An Assessment of the Jordan 2012 Petroleum Subsidies Reform and Cash Compensation Program

June 2013

Poverty Reduction and Economic Management Department

Middle East and North Africa Region (MENA)

The World Bank

* This note was prepared by Abdelkrim Araar (Research Fellow, Department of Economics, University of Laval), Eric Le Borgne (Lead Economist, World Bank), Umar Serajuddin (Economist, World Bank), and Paolo Verme (Senior Economist, World Bank). We thank Ferid Belhaj, Facundo Cuevas, Bernard Funck, Dean Jolliffe, Dalia Kadi, Peter Lanjouw, and Thomas Walker of the World Bank for helpful comments. We are grateful to Mukallad Omari, Zein Soufan, and Orouba Al Sabbagh of the Ministry of Planning and International Cooperation (MoPIC) of the Government of Jordan (GoJ) for helpful discussions. The analysis is conducted with the model SUBSIM; see Araar, A. and Verme, P. (2012) Reforming Subsidies: A Toolkit for Policy Simulations", World Bank Policy Research Working Papers No. 6148.

1. Executive Summary

The unsustainably large fiscal costs of petroleum price subsidies led the Government of Jordan (GoJ) to implement substantial reforms on November 13, 2012. The GoJ eliminated subsidies on gasoline (Octane-90), diesel and kerosene entirely resulting in price increases ranging from 14 to 33 percent; while subsidies on LPG gas cylinders used mainly for cooking were not fully removed, its price rose by 54 percent. The GoJ also reinstated the monthly automatic petroleum products price adjustment mechanism that had previously been in place till December 2010 to prevent the re-occurrence of subsidies over time. To compensate for large price increases on petroleum products, the government simultaneously introduced a cash transfer scheme for households. With the costs and benefits of the major reforms of November 2012 still remaining unclear, this note develops estimates of the reforms' distributional and fiscal impacts with a view to informing policy dialogue.

The analysis shows that the wealthier households were the largest beneficiaries of the pre-2012 petroleum product subsidies. This finding is not new and is highlighted extensively in the recent literature (e.g., World Bank 2012, World Bank 2011, IMF 2012). Moreover, some petroleum products were more pro-rich than others. For example, almost a third of all gasoline (Octane-90) subsidy benefits accrued to the richest 20 percent of households while less than a tenth went to the bottom 20 percent. For LPG gas cylinders, however, the distribution of benefits across income groups was quite uniform.

The analysis reveals that had the price increases of the subsidized products taken place *without* any remedial measures, they would have increased poverty by about 0.75 percentage points. All income groups would have experienced a welfare decline, with the poorer households facing relatively greater losses. For example, simulations suggest that on average, the per capita expenditures of the poorest 20 percent households would have fallen by about 1.8 percent while for the richest 20 percent it would have fallen by 1.5 percent. The largest adverse impact on the welfare of the poorer households would have come from LPG price increases, as LPG consumption makes up a larger share of their household budget than Octane-90, diesel, or kerosene; and while still subsidized, LPG experienced the largest relative price increase. The increased prices of Octane-90, diesel or kerosene have minimal impacts on poverty indicators.

The complementary cash transfer program that was implemented by the Government, however, is expected to compensate for the adverse consequences of price increases for a large portion of the population. The cash transfer program is designed to reach all households with Jordanian nationals as heads earning less than 10,000 Jordanian Dinars (JDs) a year, thereby covering roughly two-thirds of Jordan's population. The analysis reveals that beneficiaries are compensated quite generously. If the program is targeted perfectly to those earning less than JD10,000 a year, it is expected to increase the per capita expenditures of the poorest 20 percent of households on average by as much as 4 percent and of those in the second quintile by about 2 percent, thereby more than compensating them for the increase in petroleum prices. The clear losers of the November 2012 reforms would be households that are now paying higher petroleum prices without receiving the cash transfer.

The cash transfer program, is however, estimated to cost about JD320 million per year, which is higher than the estimated JD190 million a year in revenues / cost savings generated from households' use of petroleum products. While there would be savings to the government from reduced subsidies to the non-

household actors such as firms and the government, the program is costly and over-compensates a majority of Jordanian households.

Design issues also arise from using income as a criterion to target cash transfer beneficiaries. Firstly, households are selected based on self-reported income levels, but this income is difficult to verify. To the degree this is a concern, the cash transfer program would be mistargeted. Moreover, while the program uses households' total income as the criterion for determining beneficiaries, per capita income is a more apt indicator of household welfare. Analysis from household survey data suggests that there is a significant difference between households ranked by per capita expenditures and those ranked by total household income. For example, about 10 percent of poor households with Jordanian heads (and 16 percent of all poor households) have incomes greater than JD10,000 per year, and would be excluded from the cash transfer program. On the other hand, about 41 percent of households who have income lower than JD10,000 a year are in fact among the top 30 percent households in terms of per capita expenditure rankings; still they would be eligible for the cash transfer. For these reasons, there is merit to considering alternative approaches to targeting beneficiaries. For instance, the government could target cash transfers to households based on sophisticated techniques such as proxy means testing; another option would be to target using a per capita income threshold instead of the present household income threshold of JD 10,000 per year, which would be likely to make the targeting of the cash transfer more pro-poor.

