POLICY RESEARCH WORKING PAPER 3010

Vulnerability in Consumption, Education, and Health

Evidence from Moldova during the Russian Crisis

Edmundo Murrugarra
José Signoret

The World Bank
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Human Development Sector Unit
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Abstract

Murrugarra and Signoret analyze the widespread effects of the financial crisis in Russia to explore the vulnerabilities of households in Moldova. They show that the crisis had differential impacts on households, affecting most the urban and better-off. Households' decisions about education and health resulted in decreased utilization and expenditures. The enrollment of young children from better-off households did not improve while others did. Secondary school enrollment of children from better-off households decreased after the crisis, in part because of the need to release labor supply. Health utilization decreased mainly for primary health care (not for hospitals), both for better-off households and in rural areas. Some of these changes are due to limited household resources (health), decreased public spending (health and education) or the need to increase households' labor supply (education of teenagers). Social benefits played a very limited role in mitigating these effects, solely in health care use. Households' assets helped to offset some of the negative effects of declining incomes.

This paper—a product of the Human Development Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand the effects of crises on human development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Edmundo Murrugarra, mail stop MC7-703, telephone 202-473-4452, fax 202-477-3387, email address emurrugarra@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. José Signoret may be contacted at signoret@econ.berkeley.edu. April 2003. (46 pages)

Vulnerability in Consumption, Education and Health: Evidence from Moldova during the Russian Crisis[♣]

Edmundo Murrugarra [a] José Signoret [b]

[♣] Paper prepared for the Non Income Dimensions of Poverty Regional Study.

[a] The World Bank. Human Development Department, Europe and Central Asia Region. e-mail: emurrugarra@worldbank.org.
[b] U. of California, Berkeley, Dept. of Economics. e-mail: signoret@econ.berkeley.edu

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1. Introduction

This paper provides an assessment of household vulnerability in consumption in Moldova and discusses three major questions: (i) Which households were most affected by the effects of the Russian crisis in Moldova; (ii) How households characteristics helped households in coping with the shock; and (iii) Did government and informal safety nets provide a support during times of crisis? Vulnerability is defined here as welfare losses measured as consumption drops. Households, however, may be vulnerable to a number of shocks from different nature. Unexpected events in labor markets (unemployment), productive activities (input prices or access to markets), weather and natural phenomena (earthquakes, droughts, floods), or aggregate macroeconomic shocks (exchange rate devaluations). This paper exploits the effects of the financial crisis in Russia to examine the impact on poverty and consumption levels in Moldova. Moldova is strongly linked to the Russian economy through commercial, demographic (migration) and historical reasons. These links made the Moldovan economy and society particularly sensitive to the events in the Russian economy. The Russian financial crisis, though short-lived, significantly impacted through the devaluation of the ruble and the reduced exports to Russia.

The rest of the paper is organized as follows. Section 2 describes the timing and nature of the Russian financial crisis and the effects on the Moldovan economy. Section 3 presents the measures of vulnerability and discusses methodological approaches used in the literature. Section 4 provides the results from the estimation and discusses the results. Section 5 summarizes the results.

2. Macroeconomic context and the Russian crisis

Moldova is a landlocked poor country of less than 4 million population, with a national GDP per capita around US$ 400 but subject to significant economic shocks during the last decade. Despite the significant declines of GDP after independence in the early nineties, GDP per capita started recovering until 1997, only to suffer the effects from the Russian crisis that reduced GDP by more than 6 percent in 1998. By 1999, GDP per capita was similar to that of 1994 (Moldova Economic Trends, 2001).
Similar to other former Soviet Union republics, Moldova was also characterized by its barter economy, in particular with the central partner (Russia). After the collapse of the Soviet Union, Moldova (as other FSU countries) continued having strong commercial attachments with Russia and did not diversify their commercial partners. Compared to other economies, the ratio of exports and imports to GDP is relatively large in Moldova. During the nineties, exports represented more than 50 percent of GDP in Moldova, and imports more than 70 percent. In 1997, the trade intensity ratio (exports plus imports

divided by GDP) was 1.29, one of the largest among FSU countries with the exception of Tajikistan (1.6) and close to Belarus (1.26).[1]

Table 1: Source: Moldova Economic Trends (2001)

Table 1.1 GDP and GDP per Capita; 1993 - 2000

	1993	1994	1995	1996	1997	1998	1999	2000, prel
Nominal GDP, Lei million	1,821.1	4,736.8	6,479.7	7,797 6	8,917.0	9,122.1	12,321.6	15,980 0
Real GDP, year-on-year % change	-1.2	-30.9	-1.4	-5 9	1.6	-6.5	-3.4	1.9
Population, thousands	3,607.6	3,608.5	3,603.7	3,599 0	3,654.0	3,648.3	3,645.3	3,636.5
Average Exchange Rate (Lei / US$)	1.45	4.06	4.49	4.59	4.63	5.38	10.51	12.43
Exchange Rate, end of period (Lei / US$)	3.64	4.27	4.50	4.65	4.66	8.32	11.59	12.38
GDP per capita (US$-current prices)	348.1	323.3	400.5	472.0	527.1	464.8	321.6	353.5

Source: Department of Statistics and Sociology, MET calculations

Furthermore, the trade intensity of the Moldova economy was concentrated on a key partner, Russia, and on other FSU countries. In 1997, about 70 percent of the exports and 52 percent of the imports were with CIS countries. In addition, besides being the most important commercial partner, Russia is also the most important direct investor (Economic Trends, 2001).

Table: Trade Intensity in CIS countries 1996-2001

Country Name	1996	1997	1998	1999	2000	2001
Armenia	79.2	78.5	71.8	70.6	74.1	72.3
Azerbaijan	85.1	82.0	77.1	69.9	79.1	78.5
Belarus	96.8	125.5	123.0	120.8	137.2	82.0
Bulgaria	122.7	118.3	99.0	96.0	122.5	125.1
Croatia	89.9	97.9	88.8	89.4	95.6	101.6
Georgia	46.0	56.7	53.4	57.2	63.4	60.3
Hungary	78.8	91.0	103.3	108.5	126.5	123.1
Kazakhstan	71.3	72.4	65.2	82.6	106.0	98.4
Kyrgyz Republic	87.3	84.5	94.5	99.2	89.4	74.2
Moldova	129.2	129.1	119.0	118.7	126.5	124.9
Romania	64.7	65.4	54.6	61.7	73.6	72.5
Russian Fed.	45.5	45.5	57.3	71.1	68.6	61.0
Tajikistan	-	168.5	103.1	126.4	165.4	-
Turkmenistan	150.0	101.6	94.2	103.5	116.4	-
Ukraine	93.9	84.2	86.0	102.0	120.4	110.1
Uzbekistan	61.9	57.0	45.3	36.6	46.1	84.8

Source: SIMA database.

[1] As a comparison, a study using data for 1982 (Leamer, 1988) showed that only Singapore (1.62), French Guyana (1.25) and Brunei (1.07) have high intensities. In the study, Hungary was the only East European or non-market economy with an intensity of 0.06.

Trade intensity ratios may not measure precisely the degree of openness of an economy since other factors -- such as resources, prices, tastes and even natural barriers to trade – may also affect the level of exports and imports compared to GDP (Leamer, 1988). With this caveat in mind, trade intensity was associated an increased vulnerability of the country to shock in Russia as it is suggested in Figure 1. Countries with higher trade intensity ratios experienced a more rapid decrease in growth rates between 1997 and 1999. Growth rates decreased between 5 to 8 percentage points in Moldova and Belarus, countries with large openness indexes. Less open countries like Uzbekistan and Romania did not experience this decrease in growth rates. Notice that this evidence does not attempt to discuss the relationship between openness and growth, because we examine trade intensity (not exactly openess) and reduced growth rates in a context of concentrated trade and a financial crisis.[2]

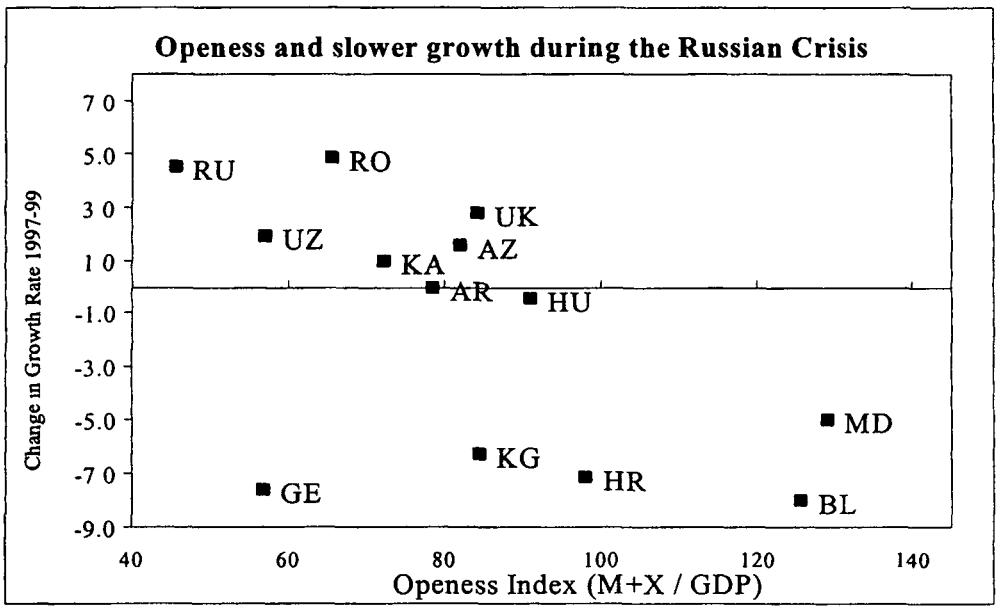
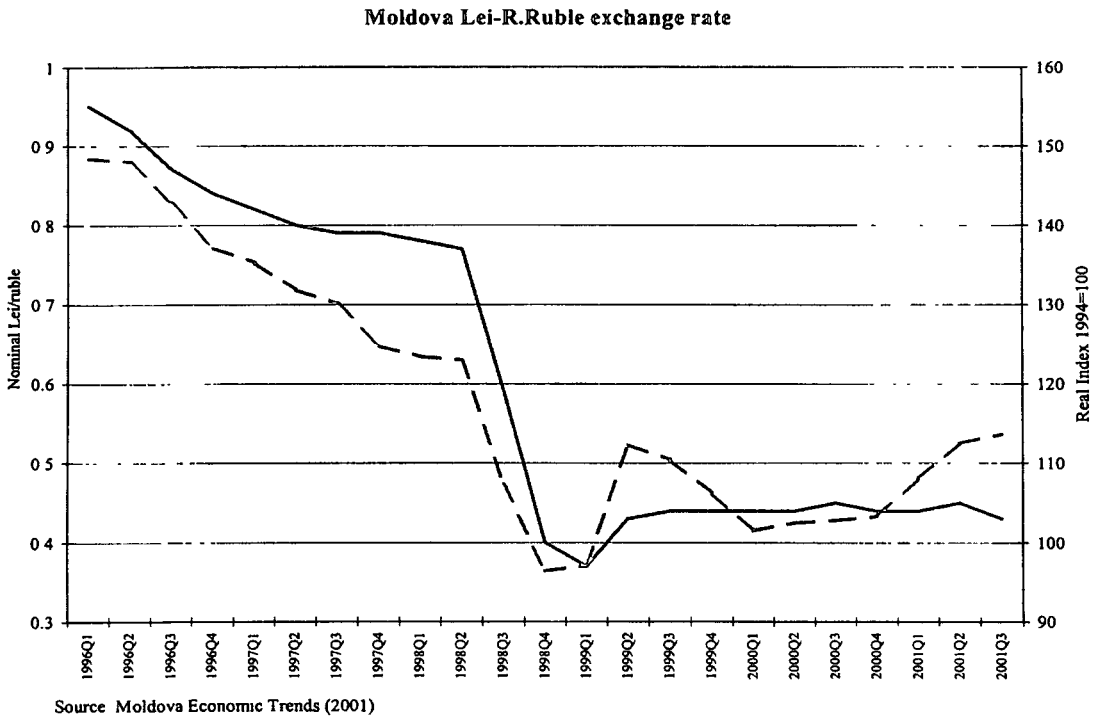


Figure 1

The financial crisis in Russia forced the devaluation of the Russian Ruble against the US Dollar. While the crisis was short lived and Russia soon experienced recovery, the permanent changes in relative prices (exchange rates) affected in a more persistent fashion the former FSU economies. For the FSU economies, the Ruble devaluation represented a persistent appreciation of local currencies against the Ruble.

[2] In fact, it would be interesting to examine the evidence from FSU countries to analyze the linkage between openness and growth during crises.



Source Moldova Economic Trends (2001)

Figure 2

Event though the nominal and real Lei/Ruble rates were slowly falling since 1996, during the third and fourth quarter of 1998 both fell more significantly. The nominal rate (continuous line) fell 0.78 Lei per Ruble in the preceding months to 0.40 during the fourth quarter of 1998 and even to 0.37 in the first quarter of 1999 (almost a 50 percent reduction). It would later reach an equilibrium level at 0.44 afterwards representing a 44 percent decrease. The real rate (dashed line) followed the same pattern, although less pronounced because of the lagged inflationary effect on non-food items and services. It decreased more than 21 percent when comparing the fourth quarter with the second quarter of 1998. In the short run Moldova experience also the negative income effect in Russia (recession) that outweighed the competitiveness gains.

A more important implication was the surge in the Lei/Dollar exchange rate. Even though the Lei lost value against the US dollar during most of the decade, this depreciation was very gradual: during 1997 it only increased 0.7 percent. Between August and November 1998, however, the Lei/USD exchange rate increased by 60 percent, and continued increasing during the fourth quarter (almost 80 percent compared to August 1998). The inflationary consequences of the Lei/Dollar increase were reflected in the subsequent months as seen in Figure 3.

In summary, even though the economy of Moldova was still suffering the effects of the recession during the late nineties, the Russian financial crisis negatively affected the economy through price increases due to the Lei/Dollar devaluation, temporary loss of Russian external markets due to recession, and other intermediate effects (such as decreased remittances from Russia).

