

Chapter V

A Matrix to Measure Socio-Economic Impacts of Syrian Refugees on Jordan's Economy

This chapter analyzes the findings of the cost-benefit quantity studies on hosting registered and unregistered Syrian refugees in Jordan. It starts with the quantitative findings in relation to the induced benefits of hosting refugees. It then considers the costs incurred by Jordan's economy at the macroeconomic and sectorial levels. After a discussion on the estimated key social impacts of the crisis, the chapter is concluded by the cost-benefit matrix, a tool devised by the researcher to serve as a trial balance for the ultimate impact of the refugee crisis on national economy. The study is based on estimates calculated for the period 2011-2013 in light of available official figures and researcher's estimates. Using appropriate cost-benefit proxies, the study has projected the costs and benefits for the year 2014 in light of two scenarios. The two scenarios contemplate firstly a continuous normal trend of refugee influxes (around 400 refugees a day) and secondly a high frequency of influxes of around 1,500 refugees a day.

Economies around the world are attempting to meet obligations imposed on their accession to international conventions on refugees, which has, undeniably, entailed huge socio-economic burdens on individual countries. Jordan is not an exception. It has been facing, since the outbreak of the Syrian crisis, the tremendous task of addressing the Syrian refugee issue, which, notwithstanding its humanitarian dimension, has posed a serious economic challenge for an already under-resourced country. Still under the influence of the 2008 global financial crisis, the country is experiencing, both locally and regionally, acute economic problems induced by the movements of people, with some studies estimating the financial burdens at over JD4 billion.⁽¹⁹⁾

With this background in mind, it is relevant to quantify the impacts of the Syrian refugee crisis on Jordan's economy by examining the consequences of that crisis on the various economic sectors. Any effort towards that end must be entirely free of exaggeration and error of method, requiring an objective study of the negative but also of the positive impacts of the crisis on the national macroeconomic indicators. The quantified estimates should observe the quantitative trends of the crisis, specifically in relation to the number of refugees entering Jordan with the explicit purpose of escaping the plight of their homeland through official and non- official entry points along the 375 kilometer borders. The following section elucidates the method used in this study for the calculation of costs and benefits of the Syrian refugee issue with an analytical and illustrative review of estimates.

(19) For more details, see Issnaad Consultancy (2012), *The Impact of Popular Movement in the Region and in Jordan on Macroeconomic Indicators in Jordan* (only available in Arabic).

1. Analysis and Estimation Method

There are some general facts that need to be mentioned here, which have been incorporated in the foundational assumptions of the study. These have been deduced from official local and international studies and can be summed up as follows:

- 593,000 Syrian refugees have registered with the UNHCR up to January 2014;
- Official figures from the Syrian Refugee Camp Affairs Department/Public Security Department (PSD) suggest that nearly half a million Syrian refugees have begun living in Jordan since the outbreak of the crisis, though they are not registered with the UNHCR. It is also estimated that nearly 350,000 Syrians had been ordinary residents in the country before the crisis (2006 through 2010);
- The United Nations estimate the cost of hosting over half a million Syrian refugees in Jordan at US\$5.3 billion for the period 2013-2014, the cost being divided into US\$2.1 billion and a projected US\$3.2 billion for 2013 and 2014, respectively;⁽²⁰⁾
- In Table (1) below, the UNHCR's official statistics show that the money pledged for refugee costs by the international community does not exceed 75% of total estimated costs.

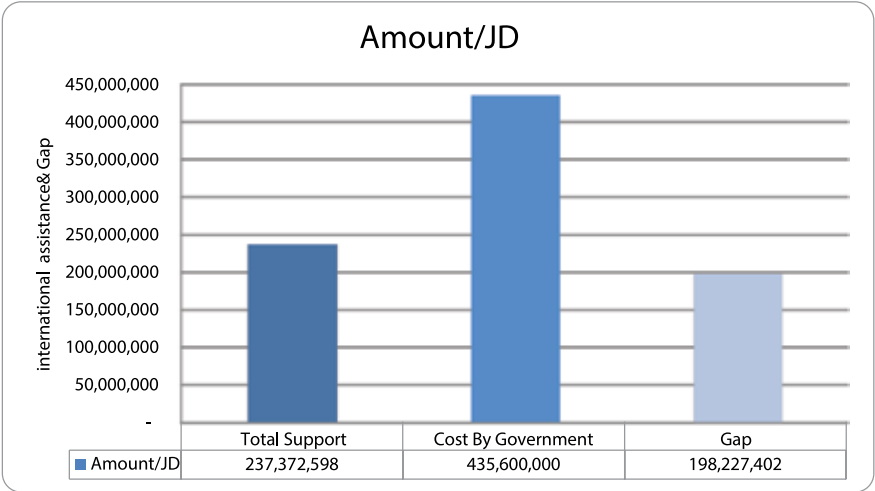
(20) For more details, see: UNDP, "Mitigating the impact of the Syrian refugee crisis", November 2013.

Table (1): Coverage of the costs incurred by hosting Syrian refugees in Jordan in 2013
(UNHCR's Figures)

Description	Needs (US\$ Million)	Received Aid (US\$ Million)	Assistance Gap (US\$ Million)	Coverage Rate
Estimated needs to cover refugees' expenses	976.577	736.664	239.913	75%

Source: Official UNHCR Website.

• Official figures from Jordan's Ministry of Planning (MoP) show a 46% deficit in costs, as estimated by MoP, for hosting Syrian refugees in Jordan (Figure 1).



• Jordan’s government received around JD17 million in assistance in 2012, which was later on boosted by the international community to reach JD323.2 million in 2013, according to MoP’s data (Figures 2 and 3).

Table (2): Assistance pledged to Jordan in 2012 for shouldering the burdens of hosting Syrian refugees

Sector	Total Funding (JD)	Total Funding (US\$)
Road construction and infrastructure	1,130,670	1,596,992
Water and sanitation services	7,793,522	11,007,799
Education	7,237,434	10,222,364
Medical care	648,680	916,215
Protection	45,000	63,559
Social services	7,440	10,508
Grand total	16,862,746	23,817,438

Source: Jordan's Ministry of Planning and International Cooperation.

Figure (3): Assistance pledged to Jordan in 2013 for shouldering the burdens of hosting Syrian refugees

Sector	Total Funding (JD)	Total Funding (US\$)
Medical care	70,917,017	100,165,278
Education	168,851,351	238,490,608
Water and sanitation	52,061,898	73,533,754
Municipalities	20,100,000	28,389,831
Energy	7,000,000	9,887,006
Protection	4,229,322	5,973,619
Grand total	323,159,587	456,440,095

Source: Jordan's Ministry of Planning and International Cooperation.

