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JORDAN

SELECTED ISSUES

April 14, 2014

Approved By
Middle East and Central Asia Department

Prepared By Yasser Abdih, Andrea Gamba, and Rafik Selim (all MCD)

CONTENTS

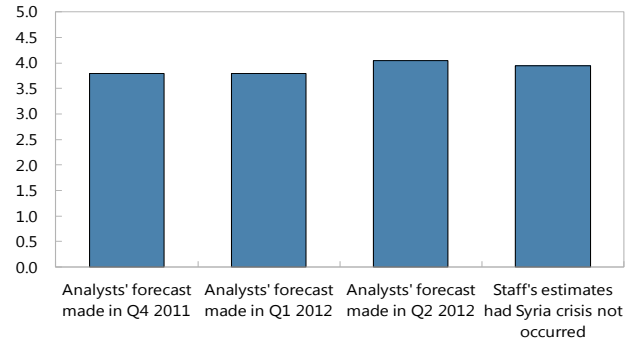
THE SYRIA CRISIS AS FELT IN JORDAN[1]

This note investigates the macroeconomic impact of the Syria crisis on Jordan. We find that the crisis: (1) had an overall negative impact on measured output growth—although anecdotal evidence suggests possibly a positive impact on output in the informal sector; (2) contributed to inflationary pressures, particularly on rents; and (3) strained labor markets, mostly in the informal sector as refugees compete with locals for jobs. While the crisis has put strain on the external trade balance, the overall impact on the current account is not clear.[2]

A. Output

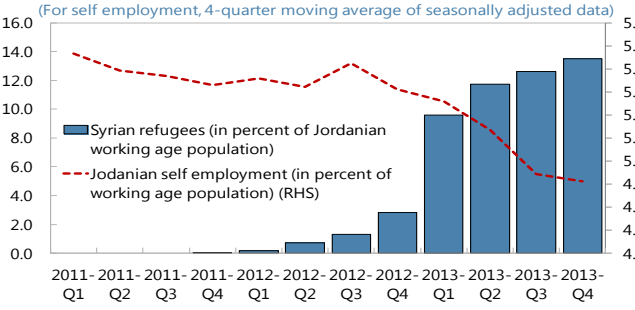
1. **The Syria crisis has weighed on measured growth.** On the one hand, losses of the Syrian export routes as well as a hesitant investor sentiment—resulting from uncertainty surrounding the length and outcome of the Syria conflict—are likely to have adversely impacted output. On the other hand, increased consumption brought about by a sizable influx of Syrian refugees has contributed positively to economic activity. Staff empirically assesses the overall impact to be negative, with losses to output growth estimated at about one percentage point in 2013—one third of the impact on Lebanon's growth, as estimated by a recent World Bank study (see Appendix I for the empirical model).[3] In other words, had the Syria crisis never occurred, growth in 2013 would have been at about 4 percent. This is in line with market analysts' forecast of Jordan's growth prior to the time when they perceived the Syria crisis as significantly affecting Jordan (Figure 1).

Figure 1. Growth Forecasts for 2013
(In percent; Analysts' forecasts are EIU and S&P average)



Sources: Economist Intelligence Unit; Standard and Poor's; and IMF staff estimates.

Figure 2. Jordanian Informal Sector Workers and Syrian Refugees
(For self employment, 4-quarter moving average of seasonally adjusted data)



Sources: Jordanian authorities; United Nations High Commissioner for Refugees; and IMF staff estimates

[1] Prepared by Yasser Abdih.

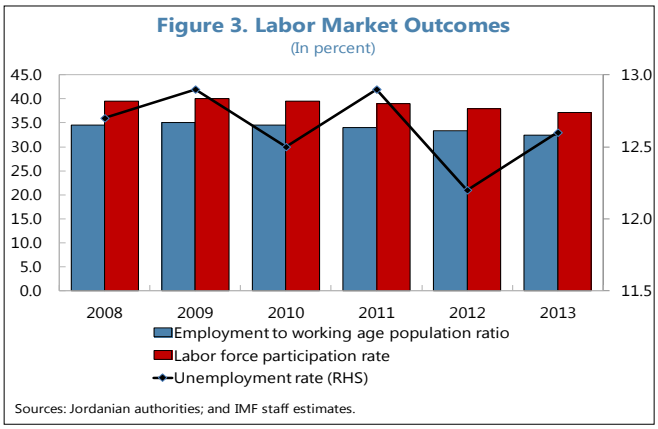
[2] This note does not look into the poverty and fiscal implications of the Syria crisis. Regarding poverty, the lack of time series data substantially hinders any meaningful inference. And as for the fiscal impact, it was examined in detail in a recent USAID study.

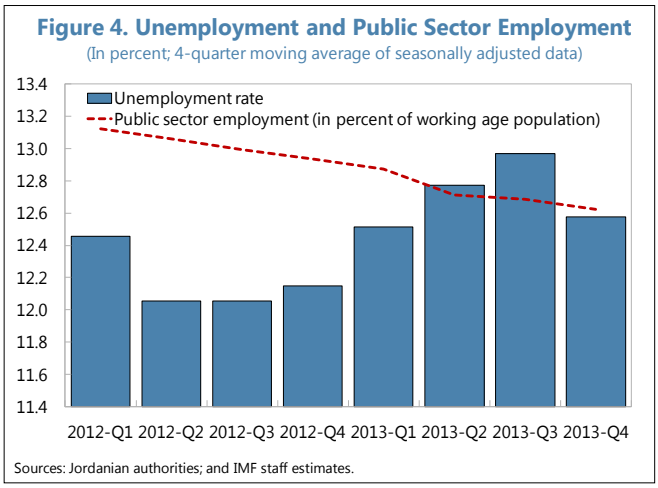
[3] World Bank, "Lebanon: Economic and Social Impact Assessment of the Syrian Conflict," Report No. 81098-LB, 2013.

2. **Nonetheless, informal sector output is likely to have risen.** Even before the Syria crisis, the informal sector was large, with staff's prior research putting its size at about 26 percent of measured GDP.[4] Now, anecdotal evidence suggests an even growing share of unmeasured output due to the heavy involvement of Syrian refugees in informal activity in sectors such as agriculture, construction, food services, retail trade, and home-based production. However, some crowding out of Jordanian nationals may have occurred, as evidenced by the recent sharp decline in Jordanian self employment, a typical proxy for informal sector employment (Figure 2).[5]

B. Labor Markets

3. **At the national level, statistical evidence does not appear to support the hypothesis that the Syria crisis had negatively impacted formal labor market outcomes.** Unemployment among Jordanians has increased in 2013, because of a decline in the ratio of employment to working age population and despite lower labor force participation rates (Figure 3). One could argue that the massive influx of Syrian refugees has something to do with such unfavorable outcomes, for example, through their competition with Jordanians for low-skilled formal jobs. Statistically, and based on available data, staff finds no evidence supporting this hypothesis (see Appendix II for the empirical model). This is supported by the fact that registered refugees, although considered Jordanian residents, are not legally allowed to work in Jordan.[6] This constrains them from competing for jobs in both the public sector and the formal private sector, and hence limits their employment options to the informal sector. Such a conclusion is reinforced by the fact that





[4] Abdih, Yasser, "MENA Oil Importers: Addressing Informality and Promoting Inclusion," in Regional Economic Outlook, Middle East and Central Asia; International Monetary Fund, October 2011.

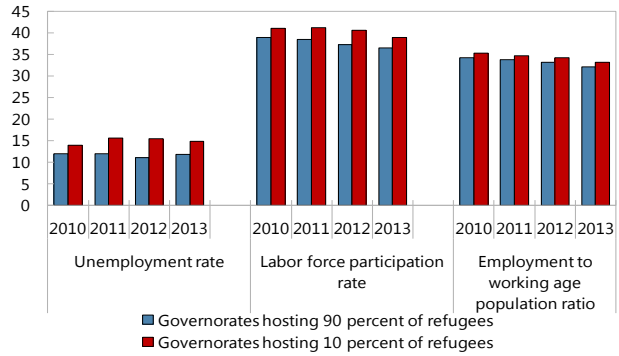
[5] In Figure 2, we apply a 4-period moving average to remove irregularities and volatility in the data, thereby allowing for a clearer trend. This is done for presentational purposes only, and none of the results hinges on such a transformation. The same observation applies to other figures in this note that use a 4-period moving average.

[6] Syrian refugees are not covered in labor market surveys. For documentation on the illegality of granting work permits for Syrian refugees, see United Nations and the Government of Jordan, "Needs Assessment Review of the Impact of the Syrian Crisis on Jordan," November 2013.

many of the refugees are very young—more than half of the total refugee population is less than 18 years old. At this age, competition with locals would likely be in the informal labor market. Instead, the public sector creating fewer jobs is a plausible alternative explanation of the recent worsening of unemployment outcomes, because the sector has been generating much of the jobs in the last decade (Figure 4).

4. **The same result holds when one looks at labor market outcomes by governorates**. Amman, Mafraq, Irbid, and Zarqa, cumulatively host nearly ninety percent of the Syrian refugees; eight governorates, including those in the south, host the remaining 10 percent. In the former group of governorates, unemployment rates have somewhat declined from their pre-Syria conflict levels, whereas in the latter group, such rates have marginally deteriorated (Figure 5). This is consistent with staff's empirical analysis.

