ICBME
THIRD INTERNATIONAL CONFERENCE ON BUSINESS, MANAGEMENT AND ECONOMICS

2006 • 2007 • 2008 • 2009

VOL. 3

PERSPECTIVES on TURKISH ECONOMY

Edited by Coskun Can Aktan & Sabah Balta

Selected Proceedings of the Third International Conference on Business, Management and Economics Organized by Yasar University, 13-17 June 2007, Cesme - Izmir, Turkey

YASAR UNIVERSITY
PERSPECTIVES ON TURKISH ECONOMY

Volume 3:

Selected Proceedings of the Third International Conference on Business, Management and Economics, Organized by Yasar University
16-17 June 2007, Cesme-Izmir, Turkey

izmir 2007
PERSPECTIVES ON TURKISH ECONOMY

Volume 3:
Selected Proceedings of the Third International Conference on Business, Management and Economics, Organized by Yasar University
16-17 June 2007, Cesme-Izmir, Turkey

Edited by CoskurfCan Aktan & Sabah Balta

Funded and supported by
Scientific and Technical Research Council of Turkey (TUBiTAK)

izmir 2007
Cataloging-in-Publication Data

Perspectives on Turkish Economy
Volume 3:
Selected Proceedings of the Third International Conference on Business, Management and Economics, Organized by Yasar University
16-17 June 2007, Cesme-Izmir, Turkey

Edited by Coskun Can Aktan & Sabah Balta

ISBN: 978-975-6339-13-8

First Edition:
December - 2007

© Author(s) and Yasar University
No part of the material protected by this copyright may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without written permission from the Yasar University. Author(s) have right to publish their article elsewhere electronically or in another publication.

Cover Design:
Tansel 6zalp

Printed in Turkey:
Birle Matbaacilik, Tel: (0-232-4336866)
This volume contains a collection of papers on Turkish Economy presented at the Third International Conference on Business, Management and Economics, which was held in Cesme, Izmir, 15-17 June 2007.

The Conference proceedings presented here contain significant research on Turkish economy. The papers explore the various aspects of Turkish migration to EU, intra-industry trade between Turkey and EU; agricultural integration between Turkey and EU, exchange rate volatility etc.

We do hope that the papers from this book, and the discussion based on them at the Conference, would not only open new questions, but give some answers and directions in the literature.

We would like to thank all those who contributed to this book. We also want to give a special thanks to the reviewers, whose effort and hard work reflect their commitment and dedication to the profession. We also appreciate Senem Yilmaz’s efforts for editorial assistance.

Coskun Can Aktan & Sabah Balta
Proceedings Editors
CONTENTS

Preface ................................................................................................................................................. v

THE IMPACTS OF TRADE LIBERALISATION ON REGIONAL GROWTH:
A CASE STUDY OF TURKEY
Fatma Nur İ.araman .........................................................................................................................

TRADE RELATED LABOUR MARKET ADJUSTMENT POLICIES AND
UNEMPLOYMENT IN TURKEY
Htiseyin Mualla Yticeol ...................................................................................................................15

PERSPECTIVES FOR THE COTTON-YARN SECTOR IN GREECE
AND TURKEY
Dadakas D., Katranidis S. D., ........................................................................................................39

TESTING J-CURVE HYPOTHESIS AND ANALYSING THE EFFECT
OF EXCHANGE RATE VOLATILITY ON TRADE BALANCE:
EVIDENCE FROM TURKEY
Mustafa Erhan Bilman, Ash Seda Kurt ...........................................................................................57

INTRA-INDUSTRY TRADE BETWEEN TURKEY AND
EUROPEAN UNION
Hatice Erkekoglu ..............................................................................................................................73

REGRESSION TREE ANALYSIS OF EFFECTS OF ENERGY
PRICES ON TURKISH CURRENT ACCOUNT DEFICIT
Tevfik Aytemiz Ahmet Şengontil .................................................................................................91

THE PANEL GRAVITY MODEL AND PREDICTING TURKEY’S
EXPORT FLOWS
Enune Bilgili .....................................................................................................................................107

COMPARATIVE STUDY FOR THE CONTRACT DESIGN OF
INTEREST RATE DERIVATIVE PRODUCTS IN TURKDEX
Engin Kurun .....................................................................................................................................125

