

## Transfers, Safety Nets, and Poverty

**T**he poor in Iraq are disproportionately dependent on non-labor incomes, and lacking assets, in particular, on transfers including through the Public Distribution System (PDS). Despite an increase in the share of income from the labor market to 49 percent in 2012 from 42 percent in 2007, public and private transfers still account for 36 percent of total income for the bottom decile, of which more than 80 percent is comprised of public transfers.

The dependence on transfers as a source of income also varies widely across space, especially for the bottom decile. For instance, while labor incomes account for 58 percent of the total income of the bottom 10 percent in Kurdistan, its share falls to 42 percent for the bottom 10 percent living in the South. PDS transfer receipts as a source of non-labor income are also smaller in Kurdistan, accounting for less than 20 percent of non-labor incomes on average while it rise up to 48 percent of total non-labor incomes in the South. The relatively low share of ration transfers in Kurdistan is compensated by relatively high shares of pension and capital income.

Private transfers are relatively small in size and cover a minority of the poor. International remittances cover less than 1 percent of the poor and more than 90 percent of the recipients are non-poor. Zakat transfers cover only 2.4 percent of the poor, but a third of zakat recipients are below the poverty line. Domestic remittances comprise almost a third of poor and non-poor households; although only 20 percent of the recipients are poor.

With the exception of the PDS, public transfers also cover a small proportion of the poor. Pension incomes reach less than 20 percent of the poor; social protection network transfers cover only a tenth of the poor. Per capita ration receipts were higher among households with non-employed heads, and receipts decline steadily with the increases in the education of the head of household. Receipts are also higher for rural households, and in every division relative to Kurdistan, especially in the South. The bigger the household size, the less it receives from the PDS. However, rations do not decline evenly as household size increases. The loss in transfers received from rations gets up to 30 percent when households are bigger than 12 members. On the other hand, the richer the household, the more it receives irrespective of its size.

The Public Distribution System (PDS) remains the overwhelming source of calories for the poor and bottom 40 percent, accounting for 74 and 64 percent of their total caloric consumption respectively in 2012. At the same time, it accounts for 30 percent of food expenditures for the poorest 10 percent of Iraqi households, and 16 percent of total expenditures. In terms of the self-reported impact of the decline in rations, more than 80 percent of households reported experiencing a decline in incomes as a result, and while 80 percent reduced food stocks, and 70 percent cut back on food purchases, 20 percent had to increase food purchases to compensate for the lack of PDS items.

Overall, ration and free market items are essential in the consumption basket of Iraqis with the exception of

free market oils. In other words, Iraqi households are almost non-responsive in terms of altering demand to changes in food prices of ration items and their free market equivalents. Richer households are more responsive to variations in prices of ration items than poorer households while the opposite is for free market goods: less-well off households are more responsive to changes in prices of free market goods than those located in the upper part of the distribution. In general, most rations items are marginally “inferior” goods in the Kurdistan region irrespective of the level of per capita consumption. As the economy evolves and the levels of income increases across the distribution, and as the rest of the country approaches the higher welfare levels of Kurdistan, these types of ration goods will be less demanded in the short run. Eliminating the ration system would be approximately equivalent to increasing the price of ration items up to the market price levels given the low own price elasticities of ration goods and the positive income elasticities for these goods for much of the population. This will affect directly consumer’s welfare levels by reducing them by one-fifth to one-third for the upper quintiles in urban areas and up to 60% for the lowest quintile in urban areas. However, where income levels are higher, local markets are more evolved, and where rations are not universally consumed, as in Kurdistan and Egypt, the greater flexibility in consumer response suggests that welfare impacts may be smaller when a similar environment is created across the rest of the country.

## Transfers, Safety Nets and Poverty

Faced with limited opportunities for employment and earnings in the labor market, the poor in Iraq are disproportionately dependent on non-labor incomes, and lacking assets, in particular, on transfers including through the Public Distribution System (PDS). In 2007, labor earnings accounted for 66 percent of total income for the average Iraqi, with another 20 percent from non-labor income (private and public transfers), and 14 percent from implicit rental income from owner occupied dwellings. Almost 80 percent of non-labor income was made up of public transfers. This pattern remained roughly unchanged

in 2012, with a small decrease in the share of non-labor incomes, and within non-labor income, a small decline in the importance of public transfers.

Among the poor, and especially among the bottom 10 percent of the consumption distribution, the dependence on non-labor incomes, especially on public transfers increases sharply. Despite an increase in the share of income from the labor market to 49 percent in 2012 from 42 percent in 2007, public and private transfers still account for 36 percent of total income for the bottom decile, of which more than 80 percent is comprised of public transfers. While the share of public transfers in non-labor incomes remains above four-fifths for each of the bottom 4 deciles, there is a distinct shift towards a higher share of labor income as households move out from the bottom 10 percent.

The dependence on transfers as a source of income also varies widely across space, especially for the bottom decile. For instance, while labor incomes account for 58 percent of the total income of the bottom 10 percent in Kurdistan, its share falls to 42 percent for

**TABLE 38:** Main Sources of Income (Share of Total), National Average and Bottom 4 Deciles, 2007 and 2012

Iraq	Labor	Non Labor	Imputed Rent	Non labor income	
				Public	Private
<b>2007</b>	66.18	19.49	14.34	78.41	21.59
Deciles					
1	42.29	40.73	16.98	91.22	8.78
2	55.20	29.46	15.34	87.79	12.21
3	60.20	24.74	15.06	87.70	12.30
4	60.77	23.92	15.31	87.01	12.99
<b>2012</b>	68.00	16.40	15.60	75.62	24.38
Deciles					
1	49.24	35.59	15.17	83.52	16.48
2	61.99	24.18	13.83	85.01	14.99
3	64.15	21.15	14.70	82.46	17.54
4	65.93	18.92	15.16	81.35	18.65

Source: Authors’ calculations, IHSES 2007 and 2012.

the bottom 10 percent living in the South. At the same time, ration or PDS transfer receipts as a source of non-labor income are also smaller in Kurdistan, accounting for less than 20 percent of non-labor incomes on average, and 42 percent of non-labor incomes among the bottom decile. In contrast, 48 percent of total non-labor incomes in the South accrue from implicit incomes associated with PDS receipts, and this share increases to 62 percent for the lowest 10 percent. The relatively low share of ration transfers in Kurdistan is compensated by relatively high shares of pension and capital income in Kurdistan. Overall, pensions make up between 22 to 30 percent of average non-labor incomes, but are roughly half as important for the bottom ten percent of the consumption distribution.

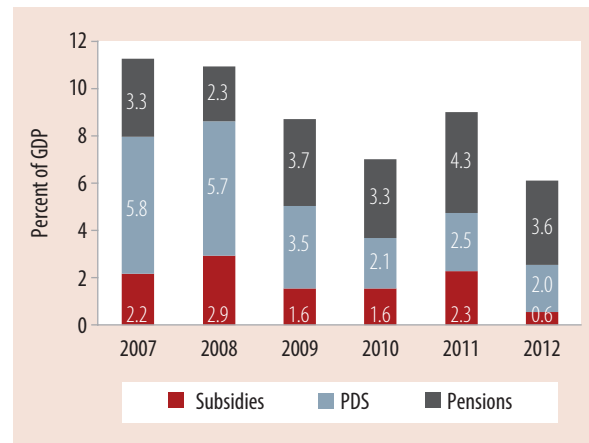
These spatial differences are also important because poverty increased in those parts of the country where the decline in implicit ration transfers between 2007 and 2012 was not compensated by increases in other public and private transfers (as Chapter 5 establishes). Between 2007 and 2012, while the size of pension transfers has steadily increased, following a policy change in the PDS that reduced the number of items to be distributed in 2008–09, expenditures on the PDS as a share of GDP have fallen from around 6 percent to 2 percent. In household level data, this change is reflected in a fall in the share

of ration incomes in non-labor income from almost 60 percent to less than 40 percent between 2007 and 2012. At the same time, there was an increase in absolute and relative terms in the contributions due to pension incomes and domestic remittances, which together accounted for more than 40 percent of non-labor incomes on average in 2012.

### Who Receives Transfers?

In what follows, we consider in greater detail six different types of transfers and non-labor income:

**FIGURE 184:** PDS and Pensions as a Share of GDP, 2007 to 2012



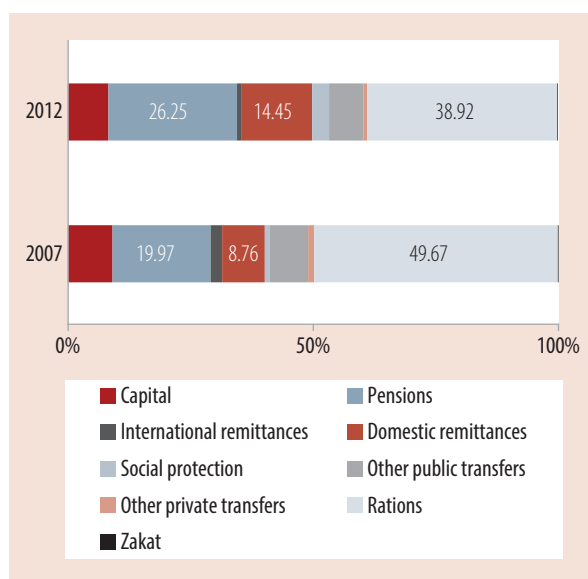
Source: Authors' calculations, IHSES 2007 and 2012.