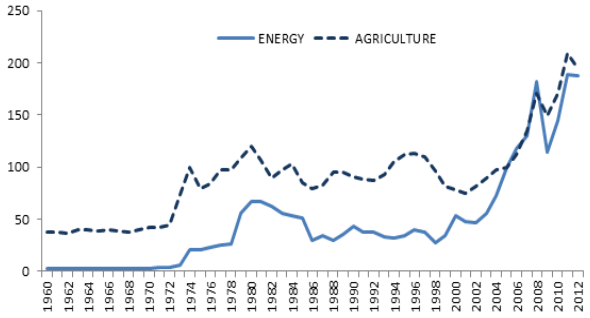
The existing cash transfer program's broad targeting and large cash transfer, however, imply that even if broad mistargeting were to occur, a substantial number of households would benefit from the program, and poor households would be more than compensated for their losses from the removals or reduction in subsidies.

It is important to acknowledge, however, that this analysis focuses on the distributional and fiscal impacts of the November 2012 reforms on households and not on the entire economy. While this paper offers an analysis based on the most recent household survey, a more detailed analysis could better examine the broader impacts of the recent reforms.

2. Petroleum Product Subsidies in Jordan: Importance to Fiscal Balance and to Households

As in other countries in the region, the GoJ has traditionally subsidized consumption through direct subsidies to producers and consumers for selected petroleum products and food items (wheat and barley) as well as for utilities such as electricity and water. These subsidies rose sharply during the earlier part of the last decade. In the short six years between 2002 and 2008 world energy prices shot up by more than threefold while world food prices doubled (Figure 1). With such large exogenous commodity and food price shocks and the intention of GoJ to protect the population from such shocks, energy and food subsidies increased; in 2005, GoJ spending on petroleum subsidies alone reached 5.8 percent of GDP (Coady *et al* 2006).

Figure 1. World Energy and Agriculture Price Trends (1960-2012)



Source: World Bank Commodity Prices Database (Index, 2005=100)

Table 1. Jordan: Change in Petroleum Subsidies, 2007–12

	2007	2008	2009	2010	2011	2012
	(In million JD, unless otherwise specified)					
Budgetary petroleum subsidies	306	197.9	42.9	88.2	571	626
Nominal GDP at market prices	12,131	15,593	16,912	18,762	20,477	22,230
Petroleum subsidies *(% of GDP)*	2.5	1.3	0.3	0.5	2.8	2.8
Petroleum subsidies *(% of budget expenditures)*	6.8	3.8	0.9	1.6	8.4	8.8

Source: World Bank (2012) figures that gathered from the Ministry of Finance (MoF) of Jordan, the Department of Statistics (DOS), Central Bank of Jordan, and Jordan Petroleum Refinery Company (JPRC). 2012 figures are estimated by the authors of World Bank (2012).

Facing increased fiscal pressures, between 2008 and end 2010, the GoJ phased out the cash subsidies on petroleum products, generating a rapid drop in petroleum subsidies from 2.5 percent of GDP in 2007 to 0.3 percent in 2009.[1] However, in December 2010, when crude oil prices were approximately US$90 a barrel, Jordan discontinued monthly petroleum price adjustments, freezing retail prices (except for heavy fuel oil for industrial consumption, power generation and aviation fuels). Petroleum subsidies were reintroduced, reaching JD571 million or 2.8 percent of GDP in 2011, and increasing by another 10 percent in 2012 to JD626 million (World Bank, 2012).

Faced again with fiscal strain – petroleum subsidies were over 8 percent of the government budget – in June 2012 GoJ took the step of increasing the price of octane-95 gasoline by about 13 percent. However, the higher priced octane-95 accounted for only about 10 percent of the gasoline consumption of Jordan's transport sector, the reminder being split between the lower priced fuels octane-90 gasoline and diesel (World Bank 2012). Thus, this move was insufficient in tackling the government's fiscal burdens, especially since many users simply substituted away to using the subsidized octane-90 gasoline. In this backdrop, the need for more far reaching price changes became imperative, leading to the November 2012 reforms.

[1] Households were compensated in the form of salary increases for public and private sector employees and military personnel, both active and retired, and by a number of tax exemptions on consumption goods. (World Bank, 2012)

2.1 The importance of subsidized petroleum products for households

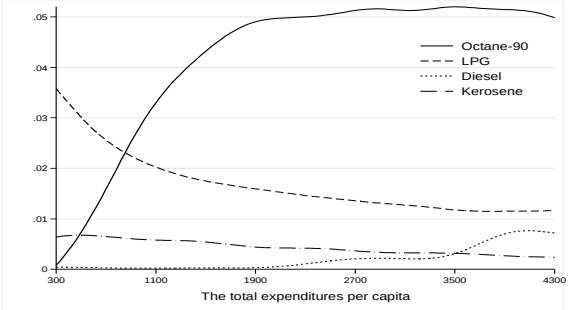
Prior to the November 2012 reform, average household expenditures on subsidized petroleum products, namely, gasoline (octane-90), diesel, kerosene and LPG, were about 6.3 percent of total household expenditures. On the whole, the wealthier households spent a larger share of their budgets on these products compared to the poorer households; for example, bottom quintile households spent about 5.25 percent of their budget on these products, whereas households in the top quintile spent 6.2 percent (Table 2).