Study Assumptions Relating to the Cost-Benefit Calculation:

The study incorporated two approaches in order to come up with an accurate estimation of the costs and benefits incurred to the national economy by the Syrian refugee crisis. The first approach calculates the spillover costs by examining the subsidies of goods and services, opportunity costs and allocations spent on refugees. The second approach calculates the difference in expenses before and after the crisis. It then looks at the officially declared allocations after considering the allocations per capita, so the proper estimates are made.⁽²¹⁾ The study also used the impact in the years 2011 and 2012. This allowed the researchers to calculate the impact on a gradual basis, benefiting from the previous study conducted by a researcher for the Economic and Social Council at the end of 2012, though some amendments were introduced to that study, as will be explained in the ensuing parts of this section. In this connection, the refugee influxes apparently started to increase steadily after June 2011, assuming that by the end of 2011 the influxes reached around a third of the final number at the end of 2011. That previous study, however, used the first 10 months of 2012 to calculate the impact, assuming the total relative number of refugees to be 12,000 a month, which is in line with the influx likelihood.⁽²²⁾ This study, similarly, used the available official figures on the number of refugees at the end of 2012. It reviewed the estimates of that previous study so as to realistically report the impact for the year 2012 and the accumulation leading to the total number at the end of October 2012.

The present study also sought to estimate the direct and spillover benefits from the presence of Syrian refugees, for which aim it adopted an approach that considered the prospective positive benefits on the macroeconomic and sectorial levels. This approach would, therefore, make the present study the first of its kind in terms of addressing the socio-economic benefits accruing from the Syrian refugees in Jordan. All previous studies in the literature focused on the costs and totally ignored the socio-economic benefits, as will be explained in the ensuing parts of this section. The emphasis, here, is mainly on the positive impacts on GDP, the state's General Budget, foreign assistance, tax and non-tax revenues, foreign reserves and investments (macro-economy) and house rents, retail and wholesale trade, restaurant and foods, as well as other consumer and investment sectors (microeconomics).

The study, in the end, introduces two matrices for benefits and costs. Afterwards, it builds up a consolidated trial balance for net benefits and costs incurred on the national economy on an annual and aggregate basis throughout the period 2012-2014. For that purpose, it used the two scenarios mentioned earlier. The first one anticipates a normal trend involving 400 new refugees coming to the country on a daily basis in 2014, while the second anticipates the arrival of around 1,500 refugees daily throughout the same period.

(21) For more insights into different approaches to calculate refugee costs, including the allocation and expense difference approach, see David North (1997), "Estimates of the financial cost of refugee resettlement: the current system and alternative models", U.S. Commission on Immigration Reform.

(22) For more details, see Issnaad Consultancy (2012), *The Impact of Popular Movement in the Region and in Jordan on Macroeconomic Indicators in Jordan* (only available in Arabic).

Assumptions Relating to Estimated Financial Costs:

The estimation of costs incurred by Syrian refugees on the national economy was based on the following assumptions:

- The costs of refugees were calculated on the macroeconomic and sectorial micro-economic levels. The first tier involved governmental subsidies on foodstuffs, general state debts, balance of trades and most importantly importations. It also included the impacts on the labor markets, including the opportunity cost for the Syrians competing with Jordanians for available local jobs. The second tier incorporated a cost analysis of education, health, energy, water, security, defense, infrastructure and municipal services.
- The macroeconomic figures for the year 2013 were adopted as officially published in the Draft General Budget Law for the Year 2014 under the allocation item "Re-estimated for 2013". The data provided by the State General Budget Law for the Year 2014 were used for making the macro-microeconomic impact in that specific year.
- Impact estimates were devised for 2014 in light of two scenarios: the base influx scenario and the overflow scenario. The first assumes a flow of 400 refugees a day, while the second assumes the flowing of as many as 1,500 refugees a day, according to flow averages observed throughout 2012-2013.
- The study then calculated the number of residents and refugees in 2013 on the assumption that 350,000 of the Syrians have been normal residents in the country even before the crisis, according to official data from the PSD refugee camp management department. Accordingly, the total number of Syrians included in the impact study stands at 953,000 (both refugees and residents). Of this number, approximately 550,000 are registered as refugees while the rest are those who arrived during the crisis but elected not to register as refugees for their own reasons. As for the expectations for 2014, the study placed emphasis only on the increase of numbers of registered refugees in light of the abovementioned scenarios, without addressing the increase in the number of unregistered residents. The aim was to produce accurate findings and avoid overestimates.
- For 2014 forecasts, emphasis was placed only on the increase in the number of registered refugees in light of the aforementioned scenarios, but was not inclusive of the increase in the number of unregistered residents. This approach should increase the credibility of the study's findings by avoiding exaggerations that could otherwise undermine the accuracy of estimates.
- Costs were calculated on the macro and microeconomic levels in light of the number of refugees by the end of the respective year, using official public figures and statistics for the selected indicators at the end of the fiscal year.

Study's Assumptions Relating to Financial Estimated Costs:

The following assumptions were used in estimating the benefits associated with the presence of Syrian refugees for the national economy:

- The study estimated the macroeconomic and microeconomic (sectorial) benefits of Syrian refugees on the national economy. On the macroeconomic level, the benefits were identified in relation to the positive impact, if any, of the refugee crisis on the GDP growth, public revenues, foreign assistance, foreign reserves and flow of Syrian investments into Jordan. On the microeconomic level, the benefits were studied in relation to the housing sector, particularly rents, job opportunities created for Jordanians by the Syrian investors and retail trade revenues.
- The study used official Jordanian figures and those published by international institutions and commissions, particularly in respect of foreign assistance, Syrian investments and job opportunities created for Jordanians.
- The 2014 benefit forecasts also relied on the two aforementioned scenarios.
- The benefit estimates were based on the same estimated number of refugees as already cited in the cost estimates, with the exclusion of unregistered residents in the same manner as that used in estimating the costs.
- Just as with costs, the calculations of benefits on the macro and microeconomic levels were based on the number of refugees at the end of the respective year using officially published figures and statistics on the targeted indicators at the end of the fiscal year.

2. Estimates of the Benefits of the Syrian Crisis for Jordan's Economy on the Macroeconomic and Sectorial Levels

Following the above assumptions, Table (4) below presents the matrix of estimated benefits for Jordan's economy from the Syrian refugee crisis during the period 2012-2014. It should be noted that the 2012 figures are inclusive of 2012 estimates but not of the influxes of refugees in the same year, with the latter not being accounted for because of irrelevance of the total number of registered refugees until the end of 2012, who by all accounts did not exceed some 10,000 refugees. The table also breaks down benefits into two categories. The first relates to the benefits on the microeconomic level, while the second relates to those benefits of Syrian investments moving to Jordan from crisis-stricken Syria. Table (4) also shows that the estimated aggregate benefits that have either been attained or will be attained by the economy in 2012-2014 are in the range of JD7.2-7.9 billion, depending on the scenario used for that purpose.