**TABLE 39:** Sources of Non-Labor Income Across Iraq, Overall and Bottom Decile, 2012

			Iraq	Kurdistan	Baghdad	North	Centre	South
Share in total income, 2012	Labor income	Overall	68.00	69.16	63.02	71.81	68.02	68.71
		Lowest decile	49.24	58.18	52.80	49.82	49.21	41.70
Share of non-labor income, 2012	Rations	Overall	38.92	19.72	41.45	42.20	38.69	48.21
		Lowest decile	59.96	42.04	53.72	64.09	59.53	62.10
	Pensions	Overall	26.25	30.40	33.33	23.87	24.39	21.78
		Lowest decile	13.27	19.40	18.10	9.72	16.86	11.43
	Domestic remittances	Overall	14.45	12.09	16.18	13.30	17.10	12.24
		Lowest decile	11.43	13.39	18.36	9.11	8.61	12.72
	Capital income	Overall	8.27	14.41	3.84	8.13	11.14	3.89
		Lowest decile	3.39	6.31	1.81	5.66	4.30	1.62

Source: Authors' calculations, IHSES 2007 and 2012.

**FIGURE 185: Sources of Non-Labor Income, 2007 and 2012**



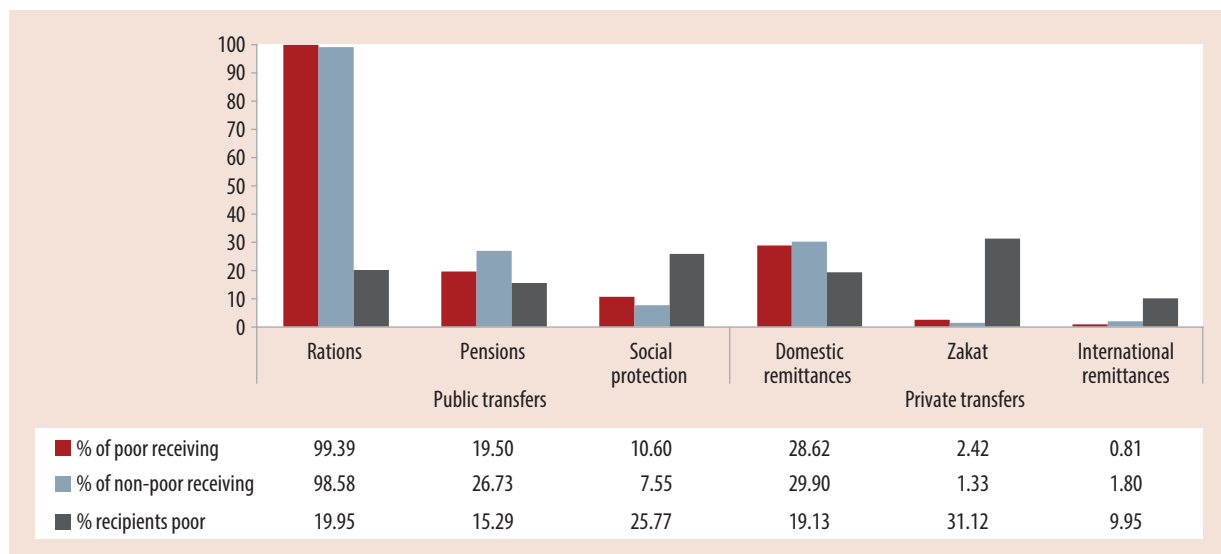
Source: Authors' calculations, IHSES 2007 and 2012.

private transfers—domestic and international remittances, and zakat receipts; as well as public transfers in the form of pensions, transfers from the social protection network, and implicit incomes associated with receipts of subsidized food items from the Public Distribution System (PDS).

In general, private transfers are relatively small in size and cover a minority of the poor. International remittances cover less than 1 percent of the poor and less than 2 percent of the non-poor; with more than 90 percent of the recipients being non-poor. Zakat transfers are also small, covering only 2.4 percent of the poor, but a third of zakat recipients are below the poverty line. Domestic remittances, which have become increasingly important over time, cover almost a third of poor and non-poor households; although only 20 percent of the recipients are poor (Figure 186).

Turning to public transfers, pension incomes, which are not explicitly designed to as an anti-poverty transfer, reach less than 20 percent of the poor, and more than a quarter of the non-poor. About 85 percent of pension recipients belong to non-poor households. Social protection network transfers, on the other hand, do involve some categorical targeting of households, and while a quarter of the poor receive some form of such transfers, the program still covers only a tenth of the poor. Transfers through the PDS are, in contrast, almost universal, and cover more than 99 percent of the poor. While less than a fifth of PDS beneficiaries are poor households; it

**FIGURE 186: Share of Poor and Non-Poor Individuals Receiving Public and Private Transfers, 2012**



Source: Authors' calculations, IHSES 2007 and 2012.

remains the only safety net that comprehensively covers Iraq's poor population.

In order to further understand the role of these private and public transfers in household welfare, we undertake multivariate analysis to identify the household characteristics associated with whether a household receives a particular transfer; and with the level of per capita receipts (results in the Annex Tables 8.1–8.6).

### *Private transfers*

In general, female headed households and households with non-employed heads appear to be more likely to receive *international remittances*, and are also more likely to receive higher per capita amounts. While households living in Kurdistan are more likely to receive international remittances compared to those living in other divisions, in terms of the amount received per person, households in the South receive more, while those in the Centre receive less. While rural households are less likely to be recipients, among the ones who do receive these remittances, per capita receipts are on average, higher than among urban recipients.

*Domestic remittances* are more likely to go to households with higher dependency ratios, although larger households are less likely to be recipients and also receive less per capita, relative to households with 1 to 4 members. Households headed by females and by those not employed in the public sector are 5 and 10 percent more likely to receive these transfers; and receive larger per capita amounts. In 2012, households in rural areas were less likely to benefit from domestic remittances; while those with less educated heads were more likely to. While households in the Centre were 7 percent more likely to be recipients of domestic remittances relative to those in Kurdistan, and those in the South were 9 percent less likely; per capita receipts were the lowest in Kurdistan, and the highest in the South. However, overall, remittance amounts per person increase with wealth.

*Zakat transfers*, although very small, appear to be quite progressive and well-targeted. Larger

household sizes and dependency ratios, belonging to a household with a less educated head, a female head, and a non-employed head, all increase the likelihood of receiving zakat. Poorer households are also more likely to receive these transfers; although households everywhere except in the South are less likely to be beneficiaries compared to those living in Kurdistan. While per capita zakat receipts decline in general with household size in 2012, they are larger for very large households with more than 20 members, for female headed households and for households with heads employed in the private sector. Rural households and households living in Baghdad receive smaller zakat transfers on average; as do households with non-employed heads.

### *Public transfers*

*Pensions* are not designed to be anti-poverty transfers, and as expected, the presence of a widow or a person of pensionable age in the household significantly increases the likelihood of the household receiving pensions by 12 and 23 percent respectively. Urban households are also, as one may expect, more likely to receive pensions; as are households living in the Kurdistan region; while households with less educated heads receive smaller amounts per person. Once these factors are taken into account, larger households are more likely to be receiving pensions (as these households tend to have more eligible members) but receive less per capita. Moreover, households with heads who are not employed in the public sector are more likely to have someone in the household who is receiving pensions; and also have higher receipts per person.

Transfers from the *social protection network*, while small, do appear to be relatively pro-poor. On average, the likelihood of receiving these transfers increases with household size, is higher for households whose heads are not employed in the public sector, whose heads are less educated, for households with a widow or eligible pensioner, and for households with lower consumption expenditures. However, per capita receipts decline with household size and increase with household consumption expenditure. On



the other hand, they are higher for households with less educated heads, for households with a widow, and for households with heads who are not employed in the public sector. While households in the Centre and Kurdistan appear to be more likely to receive such transfers; among recipients, per capita transfers are higher in Baghdad, the Centre and the South.

Finally, we examine the correlates of incomes received in the form of subsidized food through the *Public Distribution System* (PDS). Per capita ration receipts were higher among households with non-employed heads, and receipts decline steadily with the increases in the education of the head of household. Receipts are also higher for rural households, and in every division relative to Kurdistan, especially in the South. However, larger households receive lower receipts per capita, as do female headed households, and households belonging to the bottom 20 percent of the consumption distribution.

In principle, PDS rations are supposed to be allocated on a per person basis, so that per capita receipts should be invariant to household size, and in particular, to the number of people recorded on the household's ration cards. Therefore, we restrict attention to the majority of households for whom the number of members reported on the ration cards is identical to the number of household members. For this sample of households, per capita receipts decline with household size but increase with wealth (Annex Table 8.7). To explore this apparent regressivity, we interact household size with consumption in the final specification. The finding shows that the bigger the household size, the less it receives from the PDS. However, rations do not decline evenly as household size increases. The loss in transfers received from rations gets up to 30 percent when households are bigger than 12 members. On the other hand, the richer the household, the more it receives irrespective of its size.

Overall, most public and private transfers received by households tend to be small and cover a minority of the poor, with the important exception of the PDS. While very small in magnitude, zakat and

social protection transfers do appear to be relatively progressive. The coverage of the poor under these transfers however, is also in part an outcome of having received the transfer. For instance, domestic remittances may only cover a small proportion of the poor, because on average, the size of these transfers may be large enough so that the receipt of these transfers enables a household to consume above the poverty line. While causal inference of the poverty mitigating impact of these transfers are beyond the scope of the analysis here, we can try to get a sense of the correlation between the receipt of these transfers and the likelihood of a household being poor or belonging to the bottom two quintiles of the consumption distribution.

