ANALYSIS AND ESTIMATION OF THE REGIONAL POLICY IN AZERBAIJAN

By

Jamila Mammadova

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Supervisor: Professor Attila Ratfai

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ABSTRACT

The research analyzes the ongoing regional policy in Azerbaijan and conducts the OLS estimation of its effectiveness for the regional development. The most used tools in the regional policy of the country are constructional investments and support of small and medium enterprises; the effectiveness of which are estimated in the thesis. The results show that the strongest effect of the regional tools is achieved by the support of small and medium enterprises, whereas large and medium constructional investments are the least effective ones, and need to be reconsidered. The other important finding is that the regional policy does not affect the real wage in regions. At the same time, an establishment of higher educational entities in regions has a high potential for regional development, which needs to be considered by the government. Also, the policymakers shall consider diversification of the regional policy, like introduction of program approach, improvement of the institutional framework, and investments in technological advancement.

Keywords: regional development, regional policy, regional inequality

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List of ABBREVIATIONS

AzStat – The State Statistical Committee of the Republic of Azerbaijan

NFES – National Fund of Entrepreneurship Support under the Ministry of Economic Development of Azerbaijan Republic

FDI – Foreign Direct Investments

R&D – Research and Development

GDP – Gross Domestic Product

OLS – Ordinary Least Squares

INTRODUCTION

"What are we having this liberty for?

We are having this liberty in order to reform our social system,

which is full of inequality, discrimination and other things,

which conflict with our fundamental rights."

B.R. Ambedkar

Since 2009 Azerbaijan has been implementing a state program that aims at reduction of the regional inequality within the country. The reason to launch the program was the persistence of the regional disparities that have not been mitigating significantly over time. The regional investments have been made by the government even before the program as the regions could not develop otherwise. According to statistics, the economic center of the country has been its capital city, and there is no other area in the country that is at least half as developed in terms of regional output per capita.

The aim of this research is to analyze and estimate the regional policy in Azerbaijan. The research adapts the approaches of two analyses by Vedran Dulabic (2011), and Zhang and Fan (2006), who study the regional policies in Croatia and China, respectively. The former contributes to the current research with his qualitative analysis of the Croatian regional policy, and by pointing out the main aspects of the evaluation of the regional policy. For Azerbaijan, these aspects are slightly different from the Croatian case; and these aspects are administration, components and effectiveness, transparency and efficiency approach, and institutional system and monitoring of the programs. The latter work influences the current research through its approach to estimating the effectiveness of a regional policy through an econometric model that captures the effect of contributing factors on the regional growth, and includes the major policy

tools. Nevertheless, the methodology applied for the econometric model of the current research is different. In order to perform an estimation of the policy and get some conclusions about the effectiveness of the program, I follow the standard approach to policy evaluation, which means I identify key policy instruments and exogenous non-policy influencing factors (Eric McVittie, 2003), and then run a regression. The econometric model of the current research estimates the effects of investments, discounted loans, education, and structure on the regional growth indicators. Out of these four contributing factors, the first two are of our interest as they are the most used tools by the state program. The estimation is made by the Ordinary Least Squares (hereinafter referred to as OLS) regression of the panel data with fixed effects.

Regional inequality represents one of the most broadly discussed issues in the economic circles today. The issue of geographical disparities embodies underlying causes of negative economic consequences on the national level since underperforming areas slow down a country growth, cause political concerns, and make an economy volatile. Some economists estimate that regional inequality is accountable for a third of the inter-personal inequality (Yemtsov and Elbers et al. (2005) as cited in Lessmann, 2011). The problem of regional inequality is complicated by the fact that it tends to worsen over time in case of absence or insufficient intervention. Global experience shows successful cases of the fight against the regional inequalities like that of Great Britain (Armstrong and Taylor, 2000) or Ireland (Nicholas Rees, 2006). However, the world practice has also less positive examples like the case of Italy, where governmental help and subsidization did not bring significant positive outcomes or brought them in a very low weight (Barnier, 2003). This suggests that the analysis and estimation of effectiveness of regional programs and determination of the sources of the regional inequality are crucial for the regional policymaking.

The importance of the research is clear, and the two supporting arguments can be stated here. Firstly, the research provides policy implications for the regional policy in Azerbaijan. Currently, the Ministry of Economic Development of the Republic of Azerbaijan is an administrative unit that is responsible for the coordination of the regional policy; and it claims that the country has not conducted any similar research and does not possess any. Given this fact the material provides a valuable study of the ongoing regional policy program for the Azerbaijani policymakers. At the same time, it is important to estimate the regional policy since the public spending on the regional development has to be efficient and effective, and the whole society bears losses otherwise.

Secondly, the research and estimations of a regional policy is a relatively fresh field in economics, and the importance of the subject is growing and has improving recognition by the policymakers over time. Since the research combines the approaches of several studies, it forms its own unique approach for analysis and estimation of the regional policy, which is a contribution to economic literature.

The work is structured as follows: Chapter one describes the problem of regional inequality in Azerbaijan, and shows the results on its factual measurement and comparisons to some other countries. The forms of measurement are maximum/minimum ratio and the coefficient of variation of output per capita among the regions. Chapter two reflects on the theories and empirics helpful for a better understanding of the sources of regional inequality. In addition to that, the literature on regional policymaking is presented for a clearer analysis of that in Azerbaijan. Chapter three provides the qualitative analysis of the ongoing regional policy in Azerbaijan, and points out the most important tools used by the government. Chapter four is the

econometric estimation of the effectiveness of the regional policy. The work is briefly summarized in the conclusions, which also contains the policy implications.

CHAPTER 1. OVERVIEW OF REGIONAL INEQUALITY IN AZERBAIJAN

The problem of regional inequality goes hand in hand with personal inequality of economic agents (Andrés Rodríguez-Pose, 2008). This problem is essential for Azerbaijan where, historically, the economic center of the country has been the capital, Baku. The recent rapid growth of the country since 1997-1999 is attributed to the large volume of extraction and sale of oil and oil products on the world market. Nevertheless, the growth has not brought the equally fruitful outcomes to all regions and has contributed to the regional inequality persistent in the economy for a long period of time. Oil extraction and refining is geographically concentrated across Baku, which partly explains the large disparities in economic development. However, the density of business activities is not the only distinctive feature between the regions, and one of more important ones is the difference of the living standards. The problem of existence of regional inequality has been recognized by the policymakers, and various programs were initiated for its mitigation. The body responsible for the implementation of those programs is the Ministry of Economic Development. In addition to that, the National Fund for Entrepreneurship Support (hereinafter referred to as NFES), established in Azerbaijan as a promoter of a general development after the collapse of the Soviet Union, took a partial role in implementation of the regional equality promotion program. The current President of Azerbaijan, Ilham Aliyev, approved the State Program on Socio-Economic Development of regions in the Republic of Azerbaijan in order to speed up the solvation of the regional inequality issue.

In order to analyze the ongoing regional policymaking, it is crucial to analyze the extent of significance of the problem. In this chapter the statistical data of regional inequality is presented for the description of the problem itself. For the comparison purposes, the measurement of the current inequality is helpful and is performed in the following sections. Estimated parameters are

compared to those of some other countries, which gives more intuition to the level of the seriousness of the problem.

1.1. Economic regional division

The division of the regions is imported from the official economic classification established by the country. Azerbaijan is divided into eleven economic regions, each of which embodies a number of cities and regions. According to the publications of the State Statistical Committee of the Republic of Azerbaijan (hereinafter referred to as AzStat), the capital city, Baku, represents a separate economic region. It comes out of the fact that the economic structure and environment as well as pace of growth are different in the city and other regions. The eleven economic regions are: Baku city, Absheron economic region (hereinafter referred to as "Absheron"), Ganja-Gazakh economic region (hereinafter referred to as "Ganja-Gazakh"), Shaki-Zaqatala economic region (hereinafter referred to as "Shaki-Zaqatala"), Lankaran economic region (hereinafter referred to as "Lankaran"), Guba-Khachmaz economic region (hereinafter referred to as "Guba-Khachmaz"), Aran economic region (hereinafter referred to as "Aran"), Kalbajar-Lachin economic region (hereinafter referred to as "Kalbajar Lachin"), Yukhari Garabagh economic region (hereinafter referred to as "Yukhari Garabakh"), Daghlig Shirvan economic region (hereinafter referred to as "Daghlig Shirvan"), Nakhchivan economic region (hereinafter referred to as "Nakhchivan"). Their geographical allocation can be seen on Picture 1.

The important note has to be stated here regarding the economic regions of Kalbajar-Lachin and Yukhari Qarabakh. Since the majority of the territories falling on these economic regions are currently occupied by Armenia, which is an internationally recognized fact and is confirmed by the European Parliament (Resolution, 2012), the regions' economic performance is lagging for

political reasons. Even though the statistics regarding these regions are published by the AzStat, in the framework of the current description the inclusion of these two regions will cause bias. These two low-outlier-regions represent the economic backlog, which is not result of economic policy of the country but of political disagreements. The share of output of these two regions combined is less than 1% of the total output of the country. For a more accurate comparison and analysis, I take these economic regions out of the further analysis, which needs to be returned immediately after the restoration of territory of the country.