Table (4): Cost-benefit matrix estimating the impact of Syrian refugees on Jordan's economy (2012-2014)

Item	2012	2013	2014		Grand Total	
			Base influx scenario	Overflow scenario	Base influx scenario	Overflow scenario
Estimated macroeconomic revenues:	838,3	2718,5	2652,9	3198,0	6219,0	6763,9
- Contribution to GDP	65,7	342,4	276,8	376,8	684,9	784,9
- Contribution to public revenues	208,8	779,8	980,0	1333,8	1968,6	2322,4
- Foreign aid	208,8	1163,9	1306,4	1395,1	2679,1	2767,7
- Contributions to foreign reserves	929,0	14322,2	1482,3	1525,3	3843,5	3886,4
- Estimated Syrian investments	355,0	441,7	89,7	92,3	886,4	888,9
Estimated microeconomic revenues:	161,1	400	459,1	602,5	1020,5	1164,1
- Housing (rents)	112,9	228,0	253,1	323,7	594,0	664,7
- Job opportunities	1,8	4,3	4,5	4,6	10,6	10,8
- Retail sector revenues investments	46,4	167,9	201,5	274,2	415,9	488,6
Total estimated revenues	999,4	3188,7	3112,0	3800,0	7239,5	7928,0

Source: Researcher's estimates based on the available official figures including those projected in the 2014 General Budget.

1. Impact on the Macroeconomic Level

This part of the study concerns itself with the benefits of the Syrian refugee crisis in Jordan for the macro-economy of the country. To quantify the benefits of the Syrian refugee crisis for Jordan's macro-economy, the total number of officially- registered refugees and residents was used for the period beginning with the crisis until the end of 2013. Syrian nationals resident in the country (estimated by authorities at 350,000) before the crisis were excluded. Emphasis is put, here, on the positive impact of the refugee crisis on the GDP growth, public revenues, foreign assistance, foreign reserves and the flow of Syrian investments to Jordan. Each of these items (as mentioned in Table (4) above) is explained individually below:

A. Impact on GDP

There is evidence in national income accounts that positive impacts have been generated by the influxes of Syrian refugees and residents alike for the national economy, given their role in increasing private spending, investment and public spending. In other words, the accrued increase in the above factors should be reflected in the GDP with an increase proportional to the relative increase of the population. This correlates with evidence in Table (1) of Chapter III, which shows a population increase of 3% in 2012, an aggregate increase of 13% in 2013 and aggregate increases of 17% and 23% in the base and overflow scenarios, respectively.

Accordingly, and in view of the data provided by Table (1) in Chapter I on macroeconomic indicators, the contribution of Syrians (both refugees and residents since the outbreak of the crisis) to Jordan's GDP was calculated. Table (4) above shows that the Syrians have indeed contributed to the GDP, based on the abovementioned methodology, by around JD408 million during the period 2012-2013. The figure is expected to increase by JD276 million and JD377 million in the base and overflow scenarios, respectively. The total aggregate impact of increased GDP as a result of the Syrian influxes for the period 2012-2014 is estimated at JD685 million in the base influx scenario and JD785 million in the overflow scenario; that is, around 11% and 10% of total expected benefits from the two scenarios, respectively. However, it is significant that those figures depend on the growth in GDP assumed to have been attained because of the presence of Syrians in the country. This assumption is supported by Table (2) in Chapter I, which adopted official statistics that reveal a positive GDP growth from 2.6% in 2011 to approximately 3.3% in 2013. The government also expects additional growth of up to 3.5% at the end of 2014. Other studies on similar cases, such as the World Bank's study on Lebanon, however, provide estimates for the difference between official and international growth figures and real figures during the years of the crisis. This has made the final estimated impact negative, showing the costs outweighing the benefits, rather than the opposite. Quite relevant to this discussion are the forecasts of the Economist Intelligence Unit (EIU), predicting in its December 2010

issue a growth trend in Jordan's GDP of 3.5% in 2011, 4.3% in 2012, 3.5% in 2013 and 4.7 in 2014.⁽²³⁾ The implication is that Jordan's economy would have lost 1.6 percentage point for the year 2012, which accounts for JD351 million of GDP as deduced from the official figures of 2012. Losses sustained by Jordan's economy in 2013, following the same methodology, amount to 1.2 percentage points of GDP calculated for 2013; that is, around JD291 million rising to around JD310 million in 2014. This means that, according to the adopted estimation methodology, the negative aggregate impact accounts for an aggregate GDP loss exceeding JD952 million. It is still fair, however, to say that this same methodology can be used when addressing the impacts of the Syrian economic crisis separately from any discussions of the impact of Syrian refugees and residents on Jordan's economy.

B. Impact on the State's Public Revenues:

Table (4) above shows that the benefits accrued from the presence of Syrians in Jordan have risen from around JD209 million in 2012 to nearly JD780 million in 2013. The impact on public revenues rose from JD209 million in 2012 to around JD780 million in 2013, calculated by using the same method for calculating the contribution of Syrian refugees and residents after the crisis to the GDP growth. The ratio of Syrians to the general population in each year was multiplied by the total public tax and non-tax revenues. The present study projects an increase in Syrians' contribution to public revenues by around JD200 million from 2013 in the base influx scenario and around JD554 million in the overflow scenario. According to the aggregate estimates of the present study, the total public revenues accruing from the presence of Syrians in Jordan will aggregately reach around JD2 billion in the base influx scenario and over JD2.3 billion in the overflow scenario in 2010-2014. Those same estimates show that the contributions of Syrians to public revenues account for around 32% of total benefits accruing from the presence of Syrians in Jordan in the base influx scenario, rising to 34% in the overflow scenario.

C. Impact on Foreign Assistance

The large influxes of Syrian refugees into Jordan's economy have, undoubtedly, generated relatively large amounts of assistance from abroad to help the economy in facing the negative impacts of such flows. As mentioned earlier in this study, the internationally-pledged assistance for meeting the needs of Syrian refugees did not exceed 75% of the actual needs, as indicated by official UN figures. It did not even exceed 46% in 2013, as per MoP's statistics. Nevertheless, Jordan has, at last, received through the United Nations a package of assistance to be spent within the framework of the national economy on the refugees. It has also received direct assistance to pass on to the refugees, as disclosed by MoP's data. The study, therefore, recognized this assistance as a form of positive flow, adding to the benefits attained by Jordan's economy, through the use of two sources: UNHCR and MoP. The figures shown in Table (4) above

(23) See the estimation table published in Country Report: Jordan, Economist Intelligence Unit, December 2010.

are the total of the figures declared by both sources in each year, though it is necessary to understand that the MoP's figures are related to the Syrian dimension (Tables (2) and (3) in this chapter) and thus do not include all foreign assistance that Jordan has received throughout the studied period. Although some may argue that the assistance given to Jordan, including that specified for the Syrians, is largely due to the sympathy of the international community with Jordan, the donating countries have not required such assistance to be paid solely for the Syrian refugees. According to some reports, Jordan has received around US\$1.5 billion in 2012, rising to US\$2.1 in 2013.

