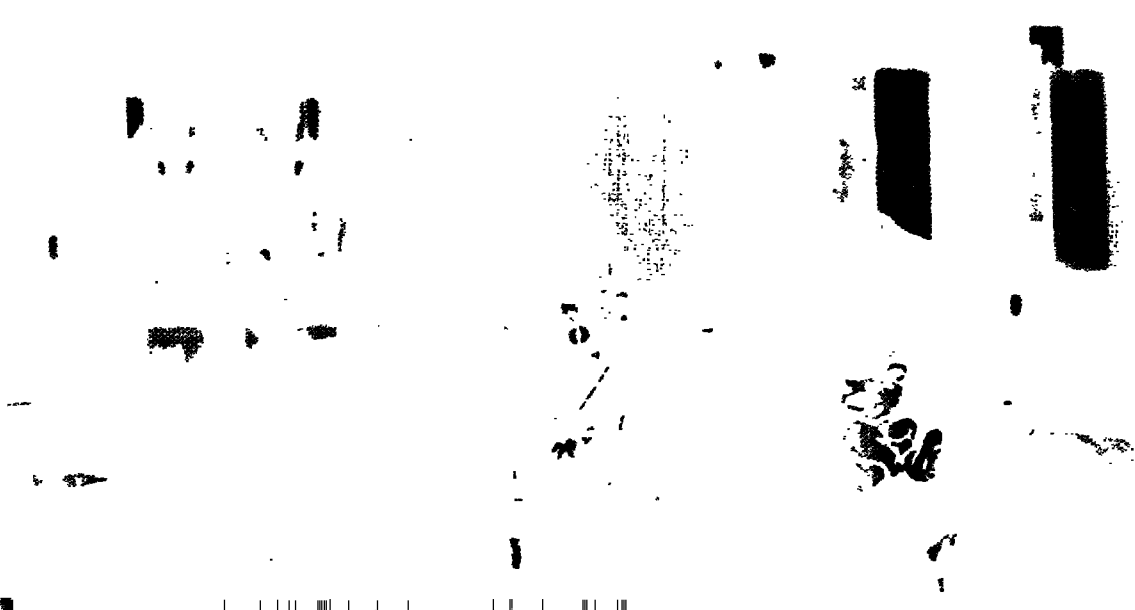


Jordan Poverty Main Report

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JORDAN
POVERTY ASSESSMENT
MAIN REPORT

VOLUME 2
DECEMBER 2004



**The Hashemite
Kingdom Of Jordan**



The World Bank



CURRENCY AND EQUIVALENTS

US\$1 =0.709JD

ABBREVIATIONS AND ACRONYMS

BA	Bachelor Of Art
BIA	Benefit Incidence Analysis
BMR	Bbasal Metabolic Rate
BOP	Balance Of Payments
CBN	Cost Of Basic Needs
CPI	Consumer Price Index
DCI	Direct Calorie Intake Method
DHS	Demographic And Health Service
DOS	Department Of Statistics
DPT	Diphtheria, Pertussis, And Tetanus
EAV	Expected Average Vulnerability
ECE	Early Childhood Education
EDSTATS	Educational Statistics
EFA	Education For All
EUS	Employment And Unemployment Survey
FAO	Food And Agriculture Organization
FEI	Food Energy Intake Method
FGT	Foster-Greer-Thorbecke
FHH	Female-Headed Household
FIS	Family Income Supplement
GDP	Gross Domestic Product
GER	Gross Enrollment
HDI	Human Development Index
HEIS	Household Expenditure and Income Survey
ICT	Information And Communication Technology
IEA	International Assessment Of Educational Progress
IFAD	International Fund For Agricultural Development
IFRPI	International Food Policy Research Institute
ILO	International Labor Organization
Inactive LT	Long-Term
Inactive ST	Short-Term
JD	Jordanian Dinar
JFS	Jordan Fertility Survey
JPFHS	Jordan Population And Family Health Survey
KG	Kilogram

KGs	Kindergartens
MD	Medical Doctor
MDGs	Millennium Development Goals
MENA	Middle East And North Africa
MHH	Male-Headed Household
MNFPL	Average Per-Capita Non-Food Poverty Line
MOH	Ministry Of Health
MOSD	Ministry Of Social Development
NAF	National Aid Fund
NCHS	National Center For Health Statistics
NER	Net Enrollment Rate
NFPL	Non-Food Poverty Line
NGO	Non Profit Organization
OECD	Organization For Economic Co-operation And Development
OLS	Ordinary Least Squares
PEGRs	Poverty Equivalent Growth Rate
PREM	Poverty Reduction And Economic Management
PSU	Primary Sampling Units
RLMS	Russian Longitudinal Monitoring Survey
RMS	Royal Medical Services
TIMSS	Third International Mathematics And Science Study
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief And Works Agency
US	United States
US\$PPP	United States Dollars (Purchasing Power Parity)
WHO	World Health Organization



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terms of the percentage of the poor), reversing the trend observed earlier in the decade. The increase in unemployment registered in Zarqa from 11 percent to 14 percent, the steep rise in NAF claimants corroborate that living conditions must have worsened in Zarqa. Some significant factors such as relocation of military establishments could be at work here.

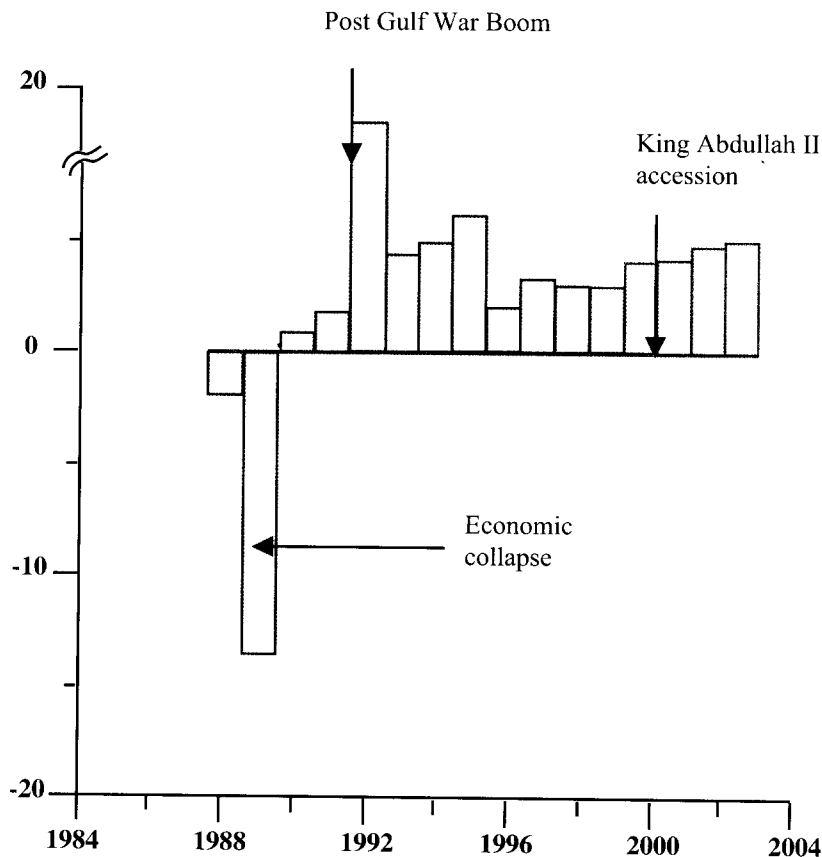
- *Within Jordan there are pockets of intense poverty (12 out of 73 sub-districts). In these pockets, the incidence of poverty is extreme reaching up to 75 percent of the population. The sub-districts identified as pockets of poverty tend to be mostly located in the desert areas of the country that are thinly populated posing special challenges for spreading fruits of development.*

POVERTY IS A KEY CONCERN FOR POLICY MAKERS IN JORDAN

1.3. Jordanians are very sensitive to poverty and unemployment. It is useful to remember that Jordan had little poverty or unemployment prior to the economic collapse in 1989. The inevitable economic collapse dumped 17 percent of the Jordanians into poverty and rendered 20 percent of the labor force unemployed. Following successful macroeconomic stabilization in the early 1990s, GDP growth peaked to near 19 percent in 1992 (Figure 1.1) helped in part by the housing boom fed by the savings brought in by the Gulf returnees. However, growth proved to be transient as the housing boom ran its course and expectations of peace dividends from 1994 peace accord did not materialize. Active redistribution policies reduced consumption inequality and reduced the proportion of poor by 2.6 to 2.7 percentage points between 1992 and 1997 despite the 1.5 percent decline in per-capita consumption in that period¹.

¹ World Bank (2001). Using Survey per-capita consumption expenditures deflated by CPI, Table 1.11 on page 23.

Figure 1.1: Real GDP Growth Rates In Jordan, 1988-2003



Source: World Bank (2001), updated.

1.4. After sputtering at a GDP growth rate just below population growth, the economy responded resiliently since 1999 overcoming the adverse neighborhood effects. This revival is not an accident. Upon ascending the throne in that year, His Majesty King Abdullah II consciously promoted an accelerated pace of structural reforms which, among other things, had the net effect of bringing down weighted average import tariffs to 10 percent and achieving a privatization record amounting to 11 percent of GDP. Jordan has achieved acceleration in Human Development Index (Box 1.1) particularly since 1999 even as it made rapid strides in structural reforms.

1.5. Despite impressive policy changes, concerns about the impact of these policies on the lives of ordinary Jordanians remain. Though GDP growth revived to an average of 4



percent since 1999, the unemployment rate estimated by official agencies remained at around 14 percent. Prompted by the concern towards the disadvantaged, the government announced a comprehensive national strategy for poverty alleviation in Jordan in May 2002. The ceiling for assistance to families covered by Jordan's social safety nets was increased 75 percent to JD 156 in 2002. Jordan's National Social and Economic Plan (2004-06) reflects the continued concern on the part of national planners and identifies "relatively high levels of poverty and unemployment" at the top among the list of current challenges faced by Jordan. The new plan targets reduction in the proportion of poor by a third over 2004-06 to 8 percent. This is sought to be implemented in the plan by selecting investment projects with explicit weight for potential to reduce unemployment and poverty in rural and remote parts of the country.

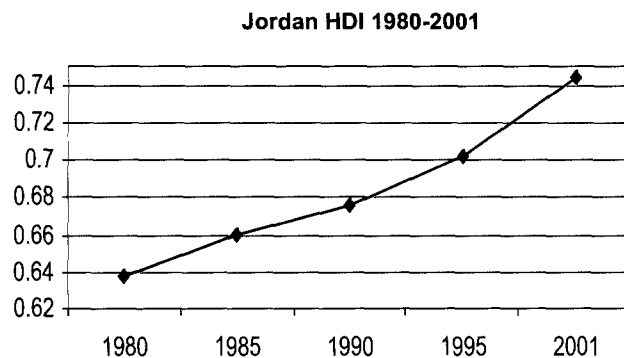
1.6. Amidst this rising concern for the poor, the current poverty assessment seeks to build a consensus on a new poverty line for Jordan, to derive new estimates of poverty, and to understand the profile of the poor using the results of the Household Expenditure and Income Survey 2002-03.

Box 1.1: Jordan Excels In Human Development

Jordan's achievements in Human Development exceeds comparators at similar levels of GDP. The UNDP's Human Development Index (HDI) is a composite indicator of welfare that combines a weighted sum of three indices related to life expectancy at birth, educational attainment, and per-capita income (the higher score the better). According to the HDI classification, UNDP classifies Jordan a medium human development country. Its overall human development ranking is 90 (among 175 countries) and the

HDI value is 0.743. The accompanying chart shows the steady improvement in human development for Jordan over the last two decades. Jordan's life expectancy has improved from 67 years in 1990 to 70.6 in 2003. Over the same period adult literacy rate has grown from 75% to 90.3% and real GDP per-capita (US\$ PPP) has increased from 3161 to 3870.

Jordan's Human Development achievements compares favorably with other Arab and non-Arab comparators. Lebanon is the only non-oil producing Arab country that ranks higher than Jordan. In terms of life expectancy, Jordan is just behind Lebanon and Tunisia among its Arab comparators.



Source: Jordan Human Development Report, UNDP, 2000

NEW POVERTY LINE FOR JORDAN

1.7. The official poverty line for Jordan dates back to 1987 (Al-Saqour et al 1989). In calculating that poverty line the committee essentially used a normative basket (food and non-food) for a typical Jordanian household and calculated the cost of the items. The two World Bank studies on poverty in Jordan since that time (World Bank 1994 and 2001) updated the original poverty line derived for 1987 with the consumer price index. Thus, for example, the World Bank (2001) used JD 313.5 as the “absolute” poverty line per-capita per year for 1997. A good summary of the past poverty studies in Jordan including the poverty lines used in them (ranged from JD 252 to JD 478 in 1997 prices) is available in the last poverty study for Jordan by the World Bank (2001) and not reproduced here for economy. No significant new studies have become available since then.

1.8. Estimating a set of new poverty lines for Jordan that are specific to household demographic characteristics, allow for spatial price differences and economies of scale, and anchored in the current, revealed that the expenditure pattern of households is expected to improve the quality of the estimated poverty line and poverty measures following current best practices. A comprehensive discussion of critical methodological issues in constructing poverty lines such as the concept of poverty, different approaches to poverty lines, the criteria to be met by absolute poverty lines, choices in setting food poverty lines and non-food poverty lines is provided in Annex 1.1.

1.9. Much of the calculations for the new poverty lines and poverty measures rely on the newly available HEIS (2002). This survey was done in four quarterly Rounds between March 2002 and February 2003. For the first time, a large sample of 12,792 households were surveyed using a two-stage stratified cluster sampling technique designed to give reliable estimates of consumption and income at the sub-district level. A detailed note on the sample design is placed in Annex 1.2. The previous household survey for 1997 was done on a much smaller scale of 6000 households. Most of the common questions between the two surveys were considered comparable for the purposes of calculation of consumption aggregate. A detailed comparison of the two surveys is presented in Annex 1.3. Standard errors for household consumption expenditure estimates for all the sub-districts in Jordan are placed in Annex 1.4 to help judge the reliability for the estimate. HEIS (2002) had special questions on disability, receipts of transfer payments, environment, etc, which add scope for more detailed analysis of poverty.

Calorie requirements

1.10. The food poverty line may be constructed using the calorie requirements (norms) of individuals. This is a very common approach that is used in many countries to construct food poverty line.

1.11. Since the calorie norms vary from country to country depending on factors such as age, sex, body weight and activity levels, it is important that we adopt norms



appropriate for the country being studied. In the construction of Jordanian poverty line, we should use the caloric norms that are appropriate for the Jordanian population. We followed the following procedure to construct the caloric norms, which are appropriate for the Jordanian population.

1.12. First we obtained the average weight of the Jordanian population that is 10 years old and over. The weights obtained from James and Schofield (1990) together with recent update on Jordanian adult body weights obtained from a module to Employment Unemployment Survey in May 2002 served as the basis as presented in Table 1.1.

Table 1.1: Average Weight Of The Jordanians

Age	Male	Female
10	26.7	25.2
11	29.7	28.3
12	33.4	31.7
13	43.8	41.2
14	50.1	45.0
15	56.5	51.9
16	62.0	56.4
17	66.0	59.1
18-29	71.5	60.1
30-59	77.6	71.2
60+	76.7	73.7

Source: Staff Estimates

Note: Age groups 18 and up from Jordan Ministry of Health special "Behavioral Risk" module added to May 2002 Employment, Unemployment Survey. For ages 10 through 17, information was obtained from James and Schofield (1990) and then the weight of the teens (13 to 17) were adjusted to match the ratio of the weight of the 18-29 age group in the Behavioral Risk study and James and Schofield (1990).

1.13. Given the average weight of the population by age and sex, one can use the following standard formulae to estimate the basal metabolic rate (BMR) caloric or energy requirements of individuals while at rest.

Male by age	Equation for calorie per day
10-17 years	$17.5*W+651$
18-29 years	$15.3*W+679$
30-59 years	$11.6*W+879$
60+ years	$13.5*W+487$

Female by age	
10-17 years	$12.2*W+746$
18-29 years	$14.7*W+496$
30-59 years	$8.7*W+829$
60+ years	$10.5*W+596$

1.14. Individual BMR requirements calculated by these formulae need to be multiplied by a factor to reflect an individual's activity level. The average BMR multipliers for current activity level are given as follows:

Males with light activity = 1.55
Female with light activity = 1.56
Male with moderate activity = 1.78
Female with moderate activity = 1.64
Male with heavy activity = 2.10
Female with heavy activity = 1.82

1.15. Since we did not have the activity levels of each individual in the household, we decided to use the moderate activity multipliers for both male and female. Thus, we multiplied BMR requirements for male individuals by 1.78 and female individuals by 1.64.

1.16. The calorie requirements so calculated for the population aged 10 years and older are presented in Table 1.2.

Table 1.2: Daily Calorie Requirements For Jordanian Population

Age	Male	Female
<2 years	791	740
2-5	1618	1480
6-9	1924	1689
10	1990	1728
11	2084	1790
12	2199	1858
13	2522	2048
14	2720	2124
15	2917	2262
16	3092	2353
17	3216	2406



Age	Male	Female
18-29	3156	2262
30-59	3167	2375
60+	2710	2247
Average: 1997	2314	
Average 2002-03	2309	

Source: Staff Estimates based on HEIS (2002).

1.17. The calorie requirements for children under 10 years of age by sex were obtained directly from FAO Nutrition Technical Assistance (FANTA) project. They are based on National Center for Health Statistics (NCHS, USA) median weights at mid-point of age range. For the younger children, less than two years old, an allowance was made for likely infection.

1.18. It can be seen that calorie requirements vary substantially with age and sex. Children require fewer calories than the adults. Also, males require considerably more calories than females. Most studies on poverty specify a single calorie requirement for everyone in the population (for instance 2000 calories per person per day). This would, obviously, bias the estimates of poverty incidence. The incidence of poverty among the families with children will likely be overestimated and the families with proportionally more adults would be underestimated.

1.19. To obtain the average nutritional requirements of the population, one needs to aggregate the per person calorie requirement of each individual in the sample households in the survey. This aggregation was performed by means of the weighted average method with the weight equal to population weight given to each sample household.²

1.20. It is noted Table 1.2 that the Jordanian population in 1997 required an average of 2314 calories per person per day. This average decreased slightly to 2309 in 2002-03, which is attributed to the change in the population composition that occurred between 1997 and 2002-03.

Calorie intake and calorie cost

1.21. Having decided upon the calorie requirements, the next step is to convert required calories into a food poverty line, which is the expenditure on food that is required to meet the exogenously determined calorie requirements. If we know the cost of buying the calories, then the food poverty line will be equal to calorie requirements multiplied by the cost of calories. Thus, the next step will be to determine the cost of calories.

² Population weights were determined by multiplying sample weights by household size

1.22. Jordan's HEIS provides information on quantities of food consumed by the households. These food quantities can be converted into calories by means of food calorie conversion factors, which are generally available from the country's nutritional departments. Unfortunately, the detailed calorie conversion factors are not available in Jordan. Jordan's health department provided us with calorie conversion factors for some commodities, which we supplemented with conversion factors obtained from the FAO web site. Annex 1.5 presents the calorie conversion factors constructed for this study.

1.23. Given the quantities of food consumed by each sample household, we could compute the actual calorie intake of each sample household by multiplying the quantities by the calorie conversion factors. Dividing the calorie intake of each household by its size gave us each household's per-capita calories intake.

1.24. Do the richer households have a greater per-capita calorie intake than the poorer households? To answer this question, we constructed quintiles on the basis of per-capita total household expenditure.

1.25. Figure 1.2 presents the per-capita calorie intake by quintiles. It is noted that the bottom quintile consumes 1857 calories per person per day whereas the top quintile consumes 5030 calories per person per day. Thus, there exists a huge difference in calorie consumption between the rich and the poor. This huge difference may partly be due to the fact that the richer households have greater wastage of food than the poorer households.

Table 1.3: Per-Capita Calorie Intake, Food Expense And Calorie Cost: 2002-03

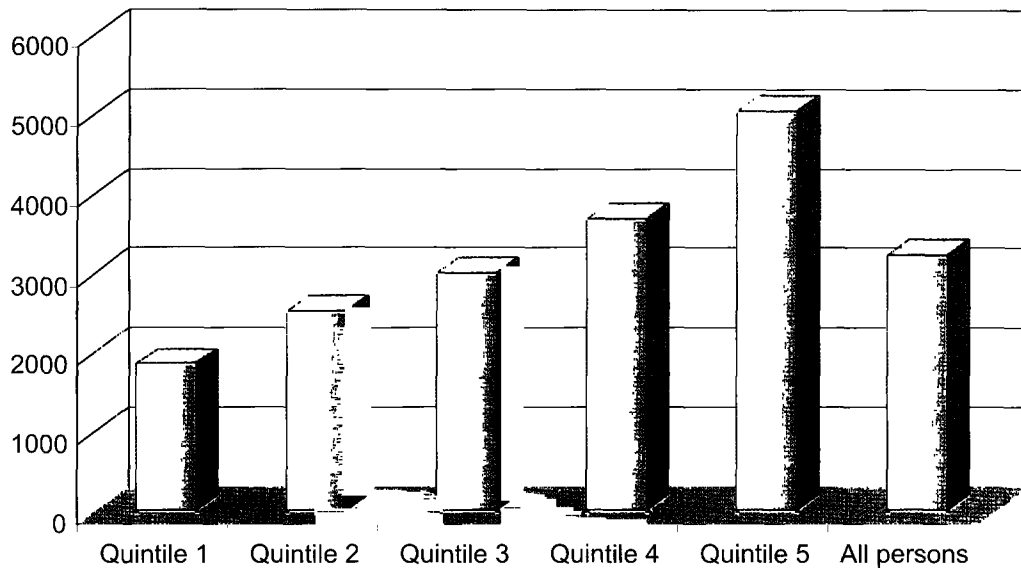
Quintiles	Per-capita Food exp	Calorie intake Per person	Calorie cost Per 1000 cal
Quintile 1	JD 150	1857	0.2217
Quintile 2	JD 242	2522	0.2627
Quintile 3	JD 324	3007	0.2953
Quintile 4	JD 436	3671	0.3251
Quintile 5	JD 754	5030	0.4139
All persons	JD 383	3217	0.3265

Note: The numbers in the last column appear approximate due to the rounding off to the nearest numbers in the earlier columns.

Source: Staff Estimates based on HEIS (2002).



Figure 1.2: Per-Capita Daily Calorie Intake By Quintiles



Source: Staff Estimates based on HEIS (2002).

1.26. Table 1.3 presents the per-capita food expenditure by quintiles along with calorie intake and calorie costs. In the first quintile, the per-capita food expenditure is only JD 150 per annum whereas in the fifth quintile, it is JD 754.

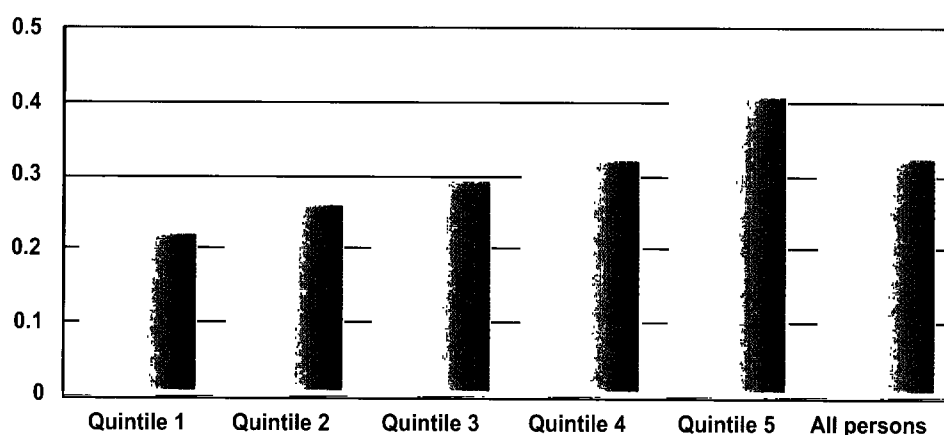
1.27. Given the per-capita food expenditure and per-capita calorie intake, we can calculate the calorie cost for each quintile by dividing the food expenditure by the calorie intake. The last column in Table 1.3 presents the calorie cost in JD per 1000 calories. It can be seen that the population in the bottom quintile spends JD .2217 in order to be able to consume 1000 calories whereas the population in the top quintile spends JD .4139 in order to be able to consume the same 1000 calories. This huge difference in calorie costs is due to the fact that richer households tend to consume rich food, which is more expensive.

1.28. It is obvious that in the determination of food poverty line, we cannot take account of expensive tastes of the rich households. If we did, then the poverty line will be so high that most of the population will be poor. When the government adopts a poverty line, it agrees on a minimum standard of living to which everyone in the society should be entitled. If the poverty line is too high, then the government would not be able to fulfill its commitment to maintain the minimum standard of living of its population. The poverty line should not be so low that almost everyone in the society is non-poor. In such a situation, the government may not be motivated enough to raise the standard of living of those who are unable meet the absolute basic needs. These absolute basic needs are not completely absolute. They are relative to the society's overall standard of living. So in

determining the poverty line, we have to decide upon a reference group, whose consumption pattern (or calorie cost) we should use in order to build on the poverty line.

1.29. The calorie cost is an important determinant of the standard of living of a household. Technical proof that calorie cost adjusted for regional food prices is a monotonically increasing function of the society's minimum standard of living is provided in Annex 1.6. The calorie cost increases as we move from a lower quintile to a higher quintile, which implies that the calorie cost increases more or less monotonically with the household's per-capita consumption expenditure. It is obvious that the reference group should contain the population that can generally be regarded as poor. This suggests that the population belonging to the bottom quintile may be a good reference group, which on average spends JD .2217 in order to consume 1000 calories (Figure 1.3). So we have decided to determine the food poverty line using the calorie cost of JD .2217 (per 1000 calories).

Figure 1.3: Calorie Cost Per 1000 Calories By Quintiles



Source: Staff Estimates based on HEIS (2002).

Spatial price indices

1.30. Spatial price indices measure the relative costs of living in different regions and communities. These indices are essential for poverty measurement because they allow one to take into account regional cost of living differences.

1.31. To compute the spatial price indices, we need to know the average prices for food and non-food items of consumption in each region. Jordan has 12 governorates, which are like provinces in other countries. Until 1997, Jordan's Department of Statistics (DOS) collected these prices for each governorate. Utilizing a national basket and average prices, the DOS computed the spatial price indices for each governorate. These indices computed separately for food and non-food items of consumption are presented in Table



1.4. The index for Jordan is 100. The relative cost of living in each governorate can be compared with respect to the average cost of living in Jordan.

Table 1.4: Spatial Price Indices By Governorates In 1997

	Food	Non-food	Total
Amman	101.31	108.09	105.09
Balqa	97.76	84.45	93.00
Zarqa	99.89	95.17	98.15
Madaba	97.17	90.44	95.98
Irbid	97.4	90.45	95.38
Mafrq	96.44	84.89	92.91
Jarash	97.4	90.81	95.38
Ajloun	96.2	84.64	92.78
Karak	98.83	88.81	94.69
Tafeela	99.46	89.99	96.82
Maan	101.78	90.67	97.84
Aqaba	102.78	97.06	99.81
Jordan	100.00	100.00	100.00

Source: Staff Estimates based on HEIS (2002).

1.32. Given the spatial price indices in 1997, one could obtain the spatial price indices for 2002-03 by means of consumer price indices computed separately for each governorate. Unfortunately, in the late 1990s, the DOS stopped collecting the price data in each governorate so we cannot know how the prices have changed in each governorate between 1997 and 2002-03. However, price indices at three regional levels (North, Center and South) are available, which we assume to hold good for all the governorates in the same region. Thus, we computed the spatial prices indices in 2002-03 given in Table 1.5 by applying uniformly the national food, non-food and total price changes to each governorate.

**Table 1.5: Spatial Price Indices By Governorates In 2002
1997 = 100**

	Food	Non-food	Total
Amman	101.9	120.2	111.9
Balqa	98.3	93.9	99.0
Zarqa	100.5	105.8	104.5
Madaba	97.7	100.6	102.2
Irbid	96.6	100.4	100.4
Mafrq	95.6	94.3	97.8
Jarash	96.6	100.8	100.4
Ajloun	95.4	94.0	97.7
Karak	97.1	94.5	97.0
Tafeela	97.7	95.8	99.2
Maan	100.0	96.5	100.2
Aqaba	101.0	103.3	102.3
Jordan	100.1	110.8	106.0

Source: Staff Estimates based on HEIS (2002).

Food poverty line

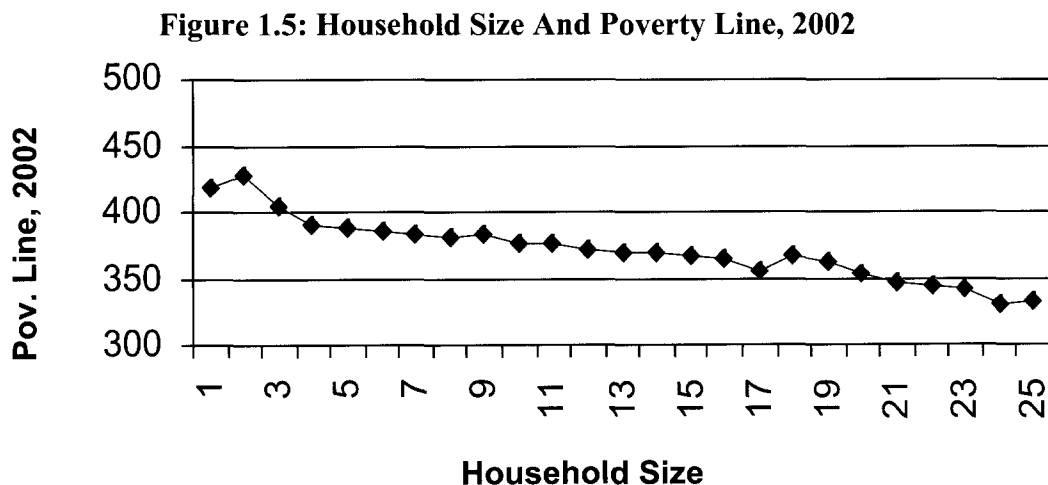
1.33. As pointed out, once we know the calorie requirements, we can compute the food poverty line by multiplying the calorie requirements by the costs of the calories. The cost of calories is determined by the food baskets that different sections of the population consume. The average calorie cost incurred by the households in the first quintile was calculated to be equal to JD 0.2217 per 1000 calories. We would use this as a benchmark to compute the food poverty line.

1.34. Since the cost of buying food varies across the governorates and over time, the calorie cost needs to be accordingly adjusted. This adjustment can be done using the spatial price indices for food given in Tables 1.4 and 1.5. Table 1.6 represents the calorie cost per 1000 calories in 1997 and 2002-03 for each governorate. The differences in calorie costs across governorates are attributed to the differences in food prices.



1.47. The above procedure provides the non-food poverty line at the national level. To achieve consistency of the non-food poverty line across the governorates, we have to ensure that the real non-food poverty line is the same across all governorates. Since the spatial non-food prices indices are given in Tables 1.4 and 1.5, we can easily make adjustment to the non-food poverty line for differences in non-food prices across governorates. We made this adjustment such a way that the average non-food poverty line in Jordan is the same.

1.48. Finally, we made an adjustment for economies of scale. Using a model proposed by Kakwani (2000), we estimated the economies of scale parameter for non-food as equal to 0.92. In the estimation of this parameter, we assumed that there are no economies of scale in the food consumption. Figure 1.5 shows the effect of economies of scale on per-capita poverty lines implicitly including demographic characteristics of households as household size increases. While the estimated average poverty line is JD 392, among households it can vary between JD 330 to JD 450.



Source: Staff Estimates based on HEIS (2002).

1.49. Suppose (MNFPL) is the average per-capita non-food poverty line and θ is the economies of scale parameter, then the adjustment for economies of scale can be made using the formula

$$(NFPL)_i = k (MNFPL) n_i^{(\theta - 1)}$$

where k is the constant of proportionality. If θ is equal to 1, then every household will be allocated the same per-capita non-food expenditure of (MNFPL) implying no economies of scale. If θ is equal to 0, the i th household will be allocated the per-capita expenditure of (MNFPL)/ n_i . The parameter k is determined so that the mean of $(NFPL)_i$ across all households is equal to (MNFPL), which ensures that the adjustment for economies of scale does not change the population mean of the per-capita non-food expenditure. In our calculations, we have assumed that θ to be equal to 0.92.

1.50. Having determined the per-capita non-food poverty line for each sample household, we computed the average non-food poverty line for each governorate and Jordan using the weighted average method with weight proportional to population weight. The results are presented in Table 1.8.

**Table 1.8: Average Non-Food Poverty Line By Governorate
(JD Per Year)**

	Poverty Line	
	1997	2002-03
Amman	201	230
Balqa	155	178
Zarqa	176	201
Madaba	166	191
Irbid	166	190
Mafrq	155	178
Jarash	167	190
Ajloun	156	178
Karak	164	179
Tafeela	165	181
Maan	167	182
Aqaba	179	196
Jordan	179	205

Source: Staff Estimates based on HEIS (2002).



1.51. Table 1.9 presents the average per-capita total poverty line for each governorate and Jordan, which is the sum of per-capita food and non-food poverty lines³.

**Table 1.9: Average Total Poverty Line By Governorate
(JD Per Year)**

	Poverty Line	
	1997	2002-03
Amman	393	419
Balqa	336	365
Zarqa	363	388
Madaba	347	377
Irbid	348	375
Mafraq	330	360
Jarash	344	373
Ajloun	330	360
Karak	349	364
Tafeela	346	363
Maan	352	364
Aqaba	366	375
Jordan	366	392

Source: Staff Estimates based on HEIS (2002).

1.52. Key assumptions in building Jordan's poverty line compares well with other countries for which poverty assessments have been completed recently (Table 1.10). Calorie requirement computed for Jordanians at 2309 is within the range of comparators, almost the same as that for Egyptians. Like most other comparators, in Jordan also economies of scale, regional price differences, and equivalent scales (for food) are taken into account. The reference group for calorie cost reflects a wide choice across countries.

³ If we used the Ravallion (1998) suggestion for non-food poverty line (allowing the actual non-food expenditure of those households whose per capita expenditure just equals food poverty line), the estimated total poverty line for 2002 would have been JD 270.

Table 1.10: Construction Of Poverty Lines: A Comparison Of Methods Used In Recent Poverty Assessments

Country	Year of Study	GDP Per capita 1995 US \$	Average Calorie requirement (per capita per day)	Are equivalent scales considered?	Are Economies of Scale considered?	Reference Group for calorie cost to set food poverty line	Are regional cost differences allowed?	Observed or arbitrary consumption patterns	Ratio of Non-food to food poverty line	Method for non-food poverty line
MENA										
Jordan	2002	1661	2309	Yes (implicitly for food by age, sex specificity)	Yes (estimated 0.92 for non-food)	Lowest quintile	Yes	Observed	Poverty Line: 1.09	D
Yemen	2002	314	2200	--	Yes, reports sensitivity analysis	Median	Yes	Observed	Lower Poverty Line: 0.53 Upper Poverty Line: 1.25	A,B
Egypt	2002	1250	2310	Yes (implicitly for food by age, sex specificity)	Yes, assumed 0.85	Second quintile	Yes	Observed	--	A
Iran	2003		2209	..	Yes, reports sensitivity analysis	Not known	Yes	Observed	Rural: 0.75 Urban: 1.32	E
Morocco	2001	1476	2000	Yes	Yes, reports sensitivity analysis	Second quintile	--	Observed	Lower Poverty Line: 0.40 Upper Poverty Line: 0.77	A,B
Tunisia	2003	2580	Rural-2165 Urban-2179 Metro-2143	Not explicit	Not explicit	Households with per-capita consumption of 200-250 1990 TD per	Yes	Observed	Lower Poverty Line Upper Poverty Line Rural 0.43 0.85 Urban 0.44 0.96	A,B

Country	Year of Study	GDP Per capita 1995 US \$	Average Calorie requirement (per capita per day)	Are equivalent scales considered?	Are Economies of Scale considered?	Reference Group for calorie cost to set food poverty line	Are regional cost differences allowed?	Observed or arbitrary consumption patterns	Ratio of Non-food to food poverty line			Method for non-food poverty line
									Metro	0.45	1.05	
						1990 TD per month						
Other Regions												
Pakistan	2002	527	Rural-2250 Urban-1950	Yes	Yes	1990-91 basic needs poverty line is updated using consumer price indices	Yes	Subjective	Upper Poverty Line: Rural: 0.97 Urban: 1.07			C
Philippines	2001	1195	2000	--	Yes	Bottom 30% of population nationally fixed	Yes	Observed	--			A
Dominican Republic	2001	2129	2161	--	--	First quartile	No	Observed	Lower Poverty Line: 1.19			A
Panama	2000	3839	2280	Yes	--	Bottom 4	--	Observed	Lower Poverty Line: 0.74			A

Notes:

- GDP Per capita figures are expressed in 1995 US\$.*
- Construction of non-food poverty line: Method A refers to estimating the non-food allowance by identifying the share of non-food expenditure for households whose total expenditure was equivalent to the food poverty line. Method B refers to estimating the same by considering those households whose food expenditure is equal to the food poverty line. The level of non-food spending in this method is found amongst those who actually reach the food poverty line (rather than those who can merely afford to do so, if they cut all non-food spending). Method C refers to a subjective construction of a bundle of goods that is conceived to be the minimum requirement to cross the total poverty line. Method D refers to estimating a regression of log of food welfare measure (defined as a ratio of food expenditure to food poverty line) on per-capita expenditure and setting non-food poverty line at a point where food welfare measure is unity. Method E uses the share of non-food expenditure of the reference group.*



C. GROWTH AND INEQUALITY IN PRIVATE CONSUMPTION

Per-capita nominal and real consumption expenditures

1.53. The welfare measure used in the present study is the per-capita consumption expenditure. It is now widely accepted that consumption is a better measure of welfare than income. It is subject to fewer fluctuations since households generally tend to smooth their consumption by saving or dissaving. Moreover, income is generally subject to large measurement errors.

1.54. Per-capita consumption expenditure includes expenditures on food and non-food items of consumption. It includes both cash and in-kind consumption. The households impute the value of home produced goods, which is then included in the total expenditure. The total expenditure also includes the imputed rental value of owner occupied houses.

Table 1.11: Per Capita Consumption: JD Per Person Per Year

	1997			2002-03		
	Food	Non-food	Total	Food	Non-food	Total
Amman	354	540	895	445	817	1262
Balqa	337	316	653	367	463	831
Zarqa	349	400	748	304	402	706
Madaba	328	406	735	385	478	864
Irbid	302	324	626	360	472	832
Mafraq	292	231	523	292	317	609
Jarash	362	330	692	347	431	778
Ajloun	366	288	653	384	339	722
Karak	462	331	792	398	474	871
Tafileh	324	272	597	370	383	753
Maan	278	243	521	322	354	676
Aqaba	420	383	803	340	509	849
Jordan	343	412	756	383	579	963

Source: Staff Estimates based on HEIS (2002).

1.55. Table 1.11 gives the per-capita nominal consumption expenditures. To compare welfare across governorates and over time, we need to calculate per-capita real consumption expenditures. The real consumption expenditures are determined by



deflating nominal expenditures by the price indices presented in Table 1.4 and 1.5. Table 1.12 presents the real per-capita expenditures in the 1997 average Jordan prices. Table 1.13 presents the annual growth rates of real per-capita consumption expenditures between 1997 and 2002-03.