Table 2. Jordan: Expenditure on subsidized products relative to total expenditures (%)

	Octane-90	LPG	Diesel	Kerosene	Total
Quintile 1	2.26	2.34	0.02	0.63	5.25
Quintile 2	3.63	1.92	0.02	0.57	6.15
Quintile 3	4.59	1.7	0.03	0.49	6.81
Quintile 4	4.97	1.46	0.12	0.41	6.96
Quintile 5	4.21	1.02	0.74	0.21	6.18
Poor	1.59	2.54	0.03	0.69	4.84
Total	4.13	1.53	0.28	0.41	6.35

Source: Authors' calculations using HEIS 2010

Figure 2. Jordan: Expenditure on subsidized products relative to total expenditures (%)



Source: Authors' calculations using HEIS 2010.

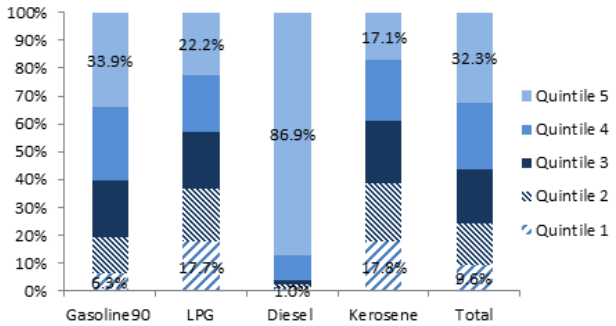
Individual subsidized products, however, have different levels of importance across rich and poor households (Figure 2 provides an illustration of this across the entire distribution of households.) Octane-90 accounted for a relatively large share of household expenditures. Its importance, however, was relatively more pronounced in the consumption basket of middle class and richer households (about 5 percent of overall expenditures of the fourth richest quintile and 4.2 percent of the richest quintile). For lowest quintile households, the budget share of octane-90 was about 2.26 percent. Conversely, gas cylinders, used primarily for cooking, are relatively more important in the consumption basket of poorer households. For the poorest 20 percent households, LPG gas cylinders represented about 2.3 percent of household expenditures, compared with 1 percent for households in the top quintile. Finally, in general, diesel and kerosene are very small shares of household expenditures.

Table 3. Jordan Total Expenditures on subsidized products by quintile

	Octane-90	LPG	Diesel	Kerosene	Total
			(In million JD)		
Quintile 1	30.3	31.4	0.3	8.4	70.5
Quintile 2	63.4	33.6	0.4	10	107.3
Quintile 3	97.7	36.1	0.6	10.5	144.9
Quintile 4	125.9	37	2.9	10.4	176.3
Quintile 5	162.4	39.3	28.5	8.1	238.3
Total	479.8	177.5	32.8	47.3	737.3

Source: Authors' extrapolations from HEIS 2010

Figure 3. Jordan: Shares of total expenditures by quintile



Source: Authors' calculations using HEIS 2010.

How progressive and pro-poor were the universal subsidies? While budget shares indicate that the subsidized petroleum products are more important for richer households, in terms of total amounts spent on subsidized products, richer households far outspend poorer ones. For example, the richest households spend an estimated JD238 million on the subsidized products, about 3.5 times more than the households in the lowest quintile who spend an estimated JD70.5 million (Table 3). In other words, households in the top quintile are responsible for about a third of all expenditures on subsidized goods while those in the lowest quintile account for a mere tenth. This suggests that richer households were the largest beneficiaries of the pre-November 2012 petroleum product subsidies. This holds strongly for Octane-90 subsidies since the poorest quintile households spent only 6 percent of the total household expenditures on Octane-90, whereas the richest quintile spent about 34 percent. For LPG gas cylinders, however, the benefits of subsidies are far more evenly distributed; still the poorest quintile was spending less than the richest quintile in absolute terms (18 percent of total national expenditures *vis-a-vis* about 22 percent).

3. The November 2012 Reforms

In November 2012 the government increased the prices of gasoline (Octane-90), diesel and kerosene, removing their entire subsidies (Table 4 shows the price increases). The price of Octane-90 rose by 14 percent, while prices of diesel and kerosene, which are used less by households, increased by 33 percent. To match up with import prices, these consumer prices are subjected to a monthly automatic price adjustment mechanism. The most drastic increase in price was that of LPG gas cylinders, whose unit price rose from JD6.5 to JD10, or by 53.8 percent; however, despite this increase, LPG continues to be subsidized.

Table 4. Jordan: pre and post reform prices of petroleum products

	Pre-reform prices 1/	Post-reform prices 2/	Increase
	(in JD)		(percent)
Octane-90	0.7	0.8	14.3
Kerosene	0.515	0.685	33.0
Solar or Diesel	0.515	0.685	33.0
Gas Cylinders (LPG)	6.5	10.0	53.8

Source: Authors' extrapolations from HEIS 2010
1/ As of October 2012 ; 2/ As of November 2012 ;

At the same time the government initiated a cash transfer scheme targeting a broad section of the population. The cash transfer scheme targets resident Jordanian households (with the households being the unit of reference) with yearly incomes not exceeding JD10,000 (which corresponds to the seventh income decile). The objective of the cash transfer program was to protect the bottom seven decile households from the cuts in subsidies. The transfer amounts to JD70 per person per year, up a maximum of 6 individuals per household; thus, the maximum amount a household could receive in transfers is JD420 per year. The scheme is expected to cost between JD320 million (1.5 percent of GDP).

