

Mobility and the dynamics of poverty in Iran: What can we learn from the 1992-95 panel data?

Djavad Salehi-Isfahani *

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Abstract

Like unemployment, the welfare costs of poverty compound with its duration. This paper uses panel data to throw light on the extent of mobility and duration of poverty in Iran in the early 1990s. Although the Islamic government has made an effort to improve the lives of the poor, which is its proclaimed social base, poverty remains a serious social problem. Little is previously known about poverty in Iran apart from measurement of poverty rates. I show in this paper that there is a fair degree of mobility between income groups and in particular at the lower end of the distribution. Whereas about 20 percent of the population is poor in any given year, only 5 percent are poor for the entire panel period. I make a distinction between the long and short term poor and attempt to identify their characteristics. The results show that long term poverty is a bigger problem in Tehran than rural and other urban areas, whereas short term poverty is geographically more equally distributed, it declines with age and education faster than short term poverty, and, unlike short term poverty, is not affected by the gender of the household head.

1 Introduction

Like unemployment, the welfare costs of poverty compound with its duration. A family that suffers a long spell of poverty may lose its ability to rebound on its own, thus needing assistance to escape from poverty. Long term poverty can also undermine child education and health and thereby transfer poverty from one generation to the next. In other words,

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whereas short term poverty can be viewed as a welfare problem, long term poverty is a development problem. Empirical studies based on cross section data which offer only snapshots of poverty provide a good picture of social welfare at a point in time, but are of limited use in understanding poverty as a social and development problem because they fail to report on economic mobility. A given level of poverty measured from cross section data can arise from very different social situations. For example, a society in which a quarter of the population forms an underclass of the chronically poor and another in which the same percent move in and out of poverty frequently so that no one family is poor for very long will look the same in snapshot.

Distinguishing short from long term poverty is important for policy because different instruments are needed to deal with each (Baulch and Hoddinott 2000). Short term or transitory poverty is better alleviated by policies that assist with consumption smoothing—better access to credit markets—whereas long term or chronic poverty may call for transfers or programs that increase the poor’s earning capacity (Lipton and Ravallion 1995). For these reasons the use of longitudinal studies of poverty and mobility have increased rapidly (for references see McKay and Lawson 2002, and Fields 2001).

This paper reports on persistence of poverty and the degree of economic mobility in Iran using a new panel data set for 1992-95. I find a high degree of mobility across expenditure quintiles and, correspondingly, low rates of long term poverty. Whereas about half of the people are poor at least once during the panel, only about five percent are poor all four years. I show that a part of this apparent mobility is due to transitory expenditure shocks and our estimates of mobility may exaggerate the situation. The panel period encompasses a large macroeconomic shock caused by a foreign exchange crisis and followed by a severe import compression in 1994-95. I ask if poverty and mobility change in significant ways as a result of this shock. I analyze the determinants of short and long term poverty using a distinction similar to that introduced by Jalan and Ravallion (2000). I show that their

determinants differ, implying that policies that target the poor need to be cognizant of the dynamics of poverty.

2 Economic policy and poverty in Iran

The Islamic Revolution of 1979 is perhaps unique among modern revolutions in that it identified the poor—the *mostazafin*; literally, the disinherited—as its social and political base, in much the same way that the Russian and the Chinese revolutions associated themselves with the working class and the peasantry (Abrahamian 1982). The revolution was followed quickly by large scale nationalizations of banks and major industrial establishments, which placed about 80 percent of total industrial production under the control of the government. The war of 1980-88 with Iraq intensified the government's role in the economy via a system of rationing of basic goods and extensive price controls. Economic reform starting in 1990 began to gradually dismantle price controls and rationing, increasing the role of markets in distribution, as well as move away from state ownership.

With the passing away of its leader, Ayatollah Khomeini, in 1989 and disappointment with public ownership, the Islamic movement has evolved away from many of its original social aspirations, but public rhetoric still identifies the poor as the main social base of the Islamic Republic and proclaims social justice as its key policy objective. More specifically, the key pro-poor policies of the early days, such as food subsidies, direct transfers, and progressive social programs in health and education have continued. Some of these policies have been highly effective in transforming the lives of Iran's poor households. A rural health delivery system is credited with rapid decrease in fertility and child mortality, and the literacy campaign has reduced illiteracy and all but eliminated the gender gap in school enrollments. The government spends about \$2 billion on subsidies for food and medicine, and several semi-public foundations assist the poor with income and credit (Esfahani 2003).

Iran's economy is highly dependent on oil exports, with roughly 50 percent of government

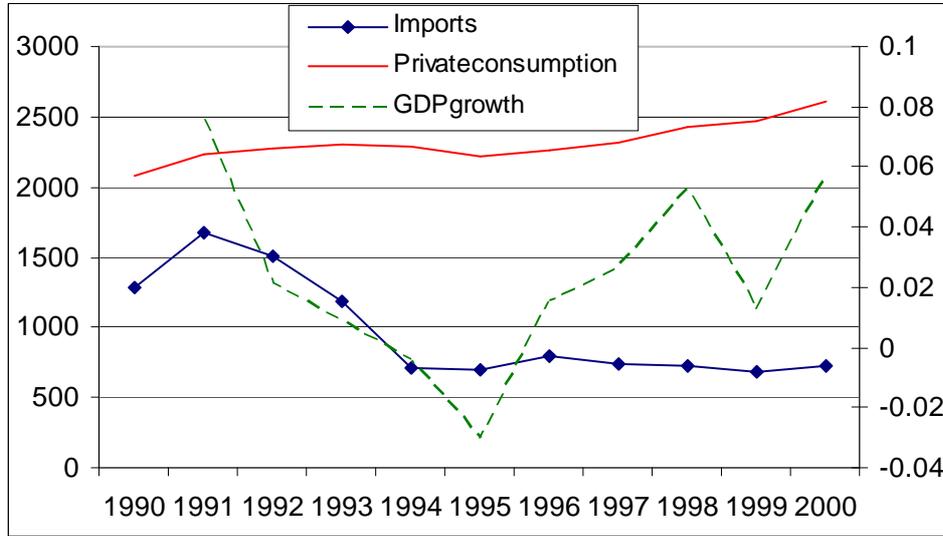
revenues and 80 percent of exports coming from oil. The economy was rocked during the panel years as a result of this dependency, starting with soaring oil revenues in 1990-91 as a result of the Persian Gulf war and increase in oil exports, followed by heavy external borrowing in 1992-93, and finally a payment's crisis in 1994-95. The heavy borrowing, mainly in short term loans, followed a poorly managed trade liberalization program and precipitated a debt crisis in 1994 which brought the reform program to a halt (Pesaran 2000). Iran's external debt, which had been negligible up to that point, climbed to nearly \$23 billion in 1994, or 50 percent of the GDP, 76 percent of which was of short maturity (World Bank 2003). The crisis started by a drastic devaluation in March 1993, which helped inflation soar to 50% in 1995.

The combined effect of these factors on the economy is best seen in the level of imports, which averaged about \$27 billion during 1992-93 and fell to about \$15 billion during 1994-95, and the rate of growth of GDP which fell from about 8 percent in 1990-93 to less than 3 percent in 1994-95 (Figure 1). Private per capita consumption also fell, though by less than indicated by survey data (presented below in Table 4).

3 The data

The base survey of the panel, taken in 1992 by the Statistical Center of Iran, is a self-weighted, nationally representative sample of 5090 households who reside in 172 sampling clusters (63 rural and 109 urban), with an average of about 30 families in each cluster. Because of attrition, the size of the balanced sample, those interviewed in all four year, is only 3371 households, or 66 percent of the base survey. The survey includes all the basic demographic and economic characteristics of the households. Income and expenditure data are self reported (the person interviewed is usually the household head) and are based, depending on an item's frequency of purchase, on a 30 or 365 day recall period. Food, fuel and clothing, for example, are reported for the last 30 days. Households were interviewed

Figure 1: Imports as percentage of GDP, GDP growth, and per capita private consumption (1000 Iranian 1997 rials), 1990-2000



Source: Central Bank of Iran, *Annual Reports*, various years.

each year in November of each year which is after the fall harvest. Evidence from experimentation with the length of the recall period in India suggests that a shorter recall period results in higher levels of reported expenditures (Deaton 2001).

