct.)
<b>Imports goods</b>	machinery, chemicals, semi-finished goods, fuels, transport equipment
<b>Main Partners</b>	Germany 13.9%, Russia 10.5%, Italy 7%, France 5.6%, China 4.4%, US 4.1% (2005)

Source: Wikipedia at <http://en.wikipedia.org/>



**Table 2: Provinces in Northern and Eastern Turkey:**

**Eastern Anatolia Region**

Agri Province  
Ardahan Province  
Bingöl Province  
Bitlis Province  
Elazığ Province  
Erzincan Province  
Erzurum Province  
Hakkari Province  
Iğdir Province  
Kars Province  
Malatya Province  
Mus Province  
Tunceli Province  
Van Province

**Southeastern Anatolia Region**

Adiyaman Province  
Batman Province  
Diyarbakir Province  
Gaziantep Province  
Kilis Province  
Mardin Province  
Sanliurfa Province  
Siirt Province  
Sirnak Province

**Black Sea Region**

Amasya Province  
Artvin Province  
Bartın Province  
Bayburt Province  
Bolu Province  
Çorum Province  
Düzce Province  
Giresun Province  
Gümüşhane Province  
Karabük Province  
Kastamonu Province  
Ordu Province  
Rize Province  
Samsun Province  
Sinop Province  
Tokat Province  
Trabzon Province  
Zonguldak Province

**Table 3: List of Sample Countries**

<b>Transition Economies</b>	<b>Partner Countries</b>
<b><i>Region 1: Caucasus</i></b>	Austria
Armenia	Belgium (and Luxembourg)
Azerbaijan	Denmark
Georgia	Finland
<b><i>Region 2: Asian republics of the FSU</i></b>	France
Kazakhstan	Germany
Kyrgyzstan	Greece
Tajikistan	Iceland
Turkmenistan	Ireland
Uzbekistan	Israel
<b><i>Region 3: Baltic States</i></b>	Italy
Estonia	Netherlands
Latvia	Norway
Lithuania	Portugal
<b><i>Region 4: BRUM</i></b>	Spain
Belarus	Sweden
Russian Federation	Switzerland
Ukraine	Turkey
Moldova	UK
<b><i>Region 5: Central-Eastern Europe</i></b>	
Czech Republic	
Hungary	
Poland	
Romania	
Slovakia	
Macedonia	
<b><i>Region 6: South-Eastern Europe</i></b>	
Albania	
Bulgaria	
Croatia	
Slovenia	
Bosnia and Herzegovina	

**Table 4: Generalized Gravity Equation Estimates, TE Imports from Europe and Turkey**

<b>Variable</b>	<b>Coefficient Estimate</b>	<b>Standard Error</b>
Log GDP Exporter	1.15	0.06
Log GDP Importer	1.03	0.07
Log GDP per capita Exporter	0.19	0.68
Log GDP per Capita Importer	-0.07	0.19
Log HDI Exporter	1.09	4.82
Log Land/labor Exporter	-0.31	0.08
Log distance	-1.56	0.15
Log markers and trade Index	0.10	0.46
Common Border	0.41	0.21
Free Trade Agreement	0.67	0.22
Caucasus	0.72	0.25
Asian Republics of the FSU	-0.19	0.28
Baltic States	1.09	0.30
South-Eastern Europe	0.76	0.27
Central-Eastern Europe	0.21	0.29
Constant	-36.57	8.32
<b>R-squared</b>	<b>0.8150</b>	

**Table 5: Generalized Gravity Equation Estimates, TE Exports to Europe and Turkey**

<b>Variable</b>	<b>Coefficient Estimate</b>	<b>Standard Error</b>
Log GDP Exporter	1.21	0.12
Log GDP Importer	1.25	0.07
Log GDP per capita Exporter	-2.08	1.18
Log GDP per Capita Importer	-0.41	0.27
Log HDI Exporter	21.29	10.53
Log Land/labor Exporter	0.36	0.22
Log distance	-1.26	0.17
Log markers and trade Index	-0.17	0.60
Common Border	0.32	0.27
Free Trade Agreement	1.51	0.23
Caucasus	-1.72	0.65
Asian Republics of the FSU	-1.15	0.47
Baltic States	0.31	0.50
South-Eastern Europe	0.06	0.43
Central-Eastern Europe	-0.23	0.43
Constant	-14.78	15.26
<b>R-squared</b>	<b>0.7512</b>	