DEVELOPING CORPORATE BOND MARKETS IN TURKEY
Erk Hacihasanoglu, Kursad Arat .....................................................................................................143

WILL TURKEY’S ACCESSION BOOST OR SLOWDOWN
TURKISH MIGRATION TO THE EU?
Gill Ertan, Luca Marchiori .............................................................................................................161
INTERNET BANKING IN TURKEY AND IN THE EU
Ash Deniz Helvac10glu, Ceylan Onay ..............................................................177

THE IMPACT OF AGRICULTURAL INTEGRATION BETWEEN TURKEY AND THE EU: A CGE ANALYSIS
Mustafa Acar, Burcu Afyonoglu, Savas Kus, Bengisu Vural ..................................189

EXPLORING FINANCIAL EFFICIENCY OPPURTUNITIES FOR TURKISH BROKERAGE HOUSES
Hiiseyn Akta, Mahmut Kargm .................................................................221

DEMOGRAPHIC TRANSITION AND ECONOMIC GROWTH IN TURKEY
Sibel Bali Eryigit, Kadir Yasin Eryigit ........................................................233

THE GEOGRAPHICAL DISTRIBUTION OF PUBLIC EXPENDITURES AND TAX REVENUES IN THE TURKISH CASE: A CONVERGENCE ANALYSIS
Naci Tolga Same, Isag Sagbas, Ismail Cigerci ..................................................251

LESSONS FROM TURKEY’S 2000-2001 CRISIS WITH SPECIAL REFERENCE TO CRISIS THEORIES
Tahir Biytkakm, Burcu Yavuz Tiftikc1gil ..........................................................267

THE RELATIONSHIP BETWEEN EDUCATION AND ECONOMIC GROWTH IN TURKEY: 1965-2006
Dilek Temiz, Arif Orcun Sakarya .................................................................287

DEFENCE SPENDING AND THE MACROECONOMY: THE CASE OF TURKEY
Onur Ozsoy ........................................................................................................309

THE CHANGING FACE OF THE TURKISH DEFENSE INDUSTRY AND TURKEY’S NEW ARMAMENTS STRATEGY
Hahik Korkmazytirek, Nejat Basim .................................................................333

A COMPARATIVE ANALYSIS OF EUROPEAN UNION AND TURKEY’S HUMAN DEVELOPMENT
Adnan Kisa & Sahin Kavuncubasi .................................................................357

IS THERE A LIST OF PARSIMONIOUS VARIABLES AFFECTING GOVERNMENT EXPENDITURE GROWTH? AN EVIDENCE FROM OECD COUNTRIES
Ali R1za Ozdemir............................................................................................375

viii
THE GEOGRAPHICAL DISTRIBUTION OF PUBLIC EXPENDITURES AND TAX REVENUES IN THE TURKISH CASE: A CONVERGENCE ANALYSIS

Naci Tolga Saruc
Sakarya University
I.I.B.F. Esentepe Kampusu
Sakarya
E-mail: tolgasaruc@hotmail.com

Isa Sagbas
Afyon Kocatepe University
I.I.B.F. ANS Kampusu
Afyon
E-mail: isagbas@hotmail.com

Ismail Cigerici
Afyon Kocatepe University
I.I.B.F. ANS Kampusu
Afyon
E-mail: i_cigerici@hotmail.com

-ABSTRACT-

Equal distribution of public expenditure and tax burden across a country is important for social cohesion and sustainable development. Public spending should be financed rationally by all the regions of the country so that tax burden could be shared among the regions. Based on these justifications, this study investigates the geographical distribution of public expenditures and tax revenues in the Turkish case. Convergence in tax revenues and public expenditures across provinces is investigated by using sigma and beta convergence methods. While sigma convergence indicates no convergence, beta convergence indicates strong convergence only in public expenditures. Based on the finding, it is suggested that convergence in public expenditure is also strongly influenced by the economic conditions of the country.