Annex Table 8.8 estimates the marginal effects, or the change in the likelihood of these two outcomes, associated with the receipt of transfers, in addition to a range of household characteristics. The relationship between household demographics and the education and labor market characteristics of the head with the two outcomes; as well as the relationship between place of residence and welfare are as expected; and in line with the diagnostic analysis in Chapter 2. Higher dependency, larger household sizes, the household head's employment in the private sector or the household head being non-employed, living in a rural area, living in any division other than Kurdistan and the Centre, are all associated with higher poverty odds.

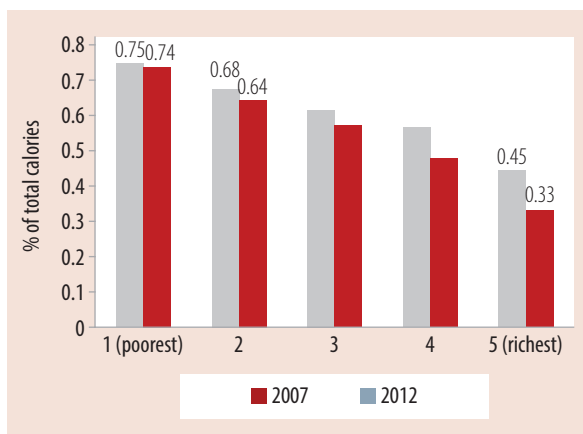
The receipt of pensions, international remittances and higher levels of per capita PDS receipts are all associated with lower likelihood of poverty and belonging to the bottom 40 percent. While this should not be causally interpreted, it may suggest that among otherwise similar households, the size of these transfers are large enough so that those who receive them are likely to have significantly higher welfare. In contrast, the relatively progressive zakat transfers and social protection payments do not lower the likelihood of being poor. In fact, they are associated with a higher likelihood of poverty and belonging to the bottom 40 percent. Again, this does not imply that the receipt of these transfers

increases poverty, but perhaps instead, that while these are associated with poorer households, they do not bridge the gap sufficiently.

## The Public Distribution System

Iraq's Public Distribution System, the largest publicly subsidized food distribution system in the world, remains the only safety net covering the poor and vulnerable in the country. The reform in 2009–2010 that cut the number of items distributed through the PDS by and large left the caloric content of the PDS basket unchanged, dropping items such as detergents, soap, milk (for adults), tea, and tomato paste. Thus, much of any observed changes in caloric consumption attributable to the PDS reflect a reduction in consumption of ration items rather than a change due to the reduction in the number of items. Figure 187 plots the share of total food calories from the PDS for households, for each of the quintiles of the consumption distribution. In 2007, three-quarters of the calories of the bottom 20 percent came from consumption of PDS items; while for the top 20 percent, this share was 45 percent. Between 2007 and 2012, while dependence on the PDS as a source of calories has changed little for the bottom 40 percent, it has come down

**FIGURE 187:** Share of Calories from the PDS, by Consumption Quintile, 2007 and 2012

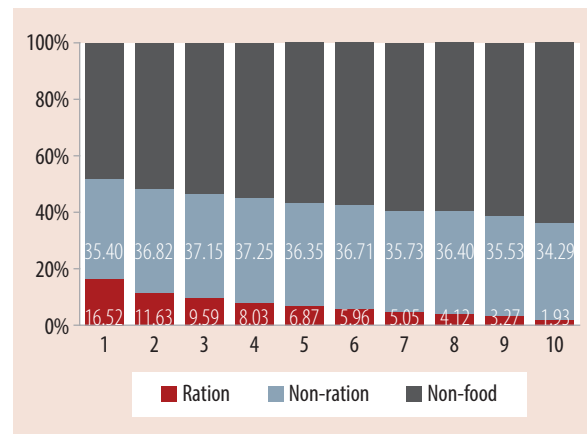


Source: Authors' calculations, IHSES 2007 and 2012.

among better off households, and especially among the top 2 quintiles. In 2012, PDS consumption accounted for only a third of calories consumed by the richest 20 percent of the consumption distribution. That being said, the PDS remains the overwhelming source of calories for the poor and bottom 40 percent, accounting for 74 and 64 percent of their total caloric consumption respectively in 2012.

PDS expenditures account for 30 percent of food expenditures for the poorest 10 percent of Iraqi households, and 16 percent of total expenditures (Figure 188). The share of PDS expenditures declines to 12 percent for the 2<sup>nd</sup> decile, to 7 percent among the 5<sup>th</sup> decile, and to less than 2 percent for the top decile. In the consumption aggregate, consumption of PDS items are valued at the national median of the prices reported by ration agents in response to the question: "If you could buy this [ITEM] in the market, how much would you have to pay for it?" Even though these prices are significantly higher than the official (subsidized) prices for ration items, they still represent a significant underestimate of the shadow cost of the ration bundle (See Box 5 for a brief description of some of the challenges in valuing PDS rations).

**FIGURE 188:** PDS Expenditures, Food and Non-Food Expenditures by Consumption Quintile, 2012\*



Source: Authors' calculations, IHSES 2007 and 2012.

Note: Rations are valued at national median ration agent prices, which is a large underestimate of the shadow cost of the ration bundle

### BOX 5: PDS Ration Items and the Valuation Problem

The IHSES surveys collect information about the quantity of ration items received, consumed and purchased. The 2007 methodology used a notion of 'net quantity received' and purchases of ration items recorded in the diary on a monthly basis (very few transactions) to measure the quantity of rations consumed. The former is the quantity of ration items received, net of amounts bartered, sold, or given away. However, this measure has no clearly defined recall period, such as the last week or the last month. Moreover, since receipts are not consumption, they may not reflect utility. Two households who receive the same amount of rations, but consume very different amounts, derive different utility from rations.

The IHSES surveys also include a direct question on consumption of ration items within the last 30 days. This is a more accurate measure of consumption, with a clear recall period, and equal consumption implies equal utility derived for households. This is the primary measure of consumption of ration items in the revised methodology. Purchases of ration items in the diary (over the last week) are converted into monthly equivalents, and also included, as households who purchase additional rations on the market must be assigned higher consumption and thereby utility.

How is this important component of food consumption to be valued? In principle, goods and services ought to be valued equal to their infra-marginal benefit; i.e., the market price faced for the marginal unit consumed. In the case of Iraq, ration items are rarely traded and in this sense, a market-equivalent price does not exist. A few transactions are recorded in the diary but these are insufficient to calculate unit values, and moreover, are associated with a select few households who are quantity constrained. So these unit values cannot be used to value all ration consumption.

Another possibility is to use official prices for ration items, which are very low, nominal prices paid by consumers. Using these heavily subsidized prices would artificially suppress the value of food expenditures stemming from rations. Moreover, rations should be valued at a price close to one at which we expect these items to be traded; and official prices are not the prices at which households can procure unlimited quantities.

Is there a close substitute to ration items that are traded in the market? In the case of Iraq, unit values for these substitutes are significantly higher for some items, especially rice, suggesting important quality differences. This implies that market prices for commercially available items cannot be used because they are not perfect substitutes.

The only remaining candidate to value rations is a question that asks households their opinion on how much they would pay for ration-equivalent items in the market. In practice, few households expressed an opinion, and enumerators approached the local ration agent in the cluster, in a manner akin to a price survey. However, there were variations in these prices that may reflect uncertainty, noise and local variations in supply, demand and quality. In order to ensure that all those who consume exactly the same amount of a ration item are assigned the same expenditure; and that this expenditure increases with higher consumption; it was decided to use the national median values of prices reported by ration agents to value ration items.

*Source:* Poverty in Iraq: 2007–2012—Methodological Note.

In this context, how did households cope with the decline in transfers in the form of implicit ration incomes? We begin by first broadly characterizing the shocks experienced by households in 2007 and 2012, and relate these to the main coping response. In particular, in 2012, the survey asks about whether a household experienced a shock due to the loss of rations, the loss of other government assistance, or due to a decline in remittances. Only 3 percent of households reported having experienced this type of shock, primarily driven by lower rations.