Box 1: Administrative Features of the Cash Transfer Program

The application process for the Cash transfer program was designed to be quite straightforward. Those who were already in government databases were automatically enrolled in the program. This included (i) public sector employees and retirees, (ii) military personnel and retirees, (iii) social security subscribers, and (iv) National Aid Fund (NAF) beneficiaries (provided they met the income criteria). All other individuals had to apply by filling a specific application form. The two page application form could be completed electronically (through the Ministry of Finance website: https://cfs.gov.jo/), or on paper forms available at post offices, Ministry of Finance or Income and Sales Tax Department (ISTD) offices across the Kingdom. The individual filling the form had to insert (i) his/her National ID Number (a mandatory unified number for all Jordanians), and (ii) the Civil Registration Number (this number is given to each household in Jordan and it is used to identify families and heads of households). The forms essentially seek self-reported information on household members' incomes.

Payment Mechanism: Payments started on November 18, 2012 for recipients who had to apply for the transfer. The remaining recipients were supposed to receive transfers at the end of November. Payments are made over three installments every 4 months to the head of the household, as defined by the official family card for the whole household. Disbursement is made automatically through payroll for public sector employees and retirees, social security subscribers, and NAF beneficiaries. Disbursement for other applicants is made through branches of the "Housing Bank" which is the second largest commercial bank in Jordan. The Income and Sales Tax Department (ISTD) of the Ministry of Finance (MoF) is administering and overseeing these transfers. Households are paid the assistance in three installments, two of which have already been paid out.

4. Analytical Framework and Data

The theoretical framework followed in this paper to analyze implications of subsidies on household welfare and government revenues can be referred to as a 'marginal' or partial equilibrium approach. This approach assumes that, except for the change in prices due to subsidy reforms, all other determinants of welfare or government revenues remain constant, in effect presenting a first order approximation of the true impact of the reform. The approach thus simulates the 'direct effects' of subsidy reform, which are the price and quantity changes that apply to the final consumer when subsidies on final products are changed. These include the short-term crude change in prices (also called first-round effects) and the medium-term behavioral response of the final consumer in terms of quantities consumed (also called second-round effects, behavioral changes or demand responses to price changes). The assumption here is that the household budget constraint is fixed and that households do not dig into savings to face increased prices; at the same time households are assumed to adapt their bundle of goods to maximize their utility after the change in prices.

The approach does not explicitly model the indirect effects on the final consumers that result from the 'trickle down' effects to intermediaries due to changes induced by reforms. In other words, indirect effects can be considered as the supply responses to price changes. The petroleum products analyzed in this paper are not only final products consumed by households, but to varying degrees are primary and intermediate products as well since they are inputs to various production processes. For example, in the Jordanian context, the indirect effects would likely be greater for Octane-90 than for LPG gas cylinders or kerosene. The present approach focuses on the more direct or partial equilibrium effects of price reforms,

rather than the indirect or general equilibrium effects that consider both direct and indirect effects on the whole economy. However, general equilibrium effects on prices are imported into the model to adjust household expenditure for changes in the consumer price index generated by changes in prices of the individual petroleum products.

All simulations in this paper are based on Jordan's most recent Household Expenditures and Income Survey (HEIS) from 2010, a nationally representative survey which is used by the Department of Statistics (DOS) to produce official welfare aggregates and poverty estimates. Analyses refer to the year 2012 when the reforms were implemented. Extrapolations between 2010 and 2012 are based on population, economic growth (GDP), and inflation (CPI) estimates during this period and the petroleum product prices right before and after November 2012 (implying that no reform was undertaken between 2010 and that date).

To consider consumer responses to price change, estimates of demand elasticity with respect to price are necessary. Efforts to estimate elasticity were limited due to the availability of cross sectional household data only, which offered no variation in individual petroleum product prices across households. For simplicity and also to assess the sensitivity of results to this behavioral aspect, all simulations are conducted assuming the consumption elasticity with respect to price to be -0.3.

The indirect or supply-side effects of subsidy reforms, working through different markets, are incorporated into the partial equilibrium framework by adjusting household expenditures by estimates of the increase in CPI associated with the price increases of petroleum products. The paper conducts simulations on the assumption that the November 2012 reform generated 2.3 percent inflation; this estimate was produced by the Ministry of Planning and International Cooperation (MoPIC) of Jordan using an 'input-output' matrix.

5. Simulations of Distributional Impacts of Subsidy Reform

In this section we simulate the impacts of the November 2012 reforms on household welfare. We consider two main scenarios. In the first scenario, only the impacts of the cuts in subsidies are considered. In the second scenario, the overall impacts of the November 2012 reforms are considered by including the combined impacts of both subsidy cuts and the cash transfer.

5.1 Scenario 1: Simulations of Cuts in Consumption Subsidies

The simulations indicate that petroleum price increases (in the absence of the cash transfer program) would lead, on average, to an estimated 1.6 percent drop in per capita consumption. For the poorer quintiles the decline is slightly greater (1.8 percent) and results largely from the removal of subsidies on LPG gas cylinders. In contrast, for the top quintile households, Octane-90's price increase would contribute most to the decline in per capita consumption (Table 5).