Key words: Convergence, Public Spending, Tax Revenues,

JEL Classification: RIO, H20
I- Introduction
If economic growth reduces income differences between regions, convergence takes place. If growth increases income differences between regions, then it is called divergence. Although the pioneering convergence studies have examined whether economic growth reduces income differences between regions, the following studies also investigated whether convergence takes place in several macroeconomic indicators such as inflation rates, interest rates and unemployment rates. Equal distribution of public expenditure and tax burden across a country is essentially important for social cohesion and sustainable development. In a country, public spending should be financed rationally by all the regions of the country so that tax burden could be shared among the regions. For this reason, to examine whether public spending and tax burden differences between regions decrease or increase is worthwhile. Convergence analysis could be used for this purpose. This study examines whether public spending and tax burden differences between the Turkish provinces decrease or increase by using a convergence approach.

H- The Theory of Convergence
The effects of economic politics and external economic shocks (like economic crisis and migration) are asymmetrical. The local dynamics or the regions may also cause different results resulting in different horizontal growth rates. However the sustainability of an asymmetrical growth in a country is not desirable. The research of the question 'Is there an asymmetrical growth or not?' was studied with Barro & Sala-I-Martin (1991) who initiated the studies on convergence literature. In these studies if the economic growth causes a decrease of unequal income distribution, the result is convergence, whereas if the economic growth causes an increase of unequal income distribution, then the result is divergence. There have been many empirical studies and large literature about the subject of convergence\(^1\). As an extension of the Harrod-Domar and Solow's model, according to the neo-classical growth theory, a closed country that has no external activity and with low saving rates develops slower than a country with higher saving rates. As a result, the income level of the country that has low saving rates, reaches the level of the lower income level countries. However, due to commercial activities and foreign capital, the income level of a country that has an open economy reaches the income level of countries that have a higher income and it converges to the level of rich-

countries. Capital flows from rich countries to poor countries that have low employment rates and higher investment yields (Todaro, 1994:86). According to the neo-classical theory, the reasons for the convergence between regions are the mobility of the production factors and the capital reserves.

That's why in the neo-classical growth model, factors like employment, capital, advances in technology, employment between regions, mobility of the production factors (migration), human capital (education), and public expenditures have been used as the determinants of the regional income differences.

To sum up, faster development of poorer regions decreases the income differences and results in convergence. There have been some empirical studies based on this fundamental argument. In these studies, the existence of convergence and the reasons for convergence have been studied. That is why in studies about convergence usually the income convergence per person between regions has been analysed, however, in some studies convergence of different variables have been used. For example where Button&Pentecost (1993) analysed the convergence of the service sector, Hall et al., (1992) analysed the convergence of foreign exchange rates and inflation rates in the EU.

Convergence analysis has also been applied in Turkey which has important income differences between its regions and its cities\(^2\). However, according to our knowledge there has been no convergence analysis on public expenditure and tax revenue in Turkey. In this aspect, based on the empirical data, the main aim of this study is to make some contributions on the subject.

**HI- Convergence in Tax Revenues and Public Expenditure**

Existence of convergence in public expenditure could be used as an indicator of the rational distribution of welfare in all the regions of a country, on the other hand existence of the convergence on tax revenues is an indicator of the rational distribution of financing of public expenditure. Although it has these positive results, there have been no strong theoretical reasons for the convergence of public expenditure and tax revenue.

With the indirect relation between the public expenditure-tax revenue and the income convergence per person, the convergence of public expenditure and tax revenue can be expected. Initially while poorer regions grow faster than rich regions (during the convergence of income per person), as a result of infrastructural investments and rapid growth there should be more public expenditure to meet the increase in service demands like education and health. At first public expenditure is higher in poorer regions than in the richer regions. As a result regional convergence of public expenditure is expected. In a region where income per person (economic growth) and public expenditure increase, because of the economic boom an increase of the tax base is expected. This increases the tax revenues resulting in convergence of the tax revenue. To sum up, as a result of convergence on income per person that has a stimulative effect on the economy, convergence on public expenditures and tax revenues are expected. That is why in this study the hypothesis of 'convergence of public expenditure and convergence of tax revenue are expected as a result of convergence of income per person.' will be tested.

IV-Research Method

Two main methods are used in convergence analysis; the static method and the dynamic method. The static method gives information about the distribution of inequalities of public expenditure and tax revenue between the regions and the cities at any given moment, whereas the dynamic method gives the same information over a period of time.