In 2007, 17 percent of all poor and non-poor Iraqi households reported having suffered from a shock in the past 12 months—these included the loss of a job or of wages, or of the closure of a business; sickness, injury or the death of a household member; theft, violence, kidnapping and other types of problems. Of each of these types of shocks—related

to jobs, death/injury, security, and other—jobs and security related shocks affected more than 9 percent and more than 7 percent of the population as whole; and prevalence did not vary by poverty status. In 2012, the incidence of these types of shocks had increased to 24 percent among the poor and 28 percent among the non-poor.<sup>56</sup> The higher incidence of shocks among the non-poor is related to households experience covariate shocks related to

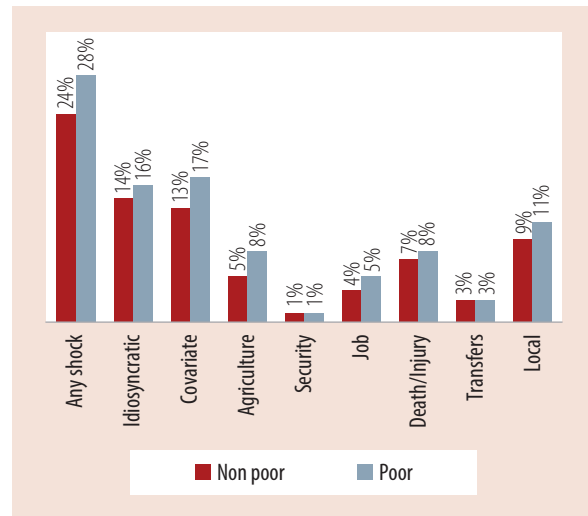
<sup>56</sup> It should be noted that the questionnaires are not strictly comparable between 2007 and 2012. While the 2007 modules lists a possible set of 11 shocks, including “Another huge problem”, the 2012 module is more detailed, asking about 23 possible shocks, including in particular, agriculture-related shocks and shocks affecting the local economy and community. It is likely that the longer list of possible options in 2012 elicited a better response, and as a result 2012 prevalence rates are significantly higher.



agriculture—including drought, the loss of assets or livestock, reduced agricultural water quality, pests and diseases and reduced availability of grazing areas. These are also reflected in 15 percent of rural household reporting having experienced an agriculture related shock, especially in Kurdistan and the North, with prevalence rates of 8 and 10 percent respectively. These may be reflecting the drought experienced in northern Iraq and Syria between 2007 and 2009. In 2012, as in 2007, the prevalence of different types of shocks does not vary by poverty status, except as noted already, covariate shocks related to agriculture. While the prevalence of shocks was higher in urban areas in 2007, explained by higher job-related shocks, in 2012, rural areas experienced higher shocks, driven by agricultural shocks.

In 2012, households in Baghdad were most likely to report having experienced a shock in the last 12 months. About a third of households had experienced at least one shock, and a fifth reported a ‘local’ shock—an aggregation that includes reduced drinking water quality and availability; an unusually high level of human disease; or unusually high prices of food and other essential commodities. These local shocks were also quite high across the other divisions, and in addition, agriculture-related

FIGURE 190: Incidence of Shocks by Poverty Status, 2012

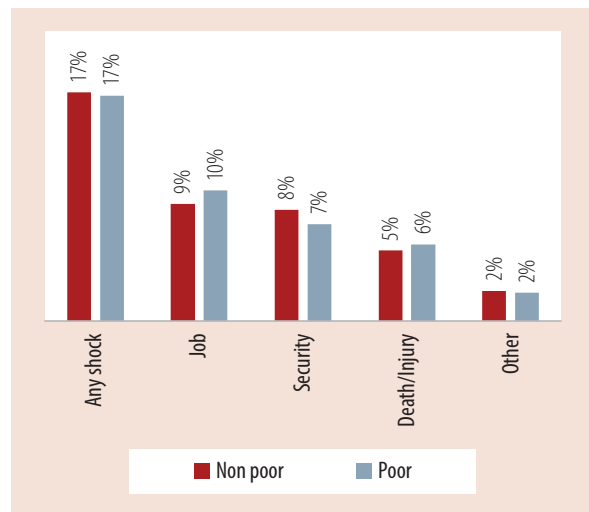


Source: Authors' calculations, IHSES 2007 and 2012.

shocks were relatively high in Kurdistan, the North and the Centre.

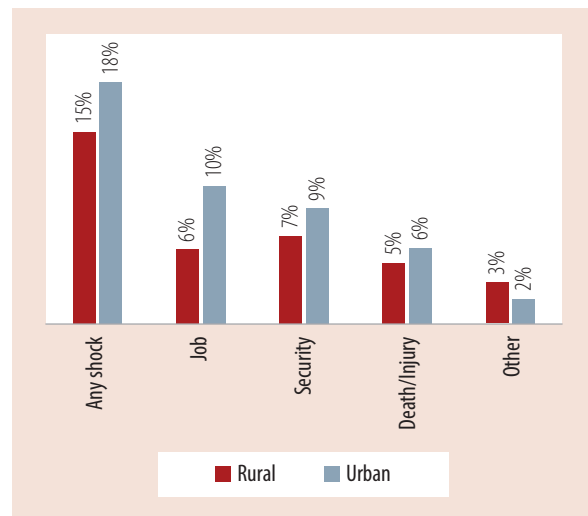
The 2012 IHSES data also includes information on the effect of the shocks on households, i.e., households report whether they increased, decreased or did not alter food purchases, food stocks, food production, assets and income as a result of each type

FIGURE 189: Incidence of Shocks by Poverty Status, 2007

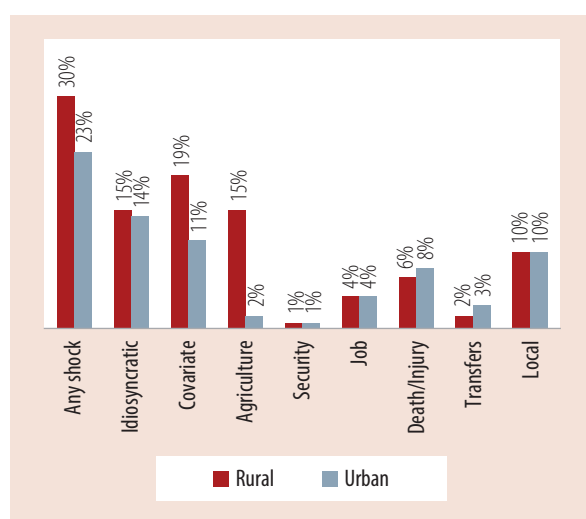


Source: Authors' calculations, IHSES 2007 and 2012.

FIGURE 191: Prevalence of Shocks in Urban and Rural Areas, 2007



Source: Authors' calculations, IHSES 2007 and 2012.

**FIGURE 192:** Prevalence of Shocks in Urban and Rural Areas, 2012

Source: Authors' calculations, IHSES 2007 and 2012.

of shock. Irrespective of whether the shock was idiosyncratic, i.e., household or individual specific, or covariate, i.e., community or locality specific, around four-fifths of households reported a reduction in income, around two-thirds reported a reduction in food purchases, 60 percent reported reducing food stocks. Reduction in assets and food production was less likely, while 12 percent of households increased food purchases.

For households faced with agriculture-related shocks, around 60 percent reduced food purchases, stocks, and production; a similar proportion experienced a reduction in assets, and almost 90 percent experienced falling incomes. No other shock results in such a decrease across food, assets and income.

For most other types of shocks, in general, the primary impact seems to be in terms of a reduction in incomes and in food purchases, with food stocks, production and assets being less affected. While differences in food production effects are understandable (as those experiencing agricultural shocks are also likely to be those engaged in food production), on average, between 20 and 30 percent of households experience declining assets in the face of other types of shocks. In terms of transfer shocks, including the decline in rations, more than 80 percent of households reported experiencing a decline in incomes as a result, and while 80 percent reduced food stocks, and 70 percent cut back on food purchases, 20 percent had to increase food purchases to compensate for the lack of PDS items.

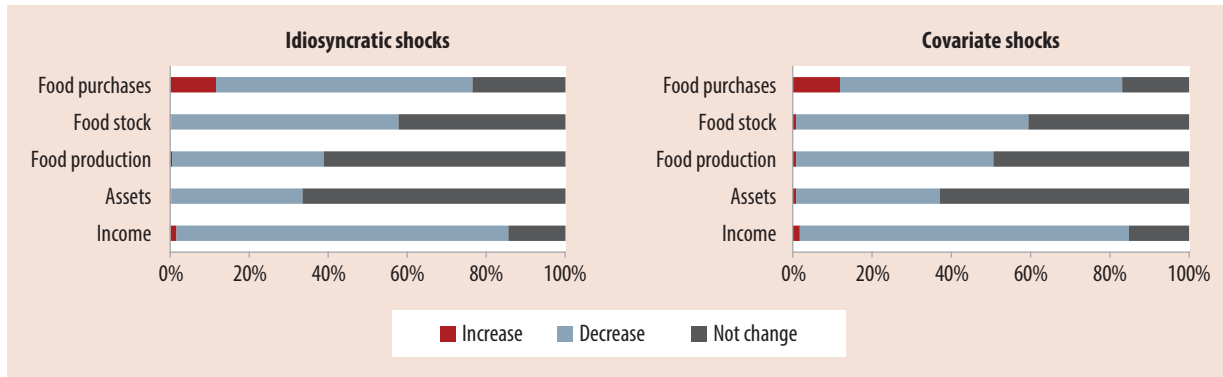
The main coping strategies of households appear to be fairly similar across idiosyncratic and covariate shocks, with about a third of households relying on their own savings, and less than a fifth doing nothing. One important difference, however, is that households were more likely to reduce the quantity, quality and variety of food or purchase food on credit in response to covariate shocks; whereas in response to individual or household specific shocks, loans, credit and assistance from friends and relatives becomes more important. These patterns are reflected in responses to agricultural and local shocks, which are primarily covariate shocks. In contrast, the dependence on social and family networks is more important in responding to individual or household level shocks including job-related shocks, or those related to death or injury of a family member. In the case of shocks related to transfers, rations and

**TABLE 40:** Prevalence of Shocks, 2012

	Any shock	Agriculture	Security	Job	Death/Injury	Transfers	Local
Kurdistan	24%	8%	2%	3%	10%	0%	8%
Baghdad	31%	2%	1%	5%	7%	3%	19%
North	27%	10%	2%	2%	6%	6%	8%
Centre	27%	7%	1%	6%	9%	3%	8%
South	15%	4%	0%	2%	6%	1%	6%