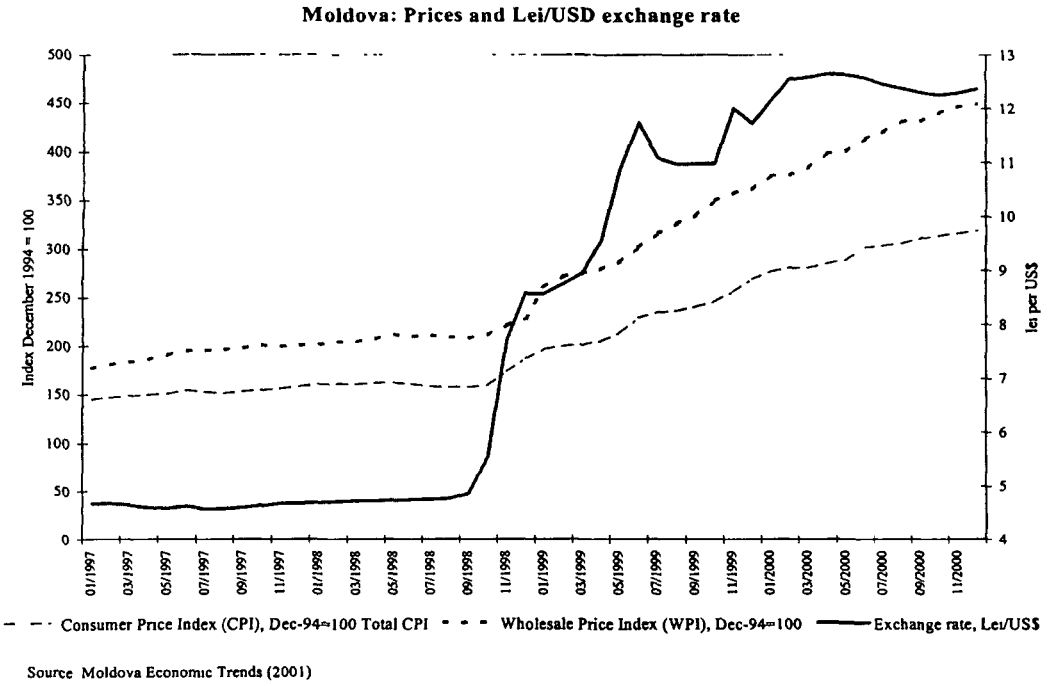


Figure 3

This paper exploits the observed effects of the Russian crisis on the Moldovan economy to identify the vulnerability in consumption, health and education among households. The next section discusses those dimensions of development and their methodological approach.

3. Measures of welfare and vulnerability

This paper uses the definition of vulnerability as "the propensity to suffer a significant fall in welfare." The operational representation involves two different dimensions. First, the measure of welfare requires narrowing the welfare dimensions to a few tractable ones. While most of the analyses have focused on monetary consumption (and/or income) vulnerability, this paper examines --in addition-- two other dimensions related to human capital investments: health and education.

The second issue is how to operationalize the "propensity to suffer significant losses in welfare." A strand of the emerging literature has defined as ex-ante poverty risk. According to this view, a vulnerable household is defined as that for which the probability of having consumption below the poverty line is greater than some probability threshold. This threshold could be any value, but typically that of one half or the estimated poverty incidence is used (Chaudhuri, 2000; Chaudhuri, Jalan and Suryahadi, 2001; Dercon, Pritchett, Suryahadi and Sumarto, 2000). In most of these studies predicted outcome distributions rely on the assumptions about the random errors. Shocks are subsumed in the errors and all the information on risk (predicted probabilities) comes

from their processes. If one only counts with cross-section data, under some heavy assumptions, intertemporal shocks (such as falling into poverty) are predicted from cross-sectional variability. The estimation of such propensity, then, imposes many assumptions on the underlying distribution of welfare and is affected by household and time specific unobserved shocks. Dercon (2001), for example, criticized the cross-sectional approach arguing that the consumption distribution observed in a period of time is contaminated by unobserved components that could be idiosyncratic to the household (individual) or the period when the survey was carried out.

The availability of panel data in developing countries has enabled researchers to examine the dynamic of observable dimensions of welfare, particularly consumption or income. Since households are observed over time, household specific components are controlled for. In addition, surveys implemented during crisis periods have allowed the identification of household behavioral responses to specific shocks (such as currency crises in Russia and Indonesia, or hurricanes in Central America). Distributional assumptions are less restrictive and the welfare distribution can be estimated from actual information about welfare and shocks experienced by households.[3] An example of this approach is the series of papers exploiting the Indonesian panel data that assess the effects of the devaluation of the Indonesian currency on household outcomes. This paper follows this latter approach to examine the consumption/income vulnerability and other dimensions.

4. Evidence from Moldova

The data in this paper is from the Moldova Household Budget Survey. This household survey has been conducted monthly by the Moldova Department of Statistics since 1997. The sampling frame is based on the pooling lists for the December 1996 presidential elections and is intended to be representative at the national level by quarter. It contains information similar to other household budget surveys (like the LSMS, e.g.), with some basic information at the person level, and much more detailed information at the household level.

This paper exploits both the cross section and the panel components of the survey. Out of a quarterly sample of about 1,600 households, a sub-sample is followed with different patterns.[4] For our analysis of consumption and expenditures in health, we form a panel using all households with two yearly observations, one before and one after the Russian Crisis (i.e., the third quarter of 1998). More specifically, we exclude the observations at 1998 Q3, and take as the pre-crisis data that for those households interviewed in 1997Q4, 1998Q1 and 1998Q2. Then the post-crisis data correspond to the second yearly

[3] Also, some recent studies are starting to place risk "structurally" in their model by conditioning on available risk information in their prediction model A more detailed review of this sort of approach is in Dercon (2001).

[4] There are three rotation schemes, one quarterly and two yearly. In the quarterly rotation, some panel households are surveyed twice in 2 consecutive quarters (i.e., they are interview for a second time after 3 months). In the yearly rotations, some others are surveyed once a year (during the same month) for 2 years, while some others are surveyed once a year (during the same month) for 4 years.

observation for these households during 1998Q4, 1999Q1 and 1999Q2, respectively. The data we analyze contains 1766 households in three different dimensions: consumption, education and health.[5]

4.1 Consumption changes during the crisis

In terms of consumption, there was an overall deterioration in living standard for the period after the Russian Crisis. We can see this from Figure 4. This figure presents kernel density estimations of (log) consumption per capita for the pre- and post-crisis period. A (log) poverty line is also shown.[6] The estimated distributions of (log) consumption show a shift to the left for the post-crisis period, increasing overall poverty. Indeed, poverty incidence increased by about 10% (from 52% to 62%). A decomposition of poverty indexes before and after the crisis by selected household characteristics is provided in the appendix.

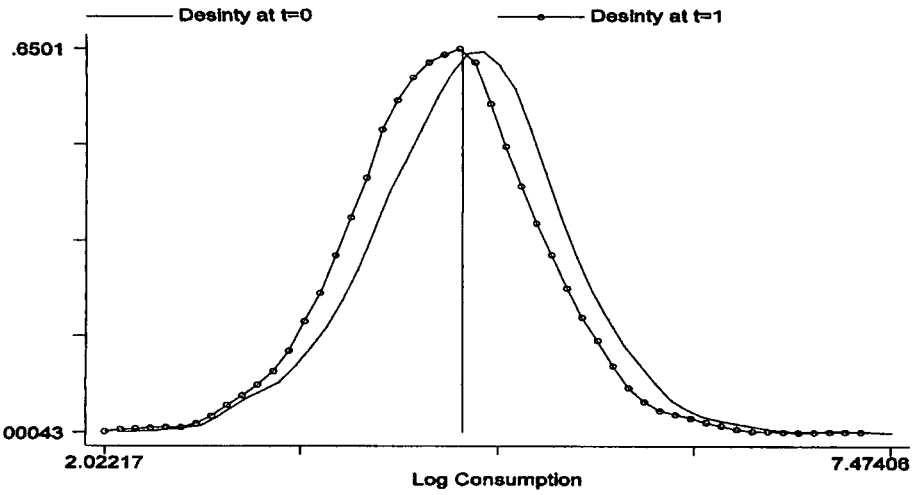


Figure 4

Beyond this aggregate distributional shift, the crisis presumably hit households at different income levels differently. If so, their relative ranking might have changed accordingly. The transition matrix in table 1 below is a first look at this effect. If the deterioration in living standard suggested in figure 1 were felt evenly across the whole population, then households in any given quintile group would remain in their same quintile group in the second period.

Table 4.1 reveals that, indeed, the majority of the households in a given consumption quintile had moved to a different quintile after the crisis. The more "volatile" quintiles are the intermediate quintiles, for which only 28% of the households remained in their

[5] Some possible outliers (households with the change in log consumption at 2 standard deviations away from the mean) were excluded.

[6] The line is the log of the poverty line as calculated by Signoret and Murrugarra (2001). Consumption is measured as per-capita consumption in real Moldovan Lei. Price indexes used to deflate nominal consumption are estimated in the same source

initial quintile, while the top and bottom quintiles are relatively more stable, in this respect.

Table 4.1. Transition Matrix (percentages)

	Post-crisis				
Pre-crisis	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	47	26	17	8	2
Quintile 2	27	28	21	18	7
Quintile 3	17	20	28	25	10
Quintile 4	5	17	22	28	28
Quintile 5	4	9	12	22	53

There are a significant number of households experiencing consumption drops at all level of initial consumption. Overall, about 63 percent of households in Moldova experienced a consumption drop. However, table 4.1 (last column) shows that the proportion of household experiencing consumption drops increases steadily as we move to higher quintiles of initial consumption. On average, the *proportional* change in consumption for the whole population is close to (and not statistically different than) zero. However, the proportional changes in consumption vary dramatically by initial consumption quintiles. Poor households in the lower quintiles experienced the highest proportional *increases* in consumption. Meanwhile, non-poor households in the upper quintiles experienced the highest *drops* in consumption.

The information in table 4.2 points to initial consumption level as a key vulnerability covariate. It also seems to suggest that the main burden of the crisis was burden mostly by households that were initially non-poor.

Table 4.2. Per capita expenditure and the proportion of households with consumption drops by quintile

		Pre-crisis	Post-crisis	Change	Prop. change	Hhs w/ drops
All sample.	Mean	117.970	98.301	-19.670	-0.008	0.627
	Std. err.	2.238	1.849	1.930	0.015	
	Median	96.081	80.027	-12.531	-0.151	
	Obs.	1766				
Quintile 1.	Mean	39.684	55.244	15.559	0.487	0.304
	Std. err.	0.597	1.533	1.509	0.046	
	Median	42.311	49.464	9.464	0.260	
	Obs.	354				
Quintile 2.	Mean	68.896	71.659	2.763	0.051	0.582
	Std. err.	0.397	1.955	1.982	0.030	
	Median	69.026	65.722	-4.810	-0.071	
	Obs.	353				
Quintile 3.	Mean	96.208	83.746	-12.462	-0.128	0.687
	Std. err.	0.458	2.257	2.239	0.023	
	Median	95.834	78.775	-18.376	-0.195	
	Obs.	353				
Quintile 4	Mean	132.797	112.583	-20.214	-0.144	0.722
	Std. err.	0.724	2.887	2.962	0.023	
	Median	131.612	103.284	-29.809	-0.210	
	Obs.	352				
Quintile 5	Mean	251.376	167.808	-83.569	-0.304	0.839
	Std. err.	6.890	6.615	7.514	0.024	
	Median	213.353	142.771	-87.145	-0.409	
	Obs.	354				

Tables 4.3 to 4.5 look at the consumption level before and after the crisis and the change and the proportional change in consumption, by certain household characteristics. From table 4.3, one can see that large cities (Chisinau, Beltsy) had the highest level of consumption in Moldova both before and after the crisis. The post-crisis measure on average is even higher than the pre-crisis measure outside large cities. By the same token, they also experienced the highest drop in consumption level, on average. However, proportional to their initial consumption level, it is the non-rural small towns the ones more severely hit. It is interesting to note the large difference between the mean and the median in this table (as well as in the following ones), suggesting a very asymmetric impact on consumption even after stratifying by country region (or other characteristics).

In table 4.4, we look at the same variables by household size. This table shows that the smaller the household the larger the consumption drop and the proportional consumption drop. The table also shows that smaller households have higher per-capita consumption than larger households.

The information in table 4.5, where we control for household head's education level, is less clear. In general, it seems to be the case that households with more educated heads have higher levels of consumption. But there is a non-monotonic relationship between

education and the consumption change or the proportional change. Households with a head with secondary education did better than household with a head with primary education. But household with a head with higher education had higher drops than household with a head with secondary education.

Table 4.3. Per-capita expenditure by country regions

		Pre-crisis	Post-crisis	Change	Prop. change
Large cities.	Mean	165.468	136.693	-28.775	-0.046
	Std. err.	7.683	6.215	6.840	0.029
	Median	122.634	107.806	-17.205	-0.141
	Obs.	368			
Other towns:	Mean	106.966	83.532	-23.434	-0.053
	Std. err.	4.026	3.373	4.100	0.038
	Median	89.277	67.654	-18.521	-0.214
	Obs.	317			
Rural:	Mean	105.165	89.500	-15.665	0.016
	Std. err.	2.073	1.764	1.762	0.020
	Median	89.531	77.240	-11.153	-0.145
	Obs.	1081			

Table 4.4. Per-capita expenditure by household size

		Pre-crisis	Post-crisis	Change	Prop. change
Hh size 1:	Mean	150.156	118.562	-31.594	-0.072
	Std. err.	6.441	4.518	4.894	0.030
	Median	120.757	96.684	-21.747	-0.196
	Obs.	325			
Hh size 2:	Mean	131.010	107.562	-23.448	-0.029
	Std. err.	5.325	3.801	4.468	0.029
	Median	107.878	90.557	-17.773	-0.170
	Obs.	446			
Hh size 3:	Mean	118.985	95.613	-23.371	-0.030
	Std. err.	4.268	3.388	3.927	0.035
	Median	99.739	77.530	-12.474	-0.152
	Obs.	328			
Hh size 4:	Mean	100.109	91.324	-8.785	0.041
	Std. err.	3.560	4.693	4.113	0.034
	Median	83.692	73.340	-8.839	-0.125
	Obs.	390			
Hh size 5+:	Mean	79.701	69.931	-9.769	0.061
	Std. err.	2.780	2.668	2.900	0.043
	Median	69.778	63.657	-7.962	-0.109
	Obs.	277			

Table 4.5. Per-capita expenditure by household head's education

		Pre-crisis	Post-crisis	Change	Prop. change
Illiterate:					
	Mean	109.903	93.196	-16.707	-0.063
	Std. err.	8.815	6.530	8.147	0.068
	Median	95.691	93.968	-19.966	-0.194
	Obs.	47			
Primary education:					
	Mean	106.613	87.963	-18.650	-0.026
	Std. err.	3.784	3.288	3.217	0.036
	Median	95.307	76.984	-16.382	-0.191
	Obs.	331			
Secondary education.					
	Mean	110.027	93.051	-16.975	0.006
	Std. err.	2.365	1.922	1.993	0.018
	Median	91.041	75.949	-10.988	-0.135
	Obs.	1173			
Higher education:					
	Mean	182.320	145.275	-37.045	-0.049
	Std. err.	10.751	9.152	10.321	0.045
	Median	137.529	112.430	-21.084	-0.173
	Obs.	215			

The results in these tables have to be interpreted with caution. For instance, we saw in table 4 that small households suffer the most in terms of proportional change. It might be the case, however, that small households are more frequently observed in small towns where the proportional change in consumption is larger. Or that, as the same table 4 points out, smaller households have higher consumption levels, and households with higher consumption levels suffered larger drops (table 2).

In figure 5.1, we show non-parametrically the relationship between the change in log consumption (approximate in the limit to the proportional change in consumption) and initial log consumption. A vertical line at the poverty line is superimposed. Consistent with the story in table 4.2, the curve it is not flat, but negatively sloped.