Figure 5. Labor Market Outcomes by Governorates
(In percent)

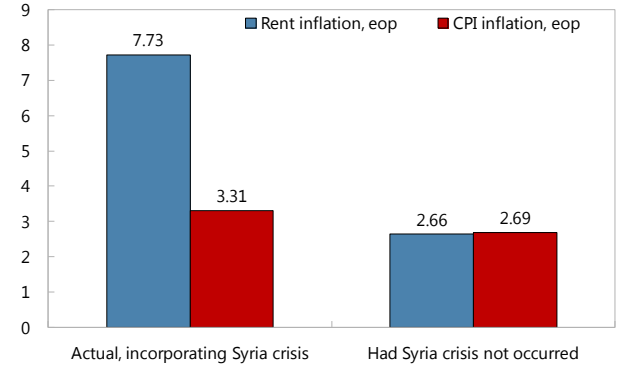


Sources: Jordanian authorities; and IMF staff estimates.

C. Inflation

5. **The influx of Syrian refugees has put upward pressure on the prices of non-tradable goods.** In particular, staff finds a statistically significant effect on Jordan's rental prices last year, with an estimated crisis impact on end-of-period rent inflation of about 5 percentage points by year-end (see Appendix III for the empirical model). This translates into a higher end-of-period consumer price index (CPI) inflation of about 0.6 percentage points relative to the counterfactual of the Syria crisis having not occurred (Figure 6). Moreover, staff finds no statistically significant effect of the crisis on domestic food prices. The latter is estimated to be predominantly driven by international food prices, both in the short run and long run, likely reflecting Jordan's high degree of openness.

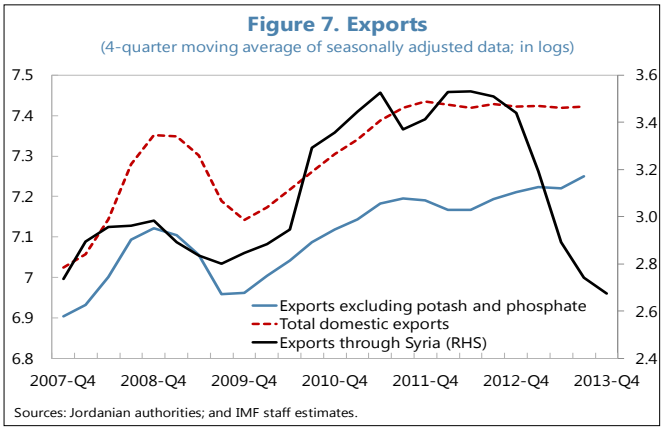
Figure 6. Syria Crisis Impact on Inflation, 2013
(In percent)

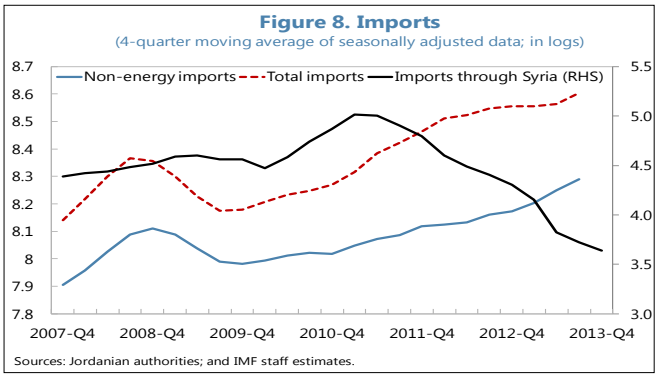


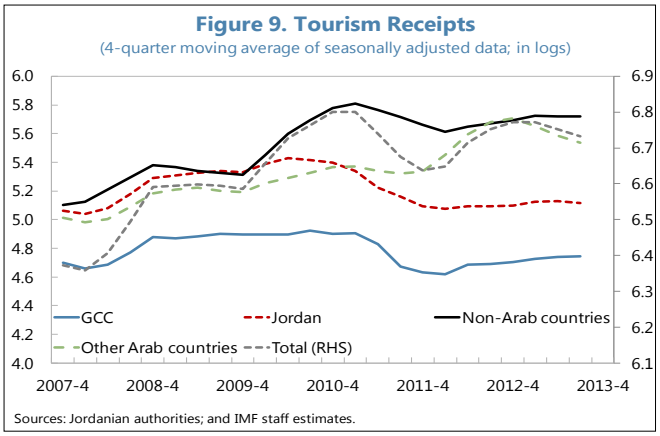
Source: IMF staff estimates.

D. Current Account

6. **The Syria crisis has taken a toll on the trade balance.** Because of the conflict, Jordan lost a major export route to Europe and other countries in the region. Indeed, during the first eleven months of 2013, combined exports to Lebanon, Turkey, and Europe dropped by 30 percent relative to the same period in 2012. As a result, Jordan is reportedly considering more expensive alternative routes—including Iraq and the Aqaba Port—with adverse implications for competitiveness. Abstracting from mining exports, which have been facing difficulties unrelated to the Syria conflict, the severe contraction in exports that travel through Syria has resulted in a sizable moderation in export growth— excluding potash and phosphate, exports grew by an average of a mere 0.7 percent per quarter in the two years up to 2013-Q3, down from an average of 3 percent in the previous two years (Figure 7). At the same time, imports through Syria have declined sharply (Figure 8). Nonetheless, the increased size of the population brought about by the influx of Syrian refugees has resulted in a rise in overall imports. Non-energy imports are estimated to have increased by over 11 percent in 2013.







7. **Nonetheless, the overall impact on the current account is not clear.** Transfers through the UN agencies and from other private citizens abroad to support the refugees have contributed positively to the current account; but there is uncertainty regarding their size, particularly on the latter. Tourism got hit initially when the transition started in the region. Because Jordan has been stable, tourism has begun to recover, including from non-Arab countries (Figure 9). That said, recent trends in tourism receipts are likely to be underestimated because the data do not take into account increased duration of stay of Gulf Cooperation Council (GCC) tourists as a result of reorientation of such activities towards Jordan from more affected countries—including Lebanon, Egypt, and Syria. This may apply as well to tourists

from other countries in the region.[7] The overall impact of the crisis on the current account though is not clear, because it depends on whether the gains from current private transfers and tourism receipts more than offset the deterioration in the trade balance. Available data do not allow for a quantitative assessment.

[7] Two additional factors may be at play here. First, there is the "Libya effect."Libyans came to Jordan for medical treatment throughout 2012, but this was not repeated in 2013. This has nothing to do with the Syria crisis, and may partially explain the moderation in tourism receipts in 2013 from other Arab countries (see Figure 9). Second, there is a "Ramadan effect."Ramadan in 2013 coincided with the tourism season and may have negatively affected tourism from the GCC and other Arab countries. Again, this has nothing to do with the Syria crisis, and although the data in Figure 9 are seasonally-adjusted, the effect may still be there, because Ramadan does not come at the same time each year.

Appendix I. The Impact on Measured GDP Growth—Empirical Model

1. We begin by estimating the following dynamic error correction model utilizing quarterly data:

$$\Delta y_t = \boldsymbol{\delta_0 D_t} + \sum_{i=1}^{p} \alpha_i \Delta y_{t-i} + \beta \left(y - y^*\right)_{t-1} + \lambda\, Syria_t + \varepsilon_t$$

where y_t denotes the log of seasonally-adjusted real GDP; Δy_t is first difference of y_t ,measuring the growth rate of real output; y-y^* denotes the output gap measured as the deviation of the log of seasonally-adjusted real GDP from its Hodrick-Prescott (HP) trend; D_t is a vector of deterministic variables that includes a constant and a time trend—the latter accounts for the combined effect of potentially omitted variables. Conceptually, one can measure the Syria shock by two alternative ways: the number of refugees or a dummy variable. The lack of sufficient time series data on the number of refugees renders the first approach not feasible. As such, we conduct our empirical analysis using a dummy variable to proxy for the Syria crisis, denoted Syria above. A priori, we expect β to be negative (signifying the workings of error correction). Also, a negative value for λ would indicate a negative overall impact on GDP growth of the Syria crisis.

