The Methodologies
of the Subsistence Minimum
Determination in Kazakhstan:
the Ways and Approaches to Improve

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Currency Equivalents (as of 14.08.2012)

Currency Unit: Tenge

USD 1 = 149.4 Tenge

Abbreviations

CBN	-	Cost of Basic Needs
CPI	-	Consumer Price Index
DWCP	-	Decent Work Country Programme
DWT/CO	-	Decent Work Team/Country Office
EMP	-	Estimated Minimum Pension
ESM	-	Estimated Subsistence Minimum
FAO	-	Food and Agriculture Organization of the United Nations
FB	-	Food Basket
HBS	-	Household Budget Survey
HFCS	-	Household Food Consumption Survey
HRSD	-	Human Resources and Skills Development in Canada
ILO	-	International Labour Organization
LIS	-	Luxembourg Income Study
MCB	-	Minimum Consumption Budget
MOLSP	-	Ministry of Labour and Social Protection
NPO	-	Non-Profit Organization
OECD	-	Organization for Economic Co-operation and Development
OLS	-	Ordinary Least Squares
RDA	-	Recommended Daily Allowance
SM	-	Subsistence Minimum
TE	-	Total Expenditure
UK	-	United Kingdom
UNSD	-	United Nations Statistics Division
UNU	-	United Nations University
USSR	-	Union of Soviet Socialist Republics
WHO	-	World Health Organization
РК	-	Республика Казахстан
ССР	-	Советская Социалистическая Республика

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Foreword

Supporting productive employment and social protection of men and women is identified as one of the three priorities of the Decent Work Country Programme (DWCP) of the Republic of Kazakhstan for 2010–2012, which was agreed by the Government, the social partners and the ILO. As part of this priority, the ILO technical assistance on assessing and improving the methodology of the subsistence minimum calculation was stipulated under the outcomes related to the improvement of social security.

Technical consultations as well as technical missions were carried out in 2010–11 and the first draft report of the analysis on the methodology of the subsistence minimum calculation was presented at the tripartite technical roundtable organized in Astana, Kazakhstan, in December 2011. Based on the supplementary request made by the Ministry of Labour and Social Protection (MOLSP) after the roundtable, Chapter 4, dealing with the relative poverty line, is newly added.

The main analytical parts of this report were prepared by Dr. Yuka Takeda, from Hitotsubashi University and Dr. Kentaro Nakajima, from Tohoku University and the final report was completed under the supervision of Mariko Ouchi, Senior Social Security Specialist of the ILO Decent Work Team for Eastern Europe and Central Asia (ILO DWT/CO-Moscow). The comments provided by Hiroshi Yamabana, Senior Actuary of the Social Security Department, the ILO Headquarters and Kazakh government authorities and representatives (including the Statistical Agency of Kazakhstan) and the social partners have been reflected in this final report. Talgat Umirzhanov, ILO National Coordinator for Kazakhstan and Eleonora Salykbayeva, ILO Project Assistant in Kazakhstan for the Finland funded Technical Cooperation Project «From the Crisis towards Decent and Safe Jobs», provided valuable guidance and assistance throughout the preparation of this report.

This report consists of four analytical chapters and conclusions which also include recommendations. Chapter 1 describes how to rationally estimate the (non-food) subsistence minimum. Here, the focus is given to two measurement methodologies: Engel's coefficient method and the Regression method. Chapter 2 reviews the history of the subsistence minimum in Kazakhstan and on how to improve its measurement on the basis of scientific methods and international practice. Chapter 3 estimates the non-food and total subsistence minimum for 2007–2009 at national and regional (oblast) levels, and Chapter 4 centres on the advantage and disadvantage of relative poverty lines. The micro data of Kazakhstan's Household Budget Survey from 2007–2009 are used for all quantitative analyses in this report. In the conclusions, the main points of discussion from Chapters 1–4 are summarized and the recommendations of future policy options are provided, which Kazakhstan might consider in order to improve its poverty line analysis.

We trust that this technical report will be a useful reference for those concerned with the development of a better poverty measurement system in Kazakhstan.

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Shurenchimeg Zokhiolt

Deputy Director

ILO DWT/CO for

Eastern Europe and Central Asia

Mariko Ouchi

Senior Social Security Specialist

ILO DWT/CO for

Eastern Europe and Central Asia

General Measurement Methodology of Absolute Poverty Lines: A Technical Survey[1]

This chapter briefly provides a technical survey on the measurement methodologies that are theoretically and practically accepted for estimating the poverty lines. Conceptually, there are two types of measurement methodologies for poverty lines: one is for absolute poverty lines, the other for relative poverty lines. The former is based on the minimum standard of physical and social well-being, while the latter focuses on inequality within a country. In general, the absolute poverty line is identified as the subsistence minimum. However, as discussed in Chapter 2, the poverty line[2] in Kazakhstan is legislatively defined as 40% of the subsistence minimum that is calculated by the Statistical Agency of Kazakhstan. Thus, Kazakhstan's poverty line can be recognised as the legislative one. It should be noted that the poverty lines discussed in this chapter are not the legislative ones but the ones based on theory that is practically accepted.

The absolute poverty line is closely linked to the social welfare policy, due to the fact that it measures the minimum requirements for a healthy life. According to Isidoro (2005) and Morduch (2005), the most popular way to measure the absolute poverty threshold is through the Cost of Basic Needs method (the CBN method). This measurement methodology is not only widely used in practice by developing countries, but also by transitional countries, such as Russia and developed countries, such as Canada (Takeda 2011; Nakajima 2011). In accordance with the global survey of the United Nations Statistical Division, two-thirds of countries calculate absolute poverty lines (Morduch, 2005).

On the other hand, the measurement methodology of relative poverty lines is used by many developed countries, particularly by the OECD countries. As stated by Morduch (2005), the use of the relative measure by those countries reflects the belief that important deprivations are to be judged in relation to the well-being of the majority of society (Morduch 2005). The relative poverty line is not only technically simple and easy to calculate, but also useful for the cross-national comparison. For example, it is widely used for the cross-national comparison of the OECD countries. However, the relative poverty line is not generally used as the threshold for the provision of social security in these countries.

The project aims at the improvement of the measurement methodology of the subsistence minimum in Kazakhstan, i.e. the absolute poverty line. Therefore, this chapter surveys how to estimate the absolute poverty line.[3] Section 1.1 shows the measurement methodology of absolute poverty lines. In addition, Section 1.2 discusses equivalence scales for adjustment of the number of household members.

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[1] This chapter has been prepared by Kentaro Nakajima from Tohoku University.

[2] In this publication, the terminologies of «poverty line» in Russian are defined as follows:
«Порог бедности» is a poverty line which is equivalent to subsistence minimum (прожиточный минимум) and absolute poverty line;
«Черта бедности» is a legislative poverty line defined by Kazakh legislation which is 40 % of subsistence minimum.

[3] Just for a reference, in Chapter 4, we show the methodology of calculating the relative poverty line as well as the estimates based on the Household Budget Survey of Kazakhstan.

1.1. The cost of basic needs method: calculating the absolute poverty lines

This section describes the cost of basic needs method (the CBN method). Conceptually, the CBN method directly estimates the minimum requirement for a healthy life in the country, thus, the CBN being closely linked to the social welfare policy.

The CBN poverty line is additively separable between *the food poverty line,* and *the non-food poverty line*. This means that by adding food and non-food poverty lines that are estimated independently, we obtain a total poverty line as a minimum requirement for living in the country. According to Isidoro (2005), a poverty threshold by CBN is calculated in the following ways.

1. Estimating the food poverty line:
    - Estimating the minimum nutritional requirements.
    - Specifying the contents of the food basket that satisfy the nutritional requirements.
    - Estimating the value of this food basket as the food poverty line (*fpl*).
2. Estimating the value of the minimum non-food needs as the non-food poverty line (*nfpl*).
3. Adding both food and non-food poverty lines and obtaining the total poverty line (*tpl*).

The details of each step are as follows.

1.1.1. Estimating the food poverty line

Firstly, in order to estimate the food poverty line, data on the minimum nutritional requirements for living are needed. As mentioned by Isidoro (2005), the most popular way to define the minimum nutritional require-ments is by following the recommended daily allowance (RDA), as laid down by the FAO (Food and Agri-culture Organization of the United Nations) and WHO (World Health Organization). Many countries develop their RDA following the FAO/WHO guidelines, and some countries define the RDA by age and gender. For example, the RDA in Russia is 2,730 kcal for males in the 20–39 age group and 2,110 kcal for females in that same age group.

Then, the second step is to specify the contents of the food basket by item and weight (e.g. beef, 1 kg; rice, 2 kg…) that satisfy the minimum nutritional requirements (e.g. 2,100 kcal). Basically, the Household Food Consumption Survey (HFCS), that includes information on individual food items consumed by weight and value, is used for specifying the contents of the food-basket. The contents of the food basket are specified in the following way: households from the HFCS are analysed as reference households. Households, whose adjusted income by the number of adults and children are lower than the lowest 20 (25 or 30) percentiles, are often used for sample households. Then, the per capita food items that are consumed by reference households are listed in order of importance, for example, with respect to quantity, value, or in some cases frequency of reported consumption. The food bundle is a compilation of the top entries in this list, finishing with the item where the total calories satisfy the minimum nutritional requirements.

Finally, the food poverty line (*fpl*) can be obtained as the price-weighted sum of the quantity of each item. The definition is as follows:

$$fpl = \sum_{i=1}^{F} q_i p_i$$

where $q_1, ..., q_f$ denote the quantity of each food item ($i = 1, …, f$) and $p_1, ..., p_f$ relate to the unit price of each food item.

The unit price of each item can be obtained by the survey of the consumer price. For example, Canada and Russia are surveying the region-specific price of each item in the food basket. However, surveying whole items at regional level is administratively costly. Alternatively, developing countries mainly obtain each unit price by dividing the expenditure by the quantity of each commodity in the lower percentile sample households in the HFCS.

In order to reduce administrative costs, some developing countries (e.g. Bangladesh, Laos, and Thailand) adopt a more conventional method, called the *consumption energy method*. This does not require both the food basket and the unit price data for calculating the *fpl*, instead of the food-basket approach. The *fpl* estimated by the consumption energy method only uses the price per kilocalorie calculated by the HFCS. First, this approach calculates the ratio of the total food expenditure and the total kilocalorie consumption as the price per kilocalorie in the sample households in the HFCS. Then, by multiplying the minimum nutritious requirements and the price per kilocalorie, it derives the food poverty line (*fpl*).

1.1.2 Estimating the non-food poverty line

Broadly speaking, there are three ways to estimate the cost of minimum non-food needs: (1) List of specified essential non-food needs (direct method), (2) Engel's coefficients (indirect method), (3) Regression approach (indirect method).

1.1.2.1. Direct method: list of specified essential non-food needs

This approach creates the non-food basket by fully listing the non-food needs and calculating the price-weighted sum of the basket as the non-food poverty line (*nfpl*), similar to the food basket. This approach is conceptually simple and is accepted by Canada and Russia. However, listing all the non-food needs requires so much administrative cost. According to Morduch (2005), half of the respondent countries of the United Nations Statistics Division Survey (UNSD survey) follow this approach. Furthermore, only tobacco and entertainment are included in the non-food needs in Albania; by contrast, Gambia lists rent, clothing, firewood, transport, education, and health costs.

1.1.2.2. Indirect methods: Engel's coefficients and the regression approach

Instead of listing all the non-food needs, the indirect estimation of non-food needs is also widely adopted. According to Morduch (2005), 38% of the respondent countries of the UNSD survey use the indirect method. This approach calculates the Engel coefficient, the ratio of food consumption to the total expenditure. There are two ways to calculate Engel's coefficient, regression and average.

The regression approach is based on the rigid consumption theory in economics, thus being one of the most rational and robust ways to determine non-food needs. This was introduced by Ravallion (1993) in the World Bank, and is nowadays implemented by Cambodia, Mongolia, and Vietnam.

The regression approach focuses on households whose total expenditure (te) is equal to the *fpl*. That is, the estimated ratio of non-food consumption per household by focusing on the poor household can be considered as the minimum required non-food needs. When calculating the ratio of the food and non-food expenditure in the households, the non-food needs ratio can be estimated.

However, households strictly satisfying the criteria $te = fpl$ are few or none. Then, a linear regression is conducted by using sample households whose food expenditure is more or less than the *fpl*. For example, the range of $[0.9 \times fpl, 1.1 \times fpl]$ is often used.

Ravallion and Bidani (1994) proposed the following estimation equation that is so called the food-share Engel curve,

$$S_i = \alpha + \beta \log\left(\frac{te_i}{fpl}\right) + \varepsilon_i$$

where

S_i = the share of per capita food expenditure of household i in relation to the total expenditure (= fe_i / te_i);

te_i = the total expenditure of household i;

fpl = the food poverty line;

ε_i = the error term.

The estimation equation is derived from the Almost Ideal Demand System (Deaton and Muellbauer 1980) that is widely used in the field of analysis of consumption and demand system. In the model above, α can be interpreted as the food share,[4] thus, $1 - \hat{a}$ represents the share of non-food needs (we express the estimator of *a* as $\hat{a}$). When calculating $(1 - \hat{a})fpl$, the non-food poverty line is then obtained.[5]

On the other hand, in order to calculate the Engel coefficient in a more conventional way, an average approach is also widely applied.

This approach simply calculates the average share of food expenditure in the total expenditure (Engel's coefficient) as fe / te in the sample households, similar to the regression approach. As well as the regression approach, the non-food poverty line is $(1 - fe / te)\,fpl$.

1.1.3. Estimating the total poverty line in the CBN

Now that the food and non-food poverty lines have been established, by simply adding these poverty lines, one derives the total poverty line (*fpl*). The definition of *fpl* is as follows:

$$tpl = fpl + nfpl = fpl + (1 - \bar{\alpha})fpl$$

1.2. Economies of scale within a household: the use of equivalence scales

Poverty should be assessed at individual level. However, it is difficult to do so in a practical sense due to administrative costs. The poverty line is estimated at household level in most cases. The simplest way to adjust income and expenditure at household level to those at individual level is by dividing the household income or the expenditure by the number of household members.

This calculation considers all household members alike, but the minimum requirements for living vary according to gender and age. Furthermore, larger families might on average be able to save on living cost compared to smaller families (See Chapter 1 for the details). In calculating poverty lines, most countries use equivalence scales for adjustment of the number of household members. For example, the Canadian Market

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[4] The derivation of the equation requires fairly lengthy explanations. For more details regarding the derivation of the equation, see Appendix 2: relating to Ravallion and Bidani (1994).

[5] For the poor household that we are focusing on, *te = fpl*.

Basket Measure uses the scale of 0.4 for an additional adult as well as for each child within a household (HRSD 2008). If a country does not establish its own equivalence scale, it might use the scales developed by the OECD. As discussed in Chapter 2, the OECD often proposed two types of scale: the (old) OECD scale (Oxford scale) and the OECD-modified scale (OECD 1982; Forster 1994). In addition, the OECD also proposed a more conventional scale that is the square root of the number of household members (OECD 2008). This square root scale is mainly used for calculating the relative measure of the income poverty.

Measurement methodology of the Subsistence Minimum in Kazakhstan and its Problems[6]

In general, subsistence minimum (прожиточный минимум) is defined as the income level which guarantees the consumption to meet the minimum requirements for human beings both physically and socially. In Kazakhstan, legislations strongly link the subsistence minimum to the social security system. For example, the subsistence minimum in Kazakhstan has been used as a basis for calculating the poverty line (порог бедности). Besides that, the subsistence minimum at national level has been used as a reference for setting the minimum wage, minimum pension and other social payments. Thus, various social indicators stem from the subsistence minimum in Kazakhstan.

Basically, there are several concepts and criteria relating to the poverty line. For example, the concept of poverty is classified as follows: (1) *absolute poverty* and (2) *relative poverty*. *Absolute poverty* is represented by the subsistence minimum or values of food consumption, whereas, *relative poverty* is captured by the ratio to the median of the incomes or consumption. Accordingly, the ratio can be set at 40%, 50%, 60%, or 75%. In many countries, the poverty line that is used for providing a social help, is identified with the subsistence minimum, that is, an absolute poverty line;[7] however, this is not the case in Kazakhstan. In Kazakhstan, not the subsistence minimum but another threshold of poverty is used for providing social help, which constitutes *40% of the subsistence minimum*. We can therefore call the threshold used in Kazakhstan as *a legislative poverty line*.

Thus, in Kazakhstan, the legislative poverty line is not equal to the subsistence minimum, although the subsistence minimum is used as the basis of the poverty statistics and social indicators.[8] Moreover, the legislative poverty line in Kazakhstan could be changed, subject to the budget constraints. However, according to international practice, the legislative poverty lines should be equal to the subsistence minimum, and it is of great significance to calculate the subsistence minimum appropriately and rationally. In this chapter two factors are examined: (1) how the subsistence minimum in Kazakhstan is calculated and (2) what specific features the subsistence minimum in Kazakhstan has, compared to international practice. Firstly, Section 2.1 will draw attention to how the measurement methodology of the subsistence minimum in Kazakhstan was regulated during the early transition period, including the late Soviet era, until 2005.[9] Then, Section 2.2 will address the measurement methodology of the subsistence minimum that has been used since 2006. Finally, in Section 2.3, referring to the international practice and following economic theory, it will be highlighted what should be changed in order to improve the measurement methodology of the subsistence minimum in Kazakhstan.