At any rate, Table (4) above shows that the total assistance received by Jordan through the abovementioned sources indicates a rise in Syrian refugee assistance by JD955 million in 2012-2013. The study, by relying on those sources, projects a rise of assistance to JD1.3 billion in 2014 in the base influx scenario and around JD1.4 billion in the overflow scenario, an increase of 8% and 16% respectively. The aggregate impact of foreign assistance throughout the period 2012-2014 amounts to around JD2.8 billion in the base influx scenario and JD2.8 billion in the overflow scenario; that is, 43% and 41%, respectively, of the total benefits accruing to the national economy as a result of the Syrian refugee crisis

D. Impact on Foreign Reserves

Table (4) above shows the impact of Syrian refugees and residents on the foreign reserves in the country, assuming that the flow of foreign assistance given for the Syrians is converted into local currency and hence directly affects the foreign reserves held with Jordan Central Bank (JCB). It also calculates a weighted proportion of income flows from abroad, assuming that they pertain to Syrians, by deducing a proportion concurrent with the ratio of Syrians to the population from the total annual income flows from abroad, according to JCB's official statistics. It also considers the annual increase of foreign reserves during the subject period and extracts the share that corresponds to the ratio of Syrians to the population, multiplied by the annual variance of foreign reserves, assuming that such an increase is due to the presence of Syrians in the country.

Using this method, the findings estimate that the Syrian presence had a aggregate increasing impact on foreign reserves during the period 2012-2014 of around JD3.8 billion in the base influx scenario and around JD3.9 billion in the overflow scenario, corresponding to 57% and 61%, respectively, of the total benefits accrued by Jordan's economy as a result of the influxes of Syrian refugees into the country. Table (4) also shows the estimated annual balance that such flows poured into the foreign reserves, with amounts ranging from less than a billion Jordanian dinars in 2012 to around JD1.4 in 2014 in the overflow scenario.

E. Impact on Investments (Estimated Syrian Investments)

Estimates of Syrian investments in Jordan varied during the period of the crisis, particularly in 2012. According to data obtained by the researcher from the Jordan Investment Board (JIB), the investment enterprises applying for investment exemptions in 2012 did not exceed JD74 million in value. It also shows that the investment enterprises applying for exemption during the first nine months of 2013 amounted to JD63.7 million. This means the total value of the investment enterprises applying for exemptions, in accordance with Jordanian investment law, did not exceed JD150 million for the period 2012-2013. Other statistics published by the Companies Control Department at the Ministry of Industry and Trade (MIT-CCD) suggest that the Syrian capital registered in 2012 amounted to around JD20 million, rising to JD37 million in 2013. The data further indicate that the number of Syrian investors amounted to 66 investments in early 2014, compared with 30 in 2013. By contrast, the figures corresponding to capital injected into the Jordanian economy exceed US\$1 billion and anticipate a rise of 3% in 2013. Another report by the United Nations Development Program (UNDP) refer to 500 new Syrian companies registered with MIT from the beginning of 2012 up to the middle of the first quarter of 2013, investing in the various industrial, agricultural and commercial activities with a total capital of JD42 million and employing 2,157 workers. (24) It should be noted, however, that the registered capital does not necessarily reflect the reality of investment, given the fact that several companies register with MIT at the minimum registrable capital even though their real capital may be several times that declared.

This explains why this study has chosen to use the Oxford Business Group's estimate, considering the investment estimate for the period 2012-2013 and its increase by 3%. Accordingly, the aggregate impact of the investment flows within the period of study, 2012-2014, as shown in Table (4) above, amounts to around JD900,000 in either scenario, accounting for around 13% of total benefits accruing to Jordan's economy from the Syrian influxes.

2. Impact on the Microeconomic (Sectorial) Level

This part of the study continues discussions of the benefits that the matrix shows should have been received by Jordan's economy as a result of the Syrian refugee crisis. Greater emphasis, however, will be placed on housing, particularly the rents that Syrian tenants are paying to Jordanian landlords. It will also address the impact of Syrian investments on the creation of job opportunities for Jordanians and calculate the estimated revenues generated from retail businesses. This latter sector has certainly been affected, with the largest number of Syrians living in local communities and hence increasing general demand on goods and services and boosting the trade and industrial activities in the country. What follows is a preview of the findings of the study in respect of each of those domains.

(24) See Oxford Business Group, Sept 18th and Muin A Khoury, UNDP, "Mitigating the impact of the Syrian refugee crisis on Jordanian vulnerable host communities", November 2013.

A. Impact on Housing

Several reports, in addition to personal interviews conducted by the researcher's team, indicated an increase in the demand for housing since Syrian refugees started to enter the country. According to official data, 80% of refugees live outside the official camps and account for the new demand for houses, taking into consideration that the average Syrian family has five members (See relevant findings in Chapter III), regardless of any distinction between registered and non-registered refugees. The Syrian demand for housing reached 44,000 families in 2012 with an increasing trend, influenced by the influxes of Syrians, rising to 448,000 families. The figures are on the rise as a result of the increase of family members both in the base and overflow scenarios until the end of 2014. The study also adopted a graduated approach in the aggregate calculation of the number of families through the year, assuming that the larger portion of them (50%) is present in the second half of the year, according to the size of influxes, while 30% is likely to arriving during the rest of the year. Personal interviews revealed that 20% share homes with other families, as the monthly rents of apartments less than 150 m² in size range from JD150 to JD250. As a result, the aggregate benefits of Jordanians resulting from leasing their apartments throughout the period 2012-2014 range from JD594 million to 665 million, accounting for around 57% of the benefits accruing at the macroeconomic level as a result of the Syrian refugees' presence in Jordan. In the final analysis, the aggregate benefits for Jordanian who lease their houses during the period 2012-2014 range from JD594 to JD665 million, accounting for around 57% of total sectorial benefits accruing from the Syrian refugee presence in Jordan and amounting to around JD1020.5 million in the base influx scenario and JD1164.1 million in the overflow scenario.

B. Impact on Job Creation

While freely conceding that Syrian workers are competing with Jordanians and other migrant workers, as the ensuing section will explain, studies have found that new jobs were created for Jordanians because of the introduction of some Syrian investments to the country. The present study, in this connection, used the UNDP's report, mentioned above, for the assumption that 50% of a total of 2100 jobs created by Syrian investments employ Jordanians. Such jobs were distributed into 30% and 70% in the years 2012 and 2013, respectively. That figure grows when taking into account the projected economic growth rate of 3.5% for 2014 in the base influx scenario and 6.5% for the overflow scenario, so as to reach the total expected job opportunities in both scenarios. The average monthly wage per worker stood at JD250, as estimated by the researcher but also as based on individual surveys and interviews conducted with some employers in the industrial sectors. For Jordanian workers, the aggregate benefits attained through such investments amounted to around JD11 million for both scenarios with a marginal difference not exceeding JD200,000. Those benefits, however, are dwarfed by the total benefits stated in Table (4) above as they account for as little as 1% of total sectorial benefits, as calculated in this study.