Table 1.12: Per-Capita Real Consumption, 1997 And 2002-03
(JD, Per Year In 1997 Prices)

	1997			2002-03		
	Food	Non-food	Total	Food	Non-food	Total
Amman	352	500	852	437	680	1117
Balqa	335	375	709	374	493	867
Zarqa	347	420	767	303	380	682
Madaba	326	449	776	394	476	870
Irbid	305	358	663	373	470	843
Mafraq	294	273	567	305	336	641
Jarash	365	364	729	359	428	787
Ajloun	369	340	709	402	360	762
Karak	470	372	842	410	501	911
Tafeela	330	303	633	379	399	778
Maan	283	268	551	322	367	689
Aqaba	427	395	822	337	493	830
Jordan	343	419	762	385	528	913

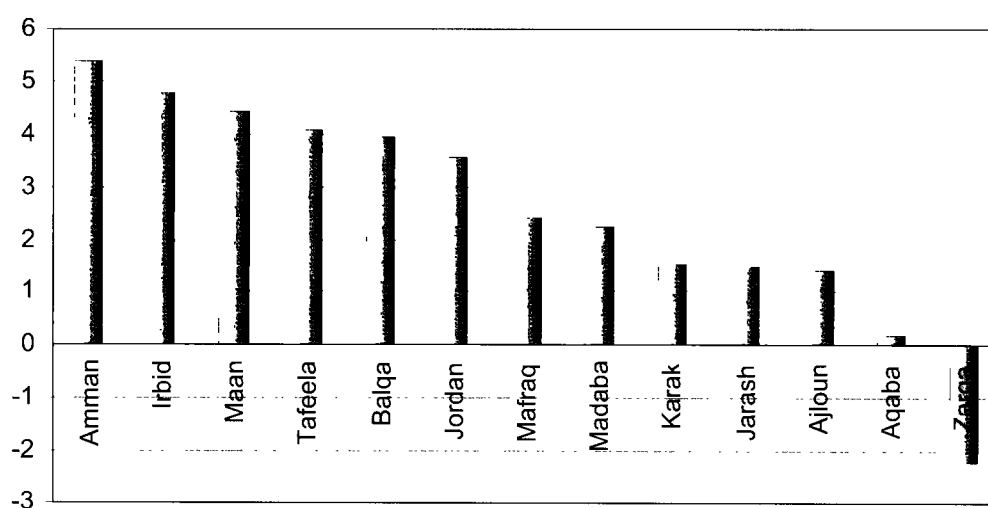
Source: Staff Estimates based on HEIS (2002) and price statistics from Department of Statistics, Jordan.

1.56. Figure 1.6 clearly shows that Amman has the highest standard of living as measured by the per-capita real consumption expenditure. It is also the region that has the highest growth rate of per-capita consumption expenditure. In Jordan, the per-capita consumption expenditure increased at an annual rate of 3.5 percent between 1997 and 2002-03, whereas in Amman, it increased at an annual rate of about 5 percent.

Table 1.13: Annual Growth Rates Of Per Capita Real Consumption

	Food	Non-food	Total
Amman	4.3	6.1	5.4
Balqa	2.2	5.5	4.0
Zarqa	-2.6	-1.9	-2.2
Madaba	3.7	1.1	2.2
Irbid	4.0	5.4	4.8
Mafraq	0.7	4.2	2.4
Jarash	-0.3	3.2	1.5
Ajloun	1.7	1.1	1.4
Karak	-2.6	5.9	1.5
Tafeela	2.7	5.5	4.1
Maan	2.6	6.2	4.4
Aqaba	-4.5	4.4	0.2
Jordan	2.2	4.6	3.5

Source: Staff Estimates based on HEIS (2002) and price statistics from Department of Statistics, Jordan.

Figure 1.6: Annual Growth Rate Of Per-Capita Consumption

Source: Staff Estimates based on HEIS (2002).

Inequality of per-capita real consumption

1.57. The analysis in the previous section showed that there has been an impressive improvement in the average standard of living in Jordan. The per-capita consumption expenditure increased at an annual rate of 3.5 percent between 1997 and 2002-03. Has



this impressive growth performance increased or decreased inequality? To answer this question, we computed the Gini index of the per-capita real consumption expenditure. The Gini index is the most widely used measure of inequality. It is a single measure of inequality. To get a better insight into the change in the distribution, we also computed the quintile shares. The empirical results are presented in Table 1.14.

1.58. It can be noted that the Gini index has slightly decreased from 37.86 percent points in 1997 to 37.60 percent points. This decrease is very small and statistically insignificant. Looking at the quintile shares, we note that the consumption shares of the first, second and fifth quintiles have declined whereas the shares of the third and fourth quintiles increased. The share of the fourth quintile has increased the most. Since the changes in the Gini index and the shares of quintiles are so small that it is difficult to infer that the inequality has increased in Jordan between 1997 and 2002-03.

Table 1.14: Inequality of per capita real consumption

	1997	2002-03	Change
Gini index	37.86	37.60 (0.0057)	-0.26 (0.0065)
<i>Quintile Shares</i>			
Quintile 1	7.00	6.92	-0.08
Quintile 2	11.19	11.13	-0.07
Quintile 3	15.12	15.25	0.13
Quintile 4	21.10	21.53	0.43
Quintile 5	45.58	45.16	-0.42

Source: Staff Estimates based on HEIS (2002).

Note: Bootstrap standard errors in brackets.

1.59. It was noted in the previous section that the growth rate of per-capita consumption expenditure was the highest in Amman, which is also the richest governorate. This suggests that inequality in Jordan would have increased but the Gini index did not show much increase. To explain this contradiction, we computed Theil's⁴ inequality measure, which can be decomposed into within group and between group inequalities. We calculated the inequality within each of the 12 governorates and also inequality between governorates. The empirical results are presented in Table 1.15.

⁴ Theil's inequality measure is given by

$$GE(1) = \frac{1}{n} \sum_{i=1}^n \frac{y_i}{y} \log \frac{y_i}{y}$$

where,

y_i is the consumption of an individual, n is the number of persons.

Table 1.15: Theil's Inequality Measure Of Real Per-Capita Consumption By Governorates

	1997	2002-03	Change
Amman	27.0	24.9	-2.1
Balqa	21.8	24.0	2.3
Zarqa	19.7	18.0	-1.6
Madaba	28.2	17.7	-10.5
Irbid	20.9	19.6	-1.3
Mafraq	20.4	16.9	-3.6
Jarash	20.8	21.8	1.0
Ajloun	18.3	12.2	-6.0
Karak	19.0	21.6	2.6
Tafeela	17.3	14.3	-3.0
Maan	20.8	19.8	-1.0
Aqaba	18.2	20.5	2.4
Kingdom	23.7	23.3	-0.4
Within Gov. inequality	23.0	21.4	-1.5
Between Gov. inequality	0.8	1.9	1.1

Source: Staff Estimates based on HEIS (2002).

1.60. Theil's inequality measure for Jordan decreased from 23.7 percent points in 1997 to 23.3 percent points in 2002-03. This change is so small that we infer that the overall inequality in Jordan has not changed significantly between 1997 and 2002-03. It is interesting to note that there have been huge changes in inequality within and between governorates. In governorates such as Madaba, Ajloun, Tafeela and Mafraq, there has been a large decline in inequality. The overall within inequality in governorates has declined by 1.5 percent points. Since the between governorate inequality has increased by about 1.1 percent points, the overall change in inequality in Jordan has been negligible.

1.61. Thus, although overall inequality has not change between 1997 and 2002-03, but there have been large changes in patterns of inequality. The inequality between governorates has become more important. This clearly calls for more emphasis on policies that reduce regional inequality.



INCIDENCE OF POVERTY

1.62. At the national level, poverty reduced in Jordan significantly between 1997 and 2002. This conclusion is robust to the choice of poverty lines and poverty measures. Definition and properties of the poverty measures used are provided in Box 1.2. The proportion of poor fell by 7 percentage points from 21.3 percent in 1997⁵ to 14.2 percent in 2002 (Table 1.16). This implies that about 42,000 Jordanians moved above poverty line per year. The poverty gap – the deficit of per-capita consumption from poverty line – fell from 5.3 percent in 1997 to 3.3 percent in 2002. Since this is the average for all Jordanians, it is estimated that about US \$ 91 million or one percent of GDP at market prices is all that it would take to eradicate poverty in Jordan, if perfect, costless targeting were possible.

⁵ World Bank (2001) estimated the percentage of poor at 11.7 percent for 1997 using the household survey of 1997, but with a different poverty line of JD 313.5 per-capita per year against JD 366 newly derived for 1997 with the new methodology of this study. There are several reasons for the higher poverty estimate for 1997, though the underlying database is the same with the estimate mean consumption only JD 7 less than the old estimate. The new line is household specific not national, corrects for spatial price differences, allows economies of scale, and allows for new calorie requirements for the Jordanian population. An additional difference in use of 1997 data is that all the households that report food and non-food consumption for any of the four rounds are included in the current study, unlike only a common set in the previous

BOX 1.2: POVERTY MEASURES

1. Headcount ratio

$$H = q/n$$

Where q = number of people deemed poor and n = population size.

This index is widely used and easily understood. However, the headcount ratio is insensitive to distribution below the poverty line. If a poor person becomes poorer, H remains unchanged.

2. Poverty gap index

$$PG = \frac{1}{n} \sum_{i=1}^q \frac{z - y_i}{z}$$

Where y is income/consumption, z is the poverty line, q is the number of poor and n is the population size.

Though PG reflects depth of poverty, it is insensitive to severity of poverty. This can be interpreted as the potential saving to the poverty alleviation budget from targeting because it is equal to the ratio of minimum cost of eliminating poverty (z -mean income of the poor)* q to the maximum cost of eliminating poverty $z*q$.

3. Squared poverty gap index

$$SPG = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^2$$

SPG is sensitive to differences in both depth and severity of poverty. This can be stated as the poverty gap with weights to each poor person equal to his/her poverty gap.

3. Watts index

$$W = \frac{1}{n} \sum_{i=1}^n \ln(z/y)$$

Watts index satisfies all the desirable properties for poverty measures: focus (is not concerned with the changes in income/consumption of the non-poor), monotonicity (an increase in income/consumption of poor reduces the index), transfer (a transfer from a poor person to a poorer person worsens the index) and additive decomposability (weighted aggregation over sub-populations is possible).



Table 1.16: Poverty In Jordan, 1997 And 2002

Poverty Measure	1997		2002		Test for diff.
		95%ci		95%ci	t values
<i>Total</i>					
Percentage of Poor	21.3	19.8-22.8	14.2	13.4-15	-8.08
Poverty Gap	5.3	4.8-5.8	3.3	3-3.5	-7.15
Severity of Poverty	2.0	1.8-2.2	1.1	1-1.2	-6.58
Watt's Index	6.8	6.1-7.5	4.1	3.8-4.4	-7.04
<i>Rural</i>					
Percentage of Poor	27.0	23.8 - 30.3	18.7	17 - 20.4	2.77
Poverty Gap	7.2	6 - 8.3	4.7	4.2 - 5.3	2.65
Severity of Poverty	2.8	2.2 - 3.4	1.7	1.5 - 2	2.57
Watt's Index	9.4	7.7 - 11	6.0	5.3 - 6.7	2.60
<i>Urban</i>					
Percentage of Poor	19.7	18 - 21.5	12.9	12 - 13.8	-6.86
Poverty Gap	4.8	4.3 - 5.4	2.9	2.6 - 3.1	-6.21
Severity of Poverty	1.8	1.5 - 2	0.1	1.1 - 6.8	-1.98
Watt's Index		5.4 - 6.9	3.6	3.2 - 3.9	-6.09

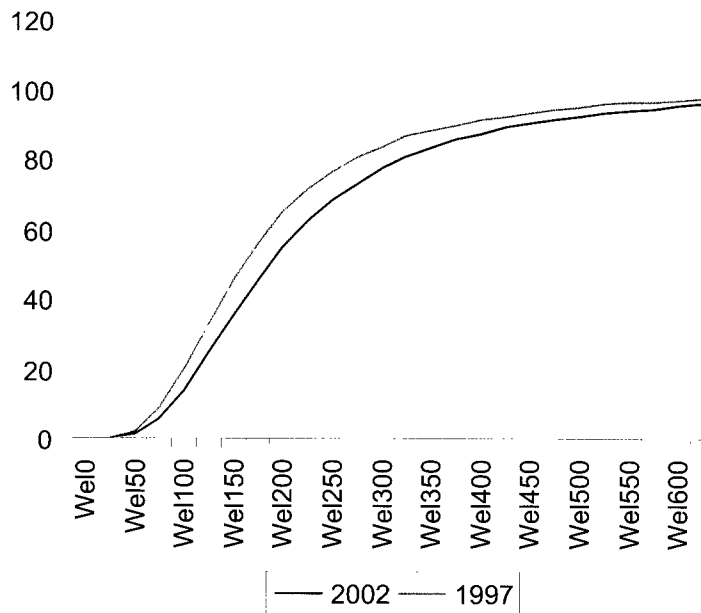
Source: Staff Estimates based on HEIS (2002).

Note 1. Average poverty lines for Jordan as a whole (per-capita, per year) are JD 366 for 1997 and JD 392 for 2002. Corresponding averages for rural are: JD 348 and JD 375. For urban the averages are: JD 370 and JD 396.

1.63. Rural-urban inequalities in terms of poverty accentuated between 1997 and 2002, continuing the past trend. Not only is the rural poverty in Jordan substantially higher than the urban, it also tends decline at a slower rate compared to the urban. In the urban areas, where nearly 80 percent of the Jordanian population resides, poverty (head-count ratio) in 2002 was 12.6 percent compared to 18.5 percent in the rural areas. Rural poverty declined by 27 percent as against the urban poverty decline by 32 percent between 1997 and 2002.

1.64. The direction of change in poverty measures between 1997 and 2002 can be rigorously examined using the first order dominance test of the two underlying distributions. In Figure 1.7, the X-axis has alternative poverty lines with the current one set to 100. On the Y-axis we measure the cumulative percentage of people who would become poor at any poverty line read off the X-axis. This clearly shows that the distribution for 2002 is everywhere below and to the right of the distribution for 1997. Since the two lines do not intersect, higher order dominance tests hold implying that in terms of other poverty measures – poverty gap, severity and Watts index – 2002 will show unambiguously an improvement over 1997.

Figure 1.7: First-Order Dominance Test



Source: Staff Estimates based on HEIS (1997), (2002).

1.65. At the governorate level (Table 1.17), poverty reduction has been uneven judging by statistical tests of significance. In seven of the 12 governorates where more than 65% of the country’s population lives (Amman, Madaba, Irbid, Mafraq, Ajloun, Tafeela and Ma’an), poverty was reduced. In four governorates housing about 20 percent of the population (Balqa, Jarash, Karak, and Aqaba), poverty decreased slightly. In one governorate with 15 percent of the population (Zarqa), poverty actually increased.⁶ Figure 1.8 charts the statistically significant changes in levels of poverty in a geographic map for 1997 and 2002.

⁶ Relocation of military base from Zarqa to other governorates appears to have affected the livelihood of Zarqa residents.



Table 1.17: Change In Poverty Measure By Governorates, 1997 And 2002

	1997				2002				"t"			
	H	Gap	Severity	Watts	H	Gap	Severity	Watts	H	Gap	Severity	Watts
Amman	19.6	4.6	1.7	5.9	9.2	1.9	0.6	2.3	-7.0	-6.1	-5.4	-5.9
Balqa	21.8	5.6	2.1	7.1	17.8	4.0	1.4	5.0	-1.0	-1.3	-1.3	-1.3
Zarqa	16.3	3.9	1.3	4.9	22.3	5.4	2.0	6.8	2.5	1.8	1.6	1.7
Madaba	23.9	6.9	2.8	9.3	10.7	2.4	0.8	3.0	-3.8	-3.5	-3.1	-3.3
Irbid	26.0	6.6	2.6	8.6	13.8	3.1	1.0	3.8	-6.1	-5.3	-4.8	-5.1
Mafraq	35.9	9.4	3.6	12.2	25.4	6.8	2.6	8.7	-2.5	-1.9	-1.6	-1.8
Jarash	19.2	4.9	1.9	6.4	18.4	4.7	1.8	6.1	-0.2	-0.1	-0.1	-0.1
Ajloun	17.3	3.8	1.4	4.8	9.7	1.9	0.6	2.3	-2.0	-2.1	-2.2	-2.1
Karak†	13.0	3.3	1.3	4.3	12.2	3.1	1.2	4.1	-0.2	-0.1	-0.1	-0.1
Tafeela	24.3	6.2	2.4	8.1	10.6	1.9	0.6	2.3	-3.9	-3.8	-3.7	-3.8
Maan	37.3	11.7	5.3	16.3	24.1	6.2	2.2	8.0	-2.6	-3.2	-3.4	-3.3
Aqaba†	17.0	3.5	1.1	4.4	15.2	4.1	1.7	5.5	-0.5	0.6	1.1	0.8
Kingdom	21.3	5.3	2.0	6.8	14.2	3.3	1.1	4.1	-8.1	-7.2	-6.6	-7.0

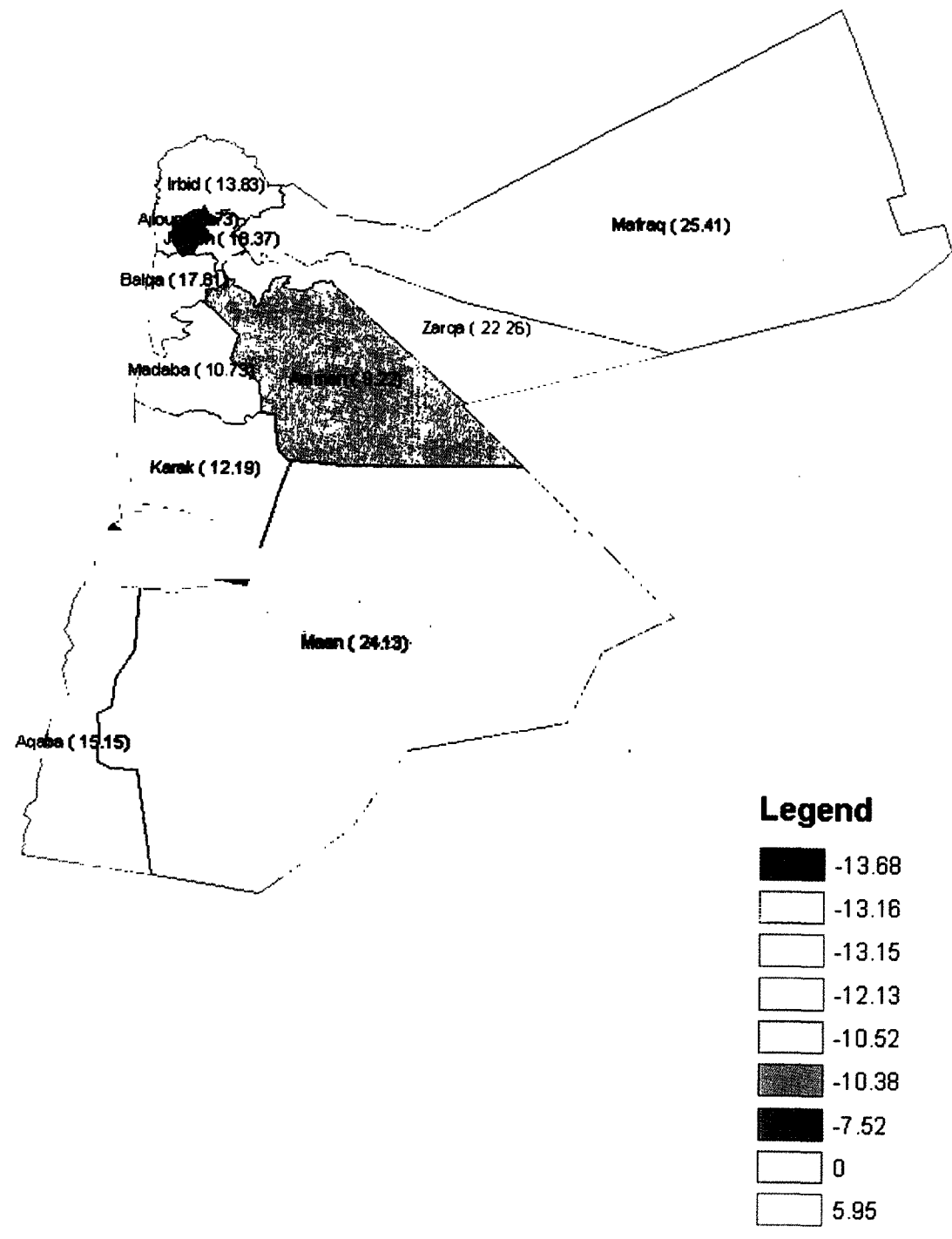
Source: Staff Estimates based on HEIS (1997), (2002).

Note: † For these governorates, poverty estimates between 1997 and 2002-03 are not comparable because of sample design issues. In 1997, sample blocks did not adequately represent poorer neighborhoods in these governorates.

1.66. In the three governorates (Balqa, Karak and Aqaba) there is no strong evidence to suggest that poverty either increased or decreased. In all other governorates, except Zarqa, poverty declined significantly particularly in Maan and Mafraq governorates that had high poverty levels exceeding 30 percent in 1997. In Zarqa, however, poverty significantly increased from 16 percent to 22 percent. Annex 1.8 provides a geographic map of governorate-level poverty in 1997 and 2002.

Figure 1.8

Change in Headcount Ratio, 1997-02



Source: Staff Estimates



1.67. Analysis of sub-district level (73 sub-districts in the country) reveals deep poverty pockets of poverty, where at least 34 percent of residents are poor. There are 13 such sub-districts in which percentage of poor vary from 34 percent to 73 percent. These pockets of poverty are predominantly in thinly populated desert areas. Poverty estimates for top 20 sub-districts in terms of percentage of poor are presented in Table 1.18. Estimates for all the 73 sub-districts are shown in Annex 1.9.

Figure 1.9

Poverty Severity 2002-2003

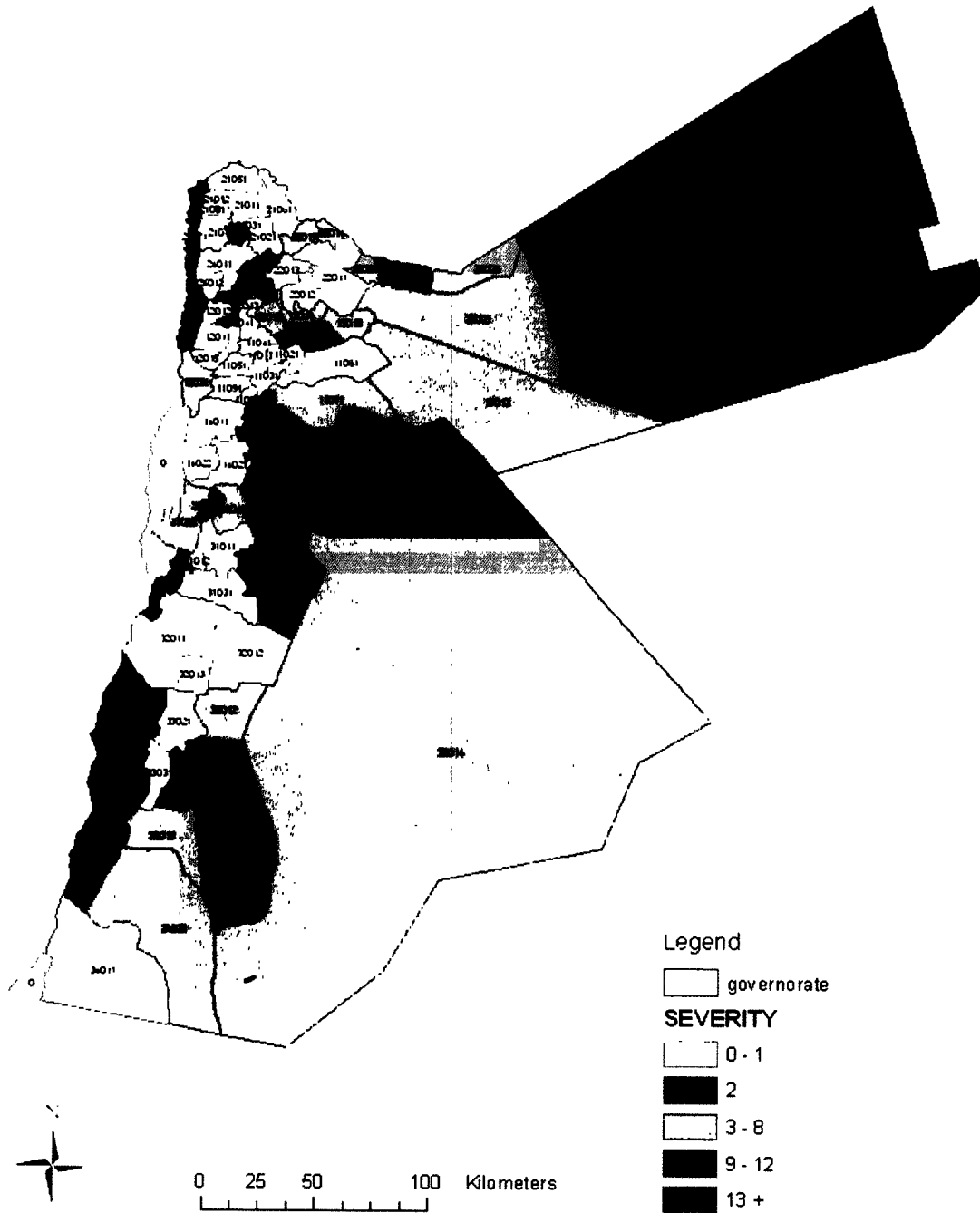




Table 1.18: Pockets Of Poverty In Jordan

	Governorate	District	Sub district	% of poor	Poverty Gap	t for z1	t for Gap1
1	Mafrq	Al Badiyah Al Shamalliyyeh	Rwaished	73.3	28.2	20.7	7.7
2	Aqaba	Qasaba	Wadi Arabah	53.5	20.0	19.4	6.7
3	Zarqa	Al Qasaba	Al Dhilail	52.2	12.3	13.0	5.4
4	Mafrq	Al Badiyah Al Shamalliyyeh	Al Salihyyeh	48.2	15.2	7.9	6.9
5	Ma'an	Al Qasaba	Al Husayniyyeh	46.9	15.6	5.3	6.0
6	Ma'an	Al Qasaba	Al Jafr	46.0	12.7	high	high
7	Zarqa	Al Qasaba	Beerain	42.3	8.5	6.1	4.4
8	Ma'an	Al Qasaba	Al Mraighah	41.3	12.6	3.6	3.6
9	Zarqa	Al Qasaba	Al Azraq	40.3	8.7	21.6	17.0
10	Aqaba	Al Qwairah	Al Qwairah	36.0	11.3	5.5	4.0
11	Mafrq	Al Badiyah Al Shamalliyyeh	Dair Al kahef	35.2	10.2	5.3	6.6
12	Mafrq	Al Badiyah Al Shamalliyyeh	Um Aljimal	34.6	8.7	9.4	5.4
13	Karak	Southern Ghors	Ghoor Al Safi	34.3	7.3	11.5	9.2
14	Amman	Al Jiza	Al Jiza	32.0	7.3	5.0	3.3
15	Mafrq	Al Qasaba	Hoosha	31.6	8.1	2.7	2.3
16	Zarqa	Al Qasaba	Al Hashimiyyeh	29.0	7.4	10.3	6.1
17	Mafrq	Al Qasaba	Sama Al Serhan	28.1	8.0	4.9	3.0
18	Balqa	Dair Alla	Dair Alla	27.6	5.7	6.7	4.3
19	Balqa	Souther Shouna	Souther Shouna	27.1	7.6	4.9	4.4
20	Amman	Al Jiza	Um alrasas	26.6	6.7	3.3	2.4

ANNEX 1.1

METHODOLOGICAL ISSUES IN CONSTRUCTION OF POVERTY LINES

N. KAKWANI

The Concept of Poverty

A family is classified as poor if its total earnings are less than its poverty line. Rowntree (1901) was the first one to measure the cost of maintaining a minimum standard of living. He first estimated the minimum money costs for food, which would satisfy the average nutritional need of families of different sizes. To these costs, he added the rent paid and certain minimum amounts for clothing, fuel, and sundries to arrive at a poverty line for a family of a given size.

Rowntree's approach to measuring poverty may be called "income approach." It identifies the poor on the basis of monetary income or consumption. It measures the degree of low income or consumption in the society.

The income approach views poverty as income (or consumption) deprivation. Poverty is caused because some sections of the society have such a low income that they cannot satisfy their minimum basic needs as defined by the poverty line.

Although income deprivation may give rise to several other kinds of deprivations, people may still suffer acute deprivation in many aspects of life even if they possess adequate command over commodities. It is the lowness of well being, which can be deemed more important than the lowness of income. In this context, Sen (1999) argues that poverty should be viewed as the deprivation of basic capabilities rather than merely as lowness of income.

Poverty, viewed in terms of capability deprivation, encompasses not only material deprivation (measured by income or consumption) but also various forms of deprivation in one's life – including unemployment, ill health, lack of education, vulnerability, powerlessness, social exclusion and so on. Thus, this broad notion of poverty opens up to a broader range of policies that governments can follow to reduce poverty. If it is found that there is an acute deprivation in the area of health, then obviously it is easier to make policies to reduce this deprivation. If poverty is measured only in terms of income deprivation, then the policy focus will be on increasing people's income, which may reduce the deprivation in the area of health but then it may take much longer. The most effective way to reduce poverty will be to make policies and projects that would directly deal with the specific kinds of deprivation that have been identified using the capability deprivation approach. It is also possible that the lowness of income may be the main cause of the specific deprivation. In such situations, a combination of policies that enhance people's income and reduce the specific deprivation may be appropriate. It is not suggested that in the pursuit of capability deprivation approach, we should abandon the income approach. As a matter fact, both approaches can supplement each other.



A clear understanding of relationship between income and non-income poverty is important for poverty alleviation policies. We want to know whether the poor identified in the income space also suffer some form of deprivation in other aspects of their lives, such as ill health, lack of education, vulnerability, social exclusion and so on. To understand this relationship, we first need to identify the poor and then measure the degree to which the poor are deprived of the basic capabilities compared to the non-poor. This information is extremely useful in targeting the basic services – education, health, and nutrition, etc. – to the poor. This objective can be achieved only if we know the poverty lines that separate the poor from the non-poor.

Alternative Approaches to Setting Poverty Lines

There are two main approaches to specifying poverty lines, if we consider objective approaches. The subjective approach, explained in the accompanying Box 1.3, which draws directly on people's perception of being poor, is a useful supplement to objective approach. The first of the two objective approaches is the absolute approach, which is based on Rowntree's concept of minimum subsistence standard of living. A person is identified as poor if he or she is unable to enjoy this minimum standard of living. Alternative approach is the "relative approach," which defines the poverty line in relation to the average standard of living of a particular society at a particular time (Atkinson, 1974). This approach is based on the concept of "relative deprivation," which denotes the deprivation suffered by worse-off persons in the society relative to the better off.⁷

The relative approach is widely used in the rich industrialized countries. For example, Fuchs (1969) defined the poverty line in the United States as equal to one half of the median family income. Drewnowski (1977) suggested that the poverty line should be equal to the mean income of the society. Under this definition, the poor are those who gain when income becomes more evenly distributed and the non-poor are those who lose. In Australia, the Commission of Inquiry into Poverty (Henderson 1975) suggested that a household consisting of head, dependent wife, and two children would be in poverty if its weekly income fell short of 56.6 percent of seasonally adjusted average weekly earnings of wage and salary earners for Australia. The poverty line under this approach changes with the average earnings of the wage and salary earners.⁸

Is the relative approach appropriate to measure poverty? The absolute approach is important if we want to ensure that nobody in the society should have a standard of living that is below the society's predetermined minimum standard of living. This predetermined minimum standard of living is fixed over time and space. In the relative

⁷ The term relative deprivation was coined by Stouffer (1949) and subsequently developed by Merton (1957) and Runciman (1966).

⁸ It must be pointed out that all the rich industrial countries do not follow relative approach to measuring poverty. The first official poverty line for the United States, constructed by Orshansky (1965) was an absolute poverty line based on the cost of the U.S. Department of Agriculture's low-cost food plan.

approach, the society's minimum standard changes in line with the society's average standard of living.

Criticisms of Relative Poverty Line

The major criticism of relative approach is that it may show a reduction in poverty when people's income may be falling all around, resulting in a fall of the standard of living of the poor as well as the non-poor. A reduction (or increase) in poverty will show up only if there is a change in the relative income distribution. A poverty measure based on a relative approach is, in fact, a measure of inequality. Poverty should then be viewed as an issue of inequality. If that is our view of poverty, then it is unnecessary to specify poverty lines. Instead, we should look at various measures of inequality. Poverty is distinct from inequality. Sen (1983) has put this view as follows:

A sharp fall in general prosperity causing widespread starvation and hardship must be seen by an acceptable criterion of poverty as an intensification of poverty. But the stated view of poverty "as an issue of inequality" can easily miss this if the relative distribution is unchanged and there is no change in the differences between the bottom 20 or 10 per cent and the rest of the society.

Under the relative approach, poverty is completely insensitive to economic growth if the inequality of income does not worsen or improve. The only way to reduce poverty will be to reduce inequality. Thus, the impressive economic growth enjoyed by many East Asian countries will play absolutely no role in reducing poverty. Similarly, negative growth rates that occurred in the early 1990s in ex-Soviet republics would have shown no increase in poverty even if the standards of living of the poor as well as of the non-poor fell sharply in these countries. Such scenarios, we regard as unacceptable.

The poverty lines in the OECD countries are generally set at the half of the median income. There is no technical justification for this poverty line. We cannot say that this poverty line will always correspond to the socially accepted minimum standard of living in the country. If, for instance, our objective is to make sure that everyone in the society is able to meet the nutrition needs, then this poverty line is completely inadequate.

If we follow the relative approach within different regions in a country, then the richer regions should have a higher poverty line than the poorer regions because of their higher average standards of living. Thus we may have a situation that the richer regions have a higher incidence of poverty than the poorer regions, which may lead to greater government resources flowing to richer regions and fewer resources to the poorer regions. This situation is clearly not acceptable.

Since the relative poverty lines are country-specific, comparisons of poverty rates can say nothing about absolute standard of living across countries.



Absolute Poverty Line is Relative in the Long Run

Rejection of relative views of poverty must not be confused with being indifferent to the contemporary standard of living of the society. The poverty line should, of course, take into account current standards of living and should only be defined in relation to the living standards of a particular society at a particular time. The poverty threshold must change gradually as the standard of society adapts itself to new conditions. The relative approach implies that the poverty threshold should change monthly or quarterly as data become available. The standard of living of a society is more stable than what is indicated by monthly or quarterly changes in economic situations.

It must be emphasized that an absolute poverty line cannot remain absolute forever. It should change in line with the long run changes in the society's average standard of living. Thus, the absolute poverty line becomes a relative poverty line in the long run. As the society's average standard of living changes, people's consumption patterns also change as they adapt to the new standards of living. Thus, the absolute poverty line should be revised in the long run to take into account the changes in people's consumption patterns.

Box 1.1.1: Subjective Poverty Line

One obvious method of determining the poverty line is to ask people about their minimum standard of living. We can ask them questions such as “what is the minimum per-capita income that will be sufficient for a family of four members to live adequately?” “Do you consider your income is very low, rather low, sufficient, or high?” Answers to these questions can provide the poverty line and poverty rates. This approach is highly subjective but the question is: Does it provide reasonable poverty estimates? How does this approach differ from the objective approach?

The subjective approach to measuring poverty is based on people’s own assessment of poverty. One may argue that since poverty is concerned with the well being of the people, then people should be able to provide the best assessment of their own well being. The poverty line derived from nutritional base, although referred to as the objective poverty line, is not completely objective. It involves many value judgments, which are made by researchers (or policy makers). Despite many problems associated with the nutritional poverty line, it does reflect the society’s minimum standard of living. The subjective poverty line, on the other hand, reflects the people’s perceptions about what should be the society’s minimum standard of living. These perceptions may change in the short run even if the society’s standard of living does not change at all. Thus, the poverty rates calculated on the basis of a subjective poverty line may become highly unstable. If the government changes its policies in response to changes in people’s perception, it will be difficult to formulate a long-term strategy for poverty reduction.

Despite many limitations, subjective poverty measures can provide a very useful insight into the understanding of nature and causes of poverty. It is increasingly becoming popular because of the realization that poverty is a highly complex phenomenon and objective methods that are widely used to measure poverty are not sufficient to understand its nature and causes. Recently, Ravallion and Lokshin (2002) have studied the determinants of people’s perception of their economic welfare. Using the Russian Longitudinal Monitoring Survey (RLMS), they arrived at the conclusion: “While income is a highly significant predictor, subjective economic welfare is influenced by many other factors including health, education, employment, assets, relative income in the area of residence and expectation about future welfare.” Their study demonstrates that the subjective approach can provide helpful insight into how objective data should be weighed in assessing economic welfare.

The subjective measurement of poverty can be a useful supplement to objective measurement of poverty. New methods are now being devised to measure people’s perceptions. However, it must be emphasized that the objective poverty line will always play a dominant role in analyzing poverty.



Basic Criteria for Setting Absolute Poverty Lines

Individual Needs

The poverty lines specify the levels of income that different individuals should have to maintain a socially accepted minimum standard of living. If all individuals were identical in all respects, then we would need only one poverty line that applies to all individuals. In practice, individuals may differ widely in terms of their needs or requirements. It is obvious that a person with greater needs will require a greater income than a person with a lesser needs to be able to enjoy the same level of standard of living. Thus, the determination of a poverty line should take account of individuals' needs.

The evaluation of individuals needs is indeed very problematic. The needs can vary so much across individuals that it is almost impossible to quantify all of them, so we would focus on only some of the most important individual needs.

Food and non-food requirements for individuals vary with respect to their age and sex. For instance, children will require less food than adults to maintain the same nutritional requirements. Similarly, women require less food than men but may require more expenditure on clothing. It is clear that we cannot use the same poverty line for all individuals. A person with greater needs should have a higher poverty line than a person with lesser needs. If person A has poorer health than person B, then person A has to spend a greater part of his or her income on medical attention and will thus require greater income to maintain the same standard of living.

Equivalent Adult Scales

Since it is very difficult to measure each individual's consumption separately, surveys typically estimate total household consumption (or income), which then is distributed evenly among household members. Then adult equivalent scales are generally used to take account of the relative needs of individuals of different age and sex within the household. The adult equivalent scale measures the relative income required by households of different composition to maintain the same standard of living. There is a vast amount of literature on the estimation of adult equivalent scales using the consumer theory. Several approaches exist. All these approaches have severe limitations. The main problem is the identification of the individual utility from the observed consumption behavior of families or households so we do not get stable estimates of adult equivalent scales.⁹ We take the view that the estimation of adult equivalent scales from the observed consumption behavior is not feasible. In this paper, we attempt to take account of individual needs using the information on calorie requirements, which vary with individuals' age and sex.

⁹ Deaton (1998) for an excellent discussion on equivalence scales.

Economies of Scale

A household consumes a variety of consumption goods. These goods can be broadly classified as public and private goods. There are goods and services, which can be attributed to individuals in the household. These may be called private goods. Most household food and clothing consumption fall in this category.

On the other hand, several individuals within the household can consume public goods jointly where the satisfaction derived by one person does not reduce that obtained by another. Housing services and durables are good examples of public goods. For instance, two or more persons can share a refrigerator or a television set obtaining the same satisfaction as a single person using the same facilities. As a result, economy of scale occurs: two households, despite their size differences, will spend the same amount on durables. Economies of scale in household consumption generally occur as a result of joint consumption of public good – the doubling of household size does not result in a doubling of consumption expenditure to maintain the same standard of living. Thus, the poverty line should take account of the economies scale in the larger households.¹⁰

Regional Costs of Living

Since individuals live in different geographical regions facing different prices, the same level of nominal income will buy a different level of welfare. Individuals living in more expensive areas and regions will require more income to enjoy the same minimum standard of living and we cannot and should not have the same poverty line for all regions and areas. Thus, poverty line should be adjusted for differences in costs of living across areas and regions. This problem becomes more serious when we want to compare poverty between rural and urban areas.¹¹

Consistency of Poverty Line

Ravallion and Bidani (1994) define a poverty profile to be inconsistent if one of two households deemed to have exactly the same standard of living but located in different regions is classified as poor and the other as not. Thus, consistency requires that the poverty line be fixed in terms of the level of living required.

The real poverty line is the nominal poverty line adjusted for regional differences in the cost of living. To maintain consistency, the difference in regional poverty lines for persons with the same needs should be entirely attributed to differences in regional costs of living. If persons A and B have the same needs and face the same price vectors but live in different regions, they should have exactly the same poverty lines.