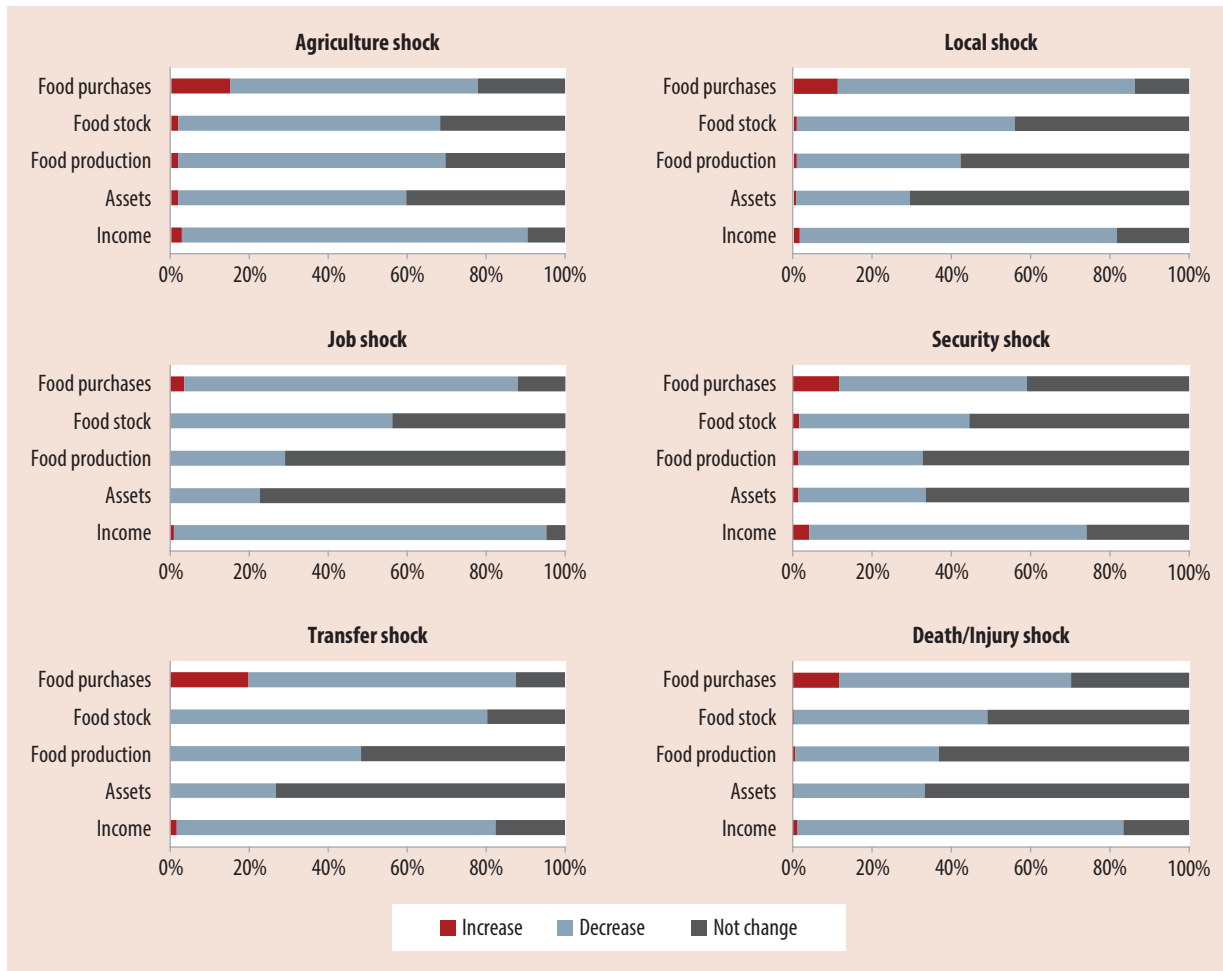
Source: Authors' calculations, IHSES 2007 and 2012.

FIGURE 193: Household Perceptions of the Effects of Different Shocks, 2012



Source: Authors' calculations, IHSES 2007 and 2012.

FIGURE 194: Household Perceptions of the Effects of Each Type of Shock, 2012

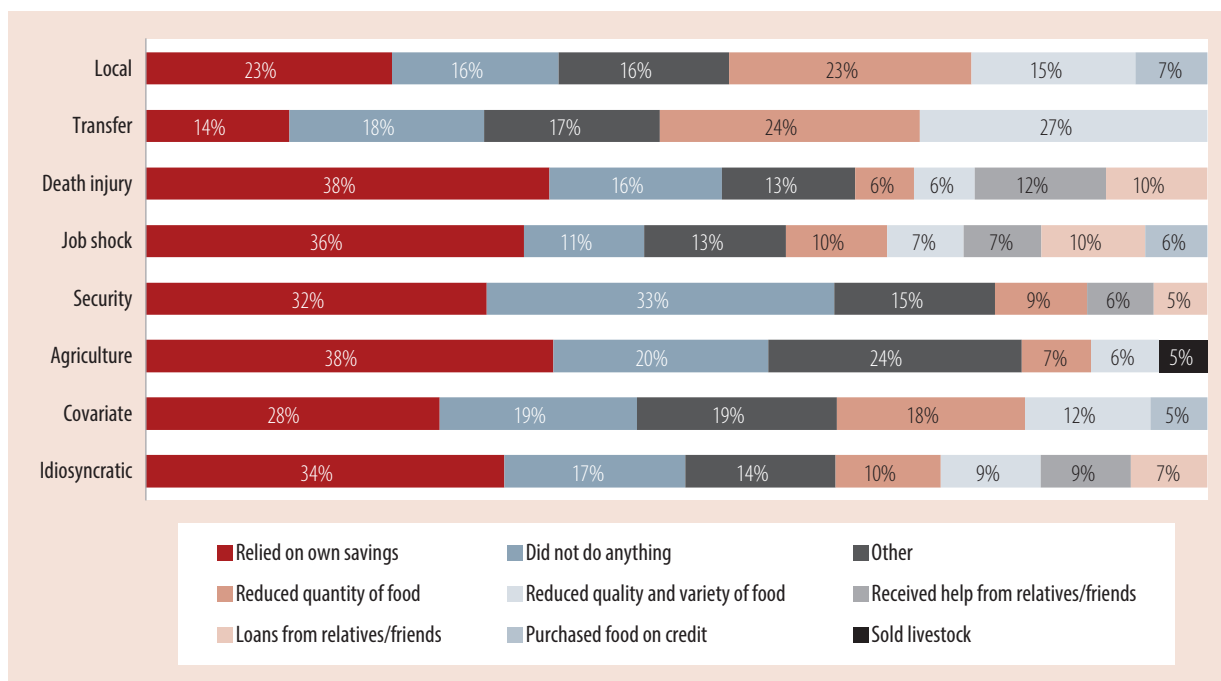


Source: Authors' calculations, IHSES 2007 and 2012.

remittances (which primarily comprises rations), the food response seems to be particularly important;

with households, with 50 percent of households reducing the quality and quantity of food in response;

FIGURE 195: Main Response to Each Shock, 2012



Source: Authors' calculations, IHSES 2007 and 2012.

and only 14 percent relying on savings. Thus, faced with declining ration items, many households further cut back on food consumption in terms of quantity, quality and variety.

### Simulation of the Welfare Impact of the PDS

Even though the total expenditure on the Public Distribution System has reduced as a share of GDP over the last 5 year period (Figure 184), and the total amount expended by the government has decreased in real terms from 2.3 to 1.1 ID trillions, it still represents a fiscal burden for the government budget. While the PDS provides a level of broad food security to the poor and vulnerable in Iraq, it also covers more than 95 percent of the non-poor, and is therefore, a very expensive safety net program. Moreover, in its current form, it suffers from significant inefficiencies in procurement, distribution, and management, and implies significant macro-economic distortions because of its heavy reliance on food imports and its universal nature. For this and many other reasons, including the need for the introduction of a comprehensive safety net system

going beyond food subsidies, the government of Iraq is considering further reforms to the PDS.<sup>57</sup>

In this section, we analyze the impacts of changes in the PDS on household welfare under different reform scenarios. To do that, we use a partial equilibrium setting which will allow us to estimate demand responses that are essential in predicting outcomes of various policy reforms and in undertaking projections of food demand. This framework will answer questions such as: how will consumers throughout the entire consumption distribution adjust their demand for rice and other food items if the effective price of rice is increased as a consequence of the reduction in PDS rice distribution?; or, what will be the effect on market demand of vegetable oil, brown flour or sugar?