Picture 1 Economic regions of Azerbaijan

Source: www.azerbaijan.com

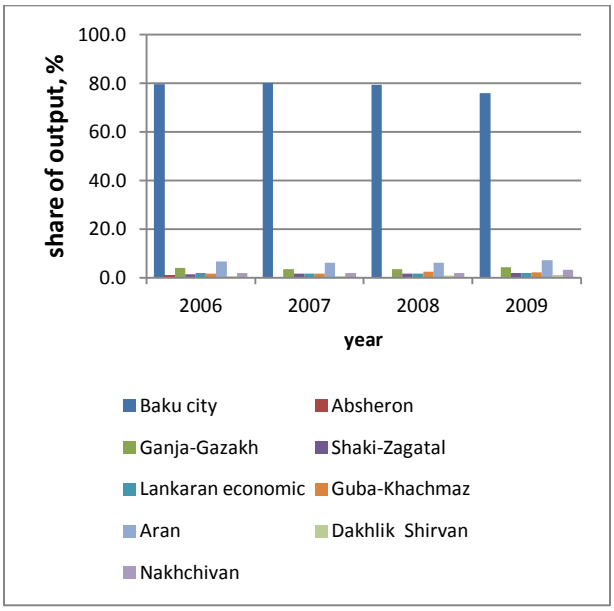
1.2. Economic, structural, social, and demographic differences among the regions

In this section the current conditions of the main socio-economic indicators are presented using the data from the AzStat. The main purpose to present these data is to be able to compare

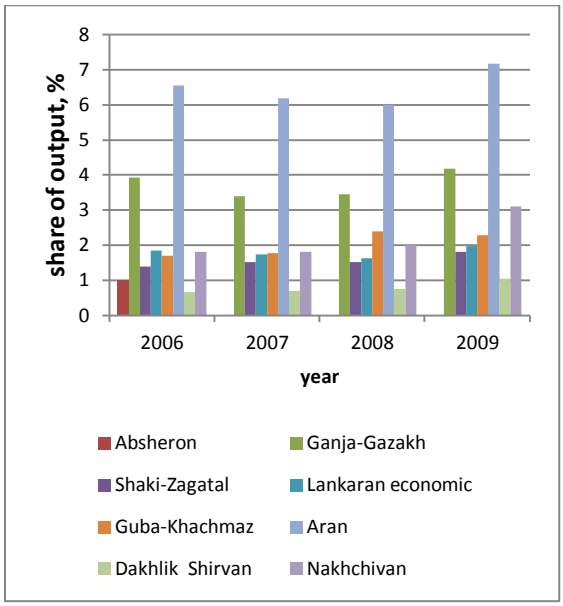
them to each other and detect the interregional inequality. The expected outlier of distinctively higher development in all parameters is Baku. The four main dimensions of factors are considered as key factors for analysis of regional inequality – economic, structural, social, and demographic. These factors are taken as explanatory in the technique for initial identification and assessment of regional differences (Dario Cziraky et all, 2005), which are equally applicable here.

The economic factors for the current analysis are represented by regional output, regional output per capita, and average nominal wage. As for the first indicator, the gross output falling on the capital city varies between 76-80% of the country total output in the period of 2006-2009, whereas the variation across the rest regions excluding Baku is around 1-7% of total GDP, which is shown on Graph 1 (a) and (b). Due to the large differences between Baku and the remaining areas, the graph is divided into two parts, where the first part (a) includes Baku and the second (b) does not.

Graph 1 Share in country total output per region



a) All regions with Baku



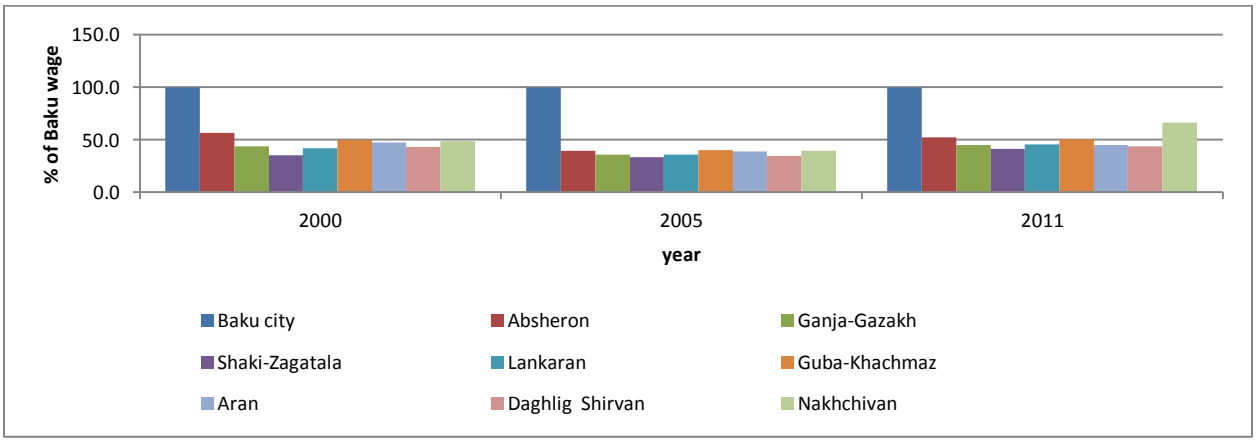
b) All regions without Baku

Source: AzStat

Graph 1 above captures the differences between regions through the gross output variation. However, the regional production differences can be attributable to the population differences, and to control for it, the per capita region output is worth comparing. The data is available for each economic region and its subdivisions for the period of 2006-2011 from the AzStat. According to the AzStat, the per capita output in 2011 in current prices in local currency constitutes 20.1 thousands manats for Baku, and 1.9 thousands manats for regions on average, which is more than ten times higher for the former. Apart from Baku and the two excluded regions, the minimum per capita output within the regions is just above one thousand in Lankaran, and the maximum is Nakhchivan with 5.5 thousands manat.

The nominal wage difference is such that the nominal wage in Baku is around twice as high as that that in the majority of other regions. The differences are summarized in Graph 2, where the nominal wages are represented in percentage terms with Baku holding 100%[1].

Graph 2 Relative nominal wages per region



Source: AzStat, Author's own work

The next type of information, the structural dimension of inequality is described by employment to population ratio, and the share of employees engaged in agriculture. Due to the lack of statistical data on structural information, the information presented here is slightly different from the initially planned one. Nevertheless, I decided to keep and present the available information so that the structural aspect is not lost in the analysis. The classical way of presenting the employment information is the ratio of the labor force to population. However, the labor force data is not available on the AzStat at economic regions level, and, thus, the ratio of employees to population is used. The number of employees available at the AzStat is the number

[1] The reason to format the data in this way is that perception of differences is misleading otherwise. Given the fact that the data is measured in nominal terms, the previous years' nominal salaries are times lower, which makes previous years' data look more or less equal between the regions. With the percentage measurement, the picture is more accurate and informative.

of people who signed a labour contract, and, thus, does not include the self-employed or unemployed. Since the comparison is made on interregional level only and is not extended to the international level, I assume that application of the same technique of calculation for all regions, which is the ratio of employees to population, can serve for the description of differences between the regions. It can be considered as a suitable proxy since the difference between regions is not lost by such replacement. These ratios for 2010 are presented in Table 1, and it indicates that the two regions with the best employment performance are Baku and Nakhchivan, and the region in the low extreme is Lankaran. These findings are consistent with the economic dimension results, and with my expectations.

Table 1 Ratio of number of employees to population per region, 2010

0.29	0.15	0.12	0.12	0.08	0.1	0.11	0.09	0.21
Baku	Absheron	Ganja-Gazakh	Shaki-Zagatala	Lankaran	Guba-Khachmaz	Aran	Daghli Shirvan	Nakhchivan

Source: AzStat, Author's own work

The second parameter of structural dimension indicates the business structure and diversification of business activities in a region, which is crucial while thinking of regional inequality. To find employment in agriculture we obtain the data on the region level from the AzStat again. The ratio of employees engaged in agriculture to total number of employees for 2010 can be seen in Table 2. Nevertheless, according to the World Bank statistics, the average share of employees in agriculture in Azerbaijan constitutes 38% per year in the period of 2008-2011. In the table presented below the share of those employees is incomparably lower. One explanation of this fact can be taken from the methodology of the AzStat, where they state that

the number of employees refers only to those people who signed labour contracts, whereas I expect a good portion of people to work without them. Since the interest is in variation rather than in gross numbers, the findings are still presented here. The possible limitation of this table is that some variation can be explained with different power of law in different regions, which automatically means more registered farmers in some regions. This limitation is not very strong since in that case share of registered employees in other fields increases as well, and effect on relativity is small even though it does exist. The findings are consistent with the issue raised in the current work and show a large variation of structure among the regions with higher share of agriculture workers in non-capital areas.

Table 2 Ratio of employees in agriculture to total number of employees per region, 2010[2]

0.05	2.27	2.07	3.42	2.06	8.06	5.53	6.25	0.5
Baku	Absheron	Ganca-Gazakh	Shaki-Zagatala	Lankaran	Guba-Khachmaz	Aran	Daglig-Shirvan	Nakhchivan

Souce: AzStat, Author's own work

It should be mentioned that the share of agricultural employment tends to decrease in almost all regions over time.

The social dimension of the differences plays a significant role for capturing the social exclusion of underperforming regions, which is believed to take place in lagging regions. The social exclusion is believed to be a hurtful outcome of regional disparities (Benneworth, 2001). The social exclusion in regional terms is believed to cause lower education and more crime as a result of lower economic development. In order to check the topicality of the social exclusion I

[2] The ratio has been multiplied by one hundred since the numbers are too low

am calling for data on education and crimes per region. If Baku, which is obviously a leading region with the highest number of population, has lower crimes rate, the social exclusion would indeed be following out of the economic differences. For the education differences the three indicators are selected: the number of complete high school graduates, the number of higher educational entities, and the number of PhD program graduates. As for the first indicator, according to the AzStat, almost 40% of the population has completed high school education in Baku in 2011. Among the regions, Absheron and Nakhchivan have similar results of 38.2% and 35.3% respectively. The lowest indicator can be found for Lankaran with 17% of high-school graduates and Guba-Khachmaz with 19.2%. The remaining regions' education indicators are varying across 25%.

The number of existing higher educational entities is very informative as it shows the existence or, in contrast, the absence of choice for regional inhabitants to have an educational development. The absence of sufficient amount of higher educational entities across the regions forces the regional inhabitants either to give up on a higher education or to move to the capital. In order to get the information on existing higher educational entities, the information on the full list of the higher educational entities in the country is taken from the web page of the Ministry of Education. Afterwards, the number of those entities is calculated for each economic region, which is summarized in Table 3 below.

Table 3 Number of higher educational entities by economic regions, 2010

Economic region	Number of higher educational entities
Baku	42
Absheron	2
Ganja-Gazakh	5
Shaki-Zagatala	2
Lankaran	2
Guba-Khachmaz	1
Aran	4
Dakhlik Shirvan	1
Nakhchivan	3

Source: Ministry of Education of Azerbaijan, Author's own work

As it can be seen in the table above, the capital city is incomparably more developed in terms of diversity of the higher educational entities than the other regions. It must be also mentioned that the majority of the higher educational entities in the economic regions other than Baku are branches of the same university – Azerbaijan Teacher's Institute, which implies that there is no sufficient diversity even among the regions.