We take the view that consistency is an essential requirement of poverty lines. The violation of consistency implies that we cannot make poverty comparisons across regions. The methodology, which we propose in this paper, explained in detail in Annex

¹⁰ Although economies of scale are important for poverty measurement, no credible method exists to estimate them. See Kakwani and Son (2003) for a detailed discussion of this issue.

¹¹ See Kakwani and Hill (2002) for alternative methods of estimating the regional costs of living indices.



1.2, satisfies consistency so that we can legitimately make poverty comparisons across the regions.

The Poverty Line Should Reflect the Consumption Patterns of the Population

The poverty lines should be derived from the basic food and non-food baskets, which reflect the consumption patterns of the poor. It has been argued that the poverty lines choice of the basic needs basket should take account of the people's consumption patterns in each region and area. Ravallion and Bidani (1994) call this specificity, which implies that we should have a separate food basket for each area or region. But if we have a separate basket for each region, then we may violate the consistency of the poverty lines in terms of maintaining a constant standard of living across the regions and area. Thus, there can be a conflict between consistency and specificity. How can we resolve this issue? As a matter of fact, this is the most contentious issue in the specification of poverty lines.

The Poverty Line Should Be Consistent Over Time

To monitor poverty, we need to have poverty profiles that are comparable over time. The comparability of poverty profiles requires that the minimum standard of living implied by the poverty line should not change over time. It means that the real poverty line is fixed over time. Thus, the poverty line should change over time only because of changes in prices. This method implies that the poverty line should be adjusted over time by means of the true cost of living index, so the observed differences in the poverty line measure the real change in the poverty line. Thus, consumer price indices play an important role in obtaining poverty lines that are consistent over time.

Nutritional Requirements

The food poverty line may be constructed using the nutritional requirements of individuals. So the first step in the construction of poverty lines is to specify the food requirements of individuals or families. An individual may be regarded as non-poor if he or she has access to an adequate source of food. We assume that an individual has access to adequate food if he or she has access to an adequate source of nutrition. According to Lipton (1988), "access to adequate source of nutrition" is a good indicator of quality of life; health, shelter, education, even mobility, are all reflected in nutritional status, although not in a linear or otherwise simple way.

The determination of nutritional requirements of individuals or families is a difficult task. To maintain the required physical efficiency, an individual requires several nutrients (such as protein, fat, carbohydrates, and calories) in adequate amounts, in proper combination and at appropriate times (Gopalan 1992). The FAO has been concerned with the issue of determining the nutritional norms of individuals in different age and sex groups. These norms vary from country to country (and even different groups within a country) depending on factors such as race, climatic conditions, etc.

The nutritional needs of individuals may be used as a starting point to construct food baskets for poverty measurement. It must be emphasized that these needs of individuals depend on several factors such as age, sex, climatic conditions and activity levels. Therefore, there cannot be a single food basket for all people living in a country.

Since the nutritional norms vary from country to country depending on factors such as race, climatic conditions, etc., it is important that we adopt norms appropriate for the country being studied. In the construction of the Jordanian poverty line, we will be using the nutritional norms that are appropriate for the Jordanian population.

Different methodologies for setting food poverty line

Having decided upon the calorie requirements, the next step is to convert required calories into a food poverty line, which is the expenditure on food that is required to meet the exogenously determined calorie requirements. We discuss here three alternative methodologies that have been used in different countries to determine food poverty lines.

Direct Calorie Intake Method (DCI)

Many household expenditure surveys provide information on quantities of food consumed by the households. These food quantities can be converted into calories by means of food calorie conversion factors, which are generally available from the country's nutritional departments. This gives the calories consumed by each household in the survey, which on dividing by household size, gives the household's per-capita calories intake. A household is then identified as poor if its per-capita calorie intake is less than its per-capita calorie requirement. This method is referred as direct calorie intake method (Asra and Santos-Francisco 2001).

The DCI method assumes that if two households consume the same per-capita kilocalories, then they will have the same standard of living. That is, a household's standard of living is determined by the per-capita consumption of calories. This assumption cannot be valid. In general, richer households buy better quality of food and more expensive food items, such as meat and seafood. Two households, consuming the same per-capita kilocalories, may have vastly different standards of living. Thus, this methodology may identify non-poor households as poor and poor households as non-poor. We do not recommend the DCI method for measuring poverty.

Food Energy Intake Method (FEI)

The Food Energy Intake (FEI) Method,¹² although attributed to Greer and Thorbecke (1986), was widely used in India in the 1970s. This method uses a regression model to compute the food poverty line at which a household's per-capita food energy intake is just sufficient to satisfy a given required number of its per-capita daily calories. The regression model that is estimated is given by

$$\ln(x) = a + bc + u, \quad (1)$$



ANNEX 1.2

SAMPLE DESIGN OF THE HOUSEHOLD EXPENDITURES AND INCOME SURVEY 2002/2003

The needs for statistical data reflecting the nature of expenditures and income and their relationship with other socio-economic variables are paramount for policy makers in a rapidly changing economy like Jordan's. Accordingly, Jordan's Department of Statistics undertakes a Household Expenditures and Income Survey every five years.

The main objectives of the HEIS 2002/2003 could be summarized as follows:

1. To obtain detailed data and information on household income and expenditures.
2. To obtain detailed, cross-tabulated data on income and expenditures according to different socio-economic variables (housing characteristics, demographic characteristics, social characteristics, health characteristics, etc.).
3. To obtain the needed data for the purposes of establishing the Consumer Price Index.
4. To obtain data needed for measuring poverty indicators.
5. To obtain information on the characteristics of a poor population.
6. To obtain the data needed for the preparation of poverty maps.

The results of this survey have been intended to be representative according to at sub-district level, therefore, the sample size of the 2002/2003 survey was correspondingly large in comparison with the previous survey sample, which was considered as representative at the governorate level.

SAMPLE FRAME AND STRATIFICATION

The master sampling frame for the DOS household survey program was used in conjunction with the 1994 General Population and Housing Census enumeration of households. It may be noted that Jordan consists of 12 governorates, and each governorate consists of a number of districts (38 districts in all). Each district consists of at least one sub-district (73 sub-districts in all), and each sub-district consists of household groups (cities and villages). Each of these groups consists of number of clusters, each cluster consists of 60-100 households.

Two-stage stratified cluster sampling technique was used for the survey. In the first stage, primary sampling units (PSU) were selected from census enumeration blocks with probability of selection proportional to the number of households in the block. In the second stage, a sample of 12 households was selected from each PSU using the systematic sampling procedure. In addition, a reserve sample was selected using the systematic sampling procedure but with a different starting point. Each of the four large cities (Amman, Zarqa, Rusaifeh, and Irbid) has been divided into four strata. For the fifth large city – Wadi Al Seir – in Amman governorate, two strata were assigned. All other



sub-districts are assigned to one stratum. The stratification was done on the basis of socio-economic characteristics such as: type of houses, value of the house, educational level of the head and others. Given the sample size determination explained below, it is expected that coefficient of variation will be lower than 8% at the sub-district and less than 1% at the national level for the main two survey variables: per-capita income and expenditure variables.

DETERMINATION OF SAMPLE SIZE

The results of the 1997 Household Expenditures and Income Survey were used to assign the sample size that needed to obtain accurate data at sub-district level.

The procedure used in estimating the sample size for the HEIS 2002/2003 includes the following steps:

1. Redistribution of the sampled households of the 1997 survey according to the sub-districts.
2. Calculation of the relative standard error (the C.V.) for each sub-district.

Reviewing of the values of the standard error (C.V.), it has been observed that the standard error was less than 10% in most of sub-districts irrespective of the small size of the sample. This indicates the existence of homogeneity in expenditure variable within the single sub-district. On the other hand, certain sub-districts were excluded from the calculation of the standard error because the number of households was insufficient. Other sub-districts were not represented in the 1997 sample because that sample was designed to be representative at the governorate level.

Great differentials were observed in numbers of selected households and clusters among sub-districts, which represent a major difficulty in using a certain distribution of the sample among these sub-districts. This situation requires the existence of a minimum number of selected households in the single sub-district to ensure the possibility of disseminating certain results at sub-district level.

The calculated Design Effect from the 1997 data by sub-district shows large values for some sub-districts, which indicates an existence of homogeneity within each primary sample unit (Block). This suggested that the sample size in each primary sample unit should be proportionally small to give a chance for increasing the number of selected clusters in each sub-district to insure a better spread of the sample.

The results of the 1997 Household Expenditures and Income Survey were used to estimate the sample size at sub-district level, with a relative standard error of less than 10 percent. The minimum number of selected clusters in each district was fixed to be seven clusters and three in each sub-district. This will enable us to obtain a good spread of the sample according to the administrative level.

The selected number of households was determined to be 12 in each cluster, taking into account the possibility of non-response cases, thus, a reserve sample was selected from each cluster to compensate the non-response cases during the execution of the survey.

By multiplying “the number of observations estimated by simple random method” BY design effect, and maintaining C.V. for expenditure variable less than 10% at the sub-district level, with at least seven clusters at the district level and three clusters at the sub-district level, the estimated sample size was 12,792 households distributed as follows.

Table 1.2.1: HEIS 2002/2003 Sample Distribution by Sub-Districts

Governorate	1: District	Sub-district	1.1 Number		
			Clusters	Households	
Amman	Al Qasaba	Amman	136	1,632	
		Marka	56	672	
		Quismeh	30	360	
		Al Jamia'	60	720	
		Wadi Elseer	40	480	
		Sahab	10	120	
		Mowaqqar	7	84	
		Al Jiza	8	96	
			Um alrasas	6	72
			Naou'r	11	132
		Um Al basateen	3	36	
2: Total			367	4,404	
3: Balqa	Al Qasaba	Salt	12	144	
			Al Ardha	3	36
			Zay	3	36
			Mahes and Fuhais	3	36
			Eira and Yarqa	3	36
			Dair Alla	18	216
			Southern Shuneh	9	108
			Ein Al Basha	30	360



Governorate	1: District	Sub-district	1.1 Number	
			Clusters	Households
4: Total			81	972
5: Zarqa	Al Qasaba	Zarqa	80	960
		Al Azraq	3	36
		Beerain	3	36
		Al Hashimiyyeh	5	60
		Russeifa	30	360
6: Total			126	1,512
7: Madaba	Al Qasaba	Madaba	23	276
		Theeban	6	72
8:				
9:		Al-Areedh	3	36
10: Total			32	384
11: Irbid	Al Qasaba	Irbid	64	768
		Al Wastiyyeh	9	108
		Bani Obaid	35	420
		Al Mazar Al Shamali	7	84
		Al koorah	17	204
		Bani Kinaneh	16	192
		Ramtha	20	240

Governorate	1: District	Sub-district	1.1 Number	
			Clusters	Households
	Northern Ghor	Northern Ghor	14	168
	Al Taybeh	Al Taybeh	7	84
12: Total			189	2,268
13: Mafraq	Al Qasaba	Mafraq	16	192
		Bala'ma	9	108
		Rhab	5	60
		Sama Al Serhan	3	36
		Hoosha	3	36
	Al Badiyah Al Shamaliyyeh	Al Salihyyeh	6	72
		Sabha	3	36
		Rwaished	3	36
		Um Aljimal	4	48
		Dair Al Kahef	3	36
14: Total			55	660
15: Jarash	Al Qasaba	Jarash	26	312
		Borma	3	36
		Al Mastaba	4	48
16: Total			33	396
17: Ajloun	Al Qasaba	Ajloun	19	228
		Kofranjah	5	60



Governorate	1: District	Sub-district	1.1 Number	
			Clusters	Households
			19: 24	20: 288
	Al Qasaba	Karak	15	180
	21: Karak			
		Ayy	5	60
		Qatraneh	3	36
	Southern Ghors	Ghor Al Safi	5	60
		Ghor Al Mazra'	6	72
		Al Mazar Al Janoubi	15	180
	Al Qasr	Al Qasr	6	72
		Faouq'	3	36
	22: Total		23: 58	24: 696
	Al Qasaba	Tafeela	16	192
	25: Tafeela			
		Al Hasa	4	48
		Bsaira	6	72
	26: Total		27: 26	28: 312
	Al Qasaba	Maan	13	156
	29: Maan			
		Al Husayniyyeh	3	36
		Eil	4	48
		Al Jafr	1	12
		Al Mraighah	3	36
	Al Shoubak	Al Shoubak	7	84
	Wadi Mousa	Wadi Mousa	7	84

Governorate	1: District	Sub-district	1.1 Number	
			Clusters	Households
30: Total			31: 38	32: 456
33: Aqaba	Qasaba	Aqaba	27	324
		Wadi Araba	3	36
	Al Quwairah	Al Qwairah	7	84
		34: Total		
TOTAL COUNTRY			1,066	12,792

Source: Department of Statistics, Jordan.

Weighting Procedures for 2002 HEIS

For the sample estimates from a particular survey to be representative of the population, it is necessary to multiply the data by a sampling weight, or expansion factor. The basic weight for each sample household would be equal to the inverse of its probability of selection (calculated by multiplying the probabilities at each sampling stage). Since the sample design is similar to that for the 1997 HEIS, the weighting procedures will also be similar.

A stratified two-stage sample design is used for the 2002 HEIS, with census enumeration blocks selected at the first sampling stage and households selected at the second stage. The probability of selection for the sample households can be expressed as follows:

$$P_{hi} = (n_h \times M_{hi} \times m_{hi}) / (M_h \times M'_{hi})$$

Where:

p_{hi} = probability of selection for the sample households in the i-th sample block in the h-th stratum (governorate, city, other urban and rural)

n_h = number of sample blocks selected in the h-th stratum

M_h = total number of households in the frame for the h-th stratum



M_{hi} = total number of households (measure of size) in the master sampling frame for the i-th sample block in the h-th stratum

m_{hi} = 12 = number of sample households selected in the i-th sample block in the h-th stratum

M'_{hi} = total number of households in the updated listing for the i-th sample block in the h-th stratum

The two components of this probability of selection correspond to the individual sampling stages. The basic sampling weight, or expansion factor, is calculated as the inverse of this probability of selection. The weight can be expressed as follows:

$$W_{hi} = (M_h \times M'_{hi}) / (n_h \times M_{hi} \times m_{hi})$$

Where:

W_{hi} = basic weight for the sample households in the i-th sample block in the h-th stratum

It can be seen that if m_{hi} is constant in a stratum (for example, 12 households in the case of the 2002 HEIS) and $M'_{hi} = M_{hi}$ (that is, the number of households in the updated listing for the sample block is equal to the corresponding number in the frame) the sample would be self-weighting within the stratum.

In the case of each small sample enumeration block (with less than 20 households) that was combined with an adjacent block to form a PSU after the first stage of selection, the value of M_{hi} and M'_{hi} would correspond to the number of households in the combined blocks.

It is also important to adjust the weights to take into account the non-interview households. The final W'_{hi} for the sample households in the h-th stratum can be expressed as follows:

$$W'_{hi} = W_{hi} \times m'_{hi} / m''_{hi}$$

Where:

m'_{hi} = total number of valid sample households selected in the i-th sample block in the h-th stratum (excluding any destroyed or vacant housing units in the sample).

m''_{hi} = total number of sample households with completed questionnaires in the i-th sample block in the h-th stratum, including replacements.

ANNEX 1.3

INCOME AND EXPENDITURE SURVEYS (1992, 1997, 2002/2003)

COMPARISON

Income and Expenditure Surveys 1992

Survey Design:

Single purpose survey, following standard international methodology.

It is the third survey conducted by the Department of Statistics (DOS). Earlier surveys were conducted in 1979/80 and in 1986/87. A lot of experience has been gained by DOS in conducting such surveys.

Each household is observed over the whole year, to capture seasonal variations in expenditure patterns.

Sample:

Survey of 8000 households. Survey is nationally representative at the urban-rural level and the governorate level, according to multi-stage stratified design.

The survey frame is a special frame prepared by DOS because the old frame of 1979 census became very old.

Identifiers that uniquely identify any household are: govr, city, urrl, famly.

Sample coverage: due to the sample characteristics, (8) Enumeration of 50 ank (cluster) was chosen. Every ank contain 20 families in major governorates and 10 families in smaller ones.

The following table illustrates the population settlements, which has been selected into the sample.



Table 1.3.1. Population settlements, which has been selected into the sample 1992

Governorate	Urban	Rural	Total
Amman	20	16	36
Irbid	38	27	65
Zarqa	6	4	10
Balqa	7	17	24
Mafraq	3	21	24
Karak	5	25	30
Maan	3	10	13
Tafeela	4	5	9
Total	86	25	211

Source : Department of Statistics, Jordan.

Questionnaires

Six questionnaires:

1. Housing Characteristics questionnaire:

Obtained once. Includes housing type ownership, electricity, water, and presence of household durables.

2. Individual characteristics questionnaire:

Collect information on individual's characteristics like, sex, education, labor force, marital status, relation to household head. Main information is obtained in first quarter visit, and updates for new members are done quarterly.

3. Current Income Sources questionnaire:

Obtained twice per year, once over the first six months of the year, and the second time over the last six months of the year. It includes all types of income sources: details of labor income, property income, interest, dividends, pension, transfer payments, and total income. Information is obtained by individual.

4. Asset changes questionnaire:

Sales and purchases of land, buildings, borrowing/lending, inheritance, bank deposits/withdrawals, and stock purchases/sales. This information is obtained at the individual level of each household and collected twice a year, similar to income sources.

5. Food Expenditure questionnaire:

Collected four times a year, once for each quarter.

Collected for each day of the representative week.

Details are collected over a large number of goods (210 items); e.g., four types of flour and four types of rice.

Includes information on some non-food goods purchased on a periodic basis, such as tobacco, perishables like newspapers, transportation expenses, soap, matches, etc.

PROOF THAT CALORIE IS A MONOTONICALLY INCREASING FUNCTION OF WELFARE

BY N. KAKWANI

The poverty line specifies the level of income or consumption that is just sufficient to maintain the society's basic minimum standard of living. A person is classified as poor if he or she is unable to enjoy this minimum standard of living. The standard of living is a difficult concept to quantify. In this note, we propose a model based on consumer choice theory that can help to quantify the minimum standard of living.

PROPOSED MODEL

We may define a utility function for an individual as

$$u = u\left[\frac{q_f}{r}, q_n\right] \quad (1)$$

where q_f and q_n are the quantity vectors of food and non-food items of consumption, respectively; r is the average calorie requirement of an individual.

Suppose p_f and p_n are the price vectors of food and non-food items of consumption, respectively, then using the conventional treatment of consumer choice, an individual maximizes the utility function (1)

subject to the budget constraint

$$p_f \cdot q_f + p_n \cdot q_n \leq x \quad (2)$$

where x is the total expenditure or income that is available to the individual.

This maximization procedure yields the food and non-food demand functions as

$$q_f = rg_f(x, rp_f, np_n) \quad (3)$$

and

$$q_n = ng_n(x, rp_f, np_n) \quad (4)$$

respectively. These equations are the Marshallian demand functions (Marshall 1930).



Questionnaires

Five main questionnaires:

1. The general questionnaire:

Housing characteristics: Obtained once. Includes housing type, electricity, water, and presence of household durables.

Individual characteristics: sex, education, labor force, marital status, relation to household head. Main information is obtained in first quarter visit, and updates for new members are done quarterly.

Income Sources: Obtained twice per year, once over the first six months of the year, and the second time over the last six months of the year. It includes all types of income sources: details of labor income, property income, interest, dividends, pension, transfer payments, and total income. Information is obtained by individual.

Asset changes: sales and purchases of land, buildings, borrowing/lending, inheritance, bank deposits/withdrawals, and stock purchases/sales. This information is obtained at the individual level of each household and collected twice a year, similar to income sources.

2. Food Expenditure:

Collected four times a year, once for each quarter.

Collected for each day of the representative week.

Details are collected over a large number of goods (252 items).

Includes information on goods purchased on a periodic basis, such as tobacco, perishables like newspapers, transportation expenses, soap, matches, etc.

It includes a variable over consumption type: consumption of gifts, or home production, etc.

3. Non-Food Expenditure and Services:

Collected four times a year, once for each quarter.

Collected for each month of the quarter.

Details are collected over a large number of goods (338 items): clothes, housing spending, durables, spending on autos, education, health, recreation, and taxes.

It includes a variable over consumption type: consumption of gifts, or home production, etc.

4. Employers and workers for their own benefit:

For individuals who have income from private business.

Collected one time.

Two parts, one for organized sector the other for unorganized sector.

In the organized sector part, details are collected for number of economic activities, employees, production inputs (both goods and services), and production value.

In the unorganized sector part, details are collected about the economic activity of the family, production costs (production inputs + labor compensations), and revenues.

5. Health environment and education:

Collected one time.

Collected data about basic services: how far are they, housing environment, and health status for the family members (disabilities, diseases, availability of cure and consultations, health insurance).

Surveys comparison

Reviewing the process in which the Income and Expenditures surveys has been done in 1992, 1997, and 2002/2003, one can notice the development of such a survey and the use of the accumulated experiences in designing the survey, the way of collecting the data, number of questionnaires, and the response to the local and international trends and requirements to produce reliable statistics. In 1992, DOS collected data from 8000 households and used six questionnaires to collect the data, while in 1997 the number of questionnaires was shortened to three by merging some questionnaires into the others, and the number of households was reduced to 6000. In the 2002/2003 survey, we witnessed a change – the number of households increased to 12,792 and the number of questionnaires to five. This was done for a special purpose. The main objective of this survey is to get a better understanding of Jordanian households not at the urban rural or governorates levels (as previous surveys did), but on the province levels (a province is the smallest administrative unit in Jordan). This a great development that will enable Jordan to draw clear maps for poverty. The increase in the number of questionnaires was due first to the separation of the “Employers and workers for their own benefit questionnaire” from the Housing/Individual Characteristics/Income Sources/Asset changes questionnaire and the introduction of the Health, Environment, and Education questionnaire, which was designed to collect more and specific data about these vital fields.

The change in the food and non-food questionnaires between 1992, 1997, and 2002/2003 was only in adding new items to capture the changes in the consumption patterns and habits. In three surveys there are 17 groups of food items and 18 groups of non-food commodities.

Regarding the numbers of items covered by the food and non-food questionnaires, this also witnessed some development especially in the non-food questionnaire, where the items increased (from 289 in 1992 to 312 in 1997 to 338 in 2002) to capture the development in the consumption patterns and new goods that have become available in the markets.

Regarding the comparability of these surveys, all the surveys follow the same methodology, with minor adjustments, and therefore the surveys are comparable.

Notes for next surveys

It is recommended in the coming surveys to pay more attention to the issue of the durable goods. It is true that the survey collects data on the purchasing of these items during the survey reference period and the availability of such items in the house, but there is a need to know the purchasing value for these items at the time of purchasing and when the purchase was made (for those who reported ownership of durables but there is no purchase during the survey year). By this we can solve the problem of estimating the utilities the family is getting from owning these durables.



ANNEX 1.4

THE ADMINISTRATIVE DIVISIONS OF JORDAN

	Governorate	Districts	Provinces
1	Amman	9	4
2	Balqa	5	3
3	Zarqa	3	3
4	Madaba	2	5
5	Irbid	9	0
6	Mafraq	4	10
7	Jarash	1	2
8	Ajloun	2	2
9	Karak	7	3
10	Tafeela	3	0
11	Maan	4	4
12	Aqaba	2	2
	Total	51	38

Source: Department of Statistics, Jordan.

According to administrative divisions regulation no (46) for the year 2000 and its amendments[1]

The Kingdom is divided into 12 Governorates

- 1- Capital Governorate with Amman City as Center
- 2- Irbid Governorate with Irbid City as Center
- 3- Balqa Governorate with Salt City as Center
- 4- Karak Governorate with Karak City as Center
- 5- Maan Governorate with Maan City as Center
- 6- Zarqa Governorate with Zarqa City as Center
- 7- Mafraq Governorate with Mafraq City as Center
- 8- Tafeela Governorate with Tafeela City as Center
- 9- Madaba Governorate with Madaba City as Center
- 10- Jarash Governorate with Jarash City as Center
- 11- Ajloun Governorate with Ajloun City as Center
- 12- Aqaba Governorate with Aqaba City as Center

The Governorates consist of Districts and provinces as stipulated in the Regulation.

1. Capital Governorate consists of the following Districts and Provinces

- a- District of Qasabet Amman with Abdali as Center,
- b- District of Marka with Marka as Center,
- c- District of Qweismeh with Jwaideh as Center,
- d- District of University with Jubeiha as Center,
- e- District of Wadi Seir with Wadi Seir as Center,
- f- District of Sahab with Sahab as Center,
- g- (1) District of Jeiza with Jeiza as Center



- (2) Um El-Rasas Province with Um Al-Rasas as Center
- h- (1) District of Al-Mowaqqer with Al-Mowaqqer as Center,
(2) Province of Rujum Al-Shami with Western Rujum Al-Shami as Center,
- i- (1) District of Na'ur with Na'ur as Center,
(2) Province of Um Al-Basateen with Um Al-Basateen as Center
(3) Province of Husban with Husban as Center

2. Irbid Governorate consists of the following Districts

- a- District of Qasabet Irbid with Irbid City as Center,
- b- District of Ramtha with Ramtha as Center,
- c- District of Koura with Deir Abi S'eed as Center,
- d- District of Bani Kenaneh with Sama Al-Rousan as Center,
- e- District of Northern Ghor with North Shounah as Center,
- f- District of Bani Obeid with Al-Huson as Center,
- g- District of Northern Mazar with Northern Mazar as Center,
- h- District of Al-Taybeh with Al-Taybeh as Center,
- i- The Middle District with Kufr Asad as Center

3. Balqa' Governorate consists of the following Provinces and Districts

- a- (1) District of Qasabet Salt with Salt City as Center,
(2) Province of Ardah with Sbeihi as Center,
(3) Province of Zay with Allan as Center,
(4) Province of Eira & Yarqa with Yarqa as Center,
- b- District of Southern Shounah with South Shounah City as Center,
- c- District of Deir Alla with Deir Alla as Center,
- d- District of Ein Al-Basha with Ein Al-Basha as Center,
- e- District of Mahes & Fuheis with Fuheis as Center

4. Karak Governorate consists of the following Provinces and Districts

- a- (1) District of Al-Karak Qasabet with Al-Karak City as Center,
 - b- (1) District of Southern Mazar with Southern Mazar as Center,
(2) Province of Mu'ab with Al-Husayneyeh as Center,
 - c- (1) District of Qaser with Qaser as Center,
(2) Province of Moujeb with Mughayyer as Center,
 - d- (1) District of Southern Ghour with Ghour Al-Safi as Center,
(2) Province of Ghour Al-Mazra'a with Ghour Al-Mazra'a as Center,
 - e- District of Ayy with Ayy as Center,
 - f- District of Faqou' with Faqou' as Center,
 - g- District of Qatraneh with Qatraneh as Center
-

5. Maan Governorate consists of the following Provinces and Districts

- a- (1) District of Qasabet Maan with Maan City as Center,
(2) Province of Eil with Eil as Center,
(3) Province of Al-Jafer with Al-Jafer as Center,
(4) Province of Al-Mreigha with Al-Mreigha as Center,
(5) Province of Athroh with Athroh as Center,
- b- District of Petra with Wadi Mousa as Center,
- c- District of Al-Shoubak with Al-Shoubak as Center,
- d- District of Al-Husayneyah with Al-Husayneyah as Center

6. Zarqa Governorate consists of the following Provinces and Districts

- a- (1) District of Qasabet Al-Zarqa with Zarqa City as Center,
(2) Province of Beirin with Beirin as Center,
(3) Province of Al-Dhleil with Al-Dhleil as Center,
(4) Province of Azraq with (North & South Azraq) Traingle as Center,
- b- District of Al-Rusayfeh with Al-Rusayfeh as Center,
- c- District of Al-Hashimeya with Al-Hashimeya as Center

7. Mafraq Governorate consists of the following Provinces and Districts

- a- (1) District of Qasabet Al-Mafraq with Al-Mafraq City as Center,
(2) Province of Bala'ma with Bala'ma as Center,
(3) Province of Irhab with Irhab as Center,
(4) Province of Al-Mansheyeh with Mansheyet Bani Hasan as Center,
- b- (1) District of North Badia with Sabha Triangle as Center,
(2) Province of Sabha with Sabha Triangle as Center,
(3) Province of Um Al-Jmal with Um Al-Jmal as Center,
(4) Province of Deir Al-Kahf with Deir Al-Kahf as Center,
(5) Province of Um Al-Quttein with Um Al-Quttein as Center,
- c- (1) District of Western Northern Badia with Al Al-Bait University Triangle as Center,
(2) Province of Sama As-Sarhan with Sama As-Sarhan as Center,
(3) Province of Housha with Housha Triangle as Center,
(4) Province of Al-Khaldeyah with Al-Khaldeyah as Center,
- d- District of Ruweished with Ruweished as Center

8. Tafeileh Governorate consists of the following Provinces and Districts

- a- District of Qasabet Al-Tafeileh with Tafeileh City as Center, Erhab
- b- District of Baseera with Baseera as Center,
- c- District of Al-Hasa with Al-Hasa as Center

9. Ma'daba Governorate consists of the following Provinces and Districts

- a- (1) District of Qasabet Ma'daba with Ma'daba City as Center,
(2) Province of Jreineh with Jreineh as Center,
(3) Province of Ma'een with Ma'een as Center,
(4) Province of Al-Faysaleyeh with Al-Faysaleyeh as Center,



- (5) District of Theiban with Theiban as Center,
- (6) Province of Al-Areedh with Al-Areedh as Center,
- (7) Province of Mleih with Mleih as Center,

10. Jarash Governorate consists of the following Provinces and Districts

- (1) District of Qasabet Jarash with Jarash City as Center,
- (2) Province of Al-Mastaba with Al-Mastaba as Center,
- (3) Province of Burma with Burma as Center,

11. Ajloun Governorate consists of the following Provinces and Districts

- (1) District of Qasabet Ajloun with Ajloun City as Center,
- (2) Province of Sakhra with Sakhra as Center,
- (3) Province of Arjan with Arjan as Center,
- (4) District of Kufranjeh with Kufranjeh as Center

12. Aqaba Governorate consists of the following Provinces and Districts

- (1) District of Qasabet Aqaba with Aqaba City as Center,
 - (2) Province of Wadi Arabeh with Al-Reisheh as Center,
 - (3) District of Al-Qweirah with Al-Qweirah
 - (4) Province of Disi with Disi as Center
-

ANNEX 1.5. STANDARD ERRORS FOR HOUSEHOLD CONSUMPTION ESTIMATES

Category	Code	Estimate	Standard	C.V.	95% Confidence Interval		Design	No. observation
			Error	(%)	Lower	Upper	Effect	
Kingdom		6179.43	72.864	1.18	6036.616	6322.245	3.05	10027
GOVDISTSUB								
Amman	11011	7006.288	194.907	2.78	6624.269	7388.306	3.16	1202
Marka	11021	7192.004	383.431	5.33	6440.479	7943.53	3.86	522
Quiesmah	11031	6996.196	454.037	6.49	6106.284	7886.108	3.98	235
Jameia	11041	10140.92	389.593	3.84	9377.314	10904.517	3.55	428
wadi al sier	11051	9161.252	626.655	6.84	7933.008	10389.496	5.31	277
Sahab	11061	6563.068	534.388	8.14	5515.667	7610.469	2.98	84
Moakar	11071	5023.177	432.227	8.6	4176.011	5870.343	1.84	74
Jezah	11081	4280.807	389.526	9.1	3517.335	5044.279	2.63	73
aum rasas	11082	5217.577	445.603	8.54	4344.196	6090.958	0.33	66
Naour	11091	5990.888	325.281	5.43	5353.337	6628.44	0.99	115
aum basateen	11092	7915.369	1683.757	21.27	4615.204	11215.533	0.68	29
Salt	12011	7772.305	575.562	7.41	6644.203	8900.407	1.88	135
Aredah	12012	5470.953	252.244	4.61	4976.556	5965.351	0.13	36
Zai	12013	5267.779	252.971	4.8	4771.956	5763.601	0.18	32
fohais mahes	12014	8298.119	1172.564	14.13	5999.895	10596.344	4.44	34
era yarka	12015	6678.544	459.578	6.88	5777.771	7579.318	0.27	34
dier ala	12021	3823.79	94.308	2.47	3638.946	4008.634	0.32	192
shonah janobiea	12031	4874.385	385.107	7.9	4119.574	5629.195	1.07	82
aien basha	12041	4657.981	309.053	6.63	4052.237	5263.725	1.37	285
Zarka	13011	4661.969	146.809	3.15	4374.223	4949.715	2.26	835
Azrak	13012	3619.854	78.737	2.18	3465.528	3774.179	0.05	28
Berien	13013	3780.61	149.494	3.95	3487.601	4073.619	0.1	32
Hashemieh	13014	3452.631	261.844	7.58	2939.416	3965.845	2.74	54
Doliel	13015	4272.86	314.723	7.37	3656.004	4889.717	0.49	57
Rusiefah	13021	4672.325	184.711	3.95	4310.292	5034.358	2.45	316
Madabah	14011	6167.871	377.539	6.12	5427.894	6907.848	1.63	248
Deban	14021	5483.657	293.423	5.35	4908.547	6058.766	0.45	68
Areedh	14022	5020.739	103.09	2.05	4818.683	5222.796	0.01	34
Irbid	21011	5785.63	207.578	3.59	5378.778	6192.482	2.36	590
Wasadieah	21012	5540.609	356.337	6.43	4842.187	6239.03	0.65	94
bani obaied	21021	5720.58	272.692	4.77	5186.104	6255.056	1.29	333
mazar shamali	21031	4391.681	344.951	7.85	3715.578	5067.784	2.56	73
Korah	21041	5398.413	241.346	4.47	4925.375	5871.451	1.1	182
bani kananah	21051	5710.261	244.364	4.28	5231.307	6189.215	1.25	166
Ramtah	21061	5463.376	237.546	4.35	4997.786	5928.967	0.98	218
shonah shmaliea	21071	4841.697	210.842	4.35	4428.446	5254.948	0.88	146
Taibah	21081	4889.55	361.505	7.39	4181	5598.099	0.98	74
Mafrak	22011	4768.939	249.813	5.24	4279.305	5258.572	1.87	153



Balama	22012	3944.442	269.066	6.82	3417.074	4471.811	0.47	92
Rehab	22013	5120.759	455.938	8.9	4227.12	6014.397	0.84	54
sama serhan	22014	4796.444	501.992	10.47	3812.539	5780.35	0.82	30
Hoshah	22015	4148.279	265.945	6.41	3627.027	4669.53	0.58	35
Salehieah	22021	3811.277	240.137	6.3	3340.609	4281.945	0.33	62
Sabha	22022	3915.578	526.071	13.44	2884.478	4946.677	2.87	33
Roieshed	22023	2429.096	199.585	8.22	2037.91	2820.282	0.13	33
om jermal	22024	4047.439	276.919	6.84	3504.677	4590.201	0.31	44
dier kahef	22025	3026.894	189.349	6.26	2655.771	3398.018	0.2	32
Jarash	23011	5500.305	341.237	6.2	4831.481	6169.129	1.49	242
Mastaba	23013	5122.452	152.551	2.98	4823.453	5421.452	0.07	33
Bormah	23021	5297.09	47.778	0.9	5203.445	5390.735	0.01	27
Ajlun	24011	5191.441	266.801	5.14	4668.51	5714.372	1.59	191
Kufranga	24012	5093.152	424.59	8.34	4260.956	5925.348	1.59	50
Karak	31011	6537.77	418.418	6.4	5717.671	7357.869	1.81	130
Aie	31012	4549.809	332.286	7.3	3898.528	5201.09	0.37	52
Katrana	31013	4848.009	295.378	6.09	4269.069	5426.95	0.21	32
Ghoursafi	31021	5118.146	48.66	0.95	5022.772	5213.52	0.01	57
Ghourmzraa	31022	6130.28	653.417	10.66	4849.583	7410.977	0.76	66
mazar janoubi	31031	5940.963	358.881	6.04	5237.556	6644.369	1.07	140
Kasser	31041	4809.088	248.858	5.17	4321.326	5296.85	0.35	65
Fakoe	31042	5573.138	229.64	4.12	5123.043	6023.234	0.25	33
Tafeila	32011	5223.715	260.519	4.99	4713.099	5734.332	0.97	160
Hessa	32012	5926.376	526.307	8.88	4894.815	6957.937	0.29	29
Bserah	32013	4616.629	254.995	5.52	4116.838	5116.42	0.39	54
Maan	33011	4571.664	278.612	6.09	4025.584	5117.744	1.17	101
Hussieneah	33012	5488.714	1266.844	23.08	3005.699	7971.729	0.32	31
Aiel	33013	5633.761	1093.516	19.41	3490.47	7777.053	0.62	38
Jafor	33014	4620.341	0.008	0	4620.326	4620.357	0	11
Mregha	33015	4246.224	364.481	8.58	3531.841	4960.608	0.23	31
Shoubaq	33021	5186.668	240.898	4.64	4714.508	5658.828	0.2	70
wadi mousa	33031	5167.956	340.485	6.59	4500.606	5835.307	0.88	73
Aqaba	34011	6044.768	330.435	5.47	5397.115	6692.421	2.39	186
wadi araba	34012	3387.56	155.672	4.6	3082.444	3692.677	0.08	24
Quierah	34021	4399.815	497.244	11.3	3425.216	5374.414	0.97	50

Source: Department of Statistics, Jordan.