By itself, the petroleum products price increase would have increased poverty incidence in Jordan by 0.84 percentage points, from 14.4 to 15.24 percent of the population (Table 6). Without any mitigating measures, an estimated 53,000 Jordanians would have been pushed into poverty. The depth of poverty or the poverty gap, which measures how far below the poverty line the income of the poor are on average,

would have increased as well (by about 8 percent as suggested in Table 6).[2] These adverse poverty impacts would have resulted mainly from increased LPG gas cylinder prices, whereas Octane-90, diesel and kerosene price increase would have had virtually no impact.

Table 5. Jordan: The impact on the per capita well-being of removing subsidies 1/

	Pre-reform	Post-reform impact of per capita wellbeing					Change in per capita consumption
	Total expenditures per capita	Octane-90	LPG	Diesel	Kerosene	Total	
			(in JD)				(percent)
Quintile 1	810	-2.57	-10.21	-0.06	-1.69	-14.53	-1.8
Quintile 2	1,226	-6.54	-12.65	-0.12	-2.31	-21.61	-1.8
Quintile 3	1,635	-10.59	-14.96	-0.14	-2.66	-28.35	-1.7
Quintile 4	2,290	-16.36	-17.96	-1.00	-3.09	-38.42	-1.7
Quintile 5	4,492	-26.93	-24.72	-10.83	-3.06	-65.54	-1.5
Total	1,824	-10.78	-15.03	-1.70	-2.45	-29.96	-1.6

Source: Authors' estimates. 1/ Simulations assume consumption elasticity with respect to price to be -0.3 and inflation resulting from subsidy reform to be 2.3 percent.

Figure 4 shows the impact on poverty according to the percentage of increase in price of each of the four petroleum products. From this figure it becomes clear that price increases of gasoline (Octane-90) and LPG would impact households the most. Such a diagram can be helpful to policymakers to understand the tradeoffs of reforming subsidies.

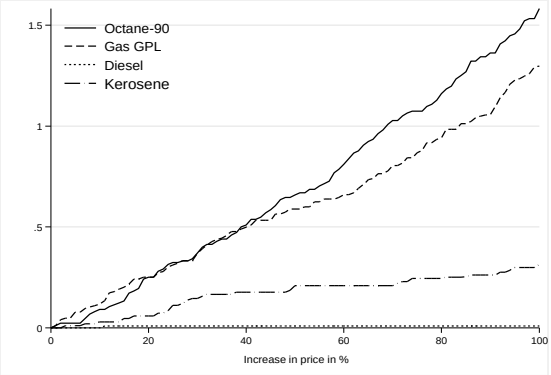
Table 6. Jordan: The impact on poverty of removing subsidies 1/

	Poverty level	Change in poverty	Poverty gap	Change in poverty gap
	(percent)	(% points)	(percent)	(% points)
Pre reform	14.40	.	2.81	.
Octane-90	14.57	0.17	2.83	0.027
Gas LPG	15.03	0.63	2.97	0.163
Diesel	14.40	0.00	2.81	0.001
Kerosene	14.51	0.12	2.83	0.027
Post reform	15.24	0.84	3.03	0.221

Source: Authors' estimates.

1/ Simulations assume consumption elasticity with respect to price to be -0.3 and inflation resulting from subsidy reform to be 2.3 percent

Figure 4. Jordan: Poverty impact of price increases 1/



[2] When measured across the poor population, the poverty gap represents how much the consumption of the poor on average is short of the poverty line (in terms of percentage of the poverty line). The deficit multiplied by the number of the poor and typically expressed as percentage of GDP, provides an estimate of the minimum cost of eliminating poverty, assuming resources could be perfectly targeted to the poor.

Table 7. Jordan: The impact of subsidy reform and cash transfer on per capita well-being 1/

	Pre-reform	Post-reform			
		Case 1: Cash transfer perfectly targeted		Case 2: Cash transfer imperfectly targeted (when 40 percent of transfers are mistargeted)	
	Total expenditures per capita	Impact on per capita wellbeing	Change in per capita consumption	Impact on per capita wellbeing	Change in per capita consumption
	(in JD)	(in JD)	(percent)	(in JD)	(percent)
Quintile 1	810	32.6	4.0	16.1	2.0
Quintile 2	1,226	25.5	2.1	11.3	0.9
Quintile 3	1,635	11.2	0.7	4	0.2
Quintile 4	2,290	-4.2	-0.2	-5.9	-0.3
Quintile 5	4,492	-43.6	-1.0	-34.9	-0.8
Total	1,824	10	0.5	1.9	0.1

Source: Authors' estimates. 1/ Simulations assume consumption elasticity with respect to price to be -0.3 and inflation resulting from subsidy reform to be 2.3 percent.

5.2 Scenario 2: Simulations of Cuts in Consumption Subsidies with the Cash Transfer Program

The compensatory cash transfer program is estimated to significantly offset the negative impact of the petroleum price increase on household welfare and poverty. The Government of Jordan estimates to transfer about JD320 million to Jordanian households through this program.

Assuming perfect targeting of the cash transfer program to Jordanian households with annual incomes below JD10,000, it is estimated that per capita expenditures of households will rise by about 0.5 percent on average. Since the cash transfers are independent of the amount spent on petroleum goods, poorer households (with lower initial petroleum goods spending) would benefit disproportionately from this scheme. Table 7 (case 1) indicates that per capita consumption levels would rise by about 4 percent for the bottom quintile and by 2 percent for the second quintile. The top quintile on the other hand would see their level of consumption welfare decline by 1 percent.