C. Impact on Retail Trade Revenues

The abnormal increase in Jordan's population throughout the period 2012-2013 directly increased demand on all types of retail and wholesale trade, particularly food, household utilities and other forms of retail trade. The study provides estimates for the benefits accrued by the retail trade sector using the ratio of Syrian refugees and residents after the outbreak of the crisis to determine their contribution to the growth of revenues in that sector. It has been found that the aggregate benefits for the sector throughout the period 2012-2014 stand at around JD416 million in the base influx scenario and around JD489 million in the overflow scenario. Those figures account for 42% and 41% of the total estimated sectorial benefits in the two scenarios.

3. Estimated Costs Incurred by the Syrian Refugee Crisis on Jordan's Macroeconomic and Sectorial Levels

In light of the assumptions mentioned above, Table (5) demonstrates the matrix of estimated costs for Jordan's economy as a result of the Syrian refugee crisis throughout the period 2012-2014. It should be noted that the 2012 figures are inclusive of 2011, based on the study's data prepared by the researcher for the Economic and Social Council. The costs incurred in 2011 are found to be insignificant compared with the total costs calculated or estimated in this study. The latter amounted to around JD140 billion out of the total costs estimated in this study to range from JD11 to JD13 billion.

Following the same approach as in the benefit analysis, the costs estimated were broken down into two categories, the macroeconomic and sectorial sectors, with the main focus placed on service sectors (education, health, energy, water, infrastructure, security and defense), which have been affected by the severe influxes of Syrian refugees and residents since the Syrian crisis erupted in 2011.

Table (5) below estimates the costs excluding the abovementioned period to be in the range of JD11.5 to JD13 billion, according to the scenarios envisaged as follows:

Table (5) below estimates the costs excluding the abovementioned period to be in the range of JD11.5 to JD13 billion, according to the scenarios envisaged as follows:

Table (5): Matrix of estimated costs as incurred by Jordan's economy due to the Syrian refugee crisis (2012-2014)

Item	Estimated Monetary Costs (JD Million)					
	2012	2013	2014		Grand Total	
			Base influx scenario	Overflow scenario	Base influx scenario	Overflow scenario
Impact on macro-economy	653.7	2211.7	2746.5	3719.3	5611.9	6584.7
- Foodstuff subsidies	13.1	33.8	38.3	51.8	85.1	98.6
- Public debt	84.4	240.0	374.0	506.0	698.4	830.4
- Trade account	440.9	1609.0	1957.1	2663.6	4007.1	4713.6
- Imports	378.7	1952.7	2609.4	3551.3	4940.8	5882.8
- Labor market	43.3	129.1	152.1	200.9	423.5	373.3
- Job opportunity costs	72.0	1998.8	225.0	297.0	496.8	568.8
Impact on sectors	464.8	2453.9	2954.1	3532.0	5859.7	6440.3
- Education	14.0	70.0	87.5	93.6	171.5	177.6
- Health	29.2	85.4	125.9	170.5	240.5	285.1
- Energy	61.7	79.9	95.9	130.5	237.4	272.0
- Water	2.8	14.4	16.6	22.6	33.9	39.9
- Security and defense	58.9	263.7	320.8	436.6	643.4	759.2
- Infrastructure	295.1	1916.4	2277.0	2641.1	4488.5	4852.6
- Municipal services	3.08	14.1	27.4	37.1	44.5	54.2
Total estimated costs	1118.5	4665.6	5697.6	7251.3	11471.6	13025.0

Source: Researcher's estimates based on available official figures, including projections in the 2014 General Budget.

1. Impact on the Macro-Economy

This part of the study addresses the estimated costs incurred on the macro-economy by the influxes of Syrian refugees, including those refugees who live in the official camps or in the local communities and those unregistered as refugees with the UNHCR even though they have been living in the country since 2011. It should be noted, however, that the methodology is limited to estimating the costs incurred by the presence of Syrian refugees and residents in Jordan since 2011 on the economic indicators. By no means is the study concerned with the impact of the Syrian crisis on national economy. Hence, on the macroeconomic level, the study estimated the costs associated with subsidies paid on foodstuffs, the General Budget and the trade balance, with specific reference to the impacts on the bills of importations and on the labor market. This includes the calculation of the opportunity cost wasted as a result of Syrians competing for jobs with Jordanians. The study estimated the total aggregate costs at around JD5.6 billion in the base influx scenario and JD6.6 billion in the overflow scenario, which corresponds to 49% and 50% of the total estimated costs in the each scenario, respectively. The sections below discuss those impacts in more details.

A. Impact on Food Subsidization

Financial deficit is a chronic distortion besetting Jordan's economy in view of failure to cover the country's public expenses through the use of local revenues. Jordan has pursued several corrective measures, particularly since the early 1990s, to address the financial situation of the country. The most recent measure was a complete lifting of subsidies on all petroleum products (except household gas). Nevertheless, the economy is still strained by the huge pressures of the global financial crisis followed by the popular movements in the region and in Jordan itself. Against this background, successive governments have been forced to subsidize foodstuffs at an annual cost exceeding JD200 million.

In studying the overall impact of the Syrian refugee crisis on the macro indicators, this present study has deemed it necessary to estimate costs incurred by subsidizing food, as this subsidy is a benefit for all residents, regardless of whether they are citizens or not. The impact on food can be estimated by calculating the subsidization costs per capita and then calculating the ratio of that subsidy to the number of Syrian refugees and residents in light of the food subsidy balance at the end of each year of the studied period. A previous study prepared for the Economic and Social Council estimated the food subsidy per capita to be around JD57 in 2011, rising to around JD75 in 2012. For the purposes of this study, which is seeking to estimate the impact of Syrian refugees and residents on the economy since the outbreak of crisis, the aggregate cost of that item ranged from JD85 million in the base influx scenario to JD99 million in the overflow scenario. Those costs account for over 1.5% of total estimated costs at the macro level.

B. Impact on Public Debt

According to official statistics, as shown in Table (1) in Chapter I, the overall net public debt rose in 2011-2012 by around JD3.4 billion owing to the total burdens placed on the budget in the aforementioned period. The trend continued through 2013, rising by around JD3 billion from 2012 at a rate of over 16% in one year. The figures in the 2014 General Budget projects a further increase in net public debt to JD21.4 billion, with a two billion increase from the previous year. By projecting the per capital increase in the state's budget on the influx of Syrians during the period 2012-2014, the aggregate cost of hosting Syrian refugees and residents ranges from JD698 million to over JD830 million. This accounts for around 13% of total costs estimated for the subject study period. It is necessary to emphasize that the per capita cost was calculated on the basis of the annual increase in the debt rather than on the outstanding debt balance at the end of the relevant year. This calculation is intended to seek accuracy and avoid blaming the refugee crisis for the consequences of the debt. The researcher's previous study conducted for the Economic and Social Council had already calculated the cost of hosting Syrian refugees following the same methodology for the year 2011 at around JD18.1 million. That figure has not been used in estimating the current cost for the period starting 2012.