ANNEX 1.6

FOOD CALORIE CONVERSION FACTORS

Prepared by: Mohammad Khasawnah & Hind Diab

COMMODITY	CODE	Unit	Calories/100gm	Kcal/unit	إسم السلعة
1. CEREALS & PRODUCTS	100				الحبوب ومنتجاتها 1
WHEAT	101	KG	348	3480	قمح حب
RICES, NORMAL GRAIN	102	KG	358	3580	أرز حبة عادية
RICE, LONG GRAIN	103	KG	362	3620	أرز حبة طويلة
FLOUR, ZERO	104	KG	338	3380	طحين أبيض
FLOUR, LOCAL	105	KG	364	3640	طحين بلدي
FLOUR, PACKET	106	KG	344	3440	طحين باكيت
BREAD, LOCAL FLOUR	107	KG	299	2990	خبز قمح بلدي
BREAD, ZERO FLOUR	108	KG	281	2810	خبز طحين أبيض
BREAD, OTHERS	109	KG	249	2490	خبز أنواع أخرى
BRUISED WHEAT (FREKEH) CEREAL	110	KG	354	3540	برغل
GRONTS	111	KG	366	3660	فريكة
MACARONI	112	KG	362	3620	سميد
					معكرونة/ شعيرية
Kaêak	114	KG	367	3670	كمك
BISCUIT	115	KG	367	3670	بسكويت
BISCUIT FOR INFANTS	116	No.	457	90	بسكويت أطفال
Starch	117	No.	480	96	نشأ
CHILD FOOD (CERELAC.)	118	No.	480	2400	غذاء أطفال
PANCAKE (KATAYEF)	119	KG	342	3420	قطايف
CUSTARD	120	KG	364	364	كسترد
COST OF RNDING CEREALS & FOOD PRODUCTS	121				كلفة طحن الحبوب والمواد الغذائية
OTHERS	122				أخرى
2. MEATS & POULTRY	200				اللحوم والدواجن 2
MUTTON, LOCAL	201	KG	267	2670	لحم ضأن بلدي
GOAT, LOCAL	202	KG	123	1230	لحم ماعز بلدي
VEAL, LOCAL	203	KG	240	2400	لحم عجل بلدي
MUTTON, IMPORTED	204	KG	267	2670	لحم ضأن مستورد
VEAL, IMPORTED	205	KG	225	2250	لحم عجل مستورد



CAMEL	206	KG	193	1930	لحم جمل
MUTTON, FROZEN	207	KG	267	2670	لحم ضأن مجمد
VEAL, FROZEN	208	KG	240	2400	لحم عجل مجمد
MEAT CHOPS (VEAL, MUTTON)	209	KG	203	2030	لحم مفروم أصابع (عجل، ضأن)
PLUCK	210	KG	315	3150	معلق
CANNED MEAT	211	KG	233	2330	لحوم معلبة
LUNCHEON MEAT	212	KG	233	2330	لحوم لانشيون
FRESH CHICKEN	213	KG	149	1490	دجاج حي
FRESH CHICKEN/SLAUGHTERY	214	KG	122	1220	دجاج طازج مذبوح
FROZEN CHICKEN	215	KG	120	1200	دجاج مجمد
LIVERS, GIZZARDS	216	KG	130	1300	القوانص وأحشاء الدجاج
OTHERS	217				أخرى
3. FISH	300				3 الأسماك
FISH, FRESH	301	KG	149	1490	أسماك طازجة
FISH, FROZEN	302	KG	225	2250	أسماك مجمدة
SMOKED FISH	303	KG	225	2250	سمك مدخن
SARDINE	304	KG	238	2380	سردين
TUNA FISH	305	KG	238	2380	تونة
OTHERS	306				أخرى
4. DAIRY & EGGS	400				4 الألبان ومنتجاتها والبيض
FRESH MILK	401	Liter	61	610	حليب طازج
FRESH MILK (KG)	402	KG	64	640	حليب طازج بالكيلو
CANNED MILK, LIQUID	403	KG	317	3170	حليب سائل معلب
POWDERED MILK	404	KG	500	5000	حليب بودرة
INFANT POWDERED MILK	405	KG	496	4960	حليب أطفال مجفف
YOGURT (CANNED)	406	KG	59	590	لبن رايب معلب
YOGURT (ZABADI)	407	KG	61	610	لبن زيادي
YOGURT (KG)	408	KG	61	610	لبن رايب بالكيلو
YOGURT, PASTEURIZED, MAKHID	409	Liter	82	820	لبن مخيض مبستر
YOGURT (MAKHID)	410	KG	82	820	لبن مخيض عادي
LABBANEH (CANNED)	411	KG	154	1540	لبنه علب
LABBANEH (KG)	412	KG	154	1540	لبنه بالكيلو
OTHER KINDS OF YOGURT	413		154	1540	أنواع أخرى من اللبن
WHITE CHEESE	414	KG	289	2890	جبنة بيضاء
CHEESE (PACKED)	415	KG	242	2420	جبنة باكيتات

CANNED CHEESE	416	KG	289	2890	جبنه علب
KASHKAWAN CHEESE	417	KG	404	4040	جبنه كشكوان
YELLOW CHEESE	418	KG	480	4800	جبنه صفراء
OTHER CHEESE	419		359	3590	أجبان أخرى
CREAM	420	KG	207	2070	قشطة
SOUR MILK	421	KG	289	2890	حليب رائب (جميد)
BUTTER, LOCAL	422	KG	750	7500	زبدة بلدية
BUTTER (PACKET)	423	KG	717	7170	زبدة باكيت
ANIMAL GHEE	424	KG	890	8900	سمن حيواني
EGGS	425	No.	159	53	بيض
OTHERS	426				أخرى
5. OILS & FATS	500				الزيوت والدهون 5
OLIVE OIL, LOCAL	501	KG	900	9000	زيت زيتون بلدي
OLIVE OIL, IMPORTED	502	KG	900	9000	زيت زيتون مستورد
CORN OIL	503	Liter	393	3183.3	زيت ذرة
SUNFLOWER OIL	504	Liter	900	7290	زيت عباد الشمس
SOYA OIL	505	Liter	900	7290	زيت فول الصويا
PALM OIL	506	Liter	900	7290	زيت النخيل
VEGETABLE GHEE	507	KG	736	7360	سمنة نباتية
ANIMAL GHEE (MANUFACTURED)	508	KG	890	8900	سمن حيواني مصنع
OTHER OILS & FATS	509		847	8470	زيوت ودهون أخرى
6. FRUITS	600				الفواكه 6
ORANGES	601	KG	49	490	برتقال
MANDARINS	602	KG	50	500	مندلينا
CLEMENTINES	603	KG	50	500	كلمنتينا
LEMONS	604	KG	35	350	ليمون
GRAPEFRUITS	605	KG	46	460	جريب فروت
BAUMALY	606	KG	43	430	بوملي
BANANAS, LOCAL	607	KG	97	970	موز بلدي
BANANAS, IMPORTED	608	KG	102	1020	موز مستورد
APPLE, LOCAL	609	KG	60	600	تفاح بلدي
APPLE, Imported	610	KG	63	630	تفاح مستورد
GRAPES, LOCAL	611	KG	74	760	عنب بلدي
GRAPES, IMPORTED	612	KG	76	760	عنب مستورد
WATER MELONS	613	KG	29	290	بطيخ



SWEET MELONS	614	KG	28	280	شمام
APRICOTS	615	KG	58	580	مشمش
PEARS	616	KG	64	640	إجاص
PEACHES	617	KG	59	590	دراق
GUAVAS	618	KG	74	740	جوافة
POMEGRANATES	619	KG	77	770	رمان
FIGS	620	KG	84	840	تين
DATES	621	KG	225	2250	تمر / بلح
PEARS	622	KG	52	520	برقوق / خوخ
CHERRY	623	KG	70	700	كرز
ALMOND, FRESH	624	KG	643	6430	لوز أخضر
EKE-DUNIA	625	KG	49	490	اسكندنيا
BERRY	626	KG	64	640	توت
OTHER FRESH FRUITS	627	KG	59	590	فواكه طازجة أخرى
CANNED FRUITS	628	No.	212	2120	فواكه معلبة
DRIED FRUITS	629	KG	267	2670	فواكه مجففة
OTHER FRUITS	630		267	2670	فواكه أخرى
7.VEGETABLES	700				الخضروات
TOMATOES	701	KG	25	250	بندورة
POTATOES	702	KG	81	810	بطاطا
DRY ONIONS	703	KG	46	460	بصل ناشف
GREEN ONIONS	704	KG	41	410	بصل أخضر
DRY GARLIC	705	KG	140	1400	ثوم ناشف
GREEN GARLIC	706	KG	140	1400	ثوم أخضر
EGGPLANT	707	KG	32	320	بادنجان
MARROWS	708	KG	31	310	كوسا
STRING BEANS	709	KG	46	460	فاصوليا
OKRA	710	KG	49	490	باميا
GREEN BEANS	711	KG	72	720	فول أخضر
PEA, FRESH Ö CHICK	712	KG	376	3760	حمص أخضر
MALLOW JEWS	713	KG	66	660	ملوخية
PEPPER GREEN	714	KG	29	290	فلفل أخضر
SPINACH	715	KG	33	330	سبانخ
CAULIFLOWER	716	KG	31	310	زهرة
CABBAGE	717	KG	30	300	ملفوف
PEAS RAW	718	KG	46	460	لوبيا

PEAS	719	KG	102	1020	بازيلاء
CUCUMBERS	720	KG	17	170	خيار
CARROTS	721	KG	42	420	جزر
TURNIPS	722	KG	29	290	لفت
BEETS SUGAR	723	KG	47	470	شمندر
LETTUCE	724	No.	19	47.5	خس
RADISH	725	KG	29	290	فجل
OLIVES	726	KG	144	1440	زيتون
MINT & PARSLEY	727	No.	60	60	بقونس ونعنع
FRESH OTHER VEGETABLES	728	KG	22	220	خضار طازجة أخرى
VEGETABLES CANNED	729	KG	36	360	خضروات معلبة
VEGETABLES DRIED	730	KG	176	1760	خضروات مجففة
VEGETABLES FROZEN	731	KG	71	710	خضروات مجمدة
8. LEGUMES	801				البقوليات 8
LENTILS	802	KG	351	3510	عدس
PEAS DRY CHICK	803	KG	376	3760	حمص حب مجفف
BEANS BROAD	804	KG	354	3540	فول مجفف
COW PEAS DRY	805	KG	349	3490	لوبيا مجففة
PEAS DRY	806	KG	346	3460	فاصوليا مجففة
BEANS CANNED	807	No.	151	453	فول معلب
PEAS CANNED	808	No.	151	453	بازيلاء معلب
BEANS CANNED	809	No.	151	453	فاصولياء معلبه
CHICK PEAS CANNED	810	No.	300	900	حمص معلب
ترمس ناشف	811	KG	420	4200	ترمس ناشف
CANNED OTHER LEGUMES	812	No.	150	450	بقول أخرى معلبه
DRY LEGUMES OTHER	813		31	31	بقول أخرى جافة
9. SPICES ومحسنات الطعام	900				التوابل ومحسنات الطعام 0.9
BLACK PEPPER	901	KG	377	3770	فلفل أسود
MIXED SPICES	902	KG	25	250	بهارات مشكلة
CARDAMOM SEEDS	903	KG	319	3190	حب هيل
SALT	904	KG			ملح طعام
VINEGAR	905	Liter			خل
ANISE SEEDS	906	KG	364	3640	يانسون
CINNAMON	907	KG	364	3640	قرفة
PICKLES	908	KG			مخللات
SESAME PASTE (TAHINA)	909	KG			طحينية



Substituting (3) and (4) into (1) yields the cost function

$$x = e(u, rp_f, np_n) \quad (5)$$

which is the minimum cost of buying the individual utility u at given food and non-food prices.

Further, substituting (5) into (3) and (4) yields the Hicksian food and non-food demand equations (Hicks 1957):

$$q_f = rg_f(u, rp_f, np_n) \quad (6)$$

and

$$q_n = ng_n(u, rp_f, np_n) \quad (7)$$

respectively.

The food and non-food poverty lines are then obtained by substituting $u=u^*$ in (6) and (7), respectively as

$$F = p_f q_f = rp_f g_f(u^*, rp_f, np_n) \quad (8)$$

and

$$NF = p_n q_n = np_n g_n(u^*, rp_f, np_n) \quad (9)$$

Equations (8) and (9) give the food and non-food poverty lines at the point where the individuals enjoy the same level utility u^* . These lines will be comparable across all individuals irrespective of where they live. The difficult problem is: How do we determine u^* ? The following solution is proposed.

The food poverty line should satisfy the requirement that calorie intake is equal to the calorie requirement. Suppose c is the vector that converts food quantity vector q_f into calories. c is fixed for all individuals. $c \cdot q_f$ is the number calories that are obtained from the food basket q_f , which should be equal to calorie requirement r . Thus, using (A.6), we obtain

$$c \cdot g_f(u^*, rp_f, np_n) = 1 \quad (10)$$

This equation should hold for all exogenously determined values of r , p_f , n and p_n . This means that the function $g_f(u^*, rp_f, np_n)$ should not contain rp_f and np_n as its arguments and should depend only on u^* . The food poverty line in (8) will then be given by

$$F = p_f q_f = rp_f g_f(u^*) \quad (11)$$

Since the food poverty line can also be written as the product of calorie requirement and calorie cost (which is the expenditure on food per calorie), which from (11) immediately gives calorie cost function as

$$c \text{ cost} = p_f g_f(u^*) \quad (12)$$

which shows that the calorie cost of an individual depends on two factors, namely, food prices and the utility u^* . A poverty line is said to be consistent if the utility level u^* is fixed for all individuals. The food prices can be different for different individuals depending on where they live. Or, in other words, we have to take into account regional costs of living differences. Suppose p_f^* is the vector of national food prices, then the regional cost of living index k is given by

$$p_f = k p_f^* \quad (13)$$

which on substituting in (12) gives

$$c \text{ cost}^* = g_f(u^*) \quad (14)$$

where $c \text{ cost}^* = c \text{ cost} / k$ is the calorie cost in national food prices or it is the calorie cost adjusted for the regional food price differences. Since $g_f(u^*)$ is a monotonically increasing function of u^* , it implies from (14) that the calorie cost adjusted for regional food prices is a monotonically increasing function of the utility people enjoy. This proves Lemma 1.

Lemma 1: The calorie cost adjusted for regional food prices is a monotonically increasing function of the society's minimum standard of living.

We cannot measure u^* but we can measure the calorie cost from the data so this lemma provides a link between the two. If we fix the price-adjusted calorie cost, we are effectively fixing the utility level or the standard of living in order to arrive at the consistent poverty line. We determine calorie cost for a reference group such as people belonging to the first or second quintile at the national level. This effectively determines the country's minimum standard of living.

Given the calorie cost at the national level and the regional food cost of living, we determine the calorie cost for each region. Multiplying these calorie costs by individuals' calorie requirements, we obtain the food poverty line for each individual.

Given the food poverty line for each individual, we can determine the non-food poverty line from equation (9), which we further adjust for regional non-food price differences.



ANNEX 1.8

SOURCES FOR COMPARISON TABLE 1.10

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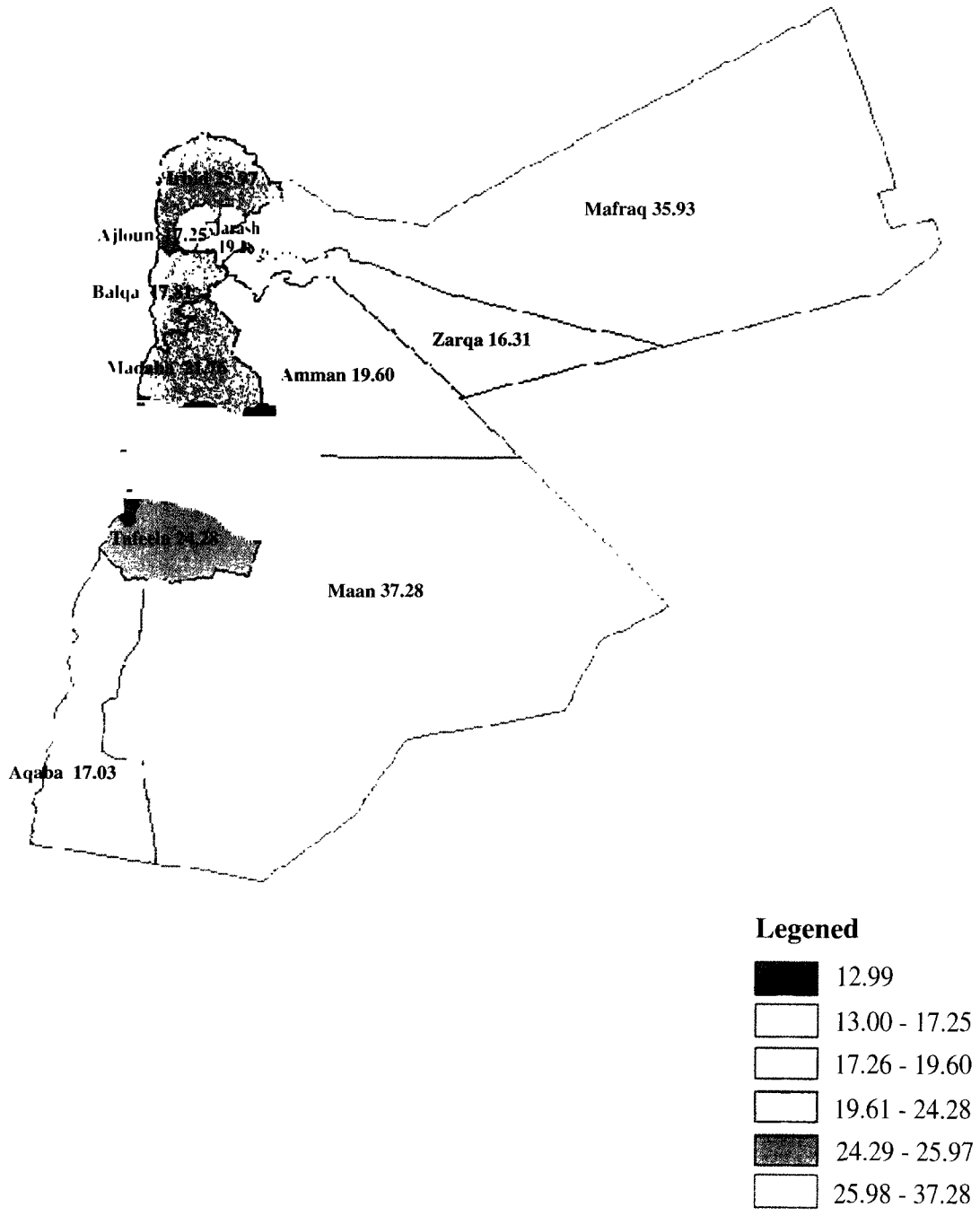
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Jordan: Poverty Line in Jordan by Nanak Kawani, 2003, unpublished work for Jordan Poverty Assessment.



ANNEX 1.9

Percentage of Poor, 1997





- *Jordanians residing in rural areas tend to be poorer, living off agricultural incomes. Higher dependency ratio (more children and elderly) is associated with greater incidence of poverty. Education and employment in the formal sector reduces incidence of poverty. Female-headed households do not particularly tend to be poorer as a group.*
- *Anthropological studies indicate that urban and rural poor employ different coping strategies to deal with poverty. When accounts of escape out of poverty are considered, adoption of settled life-style as opposed to nomadic, links to settled people, and emergence of effective local leadership seem to hold the keys.*

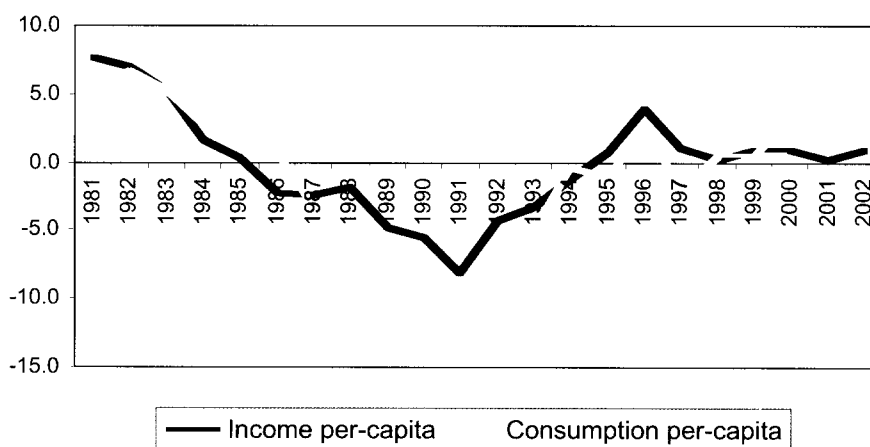
GROWTH AND POVERTY REDUCTION IN JORDAN

The Strong Growth in Per-capita Consumption between 1997 and 2002

2.2. As we saw already, the decline in poverty between 1997-2002 is mostly because of the strong annual growth in per-capita consumption. Household expenditure surveys of 1997 and 2002-03 suggest a growth of 3.5 percent real growth in private consumption. However, in this period GDP per-capita ¹ (or, disposable income that includes current transfers) registered only a modest 0.8 percent annual growth. This fact of faster rise in consumption relative to income needs to be explained in terms of possible estimation errors, differential price movements between consumption and income, or economic factors that affect private consumption behavior. This will help understand whether this fast rise in consumption can be relied upon to reduce poverty in the future.

¹ Private current transfers from abroad are added to GDP to measure disposable income. With or without private transfers, per-capita income growth over 1997-2002 remains the same at 0.9 percent per year.

Figure 2.1: Annual Growth In Per-Capita Private Consumption And Income (Percent)



Source: Staff Estimates based on World Bank's Jordan Live Database.

Note: Figure shows five-year average growth rates.

2.3. First, it is easy to rule out estimation errors in HEIS by crosschecking with National Accounts estimates. The national accounts and household survey estimates give about the same real growth rate in per-capita consumption between 1997 and 2002. However, National Accounts estimates, which derive consumption as a residual, are consistently higher than household survey estimates by about eight percent (Table 2.1) for 1992 and 1997. Provisional estimates indicate a smaller difference for 2002 at three percent. However, this difference could widen after final revisions to National Accounts for 2002. Estimated private saving rate out of gross national disposable income declined by two percentage points between 1997 and 2002 to 18 percent.

2.4. In principle, the differential movement of price indices used for private consumption and GDP can account for the difference in real growth rates even if the private consumption as a share of GDP remained the same in nominal terms. For the period in question, there has been hardly any difference in deflators for private consumption (CPI) and GDP. Both recorded an annual growth of nearly 1.6 percent.

Table 2.1: Comparison of Survey And National Accounts Estimates Of Private Consumption (Annual, Per-Capita, JD)

	HEIS			National Accounts			Ratio NA/HEIS
	Nominal	Real, 2002 prices	Annual growth%	Nominal	Real, 2002 prices	Annual growth%	
1992	684	871		742	945		1.0853
1997	756	801	-1.7	818	867	-1.7	1.0825
2002	963	963	3.6	992	992	2.6	1.0307

Source: Staff Estimates based on National Accounts and household surveys.



2.5. Next, we turn to conventional economic theory to explain the rise in private consumption. Private consumption is influenced by current disposable income and wealth of households. Current income affects the behavior of the liquidity-constrained households whereas wealth is an additional factor for other households. In addition, real effective exchange rate is assumed to affect private consumption in Jordan. An appreciating currency (and lower import-tariffs) reduces the prices of consumption goods and raises the perceived wealth of individuals. An econometric model estimated over 1981-2002 suggests the following long-run elasticities²:

Disposable income: 0.82
 Assets (proxied by real broad money): 0.18
 Real effective exchange rate: 0.39

2.6. Using these elasticities, we learn that of the 3.5 percent growth in per-capita private consumption, almost equal parts of the explanations can be attributed to growth of per-capita real disposable income, increase in wealth, the effect of real appreciation, and adjustment towards long-term relationship.

2.7. Looking at a more disaggregated level across deciles (Table 2.2), a stronger story emerges that per-capita consumption growth is not concentrated only in the richer deciles. Poorer deciles also have enjoyed higher consumption growth exceeding three percent. Growth patterns of non-food consumption varies more across income group than that of the food.

Table 2.2: Per-Capita Consumption Growth Across Deciles

Decile	Total	Food	Non-Food
1	3.4	3.1	6.7
2	3.3	2.9	6.6
3	3.4	2.7	7.3
4	3.5	2.6	7.7
5	3.7	2.4	8.8
6	3.8	2.4	9.3
7	3.9	2.4	9.6
8	4.0	1.9	10.5
9	4.0	1.7	10.4
10	3.0	2.1	6.2
Total	3.5	2.2	8.2

Source: Staff Estimates based on HEIS, 1997 and 2002.

2.8. Lastly, evidence from other lower-middle income countries like Jordan with strong structural reform progress confirms growth in per-capita private consumption of

² The sum of elasticities on income and wealth add up to unity as required by economic theory.

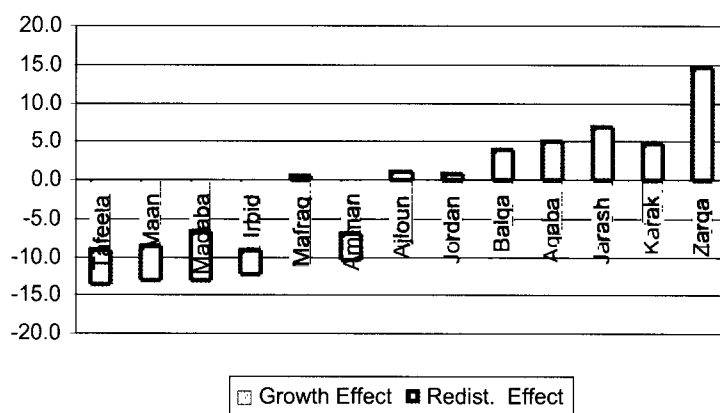
three percent or more. For example, Tunisia had an average per-capita household consumption growth of 2.9 percent during the 1990s.

2.9. Looking to the future, it appears that much of the rise in per-capita consumption will have to come from income growth in Jordan. Jordan's circumstances are propitious for such an income drive consumption growth, as a solid foundation has been laid by implementation of structural reforms. The real appreciation episode of recent years is unlikely to continue with the current exchange rate policy of Jordan and change in the movement of U.S. dollar in the international currency markets. Also, the natural tendency of consumption to rebound (Figure 2.2) to its long-term relationship to income and wealth appears to be nearing its end.

The Roles of Growth and Redistribution in Poverty Reduction

2.10. The change in poverty between 1997 and 2002 can be decomposed into growth in private consumption and redistribution effects as explained in the accompanying Box 2.1. At the national level, the observed reduction in the proportion of the poor (7.1 percentage points) has come mostly from growth. In fact, but for the slight worsening of income distribution against the poor³, the reduction in the proportion of the poor would have been higher by 0.7 percentage points. Governorate level decomposition analysis shows that where there was a significant decline in poverty, both the growth and redistribution effects have worked in the same direction (Madaba, Tafeela, Irbid, Maan and Amman governorates). Poverty reduction in Ajloun and Mafrqa governorates is almost entirely growth driven. In the rest of the kingdom (Balqa, Jarash, Karak, Aqaba, Ajloun, Mafrqa and Zarqa), the beneficial effects of growth have been countervailed in part by adverse effects from redistribution. Zarqa governorate is the extreme case in which poverty actually increased and the redistribution effect overwhelmed the growth effect (Figure 2.1). Box 2.2 focuses on the increase in poverty in Zarqa and what special circumstances could have raised poverty there.

Figure 2.2: Decomposition Of Change In The Proportion Of The Poor



Source: Staff Estimates based on HEIS (2002).

³ While aggregate Gini coefficient hardly changed between 1997 and 2002, the income shares of the poor slightly worsened.



Box 2.1: Decomposition Of Change in Poverty Into Growth And Redistribution Components

Poverty in any given period can be derived from the prevailing income distribution and the assumed poverty line. More formally, following Datt and Ravallion (1992) one can write:

$$P_t = P(z/\mu_t, L_t)$$

Where P_t is the poverty measure, z is the poverty line, μ_t is the mean income and L_t is the set of parameters of the underlying distribution.

Change in poverty can be written as

$$\Delta P = P(z/\mu_1, L_1) - P(z/\mu_0, L_0)$$

Growth effect is the change in poverty attributable to the change in mean income holding the distribution constant. Inequality effect is the change in poverty attributable to the change in inequality holding mean income constant. In decomposing the change in poverty, one can use either the base period or the end period as the reference point. If we use either, we are left with a residual effect as Datt and Ravallion show. Instead, one can average the effects using either period as the reference point as show below:

Growth effect

$$\frac{1}{2} [P(z/\mu_1, L_0) - P(z/\mu_0, L_0)] + \frac{1}{2} [P(z/\mu_1, L_1) - P(z/\mu_0, L_1)]$$

Inequality effect

$$\frac{1}{2} [P(z/\mu_1, L_1) - P(z/\mu_1, L_0)] + \frac{1}{2} [P(z/\mu_0, L_1) - P(z/\mu_0, L_0)]$$

This is the approach taken in this study.

Has Growth in Jordan been Pro-poor?

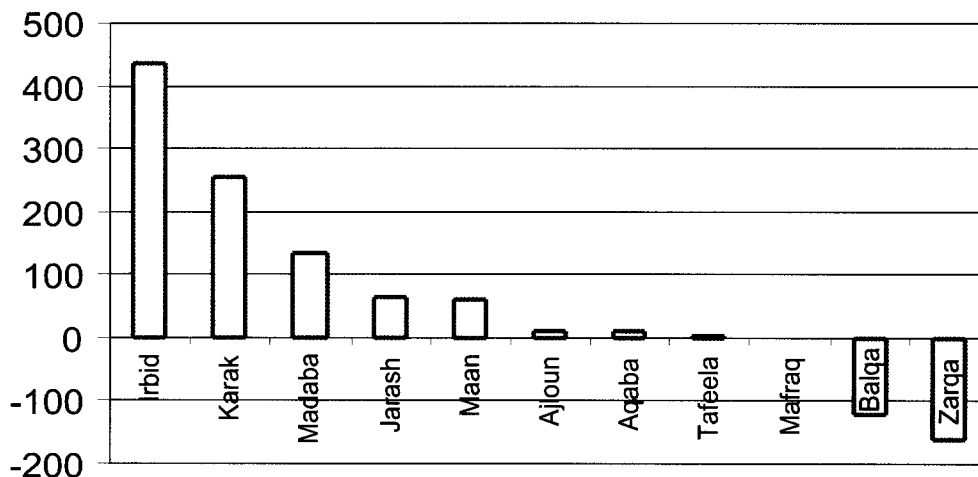
2.11. Following on the decomposition analysis of poverty reduction in terms of growth and redistribution, it is interesting to answer whether growth has been pro-poor in Jordan. We learn from the preceding analysis that income inequality marginally worsened between 1997 and 2002 in Jordan and poverty reduction would have been higher by 0.7 percentage points but for it. More directly, as Ravallion and Chen (2002) suggest, it is important to look at the growth rates in consumption for the poor because of ambiguities inherent in broad decomposition analysis. There are two alternative approaches to measuring pro-poor growth, one by Ravallion and Chen (2002) and the other by Kakwani and Pernia (2000). The accompanying box explains the two alternative approaches (See Box 2.3).

Box 2.2: Why did Poverty Increase in Zarqa Governorate?

Among all the 12 governorates in Jordan, only in Zarqa governorate the percentage of poor increased from 16% in 1997 to 22% in 2002. Other measures of poverty such as poverty gap, severity and Watts index also indicate worsening of poverty. The rise in poverty in Zarqa is corroborated by deterioration in other indicators of well being. The unemployment rate increased in Zarqa from 11 to 14 percent over the same period. Targetted transfers from the National Aid Fund grew the fastest among all governorates at near 25 percent a year between 1997 and 2002. Therefore, it is apparent that poverty situation really worsened in Zarqa.

There are two key tentative explanations why poverty in Zarqa increased. First, there was reportedly a major decline in economic activity following the shifting of military camps stationed in Zarqa to other governorates. All the support services to the military establishment in Zarqa may have been adversely affected. Second, the informal sector provides a key support for economic activities in the governorate. Between 1997 and 2001, the total number of private establishments employing five or more workers declined the maximum in Zarqa governorate by 169 units. As a net result many people may have lost their main source of livelihood, pushing them into poverty.

Box Figure 2.1: The Change In The Number Of Establishments, 1997-2001



Source: Staff Estimates based on Employment Surveys 1997 and 2001.



Box 2.3: Measuring Pro-poor Growth

Ravallion-Chen (R-C) Measure Starting off with two requirements for the pro-poor growth index: (i) it should be consistent with the direction of change in poverty and (ii) the implicit measure should satisfy axioms for poverty measurement, Ravallion and Chen propose that the rate of pro-poor growth is “the actual growth rate multiplied by the actual change in Watts index to the change that would have been observed with the same growth rate but no change in inequality.” This is the same as the *mean growth rate* for the poor identified in the initial year. It is useful to remember the difference between the *mean growth rate* for the poor and *growth rate in the mean* for the poor. The former is the average of the growth rates for the various percentile groups of the poor whereas the latter is the growth rate for the mean for the poor as a group. In practice, growth is judged to be pro-poor if the mean of the growth rates for the poor exceeds the growth rate in the mean for the entire population.

Kakwani Measure This measure is also consistent with the direction of change in poverty measure chosen, like the R-C measure, but it is not restricted to the Watts index and therefore can be computed for a variety of poverty indices. The measure is path-independent, unlike the R-C measure, as it averages the effects of the choice of reference period between the base and terminal years. It is essentially a by-product of standard decomposition methodology Kakwani (2000). The Kakwani measure is the ratio of poverty elasticity to the growth elasticity for the poverty measure chosen. If this ratio is greater than unity growth, it is judged to be pro-poor. Poverty elasticity is the observed proportionate change in poverty measure as a ratio of proportionate change in per-capita consumption. Growth elasticity is the ratio of the proportionate change in poverty measure *holding inequality constant* to the actual proportionate change in per-capita consumption. Inequality elasticity is the ratio of the proportionate change in poverty measure *holding income constant* to the actual proportionate change in per-capita consumption. The poverty elasticity is the sum of growth and inequality elasticities.

2.12. The two measures of pro-poor growth result in the same conclusion for Jordan. Growth in Jordan between 1997-2002 has been slightly biased against the poor. Table 2.3 and the “growth incidence curve” in Figure 2.3 compute and illustrate the Ravallion-Chen measure of pro-poor growth.

Table 2.3: Growth Rates 1997-2002
(Growth rate in the mean = 3.1 percent per year)

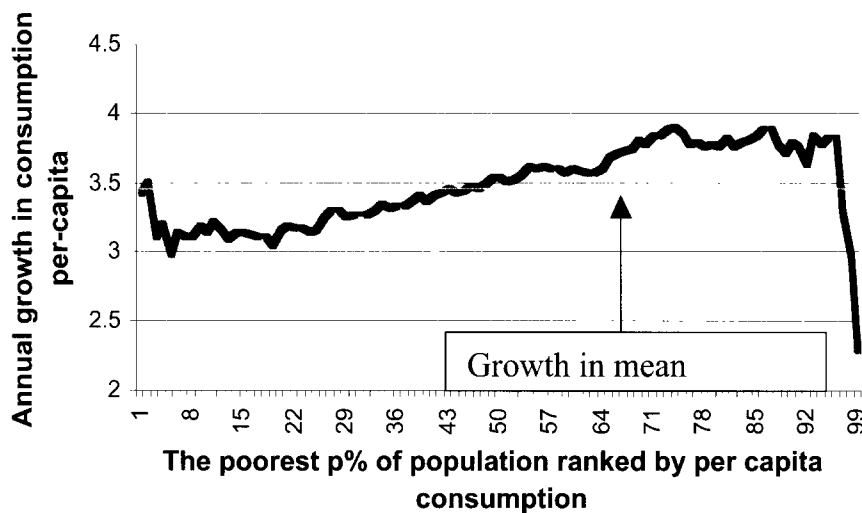
Percentile	Mean growth rate for the poorest p% (per year)
10	2.9
15	3.0
20	3.0
25	3.0
30	3.1
100	3.4

Note: Welfare measure is defined as the ratio of nominal per-capita consumption to the poverty line of the household.

Source: Staff Estimates based on HEIS (2002).

2.13. The rate of pro-poor growth at the 20th percentile (the estimated proportion of the poor in 1997) is 2.6 percent per year compared to the mean growth rate in consumption for the entire Jordanian population at 3.1 percent. Therefore, growth in Jordan over this period (1997-2002) was not pro-poor. The growth incidence curve in Figure 2.3 shows that right up to the 47th percentile, growth rates for the poor have been less than that of the mean growth for the whole population.

Figure 2.3: Growth Incidence Curve For Jordan, 1997-2002

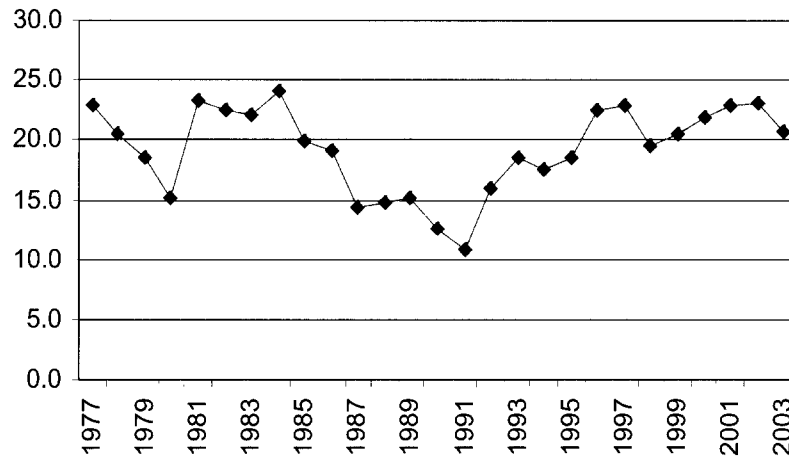


Source: Staff Estimates based on HEIS (2002).

2.14. Kakwani's pro-poor growth index supports the same conclusion that in overall terms, growth in Jordan has not been pro-poor. Table 2.4 displays the pro-poor growth index by governorates and for Jordan as a whole. In six of the 12 governorates, the index is above unity implying pro-poor growth. Not coincidentally, these are the same governorates where growth and redistribution worked together to reduce poverty as noted earlier. In the other governorates, growth has not been pro-poor.



**Figure 2.4: The Ratio Of Worker Remittance Inflows To GDP
(In Percent)**



Source: World Development Indicators, 2003.

2.19. Which income groups benefit from worker remittance inflows? This is a controversial issue (as noted in Adams and Page, 2003). In some countries such as Egypt (rural) and Mexico, relatively poorer households engage in international migration more. In Jordan's case, like in Morocco, it is the workers from richer deciles that migrate more and hence benefit more from international migration. In the rich Gulf countries, the main destination countries for international migration of workers, skilled workers (with Arabic skills as an additional advantage) from Jordan are competitive compared to the unskilled, who, in any case, cannot compete with cheap labor from Asia. The fixed costs associated with international migration also keep the poor from seeking work abroad.

2.20. HEIS (2002-03) includes a specific question of transfer receipts from non-residents as an income source for two of the four rounds. The estimated average per-capita remittance inflows from the survey is a meager JD 50, roughly one-fifth of the estimate derivable from BOP statistics and population estimates. The difference could arise because of under-reporting of transfers, or, because non-resident Jordanians can directly hold deposits in Jordan (hence, tracked by BOP statistics), but utilize only a fraction of that for family maintenance in Jordan.

2.21. Analysis of HEIS (2003-03) shows that the poorest decile receives almost negligible remittance inflows (Table 2.7). However, this does not imply that remittance inflows have no impact on poverty. If the worker remittance inflows were to dry up totally, assuming that all remittance inflows are spent, the percentage of poor will increase by nearly two percentage points and the poverty gap will double to six percent. Many families currently above poverty line, including those in the top most decile, become poor. Female-headed households are particularly vulnerable to remittance inflows as the percentage of poor jumps from 15 to 22 percent without remittances.

Table 2.7: Impact Of Worker Remittances On Poverty

Decile	Average Per-capita Remittances Received, JD	Mean Per-capita Expenditure, JD	Share, %	Poor (%)	Poor (%) without any remittances	Poverty Gap (%)	Poverty Gap, without any remittances (%)
1	3	260	1.3	99.6	99.6	29.7	30.6
2	7	384	1.8	41.4	43.4	3.1	4.6
3	8	476	1.8	0.8	3.5	0.0	1.3
4	14	565	2.5	0.0	2.4	0.0	1.8
5	16	662	2.5	0.0	1.7	0.0	1.7
6	21	777	2.7	0.0	1.6	0.0	1.2
7	35	920	3.8	0.0	1.5	0.0	2.5
8	62	1130	5.5	0.0	1.3	0.0	5.9
9	89	1508	5.9	0.0	1.5	0.0	6.1
10	235	2947	8.0	0.0	1.9	0.0	9.6
All	49	963	5.1	14.2	15.9	3.3	6.6
Urban	59	1021	5.8	12.9	14.9	2.9	6.9
Rural	15	756	2.0	18.7	19.4	4.7	5.4
Male	38	948	4.0	14.1	15.3	3.3	6.2
Female	171	1132	15.1	15.3	22.2	3.6	11.0

Source: Staff Estimates based on HEIS, 2002.

Note: Remittance data in HEIS data was incomplete. Some households that reported remittances in the first round did not report in the second, and so on. Therefore, remittances data gaps were filled assuming that for those households that reported in one round but not in the other, the level of remittances in the unreported round was assumed to be the same as in the reported round.

DETERMINANTS OF POVERTY IN JORDAN

2.22. Though poverty profiles (cross tabulations of the poverty status of individuals with key profile variables such as educational status) are helpful to know the characteristics of the poor, they do not explain poverty in a causal sense. For this we need to use multivariate regression models. There are two alternatives for the dependent variable in such regressions consumer expenditure and a binary variable whether a household is poor or not. Since the welfare measure (consumption deflated by poverty line) is a continuously observed variable, the alternative specification of binary dependent variable (probit) model is not necessary. The implication for poverty status of a household can be inferred easily even if the dependent variable is not a binary (poor, non-poor) variable. When consumption welfare deflated by poverty line rises, the probability of being poor falls. The poverty impacts are derived assuming log-normality of the distribution of the dependent variable as explained in Annex 2.1.

2.23. The specification of determining variables includes demographic variables, education indicators, marital status indicators, employment status indicators, income source indicators, durable goods possession indicators, and housing characteristics. The



results of four alternative models are shown in Table 2.9. Models 1 and 2 differ only in that all the durable goods and housing characteristics variables are included in Model 1 but excluded in Model 2. Model 3 is an alternate specification for Model 1 with respect to only one variable that measures dependency ratio. Model 4 is analogous to Model 2 in excluding durable goods and housing characteristics but with the alternative specification of dependency variable.