2. Pretesting the above general model and starting a with relatively generous lag length (p=6 in the above model) revealed the following: Spillovers of the Syria crisis are not statistically significant prior to the second quarter of 2012; only the fifth lag on growth matters statistically; large estimated errors in 1993-Q4 and 1995-Q1 taint residual normality and homoscedasticity; and the estimated coefficient of the time trend is not statistically significant. Utilizing this information, we estimate the following final parsimonious error correction model:

$$\underset{(0.000)}{\Delta y_t = 0.009} \underset{(0.0001)}{- 0.042\, D_t^{93,Q4}} \underset{(0.0004)}{+ 0.040\, D_t^{95,Q1}} \underset{(0.0017)}{+ 0.288\, \Delta y_{t-5}} \underset{(0.0000)}{- 0.540 \left(y - y^*\right)_{t-1}} \underset{(0.0452)}{- 0.009\, Syria_t + \varepsilon_t}$$

where $D_t^{93,Q4}$ and $D_t^{93,Q4}$ are impulse dummy variables taking the value of 1 in 1993-Q4 and 1995-Q1 respectively and zero otherwise; and $Syria_t$ is a dummy variable that takes the value of zero prior to 2012-Q2 and one otherwise. The regression output shows that all the estimated parameteres are highly statistically significant (p-values of the t-statistic are reported in brackets); the Syria crisis has weighed on Jordan's output growth; and there is ultimate convergence to the steady state, as indicated by the negative coefficient on the lagged output gap. Furthermore, various diagnostis tests show that such inference comes from a statistically well specified and constant model with white noise residuals.[1] The coefficient of the Syria dummy variable together with the estimated model dynamics indicate losses to GDP growth (because of the Syria crisis) of one percentage point in 2013.

[1] Diagnostic tests for model validity (in the format Statistic = value (p-value)) test the null hypotheses that: there is no residual autocorrelation (AR); there is no residual autoregressive conditional heteroscedasticity (ARCH); the residuals are normally distributed; there is no residual heteroscedasticity (Hetero); the estimated parameters are stable over time (Chow) ; and the estimated regression model is well specified (Reset). Specifically, AR = 1.64 (0.161); ARCH = 1.19 (0.323); Normality = 2.50 (0.286); Hetero = 0.57 (0.726); Chow =0.59 (0.916); and Reset = 1.35 (0.266).

Appendix II. The Impact on Formal Labor Market Outcomes—Empirical Model

1. We examine the impact of the Syria crisis on labor market outcomes by estimating dynamic Okun's-type regressions augmented to account for the Syria shock. We estimate these models at both the national level and for the those governorates that host ninety percent of the refugees. Specifically, and utilizing seasonally-adjusted quarterly data, we estimate the following model for each of the three main labor market outcomes (LMO): the unemployment rate, the employment-to-working age population ratio, and the labor force participation rate.

$$LMO_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i LMO_{t-i} + \sum_{i=0}^{p} \beta_i gap_{t-i} + \lambda\ Syria_t + \varepsilon_t$$

where LMO denotes a given labor market outcome (in percent); and gap denotes the output gap, measured as the percent deviation of the log of real GDP from its HP trend. As in the previous section, we model the Syria shock through the use of dummy variables. The lag-length of a given model is not known a priori, but determined through sequential F-tests—a general-to-specific modeling approach.

2. Table A2.1 shows a summary of the regression results at the national level. The top block shows results for unemployment. The first row denoted Syria 12-1 shows results for the model where the Syria dummy variable takes the value of zero prior to 2012-Q1 and one otherwise. It reports the estimated coefficient of the Syria dummy variable (λ), its t-statistic, and the associated p-value. It also reports the p-values of a battery of diagnostic tests for model validity with no rejections of the null hypotheses, underpinning the empirical validity of the model (see description in Appendix I). Table A2.1 shows that the estimated coefficient of the Syria dummy variable is not significant. The remaining rows in the unemployment block report results with alternative timing of potential spillovers materializing from the Syria shock. That is, we experiment with models with Syria 12-2 (equal to zero before 2012-Q2, and one otherwise); Syria 12-3 (equal to zero before 2012-Q3, and one otherwise); etc.. None of the Syria dummy variables are significant, and once again the models are empirically valid. The middle and lower blocks of Table A2.1 report results for labor force participation and employment to population ratios respectively.[1]

3. Table A2.2 repeats the same exercise for those governorates that host ninety percent of the Syrian refugees. The evidence from Table A2.1 and Table A2.2 shows that for all the 42 regressions estimated, the Syria conflict does not appear to have had a statistically significant impact on Jordan's formal labor market outcomes. And such inference is derived from models that are statistically valid.

[1] Unit root tests suggest that the unemployment rate is stationary while labor force participation and the employment to population ratio are I (1). As such, the first difference of the latter two is used in the empirical specifications.

Table A2.1. Estimated Impact of Syria Crisis on Formal Labor Market Outcomes at the National Level

Unemployment Rate

	Syria shock			p-values of diagnostic tests for model validity					
Alternative models	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.50	-1.15	0.274	0.474	0.883	0.988	0.890	0.223	0.490
Syria 12-2	0.01	0.02	0.985	0.150	0.276	0.440	0.948	0.516	0.454
Syria 12-3	0.46	1.22	0.242	0.378	0.925	0.763	0.150	0.954	0.229
Syria 12-4	0.59	1.59	0.133	0.652	0.781	0.951	0.422	0.989	0.171
Syria 13-1	0.32	0.72	0.488	0.289	0.318	0.264	0.913	0.924	0.254
Syria 13-2	0.50	1.02	0.329	0.272	0.256	0.969	0.957	0.957	0.402
Syria 13-3	0.93	1.57	0.143	0.364	0.178	0.586	0.965	0.999	0.544

Labor Force Participation Rates

	Syria shock			p-values of diagnostic tests for model validity					
Alternative models	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.17	-0.55	0.593	0.774	0.466	0.341	0.685	0.824	0.319
Syria 12-2	0.02	0.08	0.938	0.843	0.849	0.194	0.220	0.925	0.356
Syria 12-3	0.13	0.44	0.669	0.975	0.979	0.131	0.226	0.964	0.459
Syria 12-4	-0.09	-0.29	0.778	0.865	0.688	0.389	0.427	0.958	0.308
Syria 13-1	-0.05	-0.16	0.878	0.834	0.765	0.276	0.412	0.955	0.334
Syria 13-2	0.00	-0.01	0.989	0.848	0.780	0.225	0.408	0.954	0.345
Syria 13-3	0.13	0.28	0.784	0.910	0.849	0.164	0.290	0.958	0.357

Employment-to-Working Age Population Ratio

	Syria shock			p-values of diagnostic tests for model validity					
Alternative models	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.19	-0.99	0.345	0.117	0.336	0.990	0.976	0.513	0.522
Syria 12-2	-0.22	-1.32	0.214	0.181	0.313	0.979	0.646	0.430	0.533
Syria 12-3	-0.12	-0.68	0.510	0.176	0.250	0.915	0.681	0.606	0.487
Syria 12-4	-0.26	-1.54	0.152	0.462	0.832	0.255	0.948	0.776	0.606
Syria 13-1	-0.06	-0.29	0.775	0.434	0.966	0.849	0.244	0.570	0.554
Syria 13-2	-0.01	-0.06	0.952	0.561	0.911	0.911	0.972	0.562	0.522
Syria 13-3	0.14	0.45	0.662	0.649	0.890	0.917	0.978	0.581	0.543

Source: IMF staff estimates.

Table A2.2. Estimated Impact of Syria Crisis on Formal Labor Market Outcomes for Governorates Hosting 90 Percent of Syrian Refugees

Unemployment Rate

Alternative models	Syria shock			p-values of diagnostic tests for model validity					
	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.45	-0.72	0.483	0.584	0.194	0.542	0.930	0.354	0.102
Syria 12-2	0.48	0.98	0.341	0.920	0.629	0.799	0.142	0.821	0.425
Syria 12-3	0.65	1.37	0.190	0.691	0.443	0.840	0.486	0.890	0.638
Syria 12-4	0.68	1.34	0.204	0.783	0.277	0.668	0.883	0.908	0.509
Syria 13-1	0.54	1.02	0.324	0.745	0.369	0.892	0.169	0.827	0.745
Syria 13-2	0.60	0.98	0.343	0.849	0.518	0.948	0.497	0.820	0.641
Syria 13-3	1.00	1.36	0.198	0.531	0.190	0.833	0.944	0.912	0.250

Labor Force Participation Rates

Alternative models	Syria shock			p-values of diagnostic tests for model validity					
	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.13	-0.42	0.685	0.898	0.543	0.877	0.511	0.701	0.184
Syria 12-2	0.34	0.95	0.358	0.236	0.545	0.708	0.517	0.960	0.162
Syria 12-3	0.32	1.06	0.312	0.986	0.482	0.283	0.103	0.979	0.292
Syria 12-4	0.22	0.66	0.525	0.962	0.587	0.480	0.122	0.945	0.266
Syria 13-1	-0.02	-0.04	0.967	0.958	0.845	0.871	0.389	0.916	0.201
Syria 13-2	-0.15	-0.40	0.695	0.993	0.805	0.912	0.553	0.927	0.188
Syria 13-3	-0.14	-0.30	0.773	0.849	0.518	0.948	0.497	0.820	0.641

Employment-to-Working Age Population Ratio

Alternative models	Syria shock			p-values of diagnostic tests for model validity					
	Coefficient	t-value	t-prob	AR	ARCH	Normality	Hetero	Chow	Reset
Syria 12-1	-0.25	-1.20	0.256	0.145	0.413	0.872	0.516	0.432	0.444
Syria 12-2	-0.21	-1.12	0.287	0.330	0.603	0.832	0.369	0.496	0.438
Syria 12-3	-0.08	-0.40	0.700	0.388	0.524	0.967	0.456	0.681	0.424
Syria 12-4	-0.25	-1.31	0.218	0.552	0.666	0.569	0.714	0.825	0.378
Syria 13-1	-0.03	-0.14	0.893	0.463	0.496	0.252	0.276	0.905	0.710
Syria 13-2	-0.12	-0.48	0.640	0.583	0.715	0.982	0.782	0.689	0.546
Syria 13-3	0.06	0.18	0.861	0.687	0.904	0.849	0.720	0.668	0.487

Source: IMF staff estimates.