The data is collected from 24 provinces and is classified by rural and urban areas. I divide the households into three regions, Tehran, other urban and rural. Tehran (including its surrounding urban areas) is treated as a distinct urban area because it accounts for more than 15% of Iran's population and attracts migrants from all over the country. Cost of living is higher in Tehran than smaller urban areas, so it I will assign it its own poverty line. I use CPI (by region) for deflating income and expenditure. Changes in the CPI in the three regions are highly correlated.

3.1 Attrition and sample selection

The use of the balanced sample raises important concerns regarding selection (Woolridge 2002). If households drop out of the panel for reasons related to the characteristics we are

Table 1: Summary statistics for the base and balanced samples (1992 values)

Variable	1992 sample			Balanced sample		
	N	Mean	SD	N	Mean	SD
<i>Region</i>	5090	1.89	0.78	3371	1.76	0.76
Rural (%)	1848	36.31		1476	43.79	
Urban (%)	1942	38.15		1222	36.25	
Tehran (%)	1300	25.54		673	19.96	
Household size	5090	5.1	2.46	3371	5.46	2.49
<i>Education of head</i>	5088	1.58	1.53	3370	1.36	1.46
illiterate (%)	1718	33.77		1318	39.11	
read/write (%)	1033	20.3		749	22.23	
primary (%)	1037	20.38		633	18.78	
mid school (%)	525	10.32		272	8.07	
high school (%)	508	9.98		253	7.51	
university (%)	267	5.25		145	4.3	
Age of head	5090	44.33	15.28	3371	46.39	14.73
Female head	5090	0.08	0.27	3371	0.07	0.25
<i>Marital status of head</i>	5062	1.15	0.49	3349	1.12	0.44
married (%)	4524	89.37		3046	90.95	
widow (%)	415	8.2		245	7.32	
divorced (%)	36	0.71		14	0.42	
never married (%)	87	1.72		44	1.31	
<i>Job type of head</i>	4247	2.58	0.99	2835	2.49	0.99
employer (%)	582	13.7		435	15.34	
self employed (%)	1593	37.51		1146	40.42	
public w&s (%)	1122	26.42		679	23.95	
private w&s (%)	944	22.23		569	20.07	
unpaid family (%)	6	0.14		6	0.21	
<i>Economic activity</i>	5088	1.43	1.1	3370	1.41	1.07
employed (%)	4247	83.47		2835	84.12	
unemployed (%)	94	1.85		55	1.63	
retired (%)	492	9.67		333	9.88	
student (%)	22	0.43		7	0.21	
homemaker (%)	102	2		54	1.6	
other (%)	131	2.57		86	2.55	
pce, rials per month	5090	70216	85245	3371	64671	75199
pci, rials per month	5090	60715	78547	3371	55528	68215

Table 2: Attrition and sample selection

Status in 1992	Percent leaving the panel	
	<i>1992-93</i>	<i>1992-95</i>
Poor	16.0	29.0
Non-poor	17.8	30.5

Source: 1992-95 panel data; full, unbalanced sample.

analyzing here, the balanced sample would suffer from selection and our conclusions would be wrong. Attrition is high during the first year, 17.5 percent, and falls to about 10 percent per year in the remaining two years. Comparison of means and standard deviations for the variables used in this study are presented in Table 1. Fortunately, drop-out rates do not differ very much between the poor and the non-poor, although households that drop out appear to have slightly higher educational levels than those who remain in the sample (see Table 1).

As seen in Table 2, the rates at which the poor and non-poor left the panel in 1993 after only one year, 16.0 and 17.8 percents, were quite close, with the poor being slightly less likely to attrit. The same holds true for those who dropped out sometime in 1992-95. Thus selection does not appear to play a major role in changes in poverty rates to be discussed below. Selection was important in the rural-urban distribution of population, however (Table 3). Whereas 80 percent of the rural households interviewed in 1992 stayed with the survey for all four years, only 63 percent of urban residents and 52 percent of Tehran residents did. The distribution of years in panel is very similar for individuals and households. Higher attrition in Tehran is probably caused by the greater mobility of its residents between neighborhoods, itself a result of higher rates of tenancy in larger urban centers.

Are those who dropped out of the sample different in other important dimensions from those who stayed for all four years of the panel? The question of selectivity boils down

Table 3: Attrition and region of residence: the distribution of households by the number of years in panel

Years in panel	Rural	Urban	Tehran	Total
1	7.31	16.37	21.00	14.26
2	5.30	9.53	11.77	8.57
3	7.52	11.17	15.46	10.94
4	79.87	62.92	51.77	66.23
Total	100	100	100	100

Source: 1992-95 panel data; full, unbalanced sample.

to the difference between the base (1992) sample and the balanced sample. Figures 2 and 3 compare the distributions of two main characteristics for these samples, education and expenditure per capita (pce), by rural and urban residence. Comparing the distribution for educational attainment of the household head for rural and urban households in the base (1992) sample with the same in the balanced panel (directly below), we note a higher proportion of illiterates in the balanced sample. The distributions for pce are quite similar in the two samples.

3.2 Income and expenditure levels

The data exhibit a fair amount of disparity in per capita incomes (pci) and expenditures (pce) between the three regions in Iran. Average per capita rural incomes and expenditures were about half the amount in urban areas and as low as one-third of those in Tehran. The trends observed in the panel data in per capita expenditure and income are not uniform for all regions but broadly reflect the macroeconomic situation discussed earlier. The import compression of 1994-95 appears to have affected individuals in Tehran more harshly than in other urban or rural areas. Average per capita expenditure in Tehran was down 18 percent in 1994-95 from 1992-93, compared to a 10 percent decline in rural expenditures, indicating that the provincial areas were less strongly linked to foreign exchange inflows than Tehran.

Figure 2: Comparing the distributions of education of household heads in the base and balanced samples by region of residence

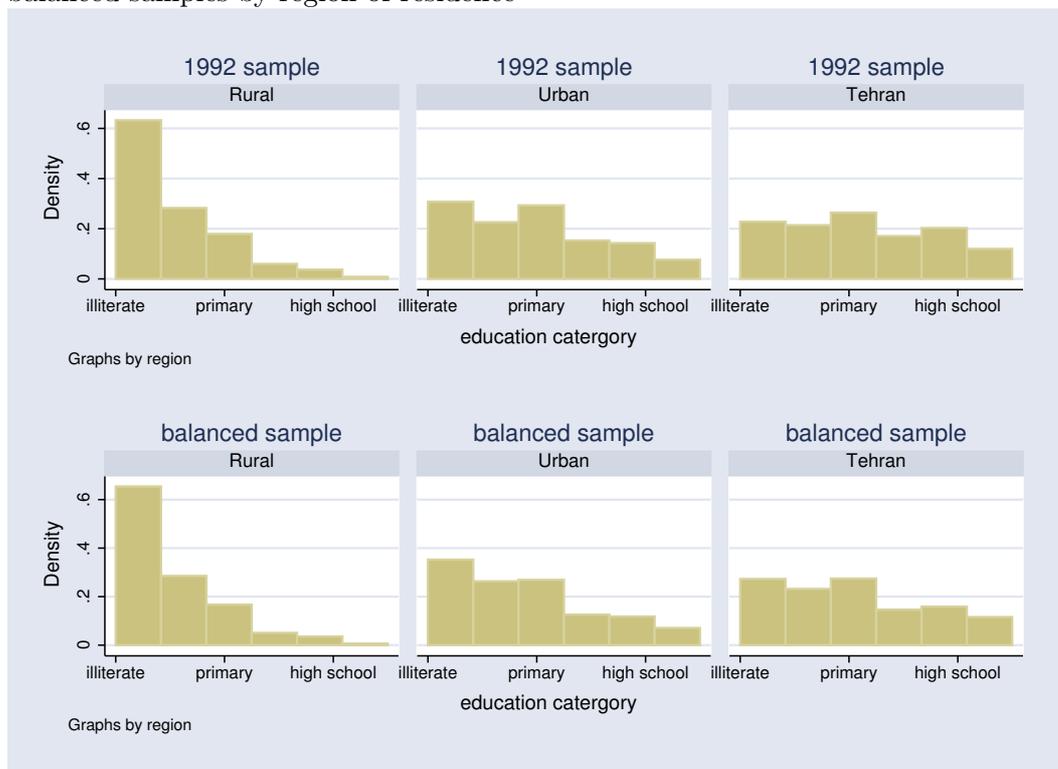


Figure 3: Comparing the distribution of log expenditure per capita in the balanced sample with the sample of drop-outs by region of residence