The Models are able to predict welfare reasonably well at the governorate level as shown in Annex 2.2.

The Effects of Demographic Variables

2.24. The larger the size of a household the lower the per-capita welfare with some offsetting influence from economies of scale. This is captured by entering two separate terms for the size of household and its square. Every additional member of the household lowers per-capita welfare by nearly 15 percent. The ratio of the number of working members to the size of household also has a positive effect on welfare. The younger the head of the household, the more likely the welfare of the household is to be low. However, as the age increases, it has a positive impact on household welfare. Living in rural areas lowers welfare by nearly two percent compared to urban.

Education

2.25. For every extra year of education among any member of the family, welfare increases by 1.5 percent. Education level of the head of the household has non-linear effect with initial negative effects overcome by positive effects as the years of education extend beyond the primary stage (5 years and up). Welfare rises by three percent for every five years of education. Both the level and square terms have positive coefficients when durable goods and housing characteristics are omitted. Education is one of the few actionable variables that public policy can influence. The effect of increasing education of the head of household by one year is shown in Table 2.8 using Model 1. Every one year of education reduces poverty gap by 1.41 at the national level. The impact on Zarqa is the highest at 2.6 percent.

Table 2.8: The Impact Of Education On Poverty

	Gap
Amman	-1.01
Balqa	-1.71
Zarqa	-2.58
Madaba	-0.88
Irbid	-1.62
Mafraq	-1.41
Jarash	-1.91
Ajloun	-1.05
Karak	-0.60
Tafeela	-0.77
Maan	-1.13
Aqaba	-0.63
Jordan	-1.41

Source: Staff Estimates based on Model1.

Marital Status, Gender, and Work Status⁵

2.26. Living in married families helps to raise welfare. Married household heads improve consumption by 4.4 percent compared to never married. Divorced heads have 11 percent lower welfare compared to the never married. Widowhood depresses welfare by seven percent, but “separated” heads enjoy substantially higher 17 percent welfare gain over the never married, possibly dominated by separated male heads.

2.27. Households headed by women enjoy 11 percent higher welfare and therefore are less likely to be poor. This positive effect of female headship on welfare is very robust to specification changes.

2.28. Compared to the unemployed, if the head of household works, it improves welfare 3.8 percent. Having a greater share of members also improves welfare.

Household Assets and Characteristics

2.29. There is an issue of simultaneity with the inclusion of durable goods or better household characteristics. Do they affect welfare, or, do they reflect welfare of the household? The possession of durable goods and better housing conditions improve

⁵ These variables are specified as dummy variables. For marital status, “never married” is the base status for comparison. For gender base, status is a male-headed household and for work status, head of household not working is the base status.



welfare. When they are excluded the coefficients on most other variables change considerably.

Income Source

2.30. Pensioner headed households appear to have the highest welfare, which is hardly surprising given the liberal pension schemes in Jordan. Households receiving transfers and those with property incomes are about the same in having seven percent higher welfare than households with no source. Earning categories of income do not fare well with own account workers managing 1.3 percent higher welfare and, surprisingly, those dependent on wage incomes have one percent lower welfare.

Table 2.9: Regression Of Consumption Welfare

Determining Variable	Model 1		Model 2		Model 3		Model 4	
		't'-Value		't'-Value		't'-Value		't'-Value
<i>Demography</i>								
Size	-0.1495	-40.4	-0.0809	-20.5	-0.1345	-31.8	-0.0743	-16.5
Size sq	0.0049	24.5	0.0017	8.1	0.0043	19.9	0.0016	7.0
Age	-0.0018	-1.4	0.0075	5.5	-0.0046	-3.1	0.0051	3.3
Ages squared	0.0000	2.8	0.0000	-2.4	0.0001	4.2	0.0000	-0.5
Female headed household	0.1134	7.6	0.1492	8.6	0.1143	6.3	0.1265	6.3
Citizen	0.0089	0.7	0.0750	4.6	0.0010	0.1	0.0600	3.7
Rural	-0.0179	-2.9	-0.0614	-9.6	-0.0180	-2.7	-0.0603	-8.6
Dep Ratio					-0.0162	-7.5	-0.0172	-6.9
Household space	0.0065	28.0	0.0122	43.9	0.0070	21.8	0.0141	37.6
<i>Education</i>								
Years school	-0.0029	-1.7	0.0096	5.4	-0.0018	-0.9	0.0087	4.3
Years school squared	0.0006	6.6	0.0009	9.9	0.0006	6.4	0.0010	9.7
Years school of all members	0.0148	12.9	0.0279	22.6	0.0110	7.0	0.0225	12.6
<i>Marital Status</i>								
Married	0.0439	2.2	0.1483	6.2	0.0421	1.8	0.1113	4.1
Divorced	-0.1094	-2.9	-0.1476	-3.3	-0.0626	-1.2	-0.0467	-0.8
Widowed	-0.0666	-2.8	-0.0179	-0.6	-0.0715	-2.5	-0.0171	-0.5
Separated	0.1716	1.8	0.1805	2.0	0.1362	1.1	0.0895	0.8
<i>Employment</i>								
Workers	0.1261	6.2	0.2806	12.1				
Work	0.0387	5.4	0.0554	6.8	0.0383	4.6	0.0483	5.1
<i>Sources Of Income</i>								
Source of Income – Wage employment	-0.0118	-1.8	-0.0475	-6.0	-0.0185	-2.2	-0.0641	-6.3
Own Account	0.0130	2.1	0.0498	6.7	0.0078	1.1	0.0369	4.4
Property	0.0661	9.3	0.1307	16.4	0.0594	7.5	0.1223	13.7
Pension	0.0804	13.5	0.0928	14.1	0.0703	10.5	0.0812	10.9
Transfers	0.0664	11.7	0.0497	7.4	0.0710	11.6	0.0534	7.3
Unknown	0.1002	6.9	0.1983	9.9	0.0914	5.5	0.1976	7.9
Other source	0.0449	8.1	0.0720	11.8	0.0414	7.0	0.0625	9.6
<i>Ownership of Durable Goods</i>								
Washing machine	0.0489	4.3		0.0401		3.1		
Refrigerator	0.1057	11.2		0.1050		10.0		
Freezer	0.0442	4.4		0.0361		3.4		
Cooking stove & oven	0.0762	5.9		0.0853		6.1		
Oven	0.0126	2.6		0.0068		1.3		
Cooking stove	0.0376	3.0		0.0487		3.5		
Microwave oven	0.0534	3.3		0.0555		3.1		
Dishwasher	-0.0160	-0.6		-0.0022		-0.1		



Determining Variable	Model 1		Model 2		Model 3		Model 4	
		't'-Value		't'-Value		't'-Value		't'-Value
Vacuum cleaner	0.0787	13.3			0.0734	11.7		
TV set	0.0704	5.7			0.0683	4.7		
Satellite receiver & dish	0.0440	8.0			0.0461	7.9		
Radio or radio with recorder	0.0295	6.0			0.0254	4.8		
Video	0.0128	1.8			0.0088	1.2		
Video camera	0.0519	2.8			0.0491	2.5		
Computer	0.0446	5.1			0.0391	4.3		
Internet connection	0.0065	0.4			0.0140	0.9		
Telephone	0.1047	20.2			0.1000	17.9		
Mobile phone	0.1144	21.5			0.1106	19.9		
Fax	0.0855	3.7			0.0893	3.6		
Air conditioner	0.0648	4.9			0.0746	5.1		
Solar heater	0.0126	1.9			0.0175	2.4		
Sewing machine	-0.0154	-2.8			-0.0149	-2.5		
Private car	0.1397	25.6			0.1357	23.6		
Housing Characteristics								
Electric System – Private Generator	0.1597	2.1			0.1861	2.3		
Electric System – Gas / Kerosene	-0.2774	-3.9			-0.3413	-4.0		
Electric System - Others	-0.0165	-0.3			-0.0595	-0.9		
Heater	0.0621	12.2			0.0562	10.4		
Central Heating	0.2376	17.8			0.2471	16.4		
Wood or Coal	0.1066	3.5			0.1044	3.4		
Others	-0.0254	-1.8			-0.0423	-2.7		
Heating Unspecified - 1	-0.5859	-4.9			0.0000	0.0		
Heating Unspecified - 2	0.0199	1.0			-0.0025	-0.1		
Sewage – Cesspool	-0.0124	-2.1			-0.0101	-1.6		
Sewage - Other	-0.5256	-5.3			-0.5098	-4.8		
Sewage - Unspecified	-0.2736	-3.9			-0.2791	-3.4		
Toilet with Bath	0.0726	12.5			0.0666	10.5		
Multiple Toilet	0.1349	18.7			0.1287	16.5		
Multiple Toilets with Bath	0.2724	3.4			0.2405	2.6		
Constant	4.9768	121.7	4.5444	109.2	5.0793	109.2	4.7417	101.5
R ²	0.6183		0.5336		0.6028		0.5174	
F Stat	654.88		747.49		519.1		572.16	
Prob>F	0.0000		0.0000		0.0000		0.0000	
N	44919		44919		37291		37291	

Source: Staff Estimates based on HEIS (2002).

Note: Governorate level fixed effects and quarterly dummies were also significant.

COPING STRATEGIES OF THE POOR – AN ANTHROPOLOGICAL PERSPECTIVE

2.31. Faced with the stark reality of poverty, the poor seek many ways to augment their incomes, save on expenditures or borrow overtly or implicitly. There are three common characteristics shared by the urban and rural poor in coping with poverty. First, the poor, regardless of their residence, take decisions on short-term considerations. Second, ignorance of social disadvantages later appears to dominate their actions. Third, the anthropological approach also stresses the tribal or familial norms and ties that govern the range of activities that the poor can make use of. There are ways in which the coping strategies of the urban and rural poor differ. The urban and rural settings offer different scope and choices for the poor. Urban areas offer more market opportunities for selling labor and buying goods on the cheap. On the other had, in the rural areas augmenting own account production and selling labor services of females on the farm are possible. There seems to be more ways of borrowing money for the poor in rural areas.

Strategies of Urban Poor

Augmenting Incomes

- Low Wage activities: usually members of poor families (mainly male) accept working in low-skilled jobs such as guards, servants, street cleaners, etc. while women (mainly young) work for many hours (not less than eight) in the private sector as clerks, and bordering on the minimum wage.
- Informal activities: one of the main activities maintained by poor males is peddlery. Peddlers sell various food items, cigarettes and clothes. Others work in “lifting” either on shoulders or on mini-caravans, while others find begging another means of income. It is important to say that poor organize themselves according to familial or neighborhood ties.
 - On the other hand, poor females work in many activities, the most important one is the engagement in the hidden garment textile industry. An investor provides a group of women with machines, raw materials, catalogues, and maintenance. Women in this case get paid according to the piece. This form of activities is widespread in main cities mainly Amman, Zarqa, and Irbid. Additionally, women accept work as housemaids, but still this work is performed uncover to the public because of cultural values.
- Child labour: poor families who mainly live in large cities push their children to work in small industries, car maintenance workshops and street peddlery. While other children collect cans and sell them by weight. The age of working children ranges from eight to 16 years old. Again, such work is organized by familial and neighborhood ties.



tenancy, and sharecropping. In a few years, they were transformed basically from nomads living in the same conditions presented earlier in the case above, into semi-farmers. Their involvement in agriculture did not make them take their hands off raising animals, and many were still living in tents and under the trees.

2.42. At one stage, after reaching a relatively high level of agricultural practices, a few leaders decided to run their own business and depend on themselves. Immediately, they decided to establish two agricultural cooperatives. They are two, because the area under consideration was dominated by two tribes.

2.43. This process means that tribal organization was reshaped (from the economic point of view) in a civil form. The tribesmen themselves carry out the administration, financing, agricultural activities, and marketing of such cooperatives.

2.44. The settlement process started around the farms they work in. Some influential key persons helped the people to settle. Nowadays, the place of settlement became a well known village called qrayqra with about 1200 people, living in cement houses, having access to almost all services such as electricity, water, communication, roads, schools, and a health care center.

2.45. The cooperative spirit, awareness, group willingness, and the common administration of such cooperatives by the tribes form the secrets of success of such cooperatives. This success manifested itself in the whole process of social, economic, and cultural shift in the life of such tribesmen.

2.46. One can say that such cooperatives that were started as ideas of certain tribesmen (or pioneers) and then crystallized at a later stage, became one of the most important establishments in the life of local people that took them out of the state of poverty and misery they used to live in. This points to the virtue of community-based solutions to the problem of poverty in areas with deep-seated poverty.

ANNEX 2.1

HOW CAN WE CALCULATE THE IMPACT ON POVERTY OF INCREASING ONE YEAR OF SCHOOLING?

BY N.KAKWANI

Suppose we have a regression model:

$$\log(w) = \alpha_0 + \alpha_1 s + \alpha_2 s^2 + X\beta + u \quad (1)$$

where w is the household welfare (per capita consumption divided by poverty line multiplied by 100) so that poverty line is always 100. s is the years of schooling by the household head and $X\beta$ measures the impact of other variables on household welfare.

Let us consider the additive separable poverty measures

$$\theta = \int_0^{100} P(w) f(w) dw \quad (2)$$

where $f(w)$ is the density function of w . Differentiating (1) with respect to s gives

$$\frac{1}{\theta} \frac{\partial \theta}{\partial s} = \frac{1}{\theta} \int_0^{100} \frac{\partial P}{\partial w} \frac{\partial w}{\partial s} f(w) dw \quad (3)$$

which measures the percentage change in poverty when we increase years of schooling by 1 year.

Differentiating (1) with respect to s gives

$$\frac{\partial w}{\partial s} = (\alpha_1 + 2\alpha_2 s) w \quad (4)$$

which on substituting in (3) gives the impact of increasing 1 year of schooling on total poverty:

$$\frac{1}{\theta} \frac{\partial \theta}{\partial s} = \frac{1}{\theta} \int_0^{100} \frac{\partial P}{\partial w} (\alpha_1 + 2\alpha_2 s) w f(w) dw \quad (5)$$

For the Foster, Greer and Thorbeck's (1984) poverty measures



$$P(w) = [100 - w]^\gamma \quad (6)$$

where γ is equal to 1 for poverty gap and equal to 2 for severity of poverty.

Differentiating (6) with respect to w gives

$$\frac{\partial P}{\partial w} = \gamma (100 - w)^{\gamma-1} \quad (6)$$

which on substituting in (5) gives the schooling effect of poverty for the FGT measures:

$$\frac{1}{\theta_\gamma} \frac{\partial \theta_\gamma}{\partial s} = -\frac{\gamma}{\theta_\gamma} \int_0^{100} (100 - w)^{\gamma-1} (\alpha_1 + 2\alpha_2 s) w f(w) dw \quad (7)$$

which measures the impact of schooling in the total population on the aggregate poverty.

For Watt's measure

$$P(w) = \log(100) - \log(w)$$

which gives

$$\frac{1}{W} \frac{\partial W}{\partial s} = -\frac{1}{W} \int_0^{100} (\alpha_1 + 2\alpha_2 s) f(w) dw$$

Suppose we want to increase schooling for the j th group only (for instance in rural areas or females), then we want to know how the total poverty is affected. Let us write the poverty measures as

$$\theta = \sum_{j=1}^J a_j \theta_j \quad (8)$$

where a_j is the population share of the j th group and J is the total number of groups.

Differentiating (8) with respect to s gives

$$\frac{1}{\theta} \frac{\partial \theta}{\partial s} = \frac{1}{\theta} \sum a_j \theta_j \left(\frac{1}{\theta_j} \frac{\partial \theta_j}{\partial s} \right)$$

where $\frac{1}{\theta_j} \frac{\partial \theta_j}{\partial s}$ measures the impact of increasing schooling by 1 year on the percentage change in poverty in the jth group. The impact of increasing schooling in the jth group on the total poverty will be given as

$$\left(\frac{a_j \theta_j}{\theta}\right) \left[\frac{1}{\theta_j} \frac{\partial \theta_j}{\partial s}\right]$$

which is the product of the poverty share of the jth group and the impact of schooling on the poverty in the jth group. This tells us which group in the society we should focus on. Our objective is to maximize the poverty reduction. We should also make an adjustment for the cost of increasing schooling in different groups. Obviously the larger groups will have greater cost.



CHAPTER 3

LABOR MARKET AND THE POOR

INTRODUCTION

3.1. The poor seek to improve their living conditions by using the one asset they have in abundance – labor. How much of this abundant asset they are able to offer in the labor market (participation rate), how successful they are in finding work (unemployment rate), and how much they earn ultimately determines whether they escape poverty.

3.2. This chapter presents an overview of recent trends in the growth rates of the labor force and employment in Section A, along with characteristics of the unemployed. The poverty incidence of the population, in terms of their status in the labor market, is presented in Section B. Section C is devoted to the analysis of the unemployed poor. In Section D, we turn to the characteristics of the working poor.

3.3. The following key messages emerge from this chapter:

- *Unemployment has worsened over the 2000s, rising from 13.7% in 2000 to 14.5% in 2003. Based on projections of the growth of the labor force, significant reductions in unemployment over the next decade will require economic growth averaging between 6-7% a year, substantially greater than the 3.8% that took place between 1997-2002.*
- *Families of the unemployed are significantly more likely to be poor, with 21.5% of the population where the household head unemployed living below the poverty line, compared with only 12.8% of the population where the household head is employed, and 15.9% of the population where the household head is not economically active.*
- *At the same time, poverty rates for the population where the household head is unemployed have realized the greatest relative declines since 1997. All groups experienced significant declines in poverty between 1997-2002, but while the poverty rate for those where the household head was employed or not economically active declined over the period by 34% and 30%, respectively, the poverty rate for those where the household head was unemployed declined by almost 39%. Transfers have played a major role in this poverty reduction, with the proportion of household income from transfers having increased from about 25% in 1997 to over 40% in 2002.*
- *Though poverty has declined for the unemployed, certain segments of the unemployed have increased their absolute and relative risk for poverty. Poverty*



rates for the least educated unemployed have increased over the 1997-2002 period.

- *Poverty has also declined for employed workers since 1997, and the proportion of households in Jordan headed by the “working poor” has declined from almost 10% in 1997 to only 6% in 2002.*

OVERVIEW OF THE LABOR MARKET

3.4. A major challenge facing the Kingdom of Jordan is improving conditions in the labor market. Over the last two decades, deteriorating labor market outcomes – rising unemployment, declining real wages, and low to negative productivity growth – have made improving conditions in the labor market central to the government’s overall strategy of strong economic growth, poverty reduction and prevention, and continuing social stability. This section reviews key labor market features in Jordan such as the characteristics of the labor force, employment growth, and the unemployed, to serve as a backdrop for understanding its implications for the participation of the poor.

Characteristics of the labor force

3.5. Jordan is characterized by its young, well-educated labor force. Skilled workers go abroad seeking work even as low-skilled workers in Jordan remain mainly in agriculture and construction activities. In 2003, the total size of the labor force in Jordan was estimated at 1.3 million workers. This was comprised of 1.24 million Jordanian laborers, and another 50,000 laborers of non-Jordanian citizenship, who make up slightly less than 4% of the labor force.

3.6. Jordanians employed abroad also constitute a significant share of employment for Jordanians. It is estimated that some 300,000 Jordanians are employed abroad, representing more than a quarter of all Jordanians employed. Remittances from Jordanians working abroad reached over US\$1.9 billion in 2002, or about 21% of GDP¹. Thus, the ultimate labor market conditions for Jordanian workers depend, in part, on labor market conditions abroad.

3.7. The national labor force in Jordan² is well educated, compared with other countries in the Middle East and North Africa. Almost half have a high school education, and more than 30% have had some college education (see Table 3.1). The pattern of women’s labor force participation has had a great deal to do with the generally high educational attainment of the Jordanian labor force. Women’s labor force participation is all but restricted to women with relatively higher levels of education. Only 4% of women with a secondary education³ or less participate in the labor force, compared with 47% of women with more than a secondary education. As a result, women constitute a very small

¹ Economic Monitoring Note, Spring 2003.

² Jordanians.

³ Age 15 or older.

share of the less educated labor force (less than 7% of the labor force with a secondary education or below), but a major share of the more skilled labor force (representing a third of the labor force with more than a secondary education)⁴.

Table 3.1: Jordanian Labor Force, By Level Of Education Completed, 2003

Highest level of education completed	Proportion of labor force, 2003		
	Total	Male	Female
Illiterate	2%	2%	2%
Less than secondary	52%	59%	16%
Secondary	14%	14%	12%
Intermediate Diploma	13%	9%	31%
Bachelors and above	19%	16%	39%
	100%	100%	100%

Source: Annual Report on Unemployment and Employment, 2003.

3.8. That very low participation of women at low levels of education has ramifications on the overall labor force participation rates of the poor versus the non-poor. Labor force participation among the poor (36.7%) in Jordan is lower than the non-poor (40%) (Table 3.2). While there is not much variation between poor and non-poor participation rates for males, a considerably lesser proportion of poor women (6.7%) enter the labor force compared to the ratio for the non-poor (13.5%). Relatively speaking, while Ajloun and Maan lag behind among both the poor male and female participation rates, Jarash and Zarqa suffer from low female participation among the poor.

3.9. Such low female participation rates might seem at first glance surprising, as one would presume a higher participation rate to fight poverty and vulnerability. However, this phenomenon has been observed across countries when poor women have higher fertility rates or have to manage greater domestic responsibilities in a context of minimal access to several basic services.

3.10. Like other economies in MENA, the Jordanian labor force is characterized by its youth. More than a quarter of the labor force is under the age of 25. With female participation in the labor force having increased significantly for young, educated women, Jordan's female labor force has also become increasingly young, with the proportion of the female labor force under the age of 25 increasing from 24.4% to 28% over the 2000s (Table 3.3).

⁴ Employment and Unemployment Survey, 2003.



Table 3.2: Jordan Participation Rates by Governorate And Gender, 2002

Governorate	Total		Male		Female	
	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor
Amman	38.3	40.6	72.7	67.4	5.7	14.7
Balqa	39.2	41.7	65.9	67.8	10.1	16.3
Zarqa	37.5	40.3	68.1	69.0	5.1	11.1
Madaba	31.9	40.4	57.2	65.2	6.4	15.5
Irbid	36.1	38.5	67.0	65.2	7.4	11.3
Mafraq	34.0	37.8	59.7	65.7	8.3	11.2
Jarash	34.7	37.0	69.8	63.6	3.1	9.6
Ajloun	26.3	36.0	46.1	60.8	4.9	11.9
Karak	36.0	41.9	67.0	64.8	12.4	19.3
Tafeela	38.7	38.4	71.6	66.0	5.9	10.9
Maan	27.0	40.5	52.0	63.6	4.2	16.1
Aqaba	41.4	42.3	70.9	71.8	10.2	12.3
Jordan	36.7	40.0	67.4	66.8	6.7	13.5

Source: Staff Estimates based on HEIS (2002).

Table 3.3: Age Composition Of The Jordanian Labor Force, 2003

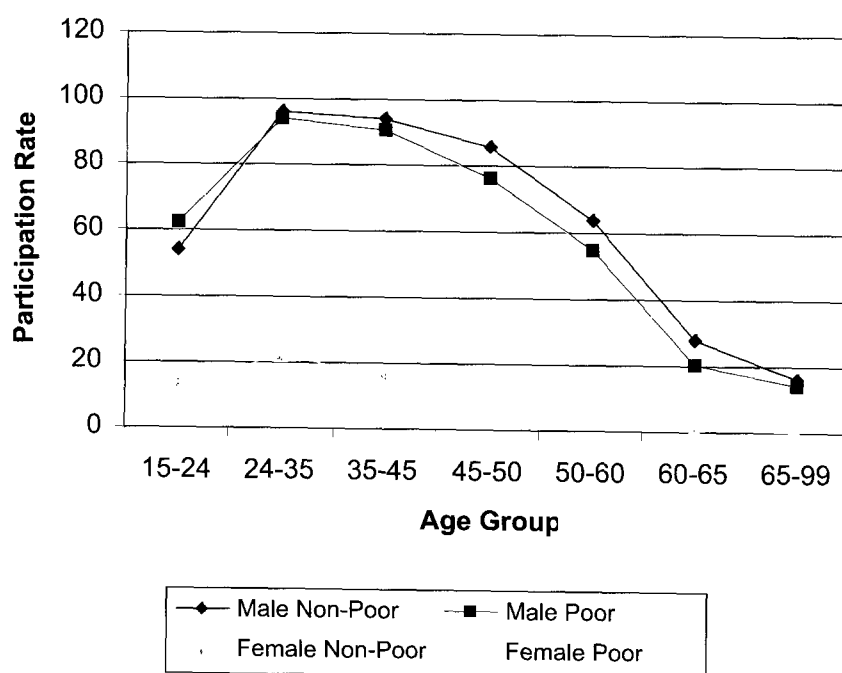
Sex And Age Group	Proportion Of Labor Force, 2000	Proportion Of Labor Force, 2003
Male		
15-24	26.9%	27.8%
25-64	71.6%	70.8%
65+	1.4%	1.4%
Female		
15-24	24.4%	28.0%
25-64	75.5%	71.8%
65+*	0.1%	0.2%
Total		
15-24	26.6%	27.9%
25-64	72.2%	70.9%
65+	1.2%	1.2%

Source: Staff Estimates based on data from Department of Statistics, Jordan.

3.11. The participation rates of the poor and non-poor vary, not only overall, but also dependent upon age and gender. Figure 3.1, below, shows that the participation rates peak for every subgroup considered at the age group 24-35. After 35 years of age, for all groups, participation rates show a steady decline until they become senior citizens who

may no longer be employable. Male non-poor and female non-poor have consistently higher levels of participation rates compared to the male poor and female poor respectively across virtually all age groups. The exception to this is the higher participation of male poor to non-poor at the 15-24 year subgroup, where continued schooling may play a large part in lower non-poor participation. For females, the lower participation rates of the poor versus the non-poor occur at the child-bearing and rearing age groups, with the gap in participation rising to a peak in the 24-35 group, but remaining until age 50, at which point the participation rates of the poor exceed those of the non-poor.

Figure 3.1: Age And Participation Rates For Poor And Non-Poor By Gender, 2002



Source: Staff Estimates based on HEIS (2002).

3.12. If we examine the population structure of the poor and non-poor, Figure 3.2, below, helps us to infer that a significantly higher proportion of the poor population is concentrated in lower age group up to and below the category 15-24 relative to the non-poor. This is true for both male and female groups. Also, as one would expect, a lower proportion of the poor are among the upper age groups, age 25 and older, compared to the non-poor.



Box 3.1: The Relationship between Unemployment and Poverty

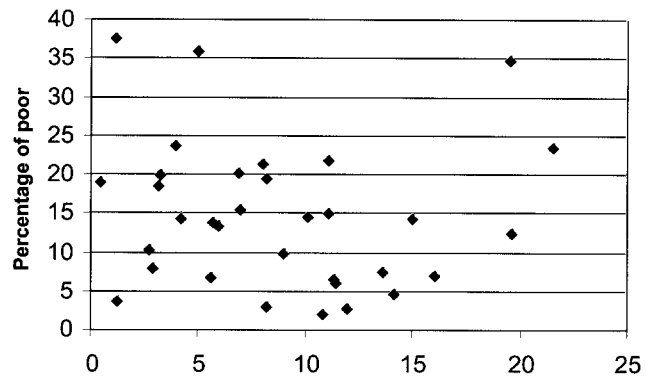
Between 1997 and 2002, the unemployment rate in Jordan slightly increased from 14.4 to 15.2 percent even though the percentage of poor declined from 21.4 to 14.2 percent. How can poverty decline while unemployment failed to show a sympathetic trend? International evidence (Figure 3.3) shows that there is no clear relationship between unemployment and poverty. Also, it is often the case that at any given point in time, across population groups differing in employment status, the incidence of poverty does

not increase with increasing unemployment. In contrast, microeconomic evidence *invariably* shows that at the individual level, unemployment increases the risk of the individual being poor. This box explains why this uncertainty arises in the relationship between unemployment and poverty when one aggregates over individuals or compares national aggregates over time.

First, from a data gathering and definitional standpoint, the movement in unemployment and poverty need not coincide. While unemployment status is specific to an individual, the status of poverty is determined at the household level. An unemployed person may not live in a poor household because there could be other income earners in the family, or the household could receive income transfers (remittances) from family members working abroad. Conversely, an individual could be “working poor” because he shares his income with other unemployed or non-working members in the family.

Second, from a policy standpoint, there are several sources of tradeoff between unemployment and poverty (Agenor, 2003). If job creation policies lead to a significant reduction in real wages, poverty may rise with reduction in unemployment. For example, an employment subsidy may raise the employment of unskilled labor in the formal sector even as it raises cost of living for those depending on the informal sector and therefore poverty, if inflationary financing is used to finance the subsidy. Even budget-neutral policies can lower unemployment while increasing poverty as it happens when a reduction in minimum wages applied in the formal sector drives wages down in the informal sector. While the tradeoffs described immediately above could be termed short-term, such tradeoffs can also arise in long-term growth context as noted in Agenor, 2003.

Figure 3.3:
Poverty And Unemployment, Cross-Country Evidence

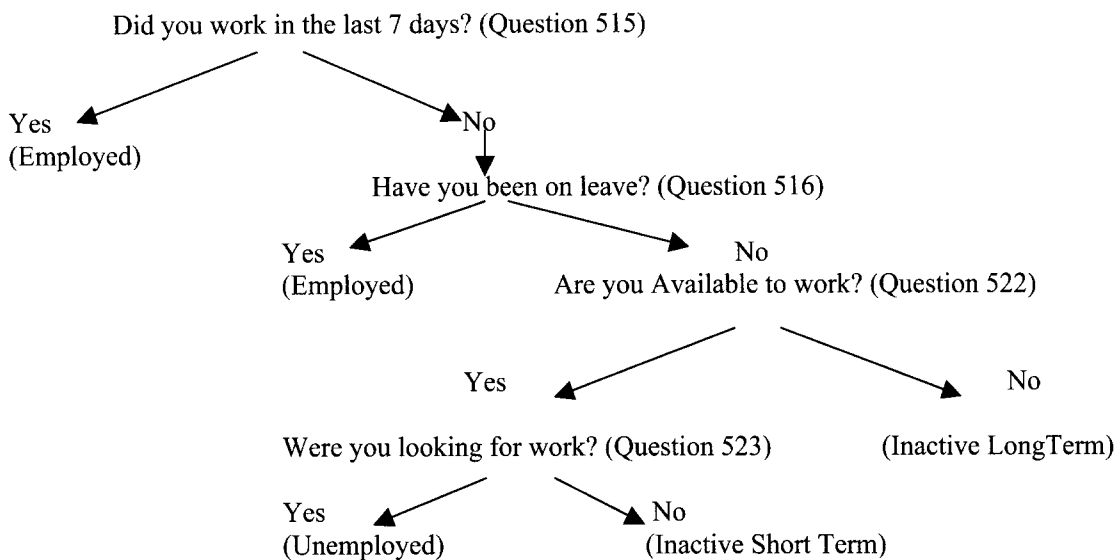


Source: ILO for unemployment and World Bank for poverty.

3.23. In Jordan, poverty disproportionately impacts families where the household head is unemployed, with 21.5% of the population with the household head unemployed living

below the poverty line, compared with only 12.8% of the population where the household head is employed and 15.9% of the population where the household head is not economically active.

Box 3.2: Deciding Activity Status of an Individual over 15



Definitions

Labor Force = Employed + Unemployed

Participation Rate = Labor Force / (Labor Force + Inactive LT + Inactive ST)

Unemployment Rate = Unemployed / Labor Force

Note: Question numbers refer to HEIS (2002-03) General Characteristics questionnaire for individuals.

Source: Staff Estimates based on HEIS (2002).

3.24. At the same time, poverty rates for the population where the household head is unemployed have realized the greatest relative declines since 1997. All groups experienced significant declines in poverty between 1997-2002, but while the poverty rate for those where the household head was employed or not economically active declined over the period by 34% and 30%, respectively, the poverty rate for those where the household head was unemployed declined by almost 39%.



**Table 3.6: Poverty Rates Of The Population, By Economic Activity Status
1997 And 2002**

Economic activity status	Poverty Rate, 1997	Poverty Rate, 2002	Change in Poverty
Total Population	21.1	14.2	32.8%
Unemployed	35.0	21.5	38.6%
Employed	19.3	12.8	33.6%
Not economically active	22.7	15.9	29.8%

Source: HEIS (1997) and (2002).

3.25. Among other things, transfers have played an important role in the reduction of poverty among the unemployed.⁸ In 1997, earnings from employment accounted for almost half of the family income of unemployed persons, but by 2002 that had been reduced to less than 40%. On the other hand, transfers, which had accounted for less than 25% of the total household income for the unemployed in 1997, had risen to over 40% by 2002. In this way, an important safety net for the unemployed has become much more prevalent, and has been instrumental in allowing for a dramatic reduction in poverty incidence among the unemployed (Table 3.6). The other key driver for reducing poverty is a shift to consumption across all income groups regardless of employment status. As noted in volume 1 of this report, this consumption shift is the combined effect of relative price shift to tradeables, reduction in real interest rates, and perceived wealth effects from a credible shift in economic policies that is expected to boost future incomes.

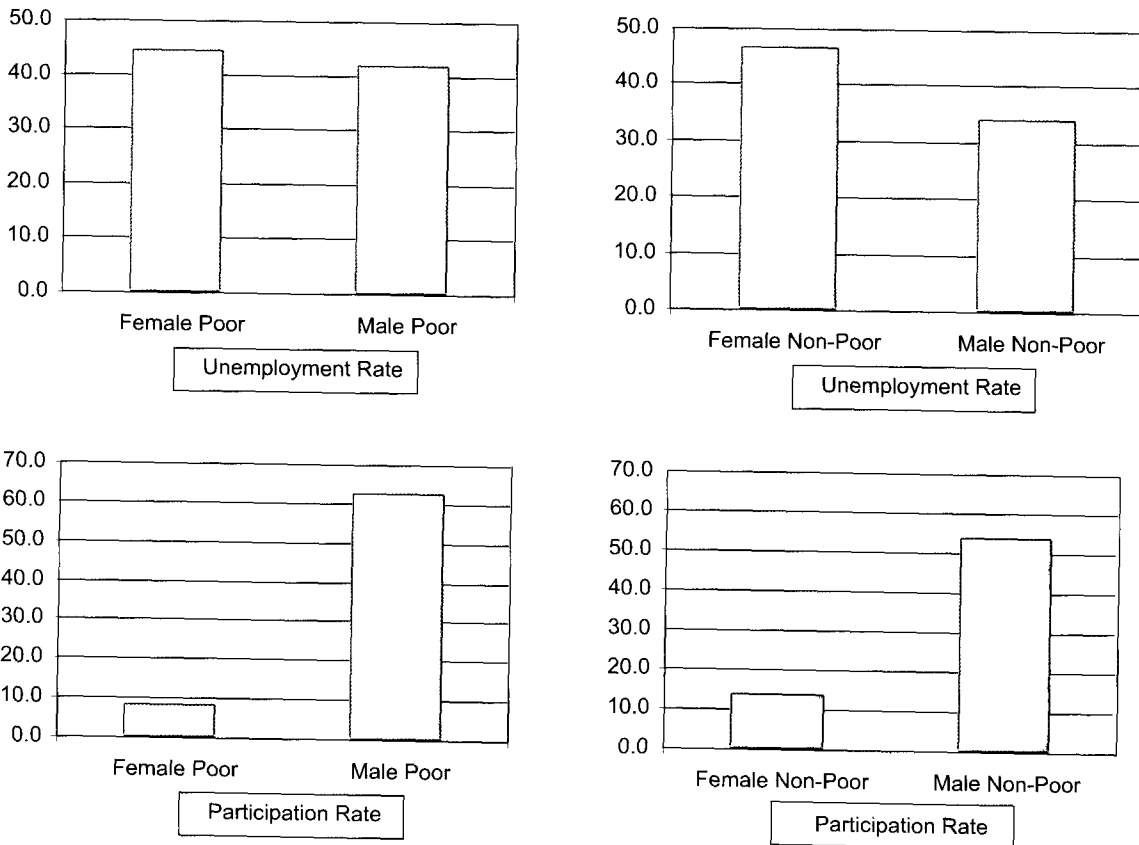
THE UNEMPLOYED POOR

3.26. Unemployment in MENA falls disproportionately on the young. Youth unemployment ranges from 37% of total unemployment in Morocco to 73% in Syria, with a simple average of 53% for all countries for which data are available.⁹ Jordan compares well to this group at 37% in 2002. However, compared to the non-poor youth, the poor youth in Jordan face a much higher rate of unemployment (42% for the poor against 36% for the non-poor). Figure 3.4 shows that youth unemployment levels also have a gender dimension with the highest unemployment rates recorded for the female poor among the youth subgroups. Problems due to very low participation rates among women are only compounded by high rates of unemployment.

⁸ Households headed by an unemployed person.

⁹ "Unlocking the Employment Potential in the Middle East and North Africa: Towards a New Social Contract", The World Bank, Washington DC, 2003.

Figure 3.4: Unemployment Rate And Participation For Youth (Age 15-24), 2002

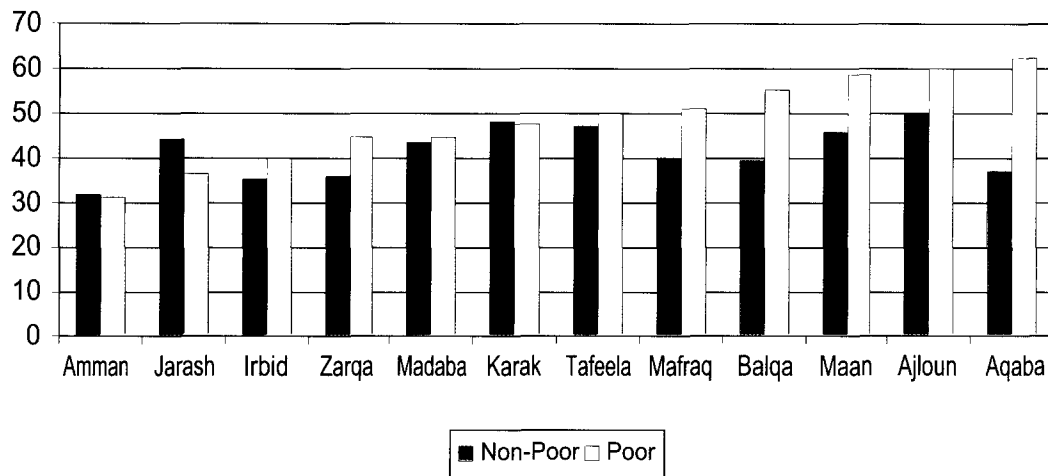


Source: Staff Estimates based on HEIS (2002)

3.27. Figure 3.5 below shows the geographic dimension of the youth unemployment. Aqaba, Ajloun, and Maan have the highest youth unemployment rates among the poor ranging around 60%. However, among the governorates of Amman, Jarash, and Karak, we find that youth unemployment among poor is less acute compared to the non-poor. While youth unemployment is a serious problem for Jordan, it is more so among the poorer sections of the society.



Figure 3.5: Youth Unemployment Among The Poor And Non-Poor By Governorate, 2002



Source: Staff Estimates based on HEIS (2002).

3.28. Who is particularly vulnerable to poverty in unemployment? In terms of poverty incidence, unemployment presents particular poverty risk by age and education. For those in the prime working age (between 25-64), unemployment raises the incidence of poverty to 21.5%, compared with only 14.4% for the overall prime age population. This is not entirely surprising, as unemployment would be especially costly for families in which the head of household is in his/her prime earning years.

3.29. Unemployment also presents increased poverty risk for the least educated. At all levels of education, unemployment is associated with increased poverty risk (where the unemployed have higher risk of poverty than the rest of the working age population), but this incremental risk declines progressively with higher levels of education. Moreover, and more troubling, since 1997, poverty has actually increased for the unemployed for the lowest levels of education. This is consistent with the finding in the Chapter 4 on educational outcomes for the poor that economic returns for those with low levels of education have declined as the structural reforms have increased the returns for education.