Static Method

In the static method, there are some approaches e.g. maximum/minimum ratio, coefficient of variation, relative average deviation, Gini coefficient, Theil index. The characteristics of maximum/minimum ratio and coefficient of variation that is chosen for the analysis are as follow (Shankar & Shah, 2001:2-4):

i) **Maximum/Minimum Ratio (MMR):** is the ratio of income per person in the richest region to income per person in the poorest region. When MMR gets closer to 1, there is convergence, when it gets closer to 0 there is divergence. Although it is easy to calculate MMR, relying on MMR may give wrong results because of the egative influences of the extreme values (outliers) on MMR.

ii) **Coefficient of Variation (CV):** CV shows the distribution around the arithmetic average. There are two different calculation methods; Unweighted CV and weighted CV.
Unweighted CV = \[
\frac{1}{N} \sum_{i=1}^{N} (Y_i - AA)^2
\]

Weighted CV = \[
\frac{1}{N} \sum_{i=1}^{N} (Y_i - AA)^2
\]

\(Y_i = \text{GDP per person for city } i\), \(N = \text{number of cities, } AA = \text{Arithmetic average of GDP per person}\)

\(P_i = \text{Population of city } i\), \(P = \text{Population of the country}\)

The measurement of inequality depends on the number of cities in estimating unweighted CV. On the other hand, the measurement of the inequality depends on the population of the city in estimating weighted CV. Maximum/minimum ratio and coefficient of variation give pre-information for one year. Comparison of these values with another year or years shows the trend of convergence. If a result of convergence is attained by the comparison of the years with the indicators that have been calculated by static methods, then it is called sigma convergence.

**Dynamic Method**

In empirical literature about the subject of convergence; beta convergence has been used as the dynamic method. If the growth rate of the regions at the end of a period has a negative relation with the initial income per person, then beta convergence exists (Dewhurst and Matis-Gaitan, 1995:23-24).

In beta convergence analysis, the following equation is expected:

\[
\ln (Y_{i,t}/Y_{i,0}) = a_1 + a_2 \ln Y_{i,0} + u
\]

This formula is used for the convergence analysis of GDP per person. If the convergence of tax revenue is being analysed, then instead of GDP the data for tax revenue per person will be used. Public expenditure per person is analysed with the same method.
In this equation 'Y' is 'gross national product (GNP)'; 'i' is 'region', 'o' is 'initial year of analysis period' and tis 'the last year of analysis period'. If the value of \( \hat{a}_2 \) is between -2 and 0, then convergence is accepted. In this equation \( \hat{a}_1 \) is regional growth balance ratio of GDP and \( \hat{a}_2 \) is the convergence ratio. If the value of \( \hat{a}_2 \) is less than 2 it is called strong convergence; if it is greater than 3 it is called weak convergence. With weak convergence, as a result of faster growth of poorer regions the absolute difference between poor and rich regions at the end of the period will be greater than the beginning (Armstrong, 1995:47/).

In this study both dynamic and static methods have been applied. The data of 1990-2005 period has been used for public expenditure and tax revenue. Due to the availability of the GDP data, the data of 1990-2001 periods has been analysed. In convergence analysis; as an indicator of public expenditure 'public expenditure/total public expenditure ratio', as an indicator of tax revenue 'GDP/Total GDP ratio' has been applied where i indicates 'city'. Maximum/minimum ratio and unweighted CV have been used as a static method. In the dynamic method beta convergence analysis has taken place by panel data. All the cities have been included in the study. In the year 1990 the number of cities was 67 then, it increased to 81 in 2005.

The data of GDP for each city was obtained from the Turkish Statistical Institute (TURKSTAT), whilst the data of public expenditure and tax revenue were obtained from the web site of Ministry of Finance General Directorate of Public Accounts

V- Findings of the Research

Findings of the Static Method

The table of maximum/minimum ratio and unweighted coefficient of variation for the period of 1990-2005 is set out below. Figures 1, 2 and 3 have been prepared with the data in Table 1.