Moreover, if the cash transfer is perfectly executed, poverty is estimated to fall by 1.7 percentage points (from 14.4 to 12.7 percent as shown in Table 8). This would mean slightly over 100,000 Jordanians would be pulled out of poverty. The poverty gap would fall quite impressively (from 2.8 to 2.3, or by 18 percent); lastly, the distribution of expenditures would become more equal, the Gini coefficient falling by about 3 percent. The generosity of the program is captured by the fact that if it reached every household earning less than JD10,000 per year, it would actually more than fully pay for the total yearly expenses on octane-90, LPG, diesel and kerosene of a third of all households.

Targeting households on the basis of income, however, is prone to errors of inclusion and exclusion as incomes cannot always be rigorously verified. Thus, some households may be incorrectly assumed to have income below (above) JD10,000 when in fact they are earning more (less) than that. We simulate a scenario where such errors are very large: we assume 40 percent of those under the income level of

JD10,000 per year would not receive cash transfers, while 40 percent of households above the income level of JD10,000 per year would in fact receive cash transfers. We chose such a scenario to get a sense of outcomes if cash transfers were very poorly delivered. The results of the simulations are presented in Table 7 (case 2).

Table 8. Jordan: The impact of subsidy reform and cash transfer on poverty and inequality 1/

	Poverty level	Change in poverty	Poverty gap	Change in poverty gap	Gini coefficient	Change in Gini coefficient
	(percent)	(% points)	(percent)	(% points)		(percent)
Pre reform	14.40		2.81		33.66	
Post-reform: Cash transfer perfectly targeted	12.69	-1.69	2.28	-0.53	32.76	-2.7
Post reform: Cash transfer imperfectly targeted (40% of transfers mistargeted)	13.60	-0.80	2.53	-0.28	33.15	-1.5

Source: Authors' estimates.
1/ Simulations assume consumption elasticity with respect to price to be -0.3 and inflation resulting from subsidy reform to be 2.3 percent.

Under such a scenario, since transfers are leaking to households with higher incomes, the average per capita consumption level would rise by only 0.1 percent. However, the lowest quintile households would still on average experience a 2 percent increase in per capita expenditures, while on average the bottom three quintile households would still be compensated for the increased prices of hitherto subsidized products.

As for the poverty rate, it would still be estimated to decline from 14.4 to 13.6 percent in the case of 40 percent mistargeting (Table 8). Thus, even a poorly targeted cash transfer program would be poverty reducing due to the breadth of the program and the generous amount of transfers. The less wealthy population not receiving the transfer would be adversely effected by subsidy removal, even more so because their situation relative to those who have received the transfer would be worse.

5.3 The Impact of the Reform on Government Revenues

The removal of the subsidies is estimated to generate JD190 million per year in revenues (or savings) from households' (Table 9). Half the revenues come from the removal of subsidies on LPG gas cylinders while about 36 percent comes from the removal octane-90 subsidies. This is so because while the spending by all households in Jordan on LPG is lower than on Octane-90, the price of LPG rose by over 50 percent while Octane-90 faced a much smaller increase. Diesel and kerosene generate small amounts in revenues. Not surprisingly, the richer households contribute relatively more to the revenues, with the top quintile generating about 30 percent of the new revenues; households in the poorest quintile contribute about 12.6 percent.

The cash transfer program, however, as mentioned earlier, is estimated to cost about JD320 million per year, which is higher than the revenues / cost savings generated from households' use of petroleum products. While there would be savings to the government from reduced subsidies to non-Jordanian

households and non-household actors such as firms, the program is costly and over- compensates a majority of Jordanian households.

Table 9. Jordan: The annual impact of the subsidy reform on government revenues 1/

	Octane-90	LPG	Diesel	Kerosene	Total
			(in million JD)		
Quintile 1	4.3	16.9	0.1	2.8	24.1
Quintile 2	9.1	18.1	0.1	3.3	30.6
Quintile 3	14.0	19.4	0.2	3.5	37.1
Quintile 4	18.0	19.9	1.0	3.4	42.3
Quintile 5	23.2	21.2	9.4	2.7	56.5
Total	68.5	95.6	10.8	15.6	190.5

Source: Authors' estimates.
1/ Simulations assume consumption elasticity with respect to price to be -0.3 and inflation resulting from subsidy reform to be 2.3 percent.

6. The Design of the Current Cash Transfer Program: Issues and Options for Improvement

In this section we look at the overall design of the program, especially in terms of its efficiency and equity impacts on beneficiary targeting, and propose options for improvement.

Issues

An expensive program, by design. The cash transfer scheme is designed as an expensive program providing generous compensation to its beneficiaries, as revealed by the simulations presented in the previous section. While JD320 million is provided annually to compensate households for the elimination of the petroleum subsidies, households were receiving only JD190 million in direct petroleum subsidies. The government is, nonetheless, creating some fiscal space with the elimination of the subsidies as non-Jordanian households and firms are no longer receiving the subsidies and are not eligible to the cash transfer.