The last indicator of education, the number of PhD graduates, is also informative since it embodies human capital formation, number of people engaging in education career, and number of educated professors. Out of 396 PhD graduates in 2011, 368 fall on Baku. In percentage variation, the number of any regions' PhD graduates does not reach 0.01%, and in Baku the percentage share is 0.02%. The absence of people of academic career in regions is obvious from these numbers. One can conclude certain signals of social exclusion here, which is not surprising.

As for the number of crimes, the data do not support the theoretical expectation of social exclusion and do not indicate any reduced security in the lagging regions. In fact, Baku is the leading area of crimes to population with slight distinction though.

Density of population distribution is taken as an explanatory factor for the demographic dimension. The information on the population density in the economic regions is available for the year of 2012, and the results are not surprising. In Baku, the number of people per 1 square kilometer is 996, and it is the highest population density among the studied areas. For the other regions the maximum density captured is 161 in Absheron, whereas average density for the whole country is 107 people per 1 square kilometer.

It might be surprising that the distribution of population is not demonstrated for the demographic dimension. The reason is that the majority of people that live in Baku are not registered officially, and, thus, the official data on population distribution can be misleading. The same rationale can be applied to the statistics of density described above, but, in this case, the disparities across the capital and other regions are even higher.

1.3. Measurement of inequality and its dynamics

The variable used for the measurement of the regional inequality is the regional output per capita. There are several techniques to measure the level of inequalities like max/min ratio, coefficient of variation, GINI index, and Theil index. Only the first two are used in the measurement of inequality for Azerbaijan. The technique for calculation of them is used in measurement of the inequality for the EU countries (George Petrakos, 2005) and is also applied here. Afterwards, the calculated numbers are compared to those indicators of some other countries. In addition to that, this technique is studied and used for comparative analysis of

Croatia (Jakša Puljiz, 2007), and to measure inequalities for developing countries (Lessmann, 2011).

The calculation of the maximum-minimum ratio has a simple technique, but has certainly some limitations since it puts too high stress on the outliers. Nevertheless, it is worth making comparisons as the data is not narrowed down to individual income, and the regional outlier represents an outlier of a large group of people. As to the coefficient of variation, the formula applied by Puljiz and Malekovic (2007) and Lessman (2011) in their measurements of inequalities in various countries is applied for Azerbaijan:

$$CV_w = \frac{1}{\bar{y}} \sqrt{\left[\sum_{i=1}^{n} (y_i - \bar{y})^2 \frac{P_i}{P_{tot}}\right]}$$

Where:

CV – coefficient of variation of parameter in country w

y_i = variable under examination in region i

= national average of the variable under examination

P_i = population in region i

P_{tot} = national population

n = number of regions

In order to capture the dynamics of regional inequality, the maximum/minimum ratio and the coefficient of variation for the regional output per capita was estimated for the years 2006, 2008, and 2011. The results are presented in Table 4; the numbers are rounded to one decimal.

Table 4 Regional inequality measurement results for Azerbaijan

	Min/max ratio	Coefficient of variation
2006	19.3	2
2008	20.1	1.7
2011	12.6	1.4

Source: AzStat, Author's own calculations

According to the estimation, the dynamics signal a reduction of the regional inequalities in Azerbaijan over time. Nevertheless, the results of the same calculations for Croatia in 2000 indicate much better situation that that in Azerbaijan. By the same token, the coefficient of variation in Croatia in 2000 is 0.39, and min/max ratio of 3.0, which questions the optimistic perception of the Azerbaijani figures. The highest coefficient of variation in 2000 was estimated for Latvia, and it is equal to 0.74, and the max/min ratio for the same country is 4.3. Moreover, in Indonesia the coefficient of variation is again lower, and is precisely equal to 1.2, which is revealing the topicality of the problem for Azerbaijan. Simple comparison tells that the level of current regional inequality in Azerbaijan is higher than that of the country with the highest level of inequality in 2000. Despite the fact that the problem has a diminishing trend, it is, possibly, too slow to conclude a positive tendency. The pace of the reduction is much slower than in other transition economies like Croatia or Hungary.

CHAPTER 2. REVIEW OF THE LITERATURE ON REGIONAL INEQUALITY

Today, one can find a lot of research conducted by many economists that explains regional disparities. In order to analyze and estimate the regional policy in Azerbaijan, it is important to understand the world experience in regional policymaking and possible sources of the problem. This understanding helps to conduct analysis and estimation of the relevance and effectiveness of the policy in the country. Thereby, the aim of this chapter is to analyze existing explanations of the regional inequality in theory and empirics; to investigate the policies aimed at mitigation of the problem. Mostly, regional disparities are studied and explained in the same way as disparities between countries, just with some additional consideration of regional details. The theories discussed further are adapted in the analysis of Azerbaijani regional inequality. Besides, the policy applied by different countries in this field is studied, and the reasons of success and failures are captured and adapted in assessment of Azerbaijani regional policymaking.

2.1. Regional inequality in theory and empirics

As was stated earlier, the regional economic theories are solely based on the macroeconomic models. According to the core model of regional economics, the root cause of agglomeration in one center is saving of economic agents on the transportation costs. In sum, it explains the regional disparities by existence of the transportation costs, which forces firms to locate closer to each other and, ultimately, agglomerate. The limitations of this approach are the diminishing costs of the transportation today. There is an empirical study on the inertia of agglomeration (Aguayo, 2004), trying to establish the dependency between attractiveness of area and its further growth for western and central Europe. The hypothesis of the research was that countries with higher output per inhabitant tend to attract more people and cause migration and

over time agglomeration. It was explaining the main idea of the theory that more developed regions help to save costs, offer higher value added, attract a work force and develop further. The theory and the estimation suggest that in order to reallocate economic activities there is a need in investments in infrastructure. If this theory is true for the regional growth in Azerbaijan, then investments in infrastructure shall bring development to the regions.

Nevertheless, not all theories necessarily support investments. The neo-classical model of growth, the Solow model, is also integrated in the analysis of the regional economics. The theory explains the differences in regional development through the differences in capital stocks. The growth is stated to be continued with a capital influx until the regional steady-state level, and at this point the technological improvement only can induce a further development. The rationale behind this theory is exactly the reason why the capital transfers were so popular in the beginning of the 19th century. In Azerbaijan the government invests in the regions as well in order to support their development. Adaptation of this theory in our analysis implies the following: the reason of underperformance of the regions is lack of capital if their development is positively correlated with the investments, and is lack of technological improvement and/or human capital otherwise. The other explanatory parameter in the framework of the growth model is population growth. Despite the theory suggestions, the relationship of population and economic growth is arguable and is more relevant for a long-term analysis (A.F.Darrat, 1999).

The monetary stimulations of growth that are used as a policymaking tool by many countries including Azerbaijan, do not always bring positive results either, and, thus, need to be estimated. The Keynesian income-expenditure approach discusses the local government stimulations for the regional development; and it states that the effectiveness of the boost of demand depends on a market multiplier. The complexity comes from the fact that a multiplier

may have both negative and positive effects. Support of the local businesses positively affects the local economy given the fact that new companies create new job places, which in turn improves local demand and pushes a local economy up. On the other hand, when the local productivity is initially low and when the local economy depends on imports, the new enterprises are likely to spend their investments on further imports. Through the improved import, the stimulations in one region can end up with a higher growth in the other regions, which is called an interregional spillover effect. The other possible negative effect is inefficiency of the investments. When the government-supported enterprises are not capable of generating profit and are functioning with the help of provisions only, their existence is a loss for the whole nation. Given the aforementioned, the market multiplier in the Keynesian income-expenditure model is determined by propensity to consume and propensity to import on regional level. If the propensity to import is high, the multiplier gets lower, and the stimulations are bringing low results. The multiplier is calculated separately for each region and requires large scope of statistical data at regional level. The regional multiplier was calculated by several studies (Alessandra Faggian, 2003), and the technique of the calculation is simple but due to the lack of data at regional level is not possible to be applied for Azerbaijan. Nevertheless, the necessity of estimation of effects of the government stimulations for Azerbaijan can be easily concluded here.

Research into the contributing factors for regional development has followed various patterns and analyzed different factors most suitable to the regions under investigation. In a particular relevance to Azerbaijan is the work of Zhang and Fan (2006), who studies the effectiveness of the public stimulations for the regional disparities reduction for Chinese rural development. The analysis concentrates on the efficiency of the governmental investments and eventually shows that they conditionally contribute to the regional inequality reduction. The

investments indeed positively correlates with productivity in China, but some of those investments did not end up in the lagging areas. It implies that for some regions there is, ultimately, negative correlation between stimulations and regional growth. In addition to this finding, the authors also present the different results from different types of investments and find that government investments in education and R&D are the most efficient for the reduction of the regional inequality. Interestingly, the majority of the investments worsen inequality, which is explained as the result of continuation of pro-central allocation of the investments of government due to higher returns in the center.

A similar attempt to establish the factors contributing to regional inequality in China was performed by Tang and Selvanathan (2005). The hypothesis states that the region inequality is caused by unequal foreign direct investments attraction across the regions. The econometric model is also a regression that is trying to estimate all contributing factors along with the FDI per region. The effect of foreign direct investments is the most significant, whereas the governmental spending aimed at reduction of the regional inequality are estimated to be insignificant at all. Similarly to the previously discussed case, this research shows that in some cases stimulation may end-up being inefficient. These works show the importance of evaluation of the governmental stimulations.

Some economists believe that a structure of regional economies and their specialization can also play a role in regional development and, thus, need to be considered (Kowalewski, 2010), (Kawka, 2003). From the one side, specialization can increase a regional productivity through the technological improvement. From the other side, sometimes there is a need in convergence of structures across the regions, so that lagging areas may catch-up with more

developed ones. This fact can be also checked for Azerbaijan, where the main activity in the regions is agriculture.

2.2. Regional policy in theory and practice

Since Azerbaijan is an inexperienced country in the regional policymaking, it mostly follows the same strategy over time, and it does not try to apply some changes in its approach. Hence, a general review of existing policy measures and tools is crucial for the assessment and recommendations for the regional development in Azerbaijan.