Appendix III. The Impact on Inflation—Empirical Model

Food prices

1. We estimate the following Autoregressive Distributed Lag model (ADL) utilizing seasonally-adjusted monthly data:

$$p_t = \boldsymbol{\delta_0}\mathbf{D_t} + \sum_{i=1}^{p}\alpha_i p_{t-i} + \sum_{i=0}^{p}\phi_i p^*_{t-i} + \lambda\, Syria_t + \varepsilon_t$$

where p is the log of the index of Jordanian food prices; p^* is the log of the index of international food prices; $Syria_t$ is a dummy variable that captures the Syria shock; and D_t is a vector including a constant and a deterministic time trend—the latter to capture the combined effect of all potential variables affecting domestic food prices other than international food prices and the Syria conflict.

2. Unit root tests indicate that both domestic and international food prices are non-stationary or integrated of order one. Given that Jordan is a very open economy, we would expect domestic and international food prices to co-move over time (or share a common stochastic trend). As such, we posit the following co-integration relationship between the two sets of prices.

$$p_t = \boldsymbol{\eta_0}\mathbf{D_t} + \beta_1\, p^*_t + \beta_2\, Syria_t + \varepsilon_t$$

where the βs are interpreted as long-run coefficients. In fact, this model is the long-run solution of the ADL model where

$$\beta_1 = \frac{\sum_{i=0}^{p}\phi_i}{1-\sum_{i=1}^{p}\alpha_i} \quad \text{and} \quad \beta_2 = \frac{\lambda}{1-\sum_{i=1}^{p}\alpha_i}\ .$$

3. Table A3.1 presents the estimation results of the ADL model and its long-run solution for a battery of dummy variables each capturing a different potential starting time of Syria's spillover effect. For example, Syria 12-1 takes the value of zero before 2012-Q1, and one otherwise; Syria 12-2 takes the value of zero before before 2012-Q2, and one otherwise, etc..

4. The Syria conflict appears not to have a statistically significant effect on the Jordanian food price index—all dummy variables are not significant. Rather, international food prices appear to be the key driver.

Rental prices

5. We empirically estimate an autoregressive process for rent inflation augmented to account for the Syria shock. Statistically, the model captures the true data-generating process remarkably well and the residuals are white noise. Spillover effects from Syria appear to materialize in the second half of 2013 (Table A3.2).

Table A3.1. Estimated Impact of Syria Crisis on Food Prices

Alternative models	ADL			Long-run solution		
	λ	t-value	t-prob	β_2	t-value	t-prob
Syria 12-1	-0.005	-0.621	0.538	-0.028	-0.610	0.544
Syria 12-2	-0.003	-0.393	0.696	-0.018	-0.390	0.698
Syria 12-3	-0.006	-0.773	0.443	-0.038	-0.740	0.462
Syria 12-4	-0.005	-0.681	0.499	-0.035	-0.655	0.515
Syria 13-1	-0.001	-0.124	0.902	-0.007	-0.123	0.902
Syria 13-2	-0.001	-0.148	0.883	-0.009	-0.147	0.884
Syria 13-3	0.003	0.220	0.827	0.018	0.222	0.826

Final model imposing no Syria impact

	ADL			Long-run solution		
Variable	Coefficient	t-value	t-prob	Coefficient	t-value	t-prob
p_{t-1}	0.841	30.600	0.000	…	…	…
p^*_t	0.139	6.370	0.000	0.871	18.700	0.000
constant	0.094	2.150	0.036	0.587	2.700	0.009

p-values of diagnostic tests for final model validity

AR	ARCH	Normality	Hetero	Chow	Reset
0.898	0.938	0.155	0.437	0.245	0.118

Source: IMF staff estimates.

Table A3.2. Estimated Impact of Syria Crisis on Rents

Autoregression for Δr_t augmented with a Syria shock[1]

Variable	Coefficient	t-value	t-prob
Δr_{t-3}	0.352	2.960	0.007
Seasonal	0.015	5.570	0.000
Syria 13-June	0.024	3.360	0.003

p-values of diagnostic tests for final model validity

AR	ARCH	Normality	Hetero	Chow	Reset
0.590	0.274	0.602	0.183	0.841	0.815

Source: IMF staff estimates.

1/ Δr_t is the first difference of the rental price index. The data are bi-annual and seasonally not adjusted. As such, a seasonal dummy variable is included. Aside from the third lag of the first difference, all lags are not significant. Syria 13-June is a dummy variable that takes the value of zero prior to June 2013 and one otherwise.

A GENERATION IN WAITING—UNLOCKING THE EMPLOYMENT POTENTIAL OF JORDAN'S POPULATION[1]

This note documents Jordan's labor market outcomes, quantifies the daunting employment challenge ahead, and projects outcomes under alternative reform scenarios by drawing on the international experience. Its results indicate that, by pursuing a wide range of reforms in labor and product markets, Jordan can unlock the employment potential of its population.

1. **Unemployment is a chronic problem.** It has been persistently high, averaging 13.7 percent in the last decade and registering 12.6 percent in 2013. Unemployment in Jordan is largely a youth phenomenon. Young people, ages 15 to 24, account for almost half of the unemployed, and the youth unemployment rate, at 31 percent, is among the highest in the world. In contrast to most of the world, unemployment rates in Jordan tend to be highest among the educated, registering 17.8 percent among those with college degrees, and for females, exceeding 25 percent (Figure 1).

Figure 1. Unemployment by Gender and Educational Level, 2013
(In percent)

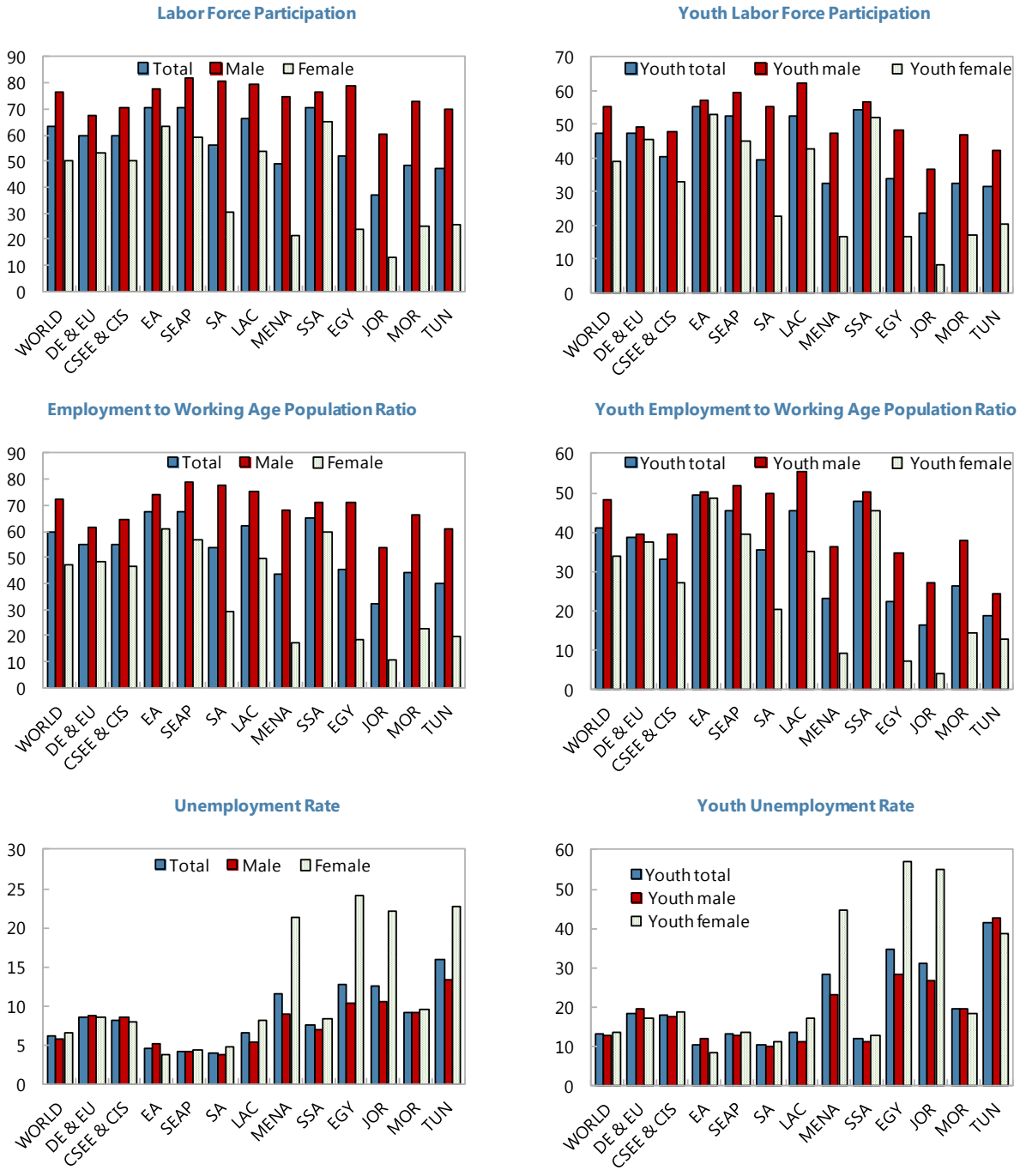
Sources: Jordanian authorities; and IMF staff estimates.