The model we use for this analysis, the Mixed Demand model, attempts to capture the consumption

<sup>57</sup> The Government of Iraq is currently considering moving to a 'smart card' system of delivery of PDS entitlements, and potentially a means-targeted eligibility criterion for the PDS.

structure of Iraqi households, given the particular characteristics of ration items and the distortions these goods impose on their own markets and on those of other freely traded market goods.<sup>58</sup> The two major empirical difficulties tackled by this approach, relative to more traditional demand systems such as the Almost Ideal Demand System (AIDS) are the following: the lack of enough variability in the price of ration goods makes it impossible to identify price effects; and the identification of demand from observed purchases given that the quantity supplied to each household is fixed.<sup>59</sup>

However, this methodological approach makes assumptions which are common to these types of demand systems in order to identify demand patterns. Among these, it assumes that all goods are purchased by households. This assumption has empirical implications: given that not all households within IHSES 2012 consumed or purchased all items, it generates an unbalanced sample across commodity groups. To solve this problem, we estimate the model at the stratum level for different quintiles in different geographic areas (i.e. urban and rural or Kurdistan and other regions), instead of household level. The choice of aggregating over the stratum level generates a loss in information in the data compared to an analysis at the household level, but it avoids the need to adopt more sophisticated procedures for dealing with multiple corner solutions in demand systems.<sup>60</sup>

Another choice which is essential for this kind of analysis is the type and number of goods included. In the Iraqi case, the type of goods is easily defined by their nature: ration and non-ration items. It is the number of items which represents a problem. Larger demand systems are harder to deal with than smaller ones; the more goods, the greater the computational burden, and the harder it is to report the results.<sup>61</sup> To avoid this problem, we firstly included four out of eight ration items with significant budget shares: rice, brown wheat, sugar and vegetable oil. Table 41 shows that these items contribute more than 98 percent of total rations expenditure across the entire distribution; and their share in total

**TABLE 41:** Budget Shares of Ration Items by Decile of Per-Capita Consumption, 2012

	Total rations (% of total expenditure)	Rice	Brown wheat	Sugar	Vegetable oil
1	16.52	6.43	2.67	3.95	3.28
2	11.63	4.41	1.91	2.78	2.31
3	9.59	3.64	1.58	2.31	1.95
4	8.03	2.99	1.26	1.99	1.67
5	6.87	2.58	1.08	1.69	1.42
6	5.96	2.15	0.93	1.50	1.26
7	5.05	1.79	0.78	1.32	1.10
8	4.12	1.41	0.63	1.09	0.93
9	3.27	1.11	0.47	0.88	0.77
10	1.93	0.58	0.26	0.56	0.49

Source: Authors' calculations, IHSES 2007 and 2012.

expenditure are larger than one percentage point in almost all deciles.

Secondly, we consider four goods which are substitutes or complements for the ration items which are traded in the free market. These are rice, cereals, sweets and oils, which are composite goods, i.e., goods for which prices within each group of commodities move in parallel, so that the corresponding group can be treated as a single good.<sup>62</sup> In sum, our system is estimated for a total of eight items: four rations and four non-rations.

<sup>58</sup> The Almost Ideal Demand System (AIDS) is not the best methodological approach to use. This is essentially because the existence of food subsidies in the consumer demand system is associated with individual consumption quotas, which introduce nonlinearities in demand functions (see Annex for further details on the model).

<sup>59</sup> In particular cases such as Iraq where rationing quotas are conditioned upon observed characteristics of the household, some degree of variability in purchased quantity is possible. However, we opted for the Mixed Demand Model.

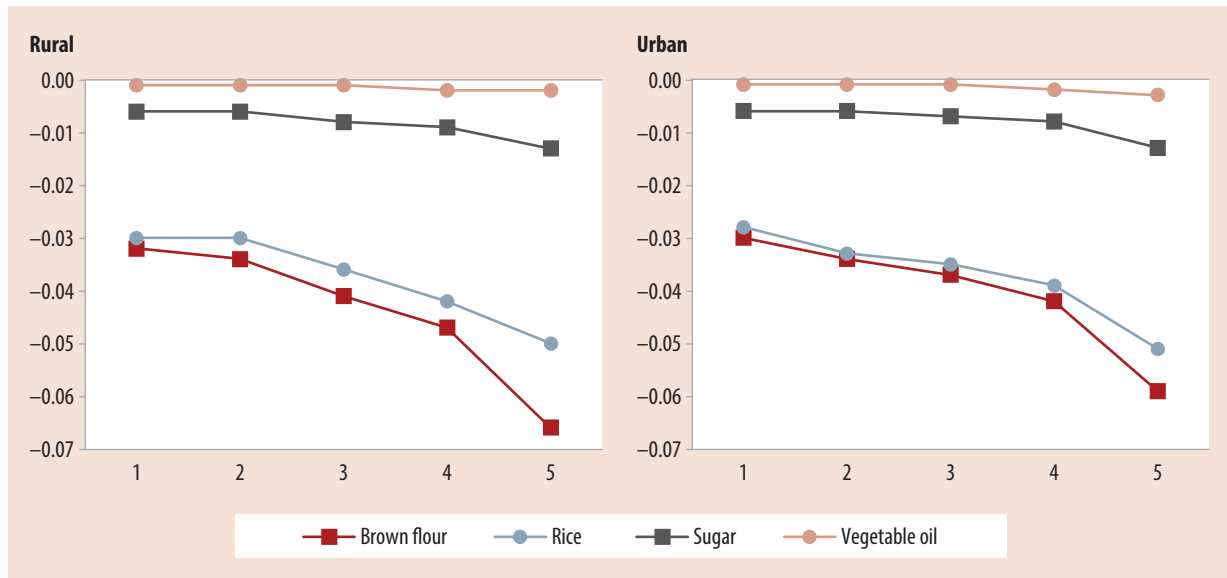
<sup>60</sup> See Ramadan and Thomas (2011).

<sup>61</sup> Deaton (1997).

<sup>62</sup> Deaton and Muellbauer (1980).



**FIGURE 196: Own-Price Elasticities of Ration Items by Quintile of Per Capita Consumption and Area, 2012**



Source: Authors' calculations, IHSES 2007 and 2012.

Note this methodological approach is quite useful to simulate variations in prices and quantities which are not significant enough to make individuals shift from their initial utility levels. Thus, significant changes in prices will need a general equilibrium framework rather than this type of analysis, because it would include all links and implications between macro and micro levels sectors. However, its major constraint is the intense information demand which makes them difficult to apply in most developing countries. Another caveat of the mixed demand model is that requires a closed form expression of utility functions.<sup>63</sup> In other words, results depend on the assumed function used to represent households' satisfaction levels (i.e. utility).

### *How does household demand respond to changes in own prices?<sup>64</sup>*

In general, it is expected that quantities demanded of a particular good will decrease in response to an increase in its own price (law of demand) and these types of goods are classified as normal. Price elasticity of demand (own-price elasticity) gives the percentage change in quantity demanded in response to

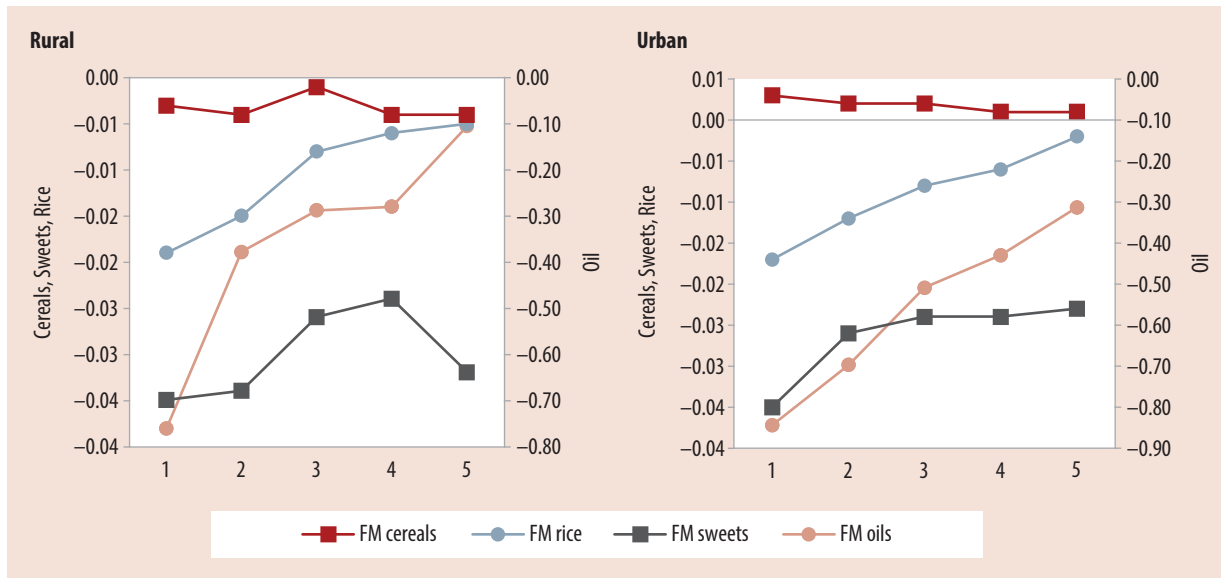
a one percentage change in price holding everything else constant. When this relationship is positive, then these goods are considered as luxury goods.

Figure 196 and Figure 197 present the own-price elasticities of the four ration and free market items in urban and rural Iraq respectively. Overall, the estimates suggest that these particular items are essential in the consumption basket of Iraqis with the exception of free market oils. In other words, Iraqi households are almost non-responsive in terms of altering demand to changes in food prices of ration items and their free market equivalents. If, for example, the price of ration brown flour increases 10 percent, consumers living in rural areas would decrease their demand for ration by 0.3 percent if they are in the bottom 40 percent of the consumption distribution. Similarly, if prices of sugar increase by

<sup>63</sup> We are using the Gorman Polar form suggested by Moschini and Rizzi (2007).

<sup>64</sup> Estimates of the cross-price elasticities are not presented in this report. See Ramadan, Krishnan and Olivieri (2014) for estimates of cross-price elasticities for 2012 IHSES and their interpretation.