The history of development of economic thought in the framework of regional policymaking was studied and brilliantly captured by Stimson and Stough (2008). According to the authors, the regional policymaking has been developing and varying overtime from the beginning of the 19th century up to today. The earliest approaches involved strong government interventions like the investments in construction of housing or other infrastructure. This approach was mostly used in 1950-1960s. In addition to that, the regional agencies were very prominent in the regional planning, and their regulation was performed by a central government. They were mostly engaged with the industrial control and/or industry allocations along with capital transfers. It implied a high government intervention in a general economic atmosphere. Nevertheless, Armstrong and Taylor (2000, page 238) argue that this policy is controversially successful. The main counterargument against the control of business allocations is twofold: first, they might reduce the amount of investments *per se*, as firms bounded in their decision making about locality might refuse to invest, and second is that such a regulation might bring inefficiency, which is an undesirable problem in the modern competitive world.

After full elimination of the gold standard, and the switch to the Bretton Wood, the monetary approach was a dominating tool in boosting economic development and achieving goals. The other important development of economic thinking was the focus on value-added, which is, in fact, a focus on technology and productivity. It switched into the dominating tool after 1980s, when the full realization of importance of the technological advancement was realized. It is exactly the period when innovation parks started being establishing. After 1990-s, a concentration over the paradigm of the collaborative advantage was rapidly growing. Ii implies a regional policy that tightens the regions one to another; and by this approach, benefits of one region is spilled over the others.

Last but not least, the final impact on regional policymaking was globalization, which raised the issue of sustainable development. The large conglomerates are mostly using advantages of certain regions, which influences the local economic atmosphere of almost all countries. Opening up of boarders is a win/lose situation, and with low government intervention or low protection attributable to the modern period, there is a large risk of shifts of productions among the countries. In this competitive environment the regional development might serve as an improvement of a national competitiveness as well. In addition to that, the quality of growth is also taken into consideration. Technology, efficiency, environment became the key features of the sustainable growth rather than just increase of the gross domestic product per region.

In short, technology again becomes a key factor. The area with a high technological progress obviously has further development in its technology, which brings a competitive advantage to it. The problem of asymmetric technological development can be also criticized by the argument of positional good, the possession of which by one group of economies forces the left group not to have it (Pan A. Yotopoulos, 2007). According to Pagano (Pan A. Yotopoulos,

2007), the positional good of the modern society is nothing but technology, which benefits ones and disadvantages others. This creates a monopoly of knowledge, and leaves no options for lagging regions to catch up with leading ones, which have access to the markets of almost all countries. The implication of the aforementioned for Azerbaijan is a need to consider emphasis on technology in the analysis of the regional policy.

Armstrong and Taylor (2000, page 233) define the main tools of regional policymaking. In the list of presented tools one can find reallocation of the labour and/or capital. The former can be achieved through measures like education, occupational trainings or migration costs' support; and the latter can be realized through the discounted loans, tax cuts, relaxation of administrative requirements or customs, R&D subsidies, advisory services, and the establishment of regional agencies. Importantly, the authors of the book stress some tools as the most preferred ones; and those tools are support for small and medium enterprises and investment in technological progress. The argument in favor of the former tool is the ultimate ability of the small and medium enterprises to create jobs, to diversify activities, to push competition, to stimulate innovation, and to improve the industrial relations. At the same time, the technological support, like acquisition of patents and distribution of them across certain regions, is seen as one of the most advanced tools of the modern economic conditions.

Despite the fact that the theoretical literature is helpful for understanding of the tools for a regional policy, the international experience and practice provide some useful cases of regional policy as well. The country that provides a great experience in this field is the United Kingdom. It was engaged in the regional policy as early as the 1920s. Despite the early period of start, there was a sea-change in Britain regional policy in 1978-1979 (Robert J. Bennet, 1991, p. 37), which was caused by inefficiency. Before that change, the approach was mostly based on "social

welfare" for every region. It was largely criticized and was ironically commented in the following way: "…[regional policy] played with more enthusiasm than success" (HoC, 1973, as cited in Robert J. Bennet, 1991, p. 38). The impetus to the changes was the inefficiency of governmental interventions, which was causing economic inflexibility and blocking adjust mechanisms in the economy of the country. It was seen as the primary source of low productivity in certain industries, and ended up with a new, more liberalistic approach in the regional policy in Britain.

The new regional policy was mostly dominated by market forces, and the government played the role of facilitator of production rather than its controller. By the same token, the automated subsidies were replaced with selective capital grants. The new aim was the development of competition, given a high pressure from the newly opened markets. The important achievement of the UK policy was a high attraction of foreign direct investments to the regions (Armstrong and Taylor, 2000). The factors that affected this were flexibility of the labour force, relaxed regulations, and access to the EU single market.

To summarize the case of the United Kingdom, the current situation is interesting to show. Today, within the frameworks of the EU Regional Policy, out of 37 regions of Britain, 35 are net contributors in the structural funds; all in all the UK is third largest net loser from the policy (Pawel Swidlicki, 2012). The influence of the case of Britain on the current analysis is such that the investments alone cannot form a regional policy. In order to switch from failure to success, Great Britain adapted changes that were relevant for it. Thereby, flexibility of a country to changes and monitoring of the efficiency of investments are supported not only by theory but are evident from practice.

The overview of Croatian regional policy by Dubic et all (2011) show some other advantageous and disadvantageous tools of regional policy. The modern regional policy in Croatia has been highly influenced by the EU Cohesion policy. The most used tools of the policy are the investments into human resources and physical infrastructure, which is a positive sign. The author believes that substantial institutional improvement is the establishment of the Ministry for Regional Development, which is directly in charge for the regional policy; which is stated on their official web page.

Nevertheless, the Croatian regional policy is criticized for the lack of partnership and efficiency approaches (Vedran Dulabic, 2011). The partnership implies the cooperation between the public and private sectors. The advantage of this approach is a coherent and stable development, high awareness of a government strategy by a public, and, ultimately, joint efforts of all economic agents, which can be achieved by developed institutional framework. The efficiency, obviously, requires some quantitative analysis of the correlation between the investments and returns. In case of Croatia, there is no clearly responsible authority to implement such estimations. Despite the fact that the institutional framework was officially established, it is not yet strong enough in terms of partnership and efficiency approaches. The main policy suggestion for Croatia by the author was a clearer and simpler institutional framework.

In contrast to Croatia, the successful case of regional policy in the frameworks of the EU Cohesion Policy can be seen in the case of Ireland. The case is believed to be one of the most efficient ones, and some important notes shall be stated here. Firstly, Ireland was not actively implementing a regional policy before the initialization of the EU Cohesion Policy. The successful results came out of the fact that Ireland managed to adapt to the requirements of the EU cohesion policy fast enough. These requirements involved changes in the institutional

framework of Ireland. This willingness to fulfill the requirements of the policy and flexibility of the country allowed Ireland to implement the changes. In fact, the government had a highly hierarchical structure before this policy; and after the initiation of the program two regions were authorized to implement their policy with a high independency (Nicholas Rees, 2006). The regional independency allows for more individual treatment of the local economies as well as keeping coordination of all administrative bodies on the country level.

Secondly, the contributing factor of successful regional policy was already existing socio-political environment, which provided the public participation and awareness during the program. This atmosphere speeded up the training planning and action processes within the regional policy of the country. It follows from the above that the partnership and institutional framework, which are a missing ingredient in the Croatian regional policy, are indeed important factors that can bring significant success in the policymaking.

CHAPTER 3. REGIONAL POLICY IN AZERBAIJAN

The analysis and estimation of the effectiveness of the regional policy in Azerbaijan requires a close study of its components and details. The aim of this chapter is to present all of the ongoing policy programs arranged so far and to analyze them from different qualitative prospects. The principal aspects of the programs are analyzed better when discussed singly (Vedran Dulabic, 2011), which allows for separate consideration of administration, components and effectiveness, transparency and efficiency approach, and institutional system and monitoring of the programs. The state programs that consider the regional development in Azerbaijan are announced and published by the Ministry of Economic Development of the Republic of Azerbaijan. Upon the whole, there are four state programs that are claimed to be engaged with the regional inequality, but only one among them focuses directly on the regional development. The most descriptive documents for the analysis of the state programs are the action plans that are published and available for each state program.

The four state programs that are claimed as involving regional development, are the State Program on Socio-Economic Development of Baku and its settlements in 2011-2013, the State Program on Socio-Economic Development of Regions of the Republic of Azerbaijan for 2009-2013 years, the State Program on poverty reduction and sustainable development in the Republic of Azerbaijan for 2008-2015 years and the State Program on Reliable Food Supply of Population in the Azerbaijan Republic for 2008-2015 years. It is clear by the titles that the most relevant one is the State Program on Socio-Economic Development of Regions of the Republic of Azerbaijan for 2009-2013 years, and, for this reason, the analysis starts with this particular program.

3.1. State Program on Socio-Economic Development of Regions of the Republic of Azerbaijan for 2009-2013 years

The program intends to execute various economic measures with a large scope of objectives. According to the Ministry of Economic Development of Azerbaijan, the main tasks of the program are diversification of non-oil sector, strengthening of the infrastructure constructions, export production, improvement of the business environment, increase of employment, and reduction of poverty on country and regional level.

Administration of the policy program falls on the local executive bodies, and is managed by the Ministry of Economic Development of the Republic of Azerbaijan. The role of the ministry is to control and coordinate between all executive organs involved by the program. The ministry is responsible for the control of all investments that are considered by the program. The financial resources are mostly provided by the central government and the NFES. The NFES plays a specific role in the financial arrangements of the regional policy implementation. Its primary objective is a development of small and medium entrepreneurship with financial support (Annual Reports, 2008-2011). The Fund provides discounted credits with preliminary consideration of each region's share, and in this way promotes small and medium entrepreneurship in the regions and in the capital city. According to the annual reports of the NFES, the majority of the regional businesses that receive loans are engaged with agriculture. It should be noted that the monetary support of the fund is distributed across all regions in Azerbaijan except Nakhchivan. The funds used for the provision of the cheap loans are partly financed by the government and partly consist of the returns from the previous loans. Interestingly, the NFES has been providing the discounted loans since 2004, which means it started earlier than initialization of the program. The role of the NFES is particularly relevant to

the analysis of the regional policy in Azerbaijan since it contributes directly to the regional development. The effectiveness of the NFES's support for the regional development is one of the criteria that can show a lot about the efficiency of the regional policy *per se*.

