

# ECONOMICS



*Viktor V. Voronov*

*Olga Ya. Lavrinenko*

## THE INCOME DIFFERENTIATION AMONG THE RESIDENTS OF LATVIA IN 2000—2008



*This paper provides an analysis of income differentiation among the residents of Latvian regions in order to assess the government's economic policies aimed at the development of a socially inclusive market economy in the country. The paper describes the dynamics of changes in the income of population of Latvian regions over nine years (2000–2008). The authors put forward a hypothesis that the changes in the state social and economic policy tend to influence the level and dynamics of income of Latvia's population.*

**Key words:** income, dynamics, differentiation, regions, Latvia.

### Introduction

The title of the paper reflects the topic of the applied research carried out by the Institute of Social Studies at Daugavpils University during 2008—2009 within the project “Human Resources Development in Latvia” financed by the United Nations Development Programme (UNDP). The aim of the project was to study possibilities for improving well-being of the population in the regions of Latvia with the development of socially oriented market economy.

The subject of research is the population of Latvia. The poll was made by the quota sample which by sex, age, territory of living and types of activities corresponds to the structure of the entire assembly of the research subject, according to the data of the Bureau of Statistic Analysis of Latvia. The research focuses on the level of incomes of the population of the Latvian regions before and after the admission to the European Union (2004), and the specifics of its dynamics and differentiation. The aim of the research is to assess the dynamics of changes in the incomes of the population of Latvia in total and by regions during 2000—2008. The main aim of the research is to analyze the current changes in the level of incomes of the population by regions in Latvia with application of economic and mathematical methods. The hypothesis of the research is the statement that the changes in social and economic policy of the state tend to adequately affect the level and dynamics of incomes of Latvia's population of. The research methodology is a range of general scientific, analytical and forecasting, economic and mathematical methods with application of the programme SPSS 17 version and methods of statistics.

While analyzing the regions of Latvia, a unified system of dividing the territory by regions adopted in the EU was used: “Nomenclature of Territorial Units for Statistics or NUTS. According to NUTS, the regions of Latvia are regarded as the third level where the minimum number of the population in the region is 150 000, while maximum is 800 000, and include in its number the city of Riga with surrounding territories (Pieriga), as well as such regions as Kurzeme, Vidzeme, Zemgale and Latgale”.

### Main findings of the research

#### *Indicators of the population income variation in Latvia and its regions*

Incomes are funds in the monetary and natural terms which a person receives from other persons or organizations in order to cover their own expenses. They include a salary and other types of income from activity (after paying taxes), including transfers, net profit from entrepreneurship and agricultural activities, property (rent, dividends) etc. For better understanding of the level and dynamics of incomes, in this research we will indicate an approximate comparative rate of the national currency in Latvia: 1 Euro = 0.7 lat.

The incomes of the population in the regions of Latvia may be surveyed by different methods with application of data from different sources. One of these sources is the poll of the population by the United Nations Development Programme (UNDP). In the framework of the research a poll of 1067 respondents is carried out every second year in Latvia by the vast programme covering social, territorial, national and other characteristics including incomes, expenses, and consumption of households. The UNDP presented its own data bases by years to the Institute of Social Studies of Daugavpils University as the project participants from Latvia. Let us concentrate first of all on the survey of the population incomes [3].

Table 1

**Incomes of the population by regions of Latvia  
(per person, in lat/month: average, range, standard deviation)**

Region	2000	2005	2007
Latvia as a whole	$\bar{x} = 66$ R = 2500 $\sigma = 66$	$\bar{x} = 106$ R = 1000 $\sigma = 78$	$\bar{x} = 151$ R = 800 $\sigma = 97$
Riga	$\bar{x} = 91$ R = 2500 $\sigma = 178$	$\bar{x} = 136$ R = 1000 $\sigma = 91$	$\bar{x} = 190$ R = 800 $\sigma = 112$
Pieriga	$\bar{x} = 69$ R = 403 $\sigma = 48$	$\bar{x} = 126$ R = 360 $\sigma = 69$	$\bar{x} = 175$ R = 508 $\sigma = 110$