---

\(^2\)Conditional beta convergence analysis can be made by the broadening of beta convergence. Conditional beta convergence is expected as the equation below (Armstrong;1995).

\[
\ln \left( \frac{Y_{i,t}}{Y_{i,o}} \right) = a_2 + a z l n Y_{i,o} + a 3 \ln V_{i,o} + u
\]

In this equation \( V \) is the 'variables' that can affect the balance growth rate of a region. The negative \( a_2 \) value of the expectation is used as an indicator of conditional convergence. One of the variables that can be applied for the conditional beta convergence studies is the dummy variable which is used to find out the effects of the regional and sectoral differences on the growth rate. In this study, there is only beta convergence analysis. Conditional beta analysis has been left over for other studies.
Table 1: *The Results of the Static Method*

<table>
<thead>
<tr>
<th>Year</th>
<th>Public Expenditures</th>
<th>Tax Revenues</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public Expenditures</td>
<td>Tax Revenues</td>
<td>GDP</td>
</tr>
<tr>
<td></td>
<td>MMR*</td>
<td>UWCV**</td>
<td>MMR</td>
</tr>
<tr>
<td>1990</td>
<td>83.10</td>
<td>1.46</td>
<td>1892</td>
</tr>
<tr>
<td>1991</td>
<td>75.33</td>
<td>1.50</td>
<td>1837</td>
</tr>
<tr>
<td>1992</td>
<td>103.56</td>
<td>1.50</td>
<td>1739</td>
</tr>
<tr>
<td>1993</td>
<td>71.90</td>
<td>1.49</td>
<td>1847</td>
</tr>
<tr>
<td>1994</td>
<td>82.99</td>
<td>1.54</td>
<td>1886</td>
</tr>
<tr>
<td>1995</td>
<td>175.85</td>
<td>1.70</td>
<td>1853</td>
</tr>
<tr>
<td>1996</td>
<td>105.97</td>
<td>1.62</td>
<td>1836</td>
</tr>
<tr>
<td>1997</td>
<td>96.20</td>
<td>1.63</td>
<td>1847</td>
</tr>
<tr>
<td>1998</td>
<td>96.50</td>
<td>1.74</td>
<td>4155</td>
</tr>
<tr>
<td>1999</td>
<td>110.30</td>
<td>1.88</td>
<td>4216</td>
</tr>
<tr>
<td>2000</td>
<td>113.35</td>
<td>1.88</td>
<td>4158</td>
</tr>
<tr>
<td>2001</td>
<td>124.27</td>
<td>1.95</td>
<td>4106</td>
</tr>
<tr>
<td>2002</td>
<td>135.93</td>
<td>2.04</td>
<td>4239</td>
</tr>
<tr>
<td>2003</td>
<td>146.18</td>
<td>2.11</td>
<td>4382</td>
</tr>
<tr>
<td>2004</td>
<td>140.33</td>
<td>1.87</td>
<td>4265</td>
</tr>
<tr>
<td>2005</td>
<td>136.03</td>
<td>1.88</td>
<td>4027</td>
</tr>
<tr>
<td>average</td>
<td>112</td>
<td>2</td>
<td>3018</td>
</tr>
</tbody>
</table>

*MMR: maximum minimum rate; **WCV: unweighted coefficient of variation; na: data is not available.

**Figure 1:** The Trend of Maximum Minimum Rate (1990-2005)

PE: public expenditures, TAX: tax revenues, GDP: Gross Domestic Product
Figure 2: The Trend of Unweighted Coefficient of Variation (1990-2005)

PE: public expenditures, TAX: tax revenues, GDP: Gross Domestic Product

For the existence of the sigma convergence, maximum/minimum ratio should be continuously and consistently decreasing and unweighted coefficient of variation should be getting closer to 0 during the period. The findings of Table 1, Figure 1 and Figure 2 neither show the decrease in maximum/minimum ratio or the unweighted coefficient of variation getting closer to 1. Table 1 indicates that a radical increase in the trend of public expenditure in 1995 and 2003. These are the results of a serious economic crisis prior to these years. Comparison of the trend of public expenditure and tax revenue in Table 1 shows that while public expenditure is affected by the economic crisis, tax revenues are not.