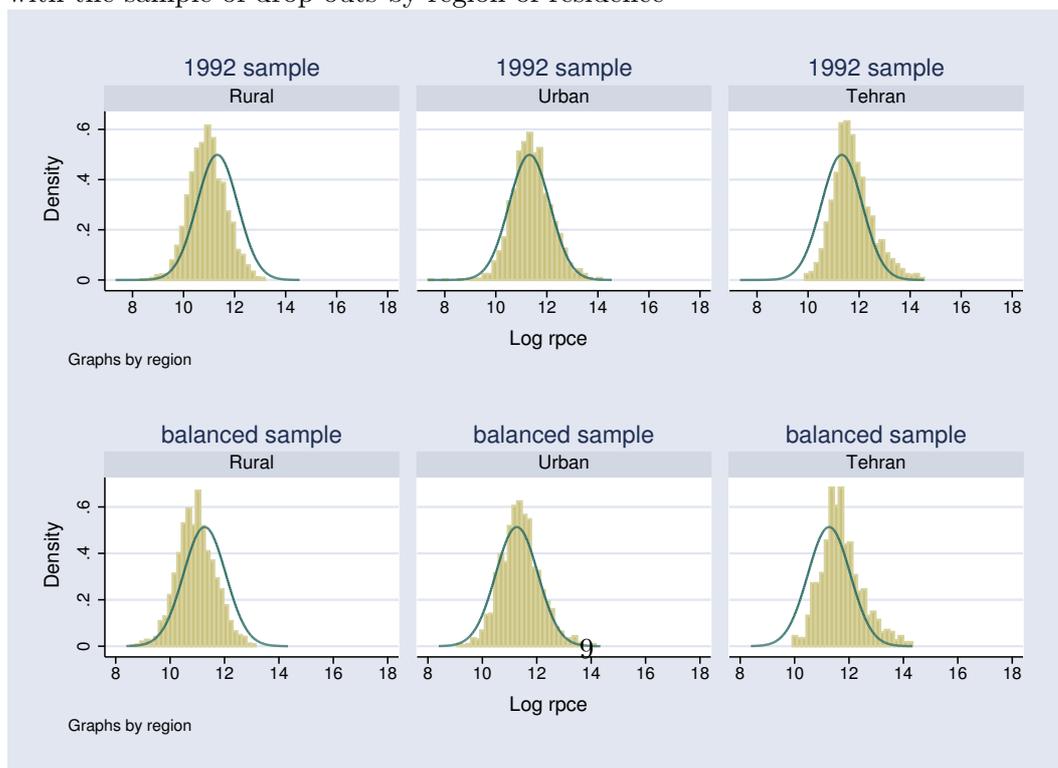


Table 4: Real income and expenditure per person (1994 rials per month)

Survey year	Income			Expenditure			Rials per
	Rural	Urban	Tehran	Rural	Urban	Tehran	PPP \$
1992	52970	84546	145722	67753	105008	152466	265
1993	51009	78242	125690	57031	91035	143978	359
1994	59281	92417	127757	53160	86533	124770	477
1995	51987	79369	109793	59700	89668	117161	625
Ratio of 1994-95 average to 1992-93	1.07	1.06	0.88	0.90	0.90	0.82	

Source: Statistical Center of Iran, 1992-95 panel data, balanced sample.

Purchasing Power Parity (PPP) conversion rates are from the World Bank,

World Development Indicators, 2003.

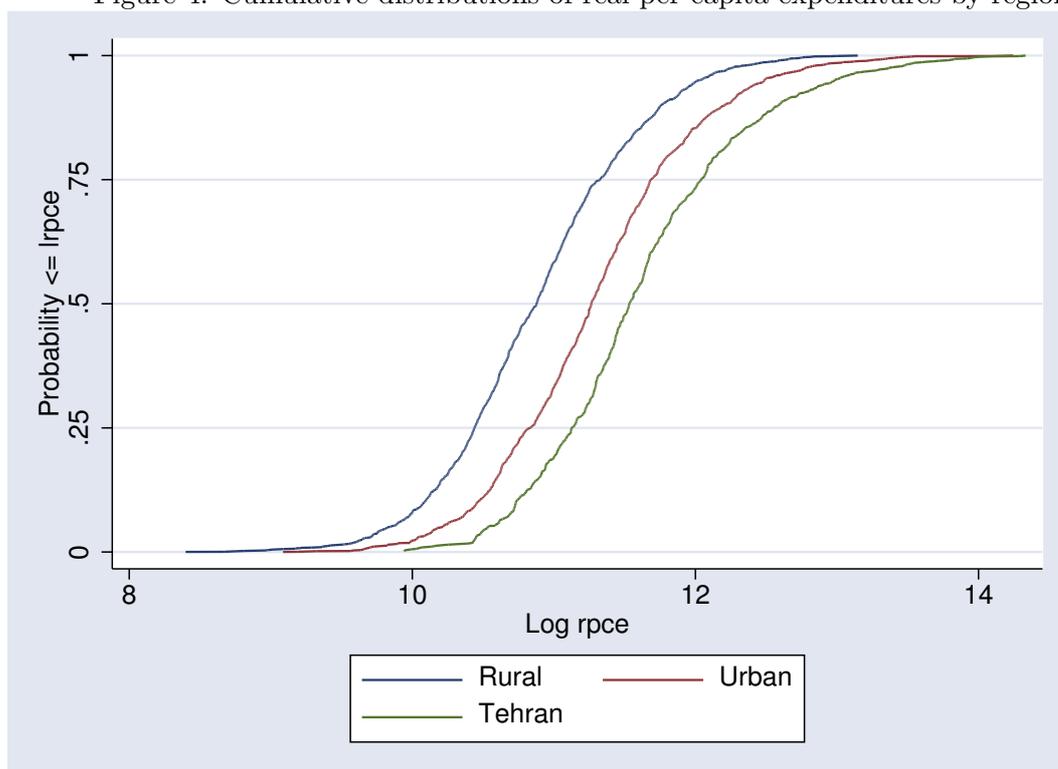
Income data show a different pattern, which is likely the result of error in reporting. The table also shows that on average reported expenditures exceed incomes, which is a common feature of many household surveys in developing countries (Deaton 1997). Rural incomes fall short of expenditures by as much as 15% while urban incomes and expenditures are closer to each other. Rural income reporting is probably even worse than reporting of urban incomes because most rural incomes are from owner operated farms, and interviewers rely on self reporting of incomes rather than attempt to compute net incomes from data on farm operations.

Figure 4 shows the cumulative distributions of per capita expenditures for rural, urban, and Tehran residents using the balanced sample. The distribution for Tehran dominates the other two, and urban dominates rural. These differences are mainly the result of the higher cost of living in Tehran followed by urban and rural areas. Accordingly, in estimating poverty I will use different poverty lines for each region.

Comparing cumulative distributions of real pce across panel years shows that decline in expenditures occurred across income levels. Figure 5 shows that the distribution of real pce in 1992 stochastically dominates 1994 and 1995 distributions.