Table 3.7: Poverty Incidence Of The Unemployed By Educational Attainment

Education	Poverty Incidence, 1997	Poverty Incidence, 2002	Change (%)
Illiterate	51.1	53.2	4.1
Read and Write	39.1	42.0	7.3
Elementary	35.1	28.4	-19.1
Preparatory	32.5	19.6	-39.5
Basic Education	0.0	9.6	+
Vocational	25.2	0.0	-100.0
Secondary	32.7	12.5	-69.1
Intermediate	10.9	6.2	-43.0
Bachelor, above	0.0	2.7	+
Total	35.0	21.5	-38.6

Source: HEIS (1997) and (2002).

WHO ARE THE WORKING POOR AND WHY ARE THEY POOR?

3.30. Labor is the most abundant and potentially valuable asset held by the poor. Since labor is the poor's primary means of generating income, which in turn determines consumption levels, this asset exerts significant influence on the poverty status. Table 3.8, below, shows that labor generates (income from employment and income of own account workers and employers) 64.6% of the total current income for the poor, as compared with 58.9% for the non-poor.

Table 3.8: Mean Per Capita Income By Source For The Poor And Non-Poor, 2002 (JD)

Income Source	Non-poor	%	Poor	%
Total Income from Employment	429	48.0	194	53.9
Total Income of Own Account Workers and Employers	98	10.9	38	10.7
Total Income from Rents	177	19.8	50	14.0
Total Property Income	28	3.2	5	1.4
Total Transfers	163	18.2	72	20.0
Total Current Income	895	100.0	359	100.0

Source: Staff Estimates based on HEIS (2002).

3.31. In 2002, 14.2 percent of the population lived at or below the poverty line in Jordan. While a significant proportion of this poor population were either children or adults who either did not participate in the labor force or unemployed, there were around



**Table 3.10: Level Of Education Of Employed Persons
Across Poor And Non-Poor**

Level of Education	Working Poor	Working Non-Poor
Illiterate	6.7	2.6
Read and Write	10.8	5.2
Elementary	24.0	14.3
Preparatory	21.3	19.1
Basic Education	14.6	12.0
Vocational Apprenticeship	1.2	1.8
Secondary	11.4	15.4
Intermediate Diploma	6.9	13.5
B.A., B.Sc.	2.7	13.8
Higher Diploma	0.2	0.6
M.A., M.Sc.	0.2	1.3
Ph.D	0.0	0.4
Total	100	100

Source: Staff Estimates based on HEIS (2002).

3.36. Also, as may be expected, according the HEIS 2002 survey, the average family size for the working non-poor is 7.5 compared to the working poor family size of 9.7. For a given level of income, *ceterus paribus*, the larger the family size, the probability of falling under the poverty line can be expected to be higher. Shaban et al 1997 finds that for Jordan, incidence and depth of poverty in both 1992 and 1997 tended to increase with rising economic dependency ratios. An additional household member was found to decrease per-capita expenditure by 9% and 11% in 1992 and 1997 respectively. The economic dependency ratio can be defined as the ratio of the number of household members that are not employed to the number of members that are. This gives us a summary measure of the average number of people dependent per employed person. The number is 4.45 for working non-poor versus 6.06 for working poor in Jordan. This means that in a working poor household an income earner provides for an average of six individuals while the average income earner in a working non-poor household needs to provide only for four and half people on an average. Hence, the dependency ratio being higher in the working poor families can be offered as a partial explanation for their poverty.

3.37. Turning to the sectors that employ most of the poor, Table 3.11, below, shows that the 13 sectors that employ almost two-thirds of the poor are also the most important employers for the non-poor. However, land transport, agriculture, market gardening, horticulture, construction, manufacture and repair of motor vehicles, manufacture of wearing apparel, and retail sale of food, beverages and tobacco are the sectors that employ a higher proportion of the poor than non-poor. Sector of employment is usually a relevant factor in determining poverty. For instance, the construction sector is known to be a low-wage sector in some developing countries. Industry-specific wage data can

throw useful light on the nature of poverty depending on the wage gap across sectors that are important for the poor.

Table 3.11: Share Of Employed By Industrial Sector, 2002

Industry	Non-poor %	Poor %	Total %
Community Services	26.9	17.9	26.1
Road Transport	8.5	15.4	9.1
Administration of the state and the economic and social policy of the community	15.7	12.2	15.4
Growing of crops; market gardening; horticulture	3.1	9.4	3.7
Building of complete constructions or parts thereof; civil engineering	5.3	7.9	5.5
Manufacture and repair of motor vehicles	3.7	6.6	3.9
Other retail trade of new goods in specialized stores	6.7	6.2	6.6
Manufacture of wearing apparel, except fur apparel	3.6	5.4	3.8
Primary education	10.9	4.9	10.4
Human health activities	7.6	3.9	7.3
Other service activities	1.9	3.5	2.1
Retail sale of food, beverages and tobacco in specialized stores	2.6	3.3	2.7
Non-specialized retail in stores	3.4	3.3	3.4
Total	100.0	100.0	100.0

Source: Staff Estimates based on HEIS (2002).



the poor benefit from public subsidies to promote education. Educational outcomes in terms of schooling quality and returns to education are examined in Section C distinguishing among the poor and non-poor. Section D offers recommendations from the analysis.

Box 4.1: Education Sector in Jordan

The 1994 Education Law extended the basic education cycle to cover Kindergarten (KG) and divided the education system into three stages: KG (two years), basic (10 years) and, secondary (two years). While the basic and secondary stages are free of charge in public schools, only the basic stage is compulsory.

Early childhood education (ECE) is available to children from ages four to six through mostly private providers. A high percentage of KGs are coeducational and located in urban areas. The total KG enrollment in 2000 was 83,777 and the Gross Enrollment Rate (GER) was 35%. Enrollments in basic education were 1,173,314, resulting in a GER of 102%. Most students (73%) were enrolled in public schools, followed by the private sector (14%), UNRWA – the United Nations Relief and Works Agency for Palestine Refugees in the Near East (12%), and other ministries (1%). Secondary education consists of two streams: comprehensive (academic and vocational) and applied. The applied stream leads to pre-employment or apprenticeship training. In addition to the public sector and UNRWA institutions, there were 1,893 privately operated schools in 2000: 1,164 pre-schools, 592 basic, and 137 secondary schools. All private schools must follow the nationally prescribed curriculum.

The higher education system consists of non-university level community colleges and universities. Access to the post-secondary education system is limited to those who complete the secondary education cycle and successfully pass the *tawjihi*. In 1999/2000, 20 percent of the 20 to 24 age group were enrolled in higher education (females represented 51 percent). There are 22 (eight public, 14 private) universities and 47 (27 public, two UNRWA, 18 private) community colleges. In 2000, there were 29,707 community college student enrollments (68 percent female). More than three-quarters (67 percent) of university enrollments in Jordan are accommodated in public universities. In 2000, there were 112,483 university students – of which 47 percent are female, up from 37 percent in 1994/1995.

Jordan has made a significant investment in basic education since the onset of the education reform in the early 1990s. Between the years 1990 and 2001, JD 395 million has been spent on capital at the basic education level, averaging JD 32 million each year. Private and household finance plays an important role, especially in the provision and financing of higher education. Student tuition fees account for almost 30 percent of public universities' recurrent expenditures (World Bank 1996), which gives Jordan one of the highest levels of cost-recovery in the world (World Bank 1994).

4.5. The main messages from the analysis in this chapter are:

- *Despite significant gains observed at the national level, the poor, especially those in rural areas, are behind the rest of the population in terms of educational attainment. Rural poor have 20% illiteracy compared to eight percent illiteracy*

among non-poor. Despite equal access, poor children are one-third less likely than the rich to enroll in education levels beyond primary.

- *Illiteracy goes hand in hand with poverty. In addition, the payoffs of having higher education in reducing the likelihood of being poor has dramatically improved between 1997 and 2002. This is indicative of the demand for skill intensive labor during the era of structural reforms.*
- *Even with similar endowment of higher education, the returns to higher education are 60 percent higher for the non-poor compared to the poor.*
- *Public spending is more equitably distributed at the lower levels of education, and there is scope for greater equity in higher education. Persistence of inequities in education system at the higher stages calls for more effective public intervention to improve educational outcomes for the poor.*

EDUCATION ATTAINMENTS

Literacy

4.6. *Adult literacy increased significantly over time and Jordan compares favorably with international standards.* In 1961, the adult literacy rate was 32 percent. By 1999, the rate was almost 90 percent. The adult literacy rate is much higher in Jordan than the average for Middle East and North African countries. By the late 1990s, Jordan's adult literacy rate surpassed average literacy rates for East Asia and Latin America (Figure 4.1).

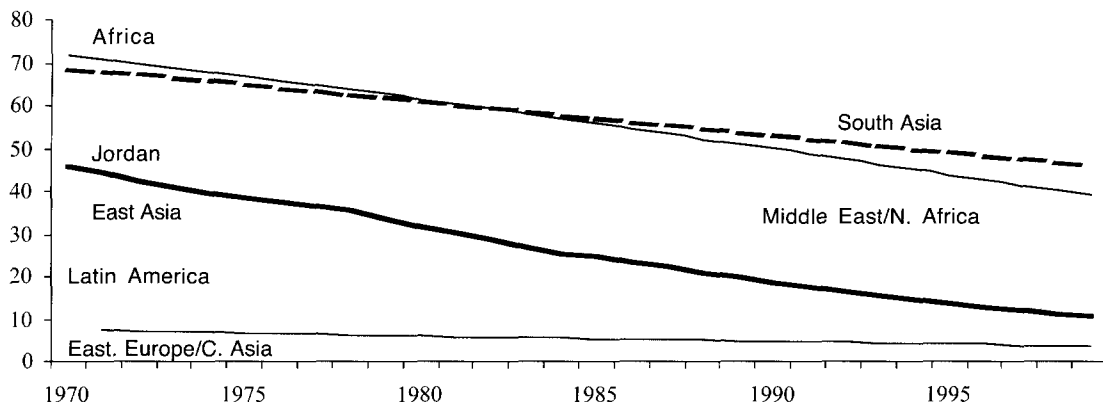
4.7. *Between 1997 and 2002, there was considerable progress in reducing illiteracy.* Overall, illiteracy declined 30%, from 14% in 1997 to 9.2% in 2002.¹ In 2002, 68.8% of the Jordanian population² had basic education or lower while 7% were university graduates.

¹ Based on analysis of the Jordan Household Expenditure and Income Survey (HEIS).

² Individual rates calculated from the 1997 and 2002 Jordan Household Income and Expenditure Surveys (HEIS) for all persons aged 12 or more.



Figure 4.1: Adult Illiteracy Rates, 1970-1999 (Percent)



Source: UNESCO 2001.

4.8. *Significant educational investments have resulted in improved educational attainments among the younger generation.* Analysis of the 2002 Jordan Household Expenditure and Income Survey (HEIS) shows that illiteracy among those between the ages of 12 and 18 is 6.6%, which is half the rate for heads of households (13.2%). Moreover, close to 50% of 12 to 18 year olds have attained more than basic education, while 32% of head of households have attained those levels.

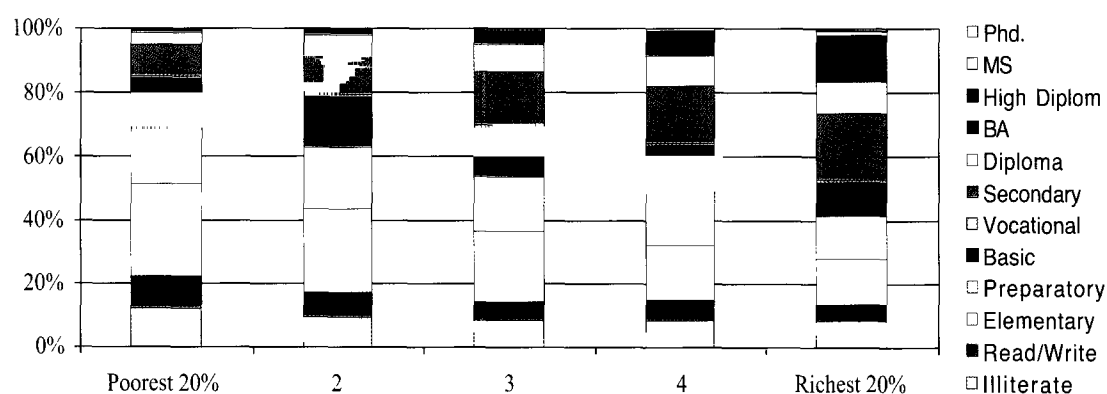
4.9. *While both the poor and the non-poor achieved significant gains in literacy, the drop in illiteracy was more pronounced for the poor.* The overall incidence of illiteracy dropped 34% from 14% in 1997 to 9.2% in 2002. During this time, illiteracy dropped 41% among the poor, from 22% to 13% and 31% for the non-poor. The remarkable progress in illiteracy rates could be attributed in part to the Government's efforts to expand universal coverage of basic education as well as literacy campaigns targeting the poor. Current government policy and Education For All (EFA) strategy includes continuing the delivery of literacy programs, mostly through evening classes at public schools and at work places.

4.10. *Nevertheless, the poorest wealth quintile still lags behind the rest of the population in terms of literacy achievement.* As shown in Figure 4.2, while the proportion of illiterates is between 8% and 9% in the upper four wealth quintiles, 12% of the lowest wealth quintile was reported to be illiterate in 2002. The difference in the illiteracy rate between the poorest wealth quintile and the rest of the population is statistically significant, thus indicating that poverty and educational outcomes are highly correlated.

4.11. *A larger proportion of the rural population is illiterate with a significant difference between the poor and the non-poor.* In 2002, the incidence of illiteracy was 7.9% in urban areas as opposed to 14.1% in rural areas. The incidence of illiteracy among the poor in rural areas is more than twice as much as it is among the poor in urban areas (20.4% versus 9.6%). On the other hand, there is only a 5% difference in incidence of

illiteracy between the non-poor in urban and rural areas (7.7% versus 13%). Moreover, illiteracy rate among the poor living in rural areas is 50% higher than the percentage found amongst the rural non-poor. Looking at other levels of education, 50% of the poor in rural areas have attained below elementary level of education (grades 1-6) in 2002, which is 16% higher than the ratio of non-poor in urban areas. The highest levels of illiteracy are found in Mafraq, the governorate with the lowest human development index (UNDP, 2003). The incidence of illiteracy in the capital city of Amman, on the other hand, is 7.3%, the lowest in the country.

Figure 4.2: Educational Attainments Of Individuals By Wealth Quintiles, 2002



Source: Staff Estimates based on HEIS (2002).

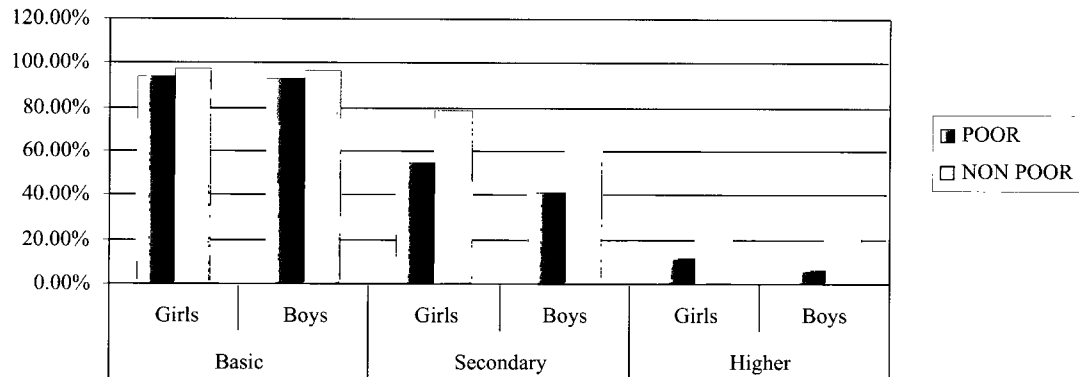
4.12. In general the difference between the incidence of illiteracy among men and women is significant, for the poor and the non-poor alike. In 2002, 4.5% of men were illiterate while 13.9% of women were illiterate. However, the gender difference in the incidence of illiteracy is the same for the poor and the non-poor (at 9%). Interestingly, the lowest gender difference is among those in the third wealth quintile (8%) and the highest is among the richest quintile (11.2%).

ENROLLMENT RATES AND ACHIEVEMENT OF MILLENNIUM DEVELOPMENT GOALS

4.13. Jordan has made remarkable progress in education coverage. The Gross Enrollment Rate (GER) for grades 1 to 6 was 104 percent in 2000, while the Net Enrollment Rate (NER) was 96 percent. The system has expanded significantly over time. In 1999, 83.4% of the 5-14 year olds and 46.5% of the 15-19 year olds are reported to be in public and private schools. Educational attainments of the Jordanian population are higher than the average for countries in the MENA region (see Figure 4.3) as well as in countries at similar income levels outside of the region.



Figure 4.5: NER At Different Levels Of Education, By Gender And Poverty Status Of Individual, 2002



Source: Staff Estimates based on HEIS (2002).

4.19. *The pattern of lower enrollments continues for all Jordanians at higher levels of education and is particularly more pronounced for the poor. While the difference between the enrollments of poor and non-poor is most significant for higher education, and girls represent a higher proportion of the students than boys, the gender difference is much smaller than the poverty difference. That is, both poor females and poor males are under represented in higher education. The gender difference, however, used to be large at different levels of higher education. Amongst community college graduates, females exceed males by almost 60% while males exceed females amongst BA/BSc degree program graduates by 74%. However, there is a great achievement in gender equality.*

Box 4.2: Factors Affecting Dropout in Jordanian Schools

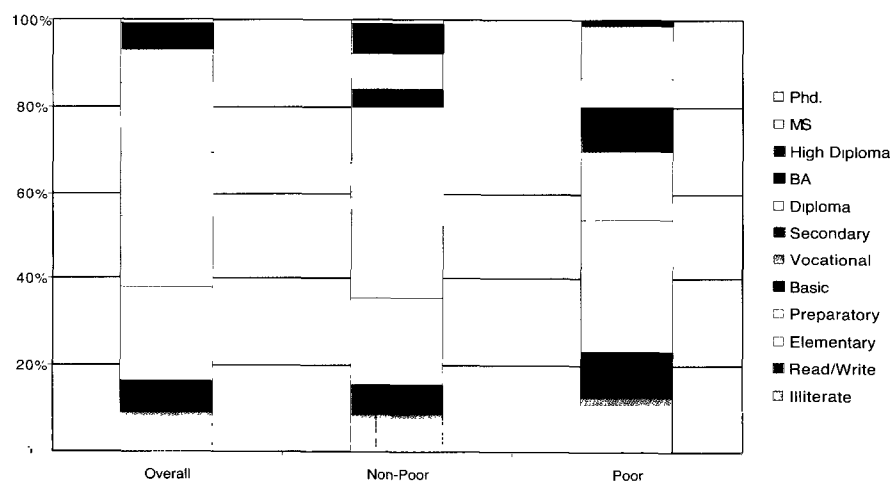
A study of the factors affecting dropout from public basic schools, based on a random sample of 270 schools and interviews with 323 children who had dropped out, revealed that while the incidence of dropping out is low, the relative rates are higher among grades 7 through 10, especially so for boys. While 50% of the dropouts had repeated classes before dropping out, a large majority came from disadvantaged backgrounds: 77% came from families with incomes less than JD 200 per month; 84% were from large families (between 6 and 10); 97% of their mothers do not work, 56% of their mothers are illiterate; more than 82% did not have computers, Internet, and books at home. The primary reason for dropping out of school for more than 60% of these children was their desire to help increase family income, willingness to work, preference to work over school, difficulty of studies, and lack of reinforcement for school from family. Over 80% of these children said they had good relations with their teachers and the environment at school was positive, but 76% of them perceived that their family needed them to work. Family income and parental education were statistically significant indicators of school drop out.

Source: Ministry of Education 2002.

EDUCATIONAL ATTAINMENTS AND POVERTY

4.20. Overall in Jordan, poverty is inversely related to educational attainment. As shown in Figure 4.6, the educational attainment of the non-poor is similar to that of the entire population, but educational attainments are much lower for the poor. Over 86% of the poor had only basic education or less as opposed to 1.3% having attained BA or higher. Amongst the non-poor, on the other hand, 67% attained basic education or less while 7% attained BA or higher levels of education.

Figure 4.6: Educational Attainment Of Individuals 12 Years And Over, By Incidence Of Poverty, 2002



Source: Staff Estimates based on HEIS (2002).



Table 4.1: Determinants Of Poverty In Jordan, 1997 And 2002

Independent Variables	1997			2002		
	Coefficient	Exp(B)	1/Exp(B)	Coefficient	Exp (B)	1/Exp(B)
Read/Write	-0.569*	0.57	1.8	-0.513*	0.60	1.7
Elementary	-1.009*	0.36	2.7	-0.842*	0.43	2.3
Preparatory	-1.169*	0.31	3.2	-1.348*	0.26	3.8
Secondary	-1.535*	0.22	4.6	-1.555*	0.21	4.7
Vocational	-2.026*	0.13	7.6	-1.503*	0.22	4.5
Diploma	-2.069*	0.13	7.9	-1.878*	0.15	6.5
BA or higher education	-2.572*	0.08	13.1	-2.929*	0.05	18.7
Gender of Household Head	1.404*	4.07		0.323*	1.38	
Residence	-1.085*	0.34	3.0	-0.413*	0.66	1.5
Sector	0.030	1.03	1.0	-0.122*	0.88	1.1
Age	-0.020*	0.98	1.0	-0.042*	0.96	1
Working Status	-0.486*	0.62	1.6	-0.296*	0.74	1.3
Family Size	0.229*	1.26		0.231*	1.26	
Urban_FSize	0.119*	1.13		0.044*	1.05	
Constant	-2.630*	0.07		-0.942*	0.39	

Notes:

1. * indicates coefficient is significant with $p < 0.001$.
 2. The following variables are dichotomous:
 Dependent variable is dichotomous; value "1" denotes poor; value "0" denotes non-poor.
 Gender of Household Head: value "1" denotes male; value "0" denotes female.
 Residence: value "1" denotes urban; value "0" denotes rural.
 Sector: value "1" denotes public sector employee; value "0" denotes non-public sector employee.
 Working Status: value "1" denotes respondent currently working; value "0" denotes respondent currently not working.
 3. Urban_FSize is an interaction variable.
 4. Exp(B) is the odds ratio; 1/Exp(B) is used as the odds ratio for negative coefficients.
- Source: Analysis of 1997 and 2002 Jordan Household Income and Expenditure Surveys.

4.24. The strength of the effect of higher education on the incidence of poverty increased almost 50% between 1997 and 2002. Investigation of the 1997 and 2002 household surveys shows that all levels of education made a significant impact on the incidence of poverty (Table 4.1, see note 1 and Annex 3.1 for details). While the likelihood of being poor changed marginally for those who had acquired up to secondary education, the relative importance of vocational education in reducing the likelihood of poverty decreased from 7.6 times to 4.5. This could be due to the possibility that jobs are less easily available after acquiring vocational education as they used to be five years ago. On the other hand, higher education became more important in 2002 — a head of household who is illiterate is close to 20 times more likely to be poor as one with higher education. The ratio has increased 50% from 13.1 in 1997 and could be the result of

improved returns from higher education (Table 4.1, see note 2 and Annex 3.1 for details). While it is a troubling statistic, given the proportionally lower representation of lower income groups in higher education, it is likely to have a positive impact on encouraging higher educational attainments among Jordanian youth. There is an improvement in the impact of living in urban areas.

EDUCATION EXPENDITURES

4.25. *Private and household finance plays an important role in the financing of education, especially at the higher education level.* The average Jordanian household spends JD 36 per year or 4% of total household expenditures on education. Educational expenditures are equitably distributed across wealth quintiles: the poorest wealth quintile spends 2% while the richest quintile spends 6.5% of total household expenditures on education. Average annual household spending at public schools is JD 14, while that at private schools is JD 359. Annual expenditure at the community college level averages JD 262, while that at public higher education institutions is JD 738.

4.26. *Private spending at public higher education institutions is equitable, but there is scope for greater equity.* On average, the richest wealth quintile spends 2.25 times what the poorest wealth quintile spends on public universities. While this expenditure is equitable, it renders a greater financial burden on the poorest income group, as this represents over five times their annual income, as opposed to the richest 20% for whom this expenditure represents less than twice their annual income (see Table 4.2). The present policy of cost recovery in higher education is a sound policy, but it appears that there is a need for additional support (in the form of scholarships or subsidized loans) to make the system more equitable by enabling the poor to access higher education.

Table 4.2: Household Expenditure At Public Higher Education Institutions By Wealth Quintile, 2002

	Poorest 20%	2	3	4	Richest 20%
Expenditure at Public Higher Education Institutions (JD)	477	606	638	742	1,073
Average Family Income (JD)	93	150	205	286	597
Ratio of Expenditure to Income	5.13	4.04	3.12	2.59	1.79

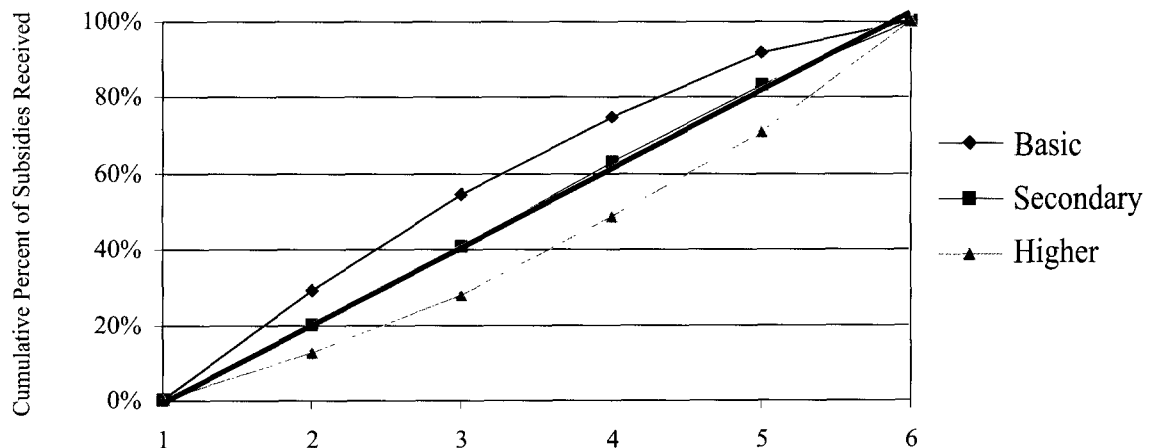
Source: Staff Estimates based on HEIS (2002).

4.27. *The government of Jordan spends a considerable sum on education: 5.3 percent of GDP and 17 percent of total expenditures in 2000.* Although expenditure on education as a share of GDP is lower today (5.3 percent) than it was at the start of the reform in 1990 (5.8 percent), it compares favorably to average expenditure levels in lower-middle income countries (see Figure 4.9). More importantly, there has been an upward trend in public spending on education as a proportion of total government expenditures since 1990. The bulk of the increase in public spending on education during the last decade has



other countries (for which data exists for much earlier year)³, and could be attributed to the success of the higher education reforms initiated during the late 1990s. Nevertheless, the fact that 70% of public higher education spending in Jordan still goes to the richest 60% of the population means that there is a strong case for enhancing the targeting of higher education financing towards lower income groups, through, for example, targeted scholarships and subsidized loans.

Figure 4.11: Distribution Of Subsidies For Education



Source: Staff Estimates based on HEIS (2002) and Ministry of Education and Ministry of Finance.

EDUCATION OUTCOMES

4.31. *Improved educational attainments have had substantial returns in terms of economic growth, poverty reduction, and improved health outcomes.* The extension of equal opportunity for women has had an additional effect on lowering fertility and has increased the labor force participation of women (see Box 4.3).

³ While the data are not exactly comparable (due to the year of the analysis and different methodologies of conducting incidence analysis), it appears that public spending on tertiary education in Jordan in 2002 was less pro-rich than that of other countries (for which data exists) in the early 1990s. For example, in 1991 in Morocco, 4% of public spending on tertiary education reached the poorest 20% of the population, while 47% reached the richest 20%; in Romania in 1994, 8% of public tertiary spending reached the poorest 20% while 32% reached the richest 20% of the population (EDSTATS, 2003 at: <http://sima.worldbank.org/edstats/ThematicDataOnEducation/BenefitIncidenceOfPublicSpending/Tertiary.xls>).

Box 4.3: Education Lowers Fertility Rates

Women who had attended secondary school had the lowest level of fertility (about 4.1) while those with no education had the highest (6.9). The total fertility level was 6 for women with primary education and 5.4 for women with secondary education. Women with secondary education had the highest median age at first birth (21.2 years). The improvement of educational opportunities, particularly for girls, has resulted in their staying in school longer, and subsequently pushed the age of marriage upward. Women who have had more than secondary education tend to marry almost six years later than those with no education or only primary education. It is also important to note that the participation of women in economic activities is increasing significantly. From 1980 to 1999, the female labor force as a proportion of the total labor force increased from 15 to 24 percent. The female labor force participation rate almost doubled during this period, from 7 to 13.5 percent. Education is one of the main factors promoting women's participation in the labor force: 64 percent of females in the labor force have intermediate diplomas and higher. The fertility level has been declining steadily during the last decade. The birth rate has been declining from a rate of 50 per 1000 in the mid 1970s to 33 per 1000 in 1995. The total fertility rate declined from 7.4 children per woman in 1976 to 6.6 in 1983 and 5.6 in 1990 (Department of Statistics 1979, 1984, 1992).

Sources: Department of Statistics 1979, 1992.

Schooling Quality

4.32. *While there has been qualitative improvement in the education system since the reform process began in 1990, all students, poor and non-poor, perform poorly in Jordan. Only 50 percent of students who take the general secondary exam (tawjihi) pass. The failure rate is as high as 56 percent in the governorate of Jarash (ranked seven out of 12 in terms of Human Development Index in 2002) and as low as 37 percent in Madaba (ranked three out of 12 in terms of HDI).*

4.33. *Jordan has benchmarked its performance in international assessments. In the 1991 International Assessment of Educational (IEA) Progress, out of 20 participating countries, Jordan finished ahead of only Brazil and Mozambique in the mathematics and science tests for 13-year-olds. In the 1999 Third International Mathematics and Science Study (TIMSS), out of 38 countries, Jordan finished ahead of six (Iran, Indonesia, Chile, Philippines, Morocco, South Africa) in mathematics and ahead of eight (Iran, Indonesia, Turkey, Tunisia, Chile, Philippines, Morocco, South Africa) in science – although TIMSS is not strictly comparable to IEA.*

4.34. *An analysis of the results of the 1999 TIMSS in Jordan indicated that students' achievements are significantly tied to socio-economic status of the family and child labor, amongst other factors. Parent's education is positively correlated with higher achievement among children (see Box 4.4). A student who owns a calculator at home scored on average about 30 points higher than someone without a calculator (while controlling for all other factors). About 10 percent of students who participated in the TIMSS work for pay and about five percent work for more than three hours a day.*



LABOR MARKET RETURNS

4.35. *Between 1997 and 2002, the value of education improved for non-poor Jordanians, especially beyond the compulsory cycle. Education for this group is still a profitable investment (Table 4.3). The highest value is generated at higher levels of education. A university graduate can expect to earn twice as much as someone with no education, controlling for years of experience. The rates of return for a complete primary is 55% for the region, where as it is 35% here, more close to OECD countries. These rates are lower than the average for MENA countries and closer to industrial countries (Psacharopoulos and Patrinos 2002).*

Table 4.3: Returns To Education For Poor And Non-Poor, 1997 And 2002

	Non-Poor		Poor	
	1997	2002	1997	2002
Read/Write	4%	5%	23%	20%
Elementary	21%	22%	34%	29%
Preparatory	28%	35%	41%	40%
Secondary	35%	50%	46%	51%
Vocational	35%	50%		
Diploma	43%	59%	48%	52%
Bachelor's Degree	72%	86%	52%	51%
Higher than BA	98%	106%	91%	81%

Source: Staff Estimates based on HEIS (1997) and (2002).

4.36. *Education of the poor is still valued in the labor market. Attaining a minimum level of literacy (i.e., reading and writing ability) increases the lifetime earnings by 20% as compared to being illiterate. Completing six years of schooling adds 10% more to their earnings. Some small depreciation was evidenced at the lower levels of education, which is expected given that a larger proportion of the poor are attaining basic education.*

4.37. *The major improvement in the value of education for the poor was observed at the secondary and the diploma level (Table 4.4). This is also the level at which the value of education is comparable between the poor and the non-poor. However, the large gains observed for higher levels of education for the non-poor were not seen for the poor. It may be possible that the non-poor may have greater opportunities to take advantage of their higher education than the poor. Nevertheless, the value of higher education remains high for both the poor and the non-poor.*

Table 4.4: Change In Returns To Education For The Poor And Non-Poor Between 1997 And 2002

	Non-Poor	Poor
Read/Write	1%	-2%
Elementary	1%	-4%
Preparatory	7%	-1%
Secondary	15%	5%
Vocational	14%	
Diploma	16%	4%
Bachelor's Degree	14%	-1%
Higher than BA	8%	-9%

Source: Staff Estimates based on HEIS (1997) and (2002).

CONCLUSION

4.38. *Jordan's significant investments in human resource development have resulted in substantial gains in terms of educational achievement of its population.* In 1961, the adult literacy rate was 32 percent. By 1999, the rate was almost 90 percent. In 2002, the incidence of illiteracy went down to 9 percent; 69 percent of the Jordanian population had basic education or lower and seven percent were university graduates. These rates compare well above the average for MENA countries.

4.39. *However, despite significant gains, the poor, especially those in rural areas, are behind the rest of the population in terms of educational achievements.* In 2002, while the proportion of illiterates is between 8% and 9% in the upper four wealth quintiles, 12% of the poorest wealth quintile are reported to be illiterate (and the difference is statistically significant). The incidence of illiteracy was much higher in rural areas (14.1%) as compared to urban areas (7.9%). Illiteracy is specially pronounced among the poor in rural areas, where illiteracy is more than twice as much as it is among the poor in urban areas (20.4% versus 9.6%). While all children have equal physical access to education facilities, secondary and higher education enrollments are skewed towards the more wealthy segments of society. The difference in enrollments is most severe for higher education, with the poorest wealth quintile representing less than one-third the proportion of the richest 20% in public and private higher education institutes.

4.40. *Overall in Jordan, poverty is inversely related to educational attainment and the differences in educational attainment between urban and rural areas are significant.* Illiteracy was a strong driver of poverty for people in both rural and urban areas. The incidence of poverty was much smaller for people who had attained above secondary education, regardless of where they were located, urban or rural. And, the acquisition of



labor market. Lifelong learning will also provide awareness of opportunities to the poor to find employment that generates returns comparable with their education level.

- Since early childhood education (ECE) has proved internationally to be the strongest factor countering the disadvantages of childhood, the government could facilitate access to ECE for the poor and most disadvantaged students.

4.48. Jordan's current education reform program is addressing most of these issues at present and efforts are therefore in the right direction.

ANNEX 4.1

ESTIMATING RETURNS TO EDUCATION

The following log-linear regression model was used:

$$\text{Log}(exp) = \alpha + \beta_1 \text{ReadW} + \beta_1 \text{Elem} + \beta_2 \text{Prep} + \beta_3 \text{Sec} + \beta_4 \text{Voc} + \beta_5 \text{High} + \beta_6 \text{Exp} + \beta_7 \text{ExpSq} + \epsilon,$$

where $\log(exp)$ refers to the natural logarithm of expenditure, ReadW, Elem, Prep, Sec, Voc and High are dummy variables representing the highest education level achieved with the illiterate category omitted. Exp represents years of experience and ExpSq represents the square of experience. This model is *not* exactly the Mincerian model for calculating the rates of return to education because real earnings data were not available. However, the regression coefficients on the schooling variables are interpreted as proxies for average private rates of return to the level of education. The rate r for schooling level s is

$$r_s = \frac{\ln AE_s - \ln AE_p}{S_s \cdot K_k}$$

where AE_s and AE_p are the mean earnings of workers with level s and previous level p of schooling and k is defined as the ratio between two items: the total cost for the "average" year of schooling, including direct costs and forgone earnings; and the forgone earnings from a full year of work had the person been in the labor market instead of in school. The equation can be manipulated as follows, using the mathematical approximation $\ln(1+x) \approx x$ to obtain an equation of the form specified in the equation above:

$$r_s = \frac{\left[\frac{\ln AE_s}{\ln AE_p} \right]}{S_s \cdot K_k} = r_s = \frac{\ln\left(1 + \frac{AE_s - AE_p}{AE_p}\right)}{S_s \cdot K_k} \approx \frac{AE_s - AE_p}{S_s \cdot K_k \cdot AE_p}$$

Note (2)

The following Probit model was used:

$$\log [p/(1-p)] = \alpha + \beta_1 V1 + \beta_2 V2 + \dots + \beta V14 + \epsilon,$$

where p is the probability that the head of household is poor, $p(Y=1)$; $p/(1-p)$ is the "odds ratio" of being poor; $\ln[p/(1-p)]$ is the log odds ratio, or "logit." Since $[p/(1-p)] = \exp(\alpha + \beta X)$, $\exp(\beta)$ is the effect of the independent variable on the "odds ratio". When the



coefficient β is negative then $1/\exp(\beta)$ will be interpreted in the reversed direction, i.e., as odds of 0 instead of 1. These coefficients are estimated by making -2 times the log of the likelihood function (-2LL) as small as possible.

V1: is a dummy variable that takes a value of 1 if the head of household achieved read/write as the highest level of education and zero otherwise.

V2-V7: are dummies representing elementary, preparatory, secondary, vocational, diploma, higher in relation to illiterate as the omitted level.

V8: takes 1 if the head of household is male and 0 if female head.

V9: takes the value 1 if the household resides in an urban area and 0 if residence is in a rural area.

V10: takes the value of 1 if the head of household is employed in the public sector and 0 otherwise.

V11: is the age of the head of household.

V12: takes the value 1 if the head of household is currently working.

V13: family size.

V14: interaction between urban/rural and family size.

CHAPTER 5

UNDERSTANDING HEALTH OUTCOMES FOR THE POOR

INTRODUCTION

Income poverty and adverse health outcomes interact in many ways to impede human development. Poor income levels contribute to unsanitary living conditions, low educational attainment, limited access to clean water, unhygienic household practices, higher fertility, low caloric intake, and difficulties in obtaining basic health services. These factors in turn lead to higher levels of malnutrition, disability, infectious and chronic disease (particularly mental health), and mortality. Adverse health outcomes – reversing the flow of effects – influence income poverty levels by exposing households to the impoverishing effects of chronic ill health and catastrophic health care. Once impoverished, households are often caught in a poverty trap unable to escape due to declining health outcomes.¹

5.1. Recognition of this close connection between poverty and health outcomes is clearly reflected in the Millennium Development Goals (MDGs) – in which three of the eight development goals are explicitly health-related.² Current evidence reveals that around fifty percent of the global communicable burden of disease rests on the shoulders of the poorest 20 percent of people around the world. In terms of varying infant mortality rates within and between countries, about 70 percent of the variation can be attributed to differences in income levels. As to the influence of ill-health on poverty levels and economic growth, recent work indicates that countries in the Middle East and North Africa (MENA) region could witness a drop in the a GDP growth rate by .2 to 1.5 percent per year between 2002-2025 due to the potential spread of HIV/AIDS. Other work in East Asia indicates that around 50 percent of household budget “crises” are caused by episodes of ill health among family members.³

5.2. Against this background, this chapter reviews the health indicators of the poor and offers tentative explanations of the observed disparities in indicators. Section A deals with health outcome indicators such as infant and child mortality rates, morbidity, nutrition, and fertility rates. Section B surveys health process indicators (childhood immunization, prenatal care and delivery, and contraceptive use) to explain the observed differences in health outcomes of the poor and non-poor. Underlying risk factors that could result in health outcomes are reviewed in Section C. Health expenditure equity is

¹ See WHO, World Bank and Voices of the Poor Publication entitled “Dying for Change: Poor People’s Experience of Health and Ill-Health,” 2002 and World Bank Distance Learning Course: Poverty, Health, Nutrition and Population: Paper #1 (online).

² Health-related MDGs: (i) reduce child-mortality, (ii) improve maternal health, and (iii) combat HIV/AIDS, Malaria, and other diseases.

