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Health and wealth in Uzbekistan and sub-Saharan Africa in comparative perspective

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ABSTRACT

The study investigates the magnitude of differences in child and adult mortality by wealth in Uzbekistan, a former soviet country of Central Asia, and compares it with similar indicators from sub-Saharan Africa. Data were derived from Demographic and Health Surveys. An "Absolute Wealth Index" was built from data on goods owned by households and quality of housing, and scaled from 0 to 12. Wealth was distributed evenly in Uzbekistan, with a symmetric distribution around a mean of 5.5 modern goods. In sub-Saharan Africa, on the contrary, the wealth distribution had a lower mean (2.5) and was highly skewed towards the left, revealing a high proportion of very poor people. Adult and child mortality levels were lower in Uzbekistan. Despite these major differences, the relationships between mortality indicators and the wealth index were similar in the two cases. The magnitude of mortality differentials by wealth was of the same order in both cases, with gradients ranging from 2.5 to 1 for child mortality and 1.5 to 1 for adult mortality (poorest versus richest). However, mortality levels remained lower in Uzbekistan than in sub-Saharan Africa at the same level of wealth for both children and adults. A similar relationship was found between nutritional status and wealth index in both cases. On the contrary, there were no differences by wealth in use of health services and level of education in Uzbekistan, whereas wealth gradients were steep for the same variables in sub-Saharan Africa. The study suggests that mortality differentials were primarily due to nutritional status, and not to access and use of health services or to education. The discussion focuses on health and social policies during the colonial and post-colonial period that have produced these patterns.

1. Background

1.1. Health and wealth in socialist countries

Little is known about income and wealth differentials in mortality and other health outcomes in former communist countries of Asia, since these were not carrying out surveys like in the West during the socialist period. At that time, information on mortality differentials in these countries was limited to classic age and sex patterns, urban versus rural, and regional differences. A few recent articles based on sample surveys provide some information on income differentials. Using data from a 1992 survey in 12 provinces of China, based on a sample of households ($N \sim 20\,000$), Zimmer and Kwong (2004) found that bank savings and household amenities were predictors of self-assessed health status, self-care limitation and chronic

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conditions among older persons. However, the magnitude of the differences remained small, and often not significant in rural areas. In Kazakhstan, using aggregate data at the regional (*Oblast*) level, Becker and Urzhumova (2005) found a negative effect of urban wages on adult mortality above age 60, and a negative effect of ownership of automobiles on adult mortality above age 30. In Uzbekistan, Ismail and Mickelwright (1997) studied child anthropometry in three regions. They found more stunting in Ferghana valley and in Karakalpakstan (the poorest areas) than in Tashkent, the capital city. Although their study was based on a small sample ($N = 1298$ children), and not always consistent with the results from later DHS surveys, they found that the differences between areas were reduced after controlling for dwelling characteristics and agricultural assets, an indication of the possible effect of wealth on child growth. Dangour et al. (2003) suggested that the body size of young girls in Kazakhstan was reduced as a result of prolonged economic instability.

Demographic and Health Surveys (DHS) are large scale standardized demographic surveys which are conducted throughout developing countries. Some were conducted in Central Asia, and found mortality differentials similar to those observed elsewhere such as those found in sub-Saharan Africa. For instance, the average ratio of rural to urban under-five mortality was 1.32 in the five DHS surveys conducted in Central Asia, compared with a ratio of 1.36 in 66 DHS surveys conducted in sub-Saharan Africa (data from the DHS web site). Relationship with level of education could not be compared in a similar way since there were too few women with no education in Central Asia. However, the magnitude of mortality differentials from primary to higher level of education ranged from 1 to 2.3, which are common values in sub-Saharan Africa. Differentials by ethnicity ranged from 1 to 2 if Russians living in Central Asia were taken as the standard, again a value similar to those found in sub-Saharan Africa. None of the reports of DHS surveys conducted in Central Asia has so far directly addressed the issue of income and wealth differentials, although some used other indicators of poverty such as the qualitative question "making the ends meet".

1.2. Health and wealth: data sources

The complex relationships between health and wealth have been studied for almost two centuries. In his pioneer study of French urban mortality, Villermé (1830) found that mortality in Paris neighbourhoods was closely related with poverty. Since the early days of industrialization, social and economic vulnerability has been consistently found to be associated with various health indicators, and in particular with mortality. In their classic study in the United States, Kitagawa and Hauser (1973) found a strong relationship between income (assessed in the census) and mortality (from vital registration). This type of analysis, based on 340 000 deaths occurring in May to August 1960 matched with the 1960 census, is one of the rare studies available linking directly mortality and income at a national level.

Most of our data linking health and wealth come from specially designed surveys. However, in demographic surveys focusing on health, income is usually not measured, and in most economic surveys measuring income, demographic outcomes are not considered. Another approach to study the relationship between health and wealth is to consider household amenities instead of income. Firstly, questions on household goods and housing characteristics are much easier to collect than income, and are readily available in many demographic surveys with health outcomes. Secondly, data on household amenities are often considered more robust for analysis than income data: they summarize the economic history of the household better than does the current income, and are independent of the local currency fluctuations. This has been the strategy promoted by the World Bank and the Demographic and Health Surveys (DHS). Filmer and Pritchett (2001) recommend a single index based on the first principal component of a basket of household amenities. The recent DHS surveys now provide a Wealth Index, which allows one to compute quintiles of wealth associated with each household survey. However, mortality differentials by wealth are seldom presented in DHS survey reports, and are available only in some of the most recent surveys. Furthermore, the classic wealth quintiles approach focuses on wealth distribution in the country (that is relative poverty), and not on absolute poverty, which hampers comparisons in time and space.

We have proposed a simpler Absolute Wealth Index (AWI), based on the sum of the modern goods owned by the household (Garenne and Hohmann, 2003; Hohmann and Garenne, 2009). This index measures absolute poverty (or wealth), and produces gradients with respect to health indicators which are more stable and more robust than those given by wealth quintiles. More important, it enables direct comparisons over time in the same country as well as between countries, whereas the principal components are more abstract, and allow only differential analysis by quintiles, or other percentiles. In terms of long term changes, the Absolute Wealth Index is a measure of integration of the household into modern economy, and is therefore expected to be more related with any indicator of the health transition or social change. Lastly, in some sub-Saharan African countries, more than half of the population has no modern goods, so that the first two or three quintiles cover basically the same population strata. Identifying these households with an Absolute Wealth Index seems to be more useful than computing quintiles. Note that our Absolute Wealth Index includes only modern goods and services, and ignores indicators of traditional wealth, such as livestock or prestigious goods. This is deliberate, since we focus on modernization, and do not attempt to measure traditional wealth. Our indicator correlates well with the logarithm of income at household level, and the mean wealth index at country level correlates also with the mean logarithm of Gross Domestic Product (GDP-PPP) (Hohmann and Garenne, 2009; Garenne et al., 2009). Our approach bears some similarity with the "permanent income" approach (Bollen et al., 2002), which has been used in fertility studies.