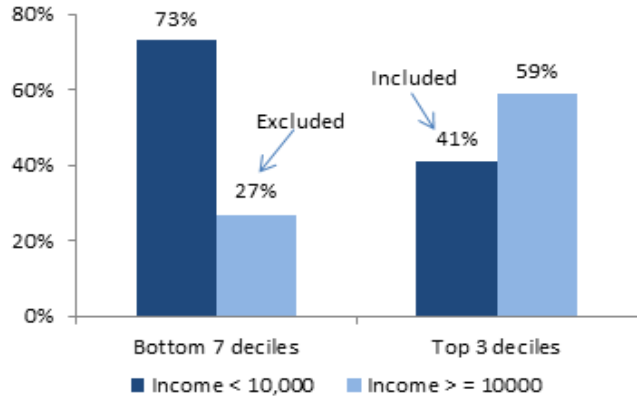
Program determinants, as designed, give rise to inclusion and exclusion errors. Specifically, two key issues arise from the current program:

- Income is imperfectly measured and captured. The targeting scheme relies on households' reported income which is difficult to verify and can lead to problems. For instance, households may deliberately under-report their incomes in order to be eligible for the program. In developed countries, means-testing is often used to determine program beneficiaries (i.e., only those with incomes below a certain threshold are eligible). However, in developing countries where many beneficiaries work in the informal sector and lack confirmable earnings, it is far more difficult to convincingly implement an income based means tested approach (Coady, Grosh and Hoddinott, 2004). As a result, non-income based targeting strategies such as proxy means tests (PMTs) and community-based targeting are often utilized in such contexts. While Jordan is an upper middle income country, its relatively limited tax base (e.g., slightly more than two in five Jordanians

aged 15 to 64 working in the private sector belong to the informal sector) suggests challenges regarding income based targeting.

- The use of household income creates a pro-rich and anti-poor bias. The cash transfer program targets beneficiaries using household level income as a cutoff instead of per capita income or expenditures. The latter would be more appropriate indicators of individual well-being.[3] To the extent that rankings of households by per capita expenditures and household total incomes do not match, targeting beneficiaries based on the latter would be deficient from an equity standpoint. As, on average, poorer households have large household size—due to a larger number of children and dependents—using household income as the determinant cutoff is biased against poorer households and benefit richer ones, especially rich single-headed households. For the former, household survey data reveals that 10 percent of poor Jordanian-headed households (and 16 percent of *all* poor households) would not be eligible to receive the cash transfer because the combined household income exceeds the JD10,000 cutoff (an "exclusion error"). More generally, middle class households would also be negatively impacted as 27 percent of households that have per capita consumption in the bottom seventh deciles are not eligible for the cash transfer. For the latter, the same HIES data reveals that 41 percent of households who are in the top three per capita consumption deciles have household annual incomes lower than JD10,000 and would be eligible for the cash transfer (an "inclusion error"). These significant exclusion and inclusion errors warrant the use of alternate targeting schemes to improve targeting based on economic wellbeing levels of households, even if all incomes were verifiable.

Figure 5. Jordan: Households in the bottom 7 and top 3 per capita consumption deciles, by income



Source: Authors' calculations using the 2010 HEIS.

Implementation of the program could also generate additional inclusion and exclusion errors. The cash transfer program would be considered successful if it is able to effectively reach the intended beneficiaries, especially the poorest households. Notwithstanding the absence of administrative data to

[3] Adjusting for cost of living differences is important as well since in Jordan spatial prices vary across regions. For example, World Bank (2012) estimated that in 2010 Amman was about 6 percent more expensive while Aqaba was 5 percent cheaper than the national average.

assess how well the program is reaching the poor, the following areas of concern arise due to the program design:

- Poorer households are likely to face greater difficulties to enroll in the program than richer ones, as the former do not have easy access to the internet to register for the program (which is the quickest and easiest way to apply); they would also have less access to tax offices and post offices, be it because they live in remote areas of the country or cannot commute easily to these offices (e.g., due to transportation cost).[4]

- Households located in rural areas, especially remote ones, are likely to face added difficulties in registering. In Jordan, pockets of high poverty incidence can be found in remote areas of the country (e.g., in desert areas). In these areas, accessing registration forms would be particularly challenging.

- The program has a design bias against households working in the informal sector. In economic terms, these households are likely to be significantly worse off than formal sector workers. As the latter are mostly automatically enrolled into the cash transfer program while the former have to apply for the program, this design bias could lead to a regressive transfer program.

Options for improvements

To address the issues identified in the previous section, some design changes could be introduced ahead of the next disbursement of the cash transfer. Aside from correcting the above-mentioned design biases, these changes could also be motivated by the need to improve the sustainability of the program, to reduce leakage, or to increase (modestly) the benefit value for (a smaller set of) recipients. Options for improvements include:

- Reducing the income threshold for eligibility so that the program becomes more targeted towards vulnerable households. Based on examining quarterly 2010 HEIS data, Mistiaen and Serajuddin (2013) estimate that roughly a third of the population in Jordan experienced living below the poverty line during some part of the year (as determined by having quarterly per capita consumption falling below the quarterly poverty line for at least one quarter during the year). The vulnerable population in Jordan is therefore considerable: beyond the 14.4 percent of the population who are poor, another 18.6 percent experience transient spells of poverty during the course of the year. Hence, while the initial coverage of the program is large (targeting 70 percent of the population), any narrowing of this coverage needs to take into consideration not only the poor but the wider set of the vulnerable population as well.