In figure 5.2 to 5.4, we show this relationship after stratifying for certain characteristics. Figure 5.2 shows that, after controlling for initial log consumption, households in other towns suffer the highest drops in log consumption, compared to other country regions. From figure 5.3, it seems that household head's gender does not make a big difference in the change of log consumption after controlling for initial log consumption. However, as previously warned, figure 5.4 suggests that, after controlling for initial log consumption, it is large households (with 4 or more members) those that suffer the larger drops in log consumption.

Figure 5. Kernel smoother: Change in (log) consumption on initial (log) consumption.

Figure 5.1

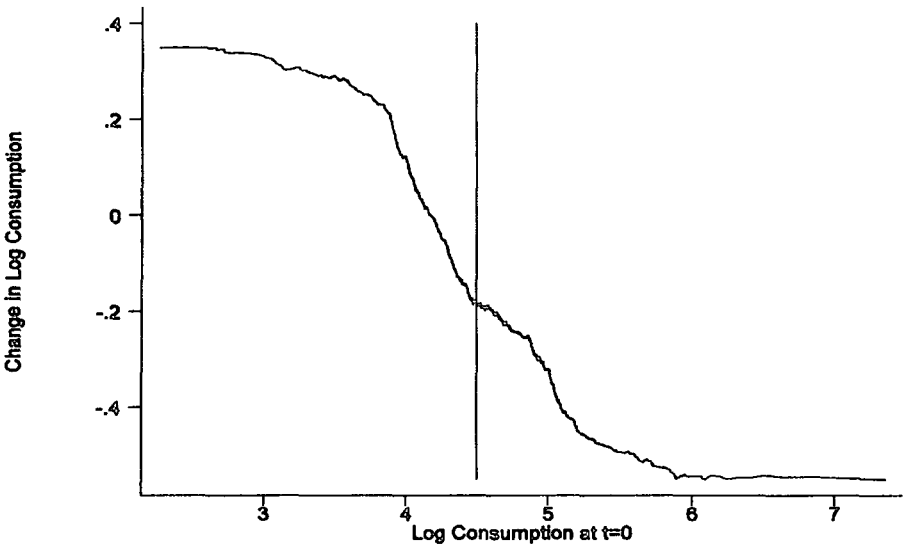


Figure 5.2

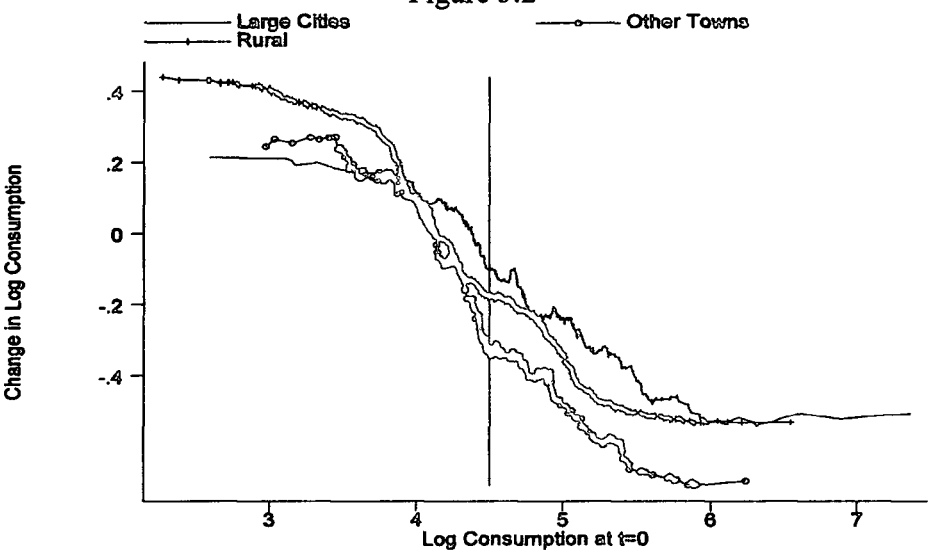


Figure 5.3

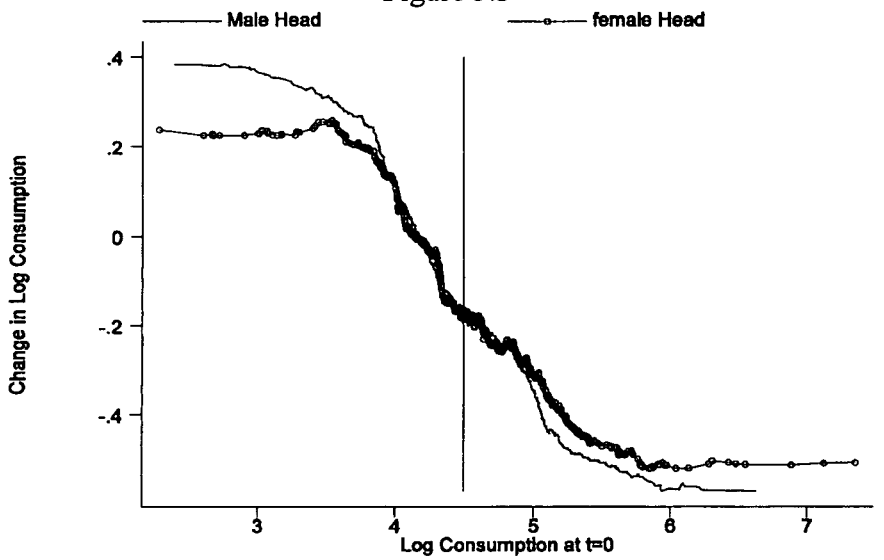


Figure 5.4

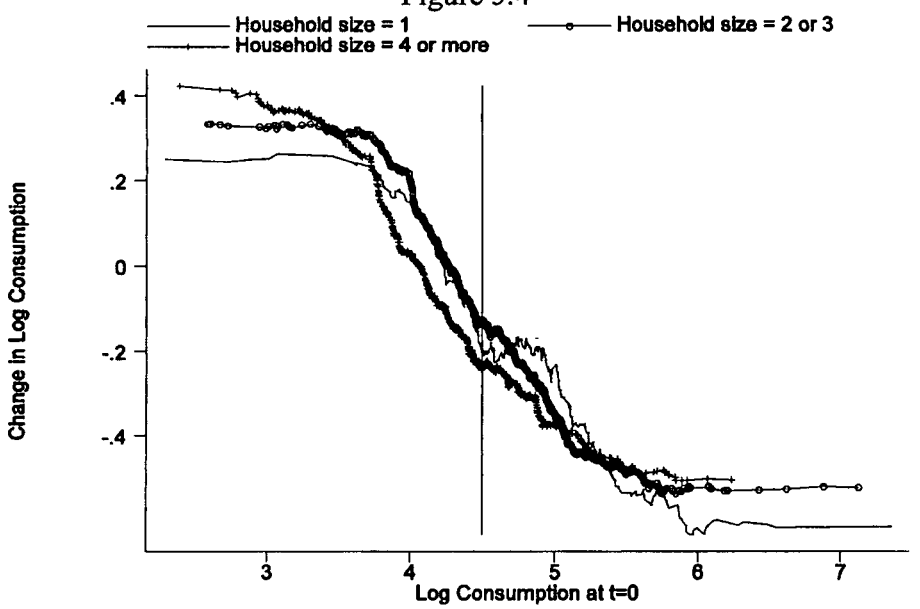


Figure 5 thus gives us evidence of different distributional impacts, especially in terms of initial consumption, country region and household size. It also points to the importance of multivariate analysis to disentangle confounding factors. In the next section we make use of multivariate analysis to look more carefully at the determinant of consumption changes after conditioning for certain important characteristics.

Multivariate Analysis. Here we follow a more flexible and robust approach of looking at vulnerability. We use quantile regression analysis, which requires very weak distributional assumptions, to look at exposure to consumption shocks. These

semiparametric estimations are quite robust to misspecification of the errors as they permit for non-normal, heteroskedastic and asymmetric errors. Quantile regressions are also robust to outliers in the dependent variable and less sensitive to outliers in the regressors than mean regression procedures.

Moreover, by providing a family of conditional quantile functions, quantile regression offers a much more complete view on the effect of covariates at different points in the consumption change distribution. This complements least squares analysis by allowing us to see if the estimates of the various effects at the conditional mean are indicative of the size and nature of these effects, say, in the lower tail. For example, do rural households have larger consumption drops compared to urban households on average? And does this urban-rural differential attenuate or increase in the lower tail, where consumption drops are significant? That is, it allows us to estimate the marginal effect of a covariate on y_i at various points in the distribution, not just at the mean

The specific model that we consider regresses the difference in the log of per capita consumption, before and after the Russian crisis, on a set of household characteristics including: initial consumption level, region dummy, household composition, household head's characteristics and household access to formal and informal safety nets. A complete list of all variables used in the analysis and their means are in Table 6.

Results

We estimate the model by OLS and by quantile regressions at five quantiles: 0.10, 0.25, 0.50, 0.75 and 0.90. The mean predicted proportional change in consumption of the models corresponding to the first three quantiles correspond to a negative change in log consumption (-0.768, -0.427, -0.131); the last two quantiles to a positive change (0.179, 0.462). The mean predicted proportional change in consumption corresponding to the OLS model is close to the median regression (-0.134).

The estimated parameters are in table 7. The results suggest that the response of the change in log consumption to changes in certain household characteristics differs substantially at the different quantiles.[7] In the discussion below, we concentrate mostly in the model for the lower quantiles and the conditional mean, given our interest in understanding vulnerability to consumption losses rather than consumption gains. Consistent with the descriptive statistics, households in other towns, and to a lesser extend those in the rural area, are more vulnerable to consumption drops than household in large cities.

[7] The hypothesis test that the estimated parameter vectors from the quantile regressions are equal is easily rejected. This suggests that we do not have a location model.

Table 4.6. Means of regression analysis variables

Variable	Pre-crisis		Post-crisis	
	Mean	Std. Err.	Mean	Std. Err.
Large cities	0.208381	0.009668	0.208381	0.009668
Other towns	0.179502	0.009135	0.179502	0.009135
Rural	0.612118	0.011598	0.612118	0.011598
Age	49.69309	0.370771	50.07701	0.367876
Head female	0.339185	0.011269	0.339751	0.011274
Single	0.0453	0.00495	0.042469	0.0048
Married	0.671574	0.011179	0.674972	0.011149
Separate	0.01812	0.003175	0.020385	0.003364
Widowed	0.199321	0.009509	0.193092	0.009396
Divorced	0.065685	0.005897	0.069083	0.006036
Illiterate	0.026614	0.003831	0.019819	0.003318
Primary education	0.187429	0.009289	0.17667	0.009078
Secondary education	0.664213	0.011241	0.681201	0.011092
Higher education	0.121744	0.007783	0.12231	0.007799
Farmers	0.060023	0.005654	0.074179	0.006238
Hired in agriculture	0.215742	0.009791	0.220272	0.009865
Hired in non-agriculture	0.330691	0.011198	0.326727	0.011164
Self employed	0.017554	0.003126	0.019253	0.003271
Pensioners	0.352775	0.011374	0.34145	0.011287
Other	0.023216	0.003585	0.01812	0.003175
Household size	2.999434	0.036502	2.964326	0.036289
Number under 6	0.219139	0.012151	0.197056	0.011433
Number aged 6-14	0.524915	0.01951	0.517554	0.019199
Number aged 15-17	0.14496	0.009007	0.152888	0.009422
Number aged 18-25	0.304643	0.014684	0.278029	0.013903
Number aged 26-64	1.475085	0.020315	1.469422	0.020562
Number over 64	0.330691	0.014249	0.349377	0.014589
Number earners	1.214043	0.023182	1.265006	0.024637
Plot size	0.039778	0.001331	0.047014	0.001983
Fraction agriculture	0.880871	0.003537	0.890881	0.003197
House area	63.53398	0.658636	63.21155	0.653748
Fraction living area	0.705316	0.002964	0.702402	0.002726
Housing ownership	0 857871	0.008312	0.875991	0.007845
Year quarter 1	0.403737	0.011679	0.403737	0.011679
Year quarter 2	0.199887	0.009519	0.199887	0.009519
Year quarter 4	0.396376	0.011643	0.396376	0.011643
Pre-crisis consumption (log)	4.550428	0.015634		.
Post-crisis consumption (log)	.	.	4.403619	0.015229
Agricultural society, dummy	0.342582	0.011296	0.313703	0.011044
Social benefits, dummy	0.289921	0.0108	0.215742	0.009791
Private transfers, dummy	0.463194	0.011869	0 372027	0.011505
Households	1766		1766	

Household head's characteristics like age and gender are not significant in explaining consumption vulnerability. Marital status and education do, however. Household with single households are more vulnerable than household with married heads. Regarding education, household with heads with higher education experienced less consumption drop than households where the head had no higher education.

In terms of socioeconomic group, it seems that there is not much difference whether the household head belongs to a particular socioeconomic group. The exception is within those households that experienced the most dramatic drops ($\theta = 0.10$), where those hired in agriculture did somewhat better relative to those hired in the non-agricultural sector.

Longer households seem to be more vulnerable to consumption drops (OLS). Also, household with a large number of non-infant kids (aged 6 to 14) were more vulnerable to the most dramatic drops in consumption ($\theta = 0.10$). And large number of children aged 15 to 17 is associated with significant drops in consumption ($\theta = 0.25$). Altogether, this suggests that, for any given household size, that is, after controlling for household size, a large fraction of kids is associated with a higher vulnerability to consumption losses.

Meanwhile, variables intending to capture for holdings, like housing area, the fraction of the housing used for living and housing ownership are associated with a lower proportional drop in consumption.

Initial consumption, as suggested in the descriptive statistics, is critically associated with the proportional drop in consumption experienced in Moldova. Higher initial consumption is associated with a deeper consumption loss.

Interestingly, variables intending to capture the effect of formal and informal assistance mechanisms do not play a significant role in any of the models. Being part of an agricultural society do not seems to play a role in helping against consumption drops. Neither do the receipt of social benefits, like unemployment benefits, pensions and social security. Private transfers enter significantly only in the 0.25 quantile and median regressions, although with a small coefficient and an unexpected negative sign.

In sum, household more vulnerable to consumption losses could be characterized as non-poor households from outside large cities, especially from small towns; with a large number of members, and more to the point, with a large number of kids; and with household heads who are single, have no higher education and are employed in non-agricultural activities.

Table 4.7. Estimated OLS and Quantile Regression Coefficients. Dependent variable: change in log PCE.