C. Impact on the Foreign Sector: Trade Account and Imports

The gap in the foreign sector represented by the deficit in the trade balance, which accounts for the difference between imports and exports, is the greatest chronic distortion in Jordan's economy. Table (1) in Chapter I of this study shows that this gap has been significantly aggravated throughout the study period compared with its situation before the outbreak of the Syrian crisis. The trade deficit almost doubled between 2010 and projections for 2014 anticipate it rising from JD6.8 billion in 2010 to over JD11.6 billion according to budgetary forecasts for 2014. This is clearly attributed to the impact of the dense population on the total size of imports to Jordan, mainly dominated by foodstuff and oil products. This study has calculated the per capital cost from the trade deficit balance, which necessarily equates with the net per capita impact on variances in goods import and export items.

The cost estimates in Table (5) above shows that the aggregate impact of Syrian refugees and residents, after the outbreak of the crisis, on the trade balance deficit is above JD4 billion in the base influx scenario and over JD4.7 billion in the overflow scenario.

Those costs account for around 71% of total macroeconomic costs in the base influx scenario and up to 72% in the overflow scenario. The impact of the imports item alone aggregately amounts to around JD4.9 billion in the base influx scenario and around JD5.9 in the overflow scenario, which is a very large cost that significantly affects the GDP and puts yet more huge pressures on JCB's foreign reserves.

D. Impact on the Labor Market and Opportunity Cost for Competing with Jordanian Workers

Unemployment has been one of the most significant problems challenging the Jordanian economy since the 1980s. According to official statistics, the unemployment rates rose from 2011 to the end of 2013 by over two percentage points, hitting 14% of national manpower. In addressing this issue, Jordan adopted in recent years several initiatives, particularly the replacing of migrant workers with Jordanians in several sectors. In the same context, MoP and the Ministry of Agriculture (MoA) jointly launched in 2011 the National Employment Strategy (NES) with the aim of setting practical strategies for the development of Jordanian human resources to eventually create jobs for nationals. NES also deals with the structural imbalances plaguing the labor markets in view of those distortions created by failure to align supply to demand. It is common knowledge that Jordan needs to create more than 100,000 jobs annually to accommodate newcomers to the market, not to mention the need to provide additional jobs for currently unemployed nationals.

The youth prevail among the working age group of the Syrian population in Jordan, as is also the case for Jordanian nationals. In view of the official statistics, 80% of the Syrian refugees nationwide live outside the official camps, particularly in the main cities of Amman, Irbid and Mafrqa. This can be fairly said to pose a great challenge to the state's public policy in creating jobs for Jordanians or replacing migrant workers with Jordanians. In a relative context, UNHC (See Figure (4) in Chapter III) says almost 58% of the Syrian refugees are in the 18-59 age group and that 22% of that group is made up of males. One implication is that members of this latter segment have entered the Jordanian labor market either as replacements for migrants or as occupiers of new jobs. In addition, a portion of the females, accounting in total for around 22% of the same segment, have entered the labor market. This presents another challenge to attempts to employ Jordanians or to empower Jordanian women through their effective involvement in the labor market. Statistics already show a decline in Jordanian women's participation in the labor market, with a rate not exceeding 16% of manpower compared with over 28% in the Arab world and 43% worldwide in countries with similar income levels to Jordan.

In view of the above facts, the present study used 25% as the percentage of total Syrian refugees entering the labor market, including those outside the camps and prior residents. It also assumed that 30% and 70% of those latter two groups compete with Jordanians and migrant workers, respectively. The estimated cost was calculated specifically in relation to only those competing with Jordanians, with the impact on the labor market calculated based on three lost opportunities. The first relates to work permits and associated fees, the second with lost social insurance deductions and the third with income that could have otherwise been generated for Jordanian replacements, noting that the average monthly wage for each worker does not exceed JD250.

The total Syrian manpower occupying local jobs ranges, according to the present study's estimations, from 110,000 to 140,000, though the study has not taken into account children below the age of 18, who exceed 30,000, according to the Ministry of Labor's (MoL) official figures. Female workers make up less than 3% of the manpower, which prompts the study to presume a conservative approach to estimating labor market-related costs and they are affected by the Syrian workers.

The researcher's previous study prepared for the Economic and Social Council found a significance presence of Syrian workers in several commercial and service stores. This phenomenon has been increasingly visible for nationals in their transactions with several private providers of goods and services, including gas stations, restaurants and all types of retail businesses.

The proliferation of Syrian workers was particularly notable in Amman and some other main cities like Irbid and Ramtha, but even extended as far as Ma'an and Karak in the south. Although many of them were a replacement of migrant workers of other nationalities, they still present a challenge to MoL in replacing migrant workers with Jordanians. Syrian labor is not only cheaper than that of other nationalities, but is also highly skilled in many occupations. Not all employers report to MoL about their migrant workers.

This deprives the ministry of a considerable source of revenues, a portion of which is channeled to national occupational programs intended to equip Jordanians with the skills needed to meet the demands of local market.

In estimation, the study finds that the failure by employers to secure work permits for their Syrian workers incurred a loss in revenues to both MoL and the Social Security Corporation (SSC) ranging from JD325 million in the base influx scenario to over JD373 million in the overflow scenario.

For the sake of accuracy, those amounts are based on the estimation by the study that 30% of Syrian workers are working under officially issued permits and paying their subscriptions to SSC. As for the opportunity costs, the study expects that the relevant aggregate costs will range from JD496 million in the base influx scenario to over JD568 million in the overflow scenario, with the total estimated costs in the labor market accounting for around 14% of the macroeconomic costs.

More important, however, is the social effect sustained because of the loss of over 100,000 jobs for Jordanians, which apart from financial considerations, deprives them of subscription to the SSC's social safety network, which guarantees insurers against death and disability, for example.

2. Sectorial Level

This part of the study discusses the matrix of costs that are assumed to have been borne by the Jordanian economy as a result of the Syrian refugee crisis. The focus is on costs incurred for education, health, energy, water, security and defense, infrastructure and municipal services. The study estimates the macroeconomic costs at around JD5.8 billion in the base influx scenario and over JD6.4 billion in the overflow scenario. This means macroeconomic costs range from 49% to 50% of estimated costs in the two scenarios. The following is a detailed discussion on those costs as associated with each individual sector.