2. **Employment outcomes are poor** (Figure 2). At 37.1 percent, the labor force participation rate in Jordan is lower than the MENA average of 49.0 percent—and at 13.2 percent, the female labor force participation is less than a quarter of the male participation. Such a low rate, together with high unemployment, has resulted in a very low ratio of employment to working-age population—only 32.4 percent of working-age people are actually employed, a rate that is lower than the MENA average of 43.4 percent and falls way short of the world average of about 60 percent.

[1] Prepared by Yasser Abdih and Rafik Selim.

Figure 2. Labor Market Outcomes: Jordan and the World, 2013

(In percent)



Sources: For regional averages and Tunisia's youth labor market outcomes: *International Labor Organization, Global Employment Trends 2014*. For individual countries, national authorities (Egypt, Central Agency for Public Mobilization and Statistics; Jordan, Department of Statistics; Morroco, Haut-Commissariat Au Plan; Tunisia, Institut National de la Statistique).
Notes: DE & EU: Developed Economies & European Union; CSEE& CIS: Central & South-Eastern Europe (non-EU) & Commonwealth of Independent States; EA: East Asia; SEAP: South-East Asia & the Pacific; SA: South Asia; LAC: Latin America & the Caribbean; MENA: Middle East and North Africa; SSA: Sub-Saharan Africa. For Egypt, data are for 2012.

3. **Looking forward, the employment challenge is daunting.** To absorb the new entrants to the labor force, and abstracting from any future potential labor market pressures exerted by the Syrian refugees,[2] Jordan will need to increase employment by an estimated 403 thousand full-time positions over 2013–2020. Under the assumption of a constant employment elasticity set at its empirically estimated historical value of about 0.5 (Table 1),[3] staff estimates that creating that many jobs would require an average annual real GDP growth of 6.1 percent. Current growth forecasts would only generate 275 thousand jobs.

Table 1. Estimating Jordan's Employment Elasticity[1]

Testing for cointegration between the logarithms of employment and real GDP

Rank	Trace test	P-value	Max test	P-value	Trace test(T-nm)	P-value	Max test (T-nm)	P-value
0	19.13	0.012*	19.13	0.007**	17.39	0.024*	17.39	0.014*
1	0.00	0.983	0.00	0.983	0.00	0.984	0.00	0.984

Cointegration analysis, 1991-2012

Variables	Cointegrating vector	Likelihood ratio test for	P-value
Log Employment	1	...	...
Log RGDP	0.55	Chi^2(1) = 10.023	0.0015**

Testing for Weak Exogeneity

Variables	Speed of adjustment coefficients	Likelihood ratio test for significance	P-value
Log Employment	-0.28	Chi^2(1) = 18.441	0.0000**
Log RGDP	-0.05	Chi^2(1) = 0.58287	0.4452

Source: IMF staff estimates based on raw data from national authorities and the International Labor Organization.
1/ A vector autoregression involving log employment, log real GDP, and their lags is first estimated, and then Johansen's cointegration test is applied. The table reports the trace and max test statistics that test the null hypothesis of no cointegration, their small sample variants (labeled T-nm), as well as their p-values. The null hypothesis of no cointegration is strongly rejected. The estimated cointegrating vector puts the employment elasticity at about 0.55, which is highly significant. Furthermore, the evidence suggests that real GDP is weakly exogenous with respect to the parameters of the cointegrating vector. We have experimented with variants of the model that include a deterministic time trend to account for potentially omitted variables, but it was not found to be significant. The residuals of the model are white noise and its estimated coefficients are highly stable over time.

4. **What is needed is a combination of permanently higher economic growth and reforms to improve the responsiveness of the labor market to growth.** The fact that unemployment has remained high for so long suggests that the problem is largely structural and will not be resolved by a cyclical increase in output. Indeed, over at least the past two decades, while the correlation between unemployment and the output gap has been statistically significant, the implied unemployment rate in the presence of a zero output gap—that is, the structural component of the unemployment rate— has been large, roughly matching the unemployment rate's historical average (Table 2). Moreover, the concentration of unemployment among the youth and educated suggests that any solution will need to involve greater labor market flexibility and educational reforms.

[2] The selected issues paper "The Syria Crisis as Felt in Jordan" shows no effect on formal labor market outcomes. For analytical purposes, we assume that the Syria crisis will gradually taper off with refugees returning.

[3] The employment elasticity is defined as growth in employment resulting from a one percentage point increase in real GDP growth.

Table 2. Unemployment: Structural Component and Responsiveness to the Output Gap

Country	Okun's Coefficient[1]	t-value	t-prob	Structural Unemployment Rate[1] (in percent)	t-value	t-prob	Unemploment Rate: Sample Average (in percent)	Sample
Jordan	-0.82	-4.70	0.000	14.55	31.80	0.000	14.03	1987 - 2012

Source: IMF staff estimates based on raw data from national authorities and the International Labor Organization.

[1] Okun's coefficient and structural unemployment are based on the following Autoregressive Distributed Lag (ADL) Model involving the unemployment rate (u, in percent) and the output gap (gap):

$$u_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i u_{t-i} + \sum_{i=0}^{p} \beta_i gap_{t-i} + \varepsilon_t \quad , where$$

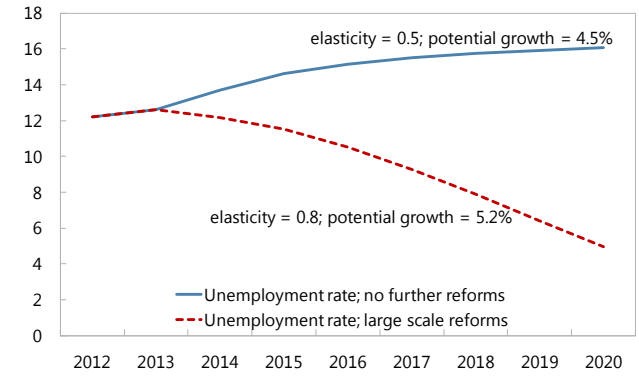
Okun's coefficient = $\frac{\sum_{i=0}^{p} \beta_i}{1-\sum_{i=1}^{p} \alpha_i}$, and structural unemployment = $\frac{\alpha_0}{1-\sum_{i=1}^{p} \alpha_i}$.

The data are annual.The output gap is measured as the percent deviation of the log of real GDP from its Hodrick-Prescott (HP) trend. The smoothness parameter is set equal to 100. The results are robust to using a smoothness parameter of 12, as suggested by Rand and and Tarp (2002)* for emerging markets and developing economis. The lag length is determined using sequential F-tests, as well as the Schwarz Information Criterion. Statistically, the residuals of the model are well behaved and stationary with no signs of autocorrelation or heteroscedasticity. Moreover, recursive estimation as well as recursive Chow tests show that the estimated coefficients of the model are remarkebly constant over time.

* Rand, John and Tarp, Finn, 2002. "Business Cycles in Developing Countries: Are They Different?" World Development, vol. 30(12), pages 2071-2088, December.

5. **Labor and product market reforms can pay large dividends.** Recent empirical work conducted by the IMF shows that countries that undertook large-scale reforms have greatly enhanced their employment elasticity, by up to 0.3.[4] This means that, if Jordan were to follow suit, it can raise its employment elasticity from 0.5 (under a no further reforms scenario) to about 0.8. At the same time, the evidence shows that reforms have a statistically significant positive impact on potential growth. Staff's simulations show that if Jordan's labor and product market policy settings were to converge toward those prevailing in the best performing emerging market economies, then Jordan would raise its potential growth by about 0.7 percentage points. Such a scenario would reduce Jordan's unemployment rate by 7.6 percentage points over the medium term to 5 percent by 2020 (Figure 3). To put this into perspective, such an unemployment rate is lower than the 2013 world average of 6 percent, and is only slightly higher than today's average rate of 4.5 percent in East Asia (Figure 2).

Figure 3. Unemployment Forecasts
(In percent)



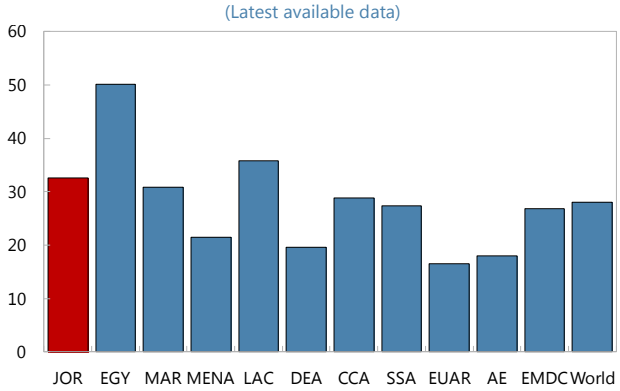
Source: IMF staff estimates.