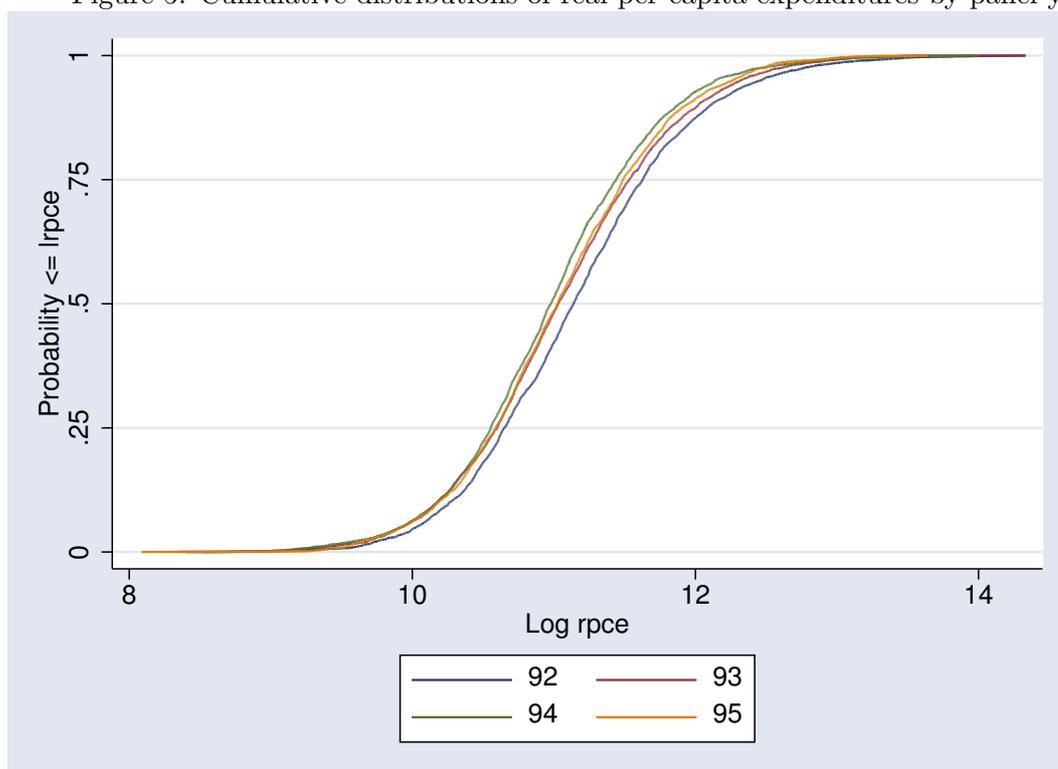
Before turning exclusively to expenditures as a measure of household welfare it is good

Figure 4: Cumulative distributions of real per capita expenditures by region



Source: Statistical Center of Iran, 1992-95 panel data, balanced sample.

Figure 5: Cumulative distributions of real per capita expenditures by panel year



Source: Statistical Center of Iran, 1992-95 panel data, balanced sample.

Table 5: Quintiles of per capita income and expenditure for rural households, 1992

pce quintiles↓	pci quintiles					
Rural						
1	35.69	29.43	18.8	9.26	6.81	100
2	23.43	25.34	24.8	17.17	9.26	100
3	17.71	20.16	23.71	23.98	14.44	100
4	14.99	16.08	19.35	24.80	24.80	100
5	8.20	9.02	14.21	24.04	44.54	100
Urban						
1	50.39	30.70	13.02	4.03	1.86	100
2	24.65	30.85	29.15	12.25	3.10	100
3	13.02	22.02	29.3	28.84	6.82	100
4	8.22	11.16	19.84	34.11	26.67	100
5	3.88	5.27	8.53	20.78	61.55	100

to examine the relationship between pce and pci. Table 5 shows that for rural and urban households income is a poor predictor of expenditures. Only 36 percent of rural and 50 percent of urban households in the lowest quintile of expenditures are in the same income quintile. There is less apparent discrepancy between pci and pce in urban than rural areas. Fifty percent of households in the lowest 20 percent of expenditure were also in the lowest quintile according to income.

3.3 Income and expenditure variability

The use of expenditure for welfare analysis is in part motivated by the argument that expenditure levels more closely reflect permanent income. This is not the case in the the (balanced) sample used in this study. Expenditure variability, measured by the coefficient of variation (standard deviation divided by the mean for 1992-95), is in fact higher in all regions (Table 6).

Economic mobility is closely related to variability of income and expenditures. Individuals with more variable incomes are more likely to find themselves in different quintiles from one year to the next. So, based on data in Table 6 we would expect more mobility in

rural relative to urban areas.

Table 6: Income and expenditure variability by region of residence

Region	Income	Expenditure
Rural	0.41	0.43
Urban	0.36	0.39
Tehran	0.36	0.39
Total	0.38	0.41

Note: Variability is measured by the coefficient of variation by dividing the standard deviations by their means.

Table 7 shows that the variability of income and expenditure decline with education. Households headed by more educated persons not only enjoy higher mean levels of income and expenditure, they also suffer less variability. Households in the lowest expenditure quintiles (Table 8) suffer from much higher variability than the rest. This factor alone would explain some of the the high mobility we observe at the lower end of the distribution (see below), especially in rural areas where education is lower.

3.4 Poverty rates

To measure poverty, I use the simplest measure of poverty which is the proportion of individuals whose income is below the poverty line, or the head count ratio. The choice of

Table 7: Coefficients of variation and means of per capita income and expenditure by education of household head (1994 prices)

Education	Income	Expenditure	Income	Expenditure	No. of households
illiterate	0.41	0.42	62417	67353	1309
read/write	0.38	0.40	68657	75755	715
primary	0.35	0.40	80316	90322	633
mid school	0.36	0.40	98746	103640	298
high school	0.34	0.41	119801	135349	258
university	0.35	0.39	184148	192252	152
Total	0.38	0.41	78597	85858	3365

Table 8: Coefficients of variation and mean per capita expenditure by expenditure quintiles (1994 rials)

Quintile	Coefficient of variation	Expenditure
1	0.38	41482
2	0.36	58837
3	0.40	78951
4	0.39	101800
5	0.53	178312
Total	0.41	85831

poverty line is not critical in this study because my focus is on change in poverty over time and real pce distributions do not cross each other in ways that would make poverty rates sensitive to the choice of poverty line (see Figure 5). The relative rates of poverty between the regions under study is affected by the levels of poverty line chosen, but not the change over time in each region. I adopt the calorie-based poverty line calculated by Pajhouyan (2000) and used extensively in poverty studies in Iran (Salehi-Isfahani 2003). Pajhouyan uses 2200 calories as the basis for his calculations and finds for each region the average level of total household expenditures for those households whose food intake corresponds to this calorie level.

Table 9 lists the calorie based poverty lines by region and compares them with one-half of median, which is also popular in studies of poverty in Iran. (Although rural Tehran and other rural areas are given their own separate poverty lines, I combine the two regions for the remainder of the paper.) There is considerable difference between the two lines for Tehran, mainly because the calorie base line takes into account the higher cost of living in Tehran. According to the calorie based estimates, a rural person with less than \$2 per day in 1994 would be classified as poor, compared to \$3 in urban and \$5 in Tehran.

Tables 10 and 11 report on poverty rates for the balanced and unbalanced samples. Several important points are worth noting. First, as noted earlier, sample attrition does not appear to have biased the estimation of poverty rates as a result of selection. Second,

Table 9: Poverty lines, 1994 rials per month

Group	1/2 median*	calorie based*	calorie based (PPP \$)
Rural	25484	31954	66.97
Urban	37522	42468	89.00
Rural Tehran	32232	31407	65.82
Urban Tehran	53940	70912	148.62

*Balanced sample

poverty rates are highest in Tehran followed by rural and urban areas. Third, the import shock of 1994-95 appears to have affected poverty in Tehran more seriously than in other areas. This may be due to the nature of the shock, which affected urban consumers, especially in Tehran, more severely than rural consumers. The poverty rate increased by seven percentage points in Tehran between 1993-94, whereas in rural areas it increased by one point in 1994 and then declined in 1995. This drop in poverty in rural areas is also noted by Pajhouyan (2000) who uses the income and expenditure survey data and who attributes it to an increase in agricultural support prices in 1995. Changes in poverty are consistent with changes in mean expenditures reported in Table 4.