These findings indicate that during the period of 1990 and 2005 there was no sigma convergence with the data of public expenditure, tax revenue and GDP. If we compare public expenditure and tax revenue on the subject of convergence, the difference between the city that spends the most for public expenditure and the city that spends the least for public expenditure can be expressed by hundreds, whereas the difference for the tax revenue can be expressed by thousands. While the highest maximum/minimum ratio for the public expenditure is 175, it is 4382 for tax revenue. These findings confirm that the convergence of public expenditure is much less than the convergence of tax revenue.
The Findings of Dynamic Method

The following equations have been developed for the convergence analysis of public expenditure, tax revenue and GDP, and they have been estimated with the panel data.

\[
(\text{PE}_i,t, \text{PE}_i,o) = a_1 + a_2 \text{PE}_i,o + u \\
(\text{TAX}_i,t/ \text{TAX}_i,o) = a_1 + a_2 \text{TAX}_i,o + u \\
(\text{GDP}_i,t/ \text{GDP}_i,o) = a_1 + a_2 \text{GDP}_i,o + u
\]

In these equations PE denotes public expenditure, TAX denotes tax revenues, and GDP denotes Gross Domestic Product.

Table 2: Beta Convergence Analysis, Panel Data (1990-2005)

<table>
<thead>
<tr>
<th></th>
<th>Public expenditures</th>
<th>Tax revenues</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a_1)</td>
<td>-0.02 (-4.36)*</td>
<td>-0.03 (-12.6)</td>
<td>-0.003 (-1.5)</td>
</tr>
<tr>
<td>(a_2)</td>
<td>-1.25 (-2.06)*</td>
<td>-0.001 (3.61)*</td>
<td>-0.001 (.386)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.01</td>
<td>0.039</td>
<td>0.001</td>
</tr>
<tr>
<td>DW</td>
<td>1.71</td>
<td>1.85</td>
<td>2.07</td>
</tr>
<tr>
<td>Included observations</td>
<td>15</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Cross-sections included</td>
<td>81</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>Total pool (unbalanced) observations</td>
<td>1179</td>
<td>1179</td>
<td>846</td>
</tr>
<tr>
<td>Finding</td>
<td>Strong convergence</td>
<td>No convergence</td>
<td>No convergence</td>
</tr>
</tbody>
</table>

259
Figures in brackets are t-statistics, * significant at the 5 percent level. Method is Pooled EGLS (Cross-section weights); Linear estimation after one-step weighting matrix.

According to the empirical findings of sigma convergence analysis (static method), sigma convergence has not been observed for the data of public expenditure, tax revenues and GDP during the period of 1990-2005.

According to the empirical findings of the beta convergence analysis (dynamic method), while beta convergence has not been observed for the data of tax revenue and GDP, there have been strong convergence for public expenditure.

VI- Concluding Remarks

The findings of public expenditure and tax revenue convergence analysis by the static and dynamic methods are as follows: During the period of 1990-2005 while the difference of public expenditure between the cities are decreasing, a parallel improvement for the tax revenue and GDP have been observed. In this period it is found that while the average maximum/minimum ratio of public expenditure is 112, it is 3018 for tax revenue. The difference between these two variables is far too much. This indicator shows that there has been a very significant inequality between the distribution of public expenditure and the distribution of tax revenue in this country. Cities that benefit most from the public expenditure do not contribute a lot to the cost of it. There is serious instability with the horizontal section distribution of the tax burden. In this study the findings of convergence informs us about the regional net fiscal convergence in Turkey. While some of the cities get benefit from the public expenditure much more than others, their tax burden is relatively low.

On October the 6th 2004, the TURKSTAT released the results of a study about household income distribution for the year 2003 (Ersel, 2004) The comparison of the results on the same subject in the years 1994 and 2003 is shown below.