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[6] This chapter has been prepared by Yuka Takeda from Hitotsubashi University.

[7] For example, the subsistence minimum in Russia is defined as a poverty line. If per capita, the income of a household is below the poverty line, then the household is identified as poor and qualified to receive state social help.

[8] The issue on how to set the social indicators with regard to the subsistence minimum is outside the scope of this report. Therefore, this matter is not being dealt with.

[9] On 16 December 1991, Republic of Kazakhstan declared its independence from the former Soviet Union.

2.1. The history of the subsistence minimum in Kazakhstan before 2006

In the period of transition from planned to market economy, Kazakhstan has seen three turning points relating to the measurement methodology of the subsistence minimum: 1991, 1999, and 2005.[10] In this section, we review the measurement methodology of the subsistence minimum from 1991 to 2005 that had been used before the adoption of the 2006 measurement methodology.

2.1.1. The subsistence minimum in Kazakhstan during the early period of transition

During the Soviet era, the existence of poverty in the country was denied by the state, so that there would be no legislation on the subsistence minimum during that period. Nevertheless, at the end of the 1960s, based on the recommendation of the Institute of Nutrition under the USSR Academy of Medical Science, the concept of the minimum consumption budget (минимальный потребительский бюджет) was formed. Moreover, the minimum consumption budget became a determinant for child allowance eligibility and low-income family allowance.[11]

The first legislation on the subsistence minimum in Kazakhstan was stipulated in the Soviet Socialist Republic of Kazakhstan Law N 671-XII «On minimum consumption budget» dated 17 June 1991 (below – the 1991 MCB law). The average subsistence minimum per capita that was set by this legislation, was used for determining the minimum amount of unemployment benefit, minimum wage, minimum pension, and minimum compulsory social payments. Until the implementation of the new legislation on subsistence minimum in 1999,[12] the 1991 MCB law adopted during the Soviet period had regulated the subsistence minimum in Kazakhstan during the early period of transition from planned to market economy.

However, the 1991 MCB law adopted by the Soviet government was sometimes inconsistent with the legislations adopted afterwards by Kazakhstan's government, which could have lead to disorder. For example, based on Kazakhstan's government decree N 801 «On the minimum average consumption budget per capita» dated 24 September 1992, the unified average minimum consumption budget per capita was introduced, but against the 1991 MCB law, the minimum consumption budget by age, socio-demographic group, natural and economic zone was not implemented. In addition, the nutritional basic consumption criteria by demographic group were also not considered. Moreover, daily services and non-food items such as clothing, footwear, furniture were not included in the minimum consumption budget. Therefore, it could be mentioned that, until 1999, when a new measurement methodology on subsistence minimum was introduced, the subsistence minimum in Kazakhstan had been calculated on the basis of the values of the minimum food basket. The calorie intake of the minimum food basket is 2,100 kcal, which meets the nutritional requirements recommended by the World Health Organization (WHO).[13]

Another problem concerning the calculations of the subsistence minimum in Kazakhstan was that the values of the average subsistence minimum per capita were calculated on a scientific basis, but only in relation to the

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[10] The legislation on the subsistence minimum adopted in 1999 came into force in 2000. Furthermore, the legislation on the subsistence minimum adopted in 2005 was put into action in 2006.

[11] For example, in 1975, households with children whose per capita income was below 50 rubles per month were provided with child allowance. In 1985, the threshold was raised to 75 rubles per month and moreover, the minimum consumption budget became the basis of the minimum wage and minimum pension. As to the headcount ratio in Kazakhstan in 1985, the number of people with a per capita income below 75 rubles per month was 15.5 %.

[12] Republic of Kazakhstan Law N 474-I dated 16 November 1999 «On subsistence minimum».

[13] Components and the structure of the food basket were set on the basis of the recommendation made by the Institute of Nutrition under the control of the Ministry of Education and Science of Kazakhstan.

development of the national economy and budget constraints. In addition, the 1991 MCB law, adopted during the Soviet era, was frozen in 1995. Under these circumstances, tasks for developing (1) the components and structure of the subsistence minimum by socio-demographic group and (2) the measurement methodology of the subsistence minimum were set by the Ministry of Labor in Kazakhstan. As a result, in 1997, the Statistical Agency of Kazakhstan calculated the subsistence minimum by socio-demographic group.

2.1.2. The subsistence minimum in Kazakhstan during 1999–2005

The subsistence minimum in Kazakhstan began to be calculated on the basis of a more scientific method in 1999, when the Republic of Kazakhstan law N 474-I «On the subsistence minimum» was adopted (below – the 1999 SM law). Since then, minor alterations have been made several times, but it can be affirmed that the 1999 SM law still regulates the subsistence minimum in Kazakhstan.

The 1999 SM law defines the subsistence minimum as being identified with the values of the minimum consumption basket, and monetary incomes per capita required for minimum well-being. Here, the minimum consumption basket is composed of (1) a food basket and of (2) non-food items and services.

The food basket includes 20 bundles of food items, which are selected, according to (1) nutritional requirements securing sufficient calorie intake for each person, (2) food consumption patterns at local level, and (3) access to the market of goods (*Table 2.1*).The basic norms of food consumption were worked out by the Institute of Nutrition in Kazakhstan so that the consumption of main food and necessary calorie intake were guaranteed. The basic norms secured the calorie consumption intake of 2,172 kcal per capita per day, which means that the international standards recommended by WHO were met. In addition, the values of the minimum food basket were calculated by multiplying the norms of consumption for each food item and its average price at regional (oblast) level in the middle of each month. The basic norms of food consumption didn't vary among regions, and the difference in values of the subsistence minimum among regions was completely dependent on the difference in prices.

As to nonfood goods and services that are also included in the subsistence minimum, the non-food basket was not made. The values of nonfood goods and services were calculated by using a fixed ratio of the food basket (food share – 70% ; nonfood share – 30%). Thus, the subsistence minimum in Kazakhstan was calculated, based on the food basket. However, it was criticised that the fixed ratio of 70% for the food basket didn't reflect the consumption structure of the poor household and was not based on the scientific method.[14]

Table 2.1 shows the required minimum consumption expenditures for each item in the food basket, and the values of (I) the food basket, (II) the non-food goods and services, and (III) the consumption basket. All these values are calculated at national level, using data of April 2004. For example, the annual norm of consumption per capita for beef is 42.3 kg, and its unit price was 329 Tenge, so that the minimum consumption expenditures for beef was 1,160 Tenge ((42.3/12)×329=1,160). The values of the food basket equalled the required minimum consumption expenditures per month for each item (3,788 Tenge). When considering the share of food in the consumption basket to be70%, we get 5,411 Tenge for the minimum consumption basket.

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[14] For example, if it had been assumed that the minimum consumption basket was composed of food, non-food goods and services, and housing, then in 2002 the share of food in the consumption of the poor households (the lower 20 % of the consumption distribution at national level) would have been 61.7 %, non-food goods and services – 26.0 %, and housing – 12.3 % (ILO 2004). However, if it had been understood that the minimum consumption basket didn't include housing, then the food share would have been 70.4 %.

Table 2.1. Composition and value of the consumption basket in 2004

			Annual norm of consumption per capita	Unit price (as of April 2004)	Value for a month (Tenge)
Food basket	1.	Wheat flour high grade	5.91	56	28
	2.	White bread	77	48	308
	3.	Black bread	37.59	69	188
	4.	Macaroni	7.5	81	51
	5.	Rice	13.5	77	87
	6.	Milk	137.3	55	629
	7.	Butter	4.49	398	149
	8.	Beef	42.3	329	1160
	9.	Fish	4.42	149	55
	10.	Eggs	14.16	105	124
	11.	Potato	95	35	277
	12.	Cabbage	32.7	37	101
	13.	Carrot	24.5	39	80
	14.	Onion	22.5	39	73
	15.	Sunflower oil	8.21	175	120
	16.	Sugar	20.65	77	133
	17.	Apple	11.2	131	122
	18.	Tea	0.55	691	32
	19.	Salt	2.6	23	5
	20.	Spices	0.7	1137	66
I.	*Food basket* (= (1) + … + (20))		*70% of the consumption basket*		*3788*
II.	*Non-food goods and services*		*30% of the consumption basket*		*1623*
III.	*Consumption basket* (= I + II)		*100%*		*5411*

Source: Statistical Agency of Kazakhstan

2.2. The subsistence minimum in Kazakhstan from 2006 to date

As regards a national plan, which set up a program for furthering social reforms in 2005–2007, it became a requirement to improve on the measurement methodology of the subsistence minimum in Kazakhstan. In December 2005, the Ministry of Labour and the Statistical Agency of Kazakhstan drew up a joint order on the measurement methodology of the subsistence minimum. Since 2006, the subsistence minimum in Kazakhstan has been calculated, according to this joint order. The measurement methodology that is used nowadays in Kazakhstan is examined below.

In 2006 and prior to that, the minimum consumption basket in Kazakhstan was composed of (1) a food basket and (2) non-food goods and services. The amount of subsistence minimum is equal to the values of the minimum consumption basket. The subsistence minimum by socio-demographic group as well as the average subsistence minimum per capita is calculated at national and regional level. Here, the socio-demographic groups are classified as follows:

1)   Children (13 years old and younger);

2)   Teenagers (14–17 years old);

3)   Working population (males:18–62 years old; females: 18–57 years old);

4)   Pensioners (males: 63 years old and over; females: 58 years old and over).

Table 2.2 shows the average subsistence minimum per capita and those by socio-demographic group at national level as of July 2011.

Table 2.2. Subsistence minimum by socio-demographic group in July 2011

	Subsistence minimum	Within:	
		Food	Non-food goods and services
Children younger than 13 years old	13,100	7,860	5,240
Teenagers at the age of 14–17			
Boys	20,950	12,570	8,380
Girls	16,051	9,631	6,420
The working population over 18 years old			
Males	19,840	11,904	7,936
Females	15,752	9,451	6,301
Pensioners	15,550	9,330	6,220

Source: Агентство РК по статистике. 2011. Величина прожиточного минимума в июле 2011 года. Экспресс-информация №№ 06-01/253. 1 августа 2011 года. Астана.

Based on the recommendation of the Institute of Nutrition in Kazakhstan, 43 items are selected for the minimum food basket and the annual minimum required quantities are set for each item according to gender and age.[15] Also, on the basis of these minimum quantities by gender and age, the minimum required quantities for each item by the socio-demographic group are established. The minimum required calorie intake for the population is 2,175 kcal, which meets WHO international standards.[16] The number of components in the food basket that has been used since 2006 is more than before, so that its values could be captured more precisely. Although the food basket is composed of 43 items, the number of items that are included in the food basket for calculating the subsistence minimum varies according to season. For example, tomatoes and cucumbers are included in the food basket from June to October, and watermelon and berries – from August to October, while these food items are excluded from the basket outside these months. The values of the food basket are calculated by multiplying the consumption quantity of each item by its monthly average of unit price and adding them up. The equation for the calculation can be written as follows:

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[15] Both for males and females, who are younger than 30 years old, the age groups are classified into the following categories: 0.5–1 year old, 1–3 years old, 4–6 years old, 7–10 years old, 11–13 years old, 14–17 years old, and 18–29 years old. As to the age over 30, the age groups for males are classified into the following category: 30–62 and over 63 years old; for females – 30–57 and over 58 years old.

[16] The required calorie intake by socio-demographic group is 1,521 kcal for 0–13 years old, 2,755 kcal for teenage boys, 2,110 kcal for teenage girls, 2,646 kcal for adult males, 2,100 kcal for adult females, and 2,052 kcal for pensioners. Taking physical development into consideration, a higher calorie intake is set for boys and girls, but this is the same in other countries.

$$FB_n = \frac{p_1 q_{1n}}{12} + \frac{p_2 q_{2n}}{12} + \cdots + \frac{p_{43} q_{43n}}{12}$$

where

FB_n = the values of the food basket (Tenge) for the gender and age group or socio-demographic group n;

p_i = the monthly average of the unit price for item i;

q_{in} = the minimum consumption quantity of item i for the gender and age group or socio-demographic group n.

As well as the food basket used until 2005, the components of the food basket and the minimum consumption norm of each item that have been used since 2006 do not vary among regions. Thus, the difference in values of the food basket at regional level is completely dependent on the difference in prices among regions. The composition of the consumption basket as of July 2011 and its values are shown in *Table 2.3*.

Concerning non-food goods and services, it should be noted that in Kazakhstan, based on the fixed ratio of the food basket, expenditure on non-food goods and services has been calculated since 2006 and prior to that, though the fixed ratio of the food basket to the consumption basket was not set at 70%, but at 60%. In July 2011, in Kazakhstan, the values of the food basket were 9,966 Tenge per capita (*Table 2.3*). As to this amount at 60% of the average subsistence minimum per capita, a value of 16,610 Tenge is obtained for the consumption basket. Based on the values of the food basket and the consumption basket, we get a value of 6,644 Tenge (= 16,610 – 9,966) for the non-food goods and services. Thus, the ratio of the non-food basket is set at 40% to the consumption basket.

Table 2.3. Composition and value of the consumption basket in July 2011

	Average subsistence minimum per capita (Tenge)
Subsistence minimum (=I + II)	**16,610**
I. Food items	**9,966**
Rice	149
Wheat flour, high grade	87
Semolina	25
Buckwheat flour	76
Oats	36
Black bread	327
Rye	58
White bread	477
Macaroni	66
Beef	1,196
Pork	601
Mutton	512
Chicken	213
Horse cavalry	283
Beef liver	18
Sausage	230
Fish	248

	Average subsistence minimum per capita (Tenge)
Milk	926
Sour cream, 20% fat	173
Cottage cheese	275
Cheese	248
Eggs	197
Butter	388
Margarine	41
Sunflower oil	206
Apples	552
Dried fruits	33
Cabbage	135
Onion	202
Beet root	51
Carrot	197
Cucumber	136
Tomato	219
Potato	913
Peas	22
Sugar	338
Spices	3
Salt	7
Mayonnaise	17
Yeast	6
Tea	79
II. Non-food goods and services	**6,644**

Source: Агентство РК по статистике. 2011. Величина прожиточного минимума в июле 2011 года. Экспресс-информация №№ 06-01/253. 1 августа 2011 года. Астана.

2.3. How to improve the measurement methodology of the subsistence minimum in Kazakhstan in the international context

In Section 2.2, the measurement methodology of the subsistence minimum that has been used in Kazakhstan since 2006 was examined. In this section, Kazakhstan's measurement methodology will be analysed in the international context, compared with Russia's measurement methodology. Russia is one of the transitional countries where the methodology has been developed in order to meet international standards.

2.3.1. Components of the subsistence minimum: consumption basket and tax payments

2.3.1.1. Food basket

In Kazakhstan, components of the food basket and its nutrition are highly thought of by experts in the country, and the basket meets the nutritional requirements recommended by WHO/FAO. However, in this case as well, the minimum consumption norm of the food basket should be considered to regularly update, in order

to more timely set the subsistence minimum according to the economic situation and the consumption pattern of the poor.[17]

According to some of international practices, the food basket is revised every 5 years.[18] However, in Kazakhstan 5 years have already passed since the last revision of the food basket in 2006. Therefore, it would be appropriate to update the minimum consumption norm of the country's food basket in the near future with the help of nutritional specialists from the Institute of Nutrition in Kazakhstan.

2.3.1.2. *Pseudo-nonfood basket*

It should be noted that the measurement methodology of the subsistence minimum used since 2006 does not define the setting of the non-food basket. As stated before, expenditure relating to non-food goods and services in the minimum consumption basket are calculated on the fixed ratio that was set at 70% before 2005, but which has been set at 60% since 2006.

Another way of calculating the values of the non-food goods and services is to make the non-food basket with the detailed non-food items.[19] However, different from defining food items and calculating the calorie intake of the food basket, it is difficult to set non-food items and the year of use for each item, based on the scientific method. Besides, if we fail to establish the non-food basket appropriately, it is highly likely that it will not guarantee or, on the contrary, overestimate the minimum requirements of the consumption for a socially normal life.[20] As discussed in Chapter 1, if the consumption of the non-food goods and services could be estimated scientifically, based on the food basket, then it would be appropriate to calculate the expenditure of non-food goods and services by using this methodology. In addition, the administrative cost of calculating the expenditure could be reduced.