[4] See Crivelli, E.; Furceri, D.; and Toujas-Bernaté, J., 2012. "Can Policies Affect Employment Intensity of Growth? A Cross-Country Analysis," IMF Working Paper, WP/12/218; and IMF Research Department, "Structural Reforms and Economic Performance in Advanced and Developing Countries," available on-line at http://www.imf.org/external/np/res/docs/2008/0608.htm.

6. **To reap those dividends, Jordan will need to:**

- ***Address skills mismatches through educational reform and training programs.*** While Jordan has made important strides in providing education to its population, entrepreneurs regularly cite the lack of suitable skills among job applicants as an important constraint to hiring (Figure 4), and unemployment rates are highest among the most educated. This suggests that the education system is failing to produce graduates with marketable job skills. Thus, it will need to focus more on quality, realigning curriculums with private-sector needs. At the same time, to put the currently unemployed into jobs, policymakers can scale up and replicate promising training programs, such as the Job Compact, and those run by the Education for Employment Foundation and Injaz in partnership with the private sector. These policies will increase the supply of skilled labor, and hence, for a given change in GDP growth, skilled employment will increase; to the extent that skilled and unskilled workers are complements, employment of unskilled workers will also be boosted. As a result, such policies would contribute positively to the employment elasticity. They would also result in the augmentation of Jordan's stock of human capital, thereby raising potential growth.

Figure 4. Firms Identifying Labor Skill as a Major Constraint
(Latest available data)



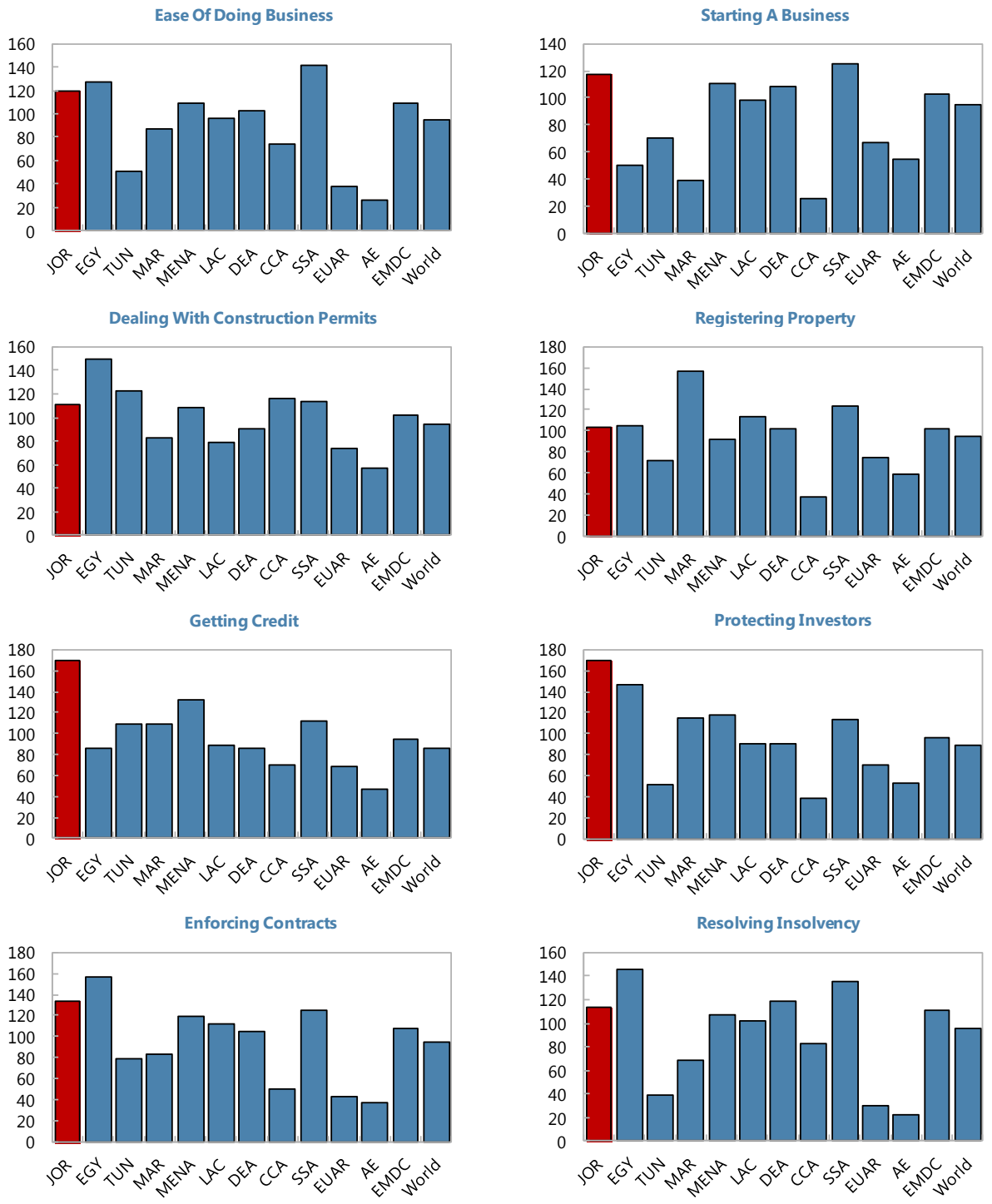
Source: World Bank, Enterprise Survey.
Note: JOR: Jordan; EGY: Egypt; MAR: Morocco; MENA: Middle East and North Africa; LAC: Latin America and Caribbean; DEA: Developing and Emerging Asia; CCA: Caucasus and Central Asia; SSA: Sub Saharan Africa; EUAR: European Union and Euro Area; AE: Advanced Economies; EMDC: Emerging Markets and Developing Countries.

- ***Improve the business climate and the quality of institutions.*** Jordan ranks poorly relative to elsewhere on key areas such as investor protection, contract enforcement, access to credit, and high costs of business start-ups (Figure 5). As documented by a large body of empirical work, reversing such outcomes would foster investment and competition, thereby boosting output growth and labor demand. At the same time, the empirical evidence also shows that improving the business environment and institutional quality would help move workers out of the informal sector—where they have little protection, usually earn low wages, and engage in low-growth-generating activities—and into the formal sector.[5]

[5] See Abdih, Yasser, "MENA Oil Importers: Addressing Informality and Promoting Inclusion," in Regional Economic Outlook, Middle East and Central Asia; International Monetary Fund, October 2011. See also Abdih and Medina (2013), "Measuring the Informal Economy in the Caucasus and Central Asia," IMF Working Paper WP/13/137.

Figure 5. World Bank Doing Business Indicators: Overall Ranks, 2014 1/

(Out of 189 countries; lower rank means better outcome)



Source: World Bank, Doing Business Database.

1/ The World Bank Doing Business indicators should be interpreted with caution due to a limited number of respondents, a limited geographical coverage, and standardized assumptions on business constraints and information availability.

- ***Reform public sector hiring practices and compensation policies.*** The public sector has been an extraordinarily important source of Jordanian employment—over the past fifteen years, public sector employment shares have ranged from 35 percent to almost 40 percent. Its role has distorted labor market incentives and diverted resources away from a potentially more dynamic private sector. Government hiring practices have typically placed a premium on diplomas over actual skills, influencing educational outcomes and contributing to skill mismatches. At the same time, the comparatively greater job security, higher average wages, and more generous non-wage benefits offered by the public sector have inflated wage expectations among new entrants. In fact, the average public sector wage is 122 percent of the average monthly private sector wage. Except for specialists and managerial level jobs, the public sector pays more than the private sector across all job ladders (see Jordan's National Employment Strategy 2011–2020). New entrants' capacity to withstand long periods of unemployment—in anticipation of securing more lucrative opportunities in the public sector—is buoyed by familial support and remittances from abroad.

  Public sector hiring procedures will need to place greater emphasis on skills and competition and less on paper qualifications. Moreover, strengthening the link between compensation and performance and implementing merit-based promotion policies would send the right signals regarding skill formation for young people.

- ***Reach out to the diaspora.*** There is a large number of Jordanians working abroad, particularly in the Gulf Cooperation Council. In many cases, these expatriates have not only advanced degrees, but also years of experience in competitive environments. Calling on the skilled diaspora and reversing "brain drain" would increase the supply of skilled labor and thereby help the domestic economy grow and compete globally. Returning members of the diaspora would bring with them their skills, capital, marketing-know how, and innovative ideas. They could open businesses and factories and hire from the pool of the unemployed. Improvements in the business environment, better governance, and better enforcement of intellectual and property rights would help bring back overseas talent. The successful experiences of India and Taiwan in luring back the skilled diaspora suggest that such reforms may need to be complemented with specific policy support.[6]

- ***Improve female's labor market outcomes.*** Not only are such outcomes worse than those for Jordanian males, but they are also worse than the average female outcomes in MENA, which, in turn, fare the worst worldwide (see Figure 2). Jordan's National Employment Strategy suggests that various factors are at play, including employer's perceptions; limited access to information on job opportunities; the lack of targeted active labor market policies for females; the lack of maternity benefits in the private sector; and the absence of affordable and dependable childcare. Addressing such constraints can go a long way to unlocking the employment potential of Jordanian women.