	OLS		$\theta = 0.10$		$\theta = 0.25$		$\theta = 0.50$		$\theta = 0.75$		$\theta = 0.90$	
Other towns	-0 2509	**	-0 3768	**	-0.3461	**	-0 1888	**	-0 2566	**	-0.2197	
Rural	-0.1783	**	-0.2558	*	-0.2363	**	-0.1631	**	-0.1780	*	-0 1370	
Age	0 0109		0.0203		0.0208		0.0086		0.0055		0 0064	
Age sq	-0 0001		-0.0002		-0.0002	*	-0.0001		0 0000		0 0000	
Head female	0 0221		0.1323		0.0935		-0.0067		0.0018		-0 0599	
Single	-0 2184	**	-0 3736	**	-0.3309	**	-0.2376	**	-0 1055		-0 0323	
Separate	-0 1686		-0 7410	**	-0.3306		-0.1299		0.0341		-0 0239	
Widowed	-0 0387		-0 0696		-0 0067		0 0501		0.0232		-0 0025	
Divorced	-0.0743		-0.1006		-0 0518		-0.0487		-0.0486		0 0562	
Illiterate	0 0222		0.1218		0.0496		0.0728		0.0226		-0 0565	
Primary education	-0 0179		-0.0603		-0 0347		-0 0088		-0.0653		0 0159	
Higher education	0 1820	**	0 2504		0.1681	**	0.2073	**	0 1307	*	0 1314	
Farmers	-0 0716		0 0087		-0.0696		-0.0560		0.0044		-0 0840	
Hired in agriculture	0 0352		0.1704	*	0.0269		-0.0150		0.0384		0 0406	
Self employed	0.0434		0 0098		0.1072		0 0256		0.0834		-0 1049	
Pensioners	-0.0740		-0.0283		-0.0924		-0.0782		-0 0508		-0 0677	
Other	0 0512		0.2425	*	-0.0263		0.0763		0 0791		-0.1844	
Household size (log)	-0 1320	**	-0.1125		-0.0992		-0.1320		-0 1621	**	-0 0238	
Number under 6	-0 0413		-0.0323		-0.0616		-0.0335		-0 0567		-0.0235	
Number aged 6-14	-0 0572	**	-0.1344	**	-0 0599		-0.0292		-0.0045		-0 0783	**
Number aged 15-17	-0.0184		-0 0590		-0.1105	**	-0.0218		0.0349		0.0308	
Number aged 18-25	0 0227		0 0071		-0.0199		-0.0012		0.0640	*	-0 0331	
Number over 64	-0 0288		0.0472		0.0148		-0 0146		-0 0170		-0 1168	*
Number earners	-0 0271		-0 0352		-0.0274		-0 0199		-0 0149		-0 0078	
Plot size	1.0362	**	0.9010		0.6552		1 1043	**	0 4900		1.0263	
Fraction agriculture	-0.0404		0.1696		0.0872		0 0365		-0.0516		-0.3690	
House area	0.0009	*	0 0011		0.0008		0 0010	*	0 0013	*	0 0011	
Fraction living area	0 2993	**	0 4856	**	0.2614		0 2573		0 1996		0.4116	**
Housing ownership	0 1195	*	0.2550		0 2111	*	0 0676		0.0027		0 1386	
Year quarter 1	-0 1498	**	-0.0990		-0.1262	**	-0.1150	**	-0 1778	**	-0.2344	**
Year quarter 2	-0 1342	**	-0.0372		-0.0342		-0.1008	**	-0 2037	**	-0.2164	**
Consumption (log)	-0 5276	**	-0 5412	**	-0.5018	**	-0 5261	**	-0.5276	**	-0 5339	**
Agricultural society	-0 0390		-0.0472		-0 0224		0 0215		-0 0447		-0 1194	*
Social benefits	0 0210		-0 0428		-0 0280		0.0237		0.0522		0.0864	
Private transfers	-0 0447		-0.0688		-0.0844	**	-0.0569	*	-0.0586		0 0096	
Constant	2 1441	**	0.9525	**	1.4491	**	2 1291	**	2.7037	**	2 8968	**

Left-out variables are dummies for large cities, married, secondary education, hired in non-agriculture, number aged 26-64, year quarter 4. (*) Significant at the 10% level. (**) Significant at the 5% level. Std. Err. (not shown) from 50 bootstrap repetitions.

4.2. Education dimensions of welfare and vulnerability

The deep economic and fiscal crisis in Moldova also reduced education expenditures since 1996, but particularly between 1998 and 1999. Real public education expenditures were slowly increasing between 1994 and 1997 at about 5 percent per year, but in 1998 and 1999, real expenditures in education decreased by more than 30 percent each year (Tibi, Berryman and Peleah, 2002). This represented an increase in arrears that reached a peak of 70 percent of total expenditures by the end of 1999. The impact of decreased expenditures and especially arrears in education must have been reflected in quality of education since those were concentrated in salaries, heating and electricity. Did the overall deterioration in the economy and the decline of education expenditures translate into a loss of education welfare?

Since the widespread public coverage of basic education in Moldova that includes the provision of basic education materials does not require households to make significant contributions, the level of expenditures in education observed in the survey is very limited. The incidence of expenditures is negligible regardless of the quarter of the year[8] and the paper examines the enrolment patterns between the academic years of 1997/98 and 1999/2000.

This section, then, examines the school enrolment dimension. Since the analysis distinguishes enrolment by age groups (or their corresponding levels of education), Table 4.8 provides an overview of the education process in Moldova. In this paper the relevant education levels (grades) examined are Primary (1-4), Lower Secondary (5-9), and after graduation from Lower Secondary children can attend either Upper Secondary (10-12) or Vocational-Technical schools (that varies in duration). Higher education is not examined in this paper given the low incidence of higher education in the survey

Children enrolment in school. One dimension of welfare corresponds to the household decisions of whether children are sent to school or not. Households' decisions may very depending on the age and gender of the child, household composition and these decisions may be affected by economic downturns. The HBS contains very limited information on education choices of the household. The Family Roster, however, indicates the level of education and the attending institution *if* attending. Using this information an enrolment measure was estimated.[9] The survey, however, does not distinguish between Upper and Vocational Secondary current enrolments, only distinguishes those for those individuals that have finished their education.

[8] The school year starts in early September. Holiday months are July and August.

[9] Additional information on school characteristics is only available for a few quarters throughout the survey. This information was not included in the analysis.

Table 4.8: Education levels in Moldova				
Education Level		**Eligibility (ages)**	**Duration (Grades)**	**Delivery facilities**
Preschool		1-6		- Preschool institutions
Primary		7-10	1-4	-
Secondary				
Lower		11-15	5-9	- Gymnasiums - General secondary schools (GSS) - Lyceums
Upper		16-17	10-11 (old system)	- GSS
		16-18	10-12 (new system)	- Lyceums
Vocational	Professional	After Gymnasium		
	Polyvalent	After Gymnasium	Between 3 and 6 years	
Colleges		Gymnasium: 11g Lyceums: 12g.	Duration varies, depending on grade admitted.	Graduates from GSS (grade 11) and Lyceums (grade 12)

Source: Tibi et al. (2002). Note: The Government of Moldova plans to upgrade the GSS to Lyceums. Lyceums are located in Municipalities and towns. Access to Lyceums in rural areas is very limited. Lyceum graduates get the Baccalaureate degree, required to enter University.

The effects of economic crisis on children have shown differential effects depending on the age of children, gender and place of residence. An important analytical issue is whether to use panel or cross section data to examine enrolment since the panel sample would lead to confound the effect of the crisis with those of aging. The evidence from developing countries suggest that while the effects on younger children is negative because of delayed enrolment, among teenage children the effects are mixed: some point to increased enrolment due to low opportunity costs in the labor market, while other suggest a decreased enrolment to replace adult labor that goes to the market.

Enrolment rates in Indonesia, a country whose enrolment rates were close to universal levels in the mid nineties, experienced some decline before and after the financial crisis in late 1997. Enrolment slightly decreased by 2 points among children 7-12 and it was more pronounced among girls, mainly associated with delayed entrance to school since drop out rates were relatively similar (Beegle et al., 1999). Enrolment for this age group also decreased more among children in the poorest quartile (between 5 and 6 points) and in rural areas (almost 4 points). For children aged 13-19 the evidence is less clear. Some survey data shows that enrolment decreased more especially among males from the poorest quartile and in urban areas, reflecting the need to participate in productive activities (Beegle et al., 1999), while another survey indicates that children of 14 or more were more likely to be enrolled probably because of diminished earnings opportunities (Frankemberg et el, 2001). Multivariate analysis indicates that enrolment declines were

deeper for the poorest children and that in Indonesia, after achieving almost universal coverage, an income measure (per capita expenditures) became important again after the crisis.

The finding of relative improvements of enrolment among older children is corroborated by evidence from other countries. Schady (2002) uses cross sectional data from Peru to show that during crisis children do not decrease their enrolment because of lower opportunity costs (poor job market retributions). The Peruvian evidence shows, on the other hand, that the fraction of children studying and working decreased during crisis. Neri and Thomas (2001) show that household head movements from formal-to-informal labor have more deleterious effects than movements into unemployment in Brazil. Such movements raise the probability of a child entering the labor market, but only during growth periods. For children staying at school, such movements also increase the probability of repeating the school year, but only during recessions.

What happened in Moldova?

Since enrolment and most expenditure decisions are made at the beginning of the school year, this paper separates the sample in periods before and after the crisis. Periods before the crisis are quarters in the academic year 1997/98. The quarters corresponding to the year 1998/99 are difficult to characterize since the effects may have been observed once the school year had started. The year 1999/2000 is clearly a post-crisis years, despite the continued increased in poverty incidence.

As other FSU countries, Moldova evidences an almost universal enrolment rate in its basic education level (grades 1 through 9). In the academic year 1999/2000 more than 95 percent of the children between 7 and 15 attended school (see Table 4.9). Enrolment is lower (about 55 percent) for children between 16 and 18, corresponding to Upper Secondary or Technical School. During the periods of analysis, net enrolment rates remained high or even increased for Basic Education. Preschool enrolment for children aged 6 years, however, declined partly due to the lower funding to this education level. Even enrolment for those directly facing labor market opportunities (aged between 19 and 20 years) increased during the worsening of economic conditions. The overall picture suggests that households were able to protect educational investments of their children (or that at the same time job opportunities were limited).

Table 4.9:Moldova: Enrolment rates 1997-2000
(percent of children attending school)

School level (ages)	97/98	98/99	99/00
Preschool (6)	11.5	8.5	7.5
Primary (7-10)	91.6	93.7	94.9
Lower Sec. (11-15)	96.5	96.0	96.9
Upper Sec. (16-18)	54.1	55.9	54.8
College (19-20)	18.7	25.1	22.2

Source: Moldova Household Budget Survey (1997-2000).

A rather different picture is observed when the analysis is detailed across urban and rural areas, particularly between large cities and other towns (Table 4.10). Net enrolment rates improved during the school year 1998-99 for all education levels, except in rural areas for those aged between 11 and 18. Compared to increasing rates for urban areas, enrolment in rural areas slightly dropped, particularly for the 16-18 individuals (almost 3 points), although they recovered in the following year. Urban children are affected only in the 1999/2000 academic year, when enrolments for individuals aged 16-18 dropped almost 3 points, mainly in large cities.

Table 4.10: Moldova: Enrolment rates 1997-2000
(percent of children of specific age groups attending school)

Large cities	97/98	98/99	99/00
Preschool (6)	6.1	8.2	8.6
Primary (7-10)	93.2	94.2	95.4
Lower Sec. (11-15)	97.1	98.2	99.0
Upper Sec. (16-18)	73.4	80.2	76.8
Other towns			
Preschool (6)	17.1	5.4	14.3
Primary (7-10)	85.5	89.4	92.8
Lower Sec. (11-15)	96.4	97.6	97.4
Upper Sec. (16-18)	62.1	68.8	67.5
Rural areas			
Preschool (6)	11.7	9.1	5.6
Primary (7-10)	92.6	94.7	95.4
Lower Sec. (11-15)	96.3	94.9	96.2
Upper Sec. (16-18)	44.9	42.0	44.6

Source: Moldova Household Budget Survey (1997-2000).

Is there a gender dimension the changes in enrolment rates around the Russian crisis? Table 4.11 shows that, first, females have higher enrolment rates across different age groups in 19997/98. The differences are particularly higher for Preschool and Upper Secondary. These differences, however, were reduced during the crisis period mainly because of the overall increase in enrolments among males and lack of improvement among females aged 11 to 18. Enrolment among girls was not significantly changed during the period but it was not increasing at the boys' pace either.

Are these patterns the same for different socioeconomic groups? An examination of enrolment by consumption quintiles in Table 4.12 provides information about the groups that were affected by the worsening conditions after the Russian crisis. First, among children aged 7 to 10 years the overall increase in enrolment rates was not observed among the better off households while children from poorer households increased their chances by 2-4 percentage points (children from the top quintile actually decreased their

net enrolment between 97 and 98). As a consequence, the income gradient observed in 1997/98 is lost in 1999/2000.

Table 4.11: Moldova: Gender and enrolment rates 1997-2000
(percent of children attending school)

	97/98	98/99	99/00
Males			
Preschool (6)	9.4%	8.3%	5.0%
Primary (7-10)	90.5%	92.5%	94.4%
Lower Sec. (11-15)	95.6%	94.9%	96.8%
Upper Sec. (16-18)	51.6%	54.9%	53.7%
Females			
Preschool (6)	13.4%	8.8%	9.7%
Primary (7-10)	92.7%	94.8%	95.5%
Lower Sec. (11-15)	97.4%	97.2%	97.0%
Upper Sec. (16-18)	56.6%	56.9%	56.0%

Source: Moldovan Household Budget Survey (1997-2000).

Table 4.12: Moldova: Enrolment rates by Quintile 1997-2000
(percent of children attending school)

Age group / Quintiles	97/98	98/99	99/00
Age 7-10	91.6	93.7	94.9
Poorest	89.7	94.0	94.5
2	91.3	94.1	95.1
3	91.7	94.9	96.3
4	93.1	93.0	94.0
Wealthiest	93.3	91.3	94.5
Age 11-15	96.5	96.0	96.9
Poorest	94.9	92.2	93.3
2	97.1	96.3	96.4
3	95.8	97.5	98.0
4	98.4	96.4	99.0
Wealthiest	96.3	98.3	99.2
Age 16-18	54.1	55.9	54.8
Poorest	39.4	39.2	46.7
2	51.7	55.3	57.3
3	55.3	54.5	52.3
4	61.5	67.4	54.8
Wealthiest	64.5	71.7	65.4

A different story is observed among those aged 11-15: poorest children observed a reduction in their rates during the 1998/99 (crisis) year, but only to recover in 1999/2000. The rather flat income gradient in enrolment in 1997/98 is steeper in 1999/2000, when enrolment among the richest is more than 99 percent compared to 93 among children in the poorest quintile.

Behind the almost constant enrolment rates for children with ages corresponding to Upper Secondary (16-18) there are very different socioeconomic patterns. While children from the poorest 60 percent evidenced an almost constant rate between 97/98 and 98/99, better off children evidenced a significant increase in their enrolment. In 1999/2000, however, the picture will change. The poorest children slightly increased their rates but the rates for the better off were significantly reduced, somewhat flattening the income gradient.

The evidence poses some issues to be addressed in the multivariate analysis, table 4.13 to 4.15 shows the Probit results for the pooled sample and separate age groups. Since the better off quintiles were affected more by the crisis, it is consistent that enrolment did not increase for those aged 7 to 15. Why enrolment, then, increased significantly for those between 16 and 18, only to drop significantly in 1999/2000?