In order to analyze the effectiveness of the program, there is a need to distinguish the components or principal tools it uses. For this reason the components and effectiveness are discussed together. Nevertheless, the estimation of the effectiveness is conducted in the next chapter. The components are important as they follow the main direction of monetary allocations within the program, which also allows for estimation of the effectiveness of the program later. The information required for it is reflected in the action plan. The action plan of the program is an official state document that contains the list of the considered measures, term of their implementation, and the corresponding responsible body; it does not show the costs of the measures. The actions plan is available in the set of documents published by the regional development department of the Ministry of Economic Development. The measures in the action plan are divided by their geographical distribution, where some of them consider the whole country-scaled actions, and the others consider the cities and regions-scaled activities.

With the intention of summarizing and capturing the components of the regional policy, in the framework of the current analysis, all of the planned measures are classified according to their types. After that, the number of measures is calculated according for each type and region. In this way, the key concentrations of the program are possible to be summed up and presented here. These types of measures are infrastructure, support of local businesses, privatization, trainings and education, ecology, security, information, and tax optimization,

The first one, infrastructure, contains the investments that consider construction works in the regions. The measures assigned to the infrastructure include the construction or repair of roads and highways, construction of electric power networks, water supply, housing repair, construction and repair of different kinds of buildings, like school, cultural or sport buildings, and some other construction works. This category represents both small and large investments activities that involve the infrastructure of the cities and regions. As it was stated earlier, the costs are not shown in the report. Nevertheless, for estimation of the efficiency of the infrastructure measures, the construction investments are available at the AzStat. It is discussed in the next chapter, where the estimation of the regional program is performed.

The support of local businesses mainly contains a support of some types of agricultural activities, expansion of the local industries or promotion of the export. According to the action plan, agriculture has been supported by the government for a long period of time, and is continued to be supported today by the program. The program considers each industry separately, which means that larger number of measures involves support of larger number of businesses for a region. This type of the measurements can be easily attributed to the NFES. According to the report of the NFSE published for each year, the vast part of the funds provided for the small and medium entrepreneurship support, falls on the agriculture businesses in regions (Annual Reports, 2008-2011).

Privatization is a self-explanatory measure and is considered only for a few regions. It constitutes a small part of the measures, which is not surprising; the main part of privatization was realized in the country after the break-up of the Soviet Union.

Trainings and education include the sponsorship of local trainings for farmers and/or employees of some other fields. This group of measures excludes the construction of schools, since they are calculated in the infrastructure. The rationale to put school construction in the infrastructure rather than education is that those new schools do not significantly change the regional primary school education. The level of population aged over 15 years with a primary school education in 2010 constitutes 99.8 in both urban and rural areas (AzStat), which implies that basic construction or repair of school is not expected to bring any educational variation among regions. It would be relevant to include the construction of higher educational entities, a number of which varies largely across the regions, but it is not considered by the state program. All in all, the share of educational measures is low, and they are considered for a very few regions.

The next two groups are self-explanatory as well. Ecology contains the forest planting, forest rehabilitation, and reduction of pollution. In addition to these measures, the standardization of the food quality is also included here. The security is spending on the national defense.

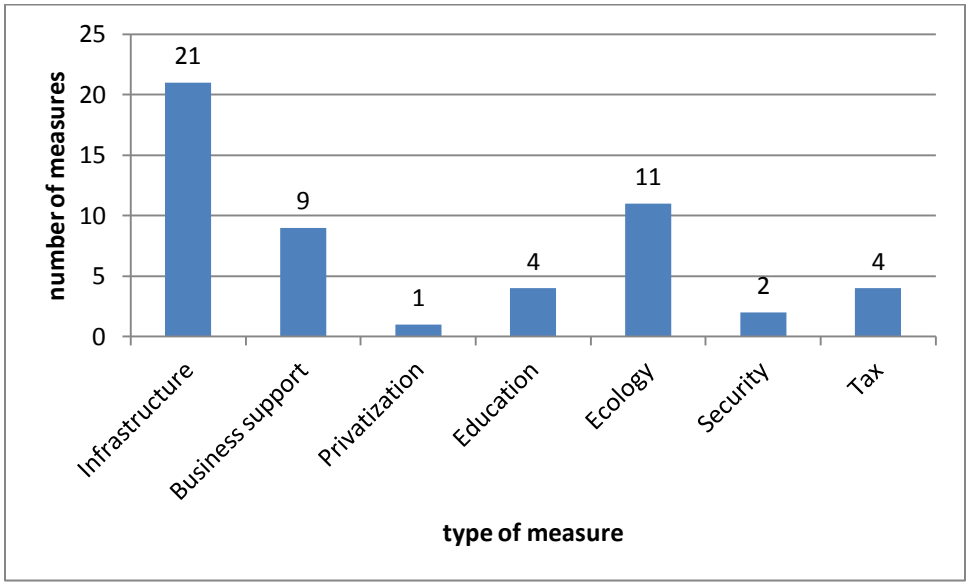
Information represents the group of measures that aim to create some informational database. As an example, for many regions investigation of natural resources is considered by the program. Besides, the creation of the electronic database of the currently existing information is also planned for some regions. This group of measures does not directly affect the regional development even though it can bring some fruitful outcomes in the long-run.

Last but not least, tax optimization is a self-explanatory measure, and it is considered only on a country-wide scale. The details are not provided by the actions plan, but it is obvious that no tax independency is assigned to the local regional authorities. Even though the tax

optimization measure is planned, it is considered for the whole country at once, and none of the regional governments is granted with some independency or flexibility.

The summary of the actions is represented below. It is useful for overall understanding of the principal direction of the program as well as for distinction of the main measures that need to be estimated for their effectiveness. The measures are distributed very unequally, and a high concentration on construction investments can be easily concluded from the results. To begin, the country-wide measures are shown separately on Graph 3, as they have slight qualitative differences. As it is follows from Graph 3, the majority of country-importance measures are considered for the infrastructure. The distinctive feature of this set of measures is existence of the tax optimization.

Graph 3 Measures considering the country-wise importance



Source: Ministry of Economic Development of the Republic of Azerbaijan

The regional measures are summarized in Table 5 below. Despite the fact that the action plan shows the measures for each city and region separately, they are grouped by economic

regions in the table. The economic regions classification is the same as described in the first chapter. The security and tax optimization types of measures are not planned for the regions, and hence, I do not include them in the table.

Table 5 Number of measures considering the economic regions

	Infrastructure	Business support	Privatization	Education	Ecology	Information
Baku	25	2	1	0	10	2
Absheron	40	10	0	0	2	2
Ganja Gazakh	152	14	0	1	1	5
Shaki Zagatala	92	9	0	0	1	5
Lankaran	82	8	0	0	2	3
Guba-Khachmaz	78	7	0	0	4	1
Aran	242	23	1	0	1	9
Yukhari Garabakh	44	4	0	1	0	3
Daghli Shirvan	57	7	0	0	4	1
Nakchivan	29	0	0	0	3	0
Total	**841**	**84**	**2**	**2**	**28**	**31**

Source: Ministry of Economic Development of the Republic of Azerbaijan, Author's own work

The table above implies that the vast majority of the measures consider construction for the regional development planning. The second dominant measures type is the support of the small and medium businesses. While trying to estimate the regional policy of the country, these two groups of measures are of primary interest. The quantitative estimation of all construction investments and discounted loans, and their effect on the regional development is assessed in the next chapter.

The transparency of the state program is ambiguous, and cannot be easily analyzed. The reports of the programs are published by the ministry for each year. The reports contain a

description of successes of the regional development through a list of realized actions; and this description bears a qualitative character. A significant part of the report contains brief information on the recovered or constructed entities, and the activities of those entities. As for the statistical data, the report contains percentage share and nominal values of investments per economic region without their further breakdown, and shows the number of established job places for each region. The lacking information is quantitative estimations, and more detailed money distribution across the regions. The report does not provide any efficiency or effectiveness analyses, from which the absence of efficiency approach is concluded. Besides, the positive sign of transparency is the fact that the NFES publishes its own report for every year. In contrast to the reports of the ministry, these reports contain a breakdown of sums of provided loans for each economic region, and show the statistical share of economic activities receiving a grant. This can be taken as a report on businesses support types of the measures considered by the state program under investigation. The fact that the reports are written and published for each year positively signals about transparency. Nevertheless, the information in the reports is not sufficient, and if one is interested in a closer study of the program, he/she needs to call for more detailed information from the appropriate government bodies.

The description of the state program of the regional development is finalized with some additional remarks about institutional framework and monitoring. The institutional system is not highly developed since the administrative participants are mostly local official bodies coordinated and controlled by the Ministry of Economic Development. The specialized bodies are not involved in the process. It means that there is no focal entity that would be accountable for the problem and responsible for the monitoring and analysis of the regional development in the country, which makes the program weaker (Vedran Dulabic, 2011). This might be one of the

reasons why the country does not possesses any similar analysis on the quality and effectiveness of the regional policy so far.

3.2. The other state programs announced by the country

There are three more programs mentioned in the beginning of the chapter that do not primarily consider the regional inequality, but have some effect on it. They are not presented in such details as the previous program in the thesis, as their objectives are not the regional development, and they cannot be taken as a part of regional policy of the country. Nevertheless, since they are published in the list of the regional state programs, it is important to justify their exclusion.

The first one, the State Program on Socio-Economic Development of Baku city and its settlements in 2011-2013 years focuses mainly on the infrastructure and re-building of the settlements around Baku. It considers also ecology, welfare (like electricity or water supply), constructions of new buildings for sport, culture, and other purposes. Even though the program is listed in the regional development state programs, it is obvious from its title, and is also evident from its careful study, that the program does not aim to reduce regional inequality or boost the regional growth.

The second one is the State Program on Poverty Reduction and Sustainable Development in the Republic of Azerbaijan for 2008-2015 years. It is a very strong policy program with a very large scope of objectives but on the national scale. It does not focus primarily on the regional inequality although it recognizes the difficulties of unequal development persistent in the country. By the same token, the final measurable targets of this program are such economic indicators of national scale as inflation, poverty, education, birth expectancy, and some others.