End of the table 1

Region	2000	2005	2007
Vidzeme	$\bar{x} = 50$ R = 208 $\sigma = 32$	$\bar{x} = 91$ R = 445 $\sigma = 69$	$\bar{x} = 123$ R = 310 $\sigma = 70$
Kurzeme	$\bar{x} = 57$ R = 297 $\sigma = 45$	$\bar{x} = 78$ R = 400 $\sigma = 60$	$\bar{x} = 131$ R = 425 $\sigma = 71$
Zemgale	$\bar{x} = 46$ R = 226 $\sigma = 36$	$\bar{x} = 87$ R = 490 $\sigma = 72$	$\bar{x} = 129$ R = 364 $\sigma = 68$
Latgale	$\bar{x} = 49$ R = 450 $\sigma = 45$	$\bar{x} = 72$ R = 300 $\sigma = 44$	$\bar{x} = 110$ R = 487 $\sigma = 74$

Source: authors' calculations by data [6].

The table contains average values of the population incomes in Latvia, its regions, range of variations (R), and standard deviation ( $\sigma$ ) during 2000, 2005 and 2007. It should be stated that *the range of deviation* is calculated as the difference between maximum and minimum incomes of the population, and *the standard deviation* is a quantitative difference in values of incomes in specific items of the observed aggregate (population).

As shown in Table 1, the leader in incomes per one member of a household in 2007 was the Riga region (an average income — 190 lats). In the Zemgale region an average income per person was lower than in the Riga region by 32% (129 lats), in the Kurzeme region — by 31% (131 lats), in the Vidzeme region — by 35% (123 lats), in the Latgale region — by 42% (110 lats).

The difference in the average income per person is clearly seen in Fig. 1.

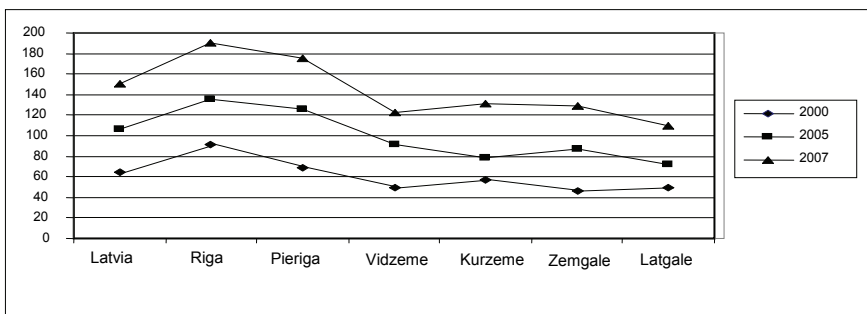


Fig. 1. Average incomes per person by regions from 2000 to 2007, in lat

Source: authors' calculations by data [6].

It follows from Fig.1 that the general tendency is a rise in incomes of the population in Latvia (nearly by two and a half times during the period of 2000—2007), at the same time the regional differentiation of incomes is quite different: a relatively high level of incomes of people living in Riga disagrees with a relatively low level of incomes of people living in other regions of Latvia, particularly in Latgale (the gap with the population in Riga here is even more in 2007 than it was in 2000).

In the calculation of income difference the relative methodology of calculation was used [1]. As applied to the problem of dynamics of the existing differences in the socio-economic development of the regions, it is important to take into account indicators of variations of monetary incomes. The most general indicators of variation are: range of variation  $R$  and standard deviation  $\sigma$ , which are mentioned above. In the formulas these calculations are as follows:

$$R = X_{\max} - X_{\min};$$

$$\sigma = \frac{\sum (x_i - \bar{x})f_i}{\sum f_i},$$

where  $X_{\max}$  and  $X_{\min}$  — maximum and minimum value of the indicator;  $\bar{x}$  — average value of the indicator;  $x_i$  — indicator versions;  $f_i$  — frequency;  $i = 1, 2, \dots, n$  — number of versions.