Enrolment estimates for children 7 to 10 indicates that enrolment differentials across quintiles observed in 1997/98 were in fact associated with the consumption measure. Corroborating the evidence of decreased rates in rural areas, children from households headed by farmers have lower rates. In the next academic year (99/00) while plot size had a positive (wealth) effect on enrolment, the share dedicated to agriculture had a negative effect, still reflecting the worsening economic conditions in of rural areas. Regional differences became clearer (not shown). The regions of Beltsy and Cainari have had higher enrolment rates (compared to Chisinau region), but during the crisis these differences were more precisely observed.

The steeper income gradient in enrolment among children aged 11 to 15 (corresponding to Lower Secondary) is corroborated by the increased importance of income and wealth (particularly housing). In this age group, household demographics play an important role, particularly after the crisis. Children (aged 11-15) in households with larger numbers of children below 6 are less likely to participate. Households could be protecting resources for children under 6 by not sending their elderly siblings to school (that is corroborated by the results for those aged 16 to 18), or that those 11-15 children were required to take care of their younger siblings to enable additional adult labor force into the market. The latter story has corroborative evidence if we assume girls were more likely to play such role, since female difference are observed in this age group. Despite the decrease in welfare among rural households, participation in Agricultural Societies helped the children in this age group to have higher enrolment rates in 98/99. Regional differences are also observed and the Beltsy and Cainari regions evidence higher enrolment, especially during the crisis year.

Table 4.13

Determinants of Enrolment for children aged between 7 and 10 years. (Estimates shown for the pooled sample and separate academic years)

	Pooled sample			97-98			98-99			99-00		
	dF/dx	s.e.		dF/dx	s.e.		dF/dx	s.e.		dF/dx	s e.	
Age	0.0370	(0.0034)	**	0.0409	(0.0073)	**	0.0257	(0.0044)	**	0.0034	(0.0034)	**
Age squared	0.0000	(0.0000)		0.0000	(0.0000)		0 0000	(0.0000)		0.0000	(0.0000)	
Female	0.0010	(0.0045)		0.0081	(0.0075)		0 0060	(0.0073)		0.0003	(0.0007)	
Female head	0.0104	(0.0068)		0.0073	(0.0108)		0.0160	(0.0086)		0.0009	(0.0011)	
Single head	-0.1624	(0.1122)	*	-0.0941	(0.1090)							
Separated	-0.0208	(0.0215)		-0 0374	(0.0445)		-0 0210	(0.0395)		-0.0035	(0.0064)	
Widowed	-0.0208	(0.0163)		-0.0124	(0.0201)		-0.0523	(0 0410)		0.0001	(0.0019)	
Divorced	-0.0658	(0.0390)	**	-0.1885	(0.1171)	**	-0.0419	(0.0485)		0.0004	(0.0010)	
Illiterate	-0.0530	(0.0584)								-0.1126	(0.1915)	
Primary	-0.0169	(0.0169)		-0.0195	(0.0267)		-0.0407	(0.0432)		-0.0009	(0.0053)	
Higher +	-0.0018	(0.0086)		0.0132	(0.0102)		-0 0182	(0.0208)	**	-0.0003	(0.0013)	
Farmers	-0.0004	(0.0074)		-0.0063	(0 0144)		-0.0404	(0.0217)		0.0008	(0.0010)	
Hired Agriculture	0.0002	(0.0080)		-0.0058	(0.0141)		-0.0134	(0.0124)		-0.0005	(0.0016)	
Self-employed	0.0017	(0.0145)		-0.0368	(0.0571)					0.0005	(0.0008)	
Pensioners	0.0116	(0.0095)		-0.0240	(0.0304)		0.0173	(0 0089)		0.0011	(0 0014)	*
Others	0.0078	(0.0150)		-0.0110	(0.0348)							
Agricultural Society	0.0116	(0.0067)		0.0134	(0.0141)		0 0178	(0.0130)		0.0013	(0.0015)	*
Social benefits?	-0.0146	(0.0089)		-0.0114	(0.0152)		0.0006	(0.0140)		-0.0047	(0.0065)	
Private Transfers?	0.0004	(0.0047)		0.0050	(0.0080)		0.0088	(0.0076)		-0.0013	(0.0017)	
log(PCE)	0.0064	(0.0041)		0.0129	(0.0070)	*	0.0010	(0.0067)		0.0002	(0.0006)	
log(household size)	0.0040	(0.0225)		-0.0199	(0.0379)		0.0022	(0.0344)		-0.0027	(0.0039)	
Number of age < 6	-0.0038	(0.0062)		-0.0067	(0.0083)		0 0077	(0.0122)		0.0006	(0.0011)	
Number of age 6-14	0.0040	(0.0052)		0.0093	(0.0088)		0 0051	(0 0081)		0.0007	(0 0010)	
Number of age 15-17	0.0037	(0.0070)		0.0021	(0.0110)		0 0119	(0.0115)		0.0013	(0 0021)	
Number of age 18-25	-0.0067	(0.0060)		-0.0121	(0.0087)		-0.0015	(0.0095)		0.0005	(0.0011)	
Number of senior	0.0076	(0.0071)		0.0153	(0.0100)		-0 0029	(0 0090)		0.0005	(0.0012)	
Number of earner	0.0011	(0.0050)		-0.0038	(0.0078)		0.0035	(0.0082)		0.0012	(0.0013)	*
Plot size	0.0000	(0.0000)		0.0000	(0 0000)		0.0000	(0.0000)		0.0000	(0.0000)	*
fraction in agriculture	-0.0314	(0.0182)		0.0088	(0 0314)		-0 0455	(0 0437)		-0.0039	(0.0041)	
Total housing area	0.0000	(0.0001)		0.0001	(0.0002)		0.0002	(0.0002)	**	0.0000	(0.0000)	
Share used for living	0 0219	(0.0194)		0.0130	(0.0279)		0.0575	(0.0431)		-0.0023	(0.0035)	
Owner	-0.0091	(0.0079)		0.0117	(0.0222)		-0.0191	(0.0074)	**	0.0024	(0.0047)	
Winter	0.0105	(0.0053)		0.0126	(0.0100)		0.0229	(0.0069)		-0.0002	(0.0008)	
Spring	-0.0060	(0.0067)		0.0060	(0.0098)		0 0035	(0.0084)		-0.0009	(0.0014)	**
Fall	0.0262	(0.0053)	**	0.0182	(0.0093)		0 0311	(0.0071)		0.0018	(0.0019)	*
Other towns	-0.0464	(0.0288)	*	-0 0211	(0.0243)		-0 0116	(0.0328)		-0.0121	(0.0134)	
Rural areas	0.0025	(0.0143)		0.0035	(0.0187)		0 0269	(0.0449)	*	0.0013	(0.0032)	
Distance to school	-0.0060	(0.0050)		-0.0159	(0.0078)	*	-0.0007	(0.0079)		-0.0001	(0.0006)	
Minutes to school	-0.0001	(0.0003)		0.0004	(0.0006)		-0.0006	(0.0007)	*	0.0000	(0.0000)	**
d9899*	0.0064	(0.0055)										
d9900*	0.0166	(0.0055)	**									
Sample size	2982			1148			1004			830		
Wald chi2(50)	319.09			312.26			809.6			495.12		
Prob > chi2	0			0			0			0		
Log likelihood	-737.38			-230.694			-174.064			-106 587		
Pseudo R2	0.2508			0.3206			0 2771			0 4358		

Note: Other regressors included regional dummies (10) Standard errors shown are corrected for unknown heteroscedasticty and clustering effects

Table 4.14

Determinants of Enrolment for children aged between 11 and 15 years. (Estimates shown for the pooled sample and separate academic years)

	Pooled sample			97-98			98-99			99-00		
	dF/dx	s e.		dF/dx	s e.		dF/dx	s.e.		dF/dx	s.e	
Age	-0.0093	(0.0012)	**	-0 0076	(0.0017)	**	-0.0093	(0.0025)	**	-0 0075	(0.0022)	**
Age squared	0 0000	(0.0000)		0.0000	(0.0000)		0 0000	(0.0000)		0 0000	(0 0000)	
Female	0 0124	(0.0034)	**	0.0086	(0.0039)	*	0.0139	(0 0067)	*	0.0019	(0 0043)	
Female head	0 0049	(0.0064)		0.0082	(0 0055)		0.0115	(0 0073)		-0.0274	(0.0156)	**
Single head	-0.1044	(0.1014)					-0.3503	(0 2408)	**			
Separated	-0.0228	(0.0225)		-0.0332	(0.0430)		-0.1082	(0 0994)	*	-0 0012	(0.0127)	
Widowed	-0 0308	(0.0168)	*	-0.0507	(0.0401)	*	-0.0407	(0.0294)		0.0040	(0.0072)	
Divorced	-0.0386	(0.0239)	*	-0.1866	(0.1201)	**	-0 0257	(0.0317)		0.0035	(0.0078)	
Illiterate	-0.0587	(0.0672)								-0.1818	(0.2222)	
Primary	0.0012	(0 0104)		-0.0123	(0.0221)		0.0051	(0 0161)		0.0076	(0.0046)	
Higher +	0.0153	(0.0049)	*	-0.0016	(0.0096)							
Farmers	-0 0052	(0 0076)		0 0014	(0.0071)		-0.0180	(0 0194)		0.0042	(0.0055)	
Hired Agriculture	-0 0035	(0.0078)		-0.0023	(0.0074)		-0.0152	(0 0169)		0.0040	(0.0090)	
Self-employed	-0 0026	(0.0165)		-0.0320	(0.0852)					0.0073	(0.0058)	
Pensioners	0.0081	(0.0079)		0.0139	(0.0045)		-0.0028	(0.0190)		-0.0002	(0.0148)	
Others	-0 0813	(0.0528)	*	-0.1040	(0.0988)	*	-0.1663	(0.1197)	*			
Agricultural Society	0.0064	(0.0063)		0.0047	(0.0066)		0.0179	(0.0115)	*	-0.0030	(0.0078)	
Social benefits?	-0 0087	(0.0068)		-0.0136	(0.0112)		-0 0022	(0 0136)		-0.0130	(0.0116)	
Private Transfers?	-0 0011	(0.0043)		0.0010	(0.0043)		0.0060	(0.0077)		-0.0043	(0.0059)	
log(PCE)	0 0056	(0.0031)		-0.0025	(0 0028)		0.0096	(0 0057)		0.0115	(0.0043)	**
log(household size)	0.0149	(0.0176)		-0.0124	(0 0144)		-0.0293	(0.0337)		0.0375	(0.0211)	
Number of age < 6	-0.0122	(0.0049)	**	0.0083	(0.0059)		-0 0035	(0 0079)		-0.0184	(0.0069)	**
Number of age 6-14	0.0033	(0.0042)		0.0032	(0.0037)		0 0135	(0 0082)		-0.0007	(0.0051)	
Number of age 15-17	-0.0102	(0 0051)	*	-0.0040	(0.0043)		-0.0029	(0.0084)		-0.0045	(0.0052)	
Number of age 18-25	-0 0037	(0 0044)		0 0053	(0.0028)		-0 0073	(0 0076)		-0.0011	(0.0033)	
Number of senior	-0.0041	(0 0060)		0.0021	(0.0057)		-0 0048	(0 0122)		-0 0108	(0 0064)	
Number of earner	-0.0124	(0.0036)	**	-0.0091	(0.0034)	**	-0 0077	(0 0065)		-0.0159	(0.0052)	**
Plot size	0 0000	(0 0000)		0.0000	(0.0000)		0.0000	(0 0000)		0.0000	(0.0000)	
fraction in agriculture	0.0136	(0.0129)		-0.0451	(0.0293)		0.0462	(0.0427)		0.0169	(0.0123)	
Total housing area	0.0003	(0.0001)	**	0.0000	(0.0001)		0.0004	(0 0002)	*	0.0004	(0.0001)	**
Share used for living	-0 0090	(0.0142)		-0.0098	(0.0138)		-0 0234	(0.0297)		0.0420	(0.0154)	*
Owner	-0.0141	(0.0064)		-0.0079	(0.0049)							
Winter	0.0027	(0 0065)		-0.0187	(0.0108)	*	0.0144	(0 0102)		0 0040	(0.0045)	
Spring	0.0007	(0.0069)		-0.0128	(0.0085)		0.0127	(0.0090)		0.0017	(0.0058)	
Fall	0 0083	(0.0058)		-0.0169	(0.0121)		0.0187	(0.0086)	*	0.0067	(0 0051)	
Other towns	-0 0287	(0 0258)		-0.0494	(0 0447)		0.0206	(0.0096)		-0.9172	(0 1594)	**
Rural areas	-0.0242	(0.0075)	**	-0.0113	(0.0055)		-0.0017	(0.0200)		-0.0599	(0.0263)	**
Distance to school	0.0035	(0 0039)		0.0001	(0.0026)		0 0004	(0.0072)		0.0067	(0 0051)	
Minutes to school	-0 0006	(0.0002)	**	-0.0003	(0.0002)		-0.0007	(0 0005)		-0.0004	(0.0003)	
d9899*	-0.0023	(0 0058)										
d9900*	0 0065	(0 0050)										
Sample size	5475			1470			1321			1131		
Wald chi2(50)	395.03			573.01			390 3			.		
Prob > chi2	0			0			0			.		
Log likelihood	-769.21			-174.622			-200 876			-144.621		
Pseudo R2	0.1692			0.2454			0 2584			0.2719		

Note. Other regressors included regional dummies (10) Standard errors shown are corrected for unknown heteroscedasticty and clustering effects.