A. Education

The previous study conducted by the researcher for the Economic and Social Council reveals that, according to official figures, schools had received around 14,000 school-age boys and girls by the end of October 2012, mostly enrolled in public schools. The private schools' intake amounted to 700 in the period from 2011, when the crisis broke out, to the beginning of the 2012 scholastic year. There are other students who have not moved outside the camps for educational purposes. At the beginning of the crisis, the Ministry of Education (MoE) set up tents as temporary schools until four school buildings were established to accommodate up to 5,000 students. Schools neighboring the camps were also opened in two shifts to accommodate as many Syrian students as possible. MoE also rented other buildings for the same purpose. In the meantime, MoE had adopted a strategy to abolish the two shift system, which burdened the ministry's resources and school infrastructure and caused inconvenience for the children, families and educational and administrative staff. The abovementioned numbers were accommodated, per MoE's data, by the schools of Ramtha, Mafraq, Irbid and Amman's first and fourth educational districts.

By the end of 2013, MoE's data showed the number of Syrian students at public schools rose above 110,000 with a projected increase to over 140,000.⁽²⁵⁾ A recent study has also shown that the number of students at Al Za'atari Camp reached 12,000, in addition to over 1,000 in the United Arab Emirates sponsored Marheeb Al Fuhood Camp. That study also found that out of 273,000 school-aged children, only 93,000 have been enrolled inside and outside camps. This indicates that around two thirds of those school-aged children are out of school, which presents the alarming prospect of their being illegally involved in the market without any permit or insurance. They could either be working for the own businesses or be engaged in internationally-banned child labor, which Jordan has strived for years to fight. These facts also affect the literacy position of Jordan in the Arab world. It has improved school enrolment to prestigious rates: as high as 91% in primary education and 94% in secondary education. Such achievements are at risk, given that the drop-out rates of Syrians are adding to the magnitude of social challenges including child labor, involvement in illegal activities and crime.

(25) Statements by the Minister of Education in Al Ghad Daily, January 14th, 2014.

The total number of Jordanian dropouts in primary and secondary schools, according to some statistics, was 150,000, a figure that will be doubled by 120% if the 180,000 Syrian dropouts are added.⁽²⁶⁾ In addition, the earlier figures do not account for those unregistered with the UNHCR, who number more than half a million with the same demographic distribution. Accordingly, not less than 250,000 of those unregistered Syrians are of school age, with drop-out rates expected to be no less than those of the registered refugees. In the most conservative scenarios, Jordan is facing an additional 100,000 dropouts, bringing the total Syrian dropouts to in excess of 280,000, almost double the Jordanian figures for all educational levels.

The cost of the 110,000 Syrian students (both refugees and residents), according to MoE's data, varies from JD450 in primary education, JD850 in secondary education and JD1,100 in vocational education. Almost 34% of UNHCR-registered Syrian refugees are in the 5-17 age group, half of whom are girls. This implies that the real educational burden of education and educational needs are distributed among the various educational stages. Accordingly, the study used an average figure to find out the real costs incurred by the educational sector to achieve accuracy and avoid exaggerated figures. This average figure was set at JD625 per student, regardless of educational level. Table (4) shows that the aggregate cost of education throughout the study period ranges from JD172 million in the base influx scenario to JD178 million in the overflow scenario. This means the average cost of education accounts for around 3% of total sectorial costs incurred for hosting Syrians in the period.

The researcher's previous study conducted for the Economic and Social Council estimated the cost of 850 Syrian students for the year 2011 at around JD3.257 million. For 2012, the estimated cost was around JD10.968 million, according to that study. So, in total, the costs of the crisis on education during the period 2011-2012 reach around JD14.225 million.⁽²⁷⁾ Those estimates are used by the present study in determining the costs of education in 2012, in addition to the costs carried forward from 2011.

(26) For more details on the analysis and figures, see Razan Nasser & Steven Symansky, "The fiscal impact of the Syrian refugee crisis on Jordan", USAID, January 2014.

27 For more details, see the study of the Economic and Social Council prepared by the researcher and published in the periodical reports of Isnaad Consulting under the title "The socio-economic impacts of the Syrian refugee crisis on Jordan's economy", 3rd Issue, Special Economic Report, February 2013 (only available in Arabic).

B. Health

The Ministry of Health's (MoH) data reveal that the cost of medical treatment per patient is around JD270, out of which JD132 is a subsidy for non-Jordanians.

Therefore, regardless of any amounts received by MoH from donors to cover the costs, the subsidy per patient is still a direct cost included in the real accounts paid by the state in respect of patients, regardless of nationality. Since the figure is the outcome of a division of total cost by number of residents, the study finds it appropriate for use in estimating the costs of medical operational (non-capital) services incurred by the state.

The assumption is that capital costs are already covered by donations or by the field hospital. Hence, the estimated medical care cost, considering that around 10% of Syrians go to hospitals to receive treatment, ranges from JD29 million in 2012 to over JD125 million in 2014 in the base influx scenario.

The figures go up in the overflow scenario to over JD29 million in 2012 and JD125 million in 2014. Accordingly, the aggregate impact on health exceeds JD240 million in the base influx scenario and JD285 million in the overflow scenario, accounting for around 4% of total sectorial costs.

According to USAID's aforementioned study, the largest portion of the cost borne by Jordan was in the health sector. That study showed that around 80,000 Syrian refugees were treated in Jordanian hospitals throughout the first eight months of 2013; that is, 10,000 patients a month. In addition, the local medical centers received 132,000 Syrian refugees throughout the same period; that is, 16,500 patients per month.

The figures still do not reflect an equal number of Syrian residents not registered with the UNHCR. The study also talked about Syrians competing with Jordanians for medical centers and hospitals, which burdened Jordanians and overstretched MoH facilities. Hence, the present study has been very realistic when assuming that the percentage of Syrian patients using MoH facilities stands at around 10% of the total Syrian population in the country.

The researcher's previous study conducted for the Economic and Social Council estimated the burdens of Syrian refugees on health for the year 2011 at around JD8.340 million. As for 2012, bearing in mind the graduated influxes of refugees throughout the first 10 months of the year, the study estimates the cost burden of Syrian refugees on health at around JD15.924 million.

C. Energy

Energy, particularly the electricity supply, tops the subsidized services in Jordan with the overall oil imports bill amounting to JD4 billion a year; that is, over 17% of GDP. Although Jordan completely lifted the subsidies on oil products, electric generation is still subsidized, incurring losses of over JD3 billion for the National Electric Power Company (NEPCO) by the end of 2013. The losses are largely because of the frequent and long disruptions (over 22 incidents) to the Egyptian gas supply, forcing the government to use the more expensive diesel and heavy fuel for electrical generation since 2011.²⁸ Nevertheless, oil subsidies continued until they were completely lifted in November 2012.

Based on official figures for the losses sustained by NEPCO, the study calculated the subsidy shared by Syrian residents per capita. Table (5) above shows that the aggregate cost of electricity resulting from the Syrian refugee crisis exceeded JD237 million in the base influx scenario and JD272 million in the overflow scenario, accounting for around 4% of total sectorial costs.