**FIGURE 197:** Own-Price Elasticities of Free Market Goods by Quintile of Per Capita Consumption and Area, 2012



Source: Authors' calculations, IHSES 2007 and 2012.

10 percent, irrespective of consumption quintile or of living in rural or urban areas, consumers reduce their demand by only 1 percent or less. However, if the price of free market oil increases by 10 percent in rural areas, demand for oil by Iraqi consumers would decrease by 8 percent in the lowest quintile.

Having said this, there is some variation of elasticities levels across quintiles especially for free market goods (Figure 197). The elasticities of three out of four free market products (i.e. rice, sugar and oil) decrease as consumption per capita increases. In other words, less well-off households are more responsive to changes in prices of free market goods than those located in the upper part of the distribution. However, the opposite happens for ration items particularly for rice and brown flour. Richer households are more responsive to variations in prices of ration items than poorer households. Well-off households may have other options like selling their quotas in the market or substituting them for better quality goods than less well-off households. Finally, elasticity for ration oil and sugar and for free market cereals varies little by consumption quintile, and the demand response to changes in price are uniformly close to zero.

### *How does income affect consumption patterns?*

After price and quantity adjustments (like substitution) have taken place, households may end up with net positive or negative income. The income or expenditure elasticity of demand measures the responsiveness of the demand for a good to a change in the income/expenditure of the people demanding that particular good, holding everything else constant. A negative expenditure elasticity of demand is associated with “inferior” goods while a positive value with “normal” goods.

Table 42 presents the expenditure or income elasticities of ration and free markets goods by area and quintiles. Overall, most products show a positive expenditure elasticity in both areas and across quintiles. This implies on the one hand that these are normal goods i.e. their consumption increases when expenditure increases, and on the other hand these are necessary goods, which are reflected by values less than one. Another takeaway is that more expensive food items such as free market goods have relatively high expenditure elasticities for all quintiles relative to ration items. At the same time, less well-off households

TABLE 42: Expenditure Elasticities by Quintile of Per Capita Consumption and Area, 2012

Quintiles	Ration Products				Equivalent Free Market Products			
	Brown Flour	Rice	Sugar	Oil	Brown Flour	Rice	Sugar	Oil
Rural								
1	0.015	-0.024	0.005	0.021	0.086	0.353	0.359	-0.017
2	0.084	-0.005	0.006	0.023	0.054	0.227	0.259	-0.021
3	0.059	-0.009	0.005	0.027	0.045	0.155	0.213	-0.022
4	0.027	0.003	0.005	0.030	0.037	0.118	0.180	-0.013
5	0.263	0.082	0.017	0.044	0.033	0.072	0.166	-0.046
Urban								
1	-0.057	-0.008	0.000	0.019	0.060	0.359	0.292	0.087
2	-0.073	-0.014	0.000	0.022	0.044	0.256	0.224	0.085
3	-0.093	-0.004	-0.001	0.025	0.035	0.175	0.187	0.061
4	-0.088	0.012	-0.001	0.028	0.029	0.129	0.162	0.042
5	-0.146	0.035	-0.002	0.041	0.023	0.082	0.152	0.017

Source: Authors' calculations, IHSES 2007 and 2012.

are more responsive than their well-off counterparts for free market goods, which is a common pattern.

However, there are exceptions like ration brown flour and free market oils. The expenditure elasticities for ration brown flour are negative in urban areas and positive in rural areas for all quintiles. This indicates that ration brown flour is a marginally “inferior” good in urban Iraq: if household incomes increased by 10 percent, demand for ration brown flour would decrease from 0.5 up to 1.5 percent in urban areas. The opposite happens for free market oil which is marginally a “normal” good in urban areas and the opposite in rural areas.

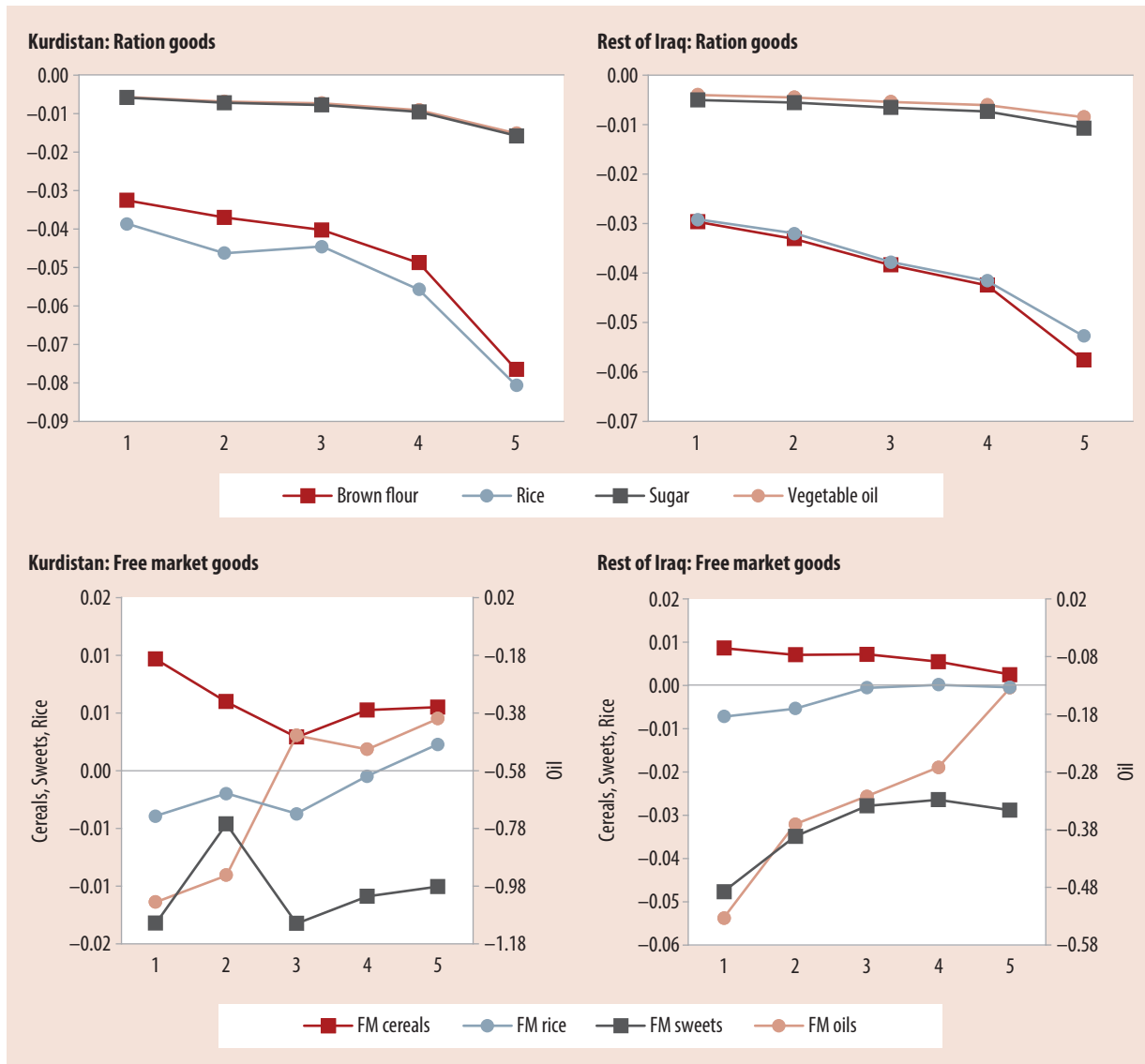
### *How would consumers adjust their consumption responses over time?*

Given the lack of information of future consumer responses to changes in prices and expenditure, one way to understand behavior over time is by exploiting the rich and vast spatial disparities that Iraq has. In other words, consumer behavior in better off regions may be a rough approximation of how worse off regions today will behave in the future as their welfare levels improved, holding everything else

constant. Thus, we consider how households would adjust their consumption patterns over time, as welfare levels improved, by comparing current demand responses in Kurdistan and the rest of Iraq. We take Kurdistan as the reference region because their current consumption levels of ration items are the lowest in the country and because their per capita expenditure levels are the highest on average.

Similar consumption responses to changes in own-prices of ration and free market goods are seen for Kurdistan and for the rest of Iraq relative to previous findings for urban and rural area (Figure 198). Overall, most goods are ordinary goods meaning that demand for these type of goods decrease when there is an increase in their own prices. Not surprisingly, ration items are much less elastic than free market goods. However, all levels responses are higher in Kurdistan than in the rest of Iraq and also higher than the estimates for urban areas shown above. At the same time, well-off households in Kurdistan region are much more responsive to variations in prices of ration goods and the opposite for their free market equivalents than in the rest of Iraq and in urban Iraq. In other words, in line with higher welfare levels in Kurdistan relative to urban Iraq, and in urban

**FIGURE 198:** Own-Price Elasticities of Ration Items by Quintile of Per Capita Consumption and Area, 2012



Source: Authors' calculations, IHSES 2007 and 2012.

Iraq relative to rural Iraq, the flexibility of consumer demand to changes in prices increases. Thus, as the economy grows, consumers face greater options and ability to substitute away from ration items and increase their consumption of free market goods.