The fixed ratio of 60% that has been used since 2006 for calculating the subsistence minimum is legislated by the joint order of the Ministry of Labour and the Statistical Agency of Kazakhstan, but it is not clear how to obtain this ratio.[21] To some extent, it could be assumed that, in principle, the composition of the minimum required expenditure used for acquiring the fixed ratio is (1) food, (2) non-food goods and services. However, it could be presumed that housing has also been added to the non-food goods and services since 2006. Here, utility costs are included as part of housing expenses. For example, in 2002, if housing had not been incorporated into the non-food components, then the food share in expenditures in poor households would have been about 70%. On the other hand, if housing had been included in the non-food components, then the food share would have been about 60% (See footnote 13). Thus, even if the non-food basket was not set with the detailed non-food items and the use by date for each item, a sort of non-food basket (*the pseudo-non-food basket*) could be made in an indirect way by changing the minimum required components of expenditure in poor households that are referenced for the calculation of the subsistence minimum.

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[17] The issue on the measurement of the minimum energy requirements is the one on which experts on nutrition should work. It means that this issue is beyond the scope of our project. In this report, we just point out that as for the methodology for measuring the minimum energy requirements, FAO (2004; 2008) should be referred to.

[18] For example, in Russia, according to the legislation, the consumption basket is revised every 5 years.

[19] For example, Russia follows this method of calculation. For more details, see Takeda (2011) about the non-food basket in Russia.

[20] Please note that the subsistence minimum is defined as the income that secures the minimum required consumption, physically and socially.

[21] Совместный приказ Министерства труда и социальной защиты населения Республики Казахстан от 2 декабря 2005 г. N 307/1-п и Агентства Республики Казахстан по статистике от 5 декабря 2005 г. N 194 «Об утверждении правил расчета величины прожиточного минимума».

For example, there are 2 patterns of *a pseudo-non-food basket*, which are as follows.

Pseudo-non-food Basket I:	Clothing, common goods used in the household, housing (including utilities).
Pseudo-non-food Basket II:	Clothing, common goods used in the household, housing (including utilities); Education, Health, Transportation.

Pseudo-non-food Basket I is similar to what is captured by the calculation of the subsistence minimum based on the measurement methodology currently being used in Kazakhstan. On the other hand, *Pseudo-nonfood Basket II* includes expenses in education, health and transportation. Moreover, the components of *Pseudo-non-food Basket II*, assumed that the minimum of education and health should be secured in order to have a healthy and social life. For example, the non-food basket in Russia is identified with *Pseudo-non-food Basket II* as in Canada that has a huge territory like Russia and Kazakhstan. Thus, it is becoming the international norm to include not only food, clothing, and housing in the consumption basket, but also the minimum that is required for acquiring the opportunity to be involved in the society.[22] It is supposed to be appropriate that, in the near future, Kazakhstan also would use *Pseudo-nonfood Basket II* that could conceptualize the well-being more broadly.

2.3.1.3. *Total expenditure as a calculation base of the subsistence minimum*

Here, a fixed ratio is briefly examined in the case when one changes the required components of the total household expenditure, as discussed more in detail in Chapter 3. **Table 2.4** shows the share of food, non-food goods and services, and tax in the total required expenditure that is estimated on the basis of the micro data of Kazakhstan's Household Budget Survey (HBS) conducted in 2009. Here, it should be noted that the estimates are derived from the calculation based on the simple aggregation of the micro data, not controlling other variables that could have an effect on one's well-being. As already mentioned, the subsistence minimum in Kazakhstan is composed of (1) the food basket and (2) non-food goods and services, and, unlike Russia, does not include tax and other compulsory payments.[23] As shown in **Table 2.4**, the share of tax and other mandatory payments in Kazakhstan is quite small. However, these expenditures are also required, in order for these costs to be incorporated in the subsistence minimum.

Table 2.4. Simulated share of the components in total expenditures, Q4 of 2009

	Total Expenditure I		
	Food	Non-food I	Tax
Households belonging to the lower 20% income earners	63.25	36.66	0.09
Households belonging to the upper 20% income earners	47.64	52.15	0.21

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[22] For example, refer to the research program in the UK «A Minimum Income Standards in the United Kingdom» (http://www.minimumincomestandard.org/index.htm)

[23] For example, during the 4th quarter of 2009, the food share in the subsistence minimum was 38.8 % for the whole population; non-food goods – 16.7 %; non-food services – 37.8 %; tax and other compulsory payments – 6.7 % (Росстат 2010).

	Total Expenditure II		
	Food	Non-food II	Tax
Households belonging to the lower 20% income earners	58.87	41.04	0.09
Households belonging to the upper 20% income earners	43.33	56.48	0.19

Notes: Total Expenditure I is composed of (1) food, (2) non-food I, and (3) tax and other mandatory payments, while Total Expenditure II – (1) food, (2) non-food II, and (3) tax and other mandatory payments. Non-food I consists of clothing, items for family use and housing, including public service utilities. Non-food II consists of Non-food I and expenditures on education, health, and transportation. The equivalent income or expenditure per capita is used for the calculation.

Source: Author's calculation on the basis of Kazakhstan's HBS.

In ***Table 2.4***, 2 patterns of the total expenditure could be a calculation base of the subsistence minimum, which are expressed as follows:

Total Expenditure I:
1) Food;
2) Non-food I: Clothing, common goods used in the household, housing (including utilities);
3) Tax and other mandatory payments.

Total Expenditure II:
1) Food;
2) Non-food II: Clothing, common goods used in the household, housing (including utilities), education, health, transportation;
3) Tax and other mandatory payments.

Above, Non-food I in *Total Expenditure I* can be regarded as *Pseudo-non-food Basket I*, while Non-food II in *Total Expenditure II – Pseudo-non-food Basket II*. Therefore, the former expenditure is presumed to be close to the total expenditure that was referred to when the subsistence minimum is calculated on the basis of the current measurement methodology in Kazakhstan. As shown in ***Table 2.4***, in the case where *Total Expenditure II* (or *Pseudo-non-food Basket II*) is used, the fixed ratio of the food basket is smaller than *Total Expenditure I* (or *Pseudo-non-food Basket I*). As a result, if *Total Expenditure II* (*Pseudo-non-food Basket II*) is used, the amount of subsistence minimum could be larger.[24] However, referring to international standards, it would be necessary for Kazakhstan to seek the possibility of using *Total Expenditure II* as a calculation base of the subsistence minimum in the country in the near future and taking budget constraints into consideration.

2.3.2. Equivalence scales

Another point concerning the subsistence minimum is the equivalence scale that is used for taking into account economies of scale within a household. The needs of a household increase with an additional member, but not in a proportional way due to economies of scale in consumption. For example, the needs for goods and services that are commonly used among household members such as furniture, refrigerators, electricity and so on will not be four times as high for a household with 4 members than for a single household. The size and age of its members in the household are often taken into account to apportion the values.

One of the commonly used equivalence scales is the (old) OECD (Organization for Economic Co-operation and Development) equivalence scale (Oxford scale). The OECD equivalence scale assigns a value of 1 to the first household member, 0.7 to each additional adult member, and 0.5 to each child (***Table 2.5***). The OECD

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[24] As shown in Chapter 3, however, based on theoretical methodologies, even if *Total Expenditure II* is used for calculating the non-food subsistence minimum, the amount of subsistence minimum is not necessarily large.

did not and does not recommend any equivalence scale for general use, but the OECD (1982) mentioned possible use of this scale in countries where their own equivalence scales have not been established. In the late 1990s, the OECD-modified scale adopted by the Statistical Office of the European Union (EUROSTAT) also came into use. This scale assigns a value of 1 to the first household member, 0.5 to each additional adult, and 0.3 to each child. In addition, in recent OECD publications, a square root scale that divides the household's income by the square root of the household's size is also used for comparing income inequality and poverty across countries.[25] This scale is often used by OECD members.

Table 2.5. Equivalence scales

	Per capita (simple average of the number of household members)	(1) the (Old) OECD scale	(2) the OECD-modified scale	(3) Square root scale	(4) Kazakh-stan's equivalence scale	(5) Estimated equivalence scale I	(6) Estimated equivalence scale II
Single	1	1	1	1	1	1	1
1 audlt + 1 child	2	1.5	1.3	1.4	1.8	1.5	1.5
2 adults	2	1.7	1.5	1.4	1.8	1.6	1.5
2 adults + 1 child	3	2.2	1.8	1.7	2.6	2.1	2.0
2 adults + 2 children	4	2.7	2.1	2.0	3.4	2.6	2.5
2 adults + 3 children	5	3.2	2.4	2.2	4.2	3.1	3.0

Source: Figures in Columns 5 and 6 are calculated by the Authors.

In Kazakhstan, households with equivalent incomes per capita below 40% of the subsistence minimum are qualified to receive allowances applicable to low-income households. Kazakhstan's equivalence scale assigns a value of 1 to the first member and of 0.8 to each additional member. For example, if the total income of a household with 4 persons is 6,800 Tenge, and the equivalent number of household members is 3.4 persons (= 1 + 0.8×3), then the equivalent income per capita of the household is 2,000 Tenge (= 6,800 / 3.4).

As it is not clear how Kazakhstan's equivalence scale was established[26], we estimated the scales by using micro data of the HBS that was conducted in 2009. In general, Engel's method is often used in order to estimate equivalence scales. In this method, the welfare of a household is regarded as the food ratio to the total household expenditure If Engel's law, which states that a household with lower per capita expenditure has a higher food ratio, is admitted on the basis of data, then it can be appropriate to estimate the scales, using Engel's method. As shown in *Table 2.4*, Engel's law is admitted in Kazakhstan. Thus, following Deaton (1997), we estimated the scales in use of Engel's curve that can be written in the following way:[27]

$$w_f = \alpha + \beta \ln\left(\frac{x}{n}\right) + \eta \ln n + \sum_{k=1}^{K-1} \gamma_k \left(\frac{n_k}{n}\right) + \tau z + u \tag{2}$$

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[25] For example, in Japan, the root square equivalence scale is used in the case of calculating the equivalent income per capita.

[26] It is said that the Statistical Agency of Kazakhstan uses the OECD method for obtaining a value of 0.8, but the details are still not so clear.

[27] See Deaton (1997) for theoretical details on how to calculate equivalence scales with the help of Engel's curve.

where

w_f = the ratio of food totalling household expenditures x;

n = the number of household members;

n_k = the number of each socio-demographic group in a household;

K = the number of socio-demographic groups;

z = a regional dummy.

Here, according to the definition provided by the Statistical Agency of Kazakhstan, the socio-demographic groups include the working population, children and pensioners. In addition, two types of the total expenditure shown in Section 2.3.1.3 (*Total Expenditures I and II*) are used for the estimation.[28]

Below, following Deaton (1997), let us look at how to estimate equivalence scales. First, we assume that x^0 is the total expenditure of a couple (a small family) and w^0 – the food share for the small household. In addition, we assume that x^1 is the total expenditure of a couple with a child (a large household) and w^1 – the food share for the large household. As mentioned above, Engel's method assumes that, if the food share in the total expenditure is at the same level, the households are equally well-off. Therefore, if w^0 equals w^1, then we can regard that the well-being of the small and large households is at the same level. In this case, a child cost, i.e. equivalence scale for a child to the couple can be expressed as $(x^1 - x^0) / x^0 = ((x^1/x^0) - 1)$. Using Equation (2), we obtain the following:

$$\ln\left(\frac{x^1}{x^0}\right) = \left(1 - \frac{\eta}{\beta}\right)\ln\frac{3}{2} + \frac{\gamma_a - \gamma_c}{3\beta} \qquad (3)$$

Here, γ_a is the coefficient for the ratio of the number of the working population in household, and γ_c – that for the ratio of the number of children in household. Based on Equation (3) we obtain the estimates of equivalence scales.

Equivalence scales that are estimated using *Total Expenditure I* based on Engel's method, are 0.6 persons for each additional adult and 0.5 persons for each child, while those using *Total Expenditure II* – 0.5 persons for each additional adult as well as each child (Columns 5 and 6 of **Table 2.5**, respectively).These estimates of equivalence scales are close to the OECD equivalence scale (Oxford scale).[29] This could indicate that a value of 0.8, currently used in Kazakhstan, may underestimate economies of scale in consumption within a household. Therefore, in the near future, it would be worth re-estimating the equivalence scale for Kazakhstan based on the scientific method. In this case, as well as a calculation base of the subsistence minimum, *Total Expenditure II* should be used for estimating the scales.

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[28] Estimated results on Engel's curve are shown in Appendixes 3–4, and a summary of statistics used for the estimation – in Appendix 5. A value of 0.5 for (adjusted) R^2 indicates that Engel's curve is well fitted.

[29] Another example for equivalence scales is the ones used by the Luxembourg Income Study (LIS). LIS scales are 0.5 persons for each additional adult as well as for each child. The LIS is a non-profit organisation (NPO) and was established in 1983 by 30 membership countries in Europe, the Americas, Asia, and Oceania. This organisation facilitates research on poverty, income inequality and social policy with the help of household surveys conducted in developed countries as well as in transitional countries. In addition, Canada uses the scale like the LIS one: 0.4 for each additional adult as well as for each child (HRSD 2008).

Towards Improving the Measurement Methodology of the (Non-Food) Subsistence Minimum in Kazakhstan: An Analysis Based on the Household Budget Survey[30]

A poverty line should be estimated rationally. As discussed in Chapter 2, the poverty line in Kazakhstan is legislatively defined as 40% of the subsistence minimum. In any case, in order to obtain a rational legislative poverty line in Kazakhstan, it is required to rationally estimate the subsistence minimum, i.e. the absolute poverty line.

As discussed in Chapter 1,[31] the subsistence minimum is composed of the basic food needs and the non-food ones. In most countries, the food subsistence minimum is estimated rationally, based on the food basket that meets the minimum nutritional requirements for living. However, as shown in Chapter 2, it is difficult to reasonably justify the components and the year of use of each item in the non-food basket. If the components and the year of use of each item in the basket are not rationally set, then the subsistence minimum could not be estimated appropriately. With this in mind, Chapter 3 investigates how to logically estimate the non-food subsistence minimum in Kazakhstan's context.

As well as the food subsistence minimum, specifying all essential non-food needs and creating the non-food basket according to these requirements is one way to estimate the non-food subsistence minimum. This approach is conceptually simple and used in practice by half of the respondent countries involved in the United Nations Statistics Division Survey (the UNSD survey) (Morduch 2005). However, international practice shows that listing all the non-food needs requires high administrative costs and the poverty line is heavily dependent on the list. Take Albania and Canada as examples: Albania lists only tobacco and entertainment under non-food needs, whereas the Canadian government does not fully specify all non-food requirements. As a result, the poverty line in Albania and Canada could be underestimated. This possible underestimation of the poverty lines based on the direct methodology gives one the motivation to search for another measurement methodology of the non-food subsistence minimum.

A more conventional way for reasonably estimating non-food needs is the indirect approach, which has widely been put into practice by many countries. According to Morduch (2005), 38% of the respondent countries participating in the UNSD survey adopt the indirect approach. Kazakhstan also uses a kind of indirect approach in order to calculate the values of the non-food goods and services (See Chapter 2 for details). It could be recommendable for Kazakhstan to seek and establish an indirect methodology for calculating the subsistence minimum, when considering the possible over- or under-estimation of the subsistence minimum calculated on the basis of the direct method.

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[30] This chapter has been prepared by Kentaro Nakajima from Tohoku University and Yuka Takeda from Hitotsubashi University.

[31] In Chapter 1, we defined the subsistence minimum as the absolute poverty line, based on literature. In order to make the analysis easy to follow, this chapter will show an estimated result of the subsistence minimum. In any case, it is easy to calculate the poverty line in Kazakhstan from the estimated result of the subsistence minimum, due to the legislative poverty line in Kazakhstan being 40 % of the subsistence minimum.

In this chapter, the indirect methods are applied in order to calculate the non-food subsistence minimum for Kazakhstan. Section 3.1 describes data and methodology that are used for the calculation and explains the type of equivalence scales in use. Moreover, Section 3.1 looks into what is included in the total expenditure for the calculation of the subsistence minimum. Section 3.2 depicts the results of the subsistence minimum based on the scientific method. Finally, Section 3.3 shows some simulations of policy-related indicators, based on the estimated subsistence minimums.

3.1. Data and methodology

3.1.1. Data

The subsistence minimum, as well as the share of food and non-food goods and services in the subsistence minimum, is calculated by using the micro data of the Kazakhstan Household Budget Survey (HBS), conducted in 2007–2009. Furthermore, by using the official Kazakhstan food subsistence minimum at national and regional (oblast) level, which is calculated and published by the Statistical Agency of Kazakhstan, the subsistence minimum is measured both at national and regional level. In order to rationally estimate the subsistence minimum, including the non-food subsistence minimum, the measurement methodologies shown in the following section (Section 3.1.2) are used.

3.1.2. Measurement methodologies of the non-food subsistence minimum: Engel's coefficient approach and Regression approach

As already reviewed in Chapter 1, there are two indirect approaches for calculating the non-food subsistence minimum: *Engel's coefficient approach* and *Regression approach*. Both approaches estimate the Engel coefficient, i.e. the ratio of food consumption to the total expenditure. In order to estimate the non-food subsistence minimum and, further, the subsistence minimum, we use these two general methodologies. In order to make the discussion easy to follow, in this section we just briefly point out the estimation methodology (see Chapter 1 for details).