³ Examples drawn from World Bank Distance Learning Course: Poverty, Health, Nutrition and Population: Paper #1 (online) and “Overview of the HIV/AIDS Situation in the MENA,” World Bank Publication, 2002.



examined in Section D for out-of-pocket expenditures and public expenditures on health. Lastly, section E offers recommendations for improving health outcomes for the poor.

Box 5.1: Health Services for Poor Jordanians

The health sector in Jordan is a combination of public, private and NGO-based organizations representing the areas of service delivery, health financing, medical supplies, pharmaceuticals, and health education. The major organizations involved in service delivery include two public institutions (Ministry of Health and the military Royal Medical Services); two semi-public educational institutions (Jordan University Hospital and King Abdullah Hospital); a growing number of non-profit and for-profit private hospitals and health care centers, and a United Nations agency serving the resident Palestinian refugee population. These organizations are financed through a combination of general public revenues, social insurance schemes, private health insurance, household spending and donor support. The Ministry of Health (MOH) is entrusted with the overall development and supervision of the health sector.

Jordanians who fall under the poverty line are entitled by law to health insurance coverage via the Ministry of Health civilian health insurance scheme. They must first apply for health insurance cards through the Ministry of Social Development (MOSD) and are then entitled to receive free health care in any of the Ministry of Health (MOH) facilities. If the needed health services are not available within these facilities (e.g., heart surgery) the Ministry is responsible for referring the patients to other health sector providers in the country. Aside from the health care coverage extended by the MOH, poor Jordanians can also petition the Prime Ministry directly for subsidized referrals to military or university health care facilities. Another option is the various indigent care funds set up by local NGOs to support specific groups of patients. Some examples include the National Epilepsy Society, the Society for Kidney Patients and the Society for the Care of Neurological Patients.

5.3. Key messages from this chapter are:

- Health outcomes are weaker for the poor children. Infant and child mortality rates for the poor are higher by 1.5 to 1.7 times compared to the richest quintile. For the poor children who do survive, the effects of malnutrition are severe. Stunting (height for age) and wasting (weight for age) is nearly seven times greater than that of the richest quintile.
- When it comes to diseases and injuries, there are no differences in incidence among income groups. However, prevalence of disability is nearly twice as high for the poor than in the richest quintile.
- Among process indicators, while immunization or utilization of prenatal services do not show variation between income classes, use of modern contraception methods and degree of medical supervision during pregnancy are low for the poor.

- Underlying risk factors of household environment such as garbage disposal methods and drainage systems are high for the poor. However, behavioral risk such as smoking is positively related to income group.
- The source of financing health care is highly regressive; the poor pay proportionately more out-of-pocket expenditure (nine percent of household income) for out-patient care.
- Hospital-based out-patient care has a strong pro-poor bias, particularly for Ministry of Health hospitals.
- Recommendations to improve health outcomes of the poor include childhood nutrition, reproductive health care, and health finance reforms favoring the poorer sections of the society.

5.4. Health Outcomes of Poor in Jordan. Health outcomes in Jordan for the general population are quite impressive relative to those of countries of the MENA region. Infant mortality, reported at 25 deaths per 1,000 live births in 2000, is well below the regional average and life expectancy from birth is one of the highest in the region excluding the high-income countries of the Arabian Gulf. These gains in overall health status can be attributed strong improvements in socio-economic development and health services over the decades. These substantial gains in the *average levels* of income prosperity and health gains, however, mask the *underlying distribution* of health outcomes among the Jordanian population. Recent data from a number of household survey studies provide a way to assess this underlying distribution and how health outcomes are distributed across different income groups – ranging from the poorest 20 percent to the richest 20 percent of Jordanian society.⁴

5.5. The health information presented below is divided into three sets of indicators. These indicators provide a useful snapshot of how “health inequalities” vary with income distribution. The first set is traditional health outcome indicators such as mortality, fertility, and malnutrition rates. The second set is intermediate health output or “process” indicators (which naturally contribute to health outcomes) such as percent of medically attended deliveries and immunization coverage rates. The third set includes “underlying” determinants of health outcomes such as smoking prevalence and female education.

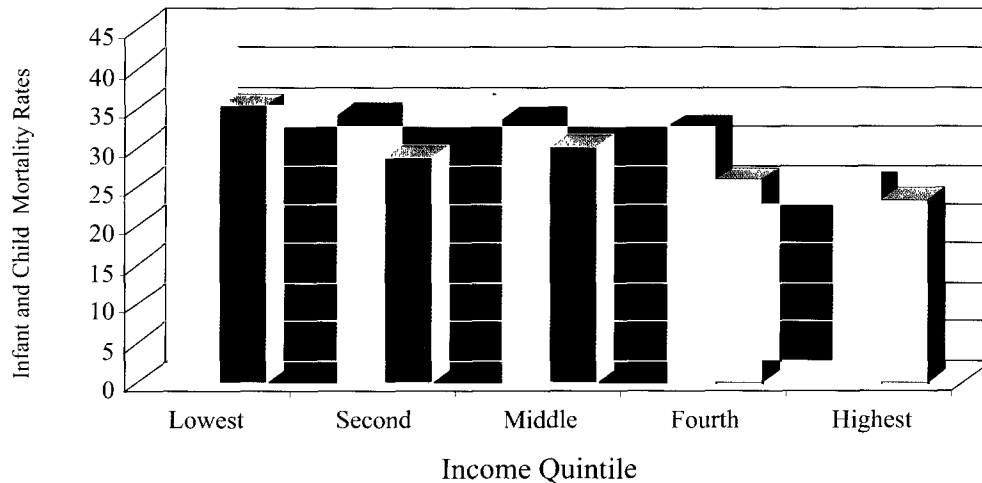
Health Outcome Indicators

5.6. Child mortality information from a recent household survey reveals substantial differences in mortality rates across income quintiles. Figure 5.1 below, shows these income differentials in **infant mortality and child mortality rates**. The infant mortality rate ranges from 23.4 deaths per 1,000 live births to 35.4 deaths per 1,000 live births. The infant mortality rate for the poorest 20 percent of society is about 1.5 times greater than the rate of the richest 20 percent of the Jordanian population.

⁴ Jordan Demographic Health Survey 1997, Jordan Household Income and Expenditure Survey 2002.



Figure 5.1: Infant and Child Mortality Rates by Income Quintile



Source: 1997 Jordan Demographic Health Survey;

Note: Child Mortality Rate in Yellow and Infant Mortality Rate in Blue.

5.7. The child mortality rate reveals a slightly steeper inequality gradient across the income quintiles. The rate of child mortality in Jordan, as shown above, ranges from a low of 25.2 child deaths per 1,000 live births among the richest 20 percent of the population to a high of 42.1 child deaths among the poorest 20 percent of the population. The low-high ratio in this case for child mortality is 1.7 – slightly greater than the ratio reported for the infant mortality rate.

5.8. Other health outcome indicators include **childhood morbidity, childhood nutrition, and total fertility rates**. Some of these indicators vary significantly across income quintiles while other indicators do not exhibit the same variation. The prevalence rates for childhood cases of fever, diarrhea and acute respiratory infections, for example, do not vary significantly across income groups while indicators for childhood malnutrition do indeed display wide variation. The percent of children under five who are severely stunted (height for age) among the poorest 20 percent is 6.8 times greater than the percent among the richest 20 percent. Similar variation is observed for childhood wasting (weight for age). These differences in nutritional indicators may help explain the infant and child mortality differentials observed in Figure 5.1. As to fertility rates, significant differences also exist. The total fertility rate of the lowest quintile group is estimated to be 5.2 births per woman aged 15-49 years while the total fertility rate for the highest quintile group is estimated to be 3.1 births per woman – a low/high ratio of 1.7. These data on childhood morbidity and nutrition – as well as total fertility are presented below in Table 5.1.

Table 5.1: Childhood Morbidity And Fertility Indicators By Income Quintile

	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile	Low/High Ratio
Indicator						
Childhood Disease						
Prevalence of Fever (%)	20.8	22.4	18.2	19.4	19.5	1.1
Prevalence of Diarrhea (%)	18.9	20.9	15.5	16.5	17.7	1.1
Prevalence of Acute Respiratory Infections (%)	11.1	11.3	9.2	9.9	9.0	1.2
Childhood Malnutrition						
Moderate Stunting (%)	10.5	7	4.3	3.5	4.5	2.3
Severe Stunting (%)	3.4	1.5	1.5	.5	.5	6.8
Moderate Wasting (%)	7.3	5.4	3.1	3.5	2.5	2.9
Severe Wasting (%)	1.4	.3	.2	.3	.1	14
Fertility						
Total Fertility Rate	5.2	5	4.3	3.5	4.5	1.7

Source: 1997 Jordan Demographic Health Survey.

Note: Childhood disease indicators represent the percent of children ill during the two weeks preceding the survey; stunting represents height for age; wasting represents weight for age; and the total fertility rate represents the average number of births per women aged 15-49.

5.9. Yet another set of indicators includes the prevalence of **disability** and the incidence of **injuries** among the general population. As shown in Figure 5.2 below, the prevalence of disability is higher among the lower income quintiles than it is among the higher income quintiles – highlighting the close association between income poverty and disability prevalence. The disability categories include visual, mental, audio, and physical disabilities. The low/high ratio across income quintiles for disability prevalence is 1.7. The incidence of injuries, including all categories of injuries, reveals a contrasting pattern across income quintiles. Starting from the lowest income quintile, incidence of injuries rises with income and then drops again at the highest income level. This pattern suggests that injuries are associated more with the lifestyles and behaviors of the middle-income groups in Jordanian society.

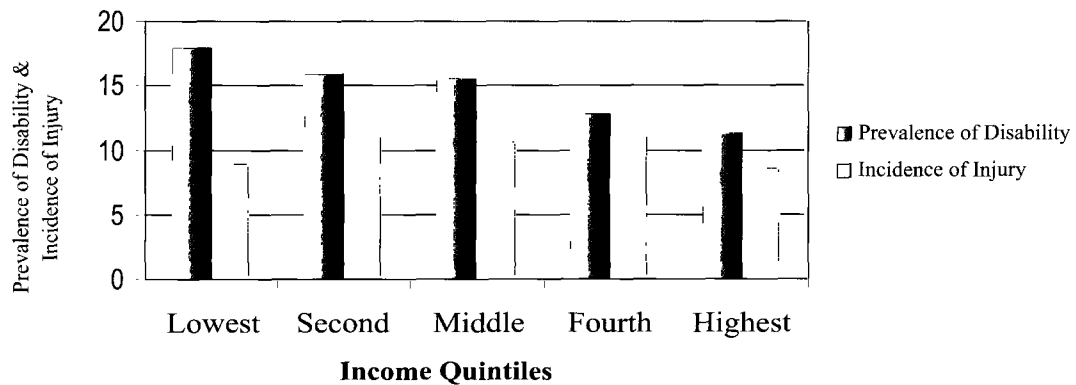
Health Process Indicators

5.10. Examining health process or health services utilization data may also help explain the variation in health outcomes particularly in those outcomes related to fertility and mortality rates. The data presented below are taken from the 1997 Jordan DHS study and



divided between the areas of contraceptive use, childhood immunization, prenatal care, and delivery; and are reported in Table 5.2.

Figure 5.2: Prevalence of Disability and Incidence of Injury per 1,000 Population



Source: Staff Estimates based on HEIS (2002).

5.11. The percent of women aged 15-49 who use a **modern method of contraception** is around 27.5 percent among women in the lowest income quintile. This percentage rises steadily to 46.8 percent of women in the highest income quintile – an almost 70 percent increase from the lowest to highest income groups in Jordanian society. This differential helps explain the wide variation, albeit not completely, in fertility rates observed in Table 5.1. Other factors, such as female education, could also be examined for any explanatory power.

5.12. The percent of children aged 12-23 months receiving **DPT immunization coverage** (diphtheria, pertussis, and tetanus) actually declines, although marginally, with increases in income – from 97.6 percent in the lowest quintile to 92.5 percent in the highest quintile. This trend is reversed when observing **immunization rates against measles**. The percentage begins at 89.9 percent in the lowest quintile and rises to 92.5 percent in the highest quintile. These differences in vaccination coverage are only marginal and therefore probably do not help explain the observed variation in child health outcomes.

5.13. The percent of women with a recent birth who had **one or more visits to a physician** rises from 83.1 percent in the lowest quintile to 96.1 in the highest quintile. A similar trend is observed for the percent of women with a recent birth who have **one or more visits to a medically trained person**. The percentage rises from 92.5 percent to 97.3 percent across the income quintiles. The following indicators are also important ones (of the process indicators) in terms of explaining the differences in child mortality and disability across income quintiles. The percent of **births assisted by a physician** in the lowest quintile is 46.5 percent while the percentage in the highest quintile is 81.2 percent – a difference of around 35 percentage points. The percent of births **at home** declines

from 13.4 percent in the lowest quintile to three percent in the highest quintile. These two indicators probably have an important impact on the observed variation in infant and child mortality rates across income groups. Proper medical supervision for high-risk pregnancies and delivery complications helps reduce the rate of childhood mortality, particularly infant mortality, and the incidence of childhood disability.

5.14. Out of the health process indicators, significant variation is observed in the use of modern contraception methods and the degree of medical supervision during delivery. Immunization rates and utilization of prenatal services do not vary to the same extent across income groups. Recent literature on child survival strategies point to the importance of birth spacing, availability of medically prescribed antibiotics (for premature rupture of membranes and sepsis), newborn temperature management, newborn resuscitation, and clean deliveries in reducing rates of childhood mortality. These interventions help reduce the number of deaths caused by preterm delivery, birth asphyxia, neonatal tetanus, and neonatal sepsis.⁵

Table 5.2: Health Process Indicators By Income Quintile

	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile	Low/High Ratio
Indicator						
Contraception						
Prevalence						
Women using modern contraceptive methods (%)	27.5	35.7	35.4	42.1	46.8	.6
Immunization						
Coverage						
Measles coverage (%)	89.9	89.3	88.8	89.6	92.5	1.1
DPT coverage (%)	97.6	95.2	96.5	96.8	92.5	1.2
Prenatal Care						
One + visits to an MD (%)	83.1	89.3	92.5	94.1	96.1	.9
One + visits to a medically trained person (%)	92.5	95.3	97.8	97	97.3	1
Delivery Attendance						
Births assisted by MD (%)	46.5	61.8	67.9	74.5	81.2	.6
Births at home (%)	13.4	6.7	4.8	4.4	3	4.5

Source: 1997 Jordan Demographic Health Survey.

⁵ "Child Survival: The Unfinished Revolution." (Jan 2003) The Lancet. Volume 361.



Underlying Risk Factors

5.15. Other indicators contributing to poor health outcomes (and often associated with poverty) are ones such as underlying household environmental and behavioral risk factors. These factors include available household waste disposal methods, local rain water run off systems among residential neighborhoods, indoor and outdoor air pollution, substance abuse, alcohol consumption, and tobacco use.

5.16. These factors, according to recent household data, vary differently across the income quintiles. Information on available waste disposal methods, for example, exhibits two varying trends. While 51 percent of the poorest income quintile reported having their garbage disposed of by a municipal garbage handler, 50 percent of the richest income group reported the availability of the same kind of service (a reverse situation or an increasing trend would naturally be expected). A different and expected trend is observed for using closed garbage containers. Seven percent of the poorest Jordanians place their garbage in closed containers while the figure for the richest Jordanians is close to 15 percent. As to rain water run off systems, a rising trend is also observed. Only 47 percent of the poorest quintile reported having an “excellent” system available while 68 percent of the richest twenty percent reported the availability of an excellent run off system. These examples from the household environment point to noticeable, yet not wide, disparities across income groups within Jordanian society.⁶

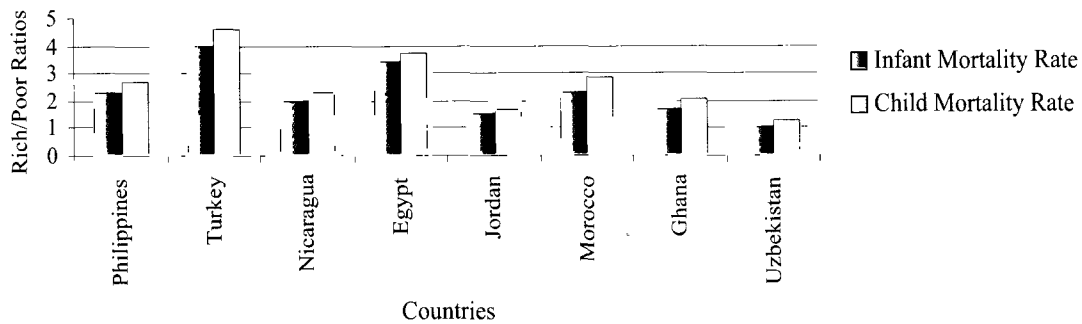
5.17. Another important risk factor for poor health outcomes is tobacco use. This example of a behavioral risk reveals an increasing level of use as income rises – making it a behavior more associated with the richer income groups in Jordan. Twelve percent of the poorest quintile smoke regularly while 17 percent of the richest quintile are regular smokers. This household evidence seemingly under-estimates the prevalence of adult smoking when compared to other national surveys of smoking prevalence among youth and adults.⁷

5.18. *International Comparisons.* Available multi-country data on health inequalities indicates that Jordan does not perform badly in terms of infant mortality and child mortality in comparison to a certain number of countries from East and Western Asia, Latin America, the Middle East and North Africa, and Sub-Saharan Africa. Figure 5.3 indicates that Jordan out-performs the Philippines, Turkey, Nicaragua, Egypt, Morocco, Ghana, excluding Uzbekistan, with rich/poor ratios of 1.5 and 1.7 for infant mortality and child mortality respectively. This comparative performance is naturally influenced by the selected comparators. Out of 41 low- and middle-income countries worldwide selected by the World Bank for multi-country equity analyses of mortality rates, Jordan fares in the top third of the countries selected. Many of the countries faring better than Jordan in terms of in-country mortality inequalities, particularly those in Sub-Saharan Africa like Tanzania and Namibia (not shown in Figure 5.3), however, still do much worse in terms of the overall *level of childhood mortality*.

⁶ Jordan 1997 DHS Survey.

⁷ UNICEF, Ministry of Health and Jordan Anti-Smoking Society. “Prevalence of Smoking Among Youth in Jordan,” (Arabic), 2000.

Figure 5.3: Multi-Country Rich/Poor Ratios for Infant and Child Mortality Rates



Source: World Bank PREM Network Website. Health and Poverty multi-country technical papers. 2003.

5.19. In terms of health service use and nutritional indicators, Jordan performs satisfactorily compared to the same list of country comparators. Jordan clearly comes out ahead of a 41 country list assembled by the World Bank in terms of prenatal visits and DPT3 immunization differentials by income. Jordan outperforms all countries in terms of the equity of one indicator across income (one prenatal visit to a doctor) except for the countries of Uzbekistan, Dominican Republic, Paraguay and Niger. This comparative performance is shown below in Figure 5.4 with Uzbekistan representing a “better performer.” As to DPT3 coverage, only Kyrgyzstan, Uzbekistan, and Namibia have better ratios than the rich-poor ratio for Jordan (although, again, at the absolute level and not in ratio terms, Jordan fares much better than these countries in terms of health service utilization indicators).

5.20. One indicator that Jordan does not perform very well in comparison to the 41 countries is the indicator of moderate wasting in children under five years (low weight for age – below minus two standard deviations). The rich/poor ratio for Jordan is 2.9, which is somewhere above the median ratio for all 41 countries. This inequality in wasting (low weight for age) warrants further examination and intervention by the Jordanian health authorities given its conspicuousness in both in-country and between-country terms. It stands out compared to the inequalities of other health outcome indicators within Jordan and with those of other countries.



Equity of Health Financing

5.24. Health financing arrangements are generally pro-poor (progressive) when *health* spending as a percentage of *total* household expenditure rises at an increasing rate across income quintiles (from lowest to highest). This measure of equity is often called the “progressivity” of a health financing system. If health payments increasingly decline as a percentage of household spending as income rises then the system is generally considered pro-rich (regressive). Measuring the degree of “progressivity” or “regressivity” in a health financing system is usually of general interest to health policymakers – as it is generally viewed as “unfair” and it can have an effect on income poverty levels as discussed in the introduction. Obliging the poor to pay disproportionately more than the rich on health is perceived by many health reformers as hurting the inherent “fairness” of a health care system.⁸

5.25. Some pieces of information, however, are available on some of the established health financing sources in Jordan. A national household health expenditure and utilization study undertaken in 2000 provides reliable information on the progressivity of out-of-pocket health expenditures on in-patient and out-patient services as a percentage of disposable income. These health expenditures, which represent around percent of all health expenditures⁹ are presented below in Table 5.3. As shown in the table, out-of-pocket expenses on out-patient care as a percentage of disposable income actually decline with upward movements in income except for the final jump to the highest quintile. Yet still the lowest quintile group pays more out-of-pocket on out-patient care. Other anecdotal information on the major social insurance schemes in Jordan (a civilian insurance scheme for public sector employees and a military insurance scheme for military personnel) also indicate a mixture of proportionality and regressivity. The monthly premium deducted from all civilian public sector employees is computed as three percent of their monthly salaries up to a cap of around \$42. Below the cap, contributions are neutral or proportional; yet beyond the cap, financing becomes regressive. As to the military public scheme, all military personnel pay a monthly flat premium ranging from a minimum of \$1.40 to a maximum of \$3.50. This source of financing is clearly a departure from proportionality and highly regressive.

⁸ Daniels N et. Al. (1996) *Benchmarks of Fairness for Health Care Reform*. New York: Oxford University Press.

⁹ Jordan National Health Accounts, 2000, 2001.

Table 5.3: Out-Of-Pocket Expenditures On Out-Patient Care As Percent of Household Income

Out-Of-Pocket on Out-Patient Care	As Percent of Household Income
Income Quintile	
Lowest	9 %
Second	6%
Middle	5%
Fourth	5%
Highest	7 %

Source: 2000 Jordan Health Expenditure and Utilization Study, PHR, Abt. Associates.

TO WHAT DEGREE DO THE POOR BENEFIT FROM PUBLIC SECTOR HEALTH SPENDING IN JORDAN?

5.26. Public sector (and semi-public) health spending in Jordan emanates from a mixture of intermediary financing entities: the Ministry of Health, the military Royal Medical Services, the Jordan University Hospital, the King Abdullah Hospital of the Jordan University for Science and Technology – including the Prime Ministry and the Royal Court. These intermediary financing agents are all funded in varying degrees by the Ministry of Finance.

5.27. To what degree do the poor in Jordan benefit from this health spending by the public sector? How *target efficient* is the spending (or these health sector subsidies)?¹⁰ Does it reach the poverty target groups it is meant to reach rather than over-subsidize the richer groups within society? Benefit incidence analysis (BIA) helps in analyzing the distribution of these health sector subsidies across different income groups – and assessing whether these subsidies are working to narrow or broaden the disparities between the rich and poor in a given society.

5.28. The methodology consists of a number of different steps: i) separating individuals into distinct categories of income groups (i.e., quintiles); ii) analyzing the utilization patterns of public sector health services by the individuals; iii) estimating the subsidy given to each individual who utilizes public sector health services; and iv) comparing the distribution of the explicit subsidy to a specific idealized or “target” distribution.¹¹ In order to estimate the size of the subsidy, “unit costs” or “unit expenditures” are estimated for each unit of health care service (e.g., in-patient admission or out-patient visit) used by individual patients. This exercise in estimation usually involves two big assumptions (in

¹⁰ In this note recurrent public sector health spending on primary, secondary and tertiary health care services is viewed essentially as a “subsidy” to the individual citizen. Some of the spending can justifiably be argued on equity and economic grounds (i.e., merit goods) and not viewed as an explicit subsidy to private consumption of health care services. Naturally these subsidies can be reduced through the imposition of user fees and monthly premiums.

¹¹ Technical Note #12. World Bank PREM Website on Health Equity Analysis.



the absence of detailed facility-level or individual-level data) that limit the accuracy of the exercise: i) unit costs are assumed to be uniform across all health care facilities, and ii) unit costs derived from top-down expenditure data are supposed to equal the value of the service to the end patient. The first assumption is clearly unrealistic given the range of inefficiencies prevalent across different facilities, and the second assumption is also problematic given the size of administrative overhead costs in all health care organizations.

5.29. The foregoing preliminary benefit incidence analysis of public health spending in Jordan does not capture all public health spending in the country. Expenditures on Jordanian patients by the Royal Court and the Prime Ministry are not included in this preliminary analysis – nor are the expenditures by the semi-public institutions of higher education. These expenditures are not included due to current data limitations. Recurrent budgetary outlays, for example, for the two university hospitals in 2000 are currently unavailable. The analysis also does not extend into step three and step four of the BIA methodology, as described above. Since accurate revenue data (user fees and premiums) are currently unavailable for the major public providers, estimating the explicit subsidy (or benefit incidence) to each individual and comparing the distribution of these subsidies to some reference distribution is beyond the scope of this preliminary exercise – and can be left to a later stage once all the data is made available.

Table 5.4: Quintile Share Of Public Sector Out-patient Utilization

	MOH Hospitals (out-patient visits)	MOH Hospitals (Percentage of Out-patient visits)	RMS Hospitals (out-patient visits)	RMS Hospitals (Percentage of Out-patient visits)
Quintiles				
Poorest 20 %	4053	27%	277	15%
2nd Poorest 20 %	3012	20%	364	19%
Middle 20 %	3214	22%	456	24%
2nd Richest 20 %	2694	18%	406	22%
Richest 20 %	1816	12%	380	20%
	14789		1882	

Source: Jordan Healthcare Utilization and Expenditure Survey, 2000.

Table 5.5: Quintile Share Of Public Sector Inpatient Utilization

Quintiles	MOH Hospitals (in-patient admissions)	MOH Hospitals (Percentage of in-patient admissions)	RMS Hospitals (in-patient admissions)	RMS Hospitals (Percentage in-patient admissions)
Poorest 20%	78	22%	11	10%
2nd Poorest 20%	74	20%	24	22%
Middle 20%	76	21%	30	28%
2nd Richest 20%	78	22%	25	23%
Richest 20%	55	15%	18	17%
	360		108	

Source: Jordan Healthcare Utilization and Expenditure Survey, 2000.

5.30. Table 5.4 reveals a decreasing rate of utilization of MOH out-patient facilities (as one may expect) with increasing levels of income. In contrast to the Ministry, utilization of RMS facilities actually increases with higher levels of income – up until the middle 20 percent after which it begins to decline again. The pro-poor bias in providing MOH services is apparent from the data presented (i.e., the poor get more than their proportionate share of delivered care). This finding runs contrary to many other findings around the world that indicate a pro-rich bias in the distribution of hospital-based care. Table 5.5 reveals a similar pattern for in-patient care utilization. The MOH services are generally pro-poor while the RMS services are geared towards the middle class income groups of society.

Table 5.6: Preliminary Estimation Of Unit Costs

	Recurrent Public Expenditure (millions JD)	Total Utilization	Unit Costs (JD)
Hospital Care	154,500		
Inpatient	140,000	393,285 admissions	356
Outpatient	14,500	6,016,369 visits	2
Primary			
Health Care	34,554	6,618,163 visits	5

Source: Staff Estimates.

5.31 Table 5.6 represents a beginning attempt to estimate the unit costs of different health care service units. These data are only for MOH and RMS services and represent two different years (2000 and 2001). The recurrent expenditure for hospital care within the MOH and the RMS are lumped together and the recurrent expenditure for primary



Jordan (i.e., stunting and wasting), and establish effective programs for the integrated management of childhood diseases.

- Strengthen current reproductive health services to increase the utilization of modern contraception and prenatal services among the poor— and enhance the capacity of the health care system to effectively handle high-risk pregnancies in the poorer rural areas of the country.
- Undertake national screening programs (i.e., early detection of hearing loss among newborns) and injury prevention campaigns (i.e., road safety) to reduce the incidence of disability among the poorer income groups.
- Continue to narrow the “gender gap” in female education via effective out-reach services to support higher school enrollment and attendance by girls from poorer backgrounds. Closing this gap in education can have very significant “cross-over” effects in health.
- Initiate significant health finance reforms to better mitigate the effects of high out-of-pocket expenditures on health care by poorer income groups. Greater risk pooling arrangements either via general taxation or special social insurance schemes could help protect households from the financial risks associated with unexpected illnesses and accidents.

CHAPTER 6

VULNERABILITY, SOCIAL PROTECTION AND DISADVANTAGED GROUPS

6.1. In Chapter 1 we examined the level and trends in poverty for Jordan. These were in the nature of *ex-post* analysis. This chapter returns to the theme of consumption poverty from a different perspective. First, in Section A, we construct an *ex-ante* measure of poverty – vulnerability to poverty. This identifies which population groups are likely to become poor who may not be currently poor. This is useful to policy makers interested in lifting people above poverty and preventing them falling below. This leads us to discuss the workings of Jordan's main social protection scheme – the National Aid Fund – in section B. Then we shift focus to poverty among clearly identifiable disadvantaged groups in Jordanian society – women and children in sections C and D, respectively.

The key messages from this chapter are:

- *Though the percentage of poor in 2002-03 is estimated at 14.2 percent, the percentage of population vulnerable to poverty is slightly higher at 16 percent, which implies that nearly two percent of currently non-poor also are vulnerable to poverty. The central region is the least vulnerable among the three regions of the kingdom with total vulnerable population at 15 percent.*
- *Chronically poor – those who are expected to remain poor – in Jordan are a small four percent of the population with the Southern region having the highest percent of population chronically poor at five percent. Chronic poverty is mostly a rural phenomenon except for the Zarqa governorate, which is mostly urban.*
- *The chronically poor and vulnerable non-poor have almost identical profiles in terms of human capital, employment status, and dependency ratio, differing only in sector of employment. The vulnerable non-poor have more public sector jobs whereas the chronic poor depend more on private sector jobs.*
- *Three-quarters of the Jordanian poor are transient poor. Their mean consumption is below the poverty line, but consumption volatility moves them in and out of poverty.*
- *The main social safety net in Jordan – National Aid Fund – is making a difference to the livelihood of the poorest. It is by far the most important supplement to the incomes of the poorest decile.*
- *However, the overall effect of NAF assistance on poverty is slight, amounting to less than one percent. As currently designed, two-thirds of the NAF assistance*



leaks to the non-poor. Scope for a simpler poverty oriented targeting could better help target transfers to the poor.

- *In terms of consumption poverty, female-headed households do not have a higher incidence of poverty than male-headed ones. Some sub-population groups of female-headed households such as “separated” (waiting for divorce) have higher incidence of poverty than corresponding male-headed households. Within female-headed households, single and widowed household heads are relatively better off compared to the divorced and separated*
- *Poverty among children (16 percent) is higher than in the general population (14.2 percent) because poorer households have larger numbers of children. Two-thirds of poor children live in three governorates of Amman, Irbid and Zarqa. About three percent of children in 10 to 18 age group work, and this ratio is higher for male children at five percent.*

VULNERABILITY TO POVERTY

6.2. A poverty index is an *ex-post* measure of the deprivation suffered by the society. It is a useful index to monitor poverty over time and across various socioeconomic and demographic groups in the society as we did in the previous chapters. The main limitation of various poverty indices is they provide a snapshot of the current conditions of deprivation suffered by the society. Many recent studies, however, have suggested that many individuals move in and out of poverty in a short period of time. This can happen because of events such as illness, death in the family, bad harvest, economic downturn, and so on. Obviously these shocks will affect different people differently. Or, in other words, some people are more vulnerable to such shocks than others.

6.3. In contrast to poverty, vulnerability is an *ex-ante* measure of likelihood of an individual or household falling to future poverty. It is obviously a dynamic concept. It provides an assessment of an individual’s (or household’s) vulnerability to poverty in the future, which means that to measure it, we need to make an assessment of an individual’s (household’s) future income (or consumption). This is indeed a more difficult task than just measuring poverty. In this section, we discuss how to measure the degree of vulnerability so that the policy makers can make an *ex-ante* policy analysis of poverty. This measurement will allow us to analyze chronic poverty against transient poverty and also to explore sources of vulnerability among the categories of poor and the non-poor (See Box 6.1).

6.4. Since vulnerability is a dynamic concept, its measurement should obviously require panel data for at least two time periods. Pritchett (2000) has in fact suggested using the panel data to quantify vulnerability. Unfortunately, panel data generally are not available. The most widely available data are from the household surveys. In this chapter, we utilize the methodology developed by Chaudhuri (2000) to measure vulnerability to poverty using cross-sectional data.

Box 6.1: Definition of vulnerability

Suppose c_i is the per-capita consumption of the i th household, which has per-capita poverty line z_i , then the i th household is classified as poor, if $c_i < z_i$.

Define

$$r_i = \begin{cases} 1, & \text{if } c_i < z_i \\ 0, & \text{otherwise.} \end{cases} \quad (1)$$

which implies that r_i takes value of 1 for the poor households and zero for the non-poor households. To measure the poverty incidence for individuals, it is necessary to assume that all persons living in a household enjoy exactly the same standard of living so that all persons living in a poor household will be classified as poor with the same degree of poverty. If f_i is the proportion of people represented by the i th household, then the head count ratio (which is the proportion of poor in the society) is computed as (see Chapter 6):

$$P(p) = H = \sum_{i=1}^n f_i r_i \quad (2)$$

where n is the total number of households sampled.

Following Chaudhuri (2000), vulnerability is defined as the *ex-ante* risk that a household will, if currently non-poor, fall below the poverty line, or if currently poor, will remain in poverty. Vulnerability may thus be defined for every household, whether currently poor or non-poor. It is the probability that a household with consumption c_i remains poor in the subsequent period if currently poor or to fall in poverty (in the subsequent period) if not currently poor:

$$v_i = \Pr [c_i < z_i] \quad (3)$$

where z_i , the per-capita poverty line of the i th household, takes account of household needs and prices faced by the household (see Chapter 5). v_i is the vulnerability index of the i th household, the larger the value of v_i , the greater will the vulnerability of the i th household to fall into poverty.

To measure the individual vulnerability, we need to make a further assumption that if the i th household has a vulnerability index of v_i , then all members belonging to the i th household will also suffer from same degree of vulnerability v_i . If f_i is the proportion of people represented by the i th household, then the average vulnerability (per person) suffered by the whole society will be given by

$$AV = \sum_{i=1}^n f_i v_i = \sum_{i=1}^n f_i \Pr [c_i < z_i]. \quad (4)$$

It can be shown that AV is equal to H, which means that the mean vulnerability of the whole society will be equal to the probability of being poor in the society. Thus, the two concepts at the aggregate level are identical. They will of course differ for various subgroups.

6.5. The method of estimation of vulnerability is explained in Annex 6.1.



Empirical Analysis of Vulnerability in Jordan

6.6. Using the model developed to explain household consumption in Chapter 2 and the methods discussed in Annex 6.1, we may now present the incidence of poverty and vulnerability.

Table 6.1: Incidence Of Poverty And Vulnerability
(Percent Of Total Population)

	Central	North	South	Jordan
High Vulnerable	5.1	7.3		6.0
Poor	3.5	4.6	5.4	4.0
Non-Poor	1.7	2.7	3.0	2.1
Low Vulnerable	94.9	92.7	91.6	94.0
Poor	10.1	11.7	10.5	10.6
Non-Poor	84.8	81.0	81.1	83.4
<i>Memo Items</i>				
Poor	13.6	16.3	15.9	14.6
Non-Poor	86.4	83.7	84.1	85.4
Total Vulnerable	15.2	19.0	18.9	16.6
Expected Average Vulnerability (EAV)	13.4	17.2	17.3	14.8

Source: Staff Estimates based on HEIS (1997) and (2002).

Note: There is high vulnerability if the probability of consumption falling below the poverty line in next period is greater than 0.5; there is low vulnerability if the probability is less than 0.5. Also, please note that the estimated percentage of poor in 2002-03 is 14.6%. This is based on the vulnerability model and is slightly higher than the actual 14.2% computed in chapter 2.

6.7. The last row in Table 6.1 gives the estimated average vulnerability (EAV). The estimates of average vulnerability are found to be close to the corresponding estimates of percentage of poor. This suggests that the estimated model presented in the previous section that has been used to calculate the average vulnerability is reasonably good. It provides fairly accurate estimates for poverty estimates in every region. Thus, the poverty indicators identified by the model correlate very well with the incidence of poverty.

6.8. Chronic poor have a small chance of coming out of poverty. Our results show that of Jordanians are chronic poor, who need government's assistance on a continual basis to stay above poverty line. The percentage of transient poor is only. This suggests that the problem of poverty in Jordan is less serious than what is suggested by the poverty incidence alone. The southern region has a very severe incidence of chronic poverty; almost five percent of the population is chronic poor. Among the 85.4 percent population of non-poor, 2.1 percent are vulnerable to poverty.

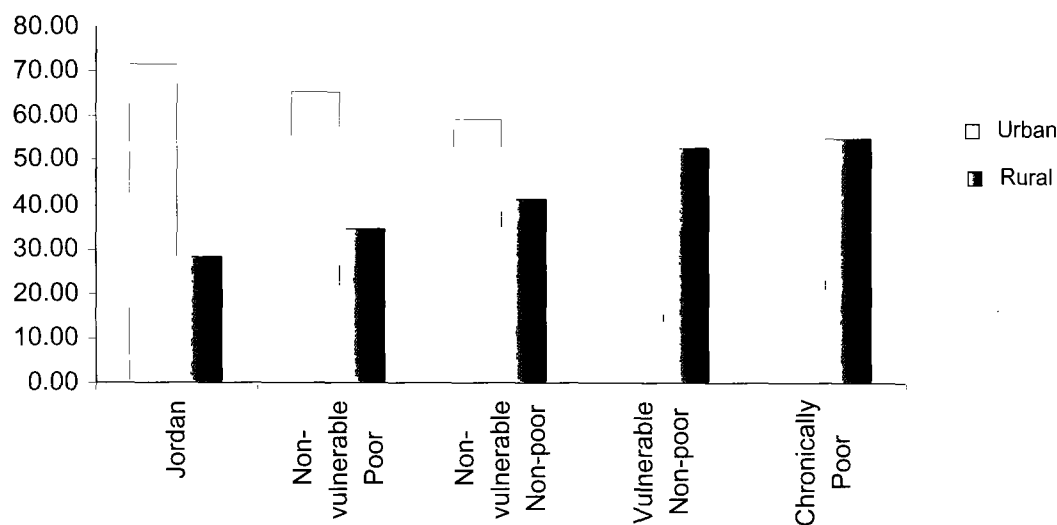
Profiles of the Vulnerable Groups

6.9. Three key results emerge from the analysis of the *ex-ante* vulnerability analysis.

- Chronic poverty and high vulnerability to poverty occur mostly in rural communities.
- The characteristics of the chronically poor display a remarkable similarity with the vulnerable non-poor, and yet the chronic poor have roughly half the welfare level of the vulnerable non-poor.
- The transient poor, in terms of different socio-economic and demographic characteristics, fall somewhere in between the chronically poor and the rich, but only enjoy a level of welfare that is very close to that of the chronically poor.

6.10. Relative to their share in the population, rural people are over-represented among the poor and vulnerable sections. While around 28% of the population in Jordan is rural, 55% of the chronic poor and 53% of the vulnerable non-poor live in rural areas. The number for the transient poor households is 35%. Given that only 27% of the non-poor and non-vulnerable are rural, rural population contributes disproportionately to poverty and vulnerability (Figure 6.1).

Figure 6.1: Vulnerability Profile By Rural-Urban Residence



Source: Staff Estimates based on HEIS (1997) and (2002).

6.11. From a regional perspective, the highest incidence of the chronically poor is observed in the governorates of Maan, Zarqa and Mafraq (around 10% as shown in Table 6.2). Balqa, Mafraq and Maan have the highest incidence of the transient poor. Zarqa, Jarash and Mafraq have a high fraction of the vulnerable non-poor among their populations. It may be noted that Mafraq has a high incidence among all these three



groups. By contrast, Amman, Ajloun and Madaba have the highest incidence of the non-vulnerable non-poor.

6.12. There is a very high variation in the estimated incidence of vulnerability and poverty across governorates. The fraction of population estimated to be vulnerable ranges from 2% in Amman to 16% in Mafrq. The inter-regional variation is even greater in terms of poverty. The fraction of people under the poverty line ranges from 9% in Amman to 27% in Mafrq.