This pattern in consumer behavior is quite clear when inspecting demand responses for goods to variations in total household expenditure and income. In general, most rations items are marginally

“inferior” goods in the Kurdistan region irrespective of the level of per capita consumption. In other words, as household expenditures increase by 10 percent, demand will fall by between 0.4 and 3.4 percent for brown flour and by around 0.7 percent for rice. Opposite responses are obtained in the Rest of Iraq: ration items are considered “normal” goods. In sum, as the economy evolves and the levels of income increases across the distribution, and as the rest of the country approaches the higher welfare

TABLE 43: Expenditure Elasticities by Quintile of Per-Capita Consumption and Area, 2012

Quintiles	Ration Products				Free Market Equivalents			
	Brown Flour	Rice	Sugar	Oil	Brown Flour	Rice	Sugar	Oil
Kurdistan								
1	-0.04	-0.07	0.00	0.03	0.04	0.29	0.21	0.16
2	-0.10	-0.11	0.00	0.03	0.04	0.18	0.20	0.17
3	-0.02	-0.07	0.00	0.04	0.03	0.12	0.18	0.06
4	-0.13	-0.07	0.00	0.04	0.03	0.09	0.15	0.08
5	-0.34	-0.07	-0.01	0.07	0.02	0.06	0.14	0.05
Rest of Iraq								
1	0.03	0.01	0.00	0.02	0.09	0.46	0.37	-0.13
2	0.05	0.02	0.00	0.03	0.06	0.35	0.25	-0.09
3	0.00	0.02	0.00	0.03	0.04	0.25	0.21	-0.07
4	-0.02	0.03	0.00	0.03	0.03	0.20	0.17	-0.06
5	0.06	0.09	0.00	0.05	0.03	0.12	0.16	-0.06

Source: Authors' calculations, IHSES 2007 and 2012.

levels of Kurdistan, these types of ration goods will be less demanded in the short run.

Thus we see that in part, demand elasticities for ration items are likely to become larger as welfare levels improve allowing for a decline in consumption of ration items when faced with price increases and a greater consumption of free market goods as incomes rise. Another piece of the puzzle is how big these price elasticities would be in an economy where developed markets of ration goods exist. Given that ration goods are universally distributed in Iraq, the spatial framework used until now is relatively uninformative.

We obtain suggestive evidence by comparing Iraq with Egypt, where a public distribution system exists for food but it is not a universal system. Table 44 presents own-price elasticities for ration items in Egypt. There are several differences between the PDS system implemented in Egypt and in Iraq. For instance, while in Iraq, quantities of ration items are a function of the number of members included in the ration card, Egypt distributes fixed quotas and subsidies for cooking oil and sugar and consumers can complement them from the free market.<sup>65</sup> In

TABLE 44: Own Price Elasticities by Subsidy Products, Egypt 1997 and Iraq 2012

		Egypt	Iraq
Subsidy plus Quantity ration	Cooking oil	-0.030	-0.002
	Sugar	-0.120	-0.008
	Brown Flour		-0.042
	Rice		-0.037
Subsidy only	Wheat flour	-0.060	
	Bread	-0.120	

Source: Authors' calculations, IHSES 2007 and 2012.

addition, wheat flour and bread are subsidized universally, and there is no quantity rationing so that households can acquire as much as they would like to consume at the subsidized price. Perhaps because of these differences, Egypt has a far more developed market for ration items and own-price elasticities are far (almost 15 times) higher than in Iraq, where there is negligible trade in PDS items.

<sup>65</sup> Further details on the Egypt system: see Ramadan and Thomas (2011) and Ahmed, Bouis, Gutner and Lofgren (2001).



### *PDS reform scenarios and their simulated welfare impacts*

The analysis so far suggests that faced with changes in the effective prices of ration items, households will, on average, have very limited change in their demand for these items. However, there are also some indications that ration goods slowly become less preferred at least for those households who have larger budgets. For instance, brown flour, which accounts for the largest share of expenditures within ration items, is an inferior good in urban areas as well as in Kurdistan. Moreover, rice from rations also is an inferior good in Kurdistan. On the other hand, as welfare levels improve in rural areas, people will not significantly lower their demand for ration brown flour, sugar and oil in the short run, which is also true for urban areas, Kurdistan and the Rest of Iraq. However, as a result of higher prevailing welfare levels in urban areas and particularly in Kurdistan region, as well as the presence of relatively well-functioning markets, consumers do exhibit more flexible consumption patterns.

Taking these into account, we propose two reform scenarios of the Public Distribution System which may minimize the social effort by removing ration items from those households who may need them the least or who could easily adjust their consumption or a combination of both. The first scenario (Scenario A) consists in targeting rations only to the bottom 60 percent of the urban (or Kurdistan) consumption distribution and entire rural (or Rest of Iraq) population. The second scenario (Scenario B) involves in targeting rations only to rural (or Rest of Iraq) areas. The simulation process is the same for both scenarios: we start removing ration items, from the smallest to the largest ration item, one by one according to the importance of the item measured by its share in the total expenditure.

Note, in both scenarios, simulations do not consider spillover effects and/or effects among and between households who live in the same or different geographic areas. These are strong assumptions, given that when such policies are implemented may result in black markets and leakages without simultaneous implementation of effective targeting policies.

Table 45 shows the average change in the welfare aggregate for both scenarios and each simulation step by quintile of the consumption aggregate in urban areas. According to the previous discussion, eliminating the ration system would be approximately equivalent to increasing the price of ration items up to the market price levels given the low response of consumers to variations in prices and expenditures. This will affect directly consumer's welfare levels by reducing them by one-fifth to one-third for the upper quintiles in Scenario A and up to 60% for the lowest quintile in urban areas in Scenario B.

As the country grows, households would become better-off and the demand for ration items would reduce as consequence of being "inferior" goods. To account for this possibility, we focus on the results based on the Kurdistan-Rest of Iraq comparison. Table 46 shows the average change in the welfare aggregate for both scenarios and each simulation step by quintile of the consumption aggregate in Kurdistan. Given the higher elasticities to changes in own prices and in incomes in Kurdistan, the welfare impact of this type of reform of the

**TABLE 45:** Average Change in Total Expenditure by Quintile in Urban Areas

Scenario A	Rice	Rice + Oil	Rice +	Rice +
			Sugar + Oil	Sugar + Oil + Wheat
1 (Poorest)	0%	0%	0%	0%
2	0%	0%	0%	0%
3	0%	0%	0%	0%
4	-8%	-14%	-23%	-34%
5 (Richest)	-7%	-10%	-17%	-20%

Scenario B	Rice	Rice + Oil	Rice +	Rice +
			Sugar + Oil	Sugar + Oil + Wheat
1 (Poorest)	-12%	-24%	-39%	-60%
2	-10%	-21%	-33%	-51%
3	-9%	-17%	-28%	-43%
4	-8%	-14%	-23%	-34%
5 (Richest)	-7%	-10%	-17%	-20%

Source: Authors' calculations, IHSES 2007 and 2012.

**TABLE 46:** Average Change in Total Expenditure by Quintile in Kurdistan Region

Scenario A	Rice	Rice + Oil	Rice + Sugar + Oil	Rice + Sugar + Oil + Wheat
1 (Poorest)	0%	0%	0%	0%
2	0%	0%	0%	0%
3	0%	0%	0%	0%
4	-8%	-11%	-18%	-27%
5 (Richest)	-7%	-6%	-10%	-12%

Scenario B	Rice	Rice + Oil	Rice + Sugar + Oil	Rice + Sugar + Oil + Wheat
1 (Poorest)	-11%	-20%	-32%	-46%
2	-10%	-18%	-28%	-42%
3	-8%	-14%	-23%	-34%
4	-8%	-11%	-18%	-27%
5 (Richest)	-7%	-6%	-10%	-12%

Source: Authors' calculations, IHSES 2007 and 2012.

PDS system is relatively smaller than what might be expected for urban areas as a whole. The largest impact is experienced by the poorest quintile in Scenario B, a reduction in welfare levels by half, compared to a 60 percent decrease in expenditures for the poorest 20 percent in urban areas. In Scenario A, where the top 40 percent are excluded from receiving PDS items, the welfare impact on the richest quintile in Kurdistan is a decline in average expenditures by 12 percent compared to 20 percent for the richest quintiles in urban Iraq. This may reflect the fact that consumers are less

impacted by PDS reforms because they already consume lower quantities in Kurdistan and can adjust their demand for ration items more easily when both initial levels of welfare are higher and markets are relatively well developed.

To conclude, the poorer segments of the consumption distribution in Iraq are disproportionately dependent on public and private transfers to supplement their relatively low earnings on the labor market. Most of these transfers are however, small, and cover a fraction of the poor. The single exception is the Public Distribution System, which guarantees a minimum amount of caloric consumption for not just the poor, but the whole population. Given its universal nature, large fiscal costs, and the significant distortions the PDS introduces in the economy as a whole, we try to estimate the welfare impact of reforming the PDS by targeting it to a section of the population. Given the universality of consumption, the lack of a market for ration items, and the low levels of income for much of the population, household consumption of PDS items is relatively inelastic to changes in price, and for much of the population, these goods are not inferior, but rather normal goods. However, there are some signs that with improvements in welfare levels, and faced with well-functioning markets, some segments of the population are substituting away from the PDS and increasing their consumption of market substitutes. Overall, this suggests that while any one-shot reform will have adverse and sizeable welfare impacts, over time, and with increases in incomes, some households may not be as significantly affected.