[6] See, for example, Noland, Marcus and Howard Pack, 2007, The Arab Economies in a Changing World (Washington: Peterson Institute for International Economics).

ELECTRICITY TARIFF INCREASES—IMPACT ON COMPETITIVENESS AND OPTIONS FOR REFORM[1]

This note finds that recent and planned electricity tariff increases are likely not to have a major impact on Jordan's competitiveness. Business perceptions and cross-country data suggest that the reliability of electricity supply is a major comparative advantage for Jordan with respect to peer countries. Also, the low share of electricity in producer price indices and firms' cost structure indicates that the impact of tariff increases on business profitability and costs is limited. The note also suggests options for tariff adjustments, which would reduce distortions while protecting the poor and the lower middle class.

A. Background and Motivation

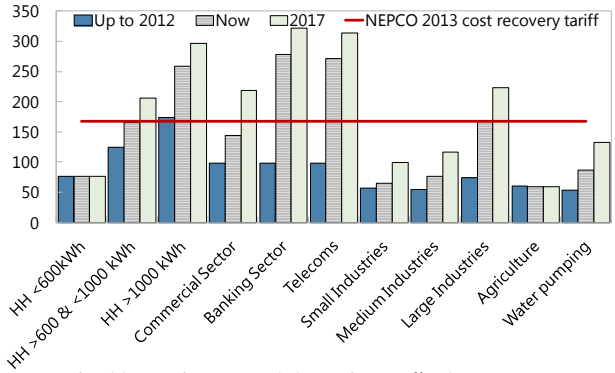
1. **Substantial tariff increases are needed to return the electricity company to cost recovery.** As flows of cheap gas from Egypt were disrupted, the more expensive fuel alternatives raised the losses of Jordan's electricity transmission company NEPCO. Though cheaper sources of energy are expected to come on stream starting in 2015, tariff increases are needed to return NEPCO to cost recovery.

2. **Tariff increases so far have focused on selected sectors.** The first round of increases (some by more than 100 percent) was implemented in June 2012 for mining, refining, and services. Tariffs were increased again (by 7.5–15 percent) in August 2013 for most non-household consumers and once more in January 2014 covering as well rich households and small industries (by 5–15 percent). Going forward, similar tariff increases have been set for each year during 2015–17.[2]

3. **The profitability of some sectors might suffer.** Because most households are exempt, the brunt of the adjustment falls on the industrial and service sectors. For some sectors – such as banking, telecom and large industries – tariffs will more than triple between 2012 and 2017.

4. **This note looks into the impact of tariff reforms on Jordan's competitiveness and sketches options for further reform.** It starts by analyzing business perceptions and cross-country data.

Figure 1. Nominal Average Electricity Tariff by Consumer Type
(In Jordanian fils)



Sources: Electricity Regulatory Commission; and IMF staff estimates.

[1] Prepared by Andrea Gamba in consultation with the World Bank.

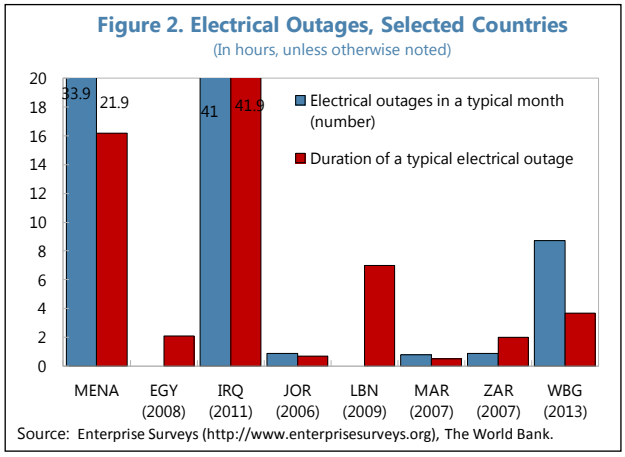
[2] Agriculture and small households will continue to be exempt.

The note then reviews the impact of tariff increases on industries and services. Finally, it takes a look at ongoing tariff reforms and suggests ways to minimize distortions.

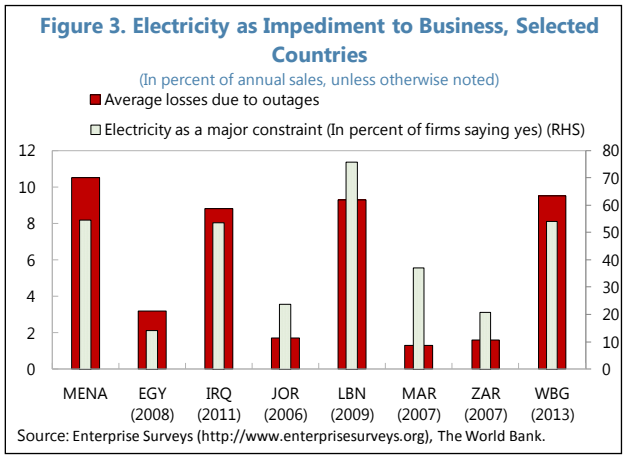
B. Electricity and Competitiveness

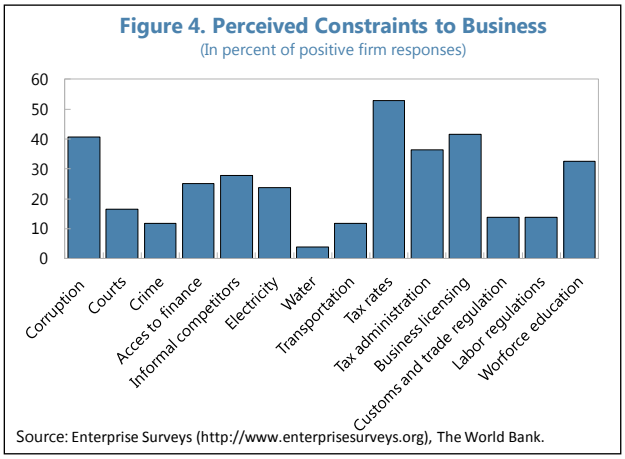
Reliable Supply as a Comparative Advantage

5. **A reliable public electricity supply provides a competitive edge to Jordanian firms.** Indeed, Jordan's electricity infrastructure fares well in a number of key indicators. The number of outages, their length and their impact on operating revenue are the lowest in the MENA region and compare well with other emerging market economies.



6. **This finding is reinforced by businesses' own perceptions.** Though market operators perceive electricity as a constraint to their business, this is well below the MENA average. Indeed, electricity appears to be a second-tier concern in business surveys (nonetheless, it is considered a significant impediment by over a fifth of firms).[3]



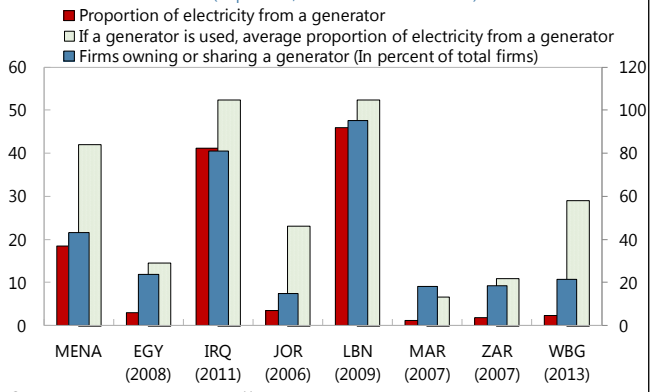


[3] The World Bank Doing Business indicators should be interpreted with caution due to a limited number of respondents, a limited geographical coverage, and standardized assumptions on business constraints and information availability.

7. **The costs of paying cost-recovery tariffs are significantly lower than those of going off-grid.** While some productive sectors (especially mining and non-retail services) face relatively high electricity tariffs, they do not have to buy expensive generators and fuel to self-generate electricity in the case of supply interruptions from the main grid. In contrast, many industries in the Arab world and in emerging markets enjoy relatively lower public tariffs, but are forced to buy and run their own generators. A back-of-the envelop calculation indicates that, in general, businesses are better off paying a higher tariff for reliable service rather than resorting to self-generation because the fixed costs are large and, as generators use diesel, the fuel costs of operating them is significantly higher than NEPCO's average fuel costs.

8. **Tariff increases are also likely a better solution than black-outs.** Scheduled and rolling black-outs have been discussed as an option to contain NEPCO's losses if there are shortfalls in gas from Egypt. A better policy response would though be to apply temporary tariff surcharges. This is because raising tariffs would only temporarily (and marginally) reduce business margins, while black-outs would push business into making costly investment in self-generation. That said, large energy-intensive companies may decide to switch off-grid, because their energy needs might justify the construction of an "in-house" turbine. Jordan's potash company is going that route, but it is unlikely that other industries will follow, given the large fixed costs and the high energy-intensity of the potash industry.