In the condition of dependence of monetary income fluctuation on the inflation, in order to compare the time aspect it is necessary to use relative variation indicators made on the basis of those mentioned above: the coefficient of range ( $K_R$ ) and the coefficient of variation ( $V_\sigma$ ). In formulas their calculation is as follows:

$$K_R = \frac{X_{\max} - X_{\min}}{\bar{x}}; (V_\sigma) = \frac{\sigma}{\bar{x}}.$$

A rise in the range coefficient and the coefficient of variation shows strengthening of indicator variation in the aggregate surveyed. Thus, analyzing the dynamics of the indicated coefficients in relation to the key characteristics, it is possible to give a qualitative and quantitative characteristic to the process of an increase in the current differences in the incomes in the regions of Latvia. In relation to Latvia as a whole the situation in the incomes is characterized as follows. During the last 8 years the differentiation of the population of Latvia in terms of average per capita income has decreased, which is evidenced by an increase in the variation coefficient by 40%. In the mentioned period the growth of standard deviation did not surpass the growth of value of the average per capita monetary income, so the differences became less pronounced.

Some decrease in differentiation results from modification of the distribution of the population incomes. To characterize this phenomenon, we will use a sequence of data distribution and consider such indicators as “bias” and “slope”, i. e. indicators of “asymmetry” ( $A_s$ ) and “excess” ( $E_s$ ). It follows from the data that during eight years the right bias has decreased and

amounted to 12% of the data of 2000. The slope of distribution has also decreased and equals to 2% of the level of 2000. The data obtained confirms a decrease in the population differentiation by income in Latvia.

### ***Specifics of the population income dynamics by particular regions of Latvia***

With regard to the Riga region the situation is characterized by the following data. The variation coefficient in the period from 2000 to 2007 decreased by 70%; therefore, the smoothing of differences in average per capita incomes occurred during this period.

Analyzing data on the Vidzeme region, it should be noted that the variation coefficient has increased by 33%, and the range coefficient has increased by 18% in the period from 2000 to 2005, which is indicative of the strengthening of polarization of the average per capita incomes in the region. During the following two years the variation coefficient shows the smoothing of income differences taking into account a decrease in the range coefficient.

The income polarization of the population of the Kurzeme region has decreased. It is revealed by a decrease in the variation coefficient by 37% in the period of 2000—2007. At that time the growth of standard deviation did not surpass the growth of per capita income value, and therefore the smoothing of differences occurred. The same processes were observed in the Zemgale region.

In the Latgale region during the period from 2000 to 2005 the polarization of the population incomes decreased, shown by a decrease in the variation coefficient by 37%, but it had increased by 11% again by 2007. The range coefficient during the last two years has slightly increased. On the whole, in the period from 2000 to 2007 the smoothing of differences in average per capita incomes occurred in the Latgale region (the variation coefficient decreased by 22%).

Let us further consider whether the polarization of average per capita incomes between the regions decreased in the period from 2004 to 2008 in absolute figures (Table 2) and in dynamics (Fig. 2).

*Table 2*

**Incomes of the population by regions of Latvia  
(average, per person, in lat)**

Region	2004	2005	2006	2007	2008
Riga	135	175	201	285	309
Pieriga	102	110	162	268	301
Vidzeme	77	92	122	176	191
Kurzeme	83	106	140	170	229
Zemgale	82	99	134	196	217
Latgale	73	80	99	152	175

*Source:* [3].

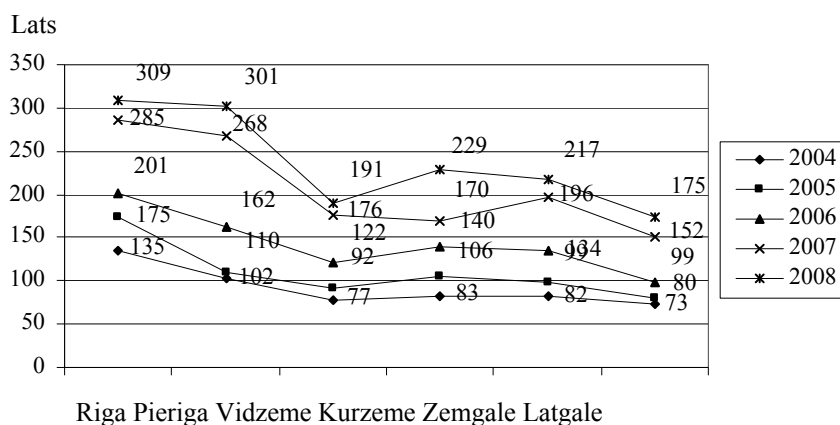


Fig. 2. Dynamics of the population incomes by the regions of Latvia (average, per person, in lat)

Source: [3].