These rates are comparable in magnitude with those estimated in other studies for Iran, though there is a wide variation in estimates in the (mostly Persian) literature Tabibian (2000), (Pajhouyan 1999). Previous studies of poverty rates for Iran are based exclusively on income and expenditure surveys (HEIS), which are larger surveys and are collected annually.¹ The comparison of the two data sets is not easy because of differences in method of collection. Both data sets rely on a 30 day recall period to measure most items of expenditure; the HEIS visits different households at different times of the year whereas the panel data is collected from the same households at the same time every year.

¹For a detailed account of poverty measurement in Iran, see Salehi-Isfahani (2003).

Table 10: Proportion of individuals below poverty by region (balanced panel), 1992-95

Year	Rural	Urban	Tehran	Total
1992	0.21	0.18	0.27	0.21
1993	0.28	0.19	0.22	0.24
1994	0.29	0.21	0.29	0.26
1995	0.24	0.21	0.32	0.25

Table 11: Proportion of individuals below poverty by region (unbalanced panel), 1992-95

Year	Rural	Urban	Tehran	Total
1992	0.21	0.18	0.26	0.21
1993	0.27	0.19	0.22	0.23
1994	0.29	0.20	0.29	0.26
1995	0.24	0.21	0.31	0.24
Average	0.25	0.20	0.28	0.24

3.5 Inequality

Was the increase in poverty during 1992-95 a result of increased inequality? Table 12 shows that inequality as measured by the Gini index decreased for all regions, especially in Tehran, between 1992-93 and stayed the same during 1993-95. This implies that increase in poverty after 1993 was not likely caused by the result of worsening of the overall distribution. The overall decline in real incomes may have been so severe as to increase poverty even though the poor may have fared better than the rest in the downturn. Improvement in inequality may be also due to reshuffling of the non-poor income groups.

Table 12: Gini index for real per capita expenditure and income, 1992-95

Year	Expenditure			Income		
	Rural	Urban	Tehran	Rural	Urban	Tehran
1992	0.37	0.40	0.44	0.39	0.41	0.42
1993	0.36	0.36	0.36	0.38	0.38	0.40
1994	0.34	0.36	0.36	0.39	0.38	0.36
1995	0.36	0.36	0.35	0.37	0.38	0.33

Note: Using the balanced sample only

3.6 Mobility

In this section I consider two related concepts of mobility, into and out of poverty and mobility across expenditure quintiles. It is well known that the use of expenditure data is likely to result in overestimation of mobility (Luttmer 2001). Transitory shocks to expenditures, such as purchase of durable goods and bulk purchase of grains, a common practice in rural Iran, can create an impression of mobility where there is none. I will first report the standard results for mobility from the data as they are and later attempt to refine the mobility measures.

Table 13 shows a high degree of mobility into and out of poverty. Those with multiple spells of poverty are about one half of all the individuals counted as poor in any given year. Only about five percent of the population are poor in all four years of the panel, which shows serious long term poverty (those found poor all four years of the panel) is low, but, on the other hand, 47 percent are poor at least once in the four years. The low rate of long term poverty is similar to the proportion who are poor in a five year panel from Pakistan (McCulloch and Baulch 2000), 7 percent in four and 3 percent in five years, but much lower than the 20 percent found for a three year panel in Egypt (Haddad and Ahmed 2002) and 40 percent reported for a ten year period for the ICRISAT panel from India (Morduch 1994) and nearly all households experience poverty at some time (Baulch and Hoddinott 2000). The latter is quite a contrast to rural Iran where only 52% of household are poor at some point. The range of findings for those who are “always poor” is quite wide in the studies surveyed by Baulch and Hoddinott (2000), from 25% in Ethiopia and Zimbabwe to 3% for Pakistan. As they note, much of this may reflect differences in methodology in data collection and definition of “always poor”. Nevertheless, it is interesting to note that Iran falls into the lower part of this range.

Long term poverty is more severe in Tehran, 8 percent, relative to rural and urban areas, 4 percent. More than half the population in rural areas and in Tehran are poor at least

Table 13: The distribution of individuals by number of years in poverty by region

Years poor	Rural	Urban	Tehran	Total
0	47.38	60.04	47.34	51.82
1	23.45	17.67	22.28	21.20
2	14.93	10.87	14.09	13.35
3	10.25	7.00	8.07	8.70
4	4.00	4.41	8.22	4.93

once, compared to 40 percent in urban areas. The comparison of Tehran with rural areas with respect to long term poverty, both of which had higher standard poverty rates, shows a difficulty with learning from this table about inherent long term poverty in specific regions of Iran. The distributions of years in poverty for the two areas only differ in the proportion in multiple years of poverty, with Tehran having more than twice the proportion who are poor in all panel years. Were it not for the possibility that Tehran was hit harder by the import shock, one could conclude that Tehran residents are generally at greater risk of long term poverty compared to rural areas, while they have the same proportion of one-time poor individuals.

Another useful measure of mobility is time dependence Fields (2001). Table 14 shows that time dependence is generally moderate, higher in urban (including Tehran) than rural areas (consistent with higher rural income and expenditure variability). Overall, there is a fair degree of time dependency in poverty in that previous spells of poverty are good predictors of subsequent poverty. The correlations for Iran are much lower than those reported for OECD countries: 0.8-0.9 for one year correlations and 0.7-0.8 for five year correlations same holds true for the . Contrary to expectation, and the results summarized by (Fields 2001), time dependence does not decrease monotonically as we move away from the base year (1992). The three year correlation in urban areas is *higher* than one and two year correlations.

Finally, transition matrices indicate a high degree of mobility during the panel years. Tables 15 and 16 show in detail the degree of mobility between expenditure quintiles of per

Table 14: Time dependence of real consumption per capita (correlation coefficients)

	Urban			Rural		
	1993	1994	1995	1993	1994	1995
1992	0.43	0.43	0.46	0.32	0.26	0.31
1993		0.45	0.48		0.48	0.39
1994			0.49			0.35

capita expenditure (pce) for rural, urban and Tehran households (balanced sample only). Table 15 is a standard transition matrix for expenditure by quintile for 1992 and 1993 and Table 16 is the same for 1992 and 1995. The rates of mobility indicated by these tables are not out of range compared to the rates reported for other developing countries (Fields 2001). About one-third of rural and about 50% of the urban residents (as well as Tehran) in the lowest quintile stayed in place after one year. Between 1992 and 1993 mobility at the higher end was the same for all regions, however. Four year mobility, between 1992 and 1995, is only slightly different: mobility is highest in rural areas followed by urban and Tehran (Table 16). The difference between rural and urban mobility (including Tehran) mimics the higher variability of expenditure in rural areas, as seen in Table 6.

3.7 Adjusting mobility for transitory shocks

Transitory expenditure shocks may cause an overestimation of mobility. I therefore attempted to correct for this problem in several ways. First, I constructed a transition matrix for *average* expenditures for 1992-93 and 1994-95 (Table 17) thinking that some of the transitory element would be averaged out. The effect on the mobility of the poorest quintile is shown to be significant for all regions, lower by between 10-15 percentage points. In rural areas nearly half of the sample, instead of one-third (as in Table 15), are found in the first quintile both in 1992-93 and 1994-95. The drop in mobility for urban areas and Tehran, where income variability is lower, is also significant, by about 10-13 percentage points.