Engel's coefficient approach is the most conventional way of estimating the non-food subsistence minimum. It directly calculates the average ratio of the food expenditure to the total expenditure (Engel's coefficient) from sample households. Here, we sample households whose total expenditure is equal to the food subsistence minimum. However, it is often evident that the number of such households is small. This is the same with Kazakhstan. Therefore, according to Isidoro (2005) and Morduch (2005), households whose total expenditure is more or less than the food subsistence minimum by its 10% are used for the estimation.

Regression approach estimates the share of non-food basic needs by applying a linear regression for the households, which are sampled in the same way as Engel's coefficient approach. Following Deaton and Muellbauer (1980) and Ravallion and Bidani (1993), a food-share Engel curve is written as follows:

$$S_i = \alpha + \beta \log \left(\frac{te_i}{fpl} \right) + \varepsilon_i$$

where

S_i = the share of per capita food expenditure of household i in relation to the total expenditure (=fe_i/te_i);

te_i = the total expenditure of household i;

fpl = the food poverty line;

ε_i = the error term.

Based on the model, α can be interpreted as the average food share of the households that can just afford basic food needs. If we express the estimator of a as $\hat{a}$, $1 - \hat{a}$ represents the share of non-food needs in relation to basic food needs. Therefore, the non-food poverty line is expressed as $(1 - \hat{a})fpl$.

3.1.3. Components of the total household expenditure and pseudo-nonfood baskets

When the subsistence minimum based on the methodologies shown in Section 3.1.2 is calculated, one should take stock of the components to be included in the total household expenditure, due to the fact that it could affect the food share. In addition, to obtain the subsistence minimum per capita that is used for providing an allowance related to social policies, there is a need to select equivalence scales.

As seen in Chapter 2, it could be assumed that the official subsistence minimum in Kazakhstan is calculated with reference to the total household expenditure, which is composed of (1) food, (2) non-food goods and services such as clothing, commonly used goods within a household, and (3) housing. In Chapter 2, the type of expenditure on these non-food goods and services are known as *Pseudo-non-food Basket I*. On the other hand, in order to calculate the subsistence minimum, some countries, especially among developed countries, adopt a broader concept on non-food components. This means that the expenditure on non-food goods includes education, medical care, and transportation. In Chapter 2, this type of expenditure on non-food goods and services is called *Pseudo-non-food Basket II*. The latter should be used for non-food goods and services, due to the fact that not only the physical requirements but also opportunities to take part in social life should be guaranteed for well-being. Besides that, this type of non-food basket is starting to be implemented at international level.[32]

Another point regarding the total household expenditure is whether tax and other mandatory payments such as transfer and alimony are included in the expenditure or not. The current subsistence minimum in Kazakhstan does not include these payments. However, as discussed in Chapter 2, tax payments also should be included in the subsistence minimum. Therefore, in the next section, we compare the results of the estimates of non-food needs, in use of the total expenditure with and without tax payments. In this chapter as well as Chapter 2, *Total Expenditure II* is composed of the food basket, *Pseudo-non-food II* and tax payments. On the other hand, in *Total Expenditure I*, *Pseudo-non-food II* is replaced by *Pseudo-non-food I*.

Regarding the equivalence scale, as discussed in Chapters 2, it could be better to reconsider of the scales currently used in Kazakhstan. The equivalence scale in Kazakhstan assigns a value of 1 to the first household member, and 0.8 to any additional household member. However, as shown in Chapter 2, when we use *Total Expenditure II* as the total expenditure, the estimate of the scale that are obtained by Engel's method is 0.5 for a child as well as an additional adult.[33] It could be appropriate to use the equivalence scale estimated on the Engel's method (below – Engel's equivalence scale). Therefore, in the next section, when comparing the estimates of the non-food basket, we use both Kazakhstan's equivalence scale and the scale estimated by Authors, that is, Engel's equivalence scale.

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[32] For example, Canada and the UK use this type of non-food basket.

[33] For the estimation, the micro data of the 2009 HBS were used. See Chapter 2 for the details.

Table 3.1. Components of the total household expenditure and the equivalence scale for calculating the subsistence minimum

	Components of the total household expenditure	Equivalence scale
Reference: Official	*Total Expenditure I* without tax: 1) Official food basket 2) *Pseudo-non-food Basket I*	Kazakhstan's equivalence scale
Variant 1: Baseline (Section 3.2.1)	*Total Expenditure II* without tax: 1) Official food basket 2) *Pseudo-non-food Basket II*	Kazakhstan's equivalence scale
Variant 2: Engel's equivalence scale (Section 3.2.2)	*Total Expenditure II* without tax: 1) Official food basket 2) *Pseudo-non-food Basket II*	Engel's equivalence scale
Variant 3: Tax payments (Section 3.2.3)	*Total Expenditure II*: 1) Official food basket 2) *Pseudo-non-food Basket II* 3) Tax and other expenditures	Kazakhstan's equivalence scale
Variant 4: Tax payments and Engel's equivalence scale (Section 3.2.4)	*Total Expenditure II*: 1) Official food basket 2) *Pseudo-non-food Basket II* 3) Tax and other expenditures	Engel's equivalence scale

As a reference, the above discussion is summarized in ***Table 3.1***, which shows components of the total household expenditure and the equivalence scale that are used to calculate the subsistence minimum in the next section.

3.2. Estimated results on the values of non-food goods and services

This section shows the annual results of the non-food subsistence minimum in each region that is estimated on the basis of *Engel's coefficient approach* and *Regression approach*.

3.2.1. Variant 1: baseline results

In Columns 1–3 of ***Table 3.2***, the baselines allowing one to compare the estimated results are demonstrated. Column 1 shows the official non-food subsistence minimum in Kazakhstan for each year and region (oblast) that is calculated by the Statistical Agency of Kazakhstan. Columns 2 and 3 demonstrate the estimates of the non-food subsistence minimum based on Engel's coefficient approach and the regression approach, respectively. These estimates are obtained by using the official food basket and *pseudo-non-food Basket II* for the total household expenditure. In addition, for calculating the equivalent subsistence minimum, Kazakhstan's equivalence scale is used. As shown in the table, annually and regionally, the estimated non-food subsistence minimum is lower than the values of non-food goods and services in the official subsistence minimum. For example, in 2009, the estimated non-food subsistence minimum based on Engel's coefficient approach relative to the official non-food subsistence minimum ranged from 64.3% (Kyzylordinskaya) to 86.9% (Mangistauskaya); and on the basis of the regression approach – from 64.1% (Kyzylordinskaya) to 87.0% (Mangistauskaya). As for the whole country, the official non-food subsistence minimum was (if talking about 2009) 5,063 Tenge per month; on the other hand, our estimate for 2009 on the basis of Engel's coefficient approach

amounted to 3,751 Tenge per month, and on the basis of the regression approach – 3,753 Tenge. Both estimates are 25.9% lower than the official non-food subsistence minimum.

It is apparent that there is little difference between both estimates based on Engel's coefficient method and the regression method. Throughout Kazakhstan, the difference is only 0.04%, and the ratio of the estimate based on Engel's coefficient method to that of the regression approach varied between 99.7% (Aktyubinskaya) and 100.7% (West-Kazakhstan) in 2009. According to Ravallion and Bidani (1993), the regression approach is more reliable than Engel's coefficient approach as it can be regarded as the simplest methodology for calculating. However the estimates for Kazakhstan, based on both approaches, hardly show any differences.

Table 3.2. The estimated non-food subsistence minimum

		Nonfood subsistence minimum								
		Excluding Tax					Including Tax			
		Kazakhstan's equivalence scale			Engel's equivalence scale		Kazakhstan's equivalence scale		Engel's equivalence scale	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Oblast	Year	Official	Engel	Regression	Engel	Regression	Engel	Regression	Engel	Regression
Republic of Kazakhstan	2007	3861	2857	2855	3082	3086	3010	3008	3225	3228
	2008	4945	4435	4438	4555	4533	4750	4755	4780	4763
	2009	5063	3751	3753	3828	3828	3947	3949	4026	4026
Akmolinskaya	2007	3722	2762	2759	2954	2955	2905	2902	3095	3096
	2008	4572	3531	3531	3558	3547	3698	3698	3723	3715
	2009	4604	3565	3566	3765	3797	3798	3795	3995	4023
Aktyubinskaya	2007	3958	3092	3090	3255	3256	3238	3237	3407	3407
	2008	4670	3488	3479	3841	3868	3693	3683	4073	4099
	2009	4753	3691	3702	4160	4199	3910	3922	4392	4428
Almatinskaya	2007	3822	3113	3110	3089	3113	3260	3257	3239	3258
	2008	4984	3989	3917	4336	4344	4225	4157	4550	4556
	2009	5115	3433	3416	3695	3669	3533	3514	3823	3815
Atyrauskaya	2007	4472	3591	3591	3906	3904	3821	3821	4135	4132
	2008	5442	3765	3759	3975	3959	3884	3877	4114	4105
	2009	5423	3789	3773	4343	4346	4047	4032	4570	4573
West-Kazakhstan	2007	3714	2732	2739	2771	2771	2818	2824	2840	2839
	2008	4651	3263	3252	3935	3935	3487	3476	4210	4210
	2009	4762	3288	3288	3649	3637	3437	3438	3770	3760
Zhambylskaya	2007	3402	2507	2511	2708	2822	2711	2701	2850	2945
	2008	4361	3127	3128	3234	3221	3265	3266	3385	3371
	2009	4467	3037	3038	3359	3378	3182	3183	3545	3558
Karagandinskaya	2007	3677	2790	2794	3001	3012	2884	2883	3113	3124
	2008	4508	3029	3042	3499	3497	3189	3203	3735	3735
	2009	4572	3536	3536	3827	3827	3771	3770	3983	3984
Kostanaiskaya	2007	3357	2478	2483	2629	2633	2649	2654	2801	2806
	2008	4553	3545	3551	3670	3670	3777	3784	3858	3858
	2009	4711	3467	3472	3608	3594	3695	3696	3807	3781

Kyzylordinskaya	2007	3700	3021	3021	3157	3171	3175	3175	3329	3339
	2008	4763	3499	3515	3600	3592	3679	3693	3778	3771
	2009	4975	3197	3189	3526	3504	3366	3359	3712	3690
Mangistauskaya	2007	4729	3524	3522	4161	4154	3710	3707	4337	4330
	2008	6020	3729	3727	4323	4313	3975	3973	4559	4546
	2009	6353	5524	5525	5867	5851	5906	5904	6174	6155
South-Kazakhstan	2007	3472	2434	2427	2666	2675	2559	2551	2790	2796
	2008	4252	3736	3761	3971	3971	3996	4027	4181	4181
	2009	4473	3362	3364	3825	3827	3511	3514	3964	3966
Pavlodarskaya	2007	3553	3204	3183	3111	3085	3390	3373	3240	3213
	2008	4440	3336	3336	3869	3873	3471	3471	3989	3992
	2009	4517	3774	3770	3847	3847	3940	3937	3986	3986
North-Kazakhstan	2007	3535	2802	2802	3158	3163	2909	2910	3259	3264
	2008	4527	3757	3754	3706	3712	3939	3940	3885	3890
	2009	4754	3561	3561	3538	3536	3706	3705	3660	3659
East-Kazakhstan	2007	3533	2924	2908	3062	3080	3093	3074	3229	3248
	2008	4612	3420	3414	3435	3429	3600	3593	3577	3575
	2009	4765	3521	3497	3718	3723	3684	3663	3864	3867
Astana city	2007	4609	3530	3529	3453	3442	3674	3674	3600	3594
	2008	5763	4203	4202	4456	4457	4407	4408	4622	4622
	2009	6033	5075	5072	5560	5681	5539	5528	5987	6043
Almaty city	2007	4913	3888	3882	3845	3851	4035	4030	4065	4070
	2008	6315	5436	5450	5948	5911	5741	5750	6350	6324
	2009	6223	4560	4561	4784	4790	4843	4845	5027	5032

By demonstrating the estimated results in *Table 3.2*, it gives a better understanding of the results. *Figures 3.1–3.3* present the results for 2007, 2008, and 2009, respectively. The vertical line demonstrates the combinations of the measurement methodologies, equivalence scales, and the type of total expenditure that are used for estimating the non-food subsistence minimum. The horizontal line shows the values of the non-food subsistence minimum per month by Tenge. Each box shows the estimates for each region, whereby it can clearly be confirmed that the estimated results are lower than the official non-food subsistence minimum. Furthermore, the difference in estimates between Engel's coefficient method and the regression method does not differ greatly annually and regionally.

3.2.2. Variant 2: the adjustment in use of the estimated Engel's equivalence scale

This section describes how the values of non-food items could be changed, if the rationally estimated equivalence scale by Engel's method were to be implemented instead of Kazakhstan's scale. The estimated results are shown in Columns 4 and 5 of *Table 3.2*. Here, as well as in Variant 1 shown in Section 3.2.1, tax and other mandatory payments are not included in the total expenditure.

Every year and in each region, based on Engel's coefficient method, the estimates, when using the estimated Engel's equivalence scale relative to official subsistence minimum ranged from 70.9% (Kyzylordinskaya) to 92.4% (Mangistauskaya) and, based on the regression method, from 70.4% (Kyzylordinskaya) to 94.2%

(Astana city). Even using estimated Engel's equivalence scale, estimated results are lower than the official non-food subsistence minimum that is calculated using the official Kazakhstan equivalence scale.

Figures 3.1–3.3 confirm the above analysis regarding the subsistence minimum at regional level. In most regions and during that period, the estimates on the basis of the estimated Engel's equivalence scale are lower than Kazakhstan's official subsistence minimum.

Figure 3.1. The non-food subsistence minimum in 2007
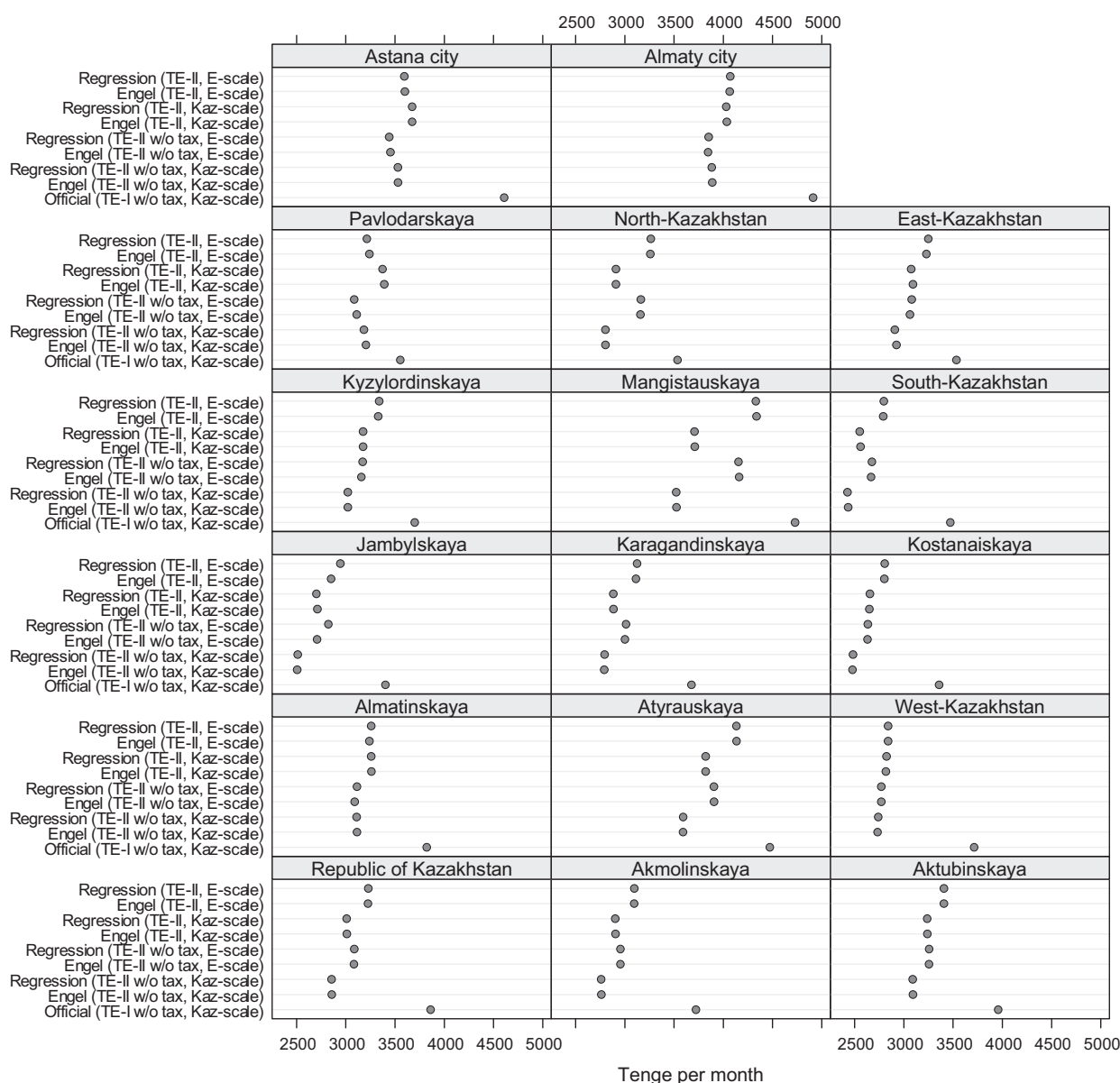
Note: Regression and Engel indicate the measurement methodologies for calculating the non-food subsistence minimum. The abbreviation TE-I in parentheses stands for *Total Expenditure I*; TE-II – *Total Expenditure II*; E-scale – Engel's equivalence scale; and Kaz-scale – Kazakhstan's scale. *Total Expenditure I* is composed of the food basket, *Pseudo-non-food Basket I*, and tax payments. On the other hand, *Total Expenditure II* – the food basket, *Pseudo-non-food Basket II* and tax payments.

