



## Economic growth and the demand for dietary quality: Evidence from Russia during transition



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### ABSTRACT

The increasing incidence of nutrition-related chronic diseases worldwide has raised people's awareness of dietary quality. Most existing studies on the topic of changing nutrition patterns measure dietary quality by single macronutrient indicators or anthropometric outcomes. However, such an approach is often too narrow to provide a picture of overall dietary quality and is sometimes even misleading. This study contributes to the existing literature by taking into account that the analysis of dietary quality comprises two dimensions: the adequate intake of vitamins and minerals, as well as the moderate intake of nutrients that increase the risk of chronic diseases. Thereby, we apply Grossman's health investment model to the analysis of the demand for dietary quality, explicitly addressing the different dimensions of dietary quality and the intertemporal character of health investments. We apply our approach to Russia using data from the Russia Longitudinal Monitoring Survey from 1996 to 2008. Our results show that intake levels of vitamins and minerals as well as saturated and total fatty acids increased after 1998 along with economic recovery, while the intake of fiber decreased. Our econometric results imply an income elasticity of vitamins and minerals of 0.051, and an income elasticity of fats of 0.073. Overall, our results are in line with an ongoing nutrition transition in the Russian Federation, which is marked by decreasing deficiencies in vitamins and minerals, as well as the increasing consumption of fats with its accompanying negative health consequences.

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### 1. Introduction

Since the breakdown of the Soviet system, Russians have experienced significant changes in all spheres of daily life. Although macroeconomic conditions have improved in recent years, major concerns remain with respect to the health status of the Russian population. According to the Russian Government Committee of Statistics (GKS, 2014), the official life expectancy at birth of 70.24 years for the overall Russian population (males 64.56 years, females

75.86 years) in 2012 was almost equal to the respective level in 1987. On average, Russian men and women face a life expectancy that is about ten years shorter than that of their European neighbors. Thereby, chronic diseases significantly contribute to the worrying morbidity and death rates in Russia (Adeyi et al., 2007; Suhrcke et al., 2007). These chronic diseases not only create individual problems, but also an enormous economic burden for households, employers, and public health care systems, especially in a country with an aging population such as Russia.

Besides unhealthy lifestyles like smoking, heavy alcohol consumption, and physical inactivity, nutrition is an important determinant of several chronic diseases such

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as cardiovascular diseases, diabetes and various forms of cancer (Hu et al., 2000; Tragakes and Lessof, 2003; Popkin, 2006, 2007; Adeyi et al., 2007; Suhrcke et al., 2007). Considering Russia's economic transition with its respective effects on nutrition, it is well understood that improvements in per-capita incomes are generally linked with a major shift in dietary patterns, i.e. a shift away from a relatively monotonous and starchy diet with low-fat intakes toward a more varied diet with more fruits and vegetables. Furthermore, the intakes of animal products, fat, and sugar generally increase with increasing incomes; in contrast to a decline in total fiber intakes (Popkin, 2006; Uljaszek, 2007). In this line, considering the income and price elasticities for different food aggregates, the studies of Staudigel and Schröck (2014) and Burggraf et al. (2015) find that with income growth Russians' demand for animal-based products tends to increase more strongly than the demand for staple foods such as bread. This shift in dietary patterns together with the accompanying increase in nutrition-related chronic diseases is often referred to as *nutrition transition* in its narrow sense (Popkin and Du, 2003).