I also calculated the transition matrix by not counting small movements due to expen-

Table 15: Mobility of individuals by quintiles of real per capita expenditure, 1992-95

pce 1992↓	pce, 1993					
Rural	1	2	3	4	5	Total
1	33.18	25.25	21.61	15.50	4.46	100.00
2	23.39	26.34	21.15	19.68	9.43	100.00
3	19.15	18.68	24.44	23.38	14.34	100.00
4	17.10	19.04	17.51	23.56	22.80	100.00
5	5.72	10.02	16.10	17.98	50.18	100.00
Urban						
1	49.31	25.58	13.29	6.22	5.61	100.00
2	33.62	29.43	16.77	13.35	6.83	100.00
3	7.19	24.59	29.39	25.68	13.15	100.00
4	4.87	11.99	25.37	28.77	29.00	100.00
5	4.49	6.35	14.02	25.64	49.50	100.00
Tehran						
1	50.58	22.08	16.37	4.24	6.73	100.00
2	24.56	28.78	17.15	20.49	9.01	100.00
3	16.42	20.53	27.71	19.06	16.28	100.00
4	2.64	16.98	27.09	31.92	21.38	100.00
5	3.22	10.98	14.79	21.96	49.05	100.00

Table 16: Mobility of Individuals by quintiles of real per capita expenditure, 1992-95

pce 1992↓	pce, 1995					
Rural	1	2	3	4	5	Total
1	33.88	22.96	21.26	11.86	10.04	100.00
2	19.09	27.70	21.98	16.85	14.38	100.00
3	19.15	17.10	23.68	24.68	15.39	100.00
4	15.39	21.56	14.39	21.21	27.44	100.00
5	11.62	8.90	16.39	23.58	39.50	100.00
Urban						
1	46.24	23.04	18.05	8.53	4.15	100.00
2	24.53	24.69	20.26	19.10	11.41	100.00
3	14.15	24.67	22.97	21.50	16.71	100.00
4	8.82	17.48	19.49	26.30	27.92	100.00
5	4.18	8.83	15.72	23.93	47.33	100.00
Tehran						
1	45.03	32.16	14.77	5.99	2.05	100.00
2	23.55	26.45	23.84	15.84	10.32	100.00
3	16.57	24.05	27.71	18.62	13.05	100.00
4	6.30	12.88	19.91	36.31	24.60	100.00
5	1.61	7.47	11.86	26.21	52.86	100.00

Table 17: Mobility of individuals by quintiles of two-year averages of real per capita expenditure, 1992-95

mean pce 1992-93↓	mean pce, 1994-95					
Rural	1	2	3	4	5	Total
1	48.35	26.41	15.04	7.33	2.87	100.00
2	22.06	29.86	24.25	12.75	11.08	100.00
3	11.88	23.75	26.63	24.57	13.17	100.00
4	12.38	14.45	19.76	29.71	23.70	100.00
5	3.44	9.38	16.40	25.50	45.27	100.00
Urban	1	2	3	4	5	Total
1	59.45	28.30	6.15	4.82	1.27	100.00
2	25.81	30.38	26.72	10.55	6.54	100.00
3	9.47	24.33	30.36	24.80	11.03	100.00
4	7.76	9.59	24.44	35.11	23.10	100.00
5	0.50	6.35	14.52	26.41	52.22	100.00
Tehran	1	2	3	4	5	Total
1	63.36	21.70	9.92	4.32	0.70	100.00
2	26.43	35.10	22.66	12.17	3.64	100.00
3	11.48	28.17	28.76	19.67	11.92	100.00
4	4.69	18.45	25.57	30.91	20.39	100.00
5	0.72	3.58	9.66	29.70	56.35	100.00

Table 18: Summary of mobility results from Table 17

Change in status	Rural	Urban	Tehran
Staying in place	0.36	0.41	0.43
Falling one Quintile	0.25	0.26	0.28
Ratio of those falling to rising one quintile	0.90	0.91	1.22

diture changes of less than 10% but this did not produce a significant change, only about a 4 percent increase in the proportion of rural individuals who were in the lowest quintile in both years.

A more serious source of bias may arise from the way expenditures data are collected, based on expenditures in the last month rather than actual daily consumption. Large purchases made in the month of reference (November) can push the person one or more quintiles up without any change having occurred in the person's actual economic status. Many items are collected on an annual basis, such as certain educational expenditures and durable goods, and are therefore immune to this particular problem. But expenditures on items reported on a monthly basis can cause error. The most important source of such error for poverty analysis is from bulk purchase of grains, which affect poorer rural households more. Elsewhere, using the more detailed Expenditure and Income Survey (HEIS), I have shown that this problem is more acute for rural households and it can cause substantial distortion in the estimation of their poverty rates (Salehi-Isfahani 2003). For panel data, too, large purchases are more prevalent among rural households, presumably because large purchases in rural areas may coincide with harvest times. Table 19 shows that, in 1992, 13% of rural households reported grain purchases of greater than 250 kilograms compared to 4 percent for households in urban areas and Tehran. For example, those who made their 'purchase' during the month of interview in one panel year but not the next would appear, without justification, to have dropped into a lower quintile. Average share of expenditures on grain in 1992 was 9% in rural areas and 5 percent in urban areas and Tehran. In rural areas the share of those who purchased more than 250 kg was about 11 percent, about 20 percent above the average for rural households.

The error created by bulk purchases for measurement of mobility appears particularly acute for lower income households. About 24% of households who moved up from the poorest quintile in 1992 to a higher quintile in 1993 were those who also moved down from

Table 19: Distribution of reported size of grain purchase (kilograms per month) in 1992

Weight Category	Rural		Urban		Total	
	Percentage	Number	Percentage	Number	Percentage	Number
0-	102	6.91	50	4.09	8	1.19
10-	303	20.53	309	25.29	209	31.05
50-	384	26.02	439	35.92	267	39.67
100-	489	33.13	373	30.52	166	24.67
250-	129	8.74	41	3.36	17	2.53
500-	69	4.67	10	0.82	6	0.89
Total	1,476	100.00	1,222	100.00	673	100.00

Table 20: Fraction of the poor with large grain purchase who fell into or escaped from poverty by year

Year	Fell into poverty		Escaped from poverty	
92-93	389	0.72	337	0.72
93-94	378	0.73	309	0.74
94-95	340	0.76	315	0.80

grain quintiles 4-5 in the same period. More significantly, 70% of those who moved out of poverty in 1992-93 were those who also moved up at least three quintiles in the distribution of grain purchases (Table 20). While we cannot be sure if the change in the amount of grain purchased reflects a change in actual consumption, or if it is due to a change in the timing of the bulk purchase, we do know that it can be a source of spurious mobility.

To correct for this potential bias, I assume that the four year average of grain purchases better reflects monthly grain consumption than the actual purchase and replace expenditure on grains in each year with its average for 1992-95. The results for adjusting expenditures for only those with high grain purchases (250 kg or more per month) are presented in Table 21. The change in the proportion of rural individuals who remain in the lowest quintile is quite noticeable, from 33% to 45%. The change for the corresponding quintile in urban areas and Tehran is comparatively very small, reflecting the smaller proportion with high grain purchases. These adjustments are similar to those when using two year averages of pce.

Table 21: Transition matrix for real pce smoothed for large grain purchase, 1992-93

1	44.80	24.80	18.26	9.67	2.46	100.00
2	20.94	26.65	28.00	17.00	7.41	100.00
3	16.85	20.66	25.56	22.79	14.14	100.00
4	14.94	19.68	16.29	26.83	22.26	100.00
5	3.53	8.57	12.04	22.99	52.87	100.00
Urban						
1	50.74	26.69	11.09	5.82	5.66	100.00
2	31.60	31.52	16.93	14.13	5.82	100.00
3	8.94	24.63	32.71	23.85	9.87	100.00
4	4.21	10.83	25.88	29.77	29.31	100.00
5	5.08	6.00	13.77	26.38	48.77	100.00
Tehran						
1	50.92	23.08	13.54	6.15	6.31	100.00
2	27.26	26.96	17.78	18.37	9.63	100.00
3	18.21	24.38	25.11	17.03	15.27	100.00
4	1.93	16.47	25.07	36.65	19.88	100.00
5	3.54	9.29	17.55	21.53	48.08	100.00

Note: A high grain purchase is defined as 250 kg or more per month, in which case their actual grain expenditure is replaced by the average for the four years.

Table 22: Comparing poverty rates with and without smoothing of grain purchases:

Panel year	Rural			Urban			Tehran		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
1992	0.21	0.19	0.15	0.19	0.18	0.14	0.24	0.23	0.2
1993	0.28	0.24	0.21	0.21	0.19	0.17	0.18	0.17	0.16
1994	0.29	0.27	0.26	0.21	0.21	0.2	0.29	0.29	0.28
1995	0.24	0.25	0.26	0.21	0.21	0.23	0.33	0.33	0.34

Note: Column (1) not smoothed; (2) grain consumption smoothed for households with high grain purchases; (3) all grain consumption smoothed

4 Understanding short and long term poverty

Panel data can help us not only measure the extent of mobility but also understand if those who suffer from long term and short term poverty differ in important respects. There are many different ways in which the information in the panel can be used to define long vs. short term poverty; for example, based on the number of years in poverty or on how the individual does on average during the panel. Jalan and Ravallion (2000) offer a particular definition which is widely used in the empirical literature because of its appealing additive property: that is, the measures of chronic and transient poverty in a given year add up to the same measure of total poverty.