**Table 6: Data on select Turkish provinces, 2000**

	<b>Total population</b>	<b>GDP per capita, PPP</b>	<b>Area (in 1000 km<sup>2</sup>)</b>	<b>GDP PPP (mln. \$US)</b>
Artvin	191,934	6,524	7.493	1,252
Rize	365,938	5,657	3.792	2,070
Trabzon	975,137	4,467	4.495	4,356
Amasya	365,231	4,750	5.731	1,735
Samsun	1,209,137	5,389	9.474	6,516
Istanbul	10,018,735	10,235	5.17	102,542
Kars	325,016	2,628	9.594	854
Erzrum	937,389	3,366	24.741	3,155
Erzincan	316,841	3,547	11.974	1,124
Mus	453,654	1,681	8.023	763
Malatya	853,658	4,319	12.235	3,687
Ankara	4,007,860	9,615	25.615	38,536
Van	877,524	2,591	20.927	2,274
Siirt	263,676	3,242	5.465	855
Mardin	705,098	2,668	9.097	1,881
Adana	1,849,478	7,616	14.256	14,086
Mersin	1,651,400	7,641	15.737	12,618
Antalya	1,719,751	6,747	20.599	11,603

**Table 7: Data on select Turkish provinces, 2004 (authors' calculations)**

	<b>Total population</b>	<b>GDP per capita, PPP</b>	<b>GDP PPP</b>
Artvin	203,039	7,417	1,506
Rize	387,111	6,431	2,490
Trabzon	1,031,558	5,078	5,238
Amasya	386,363	5,400	2,086
Samsun	1,279,097	6,126	7,836
Istanbul	10,598,417	11,635	123,316
Kars	343,821	2,988	1,027
Erzrum	991,626	3,827	3,794
Erzincan	335,173	4,032	1,352
Mus	479,902	1,911	917
Malatya	903,050	4,910	4,434
Ankara	4,239,754	10,931	46,343
Van	928,297	2,945	2,734
Siirt	278,932	3,686	1,028
Mardin	745,895	3,033	2,262
Adana	1,956,488	8,658	16,939
Mersin	1,746,950	8,686	15,175
Antalya	1,819,255	7,670	13,954

**Table 8: Estimated Trade Flows between Armenia and Select Provinces in Turkey before and after Border Opening**

North-Eastern Provinces	Imports from Armenia (1000 US\$, 2004 equivalent)			Exports to Armenia (1000 US\$, 2004 equivalent)		
	Closed Border	Open Border	% Change	Closed Border	Open Border	% Change
<b>Artvin</b>	3,773	11,880	215	31,325	130,543	317
<b>Rize</b>	6,592	15,324	132	69,989	200,631	187
<b>Trabzon</b>	16,343	35,993	120	174,870	468,946	168
<b>Amasya</b>	3,224	7,640	137	26,277	77,118	193
<b>Samsun</b>	18,007	37,000	105	177,499	436,960	146
<b>Istanbul</b>	244,184	454,525	86	5,518,628	12,027,529	118
<b>Central-Eastern Provinces</b>						
<b>Kars</b>	4,559	30,086	560	26,446	274,355	937
<b>Erzurum</b>	14,201	49,617	249	79,548	376,798	374
<b>Erzincan</b>	2,895	7,897	173	15,524	54,194	249
<b>Mus</b>	2,593	5,642	118	11,809	31,194	164
<b>Malatya</b>	8,979	20,618	130	61,250	172,939	182
<b>Ankara</b>	95,683	187,732	96	1,115,304	2,593,745	133
<b>South-Eastern Provinces</b>						
<b>Van</b>	7,419	45,551	514	34,852	330,779	849
<b>Siirt</b>	1,822	5,610	208	11,036	44,725	305
<b>Mardin</b>	4,735	11,458	142	26,632	80,212	201
<b>Adana</b>	31,169	61,534	97	331,488	776,809	134
<b>Mersin</b>	25,708	49,886	94	256,055	587,430	129
<b>Antalya</b>	17,846	31,853	78	143,987	297,977	107
<b>Total Turkey</b>	3,918,173	5,404,574	38	33,887,689	51,041,171	51

**References:**

“Turkey Economic Reform and Accession to the European Union”, Editors: B. Hoeckman, S. Togan, WB and CEPR joint publication, 2005.

“Economic Survey of Turkey”, OECD 2006.

“A Phased Strategy for Opening Armenia’s Western Border”, R. Beilock, K. Torosyan, A. Gagnidze, AIPRG working paper, 2006.