It follows from the data in Table 2 and Fig. 2 that in the period from 2004 to 2008 the relative smoothing of the average per capita incomes occurred between the regions of Latvia.

### ***The problem of poverty of the population in Latvia and its regions***

Poverty as a socio-economic phenomenon of inequality is a characteristic of market society. However its scale is different in different phases of its development. Poverty does not have any single indicator. In the definition of poverty there are at least three approaches: *absolute* (identification of cost of living or a poverty level), *relative* (identification of the level of poverty as a median or less than 60% of the average income per person) and *subjective*. What is important in all surveys is the dynamics, composition and social mobility of poor population. Assessing the socio-economic situation of the territory, such an indicator as “risk of poverty” is used. All those people whose incomes are lower than 60% of the average income level of the territory population are subject to the risk of poverty. An analysis shows that the level of poverty in Latvia reveals pronounced regional differences. Thus, most people subject to the risk of poverty live in the Latgale region; people who are least subject to it live in the Riga region (Fig. 2).

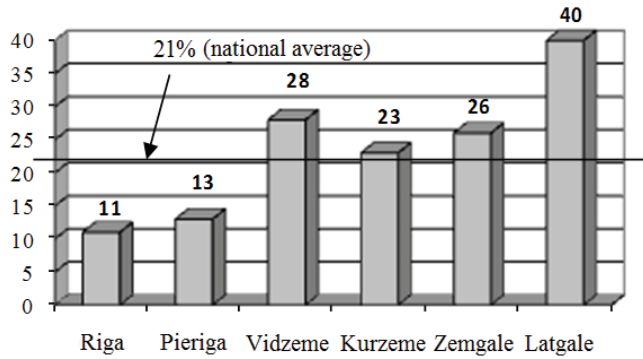


Fig. 2. Index of the poverty risk in Latvia and its regions in 2007, %

Source: [5].

The most widely used indicator is share of the population living below the level of poverty, i. e. having income which is lower than the value of *the minimum food basket*. Considering the dynamics of the growth of minimum consumer basket value in Latvia [3] from 84 lats in 2000 and 109 lats in 2005 and up to 133 lats in 2007, it should be noted that according to the data of the United Nations Development Programme (UNDP), 81% of the population of Latvia in 2000 had incomes lower than the value of minimum consumer basket, in 2005 — already 65.3%, in 2007—56.4%. An encouraging fact is that the number of such people is decreasing. From 2000 to 2005 the growth rate of the average per capita income increased by 1.61 times, and from 2000 to 2007 — nearly by 2.3 times; the growth rate of the minimum consumer basket value grew accordingly by 1.25 and 1.57 times. On the whole, the value of the minimum consumer basket and the value of the population incomes in Latvia are gradually increasing. However, only the incomes of the central (Riga) region of the country exceed the value of the minimum consumer basket. In other regions they are lower (Table 3).

Table 3

**Growth rates of the consumer basket value in Latvia and its regions, average per capita income and their correlation (the year 2000 as a basis)**

Growth rates of 2000 = 1.0	Region	2000	2005	2007
Growth rate of minimum consumer basket value	Latvia	1.0	1.25	1.57
Growth rate of average per capita income	Riga	1.0	1.49	2.08
	Pieriga	1.0	1.82	2.59
	Vidzeme	1.0	1.82	2.46
	Kurzeme	1.0	1.36	2.30
	Zemgale	1.0	1.89	2.80
	Latgale	1.0	1.50	2.24

End of the table 3

Growth rates of 2000 = 1.0	Region	2000	2005	2007
Correlation of the average per capita income of the population and the minimum consumer basket value	Riga	1.1	1.29	1.43
	Pieriga	0.81	1.20	1.32
	Vidzeme	0.59	0.87	0.92
	Kurzeme	0.67	0.74	0.98
	Zemgale	0.54	0.83	0.97
	Latgale	0.58	0.69	0.83

Source: authors' calculations by data [6].