- The current scheme could be modified so that cash transfers are targeted based on an income per capita threshold, rather than on an income threshold. This would be likely to improve the

[4] Richer households would face lower time and financial constraints in registering; a large share of them would be automatically enrolled, which is not the case for the poor (as NAF, the only program that automatically enrolls the poor into the cash transfer scheme, covers less than 20 percent of poor households in Jordan).

distributional aspects of the cash transfer (since poorer households on average tend to have larger household size).

- Reducing incentives for wealthier households to register: while all households with annual incomes below JD10,000 are eligible for the cash transfer, the cost of the program could be reduced by introducing an element of self-opting out for wealthier households. Introducing such features would limit the budgetary cost of the program without impacting poverty. A voluntary opt-out design is a feature Iran introduced in its recent universal cash transfer scheme. This was achieved by making the registration process for the cash transfer both a time consuming one (long queues) and a transparent/public one. The government also encouraged wealthier households to not participate from a sense of civic duty. To achieve this objective, the government could:
    - Prepare a media campaign calling on wealthier households' to be motivated by a sense of civic duty and to not register in or to de-register from the cash transfer program; and
    - Announce that the list of all cash transfer recipients by neighborhood would be published on the Ministry of Finance website.

- Improving the registration process of poorer households, for example through the implementation of media campaigns specifically designed to reach poor households or by registering the poor as part of a medium-term cash transfer program that is targeted and sustainable.

- Considering transferring the cash benefit to a woman in the household instead of the family head. Cash transfer program in most countries, and especially conditional cash transfer programs, have intentionally transferred cash to women. Research shows that women tend to make better use of the additional money than men, e.g., by spending on education and health, and especially on younger household members (Haddad, Hoddinott, and Alderman 1997; Quisumbing and Maluccio 2000). Such transfers to women have taken place in strongly patriarchal countries as well. In Jordan, the cash transfer program could require the family head to nominate one adult woman in the household to be the recipient of the transfer. The current registration form requires the family head to list all the family members listed in the family card so the requirement to nominate one of these members as the cash recipient would not be complex.

- Preparing for a unified database of poor and nearly poor households so as ultimately improve the targeting of the cash transfer (and to potentially increase the benefit value if other reforms are carried out).

7. Conclusion

This paper examined the distributional and fiscal implications of the recent subsidy reforms and the complementary cash transfer program. The analysis suggests the twin initiatives are in fact poverty reducing (this would remain the case even if the program gave rise to large inclusion and exclusion errors). These policy reforms, however, are onerous since the amount of cash transferred to households exceeds by one third the direct subsidy amounts households were receiving from petroleum subsidies. The program thus appears to succeed in its distributional objectives, while falling short of achieving its fiscal objective.

Moreover, in light of the Government's wishes to strike a balance between protecting its population from price increases and ensuring fiscal prudence, there appears to be room for improvements to the present program. This, however, would require a deliberate process of in-depth analysis of both technical and political economy considerations. While a generous cash transfer may often be put in place to help build broad based public support for reforming universal subsidies, reducing transfers to current beneficiaries can be a politically difficult proposition.

Finally, it is important to note that while this paper has presented several findings, the scope of analysis was necessarily constrained by time and data availability. The focus was limited to microanalysis of household level impacts. A more comprehensive analysis would involve broader sectors of the economy including: i) analysis of any administrative data of cash transfer program beneficiaries; ii) a political economy and stakeholder analysis to identify who gained and who lost from reform and how; iii) the expansion of analysis to non-household users of petroleum products and the potential impacts of reforms on them (e.g., firms often may be strongly opposed to subsidy reforms as it could affect their global competitiveness); (iv) an estimate of general equilibrium effects of reform; and finally, (v) an examination of the distribution side of petroleum products to search for efficiency gains and cost savings.

References:

Araar, A., and P. Verme. 2012. "Reforming Subsidies: A Tool-kit for Policy Simulations." World Bank Policy Research Working Paper No. 6148.

Coady D., M. El-Said, R. Gillingham, K. Kpodar, P. Medas, and D. Newhouse. 2006. "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka." IMF Working Paper No. WP/06/247.

Coady, D., M. Grosh, and J. Hoddinott. 2004. "Targeting Outcomes Redux." *World Bank Research Observer*, 19 (1): 61-85.

Haddad, L, J. Hoddinott, and H. Alderman. 1997. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*. Baltimore: Johns Hopkins University Press.

International Monitory Fund. 2012. "Jordan: Selected Issues." IMF Country Report No. 12/120.

Mistiaen, J. and U. Serajuddin. 2013. "Quarterly Profile of Poverty and Survey Nonresponse in Jordan: Implications for Policy and Survey Design." Mimeo, World Bank.

Quisumbing, A., and J. Maluccio. 2000. "Intrahousehold Allocation and Gender Relations: New Empirical Evidence from Four Developing Countries." Food Consumption and Nutrition Division Discussion Paper 84. Washington, DC: International Food Policy Research Institute.

Trimble, C., N. Yoshida, and M. Saqib. 2011. "Rethinking Electricity Tariffs and Subsidies in Pakistan." World Bank Report No. 62971-PK.

World Bank. 2012. *Hashemite Kingdom of Jordan: Options for Immediate Fiscal Adjustment and Longer Term Consolidation*. World Bank Report No. 71979-JO.

World Bank 2011. "Hashemite Kingdom of Jordan: An Analysis of Consumption Subsidies." World Bank Policy Note.