6.13. An overview of the observed poverty rates and the incidences of vulnerability across the 12 governorates yields the following observations. First, poverty rates are consistently higher than incidences of vulnerability for all the regions. However, there is considerable variation in the P-V Ratio (the ratio of the fraction of the population that is poor to the fraction that is vulnerable) ranging from Amman's 4.9 to Karak's 1.6. Second, the higher the poverty rate for a region, the higher seems to be the incidence of vulnerability. However, it may be noted that two governorates with similar levels of vulnerability incidence can have very different rates of poverty.

Table 6.2: Poverty And Vulnerability By Governorate, 2002

Governorate	Chronically Poor	Transient Poor	Vulnerable Non-Poor	Non-vulnerable Non-Poor	Vulnerable	Poor	P-V Ratio
Amman	1.14	8.10	0.75	90.01	1.89	9.24	4.89
Balqa	4.44	14.05	2.13	79.38	6.57	18.49	2.81
Zarqa	8.95	13.81	3.74	73.51	12.68	22.76	1.79
Madaba	2.86	7.54	1.39	88.21	4.25	10.40	2.44
Irbid	3.32	10.81	2.08	83.79	5.40	14.12	2.61
Mafrq	11.18	15.83	4.98	68.01	16.16	27.01	1.67
Jarash	5.45	13.18	4.00	77.36	9.45	18.63	1.97
Ajloun	1.10	8.57	1.89	88.43	3.00	9.67	3.23
Karak	5.01	8.37	3.30	83.33	8.30	13.37	1.61
Tafeela	1.74	8.72	2.03	87.50	3.77	10.47	2.77
Maan	8.74	15.93	3.51	71.82	12.25	24.67	2.01
Aqaba	5.24	10.33	2.72	81.71	7.97	15.57	1.95
Jordan	3.96	10.59	2.09	83.36	6.05	14.55	2.41

Source: Staff Estimates based on HEIS 2002.

Note: The estimated percentage of poor in this table is based on the vulnerability model and is slightly different from the 14.2% computed in chapter 2.

6.14. The educational attainment of the head of the household is an important correlate of poverty and vulnerability status (Table 6.3). The mean number of years of schooling for the head of household is 4.5 for the chronic poor, 4.8 for the vulnerable non-poor, and 6.5 for transient poor compared to the 9.3 for the non-vulnerable non-poor. The vulnerable and poor have, in general, lower levels of educational attainment for the

household head (about five and six years respectively) compared to the non-vulnerable and the non-poor (around nine years for both categories).

6.15. Work status of head of household can have significant economic implications for families. About 50% of the total heads of household are employed among the chronically poor and vulnerable non-poor, the transient poor and the rich have around 60% of their heads of household employed.

6.16. The ratio of the number of workers to the family size helps understand the dependency level on the employed persons in the family. Among the chronically poor and vulnerable non-poor, the ratio is 0.11. As with the other characteristics shown below in Table 6.3, the transient poor (0.16) fall in between the former group and the rich (0.21).

6.17. The sector of employment offers the only departure from this similarity. The chronically poor and the vulnerable non-poor differ in that while two-thirds of the chronic poor work in the private sector, only half of the vulnerable non-poor work in the private sector. Further, the transient poor is closer to the chronically poor in this dimension in that they also have about two-thirds of their heads of household employed in the private sector.



Table 6.3: Profile Of Poor And Vulnerable Groups

Profile	Chronically Poor	Vulnerable Non-Poor	Transient Poor	Rich	Jordan
<i>Educational Attainment</i>					
Household Head Years of Schooling	4.5	4.8	6.6	9.3	8.7
Years of schooling	4.0	4.3	5.1	6.6	6.3
<i>Sex (%)</i>					
Male	94.4	94.3	89.9	89.3	89.7
Female	5.6	5.7	10.1	10.7	10.3
<i>Marital Status (%)</i>					
Never been married	0.5	0.5	1.9	1.5	1.5
Married	94.3	93.7	89.6	89.2	89.6
Divorced	0.9	1.1	0.6	0.4	0.5
Widowed	4.3	4.8	7.8	8.8	8.4
Separated	0.0	0.0	0.1	0.0	0.0
<i>Work Status of Head (%)</i>					
Not Working	49.8	46.0	40.2	36.5	37.6
Working	50.2	54.0	59.8	63.5	62.4
<i>Sector of Employment (%)</i>					
Public	34.5	51.7	35.2	44.3	43.1
Private	65.5	48.0	64.5	55.1	56.4
International	0.0	0.2	0.3	0.5	0.5
Other	0.0	0.0	0.0	0.1	0.1
<i>Socio-Economic and Demographic Characteristics</i>					
Household Size	11.0	10.5	8.2	6.1	6.6
Age	47.6	46.8	47.1	47.4	47.3
Household Space	7.7	8.3	12.2	23.3	21.2
Ratio of Number of Workers to Family Size	0.1	0.1	0.2	0.2	0.2
Poverty Gap	32.1	0.0	19.9	0.0	3.4
Severity	13.7	0.0	6.1	0.0	1.2
Welfare (Per-capita expenditure as % of poverty line)	67.9	138.5	80.1	268.7	237.9
Transfers (as % of poverty line)	14.4	14.2	16.2	29.2	26.9

Source: Staff Estimates based on HEIS 2002.

JORDAN'S SOCIAL SAFETY NET ASSESSMENT

6.18. Over the period 1997 to 2003, the incidence and severity of poverty has fallen in Jordan. However, both the transient poor and the chronically poor do experience and suffer from negative income shocks, both covariate (droughts, Arab-Israeli conflict, and devaluation) as well as idiosyncratic (orphanhood, widowhood, unemployment, and disability). Jordan's main publicly funded safety net policy response has been the National Aid Fund (NAF). This section provides a brief assessment of the equity and effectiveness of the NAF in responding to shocks experienced by low-income households in Jordan.

NAF: An Overview of its Functions and Outreach

6.19. The NAF was established in 1986 with the main objective of enhancing and institutionalizing social security in Jordan. Since then, there have been changes in its outreach, budget, and program composition in response to other policy changes implemented in the country. Thus, in 1999, the country's strong safety net in the form of untargeted, generalized subsidies on foodstuffs was eliminated. Cash assistance under the NAF was expanded rapidly partly to make up for the welfare loss sustained due to elimination of food subsidies. The main difference in approach, however, needs to be noted: the food subsidy regime was untargeted and universal. The NAF, on the other hand, is targeted specifically to vulnerable and chronically poor households. The NAF budget has expanded nearly three-fold from 1996 to 2002. The bulk of the increase in the budget is accounted for by the Income Supplement Program. In 2002, the NAF has disbursed for all programs together an amount of JD 40.5 million, or 0.61 percent of GDP (Table 6.4). Relative to government spending on public pension (largely for civil servants and formal sector employees who are arguably not among the poor) of four percent of GDP, the total expenditure by the NAF for vulnerable groups is not large. Even when compared with the housing subsidy of 0.7 percent of GDP, public spending by the NAF, notwithstanding its recent increase, appears to be modest.

6.20. The NAF has correctly identified a range of vulnerable groups who have been falling in between the cracks, and launched programs specifically designed to each of these vulnerable groups. The identified high-risk vulnerable groups include orphans, widows, divorced and abandoned women, the physically disabled, families of convicts, and the elderly with physical handicaps. The forms of assistance provided include family income supplements, cash assistance for handicapped care, emergency aid in exceptional circumstances, health insurance program, vocational rehabilitation program, vocational training program, physical rehabilitation program, and education loan program.

6.21. Table 6.4 shows the growth of the NAF budget from 1996 to 2002, and its distribution among the programs. The income supplement program – a program of recurrent cash transfer to identified vulnerable households – is the most dominant program, accounting for the bulk (94%) of NAF expenditure in 2002. Cash assistance for handicapped care and the emergency assistance program together account for 5.5% of NAF expenditure. Expenditure on all other programs is negligible.

6.22. Since the income supplement program is the most dominant program, its growth is shown in some detail in Figure 6.2. Over the period 1996 to 2002, the number of beneficiaries has doubled. *Pari passu*, the budget has also grown, so that assistance per beneficiary has fallen only slightly until 2001. However, both the number of beneficiaries and the assistance per beneficiary rose sharply in 2002, by 22 percent and 43 percent respectively. This is as a result of change in policy in 2002. The new program, now rechristened the FIS (Family Income Supplement) Program (formerly recurring cash assistance program), the implementation of which started on 1/5/02, aims to bridge the gap between the family's real income and its poverty line, defined at JD 26 per person



and JD 156 (compared to JD 82 previously) for a modal six-member household. The program virtually now amounted to an income guarantee scheme.

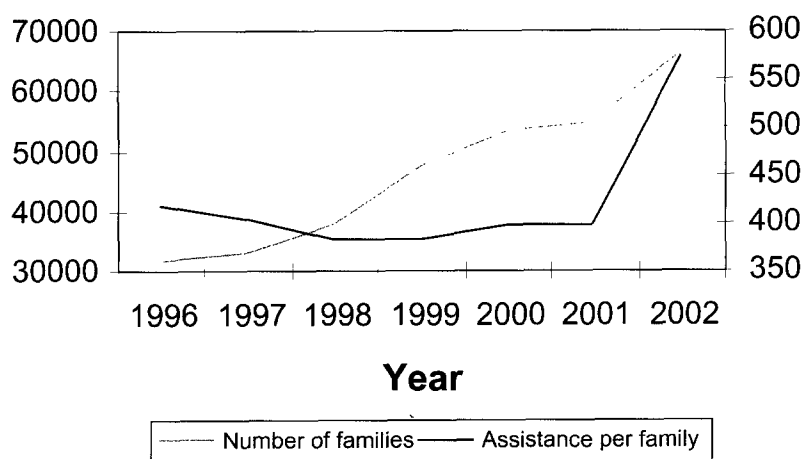
**Table 6.4. NAF Budget And Its Components, 1996-2002
(Thousand JD)**

NAF Program	1996	2002
Income Supplement Program	13211.70	38048.04
Cash Assistance for Handicapped Care Program	22.53	1910.72
Emergency and Exceptional Aid Program	62.41	393.51
Vocational Rehabilitation Program	1474.47	0
Physical Rehabilitation Program	104.74	107.25
Development of the Educational Loan Program	0	74.59
Vocational Training Program	0	9.02
Total	14,875.85	40,543.13

*Note: The annual increase of total funding under the NAF during the period 1996-02 is about 272.5%.
Source: The National Aid Fund, Jordan, 2003.*

6.23. Poverty analysis contained in previous sections has shown considerable variation in the incidence and depth of poverty across governorates. The regional heterogeneity of the poverty situation has obvious implications for NAF activity. Several questions need to be examined. Has the overall spending pattern been sensitive to regional variations in the incidence of poverty? How adequate is the expenditure per beneficiary, as percent of decile-wise average expenditure, and as percentage of the poverty threshold expenditure level? How equitable is the average expenditure across decile groups? How effective is the targeting? What is the scope for enhancing the equity of overall spending by more effective targeting of expenditures? These questions are pursued in the following sections.

**Figure 6.2: Income Supplement Program (Recurring Cash Assistance):
Families Assisted And Assistance Per Family 1996-2002**



Source: The National Aid Fund, Jordan, 2003.

Equity of NAF expenditures.

6.24. In Table 6.5 the share of each governorate in total (national) incidence of poverty, and the corresponding share in the NAF expenditure, are shown. A simple rank correlation coefficient is positive, high, and statistically significant. Nonetheless, there appears to be scope for improving regional targeting. For example, Zarqa governorate accounts for 23.6 percent of the nation's poor, but receives only 9.9 percent of NAF transfer; Amman accounts for a quarter of the nation's poor but receives only 21 percent of NAF transfer; Ajloun accounts for only 1.5 percent of the nation's poor but receives as much as 4.2 percent of NAF transfer; and Irbid accounts for 17% of the poor but receives about 24% of the NAF transfer. Thus, while there is broadly a positive correlation between NAF transfers and the incidence of poverty, there appears to be scope for improving the regional targeting of NAF transfers.

6.25. The household survey data enables one to compute the transfer per beneficiary, which also seem to vary across governorates. For example, the average transfer per beneficiary household is highest in Zarqa (842 JD) whereas the poverty gap ratio is highest in Mafraq (6.8).

Table 6.5: NAF Transfers Per Beneficiary Household By Governorates

Governorate	Average Annual Transfer per Beneficiary Household, JD
Amman	740
Balqa	674
Zarqa	842
Madaba	646
Irbid	666
Mafraq	718
Jarash	559
Ajloun	784
Karak	621
Tafeela	413
Maan	801
Aqaba	762
Jordan	692

Source: Staff Estimates based on HEIS (2002).

6.26. The next question of importance is whether, in each governorate, the poorest three deciles are receiving disproportionately large average transfers. In the interests of protecting the most indigent in the country, ideally one would expect the transfer amount as percent of poverty threshold expenditure to be highest for the poorest expenditure decile. This question can be answered with household survey data. The relevant data are shown in Tables 6.6. and 6.7, separately for rural and urban areas.



Table 6.6: Incidence Of Poverty And NAF Transfers By Governorate

Gov	Share of total poor (HCR)	Share of total NAF transfer amount
Amman	24.65	21.19
Balqa	8.74	9.35
Zarqa	23.60	9.89
Madaba	1.85	5.01
Irbid	17.20	23.58
Mafraq	7.55	8.66
Jarash	3.85	4.48
Ajloun	1.49	4.17
Karak	3.71	6.08
Tafeela	1.22	2.16
Maan	3.83	3.60
Aqaba	2.31	1.83
Jordan	100.00	100.00

Source: Staff Estimates based on HEIS (2002) and NAF, Jordan, 2002.

Note: Spearman's Rank correlation coefficient = 0.84

Table 6.7: Average Transfer Per Beneficiary Household By Expenditure Deciles

JORDAN	1	2	3	4	5	6	7	8	9	10
Urban	942	927	843	590	683	631	550	529	511	504
Rural	858	640	731	662	594	532	632	557	449	398

Source: Staff Estimates based on HEIS (2002).

6.27. In both rural and urban areas, the average transfer per beneficiary decreases almost monotonically with expenditure decile, strongly suggesting that NAF transfers are pro-poor (Table 6.7). The average transfer of the poorest decile is about twice as large for the richest in urban areas, and three times as large in rural areas. However, households in practically every income group seem to be benefiting from NAF transfers. Moreover, the absolute amount of transfer remains about the same for decile groups four to ten in urban, and four to nine in rural areas. Table 6.8 shows the distribution of NAF benefits across poverty and vulnerability categories described in Section A. It is striking that chronically poor and the highly vulnerable non-poor receive only about 16 percent of the distributed benefits. Two-thirds of the NAF benefits leak to the non-poor. In contrast, the Mexican Progresa program delivers 58 percent of benefits to the bottom two deciles.

Table 6.8: Distribution Of NAF Benefits Across Vulnerable Population Groups

	Poor	Non-Poor	Total
High Vulnerable	10.9	4.7	15.6
Low Vulnerable	21.6	62.8	84.4
Total	32.5	67.5	100.0

Source: Staff Estimates based on HEIS (2002).

6.28. What this means is that notwithstanding the elaborate and complex-targeting methods used (see discussion below in the next section), targeting really does not seem to be working, inasmuch as many of the non-poor do seem to benefit from NAF transfers.

6.29. The data are presented in Table 6.9. There appears to be much variation across governorates with respect to the quantum of benefits reaching the poorest group. In some urban provinces, the poorest are receiving about half the next expenditure group (e.g., Zarqa, Jarash, Maan) while in others the opposite is the case. The same is true in rural provinces. Also, the quantum of transfer seem to vary a great deal across governorates, with the poorest group in rural Tafeela getting almost nothing, whereas rural Jarash and Maan receive the highest quantum of transfer. Clearly, both across governorates and between rural and urban areas, NAF transfers are not necessarily serving the poorest groups in some provinces. In other words, inequity in expenditures persists at the governorate level *even within the three poorest decile groups*. To this extent, there appears to be scope for NAF transfers to contribute to a much larger reduction in the poverty gap ratio than at present.

6.30. This does not mean that NAF transfers are not playing a poverty-alleviating role; the transfers are clearly important for the poor. Indeed, a counterfactual analysis of what would have been the incidence of head count poverty without the NAF transfer shows that the transfer is playing a poverty-alleviating role. (See Table 6.10.) However, excepting in a few governorates, its poverty alleviating role – whether considered in terms of changes in head count ratio or poverty gap ratio, appear to be marginal in comparison with the level of spending (which is not insignificant). The regressive nature of NAF spending appears to be largely responsible for poor outcomes. Clearly, the poverty-alleviating outcomes could have been better than at present. The next section examines the current targeting methods, and suggests ways to improve the system.



Table 6.9: Average NAF Transfer Per Beneficiary Household As A Percent Of Poverty Line By Lowest Expenditure Deciles

Governorate	Decile 1	Decile 2	Decile 3
Amman			
Urban	34.8	43.7	33.3
Rural	21.4	16.5	23.1
Balqa			
Urban	31.8	23.8	29.2
Rural	22.4	43.7	21.7
Zarqa			
Urban	27.0	52.2	36.4
Rural	17.0	12.8	0.0
Madaba			
Urban	17.2	32.3	37.2
Rural	25.8	22.6	34.6
Irbid			
Urban	35.6	24.7	24.8
Rural	20.3	19.0	28.8
Mafraq			
Urban	18.9	22.9	0.0
Rural	28.7	18.1	27.0
Jarash			
Urban	6.7	19.8	11.8
Rural	59.2	18.6	17.5
Ajloun			
Urban	23.2	17.8	34.5
Rural	36.5	53.6	26.7
Karak			
Urban	35.9	28.1	19.5
Rural	16.4	18.1	18.4
Tafeela			
Urban	23.2	0.0	14.6
Rural	0.0	47.0	9.0
Maan			
Urban	11.8	23.1	0.0
Rural	48.2	14.9	17.6
Aqaba			
Urban	48.4	18.3	8.6
Rural	23.3	0.0	0.0

Source: Staff Estimates based on HEIS (2002).

Targeting criteria adopted by the NAF: An assessment

6.31. According to NAF guidelines, the family income supplement (FIS) program is available to several *categories* of beneficiaries: orphans under 18 years of age and their families, widows, divorced and abandoned women, unsupported girls under 18 years of age, the physically handicapped and their families, families of detained convicts, foster families for every minor child placed in custody, Jordanian women married to non-Jordanians, the elderly handicapped, the elderly and their families, and “any other category approved by NAF Board of Directors.” Families with able-bodied, yet unemployed or unmarried adult children, and families with working unmarried adult children are also eligible albeit for a reduced quantum of assistance. Thus the main targeting approach is categorical. The amount of a family’s steady income from any source whatsoever is deduced from the assistance allocated to the family. There is some tapering of per-member monthly assistance: JD 35 for one-member family, JD 60 for a two-member family, and JD 26 for every member of a family of three or more.

Table 6.10: Counterfactual Scenario For HCR And Poverty Gap Ratio

Governorate	% of Poor (HCR)	% of Poor without NAF Transfers	P Gap Ratio	P Gap Ratio without NAF Transfers
Amman	9.05	9.41	1.88	2.14
Balqa	16.87	18.41	3.72	4.93
Zarqa	21.74	22.28	5.19	5.90
Madaba	10.23	12.08	2.19	3.23
Irbid	13.18	14.42	2.92	3.69
Mafraq	24.48	25.75	6.38	8.14
Jarash	17.77	19.02	4.53	5.31
Ajloun	8.73	12.15	1.75	3.43
Karak	12.88	14.43	3.30	4.28
Tafeela	11.13	11.88	2.09	2.59
Maan	25.58	26.63	6.80	8.32
Aqaba	16.55	16.90	4.56	4.98
Jordan	13.85	14.72	3.18	3.86

Source: Staff Estimates based on HEIS (2002).

6.32. By any standards, the procedures for identifying the vulnerable are indeed very complex and lengthy. One problem with categorical targeting is that once a person enters the category, he or she remains there, unless there is periodic follow-up on beneficiaries. Past evaluations of the NAF have pointed out to weak follow-up and monitoring, and little performance accountability. Also, several individuals who fall in these categories are not necessarily the poorest or most vulnerable. It is not, therefore, surprising that the distribution of transfers under the NAF are not pro-poor. While the NAF is undoubtedly



an important element of social security in Jordan, there appears to be considerable scope for improved targeting by establishing poverty-based norms for eligibility rather than category-based targeting as at present. Improvements in the NAF's business operations also appear to be necessary to strengthen monitoring and evaluation.

6.33. Following the change in the nature of the program in 2002, the NAF transfer has dramatically increased in 2002, the bulk of which now is accounted for by the Income Supplementation program. This is now virtually an income guarantee program. Notwithstanding the increased budget and the complex nature of the targeting procedures, there appears to be significant leakage of benefits to non-poor. Probably the complicated nature of targeting based on categories themselves might be giving rise to many non-poor availing themselves of the NAF transfer by slipping themselves into one category or another. The program as is currently in operation definitely seems to benefit the poor, but there appears to be scope for improving the targeting of benefits by adopting poverty as the overarching criterion rather the myriad categories as at present. Box 6.2 provides best practice examples of well-designed social safety nets in Mexico and South Korea. Mexico had several social safety programs in place before 1997 which were reformed into an efficient Progresa program. Under the program a two-tier targeting is applied to select the communities at the first tier and then to select the eligible beneficiaries to whom means-tested *conditional* transfers are made. South Korea's new social safety net programs instituted after the 1997 crisis combine an income and wealth based means testing for the beneficiaries.

Box 6.2: Good practice examples of designing safety nets during a period of crisis: Mexico and Korea

Mexico's *Progres*a experiment. Mexico was hit by a series of macro-economic crisis and severe recession during 1994-95, and a mild recession in 1998. Like in Bangladesh, the basic elements of a safety net program package existed in Mexico prior to the crisis. Until 1996, Mexico operated 19 different safety net programs implemented by ten different agencies. Of the total resources channeled, urban areas received 77%. Close to 60% were generalized (universal) subsidies. Nearly 60% of rural poor never received any of the benefits of these programs. In October 1997, Mexico launched a series of reforms designed to eliminate universal subsidies and consolidate all programs into one integrated intervention originally known as PROGRESA. It is a federally designed and administered program, and it targets poor households in marginal rural communities. It provides two types of cash transfers: a unique amount per family, regardless of its composition, conditioned on the regular attendance of the entire family to the health clinic; and transfers for scholarships and school supplies, differentiated by school year and sex, conditioned on regular school attendance. Children between the ages of 6-17 years must meet an 85% attendance requirement; households with children between 6-24 months also received nutritional supplements. Cash transfers are paid to mothers. Transfer levels varied by the nature of conditions (health clinic visits, school attendance, etc.) but the maximum a single household could receive was set at \$75 per month. The average transfer received was around \$40 per month, equivalent to about one-fifth of a household's monthly total expenditure.

PROGRESA approach to targeting is sophisticated. It combines geographic targeting with a proxy means test applied at the local level. At the first stage, the poorest communities are selected using information on community characteristics (demography, housing, infrastructure, education characteristics, etc.) from a national census, and a "marginality index" (community score) is constructed. This is used to identify marginalized communities. At the second stage, socio-economic data of each household in the locality is collected, and using a proxy-means score, households classified as "poor and vulnerable" are selected for entry into the program. By 2000, 2.6 million households, equivalent to 40% of rural households and 10% of all households in Mexico have been enrolled into the program. The annual program budget is about 0.2% of GDP.

Unlike programs elsewhere in the world, PROGRESA has been subjected to rigorous evaluation (Skoufias and MaClafferty 2001). Analysis of targeting efficiency has shown that 58% of program benefits go to households in the bottom 20% of the income distribution. Administrative costs accounted for less than 10% of total program costs. Evaluation results have shown a substantial decrease in the incidence of sickness among young children, significant improvements in child height and weight, a dramatic reduction in anemia among children, and a significant improvement in the health status of adults. Secondary school enrollments went up (attributable to the program) by 7-9 percentage points for girls, and 4-6 percentage points for boys.

Prior to the crisis, **Korea** relied almost exclusively on rapid economic growth and informal family support; public expenditure on safety net programs was minimal. The expectation was that the informal family-based safety net was strong, and so the country did not require welfare programs of the scale that existed in OECD countries. The crisis induced a "paradigm shift" inasmuch as the Government of Korea quickly moved towards instituting a strong, publicly funded, and well-designed safety net. (Subbarao, 1997)

Prior to the crisis, Korea's formal unemployment insurance program was limited to workers employed in enterprises hiring 30 or more workers. Virtually all workers in informal sectors and



small enterprises were excluded from unemployment insurance. The crisis hit these informal workers hard. The Government immediately expanded the program of unemployment insurance to workers employed in enterprises hiring five or more workers. As a result, beneficiaries of unemployment insurance compensation increased tenfold, from around 18,000 in January 1998 to 174,000 in March 1999. However, most of the jobless did not benefit immediately. To respond to those jobless who did not benefit from the expanded insurance program, the Government launched a low-wage public workfare program in May 1998 initially enrolling 76,000 workers. In less than six months after its inception, the program was providing short term employment to 437,000 workers. Korea showed exemplary attention to the design of the public workfare program. The program wage was set at a level slightly lower than the market wage for unskilled labor to induce self-selection. A shelf of projects was drawn, labor coefficients for each activity were estimated, and local authorities were consulted in the choice of activities that were needed most by communities. The crisis did not prevent the country from paying close attention to detail in order to achieve the highest possible productivity from public works – a notable example of good practice in public works (Subbarao, 2003).

Under Korea's regular (pre-crisis) Livelihood protection program, the following benefits were provided:

- Home care and institutional care recipients: The types of aid include livelihood aid, self-support aid, education aid, maternity aid, burial aid, and medical aid.
- Self-support care: For these recipients the Korean government offers job training, self-support grants and occasional medical aid.

The selection criteria for entitlement of the regular program consisted of a means-test that combined both income and asset value. Only individuals with an income level no higher than W210,000 per person, and a household property of less than W29 million, are entitled for livelihood protection. Out of these, only those who cannot support themselves and those with chronic illness are eligible for home care.

Following the crisis, the Government has introduced a new special livelihood protection program for the self-support recipients and allocated a budget of W39.8 billion in FY98; this was increased to 234 billion for FY99. In addition, home care benefit was extended on a temporary basis to an additional 78,000 persons in 1998, and 190,000 persons in 1999; the budget was correspondingly increased by 67 billion and 128 billion for 1998 and 1999. Overall, an additional 311,000 persons were brought into the fold of the livelihood protection program in 1998 and 570,000 persons in 1999. The regular and the new special programs were integrated in October 2000 into a National Basic Livelihood Security System. Close to two million persons (or 4.4% of the population) now have access to this program (Hyekyung Lee, 2001). The budget allocation for welfare measures comprising all of the above programs increased from negligible levels in 1997 to 1.1% of GDP by 1999 and to 3.2% of GDP in 2000 – a level that clearly signaled a paradigm shift towards a publicly funded redistributive safety net program package.

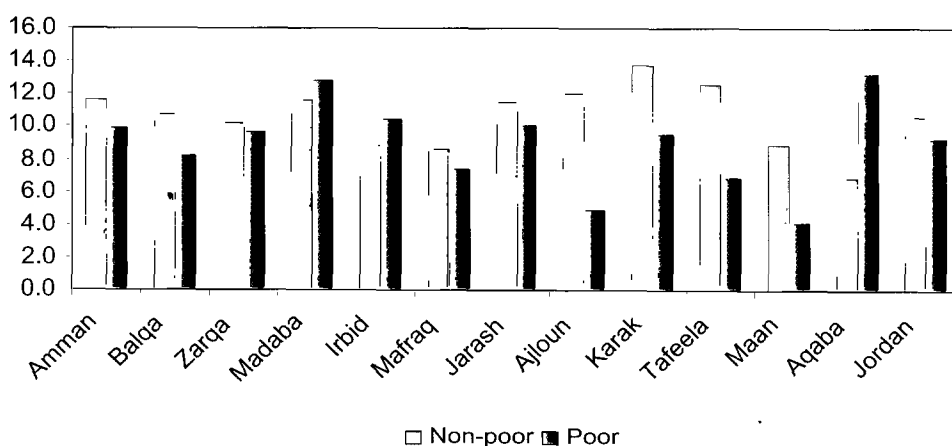
Source: Subbarao (1997) and Subbarao (2004).

GENDER AND POVERTY

6.34. Are Jordanian women poorer than their male counterparts? Usually household expenditure surveys do not contain information about intra-household distribution of consumption among members of a household. Any inequities present inside households need to be uncovered by qualitative, participative approaches, which interview individual members of the family. Also, dimensions of poverty going beyond consumption or income such as social inclusion and time poverty are more relevant in learning about deprivations faced by women. While the ongoing Country Gender Assessment for Jordan will examine some of these key perspectives on gender, this section focuses mainly on consumption poverty based on female-headed households (FHH) from the Household Expenditure and Income Survey 2002-03. Selected non-income dimensions observable from HEIS – Education and Health outcomes for women in Jordan – are discussed in Chapters 4 and 5, respectively.

6.35. About 10 percent of households in Jordan are headed by women¹. This is similar to the ratio in Egypt, another country with significant population working abroad. In MENA the percentage of FHH varies from five percent in Kuwait to 17 percent in Morocco². Among poor households, the percentage of FHH is slightly smaller at around nine percent for the kingdom as a whole (Figure 6.3). However, among governorates, there is considerable variation in the proportion of FHH from four percent in Maan governorate to 13 percent in Madaba governorate. In Aqaba and Madaba governorates, FHH are over-represented among poor households whereas in three of the four southern governorates (Karak, Tafeela, and Maan), FHH are under-represented among the poor households.

Figure 6.3: Percentage Of Female Headed Households Among Poor and Non-Poor



Source: Staff Estimates based on HEIS (2002).

¹ Headship in HEIS is based on self-declaration. Some studies distinguish between *de jure* and *de facto* headships, based on main income earner living in the household.

² MENA Gender Report, 2003.



have become a concern for institutions and professionals working in the child protection sector. Begging is an offence, and accordingly children who are picked up for this crime risk court proceedings, or placement in detention or orphanages. The multi-faceted “risky nature of the majority of offenses would indicate that holistic, social interventions at the community level will likely be an effective basis for preventive action. Background data for juveniles arrested were viewed according to student or economically active status. The percentage of arrested children who attended school for some period of time was about 59%, compared to those who were economically active (41%).

6.52. Disabled children. The official Ministry of Social Development estimates of the total number of all disabled persons in Jordan 2.6%⁷, which is higher than the WHO estimate of 10% disability in any given population. Different types of disability can be attributed to various factors. Mental retardation was related to two main factors: sequelae from high perinatal morbidity or meningitis in infancy and a high degree of intermarriage.⁸ Perinatal factors accounted for 25% and postnatal factors for 24% of the background to mental retardation. Mental and visual disabilities also were linked to iodine deficiency disorder and vitamin A deficiency, especially in poor rural areas of the country. The link between disability care and poverty is an important one. In Jordan, over 37 percent of disabled people come from households with a monthly income of less than JD 50, and hence cannot afford specialized services tailored to their needs. Children from poor families are unlikely to prevent against or rehabilitate the disabilities they face, leading to poor performance in schools and inability to earn and lead productive lives in the future.

6.53. Orphans. In general, the category of orphans covers children without living fathers or mothers or both, children who have been abandoned, or children who have birth certificates without parents’ names. Overall, it is likely that the number of orphans recorded in public or private institutions significantly understates the actual number of orphans as many do not reside in institutions. An analysis of the 2002 DHS data shows that majority of orphans (81%) have only a mother, about 17% have only a father, and a very small percentage (1.2%) have neither. There is no estimate on the total number of orphans in Jordan. The analysis shows that there are no significant gender, economic, or educational differences between orphans and non-orphans in Jordan. This is because cultural attitudes and religious traditions in Jordan create an atmosphere in which most children who are orphans are cared for in extended family networks rather than being institutionalized. As a result their health and educational outcomes are as robust as other children’s with parents.

6.54. Refugee children. According to recent data, there are 1.7 million refugees registered with the United Nations Relief and Works Agency (UNRWA) in Jordan.⁹ Yet the congestion and overcrowding present significant challenges for quality of life for all. There are about 644,000 children (under the age of 18) with official refugee status in

⁷ A study of Disabled Care Centers in Jordan, 2001, UNICEF.

⁸ The situation of Jordanian Children & Women: A rights-based analysis, 1997, UNICEF.

⁹ Information on refugees comes principally from data collected and reported by the United Nations Relief and Works Agency. For UNRWA data, consult this site: <http://www.un.org/unrwa/refugees/jordan.html>.

Jordan. UNRWA provides ten years of basic-education schooling for 136,000 boys and girls. Of these about 63,000 attend UNRWA schools inside the camps. Enrollment figures of refugee pupils in government and private schools are believed to be incomplete, since refugee pupils lack incentives to report their status as refugees in non-UNRWA schools. These challenges include high unemployment, limited supplies of clean water, inadequate drainage/sanitary systems, and high rates of non-communicable diseases (such as diabetes, hypertension, cardiovascular diseases, and cancer). Birth rates are high, and intervals between births are short, thus affecting women's health. Diarrhea and intestinal parasites, particularly affecting children, are prevalent. All of these conditions increase the vulnerability of refugee children *vis a vis* other children in Jordan, even though the Jordanian Government has consistently attempted to provide the same public services and support to the refugee communities.



$\hat{\beta}$ being the OLS estimator of β obtained from (5). Suppose $\hat{\theta}$ is the OLS estimator from (7), then a consistent estimator of σ_i^2 is given by

$$\hat{\sigma}_i^2 = X_i \hat{\theta} \quad (8)$$

then for large sample sizes, we can say that $\text{Ln}(c_i)$ is normally distributed with mean $X_i \hat{\beta}$ and variance $X_i \hat{\theta}$, which obviously gives

$$\zeta_i = \frac{\log c_i - X_i \hat{\beta}}{\sqrt{X_i \hat{\theta}}} \quad (9)$$

is distributed as asymptotically normal with zero mean and unit variance.

The vulnerability index defined in (3) can be written as

$$v_i = \Pr [c_i < z_i] = \Pr [\text{Ln}(c_i) < \text{Ln}(z_i)],$$

which in view of (9) gives an estimate of v_i as

$$\hat{v}_i = \Pr \left[\zeta_i < \frac{\log z_i - X_i \hat{\beta}}{\sqrt{X_i \hat{\theta}}} \right] = \Phi \left[\frac{\log z_i - X_i \hat{\beta}}{\sqrt{X_i \hat{\theta}}} \right] \quad (10)$$

where $\Phi(\cdot)$ is the cumulative density of the standard normal.

If f_i is the proportion of people represented by the i th household, then the estimated average vulnerability (EAV) suffered by the whole society will be given by

$$\text{EAV} = \sum_{i=1}^n f_i \hat{v}_i. \quad (11)$$

As noted earlier, the mean vulnerability of the whole society will be equal to the probability of being poor in the society, i.e., $\text{AV}=\text{H}$, but EAV will not generally be equal to H because EAV is not equal to AV. Since EAV has been estimated on the basis of an econometric model explaining the per-capita household consumption in terms of several household characteristics, the difference (EAV-H) will indicate the goodness of fit the model or the extent to which various household characteristics can explain the household consumption. Section 5 develops this model using the Lao data.

Poverty and Vulnerability Categories

Equation (10) gives the vulnerability level of each household. Some households are obviously more vulnerable than others. It will be useful to divide the households into two categories: vulnerable (v) and not vulnerable (\bar{v}). This involves choosing a level of vulnerability, above which a household may be classified as vulnerable, otherwise not

vulnerable. The choice of this threshold is ultimately arbitrary but a threshold of 0.5 seems to be somewhat justifiable. It is the point at which the household's expected future per-capita consumption is equal to its poverty line. It implies that a household is vulnerable if it faces a 50 percent or higher probability of falling into poverty in the near future. Thus, a household is vulnerable if $\hat{v}_i > 0.5$, otherwise it is non-vulnerable. This allows us to identify whether a household is vulnerable or not vulnerable. Since our concern is mainly with individuals, we should be estimating the proportion of individuals who are vulnerable. To be able to estimate it, we need to make an assumption that if a household is identified as vulnerable, then all its members are also vulnerable. A consistent estimate of the proportion of vulnerable individuals in the society can then be obtained as

$$P(v) = \sum_{i=1}^n f_i \zeta_i \quad (12)$$

where

n is the total number of households sampled and

$$\begin{aligned} \zeta_i &= 1, \text{ if } \hat{v}_i > 0.5 \\ &= 0, \text{ if } \hat{v}_i \leq 0.5 \end{aligned}$$

We may also classify households into two categories: one with low expected consumption (L) and other with high (not low) expected consumption (\bar{L}). A household may be classified as having low expected consumption if its expected per-capita consumption is less than its per-capita poverty line, which means that such a household is not expected to be able to satisfy its minimum basic needs. A consistent estimate of proportion of individuals with low expected consumption can then be obtained as

$$P(L) = \sum_{i=1}^n f_i \tau_i \quad (13)$$

where

$$\begin{aligned} \tau_i &= 1, \text{ if } X_i \hat{\beta} < Ln(z_i) \\ &= 0, \text{ if } X_i \hat{\beta} \geq Ln(z_i) \end{aligned}$$

As we know, the poor are those whose per-capita consumption is less than the poverty line. Among the poor, we may define chronic poor as those who have low expected consumption. These are the persons who are currently poor and also have low expected consumption and hence are more likely remain poor in the future. The proportion of chronic poor in our notation can be written as $P(p,L)$, which can be estimated consistently as



$$P(p,L) = \sum_{i=1}^n f_i v_i \quad (14)$$

where $v_i = 1$ if $\ln(c_i) < \ln(z_i)$ and $X_i \hat{\beta} < \ln(z_i)$
 $= 0$, otherwise.

Since in the estimation of vulnerability we have assumed that the log of per-capita consumption is distributed as normal, which is symmetric around its mean, it implies that

$$P(p,L) = P(p,v) = P(p,v,L) \quad (15)$$

which means that the chronic poor will also be vulnerable.

Next, we define transient poor as those who are currently poor but their expected consumption exceeds the poverty line. It means that these people are temporarily poor but will likely to become non-poor in the future. The proportion of transient poor denoted by $P(p, \bar{L})$ can be computed as

$$P(p, \bar{L}) = P(p) - P(p, L), \quad (16)$$

Where the estimates of $P(p)$ and $P(p,L)$ are obtained from (2) and (14), respectively.

The vulnerable group can be divided into two sub-groups based on the causes of vulnerability. Following Chaudhuri, Jalan and Suryahadi (2001), we may have two possible causes of vulnerability: for some vulnerability may stem from low long-term consumption prospects and for others, consumption volatility may be the main source of vulnerability to poverty. Since the future consumption prospects of a household are determined by the expected consumption for given household characteristics, so we divide the vulnerable persons into two groups: one with low level of expected consumption and second with high level of expected consumption. The consistent estimate of proportion vulnerable due to low expected consumption will be given by

$$P(v,L) = \sum_{i=1}^n f_i \varepsilon_i, \quad (17)$$

Where

$\varepsilon_i = 1$ if $\hat{v}_i > 0.5$ and $X_i \hat{\beta} < \ln(z_i)$
 $= 0$, otherwise.

Similarly, an estimate of proportion vulnerable due to high volatility of consumption will be given by

$$P(v, \bar{L}) = P(v) - P(v,L). \quad (18)$$

Finally we define the “total vulnerable group” as sum of those who are currently poor and those currently non-poor but are vulnerable to falling into poverty in the near future.

The proportion of such persons will be given by

$$P(\text{Total vulnerable group}) = P(p) + P(\bar{p}, v) = P(p) + P(v) - P(p, v) \quad (19)$$

Where a consistent estimate of $P(p, v)$ is given by

$$P(p, v) = \sum_{i=1}^n f_i \varphi_i,$$

where

$$\varphi_i = 1 \text{ if } \ln(c_i) < \ln(z_i) \text{ and } \hat{v}_i > 0.5$$

$$= 0, \text{ otherwise.}$$



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