Even though, it is a very large program, it cannot be applied to the regional policy assessment. The actions plan of the program contains a list of general government policies for each field of the economy of the country. It is important to mention, that the actions are not distributed across the regions here, which implies that the program is basically initiated for the general development of the country. Last but not least, nine main objectives are presented in the program but none of them is about the reduction of the regional inequality.

The third and final program that is announced by the Ministry of Economic Development is the State Program on Reliable Food Supply of Population in the Azerbaijan Republic (2008-2015). As it is clear from the name of the program, it is highly concentrated on the agricultural field of the country, and its main focus is the control of the quality of the agricultural lands, the quality of the agricultural activities, their monitoring, and provision of proper infrastructure for the agriculture development. The actions plan is a large set of actions on the country scale, and does not consider any measures on regional level. The reports of the program suggest that the main focus of the program is the quality of food, and not regional development whatsoever. The program might affect the regional development in terms of the quality of food and nutrition, but it hardly affects the output growth.

3.3. The main characteristic of the regional policy in Azerbaijan

In order to proceed to the estimation of the regional policy in the country, the main characteristics of the policy need to be distinguished and summarized. As it follows from the analysis, the highest stress is put on the investments in infrastructure and support of the small and medium enterprises. The former tool is the macroeconomic tool that affects the allocation of businesses through the improved infrastructural conditions. Investments in infrastructure, for

instance in construction of roads, are believed to raise a volume of business cooperation between the capital city and the other regions. The second most used tool, provision of the discounted loans, is a microeconomic tool that affects the business allocation decision as well. Since the monetary grants are distributed across the regions in advance, some firms might decide to invest in the grant-receiver areas. Nevertheless, according to the report of the NFES, the industrial control is not covered in the process of selection of the grant receivers. It implies that the measures of the policy dos not directly consider any diversification in the regions; and, in fact, it is highly concentrated on the agricultural activities.

It should be also noted that the government does not employ any measures that would trigger technological improvement in the regions. Such measures could be investments in education or R&D, which are extremely low or absent in the framework of the program. Generally, in some aspects the regional policy in Azerbaijan resembles a situation of the Great Britain in the beginning of its regional policy, when the capital reallocation was high, but a focus on competitiveness was low. This situation questions the effectiveness of the construction investments. In contrast, the support of the small and medium enterprises is expected to be an effective tool, since it is highly favoured by the regional economics literature. In addition to that, clearly, there is a room for institutional framework improvement; the executive bodies of the regional program are not specified enough today.

In order to make an estimation of effectiveness of the regional policy, I am trying to capture the effect of infrastructure investments and discounted loans on the regional development. In order to perform this, I build a model that estimates the effect of different factors on the regional growth. Even though, in the framework of the state program the government makes some other investments like investments in ecology and information, they do

not directly affect the productivity, but improve the welfare of the areas. It should be also mentioned that the investments in trainings are low and insignificant, and, thus, are not captured in any report of the state program. It can be also confirmed by the table of measures presented earlier. The estimation is conducted in the following chapter.

CHAPTER 4. ESTIMATION OF THE MODEL

The aim of this chapter is to estimate the effectiveness of the regional policy in Azerbaijan through the model that explains the regional inequality in the country. The model captures the effects of the tools used in the framework of the regional policy of Azerbaijan, and, at the same time, explains the parameters which contribute to the regional growth in the country. As it was shown in the previous chapter, the most used tools of the regional policy are investments. Besides, the government provides discounted loans mostly to small and medium enterprises through the NFSA, and the effect of those investments is crucial for the analysis of the regional policy in Azerbaijan.

The current estimation is the first quantitative analysis of the regional inequality performed for the country. According to the Ministry of Economic Development of Azerbaijan, which is currently responsible body for the regional development, there are no similar studies conducted for the country and/or available to the general public.

The models presented below were constructed following the theories and empirics described in chapter two, but do not strictly adhere to them. In order to make the estimation, I am trying to control the factors that are affecting the growth and development indicators in the regions. These indicators are regional output per capita for each region and average real wage for each region. The former dependent variable is the most broadly used one in economic literature for the assessment of regional disparities, and is of primary interest. The model where I explain regional output per capita through other contributing factors is the core model of the analysis. The extended model is the core model with an additional explanatory variable, which allows for assessment of importance of other potentially influencing factor.

Besides, I present a supplementary model with a real wage as a dependent variable; and this model has a main form and does not have an extended version. The reason not to perform an extended form here is twofold: firstly, the main rationale to perform the supplementary model estimation is to check if there is any correlation between the regional policy tools and the real wage rather than trying to find sources of the variation of the regional real wage. The results are expected to be slightly different from the core model with the regional output per capita. Secondly, the data on additional variable are lacking for the time period used for real wage observations.

The explanatory variables in the core model are education, total investments into fixed capital, which is divided into large and medium investments and small investments, and discounted loans provided by the NFES in the previous year. The reason to include previous year's discounted loans is simple: these loans mostly go to the small and medium enterprises, the activities of which need some time to be initiated and arranged. For this reason, the small and medium enterprises' investments are more likely to be reflected in the following operational year's growth. At the same time, it is not attributable to the investments into fixed capital that are expected to have positive economic effect both during the construction year and in the following exploitation years. In the extended model, in addition to the factors stated above, I also include the effect of the economic structure in each region, which is suggested by some literature and is worth checking. In the framework of the current analysis, the economic structure refers to the share of agriculture activities in the total economic activities of the region.

The selection of the explanatory variables is based on the previous economic research and analyses, and on the ongoing regional policy, and the impact of each variable has its particular explanation. The first explanatory variable, education, can affect the growth through

the formation of human capital. The positive relationship between education and growth is expected to be captured here. The effect of the education on local economic growth is inarguable; the positive correlation between these two is captured by some economists (Gylfason, 2001), (Alan B. Krueger, 2000), (Phelps, 1966). Nevertheless, there is a large variation across the regions in terms of the higher educational opportunities. As it was shown in the first chapter, the number of higher education entities is incomparably lower in the non-capital areas, which needs to be controlled for in the models.

The effects of the next explanatory variables, large and medium investments and small investments into fixed capital, are following the neo-classical growth theory. If the investments, or capital formation, are estimated to be significant for the regional development, then the wealth accumulation through the influx of capital indeed affects the regional development. At the same time, insignificant results would imply that the regions are developed to their steady-state levels, and their further development depends mainly on technological improvement.

The next explanatory variable, discounted loans, represents another tool, which the government uses for the stimulation of the growth in the regions. As it was seen in the work of Zhang and Fan (Fan, 2006), the government stimulations are not necessarily significant for the regional development, and, moreover, can sometimes bring negative consequences. It happens mostly in the case of inefficient distribution of the stimulation packages, and, due such inefficiency, the stimulations do not improve the regional productivity. By the same token, the negative correlation between growth and discounted loans in the current models would imply that development of the regions is slowing down despite the government regional development program. At the same time, the positive correlation is expected between both construction investments and growth, and discounted loans and growth.

The additional explanatory variable that is going to be included in the extended core model is also assumed to have a certain effect on the regional output. This variable, structure of the regional economies, is sometimes believed to be a contributing factor by some regional economic researchers, like Bliend and Wolf (Uwe Blien, 2001) or Cziraky et all (Dario Cziraky, 2004). The economic structure can explain the regional disparity through the differences in kinds of activities common for each locality. Different types of economic activities bring different returns as well as require different human capital, which affects the regional productivity. In more developed urban parts with higher output per capita the share of employment in agriculture is typically less than that in the less developed areas. If this assumption finds support in the model, it can have important implications for the regional policy of the country.

The effect of the explanatory variables on average real wage per region, which is estimated in the supplementary model, is very similar to their effect on regional output per capita. The reason why I am including the supplementary model is to check if the regional policy program has any effect on the real wage in the regions. The increase in production per capita is expected to be highly correlated with an increase in the regional average earnings. Nevertheless, the production per capita is more relevant to the current study since it reflects exactly the production on regional level, and, thus, is selected for the core model.

4.1. Data Description

The data is collected on the regional level; however the economic regions presented in chapter one are divided further for the quantitative analysis. According to the AzStat, each economic region contains a number of other regions and/or cities. Following the break-down of

the committee, the data is taken for each region/city, which increases the number of observations used to estimate the model.

As explained before, some areas do not get any investments due to occupation by Armenia; and, due to the absence of variation in explanatory variables, they are excluded from the analysis. The areas that get investments from the country, even if in a small amount, are still considered by the quantitative analysis. The number of regions and/or cities contained in each economic region can be seen in Table 6, whereas more a detailed description of regions can be seen in Appendix 1.

Table 6 Economic regions breakdown

	Economic region	Number of areas in the region	Number of included areas	Number of excluded areas
1	Baku city	1	1	0
2	Absheron	3	3	0
3	Ganja-Gazakh	11	11	0
4	Shaki-Zagatal	6	6	0
5	Lankaran	6	6	0
6	Guba-Khachmaz	5	5	0
7	Aran	18	18	0
8	Yukhari Qarabagh	7	7	0
9	Kalbajar-Lachin	4	1	3
10	Dakhlikh Shirvan	4	4	0
11	Nakhchivan	8	1	7
	Total	**73**	**63**	**10**

Source: Author's own work

For the core model with the regional productivity as an explained variable, the database used for the estimation contains the panel data for 63 regions with yearly observations for the time period of 6 year from 2006 to 2011 (N=63, T=6, NT=378). For the supplementary model

with the regional real wage as an explained variable, the number of regions remains unchanged and time span is extended to 7 years from 2005 until 2011 (N=63, T=7, NT=441).

The yearly data on output per capita for each region, large and medium investments per region, and small investments per region, are taken from the AzStat. The dependent variables, the regional output per capita (*out_pc*) and the average real wage per region (*rwage*), are measured in the current prices in local currency, manats.

In order to calculate the real wage, the nominal wage was taken from the AzStat and then adjusted to the inflation. The yearly data for inflation is taken from the International Monetary Fund database. Inflation is an average yearly consumer price index change, measured in percentage. The base year is 2004[3].