Figure 3.2. The non-food subsistence minimum in 2008
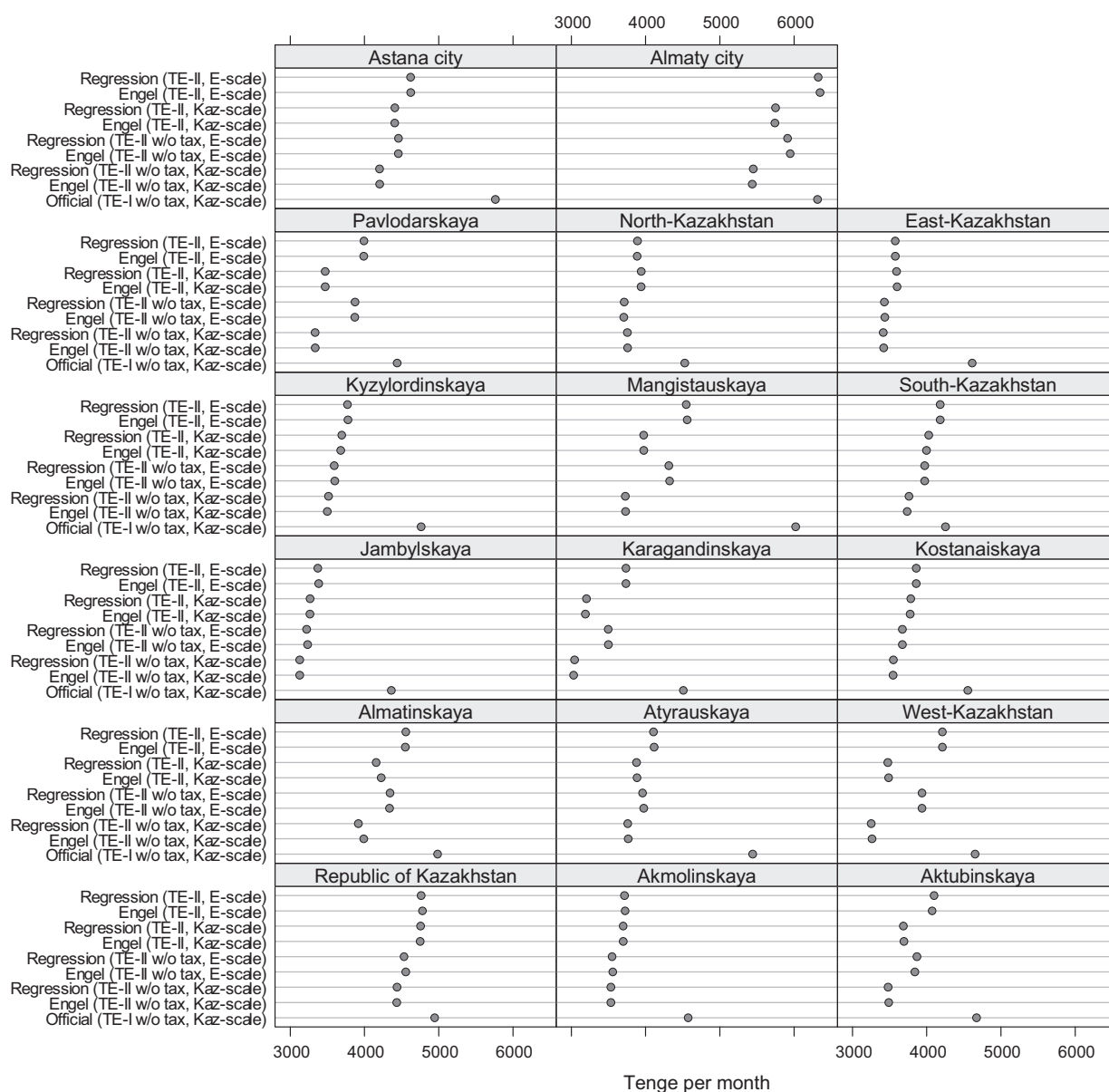
Note: See **Figure 3.1**.

Figure 3.3. The non-food subsistence minimum in 2009
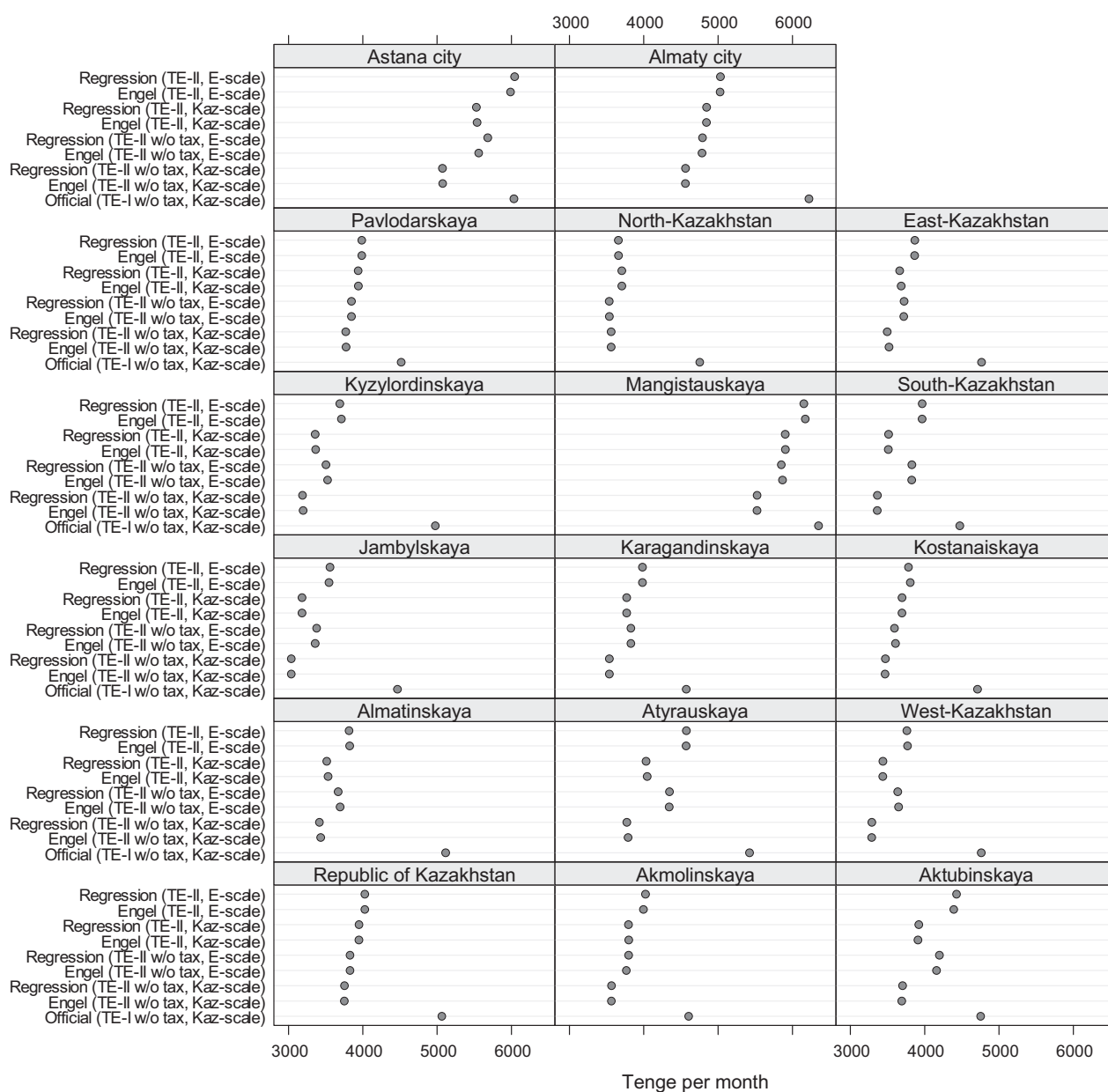
Note: See **Figure 3.1**.

At national level, for example, in 2009, the baseline estimate of the non-food subsistence minimum based on the regression method was 3,753 Tenge per month; on the other hand, the estimate with regard to the estimated Engel's equivalence scale amounted to 3,828 Tenge per month. Thus, the estimate on the basis of the estimated Engel's equivalence scale was 2.1% higher than the baseline estimate of Kazakhstan's equivalence scale. However, even using the estimated Engel's equivalence scale, the estimated non-food subsistence minimum was 24.4% lower than the official one.

3.2.3. Variant 3: including tax and other payments into the total expenditure

This section, whilst comparing the baselines, describes how the values of non-food goods could be changed, when using the total expenditure that includes tax and other mandatory payments. The results are shown in Columns 6 and 7 of *Table 3.2.* For the estimation, Kazakhstan's equivalence scale is adopted. Naturally, annually and regionally, the non-food subsistence minimum that is calculated when applying the total expenditure with tax and other payments (*Total Expenditure II*) is higher than the non-food subsistence minimum without tax payments, but those are still lower than the official ones. For example, in 2009, the estimated non-food subsistence minimum including tax and other payments relative to the official subsistence minimum ranged from 67.7% (Kyzylordinskaya) to 93.0% (Mangistauskaya) on the basis of Engel's coefficient method, and from 67.5% (Kyzylordinskaya) to 92.9% (Mangistauskaya) based on the regression method.

At national level, for example, in 2009, the baseline estimate of the non-food subsistence minimum based on the regression method was 3,753 Tenge per month; on the other hand, the estimate when applying the total expenditure including tax payments amounted to 3,949 Tenge per month. Thus, the estimate with applying the total expenditure including tax payments was 5.2% higher than the baseline estimation. However, even including tax payments, the estimated non-food subsistence minimum was 22.0% lower than the official one.

3.2.4. Variant 4: including tax and the estimated Engel's equivalence scale

Finally, this section describes how the values of non-food goods that are estimated in use of *Total Expenditure II* and the estimated Engel's equivalence scale, could be changed. The results are shown in Columns 8 and 9 of *Table 3.2*. The estimated non-food subsistence minimum is basically still lower than the official one. For example, in 2009, based on Engel's coefficient method, the estimated non-food subsistence minimum relative to the official one ranged from 74.6% (Kyzylordinskaya) to 99.2% (Astana city) and based on the regression method – from 74.2% (Kyzylordinskaya) to 100.2% (Astana city).

Table 3.3. The estimated total subsistence minimum

Oblast	Year	Total subsistence minimum								
		Excluding Tax					Including Tax			
		Kazakhstan's equivalence scale			Engel's equivalence scale		Kazakhstan's equivalence scale		Engel's equivalence scale	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Official	Engel	Regres-sion	Engel	Regres-sion	Engel	Regres-sion	Engel	Regres-sion
Republic of Kazakhstan	2007	9653	8649	8647	8874	8878	8802	8800	9017	9020
	2008	12364	11854	11857	11974	11952	12169	12174	12199	12182
	2009	12660	11348	11350	11425	11425	11544	11546	11623	11623
Akmolinskaya	2007	9306	8346	8343	8538	8539	8489	8486	8679	8680
	2008	11429	10388	10388	10415	10404	10555	10555	10580	10572
	2009	11510	10471	10472	10671	10703	10704	10701	10901	10929
Aktyubinskaya	2007	9896	9030	9028	9193	9194	9176	9175	9345	9345
	2008	11674	10492	10483	10845	10872	10697	10687	11077	11103
	2009	11882	10820	10831	11289	11328	11039	11051	11521	11557
Almatinskaya	2007	9556	8847	8844	8823	8847	8994	8991	8973	8992
	2008	12460	11465	11393	11812	11820	11701	11633	12026	12032
	2009	12788	11106	11089	11368	11342	11206	11187	11496	11488
Atyrauskaya	2007	11179	10298	10298	10613	10611	10528	10528	10842	10839
	2008	13606	11929	11923	12139	12123	12048	12041	12278	12269
	2009	13558	11924	11908	12478	12481	12182	12167	12705	12708
West-Kazakhstan	2007	9284	8302	8309	8341	8341	8388	8394	8410	8409
	2008	11629	10241	10230	10913	10913	10465	10454	11188	11188
	2009	11904	10430	10430	10791	10779	10579	10580	10912	10902
Zhambylskaya	2007	8506	7611	7615	7812	7926	7815	7805	7954	8049
	2008	10903	9669	9670	9776	9763	9807	9808	9927	9913
	2009	11167	9737	9738	10059	10078	9882	9883	10245	10258
Karagandinskaya	2007	9192	8305	8309	8516	8527	8399	8398	8628	8639
	2008	11269	9790	9803	10260	10258	9950	9964	10496	10496
	2009	11429	10393	10393	10684	10684	10628	10627	10840	10841
Kostanaiskaya	2007	8392	7513	7518	7664	7668	7684	7689	7836	7841
	2008	11382	10374	10380	10499	10499	10606	10613	10687	10687
	2009	11777	10533	10538	10674	10660	10761	10762	10873	10847
Kyzylordinskaya	2007	9248	8569	8569	8705	8719	8723	8723	8877	8887
	2008	11909	10645	10661	10746	10738	10825	10839	10924	10917
	2009	12438	10660	10652	10989	10967	10829	10822	11175	11153
Mangistauskaya	2007	11823	10618	10616	11255	11248	10804	10801	11431	11424
	2008	15050	12759	12757	13353	13343	13005	13003	13589	13576
	2009	15883	15054	15055	15397	15381	15436	15434	15704	15685
South-Kazakhstan	2007	8681	7643	7636	7875	7884	7768	7760	7999	8005
	2008	10630	10114	10139	10349	10349	10374	10405	10559	10559
	2009	11184	10073	10075	10536	10538	10222	10225	10675	10677

Pavlodarskaya	2007	8881	8532	8511	8439	8413	8718	8701	8568	8541
	2008	11099	9995	9995	10528	10532	10130	10130	10648	10651
	2009	11293	10550	10546	10623	10623	10716	10713	10762	10762
North-Kazakhstan	2007	8838	8105	8105	8461	8466	8212	8213	8562	8567
	2008	11317	10547	10544	10496	10502	10729	10730	10675	10680
	2009	11886	10693	10693	10670	10668	10838	10837	10792	10791
East-Kazakhstan	2007	8833	8224	8208	8362	8380	8393	8374	8529	8548
	2008	11531	10339	10333	10354	10348	10519	10512	10496	10494
	2009	11912	10668	10644	10865	10870	10831	10810	11011	11014
Astana city	2007	11521	10442	10441	10365	10354	10586	10586	10512	10506
	2008	14409	12849	12848	13102	13103	13053	13054	13268	13268
	2009	15082	14124	14121	14609	14730	14588	14577	15036	15092
Almaty city	2007	12282	11257	11251	11214	11220	11404	11399	11434	11439
	2008	15786	14907	14921	15419	15382	15212	15221	15821	15795
	2009	15557	13894	13895	14118	14124	14177	14179	14361	14366

As for the estimates for the non-food subsistence minimum at national level on the basis of the regression method, for example, in 2009, the one from the baseline results was 3,753 Tenge per month; on the other hand, the estimate in use of the combination of *Total Expenditure II* and Engel's equivalence scale amounted to 4,026 Tenge per month. Thus, the later estimate was 7.3% higher than the baseline result. However, the estimated non-food subsistence minimum in use of the combination of *Total Expenditure II* and Engel's equivalence scale was 20.5% lower than the official one.

Let us look at the total subsistence minimum that is rationally estimated in use of our recommendable combination of *Total Expenditure II* and the estimated Engel's equivalence scale. **Table 3.3** shows the result on the estimated total subsistence minimum. Especially, Column 8 and 9 show the results of our recommendable combination. In this case, the official total subsistence minimum is 12,660 Tenge per month; on the other hand, our estimated subsistence minimum – 11,623 Tenge per month. The difference is quite small (0.3%). By demonstrating the estimated results in **Table 3.3**, it gives a better understanding of the results. **Figure 3.4** presents the results for 2009. In every oblast, the estimated subsistence minimum is almost at the same level as the official subsistence minimum.