Table 4.15

Determinants of Enrolment for children aged between 16 and 18 years.
(Estimates shown for the pooled sample and separate academic years)

	Pooled sample			97-98			98-99			99-00		
	dF/dx	s.e		dF/dx	s.e.		dF/dx	s e		dF/dx	s e	
Age	-0 0093	(0 0012)	**	-0.0076	(0.0017)	**	-0.3919	(0.0335)	**	-0.2129	(0.0383)	**
Age squared	0.0000	(0.0000)		0.0000	(0.0000)		0.0000	(0 0001)		0.0001	(0.0000)	*
Female	0.0124	(0.0034)	**	0.0086	(0.0039)	*	0.0247	(0.0467)		0.0531	(0.0426)	
Female head	0.0049	(0 0064)		0 0082	(0.0055)		-0 1662	(0 0681)	*	0.0778	(0 1050)	
Single head	-0.1044	(0 1014)					0.3749	(0.1995)				
Separated	-0 0228	(0 0225)		-0.0332	(0.0430)		0 2486	(0 1804)		-0 0881	(0 1302)	
Widowed	-0.0308	(0 0168)	*	-0 0507	(0.0401)	*	0 2707	(0 1198)	*	-0.0722	(0 1317)	
Divorced	-0.0386	(0 0239)	*	-0.1866	(0.1201)	**	0.2137	(0 1493)		-0.0859	(0.1579)	
Illiterate	-0.0587	(0 0672)					0.2534	(0.2273)		0.0326	(0.2829)	
Primary	0.0012	(0.0104)		-0.0123	(0.0221)		-0.3636	(0.1208)	*	-0.1988	(0 1495)	
Higher +	0.0153	(0.0049)	*	-0.0016	(0.0096)		-0.0441	(0.1061)		0.0377	(0.0952)	
Farmers	-0.0052	(0.0076)		0 0014	(0.0071)		0.0059	(0.1057)		0.0261	(0 0863)	
Hired Agriculture	-0.0035	(0.0078)		-0 0023	(0.0074)		0.0058	(0.0857)		0.0926	(0.0973)	
Self-employed	-0.0026	(0 0165)		-0 0320	(0.0852)		-0.4195	(0.0919)	*	0.2408	(0.1393)	
Pensioners	0.0081	(0 0079)		0.0139	(0.0045)		-0.3469	(0 0929)	**	-0.4876	(0.0600)	**
Others	-0.0813	(0 0528)	*	-0 1040	(0.0988)	*	-0.3963	(0 0870)	**	-0.4818	0.026338	**
Agricultural Society	0 0064	(0 0063)		0 0047	(0.0066)		-0.2064	(0.0911)	*	-0.0244	(0.0797)	
Social benefits?	-0 0087	(0.0068)		-0.0136	(0.0112)		-0.1573	(0 0805)		0.0468	(0.0715)	
Private Transfers?	-0 0011	(0.0043)		0.0010	(0.0043)		-0.1277	(0.0590)	*	-0.0830	(0.0533)	
log(PCE)	0.0056	(0.0031)		-0.0025	(0.0028)		0.2371	(0.0475)	**	0.0569	(0.0460)	
log(household size)	0.0149	(0.0176)		-0.0124	(0.0144)		1.0638	(0.3102)	**	1.1780	(0.3251)	**
Number of age < 6	-0.0122	(0.0049)	**	0.0083	(0.0059)		-0.2691	(0 0921)	**	-0.3139	(0.0927)	**
Number of age 6-14	0.0033	(0.0042)		0.0032	(0.0037)		-0.2666	(0 0729)	**	-0.3005	(0.0945)	**
Number of age 15-17	-0.0102	(0 0051)	*	-0.0040	(0.0043)		-0.2336	(0.0718)	**	-0.1674	(0.1052)	
Number of age 18-25	-0.0037	(0.0044)		0.0053	(0.0028)		-0.1461	(0.0772)		-0.1242	(0.0911)	
Number of senior	-0.0041	(0.0060)		0.0021	(0.0057)		-0.1538	(0.1012)		-0.1807	(0.0965)	
Number of earner	-0.0124	(0.0036)	**	-0.0091	(0.0034)	**	-0 2037	(0.0348)	**	-0 3861	(0 0483)	**
Plot size	0.0000	(0.0000)		0 0000	(0.0000)		0.0000	(0.0000)	*	0.0000	(0.0000)	
fraction in agriculture	0.0136	(0 0129)		-0 0451	(0.0293)		0.1592	(0.2706)		-0.1044	(0.1390)	
Total housing area	0.0003	(0 0001)	**	0.0000	(0.0001)		0 0020	(0.0011)		-0.0001	(0.0009)	
Share used for living	-0 0090	(0.0142)		-0.0098	(0.0138)		-0.3684	(0.2143)		-0.2617	(0.1952)	
Owner	-0.0141	(0 0064)		-0.0079	(0.0049)		-0.3078	(0.0678)	**	0 2865	(0.1351)	
Winter	0 0027	(0.0065)		-0.0187	(0.0108)	*	0.0253	(0 0721)		-0.0366	(0.0694)	
Spring	0 0007	(0.0069)		-0 0128	(0.0085)		0.0978	(0.0803)		0 0112	(0 0825)	
Fall	0.0083	(0.0058)		-0.0169	(0.0121)		0.0477	(0.0746)		-0 0030	(0.0754)	
Other towns	-0.0287	(0.0258)		-0.0494	(0.0447)		-0.0475	(0.1557)		-0.1851	(0.1843)	
Rural areas	-0.0242	(0 0075)	**	-0.0113	(0.0055)		-0.2967	(0.1340)	*	-0 2037	(0.1939)	
Distance to school	0.0035	(0.0039)		0.0001	(0.0026)		-0.0254	(0.0565)		0.1023	(0.0609)	
Minutes to school	-0.0006	(0 0002)	**	-0.0003	(0.0002)		-0.0027	(0.0041)		-0 0051	(0 0039)	
d9899*	-0.0023	(0 0058)										
d9900*	0 0065	(0 0050)										
Sample size	2575			723			669			643		
Wald chi2(50)	731 25			647.59			1250 7			448.24		
Prob > chi2	0			0			0			0		
Log likelihood	-1283 45			-174.62			-283 91			-307.01		
Pseudo R2	0.2809			0.2974			0 3876			0.3111		

Note: Other regressors included regional dummies (10). Standard errors shown are corrected for unknown heteroscedasticty and clustering effects.

Evidence for individuals aged 16 to 18 shows that crisis effected a reduction in enrolment in 1998/99. Children from households with pensioners as heads were less likely to be enrolled during the crisis and even less after. Household demographics play a more important role in school enrolment decisions. The evidence of younger siblings having a negative effect on the enrolment of their elderly is found again, and that the number of

children below 6 and those between 7 and 14 are equally important in reducing enrolment. While the hypotheses of intra-siblings competing resources and household labor demand cannot be distinguished here, the evidence suggests that teenagers with younger siblings were affected. This evidence is corroborated by the estimates of age effects. While the probability of enrolment decreases with age (especially among Secondary aged children) during and after the crisis, the probability of enrolment decreased significantly more, particularly for those between 16 and 18 years.[10] Conversely, the number of earners is negatively associated with enrolment of teenagers, supporting the story of teenagers freeing household labor supply in times of crisis.

In summary, during the period that covered the effects of the Russian crisis in Moldova, income and wealth played an important role in determining children enrolment in school. Distance and access to schools were less important. The results suggest that the crisis did have an effect on enrolment of children in the latter stages of Secondary Education, particularly those from families with younger siblings and pensioner heads. For younger children (7-10 years), however, income played a less significant role since poorer children increased their school enrolment while the better off stayed relatively constant. The evidence suggests that some decisions regarding household labor resources must have been made in order to provide additional labor supply (and additional income).

4.3 Health dimensions of welfare and vulnerability

Moldova inherited an extensive healthcare system.[11] This extensive legacy, however, has presented a major burden to the government in face of a decade of difficult transition and of a major regional crisis. The response has been one of major restructurings and expenditure cuts. Many healthcare units have been consolidated and public fiscal expenditure on health has been steadily decreased over the years. According to official statistics, in 1999, after the Russian Crisis, public fiscal expenditure on health was 357.6 millions of lei—2.9% of the GDP. This same figure was 537.1 millions of lei in 1997, or 6% of the GDP.

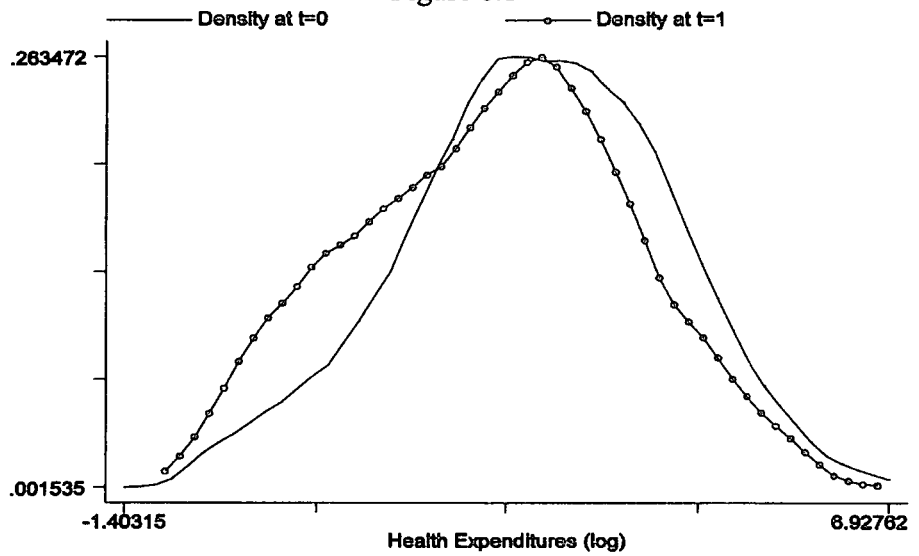
In this section we explore the issue of vulnerability from the dimension of health. We first look at this from the aspect of household health expenditures and follow an analysis similar to that previously carried out for total expenditures. The idea here is to see the effects that the crisis might have had in households' health care budget allocations. Then, we turn to the related issue of health care utilization. Our major concern there would be to explore if, given the expenditure description, households in Moldova have seen their health care services utilization reduced after the crisis.

[10] The age effect also increases for those aged 11 to 15 during the crisis, but in no significant fashion.
[11] As of 1998, all villages with 3,000 people or more were provided with a polyclinic and all smaller populations had some combination of health centers, posts, or *feldscher* points. In total, the system consisted of more than 305 hospitals, 1,011 health posts, and 189 health centers, placing Moldova's delivery network above Region's averages (World Bank, 2002).

Health expenditures[12]

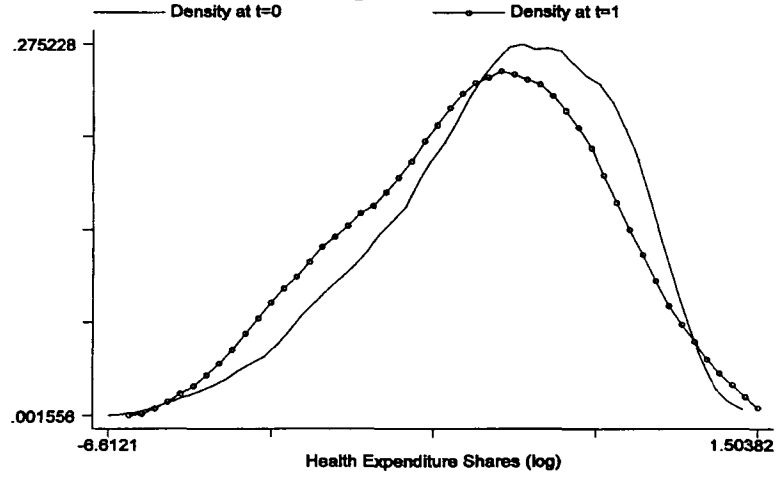
On the aggregate, expenditures on health decreased after the crisis when measured in levels or as shares of total expenditures. Health expenditures in Moldova during the period after the Russian Crisis drop on average by 7.4 lei per capita (a proportional drop of 47%). Likewise, health expenditure shares drop by about 3 percentage points, from 10.4% to 7.5% (a drop of 27.9%). These aggregate drops can also be seen from figure 3, where we have plotted estimated density functions for household health expenditure levels and shares. As for the general case of consumption, both distributions show a displacement to the left after the crisis. The following tables show, however, that this effect is not felt evenly across the population. To the contrary, the impact of the crisis on health care expenditures, follow an asymmetric pattern similar to that seen for total per capita consumption.

Figure 6.1



[12] Because free access to basic services is widely available, the majority of households in our sample report zero health expenditures for the last month, giving median values equal to zero for most of the population. We do not report proportional changes or median values in the following tables for that reason.

Figure 6.2



In table 4.16 we consider the effect by quintiles of initial consumption. The bottom quintile experienced an increased in health care expenditure levels of about 4 lei per capita (an increase of 158%). This quintile has no significant changes in its health care expenditure shares, however. The second and third quintiles have changes that are not statistically different than zero in either levels or shares. Meanwhile, regardless of whether we looked at it in terms of levels or budget shares, the two top quintiles experienced significant drops in health expenditures. Household in the top quintile expended on average 35.5 lei less per capita in health care after the crisis (a drop of 74%). Similarly, health expenditure shares for this top quintile drop by about 11 percentage points, from 18.2% to 7.1% (a drop of 61%).

Table 4.16. Health expenditures by initial total expenditure quintile

		Shares			Level		
		Pre-crisis	Post-crisis	Change	Pre-crisis	Post-crisis	Change
All sample	Mean	0.104	0.075	-0.029	15 641	8.244	-7.397
	Std. err.	0.007	0.006	0.008	1.342	0.766	1.447
	Obs.	1766					
Quintile 1	Mean	0.073	0.093	0.020	2.620	6.773	4.152
	Std. err.	0.013	0.017	0.018	0.465	1.604	1.566
	Obs.	353					
Quintile 2	Mean	0.078	0.058	-0.020	5.364	5.485	0.121
	Std. err.	0.012	0.014	0.017	0.805	1.756	1.891
	Obs.	353					
Quintile 3	Mean	0.073	0.076	0.002	7.236	7.337	0.101
	Std. err.	0.011	0.012	0.015	1 101	1.411	1.752
	Obs.	353					
Quintile 4	Mean	0.112	0.076	-0.036	14.930	9.161	-5.769
	Std. err.	0.014	0.013	0.018	1.893	1.603	2.407
	Obs.	353					
Quintile 5	Mean	0.182	0.071	-0.111	47.915	12.390	-35.524
	Std. err.	0.021	0.011	0.021	5.949	2.102	5.875
	Obs.	354					

Health expenditure levels are significantly higher in large cities than in any other country region. On the other hand, rural areas have the lowest health expenditure levels. The highest drop in health expenditure levels are also for households in large cities. This drop in large cities is of about 10.4 lei per capita. However, in terms of budget shares, it is outside large cities were the higher drops in health expenditure are found. Small towns and rural regions have drops in health expenditures shares of about 4 and 3 percentage points (drops of 33% and 34%), respectively, while in large cities this drop is only of (a not statistically significant) 1 percentage point (a drop of 10%).

Table 4.17. Health expenditures by country region

		Shares			Level		
		Pre-crisis	Post-crisis	Change	Pre-crisis	Post-crisis	Change
Large cities							
	Mean	0.134	0.120	-0.014	24.819	14.430	-10.389
	Std. err.	0.013	0.015	0.018	3.584	1.932	3.840
	Obs.	368					
Other towns:							
	Mean	0.123	0.082	-0.041	16.670	8.821	-7.849
	Std. err.	0.016	0.017	0.023	2.870	2.325	3.620
	Obs.	317					
Rural							
	Mean	0.089	0.059	-0.030	12.334	6.047	-6.288
	Std. err.	0.009	0.007	0.010	1.605	0.822	1.668
	Obs.	1081					

Table 4.18. Health expenditures by household size.

		Shares			Level		
		Pre-crisis	Post-crisis	Change	Pre-crisis	Post-crisis	Change
Hh size 1							
	Mean	0.031	0.026	-0.005	7.166	3.356	-3.809
	Std. err.	0.006	0.006	0.007	1.640	0.680	1.566
	Obs.	325					
Hh size 2:							
	Mean	0.119	0.082	-0.037	21.125	9.311	-11.814
	Std. err.	0.013	0.010	0.015	3.099	1.522	3.209
	Obs.	446					
Hh size 3							
	Mean	0.154	0.081	-0.073	25.418	9.644	-15.774
	Std. err.	0.022	0.012	0.021	4.826	1 700	4.680
	Obs.	328					
Hh size 4							
	Mean	0.105	0.093	-0.012	12.113	10.319	-1.793
	Std. err	0.014	0.017	0.021	2.039	2.233	3.029
	Obs.	390					
Hh size 5+							
	Mean	0.109	0.092	-0.017	10.421	7.809	-2.612
	Std. err.	0.017	0.019	0.024	1.826	1.783	2.455
	Obs.	277					

Apart from single-member households, relatively small households have the largest drops in terms of levels and shares. But these households are the same with the highest health expenditure levels and shares before the crisis. And these may be the households with the highest total consumptions, which we know have large health expenditure drops (table 4.16). Shortly, in our multivariable analysis, we control for this to disentangle any confounding effect.