Figure 5. Self-generation, Selected Countries
(In percent, unless otherwise noted)



Source: Enterprise Surveys (http://www.enterprisesurveys.org), The World Bank.

Price Levels Effects of Tariff Reforms

9. **Tariff increases have had a minor impact on inflation.** Export-oriented sectors could suffer from an increase in inflation, because sustained price increases could drive an appreciation of the real exchange rate and favor foreign goods over Jordanian tradables. However, the weight of energy is only about 6 percent in both the consumer and producer price baskets, and other energy-related goods—such as fossil fuels— are included in the weights.[4] Moreover, a vector autoregressive model[5] of inflation shows a small short-run impact from tariff increases and no

[4] Assuming that half of the energy weight is indeed electricity most likely overestimates the share of electricity.

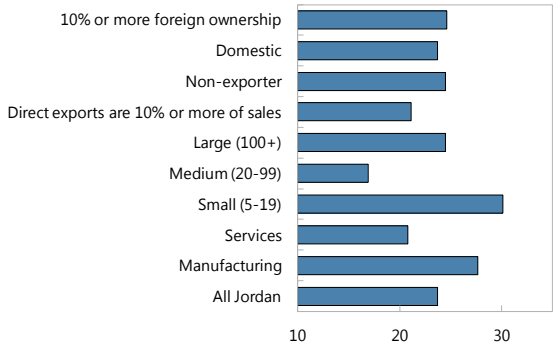
[5] The model estimates inflation as a function of the lagged price level and the nominal effective exchange rate over 2002–13. These variables are usually found to be good predictors of inflation and are available monthly. A time trend is added to take into account the evolution of unobserved variables. The effect of electricity tariffs on the endogenous variables is modeled by adding the average effective electricity tariff variable over time.

second-order impact. Both approaches suggest that the consumer price response to a 15 percent increase in the effective tariff[6] would be just below 0.5 percent.

Sector Analysis

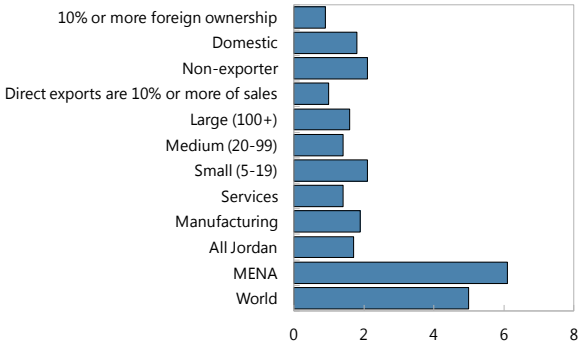
10. **The World Bank business surveys show that shortcomings in electricity infrastructure vary across the economy.** Small firms see electricity as a major constraint to business in almost one third of the interviews, significantly more than medium or large firms. Interestingly, exporting firms declare to be less affected by electricity issues than non-exporting ones. Losses deriving from electrical outages are generally small as a share of revenue in all sectors, again with small and non-exporting firms marginally more affected than others.

Figure 6. Firms stating Electricity Major Constraint
(Percent of total firms)



Source: Enterprise Surveys (http://www.enterprisesurveys.org), The World Bank.

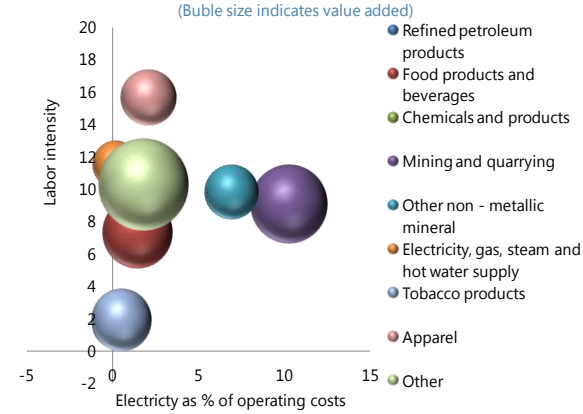
Figure 7. Losses if Electrical Outages Occur
(In percent of sales)



Source: Enterprise Surveys (http://www.enterprisesurveys.org), The World Bank.

11. **Electricity constitutes a relatively small share of Jordanian firms' operating costs.** Among major industries, electricity costs are more than 5 percent of operating costs only for mining and refining companies.[7] Most industries and services are not very energy-intensive, with electricity representing less than 2 percent of operating costs.

Figure 8. Cost Structure and Value Added of Industries
(Buble size indicates value added)



[6] This is constructed by weighting the end-use tariff paid by each segment by the segment's electricity consumption.

[7] Given Jordan's water scarcity and infrastructure challenges, water supply is also very energy-intensive, but end-user prices are administered.

12. **Removing electricity subsidies will eliminate distortions against labor-intensive industries.** Cross-country studies[8] find that energy subsidies usually drive resources away from labor-intensive industries and favor energy- and capital-intensive ones. This may well be true for Jordan, and tariff increases—coupled with the removal of fuel subsidies in 2012—will likely create more of a level playing field.

C. Outstanding Reform Issues

Tariff Structure

13. **Large tariff variations across sectors create distortions.** The top electricity tariff is more than six times higher than the bottom one. By 2017, it will be over ten times higher (Box 1). Rather than making each business sector pay a different input cost, the authorities should seek to create a level-playing field by setting uniform tariffs across sectors and pursue any industrial policy through more transparent and effective means.

14. **The structure of planned household tariff increases could be improved.** For example, the World Bank (2011) shows that a staggered tariff structure benefits all consumers without discrimination, but at high fiscal costs.[9] Also, only a fraction of households effectively curbs their energy consumption because of poverty. Since the household tariff structure is based on marginal tariff brackets, a well-off Jordanian's household consuming, say 750kWh per month, will pay the same price as the poorest household for the first 160kWh consumed (see Table below).

15. **Better targeting household subsidies could yield substantial savings.** This could be achieved by targeting the subsidy to those who consume, say, a maximum of 300 kWh per month[10] while consumers whose total consumption is above this threshold would pay at or above cost recovery. Such a scheme would protect the poor and the most vulnerable while generating significant savings. Importantly, the subsidy could be easily administered and would be relatively broad (over 42 percent of the population would be covered).

[8] See International Monetary Fund, 2013, Regional Economic Outlook: Middle East and Central Asia, (Washington, November); and International Monetary Fund, 2014, Subsidy Reform in the Middle East and North Africa: Recent Progress and Challenges Ahead.

[9] World Bank, 2011, "Electricity Subsidies and Household Welfare in Jordan: Can households afford to pay for the budget crisis?" Background paper for the Jordan Poverty Reduction Strategy.

[10] This is equivalent to the first two brackets of the current structure, and close to the average consumption of Jordanian households (328kWh/month, according to the Electricity Regulatory Commission).

Box 1. Electricity Tariff Structure

Electricity tariffs vary substantially according to consumer category. Household consumers are divided in seven different brackets depending on their consumption levels. The non-household sector is split in thirteen sectors, each with a different price. Some sectors are subject to differential tariffs according to their consumption level. Most sectors face a different tariff for day and night consumption.

Households, small industries, and agriculture have the lowest tariffs. For instance, the average tariff for small household consumers is half of that of the average household tariff and 20 percent of the top tariff. Average tariffs are above cost recovery for a variety of consumers, including large industries and selected services (such as banking, telecom, and hotels).

Table 1. Tariff Structure and Household Consumption of Electricity

Consumption brackets 2010 (kWh/month)	Class of consumption (JD)	Mean consumption (JD)	No of Households (HH)	% of HH
1-160	0-5.28	4.5	22,018	2
161-300	5.29-15.36	11	453,408	40.2
301-500	15.37-32.56	21.8	508,827	45.1
501-750	32.57-61.06	41.8	122,351	10.8
751-1000	61.07-94.81	73.2	17,605	1.6
1000 <	> 94.81	128	4,308	0.4
Total		20.5	1,128,517	100

Sources: Household Income and Expenditure Survey 2010 and NEPCO

16. **Direct cash transfers would be an even better option.** The recent elimination of fuel subsidies, which were replaced with cash transfers, provides a good example.

Other Inefficiencies

17. **NEPCO is technically well run, but there are efficiency losses in the distribution companies.** According to the World Bank, transmission losses are in line with international standards. The distribution companies are privately-owned and in general lag behind international best practices; distribution losses are high because of underinvestment and poor payment enforcement.

D. Conclusion and Policy Recommendations

18. **The impact of tariff reform on Jordan's competitiveness appears limited.** Reliable electricity supply is one of Jordan's comparative advantages relative to its neighbors, which—despite higher tariffs—is cheaper than firms having to resort to self-generation. Also, profit margin compression will be likely be negligible and not warrant any significant pass-through of tariff increases to producer (and consumer) prices.

19. **Policy action could focus on:**

- **Discontinuing industrial policy through utility pricing policies.** Ongoing reforms provide an opportunity to create a more level-playing field by using the same tariffs for each sector.
- **Improving the household tariff structure.** Currently, almost all households are subsidized. Streamlining tariff brackets would yield savings while better targeting those who are in need. An even better option would be to replace the electricity subsidies with cash transfers.