The large and medium construction investments per region (*inv_lm*) show the large and medium investments in fixed capital made by both public and private sector, and small construction investments per region (*inv_s*) show the same about the small investments in fixed capital. All investments in fixed capital are measured in thousands manats. The yearly amounts of discounted loans provided for each region in previous year (*dloans_1*) are not available in the annual reports of the NFES available for the general public. In those reports the data is grouped by the economic regions without their further breakdown. Nevertheless, for the current research the NFES exclusively provided the breakdown of statistical information. The discounted loans in database are measured is thousands manats.

[3] The real wage is equal to the nominal wage divided to the inflation change from the base level.

The last variable, structure (*struc*), is the ratio of the employees working in agricultural sector to the total number of employees for each region. The ratio is converted into percentage. The data is calculated by the author, but the initial values are taken from the AzStat.

To summarize the description of the data, it is worth looking at the way it is distributed as it can be used in the interpretation of the findings. The large and medium regional investments, directed to construction, have an average level of 113.9 million manats per year. The average amount of regional small investments constitutes 6.8 million manats per year, and the average value of the provided discounted loans is 1.4 million manats per year. The same values change significantly if we calculate them without the capital city, Baku. In this case, the average of regional large and medium investments reduces to 26.4 million manats, the average of regional small investments makes up 3.8 million manats, and the average of provided discounted loans for regions is 1 million manats. From the aforementioned it can be concluded that, on average, 80% of the discounted loans are distributed across the regions, which is not the case for other types of investments. In the case of large and medium investments, 76% falls on Baku, and in the case of small investments, 43% is directed to Baku.

4.2. The methodology and the model

The database described in the previous section is organized in a panel data set. The estimation method is the OLS regression, which minimizes squared differences between real observations and estimated a linear approximation. In order to improve the quality of the estimation the fixed effects are applied to the model. Usage of the fixed effects model allows for considering the region-specific effects that are persistent in the values of all dependent and explanatory variables over years. Intuitively, the fixed effects model controls the historical built-

ins inherent to the geographical areas. It is a very common notion in regional economics, that some part of regional diversity cannot be explained by any other factor but history (Steven Brakman, 2011, p. 149).

The main model to be estimated has the following form:

$$out\_pc_{it} = \beta_0 + \beta_1 * edu_{it} + \beta_2 * inv\_lm_{it} + \beta_3 * inv\_s_{it} + \beta_4 * dloans\_1_{it} + u_{it}$$

The extended model is as follows:

$$out\_pc_{it} = \beta_0 + \beta_1 * edu_{it} + \beta_2 * inv\_lm_{it} + \beta_3 * inv\_s_{it} + \beta_4 * dloans\_1_{it} + \beta_5 * struc_{it} + u_{it}$$

And the supplementary model follows the same pattern as the core one in its main form. As a result, the supplementary model is as follows:

$$rwage_{it} = \beta_0 + \beta_1 * edu_{it} + \beta_2 * inv\_lm_{it} + \beta_3 * inv\_s_{it} + \beta_4 * dloans\_1_{it} + u_{it}$$

In the models presented above the parameter β_0 stands for the intercept, the coefficients β_s for s=1,2,…,6, stand for the estimated effect of each explanatory variable on the corresponding dependent variable, the parameter u_{it} stand for the errors, and the indexes *i* and *t* stand for region and year respectively.

4.3. The results of estimation

The output of the estimation is presented in Appendix 2 of this thesis. All models are estimated by the same technique, which is fixed effects OLS regression.

As anticipated, in the core model all controlled variables are significant at 1% significance level. The R-squared is 92%, which implies that 92% of variation in regional output per capita is explained by the variation of the explanatory variables. Economically, the highest

effect on the regional output per capita is captured by education. Holding other factors fixed, establishment of one higher education entity increases the regional output per capita by just over one thousands manats on average. As for investments, even though the estimated coefficients are low, the first view might be misleading. In order to interpret the investments I am using the average values of investments that can bring more close to reality explanation of the estimated values. The average amount of regional large and medium investments without Baku, that is 26.4 million manats, is on average predicted to increase regional output per capita by 32.7 manats. If we calculate the average regional output over the whole time horizon without Baku, this value constitutes 2.5% of the average regional output.

At the same time one million manats of small investments and discounted loans increase the regional output by 28 and 82.6 manats, respectively. In a percentage terms, compared to the average output per capita among all regions other than Baku, it means 2.1 and 6.3 percent of production, respectively. Since the average amount of small investments in regions is 3.8 million manats, it is attributable to 106.2 manats or 8.1% of production per capita in regions.

The result of the estimation has a very high analytical effect on the investments policy that is in force today. As the large and medium investments have the lowest effectiveness on the regional welfare, they are either not efficient or the regions have no potential to absorb them strongly enough. From one side the neo-classical growth theory suggests that if discounted loans positively affect the growth, the regions are not developed to their steady-state levels and need more capital influx. From the other side, the regions do not need large construction investments for the productivity, and they might need some additional trigger for their better development.

The extended model is presented in Table 2 of Apendix 1 to the thesis. Inclusion of the structure to the model does not increase the R-squared. Large and medium investments as well as the discounted loans remain statistically significant at 1%, whereas structure is insignificant at 5% significance level. As for the coefficients, one million manats of small investments and discounted loans increase the regional output per capita by 28 and 82.5 manats, respectively; and this is similar to the estimation of the core model. Large investments of 26.4 million manats increase the regional output per capita in the same way by 32 manats. The effect of structure is economically significant, but is statistically significant only at 10% significance level. According to the model, a higher share of employment in agriculture has a positive effect on the regional output per capita. To be more precise, an increase of employment in agriculture by one percentage point increases the regional output per capita by 32 manats. It can be explained by the fact that the majority of observations in the sample are regions, which have no large variety in business types. It means that higher share of employment in agriculture is, generally, more jobs and higher income for the area. This result is consistent with the direction of the regional stimulations through the discounted loans, which mostly go to the agricultural sector.

The result of education is similar to the previous one, and establishment of one entity in the area increases the regional output by just above one thousand manats. Last but not least, in both estimations the Durbin-Watson statistics is around 2, which implies the absence of the autocorrelation.

In the supplementary model, the results are very different from the core model. As it can be seen from Table 3 of Appendix 2, the model suffers from the autocorrelation. For this reason I include the previous year's real wage and estimate the model again. The results are shown in Table 4 of Appndix 2. While the Durbin Watson is 2.0 in the corrected model, the findings are

very different from the expectations. The expectation was such that the regional policy has some effect on the real wage, and after the results of the core model, the highest effects were expected from discounted loans and education. Nevertheless, there is no any regional policy tool that would significantly affect the real wage according to the estimation. The discounted loans and small investments are statistically significant, but economically their effect is too low. Surprisingly, education does not affect the regional real wage either. The results of estimation of the supplementary model suggest that the real wage that is the real income of people does not change with the execution of the government program. Even though it would be important to study, how the government can affect the regional real wage, this question is beyond the current research. The main question of the current research is the analysis and effectiveness of the regional policy that is in force today.

While it might look so, the results of the core and supplementary models are not contradicting to each other. In the core model estimation, the effectiveness of the parameters is times higher than that in the supplementary model. The reasons can be connected to the share of the constructional investments in the regional output. Since it is large and significant, the effect of it is captured on the regional output, and is not reflected that much on the real wage of regional inhabitants. By the same token, the production in the regions is highly subsidized by the government and does not come out of the personal consumption or investments of the local people. The breakdown of the output per region is not available for the country on a regional level; and, thus, the provided explanation is suggested by the estimated models only.

POLICY IMPLICATIONS AND CONCLUSIONS

Regional inequality is one of the most outstanding problems in the Azerbaijani economy today. The purpose of this research was to analyze and estimate the ongoing policy programs that aim at reduction of the regional inequality in the country. According to the finding, there is only one state program that considers the regional development in the country today, which is called Program on Socio-Economic Development of Regions of the Republic of Azerbaijan for 2009-2013. The analysis of the program covers administration, components and effectiveness, transparency and efficiency approach, and institutional system and monitoring of the programs. In order to perform the estimation of the effectiveness, the main tools of the program were pointed out to be investments in construction and support of the small and medium enterprises, and, thereafter, their effect on the regional growth was estimated. The method of estimation is an econometric model that explains the regional output through the contributing factors. The tools of the programs are explanatory variables of the primary interest. The technique used is the OLS estimation of panel data with fixed effects.

According to the results, both of the tools used by the government have a positive effect on regional output. The most effective tool is estimated to be discounted loans. The finding is consistent with the theory of policymaking, where the investments in the small and medium enterprises are believed to be the most effective ones (Armstrong and Taylor, 2000, page 233). Small investments have much stronger effect than large and medium investments. Moreover, the effect of large and medium investments is incomparably lower than that of the discounted loans. It was explained using the neo-classical growth theory integrated in regional economics in such a way that the regions lack the potential to absorb this type of capital. The other explanation is

inefficiency of the large and medium construction investments. This argument is supported with the case of Great Britain, where the early investments of the government in regions were inefficient due to the lack of concentration on competition and technology. The investments in Azerbaijan do not consider competition or technology either. The small investments are effective and have a positive correlation with the regional development.

Apart from the regional policy tools, education has a distinctive effect on the regional output, which was expected by the theoretical framework and empirical estimations. The effect of the structure of economies on the regional growth suggest that agriculture is a successful business activity among the regions today; and the larger share of agriculture sector in region is correlated with a higher output per capita. The other important finding of the research is that the government program does not strongly affect regional real wage, which may come from the fact that the large share of the regional production is attributable to the construction works.

Despite the importance of the research, it has some limitations. Firstly, the regional policy in Azerbaijan is a very new concept, and the long-term results might be significantly different. The infrastructure investments that are not bringing any significant result today can turn out to be more productive in the future. The other limitation is that due to the lack of data on regional level, some variables, like regional FDIs, are not estimated by the models. Nevertheless, the FDI investments specifically are not used as a regional policy tool in Azerbaijan, since the vast part falls on the oil-gas sector of the economy, and there is no large variation there (AzStat). Besides, the information of the FDI on regional level is not available for the country. Finally, there are some other government programs that partially influence the regional growth, but their regional measures are not provided in the official documentation. For this reason, these programs are excluded from the analysis. This limitation is the weakest since those programs are more

concentrated on the country-wide growth, which is a normal pace of development for every economy, and cannot be considered as a separate program for regional equalization.