Table 4.19. Health expenditures by household head's education

		Shares			Level		
		Pre-crisis	Post-crisis	Change	Pre-crisis	Post-crisis	Change
Illiterate							
	Mean	0.019	0.015	-0.004	1.446	1.690	0.244
	Std. err.	0.013	0 008	0.015	0.909	1.049	1.249
	Obs.	47					
Primary education:							
	Mean	0.091	0.053	-0.038	11.675	4.638	-7.037
	Std. err.	0.014	0.010	0.017	2.179	1.182	2.427
	Obs.	331					
Secondary education							
	Mean	0.105	0.081	-0.024	14.256	8.803	-5.453
	Std. err.	0.008	0.008	0.011	1.501	0.984	1.665
	Obs.	1173					
Higher education							
	Mean	0 139	0.094	-0.045	33.162	12.477	-20.686
	Std. err.	0.020	0.016	0.022	6.527	2.717	6.716
	Obs.	215					

From table 4.19, we can see that health expenditures increase monotonically with household head's education. This is true in terms of both per capita expenditure levels and budget shares. Households with a head with higher education have the highest expenditures in health in Moldova. At the same time, it is this type of households the ones that see their expenditure on health decreasing the most.

Regression analysis

We run an OLS regression where the dependent variable is the change in health expenditure shares. Regressors include the household variables used in the analysis of consumption vulnerability plus variables to measure the time to get to both clinics and hospitals and the approximate distance to these institutions. As in our analysis for consumption, the inclusion of the year quarter dummies intends to control for any trend in expenditure shares (see a discussion on this in the consumption section). The results are in table 4.20.

Coefficients for other towns and rural are both statistically different than zero, implying that health care expenditure shares drop more dramatically outside large cities, relative to

the changes in large cities (the omitted region). Although the coefficient for rural suggest a larger relative drop for the rural region than for other towns, we cannot reject the null hypothesis that the two regional coefficient are equal.

Characteristics of the head like age, marital status, education or socioeconomic group seem not to play a role in the change in health expenditure shares. Household size plays an important role. Larger households have on average a larger drop in health expenditure shares. Specifics about the household composition do not seem to matter, however. Our variables intending to control for holdings (plot size and house are) are positively associated with the change. This seems to support the logic that having access to assets permits to cope against shocks. All else equal, relatively richer households have larger drops in health expenditure shares.

None of the variables intending to capture the effect of formal and informal assistance mechanisms (being part of an agricultural society, receiver of social benefit or private transfers) came out statistically significant.

Distance to a hospital is positively associated with the change in health expenditure shares. A major distance to a hospital is indicative of the access to that type of service. Households farther away from a hospital will tend to have a lower utilization of hospitals and thus to allocate less of their budget to this use. Lower health expenditure shares for these households may explain their lower drops.

Table 4.20. OLS regression. Dependent variable: change in health expenditure shares.

	Coef.	Std. Err	
Other towns	-0.0776	0.0432	*
Rural	-0.1248	0.0421	**
Age	-0.0042	0.0055	
Age sq.	0.0000	0.0001	
Head female	-0.0001	0.0267	
Single	0.0279	0.0681	
Separate	-0.0691	0.0610	
Widowed	-0.0104	0.0393	
Divorced	-0.0092	0.0523	
Illiterate	0.0522	0.0388	
Primary education	0.0309	0.0266	
Higher education	-0.0023	0.0318	
Farmers	0.0479	0.0474	
Hired in agriculture	0.0059	0.0320	
Self employed	0.0162	0.0981	
Pensioners	-0.0474	0.0424	
Other	-0.1788	0.0925	*
Household size (log)	-0.1070	0.0428	**
Number under 6	0.0056	0.0286	
Number aged 6-14	0.0238	0.0187	
Number aged 15-17	0.0446	0.0310	
Number aged 18-25	0.0351	0.0230	
Number over 64	-0.0027	0.0217	
Number earners	-0.0244	0.0207	
Plot size	0.3490	0.1867	*
Fraction agricult	0.0466	0.0750	
House area	0.0006	0.0003	*
Fraction living area	0.0553	0.0722	
Housing ownership	0.0055	0.0472	
Year quarter 1	-0.0324	0.0199	
Year quarter 2	-0.0311	0.0206	
Consumption (log)	-0.0720	0.0170	**
Agricultural society	0.0167	0.0245	
Social benefits	-0.0396	0.0248	
Private transfers	-0.0008	0.0195	
Distance to clinic	0.0101	0.0135	
Distance to hospital	0.0030	0.0012	**
Time to clinic	-0.0005	0.0009	
Time to hospital	-0.0005	0.0006	
Constant	0.5276	0.1949	**
R-squared	0.05		

Left-out variables are dummies for large cities, married, secondary education, hired in non-agriculture, number aged 26-64, year quarter 4. Std. Robust standard errors reported. (*) Significant at the 10% level. (**) Significant at the 5% level.

Health care utilization

Given lower public and private expenditures on health, healthcare utilization is of great concern. Indeed, official statistics suggests that health care utilization drops significantly in 1999. For instance, outpatient visits per person per year for most of the 1990s was consistently slightly above 8, and then fell sharply to just 5.6 in 1999. Also, like in most other country in the Region, in the 1990s there was a fall in the number of hospital beds. This fall, however, was particularly marked in 1999. In 1999, this number reached 825 beds per 10,000 people, down from 1,100 in 1998 and 1,150 in 1997. Other statistics like physician and hospital admissions per capita and the average length of hospital stays follow a similar trend (WHO, 2001).

In this section we look at the micro evidence on health care utilization available in the household budget survey and explore the correlated associated with a lower utilization rate. Although the survey is not rich in health care utilization, it collects information on the number of visits per month to health clinics and hospitals and the approximate distance (physical and in time) to this institutions, and we exploit this data.

Our data shows that clinics are far more commonly visited than hospitals in Moldova. From the 1,776 household in our sample, 560 households had at least one visit to a health clinic in the periods before the crisis. The number of households with, at least, one visit to a hospital is only 83, and 55 of these have also visited a clinic.

Table 4.21 reveals that before the crisis 33.5% of the households in Moldova visited at least once a health clinic or a hospital per month. And most households in visited clinics (31.9%) compared to hospitals (5.2%). For the period after the crisis, the percentage of households that had visited either a clinic or a hospital decrease almost 7 percentage point, from 33.5% to 26.8%. This represents a significant drop in utilization of 20%, relative to the utilization before the crisis. Most of this decrease comes from a decreased utilization of clinics. Clinic utilization drops 6 percentage points, while hospital utilization drops by (a non significant) 1 percentage point. In table 13 to 16 show hospital utilization rates that do not exceed 7 percentage points, and for which the pre and post crisis values do not differ statistically from each other in any of the cases. For this reason we concentrate on discussing the utilization to clinics, understanding that this is where most of the action occurs.

Dividing the population by quintile of initial expenditure shows that for all the quintile the post-crisis utilization rate is lower. However, except for the top quintile, utilization after the crisis cannot be found statistically different than utilization before the crisis. Standard errors across quintile are of about the same magnitude. But differences in utilization for the first 4 quintile are not large enough to make them significant, given the size of the standard errors. The top quintile's utilization drops to 28.4% after the crisis from a 40% prior the crisis—a significant drop of 31.5%.

Table 4.21. Health utilization by initial total expenditure quintile

		Pre-crisis			Post-crisis		
		Visited	Clinic	Hospital	Visited	Clinic	Hospital
All sample:							
	Mean	0.335	0.319	0.052	0.268*	0.256*	0.043
	Std. err.	0.011	0.011	0.005	0.011	0.010	0.005
	Obs.	1766					
Quintile 1:							
	Mean	0.253	0.232	0.051	0.197	0.194	0.024
	Std. err.	0.023	0.023	0.012	0.021	0.021	0.008
	Obs.	353					
Quintile 2:							
	Mean	0.348	0.330	0.044	0.280	0.269	0.035
	Std. err.	0.025	0.025	0.011	0.024	0.024	0 010
	Obs.	353					
Quintile 3:							
	Mean	0 372	0.355	0.043	0.315	0.296	0.050
	Std. err.	0.026	0.026	0.011	0.025	0.024	0.012
	Obs.	353					
Quintile 4:							
	Mean	0.292	0.275	0.047	0.266	0.244	0.056
	Std. err.	0 024	0.024	0.011	0.024	0.023	0.012
	Obs.	353					
Quintile 5:							
	Mean	0.411	0.400	0.074	0.284*	0.274*	0.050
	Std. err.	0.026	0.026	0.014	0.024	0.024	0.012
	Obs.	354					

(*) Statistically different (lower) than the corresponding pre-crisis value.

In table 4.22, we divide the sample by country region. This table shows that the largest drops in health care utilization are outside large cities. The utilization drop in other towns is of about 8.5 percentage points (19.7%) and in rural areas of 7.1 percentage points (25.5%), while utilization in large cities drops by only 2 percentage points (6%). Due to the size of the standard errors, pre and post-crisis differences can be established statistically only in rural areas.

Table 4.23 shows that health care utilization increases with household size. This suggests that more people in the household increases the propensity to someone in the household having to visit a health clinic. Comparing pre and post-crisis values, for households of all sizes, there is a decrease in utilization. The largest utilization decrease is for households with 4 members (9 percentage point, 25%). However, because pre and post values are largely not statistically different, table 15 does not provide a clear picture about household size and health care utilization changes after the crisis.

Table 4.22. Health utilization by country region

		Pre-crisis			Post-crisis		
		Visited	Clinic	Hospital	Visited	Clinic	Hospital
Large cities:							
	Mean	0.356	0.349	0.036	0.335	0.328	0.019
	Std. err.	0.025	0.025	0.010	0.025	0.025	0.007
	Obs.	368					
Other towns:							
	Mean	0.436	0.432	0.036	0.349	0.347	0.029
	Std. err.	0.028	0.028	0.010	0.027	0.027	0.009
	Obs.	317					
Rural:							
	Mean	0.302	0.278	0.061	0.225*	0.208*	0.055
	Std. err.	0.014	0.014	0.007	0.013	0.012	0.007
	Obs.	1081					

(*) Statistically different (lower) than the corresponding pre-crisis value.

Table 4.23. Health care utilization by household size.

		Pre-crisis			Post-crisis		
		Visited	Clinic	Hospital	Visited	Clinic	Hospital
Hh size 1:							
	Mean	0.195	0.187	0.014	0.157	0.141	0.032
	Std. err.	0.022	0.022	0.007	0.020	0.019	0.010
	Obs.	325					
Hh size 2:							
	Mean	0.348	0.323	0.071	0.260*	0.249	0.042
	Std. err.	0.023	0.022	0.012	0.021	0.021	0.010
	Obs.	446					
Hh size 3:							
	Mean	0.365	0.365	0.046	0.309	0.298	0.038
	Std. err.	0.027	0.027	0.012	0.026	0.025	0.011
	Obs.	328					
Hh size 4:							
	Mean	0.383	0.354	0.062	0.281*	0.264	0.044
	Std. err.	0.025	0.024	0.012	0.023	0.022	0.010
	Obs.	390					
Hh size 5+:							
	Mean	0.386	0.371	0.060	0.359	0.350	0.063
	Std. err.	0.029	0.029	0.014	0.029	0.029	0.015
	Obs.	277					

(*) Statistically different (lower) than the corresponding pre-crisis value.

Table 4.24. Health utilization by household head's education

		Pre-crisis			Post-crisis		
		Visited	Clinic	Hospital	Visited	Clinic	Hospital
Illiterate							
	Mean	0.170	0.170	0.000	0.063	0.063	0.040
	Std err.	0.055	0.055	0.000	0.036	0.036	0.029
	Obs.	47					
Primary education:							
	Mean	0.280	0.254	0.058	0.178*	0.165*	0.032
	Std. err.	0.025	0.024	0.013	0.021	0.020	0.010
	Obs.	331					
Secondary education:							
	Mean	0.349	0.334	0 055	0.295*	0.281*	0.051
	Std. err	0.014	0.014	0.007	0.013	0.013	0.006
	Obs.	1173					
Higher education.							
	Mean	0.386	0.372	0.036	0.312	0.304	0.019
	Std. err.	0.033	0.033	0.013	0.032	0.031	0.009
	Obs.	215					

(*) Statistically different (lower) than the corresponding pre-crisis value.

In table 4.24, we at health care utilization by the household head's education. The table shows that household utilization increases with the level of education of the head. For instance, 33.4% of households with a head with secondary education had visited a clinic before the crisis, compared to 25.4% for households with head with primary education. This relationship would remain after the crisis.

It also seems to be the case that household with more educated head had lower health utilization drops after the crisis. Although utilization decrease on average for all household, regardless of the head's education, household with head with secondary education had an utilization drop of 5.3 percentage points (16%), while households with head with primary education had a drop of 8.9 percentage points (35%). This seems to hold true for the other educational categories, with households with illiterate heads experiencing the largest drops in utilization and households with heads with higher education having small decreases. However, the imprecise means, due to the limited sample sizes for these other groups, impede to establish this significantly.

All this may reflect that at higher education level there is more awareness on health. But it may well reflect that household with more educated heads are relatively richer or are located in relatively more urbanized area, which facilitate access to health care. In the next section we take a more careful look at this controlling for all these effects.

Regression Analysis

We look at the factors associated with visiting a health clinic. For this, we run OLS regressions for before and after the crisis where the dependent variable is the household's number of visits to health clinics per month. Regressors are the same as those used for the part of health expenditures. The results are in table 4.25. A probit analysis on health clinic utilization provides similar insights to those given here and is included in the appendix.

Consumption enters significantly in both equations and with a positive sign. This says that households with higher consumption visit health clinics with a higher intensity. This role to consumption gets larger in the equation for the post-crisis period. This make sense in a setting were public expenditures in health were falling down so rapidly. After the crisis, the variable for housing area (intending to capture for assets) and that for social benefits start to enter significantly, also reflecting this major reliance on household income for health care utilization.

Distance to clinic and distance to hospital reflect monetary or nuisance costs of accessing these institutions, apart from any fee associated with the usage. Before the crisis both variable enter significantly in the estimated regression. Distance to a clinic enters with a negative sign. That is, clinic utilization is used less intensively the farther away the household is from the clinic. Distance to a hospital, however, enters with a positive sign. Since some health services can be obtained from either a hospital or a clinic (especially those of primary care), it is possible to see some substitutability between these two institutions. A higher distance to a hospital thus increases the intensity of health clinic utilization, reflecting a "cross-price" effect.