### ***Degree of inequality of the population incomes in Latvia***

Table 4 gives demonstrates the incomes of the Latvian population by quintiles.

Table 4

#### **Incomes of the population in Latvia by quintiles in the period from 2000 to 2007 (in lats/month)**

Income	Year	In Latvia	Quintiles				
			1	2	3	4	5
Average	2000	66	17	36	52	69	161
	2005	106	35	67	90	128	232
	2007	151	62	95	126	183	308
Median	2000	50	18	35	50	67	110
	2005	82	35	70	90	125	200
	2007	120	66	99	124	180	280
Total	2000	62226	3330	6370	11377	11870	29050
	2005	88804	5862	12670	16667	18497	35107
	2007	103579	9192	12168	20071	21091	41057
Boundaries of quintiles in lats	2000		1—28	29—44	45—60	61—83	84—2500
	2005		5—54	55—75	76—100	101—150	151—1000
	2007		0—80	81—100	101—150	155—200	205—800

Source: authors' calculations by data [6].

Quintile coefficients provide only a general picture of inequality without taking into account uneven distribution of incomes inside the groups of population. So for the assessment of the degree of income inequality, the Lorenz curve is used, in the construction of which the shares of population groups surveyed are placed on the abscissa axis (in% of the total number) with the relative per cent of income, while on the ordinate axis — shares of incomes of the population groups surveyed (in per cent of total income). This is clearly seen in Table 5.



**Share of incomes of the population in groups with 20 % by years, %**

Group of population	Latvia		
	2000	2005	2008
First	5.0	7.0	7.0
Second	10.0	14.0	14.0
Third	18.0	17.0	21.0
Fourth	19.0	21.0	16.0
Fifth	48.0	41.0	42.0
<i>Total</i>	100	100	100

*Source:* authors' calculations by data of the UNDP

Table 5 shows actual distribution of incomes from 2000 to 2008. Thus, in 2008, 20% of the population with the lowest income got 7% of aggregate income; 40% with low income — 21%; 60% of the population — 42%; 80% of the population— 58%; 20% of the population of the last quintile — 42% of the aggregate income representing quite high concentration of income.

### Conclusions

Based on the analysis of the dynamics of incomes of the population in Latvia in the period from 2000 to 2008, it is possible to make some conclusions.

1. In the market conditions, stratification of the society by the amount of incomes and material level of living is inevitable. Thus, in the Riga region the incomes are the highest: in 2007 the income per person was 190 lats a month (271 Euro). The poorest region was Latgale where the relative indicator was only 110 lats (157 Euro). This situation is still the same in the present time. In other regions of Latvia this indicator is lower than in the Riga region.

2. It is possible to note the following general tendencies of dynamics in the differentiation of the population incomes in Latvia which confirm the hypothesis of the present research: poor groups of the population are gradually increasing their incomes (their share of incomes was 5% in 2000, but it became 7% in 2008); the rich are relatively decreasing (their share of incomes in 2000—48%, while in 2008—42%); while middle groups of the population are gradually increasing the amount of their incomes (their share of incomes was 47% in 2000, and became 51% in 2008). At the same time, the perspective of the situation and dynamics of the population incomes in Latvia should be considered with reserved optimism.

3. In 2008 20% of the population with minimum incomes in Latvia had an average income of 80.0 lats (114 Euro) a month per person, while 20% of the population with maximum incomes — 446.0 lats (637 Euro) per month, meaning that a gap in incomes was about 6 times. This coefficient of the society stratification indicates socially acceptable inequality of incomes of the population in Latvia inside the EU (this gap in the EU in 2008 was 5 times; the same situation occurs at present).



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### About authors

*Dr Viktor V. Voronov*, Senior Research Fellow, Institute of Social Studies, Daugavpils University (Latvia).

E-mail: [viktor.voronov@du.lv](mailto:viktor.voronov@du.lv)

*Dr Olga Ya. Lavrinenko*, Research Fellow, Institute of Social Studies, Daugavpils University (Latvia).

E-mail: [olga.lavrinenko@du.lv](mailto:olga.lavrinenko@du.lv)