In practice, bearing this in mind, how does the government determine the estimated share of non-food needs? In Kazakhstan, the food share in the total expenditure is legislatively set at 60%, a percentage that is commonly used in the whole country. Thus, the share of non-food needs in the total expenditure is set at 40%. On the other hand, the estimated results suggest a higher share of non-food expenditure. For example, throughout Kazakhstan, the estimated share based on both Engel's coefficient approach and the regression method ranged from 34.6% for 2009 to 39.2% for 2008. **Figure 3.5** draws the official and the estimated share of non-food needs. In comparison with the estimated results, the current official share of non-food expenditure in Kazakhstan is more. With this in mind, it could be suggested that the share of non-food goods and services in the subsistence minimum in Kazakhstan is mostly appropriate level.

Figure 3.4. The total subsistence minimum in 2009
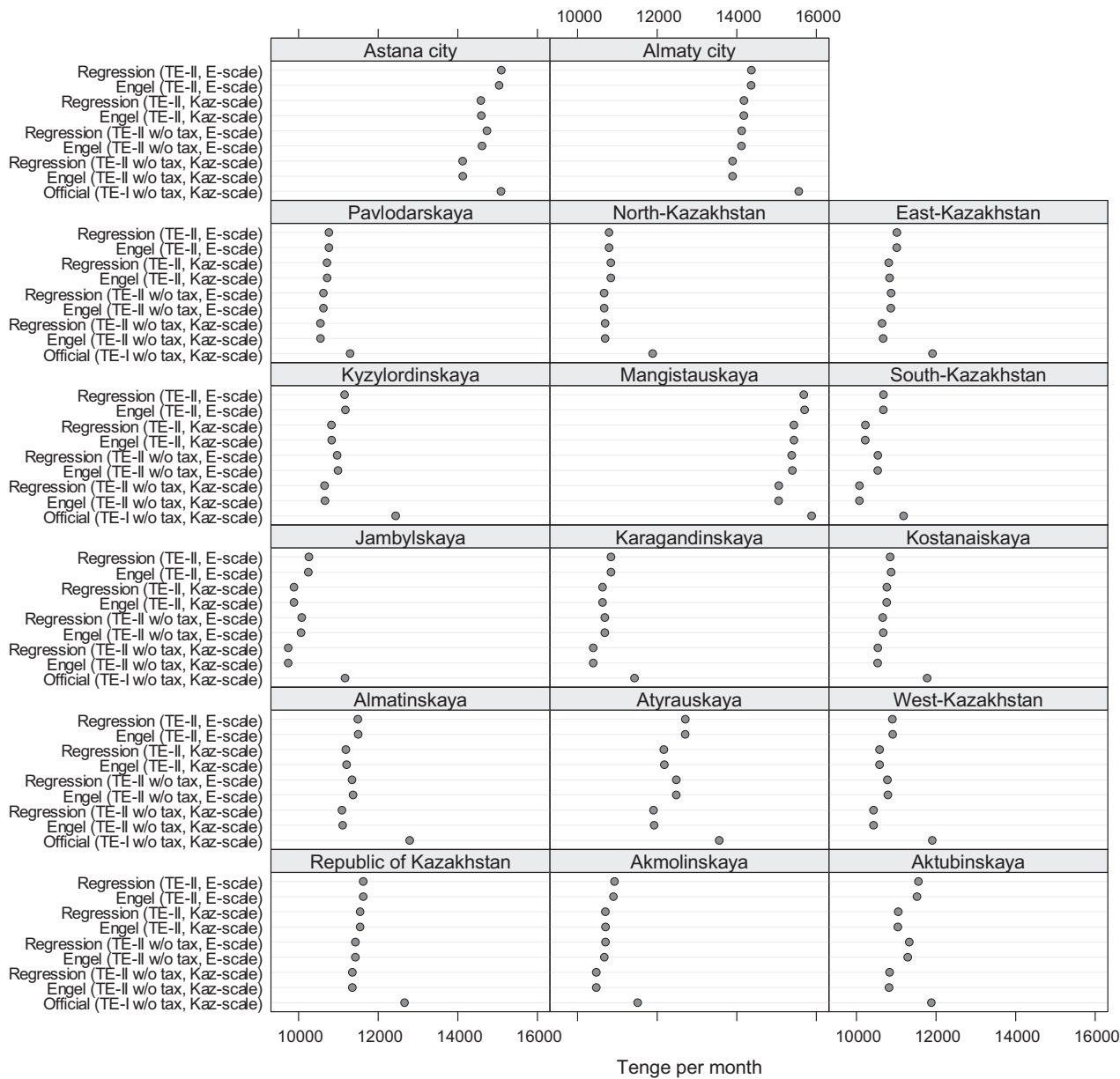
Note: See **Figure 3.1.**

Figure 3.5. The share of the non-food subsistence minimum in Kazakhstan; Official vs. Estimated
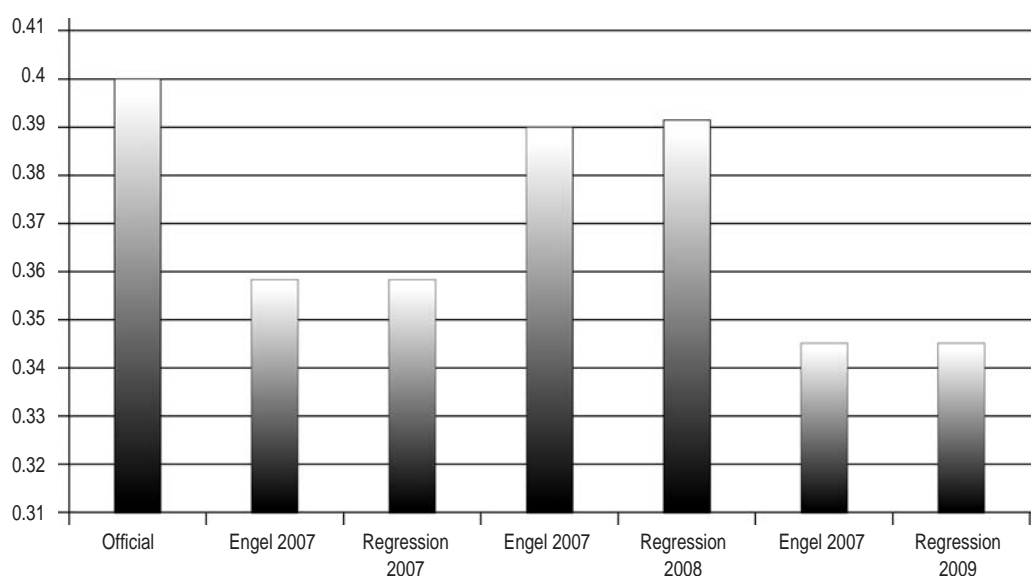
Note: The total household expenditure includes the values of the food basket and *Pseudo-non-food Basket II*. In order to obtain the equivalent expenditure per capita, Kazakhstan's equivalence scale is used.

3.3. Some simulations based on the estimated subsistence minimum

In the last section of this chapter, based on the estimated results of the subsistence minimum, two simulations relating with policy issues are shown: (1) social indicators such as the minimum wage, minimum pension and state social subsidy, and (2) inflation.

3.3.1. Social indicators

As mentioned in Chapter 2, social indicators in Kazakhstan, such as the minimum wage, minimum pension and state social subsidy, are legislatively linked to the subsistence minimum. ***Figure 3.6*** shows the ratio of these social indicators in relation to the official subsistence minimum from 2004 to 2009. During those years, the minimum wage came to around 1.0. In addition, as for state social subsidy, its ratio steadily increased to reach 1.1 in 2009. On the other hand, the ratio of the minimum pension ranged between 0.64 and 0.85 during the period stated, finishing at 0.78 in 2009. It could be said that the minimum wage and state social subsidy are successfully linked to the subsistence minimum, but the minimum pension is not grouped in the same way.

Figure 3.6. The ratio of social indicators to the official subsistence minimum in 2004–2009
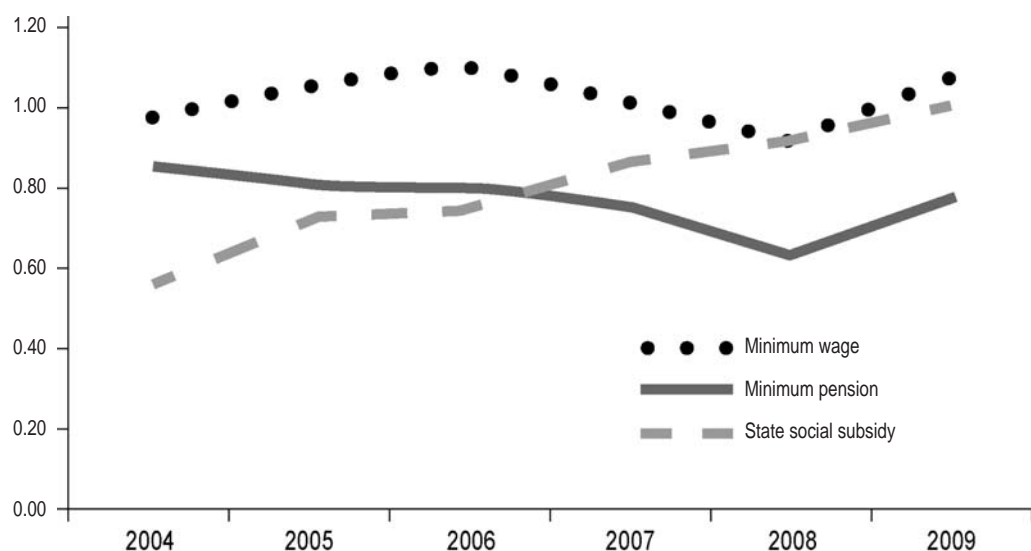
Thus, using the combination of *Total Expenditure II* and Engel's equivalence scale (Variant 4 in Section 3.2.4), let us simulate the amount of the minimum pension that is not successfully linked to the subsistence minimum. This combination (Variant 4) is recommendable in consideration of the broader definition of well-being as well as the economies of scale within a household, based on theoretical backgrounds. *Table 3.4* shows the amount of the estimated minimum pension on the basis of the subsistence minimum in use of Variant 4. For obtaining the estimated minimum pension, we used the actual ratio of the official minimum pension in relation to the official subsistence minimum that was observed in the corresponding year from the data of the Statistical Agency of Kazakhstan. It is considered a very simple approach, but it could be reasonable to use the actual ratio, due to the fact that Kazakhstan's pension security law just mentions that the amount of the minimum pension is determined every fiscal year according to the Republics budget law, and the government aims to gradually bring it close to the amount of the subsistence minimum.[34]

Table 3.4. The estimated minimum pension

	Official minimum pension	Estimated minimum pension	
		Engel's method	Regression method
2007	7,236	6,763	6,765
2008	7,900	7,807	7,796
2009	9,875	9,066	9,066

Note: The combination of *Total Expenditure II* and Engel's equivalence scale (the estimates by Variant 4 in Section 3.2.4) were used for estimating the equivalent subsistence minimum. Besides, for obtaining the estimated minimum pension, we used the actual ratio of the official minimum pension in relation to the official subsistence minimum that was observed in the corresponding year from the data of the Statistical Agency of Kazakhstan. Thus, the estimated minimum pension was obtained, multiplying the estimated subsistence minimum by the actual ratio.

[34] Закон Республики Казахстан от 20 июня 1997 года № 136-I «О пенсионном обеспечении в Республике Казахстан».

Thus, in ***Table 3.4***, the estimated minimum pension was obtained, multiplying the estimated subsistence minimum by the actual ratio of the official minimum pension in relation to the official subsistence minimum. The equation can be written as follows:

$$EMP_t = ESM_t \times ratio_t$$

where

EMP_t : the estimated minimum pension in year t,

$ESMt$: the estimated subsistence minimum in year t,

ratio$_t$: the actual ratio of the official minimum pension in relation to the official subsistence minimum in year t.

For example, as shown in ***Table 3.4***, in 2009, the estimated minimum pension on Engel's method as well as the regression method was 9,066 Tenge per month, while the official minimum pension – 9,875 Tenge per month. The estimated subsistence minimum in use of the recommendable combination of the total expenditure and equivalence scale is very close to the official one, so that it is natural that the estimated minimum pension is very close to the official one.

3.3.2. Inflation

The indirect approach, which was used for estimating the subsistence minimum, can facilitate the study as to how its estimates could change in relation to external economic circumstances, such as, inflation. In this section, in order to compare the estimates shown in ***Table 3.2***, the effect of inflation on the *non-food* subsistence minimum shall be examined, instead of the subsistence minimum. The food price index is only required to examine the issue. As the non-food subsistence minimum is calculated with the food share in the total expenditure, the non-food subsistence minimum can be estimated without having information on non-food prices.

For example, the estimated multiplier (the share of the non-food expenditure in the total cost) was 0.37 for the whole of Kazakhstan in 2009. Thus, a 1% inflation of food prices increased the non-food subsistence minimum by 0.37%, making the subsistence minimum grow by 1.37% (=1+0.37). It is obvious that this calculation is easy to use, though theoretically appropriate only when every commodity of food as well as non-food items are inflated at a common rate.[35]

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[35] Roughly speaking, as shown in the Appendix 6, it seems that the CPI (Consumer Price Index) on food and non-food items from 2003 to 2010, excluding 2007 and 2008, does not vary to a large extent.

Relative Poverty Line[36]

The relative poverty line is one of the indicators for considering social protection and social inclusion. Relatively low-income thresholds, i.e. relative poverty lines are measured as half the median of the equivalent household disposable income, which is calculated by dividing the total household disposable income by the square root of the number of household members (OECD 2008). In general, the household disposable income includes earnings, self-employment, capital income, and public cash transfers it excludes income tax and social security contributions paid by the household. Some countries and organisations might set the thresholds at another percentage of the median income. For example, Eurostat and the United Kingdom fix thresholds at 60% of the median income. On the other hand, the OECD applies several cut-offs as a threshold (OECD 2008). It uses 40%, 50% and 60% of the median income as a threshold.

The relative poverty line is mainly used for comparing poverty ratios among developed countries, such as the OECD countries. According to Morduch (2005), Australia, Canada, Denmark, Ireland, Norway and the United Kingdom calculate the relative poverty line. *Figure 4.1* demonstrates the share of poor people based

Figure 4.1. Cross-country comparison of the percentage of poor people based on the OECD's relative poverty line
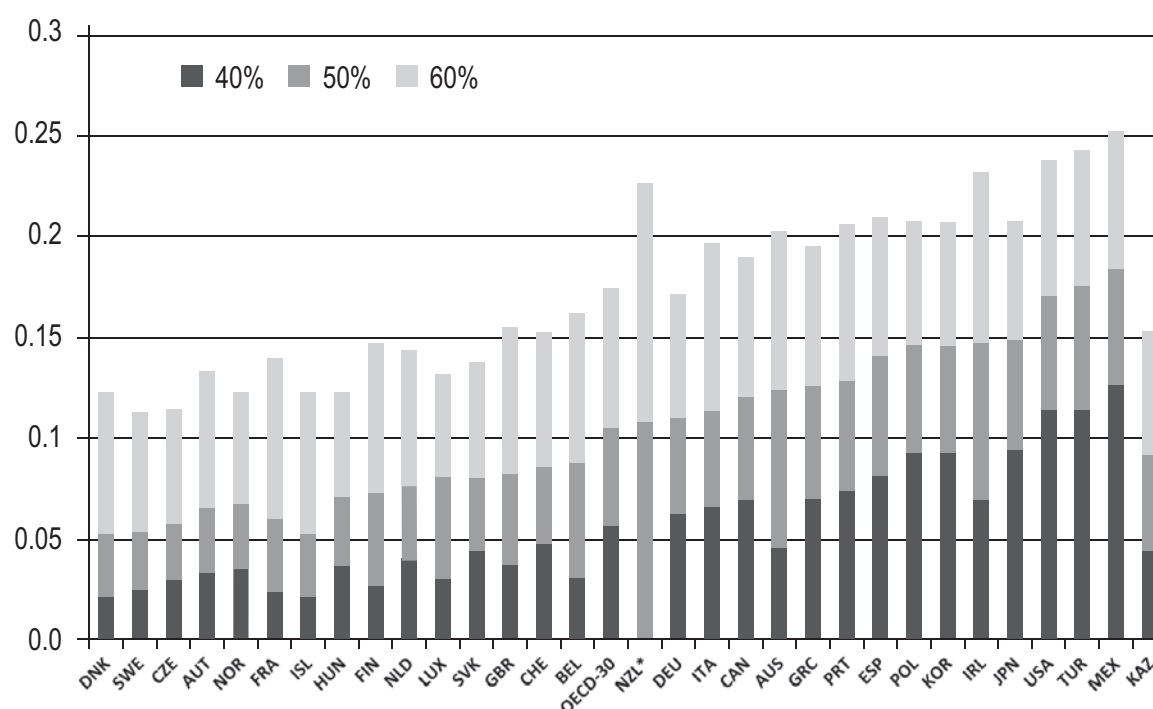
Source: The data for the countries except Kazakhstan are derived from the OECD (2008). The data for Kazakhstan are from authors' calculations on the basis of the HBS.