For the post-crisis, the distance-to-hospital effect remains. Being close to a hospital implies a lesser utilization of health clinics. But the distance-to-clinic effect loses importance after the crisis. Seemingly, in this period of distress, the income effect previously discussed is so strong as to make this price effect loose importance.

Table 4.25. OLS regression. Dependent variable: Number of clinic visits.

	Pre-crisis			Post-crisis		
	Coef.	Std. Err		Coef.	Std. Err	
Other towns	0.1523	0.3114		-0.0012	0.2523	
Rural	-0.4927	0.2850	*	-0.2966	0.2333	
Age	0.0208	0.0206		0.0231	0.0145	
Age sq.	-0.0002	0 0002		-0.0002	0.0001	*
Head female	0 0342	0.1116		0.2294	0.1628	
Single	-0.4094	0.1961	**	-0.1208	0.2052	
Separate	0.1276	0.6226		-0.3988	0.2241	*
Widowed	-0.3082	0.1536	**	-0.2800	0.1812	
Divorced	-0.3207	0.2227		-0.4891	0.1835	**
Illiterate	-0.2646	0 2088		-0.1261	0.2127	
Primary education	-0.1081	0.1564		-0.1606	0.0844	*
Higher education	0.4455	0.2551	*	0.0751	0 1333	
Farmers	-0.0405	0.1903		0.0983	0.1516	
Hired in agriculture	-0.0806	0.1582		0.1701	0.1792	
Self employed	0.5200	0.4316		0.3567	0.5641	
Pensioners	0.0758	0.2060		-0.0079	0.1767	
Other	0.0868	0.3269		0.1210	0.2837	
Household size (log)	0.1638	0.1957		-0.0003	0.1692	
Number under 6	0.1298	0.1082		0.1524	0.1211	
Number aged 6-14	0 0015	0.0762		-0.0167	0.0819	
Number aged 15-17	0 0827	0.1269		0.2452	0.1586	
Number aged 18-25	0.1037	0.0909		0.2046	0.1385	
Number over 64	0.1758	0.1264		0.1197	0.1028	
Number earners	-0 1864	0.0794	**	-0.0472	0.0823	
Plot size	-0 0502	1.0932		-0.2716	0.4068	
Fraction agricult	-0.3016	0.6136		-0.5062	0.5638	
House area	0.0002	0.0018		0.0046	0.0023	**
Fraction living area	0.0387	0.4173		-0.4313	0.4458	
Housing ownership	0.2190	0.1930		-0.2073	0.1938	
Year quarter 1	0 1047	0.1044		0.0866	0.1053	
Year quarter 2	-0.0048	0.1226		-0.0724	0.1229	
Consumption (log)	0 1531	0.0822	*	0.2062	0.0738	**
Agricultural society	0.1574	0.1257		-0.0789	0.1161	
Social benefits	0.1047	0.1230		0.2177	0.0998	**
Private transfers	0 1046	0.1002		0.0564	0.0835	
Distance to clinic	-0.2050	0.0862	**	0.0745	0.0671	
Distance to hospital	0.0263	0.0104	**	0.0199	0.0112	**
Time to clinic	0.0038	0.0075		-0.0048	0.0037	
Time to hospital	-0 0032	0.0030		0.0036	0.0031	
Constant	0.0144	1.0019		-0.3477	0.8578	
R-squared	0.0728			0.0635		

Left-out variables are dummies for large cities, married, secondary education, hired in non-agriculture, number aged 26-64, year quarter 4. Robust standard errors reported. (*) Significant at the 10% level. (**) Significant at the 5% level.

Table 4.26. Probit regression. Dependent variable: visit health clinic dummy.

	Pre-crisis			Post-crisis		
	Coef.	Std. Err		Coef.	Std. Err	
Other towns	0.4389	0.1875	**	0.2242	0.1897	
Rural	-0.1422	0.1999		-0.1951	0 1939	
Age	0.0056	0.0198		0.0109	0.0210	
Age sq.	0.0000	0.0002		-0.0001	0.0002	
Head female	0.0228	0.1170		0.0996	0.1137	
Single	-0.2274	0.2765		0.2487	0.2599	
Separate	-0.3823	0.3684		-0.0094	0.3210	
Widowed	-0.2314	0.1616		-0.1481	0.1683	
Divorced	-0.3925	0.2202	*	-0.4679	0.2402	*
Illiterate	-0.2262	0.2749		-0.5278	0.3397	
Primary education	-0.1073	0.1266		-0.1860	0.1379	
Higher education	-0.0538	0.1429		0.0927	0.1380	
Farmers	-0.1622	0.1726		0.0541	0.1621	
Hired in agriculture	-0.1484	0.1332		-0.1820	0.1419	
Self employed	0.3338	0.2993		-0.1481	0.3164	
Pensioners	-0.1592	0.1754		-0.1053	0.1920	
Other	0.1516	0.3201		0.6477	0.3833	*
Household size (log)	0.6061	0.1819	**	0.3400	0.2026	*
Number under 6	0.1086	0.0991		0.2327	0.1048	**
Number aged 6-14	-0.0582	0.0742		-0.0198	0.0777	
Number aged 15-17	0.0262	0.1127		0.0802	0.1120	
Number aged 18-25	0.1041	0.0827		0.1003	0.0884	
Number over 64	0.0557	0.0931		0.0289	0.0985	
Number earners	-0.3016	0.0709	**	-0.1003	0.0793	
Plot size	-1.2788	0.9063		-1.1399	0.5781	**
Fraction agricult.	0.2395	0.3410		-0.0162	0.3623	
House area	0.0028	0.0015	*	0.0029	0.0016	*
Fraction living area	-0.6916	0.3032		-0.4933	0.3634	
Housing ownership	-0.0787	0.1825		-0.0779	0.1900	
Year quarter 1	0.0046	0.0829		0.1097	0.0877	
Year quarter 2	-0.1444	0.1040		-0.0355	0.1084	
Consumption (log)	0.3052	0.0657	**	0.2701	0.0730	**
Agricultural society	0.1496	0.1073		0.0683	0.1175	
Social benefits	0.0962	0.0963		0.3619	0.1086	**
Private transfers	0.0943	0.0785		0.0850	0.0841	
Distance to clinic	-0.1038	0.0682		0.0184	0.0660	
Distance to hospital	0.0211	0.0047	**	0.0212	0.0049	**
Time to clinic	-0.0001	0.0044		0.0043	0.0042	
Time to hospital	-0.0023	0.0021		-0.0022	0.0020	
Constant	-1.9303	0.7213	**	-2.2914	0.7418	**
Chi-squared	154.64			148.12		

Left-out variables are dummies for large cities, married, secondary education, hired in non-agriculture, number aged 26-64, year quarter 4. (*) Significant at the 10% level. (**) Significant at the 5% level.

5. Summary

The short-lived Russian crisis may have had long-term implications in those economies with strong economic links such as the trade partners. Moldova, one of the poorest countries in Europe, showed a relatively large dependency on trade, particularly with former Soviet Union countries (Russia). This feature exposed the Moldovan economy to the effects of the crisis in Russia that devaluated the Russian Ruble against the US Dollar. The change in relative prices (exchange rates) and the partial loss of the Russian market affected the Moldovan economy. This paper examines the question: How did households in Moldova respond to the crisis? What types of households were the most affected? Were investments in education and health delayed because of the crisis?

Because of its linkage with trade activities, the Russian crisis affected those areas with strong dependence on trade activities. Since the major export product from Moldova is food and beverages (especially wine and wine products), rural areas and small towns (where some processing occurs) were particularly hit by the crisis. Although poverty in Moldova has been concentrated in rural areas, the changes after the crisis affected also the non-poor in urban areas (even large cities), increasing the overall poverty incidence from 52 to 62 percent. The larger negative impact on small towns is corroborated once controlling for other household characteristics. Moreover, living in a small town accentuated the negative effect on consumption.

Even though the reduction in welfare (as measured by consumption) was widespread, some households were hit worse. Even though higher educated households were exposed to larger drops in consumption (since they were directly exposed to the externally driven shock), education of the household head did ameliorate the negative impact. Results on other covariates, such as household size or marital status of the head, reflect the urban-orientation of the shock since smaller households (most likely urban and single heads) suffered more than larger ones (rural and married heads). Other head's characteristics such as age and gender did not showed any association with increased vulnerability.

Social safety nets did not reduce the impact on consumption. Neither social benefits from the government nor private transfers played a significant role in affecting the impact of the crisis on consumption. Only for those

How did the worsening in consumption affect other dimensions of well-being? Household expenditures on education were already negligible to observe any change, but some systematic changes were observed in school enrolment. The most important impacts were observed for those children in Secondary school, and the evidence suggests that both household resources were scarcer and that household labor reallocation decisions were made. While rural areas observed a decline in Secondary School enrolment during the academic year 1998/1999, small towns and large cities observed a decline later in the following year and only for those aged 16 and above. The analysis showed that those declines were associated with income suggesting that economic conditions of the households were playing a more important role during times of crisis, even in a country with widespread educational coverage. The effects of household

demographics indicated that teenagers with younger siblings were less likely to be enrolled in school suggesting both that elderly children sacrificed for their younger siblings or that additional teenage labor was required at home to free adult labor up to the labor market. Similar to the consumption results, social assistance and social insurance mechanisms are not associated with better performance during the crisis. In education, household with pensioner heads experienced lower enrolment in Upper Secondary, also due to household labor decisions that involved the use of teenage resources. In contrast to findings from other countries, Moldova shows that crisis can marginally affect children enrolment, especially when household characteristics increase competition for resources and increases home labor demand for teenagers, and public expenditures experience significant declines.

The impact on health was examined in two dimensions: expenditures and utilization. Health expenditures were significantly reduced particularly in small towns. Similar to what is found in consumption, health expenditures decreased more for households with heads with higher education (which were exposed to the largest declines in income/consumption). Households' assets like land ameliorate these negative effects but neither public nor private transfers have any offsetting effect. Given the broad coverage of public health services in Moldova, household responses may be reflected in utilization as well. About 34 percent of households utilized health services in Moldova, a fraction reduced to 27 percent after the crisis. Most of the utilization reduction was due to the decline in primary health care (not so much in hospital utilization), and mainly among the richest households and in rural areas. The parallel decline in public expenditures in health between 1997 and 1999 may explain part of the decline, but income and wealth variables have increased effects in periods of crisis. In contrast to the results on consumption and education, social benefits play a positive role in utilization of health care, particularly after the crisis. The (negative) role of distance to health care, is negligible when the crisis occurs, suggesting that distance and access are of lesser importance compared to financial and economic constraints.

The analyses discussed in this paper show that Moldovan households where differentially affected by the impact of the Russian crisis, and that -- because of the nature of the crisis (fall in exports and devaluation) -- urban areas and the better off resulted bearing much more than the poor. Further separate analyses for urban and rural areas or by gender may shed additional light on the mechanisms underlying the decrease in welfare in Moldova.

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Appendix: Quantile regression

The quantile regression methodology developed by Koenker and Basset (1978), and applied in the context of wage equations by Buchinsky (1994), among others, is a technique for estimating the θ-th quantile of a random variable. The quantile regression model assumes that conditional on a vector of characteristics, x_i, the θ-th quantile of the dependent variable, y_i, is linear

$$Q_\theta(y_i \mid x_i) = x_i\beta_\theta$$

which gives rise to a linear quantile regression model

$$y_i = x_i\beta_\theta + \upsilon_{\theta i}$$

where $Q_\theta(\upsilon_{\theta i} \mid x_i) = 0$. The coefficient vector β_θ is estimated by minimizing over b_θ the expression

$$\sum_{i\, y_i \geq x_i b_\theta} \theta \mid y_i - x_i b_\theta \mid + \sum_{i\, y_i < x_i b_\theta} (1-\theta) \mid y_i - x_i b_\theta \mid$$

The j-th element of b_θ then measures the impact of the j-th characteristic on the θ-th quantile of the distribution of y_i. That is, it allows us to estimate the marginal effect of a covariate on y_i at various points in the distribution, not just at the mean

Table A.1. Poverty indexes by selected characteristics, pre- and post-crisis

	Pre-crisis			Post-crisis		
	P_0	P_1	P_2	P_0	P_1	P_2
Total	0.522847	0.191716	0.095749	0.6284	0.238315	0.120332
Farmers	0.526387	0.174568	0.079025	0.665777	0.254793	0.133904
Hired in agriculture	0.588324	0.246257	0.13198	0.723632	0.282903	0.143689
Hired in non-agricult.	0.493054	0.164581	0.078056	0.575333	0.210156	0.103547
Self employed	0.462196	0.176227	0.082084	0.431166	0.160987	0.074991
Pensioners	0.499351	0.177157	0.086791	0.605333	0.231347	0.118672
Other	0.499081	0.187508	0.098231	0.642988	0.246628	0.119706
Higher education	0.289928	0.079073	0.0311	0.368637	0.126109	0.061988
Secondary	0.559445	0.211481	0.107283	0.669449	0.25696	0.12968
Primary	0.518922	0.182945	0.091048	0.631121	0.231638	0.118941
Illiterate	0.486518	0.140285	0.055575	0.58919	0.249041	0.126143
Non-elder head	0.528788	0.1962	0.098193	0.633982	0.24089	0.120985
Elder head	0.48889	0.166091	0.081781	0.59622	0.223471	0.116568
Female head	0.480933	0.166072	0.075944	0.596015	0.227663	0.11651
Male head	0.537837	0.200888	0.102833	0.639772	0.242055	0.121674
Large cities	0.327451	0.090731	0.038317	0.400783	0.133715	0.061152
Other towns	0.571854	0.202273	0.094009	0.717616	0.289296	0.15098
Rural	0.564993	0.217059	0.112029	0.674409	0.256993	0.130454
No children	0.385642	0.130426	0.061688	0.535338	0.185077	0.087313
1 child	0.517413	0.17487	0.084054	0.619528	0.225628	0.110518
2 children	0.647163	0.253991	0.134463	0.693972	0.283936	0.151436
3 children	0.686777	0.260835	0.126317	0.785225	0.328016	0.174997
4 or more children	0.655872	0.322879	0.177487	0.781755	0.322656	0.168949
No elders	0.523868	0.192007	0.095469	0.621771	0.233785	0.116326
1 elder	0.518136	0.186924	0.091521	0.643127	0.245064	0.125311
2 or more elders	0.521405	0.200244	0.110454	0.669307	0.274621	0.154934
Non-owner	0.492111	0.152909	0.069892	0.526927	0.199439	0.101052
Owner	0.527585	0.197699	0.099736	0.642506	0.243719	0.123012
Single	0.304259	0.115108	0.061636	0.543903	0.203302	0.113117
Married	0.553631	0.203897	0.102324	0.644748	0.245239	0.123466
Separate	0.303592	0.097596	0.040203	0.543437	0.259715	0.152728
Widowed	0.464395	0.171588	0.086224	0.591335	0.220285	0.10996
Divorced	0.332566	0.105817	0.043824	0.508872	0.173704	0.084588

Note: P_0 is the headcount ratio, P_1 the poverty gap, and P_2 the square poverty gap. Poverty line used was z=89, as calculated in Signoret and Murrugarra (2001).

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