Because my primary aim is not to decompose poverty, I do not need the additivity property and can therefore use a simpler distinction of short and long term poverty. I define as long term or chronically poor those individuals whose mean real expenditures for the panel years falls below the poverty line. To avoid confusion with the Jalan-Ravallion concept I will call these people long term poor. Short term poor (akin to transient poor in Jalan and Ravallion) are those who are *not* long term poor—that is, their mean consumption exceeds the poverty line—but who fall into poverty at least one year in the panel period. These measures have intuitive appeal and allow probit analysis of their determinants.

Long term poverty for 1992-95 is measured at 15 percent nationwide; highest in Tehran, 20 percent, and lowest in other urban areas, 12 percent (Table 23). Short term poverty rates are unsurprisingly much higher (because being poor in any one year of the panel qualifies a person as short term poor) and range from 38% in rural areas to 28 percent in urban areas. Residents of Tehran and rural areas face different situations, with the former facing higher long term poverty and the latter higher short term poverty. Other urban areas have the lowest long and short term poverty rates.

We can also consider short term poverty by the year in which the person was poor. The last four rows of Table 23 present this modified notion of short term poverty. Again the

rates are highest in Tehran and rural areas, but we are also able to see that for those who are not long term poor (that is, their mean expenditure is above the poverty line), all four years were not equally likely to bring misfortune. For example, in 1993, just before the macroeconomic shock, only 7 percent of Tehran residents who were not long term poor fell into poverty, whereas 16 percent of such individuals were poor in rural areas. The yearly short term poverty rate doubles in Tehran in 1994-95, after the shock, while the rural rates were actually lower in 1995.

Table 23: Proportion of individuals in short and long term poverty by region (balanced panel), 1992-95

Year	Rural	Urban	Tehran	Total
Long term poor	0.15	0.12	0.20	0.15
Short term poor	0.38	0.28	0.33	0.33
Not long term poor but poor in:				
1992	0.11	0.09	0.11	0.10
1993	0.16	0.09	0.07	0.12
1994	0.16	0.11	0.13	0.14
1995	0.12	0.11	0.15	0.12

Are individuals who are long and short term poor different in their characteristics? Since policies that help the long term poor—public assistance—may differ from policies that help the short term poor—access to credit—identifying characteristics associated with each type of poverty is important for public policy. For example, identifying them by age and education of the head of household, place of residence, employment, and the like would help in better targeting them. To do this I estimate probit equations for the two binary variables, long term poor and short term poor. The results are presented in Table 24.

Discussion of regression results (Table 24):

- Age. The effect of the age of the household head is significant for long term but not for short term poverty. Rather surprisingly, individuals living in households headed by persons older than 55 are the least likely to suffer from long term poverty, and those

Table 24: Determinants of short and long term poverty using probit analysis

	Short term (1992)		Long term		Poor in 1992	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Age (omitted: age 15-34)						
35-54	-0.031	0.026	-0.040*	0.019	-0.050*	0.023
55 and older	-0.025	0.032	-0.081*	0.019	-0.070*	0.025
Education (omitted: illiterate)						
read & write	-0.010	0.027	-0.037*	0.018	-0.060*	0.022
primary	-0.043	0.029	-0.095*	0.020	-0.129*	0.024
high school	-0.172*	0.033	-0.130*	0.014	-0.183*	0.018
university	-0.276*	0.032	-0.136*	0.015	-0.201*	0.017
Region (omitted: rural)						
urban	-0.062	0.037	0.021	0.034	0.029	0.039
Tehran	0.022	0.041	0.130*	0.051	0.167*	0.049
Private sector	0.040*	0.032	0.010	0.023	0.081*	0.033
Employment (omitted: employed)						
retired	0.048	0.075	0.140*	0.077	0.144*	0.077
unemployed	0.046	0.040	-0.029	0.025	0.020	0.038
Other	0.008	0.048	0.064	0.045	0.024	0.047
Household size	0.022*	0.005	0.013*	0.005	0.021*	0.006
Female head	-0.11**	0.051	0.028	0.052	-0.027	0.053
	Pseudo R2=0.0431		Pseudo R2= 0.0726		Pseudo R2 = 0.0727	
Number of observations: 3365						

Note: Coefficients are marginal probabilities. Significance levels:

* 5 percent, ** 10 percent. Standard errors are robust.

belonging to the youngest group (under 35) are the most likely. This is probably due to the fact that in Iran incomes and assets increase with age. Figure 7 shows how predicted probabilities of long and short term poverty differ with respect to age. The age profile for both long and short term poverty are one of rising to age 35 and declining thereafter, with the short term probabilities more than twice the long term probabilities.

- Education. The effect of the education of the head is significant and negative for all levels of education for long term poverty but for short term poverty the effect is only significant with high school and above. For short term poverty education beyond primary appears to have a decisive effect. Figure 7 shows that short term poverty is more responsive to education at low levels of education. Predicted probabilities are the same at higher levels of education.
- Region of residence. Residence appears to play no role in the likelihood of short term poverty; none of the coefficients are significant. Urban individuals, despite lower poverty rates in urban areas, are not more likely to be poor either in its long or short term kind. Tehran residents are denitrified here as being subject to higher probability of being long term poor relative to rural individuals. This is not a surprising result for a major metropolitan area, wherein the least fortunate may move to from rural and other urban areas.
- Private sector employment. Individuals in households whose head is employed in the private sector are at greater risk of short term poverty relative to public sector employed, but not for long term poverty. This is expected because employment and pay in private sector is more variable than public sector.
- Employment status: As expected the retired are more likely to suffer from long term poverty. The coefficient for the retired category is positive and significant for long

term poor but not short term.

- Household size. Its effect on long term poverty is positive, as expected, and slightly stronger than in the case of short term poverty.
- There is a weak but interesting result in the regressions with respect to the female headship of the household. Individuals living in households headed by a woman are *less* likely to be short term poor than those headed by men, which is not the case for long term poverty. There the coefficient of female headship is in fact positive but not significant. That female headship should not be associated with increased poverty of either kind is perhaps not surprising in Iran of the early 1990s. The government was aware, and approving, that women were not typically breadwinners due to their low activity rate, and, in addition, many had lost their breadwinners during the war with Iraq (1980-88). The targeting of public assistance programs in their case may have been more effective due to their visibility on the government's radar screen.

5 Concluding remarks

This paper has tried to evaluate the information contained in the 1992-95 panel data to might shed light on economic mobility and the extent and persistence of poverty in Iran. Clearly, a lot more can be learned from these data than I have been able to report here. The lack of a published literature, especially in English, on mobility and poverty in Iran and no previous poverty analysis of the panel data necessitated a more detailed and survey like approach in this paper with less emphasis on issues of analytical and policy interest. Nevertheless, several interesting results emerge from the study. First, substantial poverty exists in Iran despite the government's expressed desire to give top priority to distribution even at at the expense of growth. Long term poverty rates are much lower, but both long and short term poverty rates are comparable to those observed in other countries with very