Until now, the majority of studies available for Russia have analyzed the health outcomes of Russians' nutrition patterns (e.g. obesity or chronic diseases), whereas only a few studies have analyzed the country's dietary quality. Uljaszek and Koziel (2007) show that the growing prevalence of obesity in Eastern European countries cannot be attributed to increased dietary energy availability, at least at the macro level. These authors show that the obesity patterns observed in East European nations can be explained for example by less physical activity and growing real per-capita incomes.<sup>1</sup> Dellava et al. (2010) highlight that Russia has one of the highest cardiovascular mortality rates, combined with a low nutrition literacy. Zohoori et al. (2001), Liefert (2004), as well as Huffman and Rizov (2007) examine Russians' caloric intake, and each show that overweight and obesity rates significantly increased during economic transition. Jahns et al. (2012) focus on obesity among children in Russia. For 1995, they find a significant positive influence of income on children's energy and fat intake. However, in contrast to the income effects on energy and fat intake, Jahns et al. (2012) indicate that prevalence of overweight does not significantly differ for various strata of parents' income in 1995 and 2002. For the time period 1995–2005, Staudigel (2012) shows Russian expenditure elasticities of energy intakes and food aggregates to range between zero and one, indicating them as necessities. Considering the differences between normal-weight, overweight, and obese households, Staudigel finds that the expenditure elasticities of food quality (in terms of quality differences in the computation of households' price variables) of the meat, bread, fruits, and dairy aggregates are higher for obese households than for normal households. Analyzing the impact of food prices on overweight and obesity, Staudigel (2011) shows that food

prices are not major determinants of body mass index (BMI), and thus obesity, in Russia.

Herzfeld et al. (2014) examine the dynamics of the Russian demand for fat, protein, and food diversity for the period from 1994 to 2005. Their results show that with increasing incomes, households tend to demand more fats and proteins while food variety increases. Moreover, these authors find habit formation in the demand for food diversity, but not in the demand for fat and protein. Stillman and Thomas (2008) investigate the impact of fluctuations in household expenditures on several nutrient intake indicators such as total calorie intake and the percentage of calories from fat and protein. They apply Grossman's health investment model (Grossman, 2000) by taking BMI, total energy, and energy percentage of fat intakes as indicators of the demand for health.<sup>2</sup> These authors' results indicate that transitory changes in expenditures are positively and significantly associated with total calorie intake, the share of calories from protein and fat, adult BMI, and child weight-for-height. In sum, hitherto studies on nutrition in Russia mainly focus on anthropometric outcomes or measure dietary quality by single macronutrient indicators. Nonetheless, such an approach is often too narrow to provide a picture of overall dietary quality and is sometimes even misleading.

This study investigates Russians' demand for dietary quality during economic transition by using a more differentiated approach than those discussed above. We explicitly take into account that the analysis of dietary quality comprises the adequate intake of vitamins and minerals, as well as the moderate intake of nutrients that increase the risk of chronic diseases. Thus far, this overall picture of dietary quality has not been addressed in the existing literature on Russia. Furthermore, we contribute to the theoretical and empirical health investment literature by applying Grossman's health investment model to the analysis of the demand for dietary quality. Addressing the two dimensions of dietary quality and the intertemporal character of health investments, our theoretical model is the first to account for all of the following specifications: (i) health can be produced by dynamic health investments; (ii) adequate vitamin and nutrient intakes generate health investments; and (iii) the intake of risky nutrients raises today's utility but deteriorates future health if consumed in excess.

This paper is organized as follows. In the next section we illustrate our methodological approach. Then we present a description of the employed data set in Section 3. In Section 4 we describe the econometric methodology and present our estimation results. Finally, we discuss our findings and conclude in Section 5.

<sup>1</sup> The general finding in empirical studies on economic growth and obesity is that the relationship is positive and concave (see, e.g., Egger et al., 2012; Goryakin and Suhrcke, 2014).

<sup>2</sup> However, in Grossman's health investment model, the demand for dietary quality should indicate an investment in health rather than the demand for health (Grossman, 2000). Furthermore, Stillman and Thomas (2008) examine the percentage of calories from fat as an indicator of dietary quality. This indicator setting leads to their statement that dietary quality rises in the sense of an increased energy percentage of fat intakes when household resources increase. However, this statement seems questionable in a country with noticeably high fat and protein intakes where the majority of the population is either obese or overweight.

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