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[36] This chapter has been prepared by Yuka Takeda from Hitotsubashi University and Kentaro Nakajima from Tohoku University.

on the OECD relative poverty line. Kazakhstan is not a member of the OECD, but just for comparison, the relative poverty ratios for Kazakhstan are also shown in *Figure 4.1*. The number of relatively poor people in Kazakhstan is lower than half the OECD countries. The share of somewhat poor people in Kazakhstan is close to that of Switzerland and the United Kingdom.

In addition, the relative poverty line is useful for comparing the performance of social security and labour market policies among countries that adopt relatively common social policies. Moreover, the relative poverty line as well as the absolute poverty line, i.e. the subsistence minimum, can be used for evaluating the effectiveness of the social policy in a country. The relative poverty line is useful for understanding one of the aspects of poverty as well as the effectiveness of social policies.

However, it is rather questionable whether or not to use the relative poverty line as a threshold for providing social help to poor households in Kazakhstan. Firstly, most countries do not use relative poverty lines as a threshold for the provision of social security benefits. According to international practice, the absolute poverty line or the amount obtained on the basis of the market basket method is used as a threshold for providing social help to poor households. Secondly, if the relative poverty line were used as the criterion for social security, then Kazakhstan would bear a potential increase of budgetary expenditure. Relative poverty lines for Kazakhstan at quarterly and annual average are shown in *Table 4.1* and *Table 4.2*, respectively. For reference, the amount of subsistence minimum at annual average is shown as well in *Table 4.2*. For example, if the cut-off percentage is set at 50% or 60%, then the relative poverty lines are much higher than the subsistence minimum. Thirdly, if Kazakhstan adopts the criteria for the provision of social security, the different relative poverty lines among the regions of Kazakhstan will be applied and the economic inequality in Kazakhstan could be accelerated as a consequence.

Table 4.1. Relative poverty lines at national level for Kazakhstan in 2007–2009

(Tenge per capita, nominal)

Year	Quarterly	Cut-off percentage		
		40%	50%	60%
2007	1	9194.1	11492.6	13791.1
2007	2	9660.7	12075.8	14491.0
2007	3	10125.1	12656.4	15187.7
2007	4	10727.9	13409.9	16091.8
2008	1	11147.9	13934.8	16721.8
2008	2	11878.6	14848.3	17817.9
2008	3	12460.1	15575.2	18690.2
2008	4	13245.5	16556.8	19868.2
2009	1	12894.1	16117.7	19341.2
2009	2	13577.2	16971.5	20365.8
2009	3	14079.4	17599.3	21119.2
2009	4	14430.7	18038.4	21646.1

Source: Authors' calculations on the basis of Kazakhstan's HBS.

Table 4.2. Relative poverty lines and subsistence minimum for Kazakhstan in 2007–2009

(Tenge per capita, nominal)

Year	Relative poverty lines by cut-off percentage			Subsistence minimum
	40%	50%	60%	
2007	9,927	12,409	14,890	9,653
2008	12,183	15,229	18,275	12,364
2009	13,745	17,182	20,618	12,660

Note: Relative poverty lines at annual average are calculated on the basis of the estimates in **Table 4.1**.

Source: Relative poverty lines are calculated by authors on the basis of Kazakhstan's HBS. The data of subsistence minimum are collected from the Statistical Agency of Kazakhstan.

Figure 4.2 demonstrates the amount of relative poverty line by region in the 4th quarter of 2009. For example, the relative poverty line for Almaty is approximately double that of South-Kazakhstan. This disparity could provide a strong incentive, especially for the poor living outside Almaty to have the propiska of Almaty.

Figure 4.2. Regional relative poverty lines in Kazakhstan in Q4 of 2009 (Tenge per month)
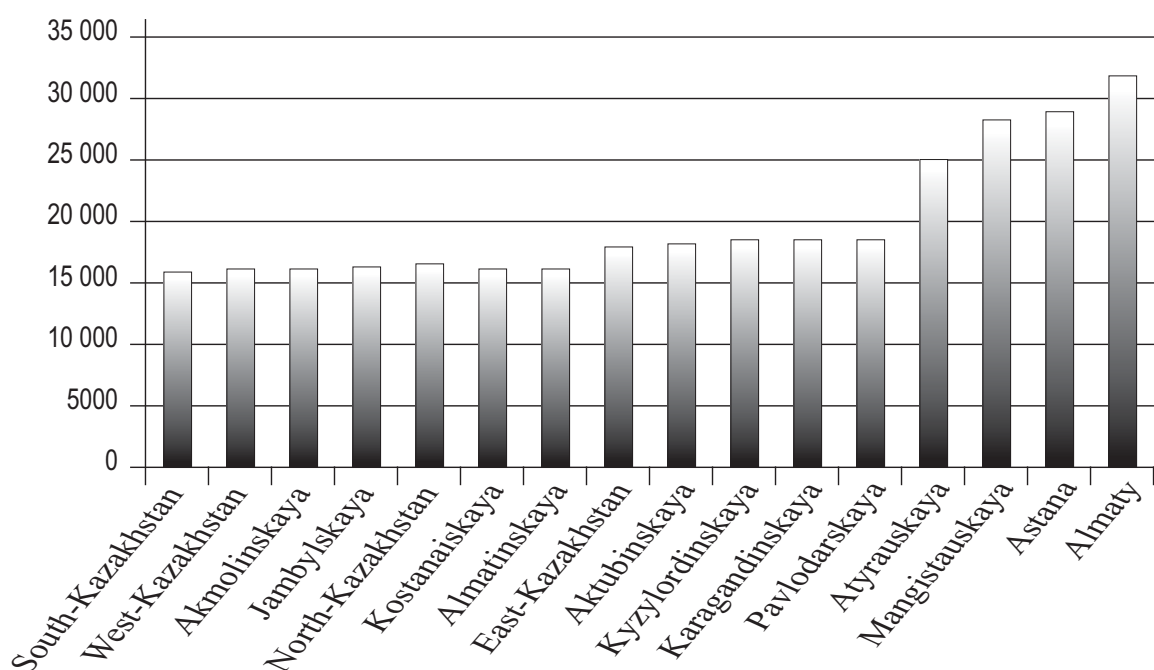
Source: Authors' calculations on the basis of Kazakhstan's HBS. The cut-off percentage is 50%.

Conclusion and Recommendations

Chapter 1 surveyed how to rationally estimate the (non-food) subsistence minimum. Here, the focus was on two measurement methodologies that are theoretically and practically accepted for estimating the (non-food) subsistence minimum: *Engel's coefficient method* and the *Regression method*. In Chapter 2, a review was carried out on the history of the subsistence minimum in Kazakhstan and on how to improve its measurement on the basis of scientific methods and international practice. It was found in this chapter that Kazakhstan should estimate the non-food subsistence minimum based on the scientific method. In Chapter 3, based on scientific methodologies, we estimated the non-food and total subsistence minimum for 2007–2009 at national and regional (oblast) levels, using the micro data from Kazakhstan's Household Budget Surveys (HBS). Finally in Chapter 4, the advantage and disadvantage of relative poverty lines were discussed. Conclusion and recommendations are set out below.

5.1. The structure of the subsistence minimum and the total expenditure

The subsistence minimum, currently used in Kazakhstan, is composed of the values of (1) the food basket and (2) non-food items and services. The food basket is appropriately developed with the help of the Institute of Nutrition in Kazakhstan. However, it could be assumed that the values of the non-food items and services in the subsistence minimum are not calculated on the scientifically sophisticated method.

Details regarding the calculation methodology used in Kazakhstan are rather obscure, but it is unquestionable that since 2006 the value of the food basket has been legislatively set at 60% of the subsistence minimum. Therefore, the percentage allocated to food and non-food goods and services in the subsistence minimum is 60% and 40%, respectively. The food basket is calculated on the basis of the structure of the total expenditure in poor households. It can be presumed that the total expenditure used as a calculation base of the subsistence minimum is composed of (1) foods, (2) non-food goods and services, and (3) housing. However, (4) **the minimum standard of education, health, and transportation should be also secured** in order to have a healthy, well-balanced social life. In addition, (5) **tax and other mandatory payments as well as these expenses should be added into the total expenditure** that is used as the calculation base of the subsistence minimum (in this report, this type of total expenditure is known as *Total Expenditure II*). It is becoming the international norm to accept this broader concept of well-being.

5.2. Food basket

In Kazakhstan, the food basket is appropriately determined on the basis of the recommendations made by the Institute of Nutrition. In addition, the basket meets the nutritional requirements recommended by the FAO/WHO. However, 5 years have already passed since the last revision of the food basket in 2006. In order to set the subsistence minimum appropriately, the minimum consumption norm of the food basket should be updated regularly according to the economic change in the country. **In line with international practice, the**

food basket is changed accordingly, for instance, every 5 years. Thus, it would be better for Kazakhstan to apply this international standard.

5.3. Pseudo-non-food basket

In Kazakhstan, the non-food basket is not made, but a pseudo-non-food basket is set in the following way the share of non-food goods and services in the total expenditure in poor households is regarded as the share of the pseudo-non-food basket in the subsistence minimum.

It could be supposed that the pseudo-non-food basket, currently used in Kazakhstan, is composed of (1) non-food goods and services, and (2) housing. However, as already pointed out, in order to understand well-being on a wider scale, **it is required to include the minimum expenses for education, health and transportation as well as tax and other payments in the subsistence minimum**.

5.4. Equivalence scales

The methodology for estimating the equivalence scale that is internationally accepted is Engel's method (below – *Engel's equivalence scale*). The estimate of *Engel's equivalence scale*, using the micro data of Kazakhstan's HBS, is 0.5 for each additional adult and child in the household. Our estimate is the same as the OECD equivalence scale that is often used for the international comparison of equivalent incomes. On the other hand, the equivalence scale currently used in Kazakhstan (the official equivalence scale) assigns a value of 0.8 for each additional adult and child (the square root scale). It is not clear how the official equivalence scale is calculated, but it is appropriate for Kazakhstan to obtain **the equivalence scale that is estimated on the basis of the scientific methodology, for example,** *Engel's equivalence scale*.

5.5. Measurement methodologies of the non-food and total subsistence minimum

There are direct and indirect ways to estimate the non-food subsistence minimum: (1) list all the non-food needs, (2) estimate non-food requirements indirectly based on economic theory. Although nutritious requirements are the rational basis for making the food basket, there is no such basis for making the non-food basket. In general, the collection and monitoring of all non-food prices require administrative costs. Therefore, it is difficult to list all the non-food needs appropriately and rationally. In fact, many countries, i.e. 38% of the respondent countries of the UNSD survey (United Nations Statistics Division Survey), have chosen indirect methods. Furthermore, according to international practice, two indirect methods are often used: *Engel's coefficient method*, and the Regression *method*.

Based on these indirect but scientific methodologies, the rational estimates of the non-food subsistence minimum can be obtained, even if the components of the non-food basket and the year of use for every item are not set. These measurement methodologies enable the non-food basket to be set in the indirect way. In order to obtain the subsistence minimum that is rationally estimated when the food basket is revised, the non-food basket is also re-estimated on the basis of the scientific methodology.

According to the estimation results using the micro data of Kazakhstan's HBS for 2007–2009, both estimates based on *Engel's coefficient method* and the *Regression method* did not differ. **In general, the estimate of the non-food and total subsistence minimum based on the *Regression method* is more robust than the estimate based on *Engel's coefficient method*. Therefore, it is recommended that the former method for calculating the non-food and total subsistence minimum be used.**

To sum up, **it is advisable to estimate the non-food and total subsistence minimum as well as the food and non-food shares, based on the *Regression method* using the combination of *Total Expenditure II* and *Engel's equivalence scale*.**

5.6. Shares of food and non-food in the subsistence minimum

The share of the non-food subsistence minimum is legislatively fixed at 40% in Kazakhstan. According to our estimation results, the rational share of the minimum non-food needs in the subsistence minimum ranged between 34.6% and 39.2%. This suggests that the official non-food share in Kazakhstan is mostly at rational level. As for the subsistence minimum, the one estimated was quite close to the official figure. Our estimate was 0.3% lower than the official one.

However, it should be noted that the estimates for the (non-food) subsistence minimum as well as those for the food and non-food shares changed annually and regionally. These changes could occur due to annual and regional variation in price and the difference in the consumption pattern between regions. Therefore, **in order to deal with these changes and differences, it would be appropriate to regularly update the food and non-food shares in the subsistence minimum, based on the recommended method.** According to international practice, revision of the subsistence minimum is carried out, for instance, every 5 years. In addition, the food and non-food shares are not fixed and re-estimated, for example, annually. It would appropriate for Kazakhstan not to fix the shares.

5.7. Relative poverty line

As a reference, the relative poverty line was discussed in this publication. **The relative poverty line is mainly used for comparing poverty ratios among developed countries** like the OECD countries. Moreover, it is useful for comparing the performance of the policies on social security and labour market (not clear; my variant; the performance of social security policies on the labour market) among countries that adopt relatively common social policies, and for evaluating the effectiveness of the social policy in a country.

In this respect, **the relative poverty line is not considered as an appropriate criterion to be used as a threshold for providing social help to poor households in Kazakhstan.** Firstly, most countries do not use relative poverty lines as a threshold for the provision of social security benefits. Secondly, according to our calculation on the basis of Kazakhstan's HBS, the relative poverty lines are much higher than the subsistence minimum. Therefore, it may create a substantial concern from a budgetary point of view, if the relative poverty line is going to be used as the scale for the provision of social benefits in Kazakhstan. Thirdly, another concern is that since the difference of relative poverty lines among the regions in Kazakhstan is considerable, the economic inequality in Kazakhstan may be further accelerated if Kazakhstan adopts the relative poverty line as the measure for the provision of social benefits. The result of our calculations shows that the relative

poverty line for Almaty is approximately double that of South-Kazakhstan. Such a disparity could provide a strong incentive, especially for the poor living outside Almaty to have the propiska of Almaty.

5.8. Other recommendations about the subsistence minimum

Finally, the «legislative» poverty line shall be mentioned. In Kazakhstan, the poverty line is not set at the subsistence minimum, but is legislatively fixed at 40%. Thus, in this report, the poverty line in Kazakhstan was known as the legislative one. However, it should be noted that the subsistence minimum is identified as the income level, which guarantees that the consumption meets the minimum requirements for human beings both physically and socially. With this in mind, the poverty line should be equal to the subsistence minimum. **In relation to this, it is highly recommended that the legislative poverty line be abolished and the poverty line be made at least equal to the level of subsistence minimum in Kazakhstan**.

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Appendixes

Appendix 1: List of legislations relating to the subsistence minimum and the consumption basket in Kazakhstan

1. Закон Казахской ССР от 17 июня 1991 г. N671-XII
   «О минимальном потребительском бюджете».

2. Постановление Верховного Совета РК от 18 января 1992 г. N 1158а-XII
   «О сроках поэтапного введения в действие минимальных потребительских бюджетов».

3. Постановление Кабинета Министров РК от 24 сентября 1992 г. N 801
   «О размере среднедушевого минимального потребительского бюджетов».

4. Указ Президента Республики Казахстан от 21 декабря 1995 г. N2700
   «О республиканском бюджете на 1996 год».

5. Постановление Правительства РК от 19 сентября 1996 г. N 1150
   «Об организации работы по определению основных показателей уровня жизни населения».

6. Закон Республики Казахстан от 16 ноября 1999 г. N474-I
   «О прожиточном минимуме».

7. Постановление Правительства Республики Казахстан от 30 ноября 2004 г. N 1241
   «Об утверждении программы дальнейшего углубления социальных реформ
   в Республике Казахстан на 2005–2007 годы».

8. Совместный приказ Министерства труда и социальной защиты населения
   Республики Казахстан от 2 декабря 2005 г. N 307/1-п
   и Агентства Республики Казахстан по статистике от 5 декабря 2005 г. N 194
   «Об утверждении правил расчета величины прожиточного минимума».

Appendix 2: Regression approach

This appendix briefly and intuitively explains the regression approach. For more details, see Ravallion and Bidani (1994) and Deaton and Muellbauer (1980).