Policy implications

Generally, the regional policy of Azerbaijan has a significant effect on the regional development. It means that the country needs to continue the implementation of the program and to invest in the regional growth. The most suggested tools by the estimation are small investments, and discounted loans. Nevertheless, there is a certain room for improvement that comes from the international experience and theoretical framework, and the main recommendations are stated below.

Firstly, the large and medium investments need to be reconsidered. It is not surprising that those investments are not sufficiently strong, as similar results were seen in the practice of Great Britain. In order to fight against this, the country changed the approach of investments, and the same might be helpful for Azerbaijan as well. In Azerbaijan, the government spends large sums on construction, which is not bringing high returns yet. Even if it is expected to bring fruitful results in the long future, the portion falling on the large investments today is the highest and, perhaps, too large. At the same time, there is no clear evidence that these investments will justify themselves over time. The money might have been spent on some other measures proposed below that have a high potential to improve the regional productivity.

Secondly, the institutional framework can be improved. There is no single entity that is accountable for the issue of the regional inequality or regional growth. Nevertheless, successful international practice, like the case of Ireland, suggests that the institutional system is one of the crucial parts in the realization of the policy program. If one combines the cases of Croatia and

Ireland, he/she can conclude that the institutional framework is as much important as the proper action plan. The separate administrative body could focus more on the planning and implementation of the regional policy. At the same time, it could be timely adjusting for changes in economic environment, and have more individual approach to each region, which would be a high flexibility.

The institutional improvement could also involve the third recommendation, the performance approach. It is a very important factor of all aspects of the policymaking including the regional policy. It is a well-known fact that public efficiency is believed to get improved with the performance approach and with some decentralization so that the goals are stated in a clearer way (Teresa Curristine, 2007). It helps to evaluate the efficiency of all spending, and redesign the programs in case of their inefficiency. A large amount of monetary sums have been invested in infrastructure since 2004 in the regions; and, according to the findings, up to today their effect is not strong enough. A higher concentration on the efficiency would also allow for more individual approach for each region. It would imply putting targets in results rather than just implementation of the measures, and, thereby, a higher regional independency. The continuation of the ongoing regional policy with application of these changes has a potential to reduce the regional inequality over time.

Last but not least, a higher focus on the human capital formation can be crucial for the regional development. Adaptation of this micro-economic tool is worth applying for the country. An establishment of more of higher educational entities in regions has a good potential to result in formation of regional human capital as well as in attraction of human capital from the capital to the regions. Focus on technological improvement is also a part of this recommendation. In the long term first innovation park can be established somewhere far from the capital, and that would

certainly bring formation of the human capital in the regions. Both theories and empirics presented earlier in the research suggest that the technological advantage is drastically important for the development and competitiveness of an economy. The country possesses sufficient capital reserves for such investments like patents buyouts, investments in R&D, and initial attraction of specialist from abroad, which has high chances to develop regions and the whole country at the same time. Even though the government has some insignificant investments in the trainings and education, they are too low, and do not form large human capital in the regions. The differences of educational environment are shown in Chapter one, whereas a high effect of education on the growth is captures by the model in chapter four. The very strong recommendation would be to create a long-term policy plan aiming at improvement of the education and the technological competitiveness of the regions. This economic problem is broad and, thus, requires a separate individual research.

APPENDIX 1

Breakdown of the economic regions and information about their inclusion in the quantitative analysis

Baku city		
1	Baku city	included
Absheron economic region		
1	Sumgayit	included
2	Absheron	included
3	Khyzi	included
Ganja-Gazakh economic region		
1	Ganja	included
2	Aghstafa	included
3	Dashkasan	included
4	Gadabay	included
5	Goranboy	included
6	Goygol	included
7	Gazakh	included
8	Samukh	included
9	Shamkir	included
10	Tovuz	included
11	Naftalan	included
Shaki-Zagatal economic region		
1	Balakan	included
2	Gakh	included
3	Gabala	included
4	Oguz	included
5	Zagatala	included
6	Shaki	included
Lankaran economic region		
1	Astara	included
2	Jalilabad	included
3	Lerik	included
4	Masally	included
5	Yardimly	included
6	Lankaran	included
Guba-Khachmaz economic region		
1	Shabran	included

2	Khachmaz	included
3	Guba	included
4	Gusar	included
5	Siyazan	included
Aran economic region		
1	Agdjabadi	included
2	Agdash	included
3	Beylagan	included
4	Barda	included
5	Bilasuvar	included
6	Goychay	included
7	Hajigabul	included
8	Imishli	included
9	Kurdamir	included
10	Neftchala	included
11	Saatly	included
12	Sabirabad	included
13	Salyan	included
14	Ujar	included
15	Zardab	included
16	Shirvan	included
17	Mingechevir	included
18	Yevlakh	included
Yukhari Karabakh economic region		
1	Aghdam	included
2	Tartar	included
3	Khojavand	included
4	Khojaly	included
5	Shusha	included
6	Jabrail	included
7	Fuzuli	included
Kalbajar-Lachin economic region		
1	Kalbajar	excluded
2	Lachin	included
3	Zangilan	excluded
4	Gubadly	excluded
	Dakhlik Shirvan economic region	
1	Aghsu	included
2	Ismayilly	included
3	Gobustan	included
4	Shamakhy	included

Nakhchivan economic region		
1	Nakhchivan	included
2	Babek	excluded
3	Julfa	excluded
4	Ordubad	excluded
5	Sadarak	excluded
6	Shahbuz	excluded
7	Sharur	excluded
8	Kengerli	excluded

APPENDIX 2

Table 1 Estimated Core Model by Fixed Ordinary Least Squares

Dependent Variable: OUT_PC
Method: Panel Least Squares
Date: 05/30/13 Time: 20:53
Sample: 2006 2011
Periods included: 6
Cross-sections included: 63
Total panel (unbalanced) observations: 377

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV_LM	0.001240	0.000308	4.025988	0.0001
INV_S	0.027949	0.002471	11.30919	0.0000
EDU	1009.024	285.4134	3.535307	0.0005
DLOANS_1	0.082633	0.015747	5.247484	0.0000
C	183.2383	259.3619	0.706497	0.4804

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.924661	Mean dependent var	1601.771
Adjusted R-squared	0.908621	S.D. dependent var	2260.345
S.E. of regression	683.2774	Akaike info criterion	16.05144
Sum squared resid	1.45E+08	Schwarz criterion	16.75028
Log likelihood	-2958.697	Hannan-Quinn criter.	16.32883
F-statistic	57.64769	Durbin-Watson stat	1.764280
Prob(F-statistic)	0.000000		

Table 2 Estimated Extended Core Model by Fixed Ordinary Least Squares

Dependent Variable: OUT_PC
Method: Panel Least Squares
Date: 05/30/13 Time: 21:05
Sample: 2006 2011
Periods included: 6
Cross-sections included: 62
Total panel (unbalanced) observations: 371

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV_LM	0.001217	0.000309	3.935676	0.0001
INV_S	0.028080	0.002480	11.32415	0.0000
EDU	1023.830	286.3577	3.575353	0.0004
DLOANS_1	0.082493	0.015807	5.218735	0.0000
STRUC	32.25905	17.22537	1.872764	0.0621
C	-28.44165	286.2977	-0.099343	0.9209

Effects Specification

Cross-section fixed (dummy variables)

		Mean d	
R-squared	0.925412	ependent var	1618.556
Adjusted R-squared	0.909219	S.D. dependent var	2274.452
S.E. of regression	685.2906	Akaike info criterion	16.05957
Sum squared resid	1.43E+08	Schwarz criterion	16.76681
Log likelihood	-2912.051	Hannan-Quinn criter.	16.34047
F-statistic	57.14747	Durbin-Watson stat	1.785279
Prob(F-statistic)	0.000000		

Table 3 Estimated Supplementary Model by Fixed Ordinary Least Squares

Dependent Variable: RWAGE
Method: Panel Least Squares
Date: 05/30/13 Time: 21:48
Sample: 2005 2011
Periods included: 7
Cross-sections included: 63
Total panel (unbalanced) observations: 436

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV_SM	0.000278	9.14E-05	3.035903	0.0026
INV_LM	3.11E-05	1.12E-05	2.768078	0.0059
EDU	3.326390	7.260251	0.458165	0.6471
DLOANS_1	0.003282	0.000589	5.568642	0.0000
C	90.78799	6.262756	14.49649	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.486809	Mean dependent var	103.4430
Adjusted R-squared	0.395019	S.D. dependent var	34.79188
S.E. of regression	27.06131	Akaike info criterion	9.574581
Sum squared resid	270224.0	Schwarz criterion	10.20119
Log likelihood	-2020.259	Hannan-Quinn criter.	9.821871
F-statistic	5.303498	Durbin-Watson stat	0.458157
Prob(F-statistic)	0.000000		

Table 4 Estimated Supplementary Model by Fixed Ordinary Least Squares with inclusion of the lagged real wage

Dependent Variable: RWAGE
Method: Panel Least Squares
Date: 05/31/13 Time: 12:35
Sample: 2005 2011
Periods included: 7
Cross-sections included: 63
Total panel (unbalanced) observations: 436

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RWAGE_1	0.897001	0.014940	60.03827	0.0000
INV_SM	3.01E-05	2.82E-05	1.070423	0.2851
INV_LM	8.21E-07	3.46E-06	0.236947	0.8128
EDU	-0.764245	2.213775	-0.345222	0.7301
DLOANS_1	0.000422	0.000186	2.271767	0.0237
C	21.02106	2.234623	9.406979	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.952461	Mean dependent var	103.4430
Adjusted R-squared	0.943805	S.D. dependent var	34.79188
S.E. of regression	8.247549	Akaike info criterion	7.200076
Sum squared resid	25032.12	Schwarz criterion	7.836039
Log likelihood	-1501.617	Hannan-Quinn criter.	7.451058
F-statistic	110.0443	Durbin-Watson stat	2.005484
Prob(F-statistic)	0.000000		

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