Figure 6: Predicted probabilities of being short and long term poor by age group

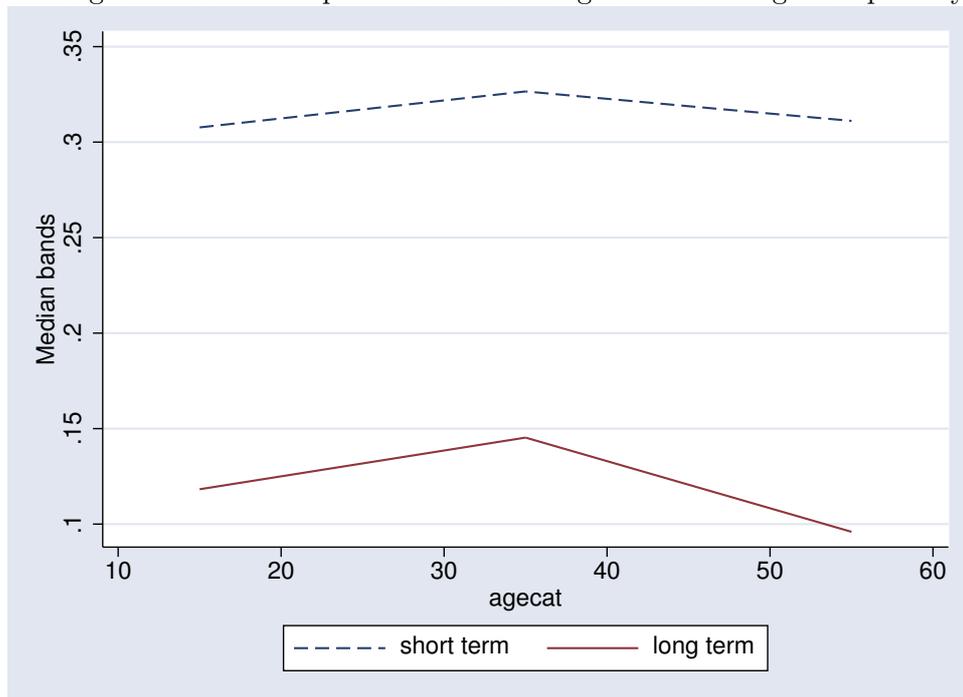
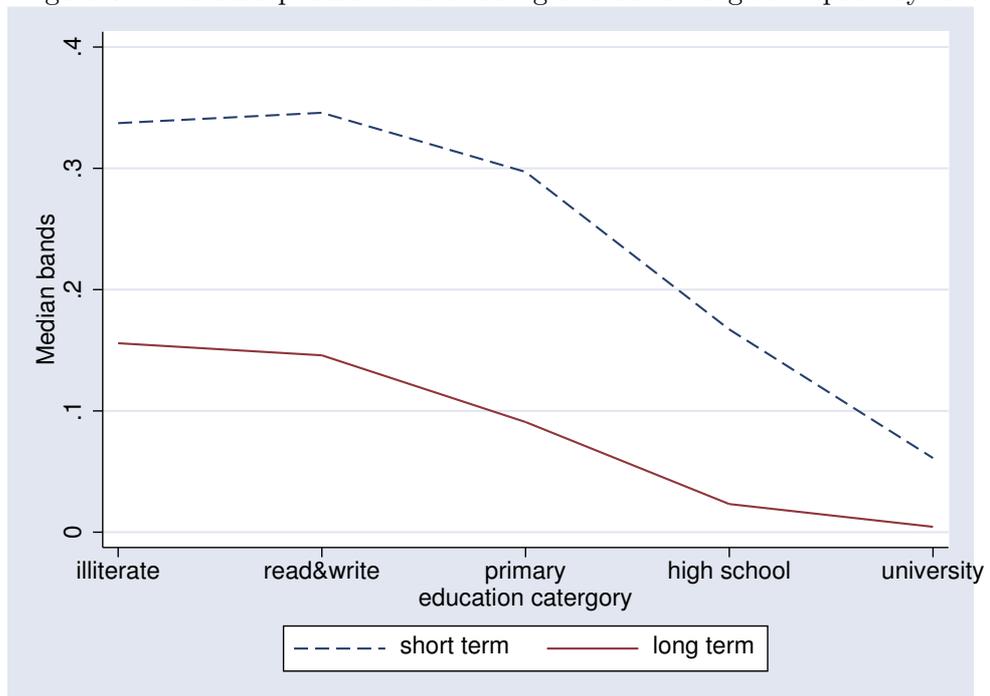


Figure 7: Predicted probabilities of being short and long term poor by level of education



different economic and political goals.

There is some evidence that the extent of mobility estimated from the panel data is exaggerated. Several adjustments reduced estimated mobility by as much as one third. Mobility appears higher for rural persons at the lower end of the expenditure distribution than for urban residents. This is perhaps related to the higher variance of rural incomes than any genuine social and economic mobility. This may seem to contradict the aspirations and expectations of the rural poor who migrate to urban areas in search of a better life. This issue is very important for social policy and deserves further attention.

The last part of the paper attempted to understand if long and short term poverty are correlated with the observed characteristics of households. Differences are noted in age and education profiles, as well as the effect of employment, place of residence, and gender of the household head. Long term poverty is more strongly affected by the age of the household head than short term poverty, and by his or her education at the lower end of the educational levels. Short term poverty shows significant declines only for high school and university levels. The gender of the head reduces short term poverty but has no effect on long term poverty. Private sector work increases the probability of short term poverty but has no effect on long term poverty. Households headed by a retired person suffer from greater long term but not short term poverty. These differences warrant attention to dynamic measures of poverty for design of policy to combat poverty in Iran.

References

- Abrahamian, E. (1982). *Iran between two revolutions*. Princeton, N.J.: Princeton University Press.
- Baulch, R. and J. Hoddinott (2000). Economic mobility and poverty dynamics in developing countries. *Journal of Development Studies* 36(6), 1–24.

- Deaton, A. (1997). *Analysis of household surveys*. Baltimore and London: Johns Hopkins.
- Deaton, A. (2001). Adjusted indian poverty estimates for 1999-2000. Technical report.
- Esfahani, H. S. (2003). Alternative public service delivery mechanisms in iran. Department of Economics, University of Illinois, processed.
- Fields, G. S. (2001). *Distribution and Development*. New York: Russell Sage Foundation; Cambridge, MA: MIT Press.
- Haddad, L. and A. Ahmed (2002). Chronic and transitory poverty: Evidence from egypt, 1997-99. *World Development* 31(1), 71–85.
- Jalan, J. and M. Ravallion (2000). Is transient poverty different? evidence for rural China. *Journal of Development Studies* 36(6), 82–99.
- Lipton, M. and M. Ravallion (1995). Poverty and policy. In J. Behrman and T. N. Srinivasan (Eds.), *Handbook of Development Economics, III*. Amsterdam: North Holland.
- Luttmer, E. F. P. (2001). Measuring poverty dynamics and inequality in transition economies: Disentangling real events from noisy data. The World Bank, mimeo.
- McCulloch, N. and B. Baulch (2000). Simulating the impact of policy upon chronic and transitory poverty in rural Pakistan. *Journal of Development Studies* 36(6), 1–24.
- McKay, A. and D. Lawson (2002). Chronic poverty: a review of current quantitative evidence. Chronic Poverty Research Center Working Paper No 15, School of Economics, University of Nottingham.
- Morduch, J. (1994). Poverty and vulnerability. *American Economic Review* 84(2), 221–225.
- Pajhouyan, J. (1999). *Bar rasi faghr va sharayet eghtesadi khanevar dar ostan Tehran (The study of poverty and the economic conditions of households in the Tehran province)*. Tehran, Iran: Management of Planning Organization (formerly the Planning and Budget Organization).

- Pajhouyan, J. (2000). Naghsh nezam tamin ejtemai dar kahesh faghr (the role of social security system in poverty reduction), in Persian. In F. Raisdana (Ed.), *Faghr dar Iran (Poverty in Iran)*. Tehran, Iran: Social Welfare University.
- Pesaran, M. H. (2000). Economic trends and macroeconomic policies in post-revolutionary Iran. In P. Alizadeh (Ed.), *The Economy of Iran: The Dilemmas of an Islamic State*. London: I.B. Tauris.
- Salehi-Isfahani, D. (2003). Poverty measurement in Iran. Technical report, Virginia Tech Department of Economics, mimeo.
- Tabibian, M. (2000). *Faghr va touzie daramad dar Iran (Poverty and income distribution in Iran)*. Tehran, Iran: Institute for Research in Planning and Development.
- Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.
- World Bank (2003). Iran: Medium term framework for transition, converting oil wealth to development. A Country Economic Memorandum, The World Bank .