Figure A.1. Measuring the non-food basic needs
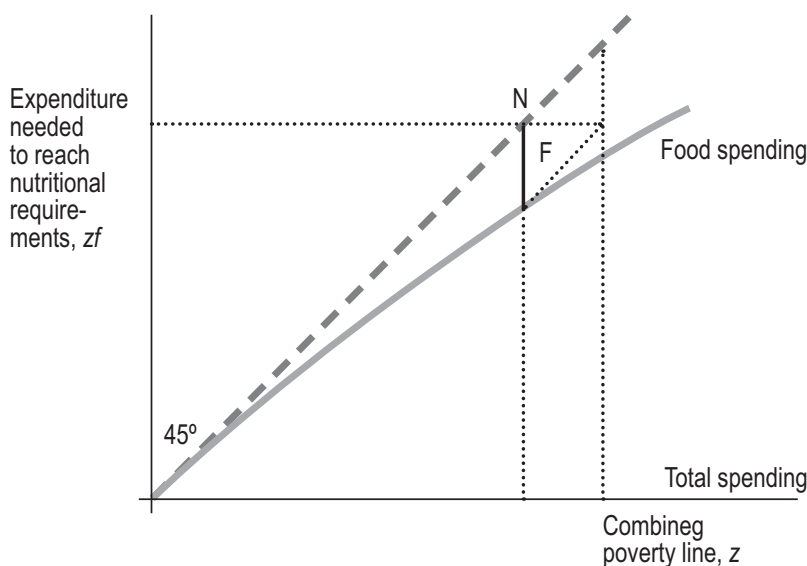
Source: Ravallion and Bidani (1994, Figure 3)

Figure A.1 shows the relationship between the average food expenditure and the total expenditure. The horizontal line refers to the total spending, and the vertical line refers to the food spending. The solid line represents the food spending function. According to Engel's law, the food spending increases with total spending, with a slope less than unity, and decreases as total spending increases. Our interest is to estimate how much the households whose total expenditure is equal to food subsistence minimum, i.e. the poor households spend on the food consumptions. In order to estimate Engel's coefficient, the food share function is set as follows.

$$S_i = \alpha + \beta \log\left(\frac{te_i}{fpl}\right) + \varepsilon_i$$

Left hand side is the food expenditure share that is the household i's demand for food. The right hand side variable is the log of total expenditure divided by the food subsistence minimum. This can be interpreted as the real total expenditure. That is, the food subsistence minimum, *fpl*, is the cost for obtaining minimum requirement for foods. Thus, the *fpl* can be interpreted as the price of foods, then, te_i / *fpl* refers to the household i's price discounted real total expenditure. To take into consideration Engel's law, we take the logarithm of the price-discounted real total expenditure.

The last term ε_i is the residual. It is natural to consider that the tastes and preferences for the food spending are different among households. In addition, Household Budget Surveys could have measurement errors. To capture the heterogeneous preference and measurement errors, we have to include this residual term into the model.

In the model, α can be considered as the average share of food expenditure for poor households (Engel's coefficient). In order to understand α intuitively, let's consider the household i (i.e. the poor household) whose total income is equal to the food subsistence minimum; and whose unobservable preference is the same as the average preference without measurement errors. In this case, the second term of the estimation equation is zero (as $te_i = fpl$), and the error term is also zero. Thus, the household's share of food expenditure S_i is equal to α. In use of the regression approach, we can robustly estimate the average share of food expenditure (i.e. Engel's coefficient), controlling the households' income differences, the heterogeneity of the unobservable preferences, and the measurement errors.

Appendix 3: Pooled OLS regression of Engel's curve for Kazakhstan
(Food share in *Total Expenditure I*)

Table A.1.

	Coef.	Std. Err.		95% C.I.	
Log of per capita expenditures	-0.113	0.0015	***	-0.116	-0.111
Log of the number of household members	-0.041	0.0017	***	-0.045	-0.038
Household composition: pensioner – reference					
Ratio of the number of children in household	-0.056	0.0037	***	-0.064	-0.049
Ratio of the number of adults in household	-0.044	0.0022	***	-0.049	-0.040
Region: Kostanaiskaya obl – reference					
Akmolinskaya	0.015	0.0032	***	0.009	0.021
Akyubinskaya	0.076	0.0036	***	0.069	0.083
Almatinskaya	0.088	0.0029	***	0.082	0.093
Atyrauskaya	0.067	0.0045	***	0.058	0.076
West-Kazakhstan	0.056	0.0037	***	0.049	0.063
Zhambylskaya	0.044	0.0033	***	0.038	0.051
Karagandinskaya	0.027	0.0028	***	0.021	0.032
Kyzylordinskaya	0.089	0.0041	***	0.081	0.097
Magistauskaya	-0.078	0.0047	***	-0.087	-0.069
South-Kazakhstan	0.007	0.0029	**	0.001	0.012
Pavlodarskaya	0.005	0.0032		-0.001	0.011
North-Kazakhstan	0.036	0.0033	***	0.029	0.042
East-Kazakhstan	0.054	0.0028	***	0.049	0.060
Astana city	0.025	0.0048	***	0.015	0.034
Almaty city	0.053	0.0030	***	0.047	0.059
Quarter: Q1-reference					
Q2	0.268	0.0020	***	0.264	0.272
Q3	0.250	0.0020	***	0.246	0.254
Q4	0.231	0.0019	***	0.227	0.235
Constant	1.595	0.0165	***	1.563	1.628
Number of observations	47,348				
F-value	3066.88				
R^2	0.588				
Adj. R^2	0.588				

Source: Authours' calculation based on Kazakhstan's Household Budget Survey 2009.

Appendix 4: Pooled OLS regression of Engel's curve for Kazakhstan (Food share in *Total Expenditure II*)

Table A.2.

	Coef.	Std. Err.		95% C.I.	
Log of per capita expenditures	-0.129	0.002	***	-0.132	-0.126
Log of the number of household members	-0.063	0.002	***	-0.066	-0.060
Household composition: pensioner – reference					
Ratio of the number of children in household	-0.035	0.004	***	-0.042	-0.027
Ratio of the number of adults in household	-0.040	0.002	***	-0.044	-0.035
Region: Kostanaiskaya obl – reference					
Akmolinskaya	0.019	0.003	***	0.012	0.025
Akyubinskaya	0.068	0.004	***	0.061	0.075
Almatinskaya	0.090	0.003	***	0.084	0.096
Atyrauskaya	0.066	0.005	***	0.057	0.075
West-Kazakhstan	0.051	0.004	***	0.044	0.058
Zhambylskaya	0.047	0.003	***	0.040	0.054
Karagandinskaya	0.023	0.003	***	0.017	0.029
Kyzylordinskaya	0.093	0.004	***	0.085	0.101
Magistauskaya	-0.062	0.005	***	-0.072	-0.053
South-Kazakhstan	0.006	0.003	**	0.001	0.012
Pavlodarskaya	0.011	0.003	***	0.004	0.017
North-Kazakhstan	0.035	0.003	***	0.029	0.042
East-Kazakhstan	0.047	0.003	***	0.042	0.053
Astana city	0.013	0.005	**	0.003	0.022
Almaty city	0.049	0.003	***	0.043	0.055
Quarter: Q1-reference					
Q2	0.211	0.002	***	0.207	0.215
Q3	0.197	0.002	***	0.193	0.201
Q4	0.184	0.002	***	0.180	0.188
Constant	1.761	0.017	***	1.728	1.795
Number of observations	47,348				
F-test	0.00				
R^2	0.52				
Adj. R^2	0.52				

Source: Authhours' calculation based on Kazakhstan's Household Budget Survey 2009.

Appendix 5: Summary of Statistics

Table A.3.

Variable		Mean	Std. Dev.	Min	Max	Observations
Expenditures:						
Food share in total expenditure	overall	0.61	0.202	0.009	1.000	N = 47,348
(Total Expenditures I)	between		0.103	0.201	0.934	n = 11,837
	within		0.174	0.036	1.043	T = 4
Log of per capita expenditures	overall	9.87	0.606	7.734	12.896	N = 47,348
(Total Expenditures I)	between		0.471	8.303	11.684	n = 11,837
	within		0.382	8.547	11.896	T = 4
Food share in total expenditure	overall	0.56	0.190	0.006	1.000	N = 47,348
(Total Expenditures II)	between		0.110	0.184	0.928	n = 11,837
	within		0.155	-0.006	0.987	T = 4
Log of per capita expenditures	overall	9.97	0.593	7.880	12.898	N = 47,348
(Total Expenditures II)	between		0.471	8.317	11.818	n = 11,837
	within		0.359	8.752	11.916	T = 4
The number of household members:						
Log of the number	overall	1.12	0.546	0.000	2.639	N = 47,348
of household members	between		0.546	0.000	2.639	n = 11,837
	within		0.000	1.121	1.121	T = 4
Household composition:						
Ratio of the number of children	overall	0.21	0.221	0.000	0.800	N = 47,348
in a household	between		0.221	0.000	0.800	n = 11,837
	within		0.000	0.206	0.206	T = 4
Ratio of the number of adults	overall	0.61	0.313	0.000	1.000	N = 47,348
in a household	between		0.313	0.000	1.000	n = 11,837
	within		0.000	0.614	0.614	T = 4
Regions (oblasts):						
Akmolinskaya	overall	0.06	0.242	0.000	1.000	N = 47,348
	between		0.242	0.000	1.000	n = 11,837
	within		0.000	0.062	0.062	T = 4
Akyubinskaya	overall	0.04	0.202	0.000	1.000	N = 47,348
	between		0.202	0.000	1.000	n = 11,837
	within		0.000	0.043	0.043	T = 4
Almatinskaya	overall	0.09	0.292	0.000	1.000	N = 47,348
	between		0.292	0.000	1.000	n = 11,837
	within		0.000	0.094	0.094	T = 4
Atyrauskaya	overall	0.02	0.149	0.000	1.000	N = 47,348
	between		0.149	0.000	1.000	n = 11,837
	within		0.000	0.023	0.023	T = 4

West-Kazakhstan	overall	0.04	0.196	0.000	1.000	N = 47,348
	between		0.196	0.000	1.000	n = 11,837
	within		0.000	0.040	0.040	T = 4
Zhambylskaya	overall	0.06	0.234	0.000	1.000	N = 47,348
	between		0.234	0.000	1.000	n = 11,837
	within		0.000	0.058	0.058	T = 4
Karagandinskaya	overall	0.11	0.316	0.000	1.000	N = 47,348
	between		0.316	0.000	1.000	n = 11,837
	within		0.000	0.112	0.112	T = 4
Kostanaiskaya	overall	0.08	0.270	0.000	1.000	N = 47,348
	between		0.270	0.000	1.000	n = 11,837
	within		0.000	0.079	0.079	T = 4
Kyzylordinskaya	overall	0.03	0.171	0.000	1.000	N = 47,348
	between		0.171	0.000	1.000	n = 11,837
	within		0.000	0.030	0.030	T = 4
Magistauskaya	overall	0.02	0.141	0.000	1.000	N = 47,348
	between		0.141	0.000	1.000	n = 11,837
	within		0.000	0.020	0.020	T = 4
South-Kazakhstan	overall	0.10	0.301	0.000	1.000	N = 47,348
	between		0.301	0.000	1.000	n = 11,837
	within		0.000	0.101	0.101	T = 4
Pavlodarskaya	overall	0.06	0.236	0.000	1.000	N = 47,348
	between		0.236	0.000	1.000	n = 11,837
	within		0.000	0.059	0.059	T = 4
North-Kazakhstan	overall	0.06	0.228	0.000	1.000	N = 47,348
	between		0.228	0.000	1.000	n = 11,837
	within		0.000	0.055	0.055	T = 4
East-Kazakhstan	overall	0.11	0.319	0.000	1.000	N = 47,348
	between		0.319	0.000	1.000	n = 11,837
	within		0.000	0.115	0.115	T = 4
Astana city	overall	0.02	0.139	0.000	1.000	N = 47,348
	between		0.139	0.000	1.000	n = 11,837
	within		0.000	0.020	0.020	T = 4
Almaty city	overall	0.09	0.284	0.000	1.000	N = 47,348
	between		0.284	0.000	1.000	n = 11,837
	within		0.000	0.088	0.088	T = 4

Quarter of 2009:

1st quarter	overall	0.25	0.433	0.000	1.000	N = 47,348
	between		0.000	0.250	0.250	n = 11,837
	within		0.433	0.000	1.000	T = 4
2nd quarter	overall	0.25	0.433	0.000	1.000	N = 47,348
	between		0.000	0.250	0.250	n = 11,837
	within		0.433	0.000	1.000	T = 4
3rd quarter	overall	0.25	0.433	0.000	1.000	N = 47,348
	between		0.000	0.250	0.250	n = 11,837
	within		0.433	0.000	1.000	T = 4
4th quarter	overall	0.25	0.433	0.000	1.000	N = 47,348
	between		0.000	0.250	0.250	n = 11,837
	within		0.433	0.000	1.000	T = 4

Source: Authors' calculations.

Appendix 6: The CPI in Kazakhstan from 2003 to 2010
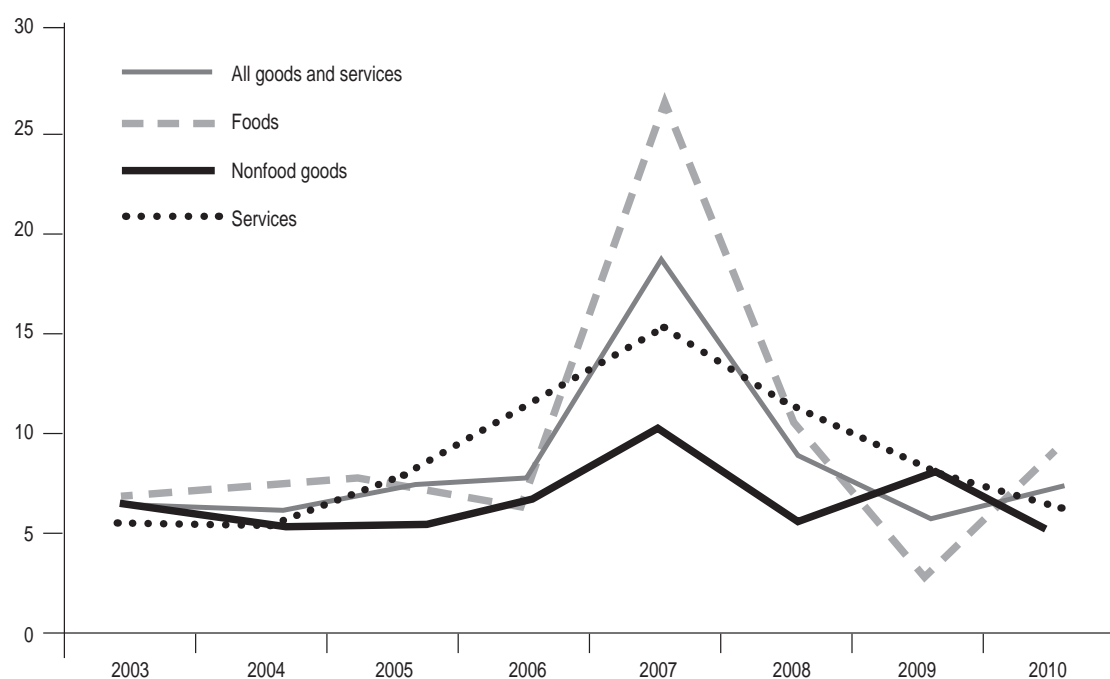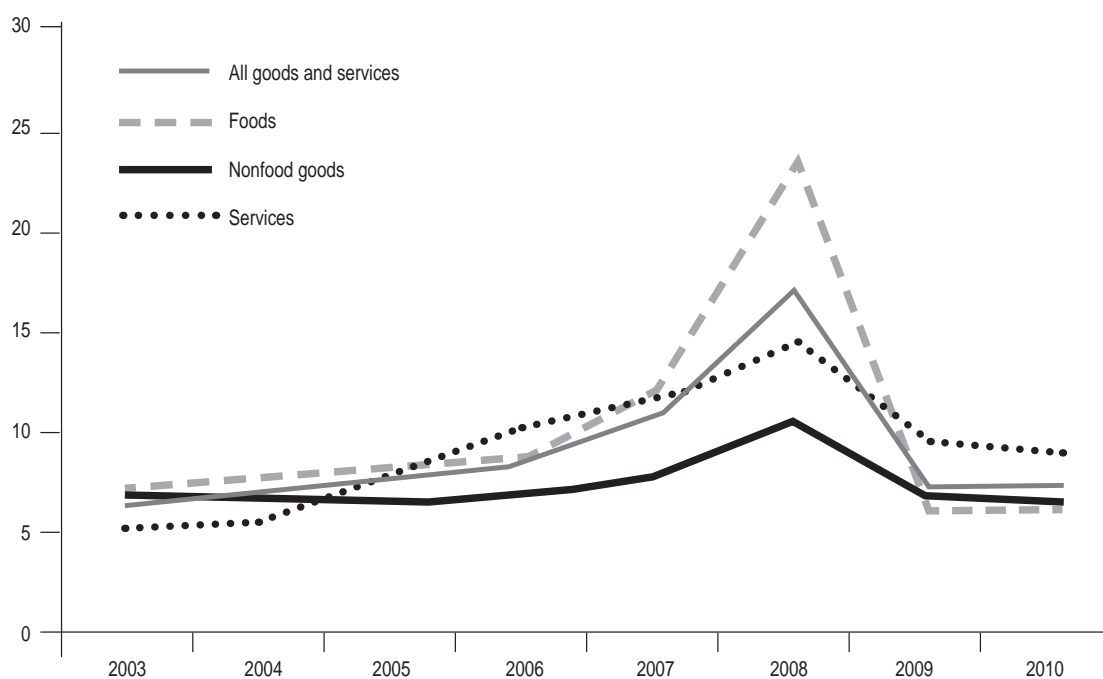
Figure A.2. December to December

Figure A.3. Year to year

Source: Statistical Agency of Kazakhstan.