---

5 For detailed comments on the distribution of income sec Ersel (2004)
Table 3: 1994 and 2003 Household Income Distribution

<table>
<thead>
<tr>
<th></th>
<th>1994</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>First (minimum income)</td>
<td>4,9</td>
<td>6,0</td>
</tr>
<tr>
<td>Second %20</td>
<td>8,6</td>
<td>10,3</td>
</tr>
<tr>
<td>Third %20</td>
<td>12,6</td>
<td>14,5</td>
</tr>
<tr>
<td>Fourth %20</td>
<td>19,0</td>
<td>20,9</td>
</tr>
<tr>
<td>Fifth (maximum income) %20</td>
<td>54,9</td>
<td>48,3</td>
</tr>
<tr>
<td>Total</td>
<td>100,0</td>
<td>100,0</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>0,49</td>
<td>0,42</td>
</tr>
</tbody>
</table>

Source: TURKSTAT

As can be seen in Table 3, there has been an improvement in the inequality of the household (personal) income distribution in Turkey. While the shares from the distribution of income have been increased for the lowest income groups, it has been decreased for the highest income groups. It is observed that the Gini coefficient which is the indicator of personal income inequality has been decreased by 7% \(^7\). This decrease shows that there has been an improvement in personal income distribution which is in agreement with our findings. The convergence in GDP that is the finding of our study and Household Income Distribution study findings support each other.

The improvement of the distribution of personal income and public expenditure indicates positive progress for the Turkish economy. However, based on the findings of this study it is not possible to give any perception of the effects on each other of personal income distribution and GDP distribution among the cities. There is a need for further new studies on this subject.


\(^7\) The use of Gini coefficient by itself can be inaccurate as an indicator of income distribution. If the income distribution is progressing generally in the country, while the share of income that the poorest 20% of the population is decreasing, it is insignificant to say there is a decrease of the inequality of income in the country (Onsal, 2004:547). Because of that the shares that the 20% of the population is getting from the income distribution should also be examined and considered.
In the literature of convergence studies since sigma convergence analysis has a disadvantage of being a momentary analysis, it has a secondary importance after beta convergence analysis. Because of that sigma convergence is used as a supporter of beta convergence. If there are contradictions on the findings, the findings of beta convergence are more preferable than sigma convergence. In this study, the findings of the dynamic method have been primarily considered.

The findings of the study indicate the public expenditure convergence. The achievement of this finding is a positive improvement for indicating the decrease of the differences on public expenditure among the cities in the country. The finding of public expenditure convergence illustrates the convergence of public expenditure in respect of quantity, however it does not inform the convergence in respect of quality. The ideal convergence is the convergence in respect of quantity and quality together. In this study, only convergence in respect of quantity has been examined. For future studies the subject of quality convergence in public expenditure is recommended. Quality convergence in public expenditure can be measured by the following indicators; convergence in the number of doctors, nurses, teachers and beds for each 10,000 people in the city.

In this study, the finding of a decrease in the differences of public expenditure among the cities has been achieved with the total general budget expenditure data. With the availability of the data for specific expenditure items e.g. education, health, etc., convergence analysis proves the differences of these kinds of expenditures among the cities. This subject is suggested for future studies.

The findings of the lack of tax revenue convergence indicates that the tax burden of the country is concentrated in only a few regions and it also indicates that the financing of public expenditure has not been received rationally from all cities in the country. One of the reasons for the unavailability of tax revenue convergence can be existence of an underground economy. This needs to be addressed. One of the other reason for the unavailability of tax revenue convergence can be the different tax effort ratios among the cities. For convergence in tax revenues, tax burden of provinces should be closer. However it is necessary to mention that there is no difference between the qualities of public expenditure convergence and tax revenue convergence. The government can completely eliminate the differences of public expenditure per person among the cities if they prefer so, however they can not eliminate the differences completely, in other words the public expenditure convergence takes in entirely: Because tax capacities of the cities are different for being dependant on location, industry, tourism, natural resources, transportation links etc., some of these factors can not be changed. Due to these reasons tax revenue per person among the cities can be decreased, but can never be eliminated completely.
To sum up, based on the findings of our study, the initial hypothesis of 'Convergence of public expenditure and convergence of tax revenue are approved as a result of convergence of income per person.' have been approved in respect of public expenditure, but has not been approved in respect of tax revenue. Where the lack of public expenditure convergence is a positive improvement, the lack of tax revenue convergence is a negative improvement for the country. To decrease the tax revenue differences per person among the cities, a decrease in the underground economy and the minimization of the differences of the tax effort ratios are suggested among the cities.

In this study, all cities are included in a single group. For future studies, cities can be sub-grouped (clusters) according to their income level and regional distributions then, the existence of convergence should be studied within these sub-groups.