The aforementioned study by the Economic and Social Council estimated the cost of electricity subsidies incurred by Syrian refugees as 1% (JD12.571 million) in 2011 and 3% in 2012. The figure for 2012 is calculated by considering the gradual influxes of refugees throughout the 10 months, added to the number of Syrians already residing in the country in that year. This would give a more accurate estimate of JD38.807 million. The total benefits accrued by the Syrian refugees and residents throughout the period 2011-2012, according to that study, adds up to over JD51 million, which does not significantly differ from the present study's estimates.

D. Water

Jordan has one of the lowest levels of water resource availability per capita in the region, standing at 145 MCM compared with the regional average of +800 MCM, 1028 MCM in Syria and 2172 MCM in Iraq, according to the Department of Statistics (DoS).⁽²⁹⁾

The previous study conducted by the researcher for the Economic and Social Council shows that Jordan is among the top 10 poorest countries in water resources and that it falls below the world water poverty line of 500 MCM. The situation is worsened by any abnormal increases in the population. Water in Jordan is supplied to all users at subsidized prices. The Joint Jordan-UN Appeal states that the annual per capita share of subsidies spent on water is JD15.15. This figure has been used in this study to calculate the costs incurred by Syrian nationals (refugees and residents) in Jordan for water use. Notably, Al Za'atari Camp consumes a daily intake of around 4,000 cubic meters of water, which is over 1.4 million cubic meters a year.

(28) For more details, see Isnaad Consulting, "Electricity tariffs in Jordan: distortions and impacts of costs on demand", Special Economic Report, 4th Issue, August 2013.

(29) http://www.dos.gov.jo/sdb/dos_home/dos_home_a/water.htm

In any case, the water subsidy given to Syrian refugees and residents was estimated at 15.15 per capita a year, which makes the aggregate cost incurred by the Syrian refugee crisis for water throughout the study period amount to around JD34 million in the base influx scenario and JD39 million in the overflow scenario.

The figure does not even cover sanitation and environment-related costs, which have not been calculated in this study. However, according to USAID estimates, such costs incurred by Syrians living outside the camps stand at around JD166 million bringing the total cost of sanitation to JD67 million and JD106 million in 2013 and 2014, respectively. Those additional costs obviously exceed those of the water supply. What those figures imply is that the cost of water, as estimated in this study, will aggregately rise by JD182, leading to costs of JD216 million in the base influx scenario and JD221 million in the overflow scenario.

Another problem relates to adverse effects on the environment, with Al Za'atari Camp being established on a water basin that supplies Mafraq, Irbid and Zarqa with all their water needs in addition to meeting 30% of Amman's water demand. The interviews conducted by the researcher's team show outspoken concerns that the water basin may be polluted by the waste water in view of violations by large numbers of the camp's residents. The situation is alarming because of the foreseen destructive environmental effects in Jordan, for which reason this study prompts the concerned authorities to commence forthwith a study by specialists in this area. It also calls for relocating the camp as soon as possible, but in any case before mid-2014.

E. Protection, Security and Civil Defense Services⁽³⁰⁾

Jordan provides high-quality services for the security, protection and civil defense of its citizens. The same applies to the hosting of refugees, regardless of whether they are registered or unregistered. Throughout the history of Jordan, refugees have benefited from all services for security, protection and civil defense in official camps, public spaces and all other parts of the country.

The costs incurred by providing such services are estimated by the study in the same manner as in the previous study prepared for the Economic and Social Council, on a per capita basis throughout the period 2012-2013 and in light of the estimated cost in the budget for the year 2014.

The relevant aggregate cost throughout the study period exceeded JD643 million in the base influx scenario and JD759 million in the overflow scenario. Those account for nearly 12% of total microeconomic costs. The Economic and Social Council's study estimates the cost at around JD9.6 million in 2011 and JD40 million in 2012.

(30) This part used the methodology and texts used by the researcher in a previous study for the Economic and Social Council.

F. Infrastructure and Public Services

It was not easy to estimate the impact of such large numbers of refugees on the infrastructure. The highly abnormal increase in the population, as well as the demographic distribution of the Syrian refugees and residents per se, is an indication of the huge pressure put on all types of infrastructure, such as roads, telecommunications and transport. Therefore, the study opted to define an approximate coefficient (a proxy) that would allow for the best estimate of the costs of Syrian refugees in terms of infrastructure. In addition, technical experts were consulted for advice on the rates of depreciation and costs of renovating the infrastructure over the years. Using the available estimates, the study found that the costs of current infrastructure stands at approximately JD40 billion for the last two decades. A proxy coefficient was deduced at the value of JD0.15 per capita and then it was used as a proxy coefficient for the per capita impact on infrastructure depreciation on an annual basis. The derived coefficient was used to calculate the impact of Syrians on the infrastructure throughout the study period, taking into consideration the changes in their numbers from year to year. The study, in addition, calculated the per capita share of capital expenditure to calculate the annual cost of benefits to Syrian individuals in terms of capital expenditure in the public financial accounts and the General Budget. That was used as a proxy coefficient of the annual per capita cost of infrastructure and projecting the outcome of the changes in the number of Syrians coming to the country in the study period (2012-2014). As a result, the aggregate cost of the Syrian refugees and residents in Jordan during that period was estimated at over JD4.4 billion in the base influx scenario and JD4.8 in the overflow scenario; that is, nearly 75% of total sectorial costs.

G. Municipal Service Sector

Chapter III of this study examines the socio-economic impacts on those communities hosting Syrian refugees coming to the country since the outbreak of the crisis. The pressures on the municipalities were crystal clear, particularly in bordering regions, as in Mafraq and Irbid, necessitating an increase in funding for the services rendered by such municipalities. The budgetary funds allocated to municipalities were raised in response to the new burdens of the Syrian refugees. In order to calculate the per capita share of municipal expenditure, a proxy coefficient for the cost of the Syrian refugees and residents all over the country was obtained. Thus, the study arrived at an estimate of the cost of Syrian residents based on the changes in their residence status and concluded that the aggregate cost of the Syrian refugee crisis on municipalities throughout the study period was around JD45 million in the base influx scenario and over JD54 million in the overflow scenario. This accounts for not less than 1% of total sectorial expenses incurred by the Syrian refugee crisis, as shown in Table (5) above.

5. The Final Trial Balance: Benefit-Cost Matrix

The following table (6) sums up the estimated impacts of the Syrian refugee crisis on Jordan's economy. It shows the total benefits received and costs incurred by Jordan throughout the period 2012-2102 according to the base and overflow scenarios.

Table (6): Benefit-cost matrix for the estimated impacts on Jordan's economy (JD million)

Item	Years			
	2012	2013	2014	
			Base influx scenario	Overflow scenario
Total estimated benefits	999.4	3118.7	3112.0	3800.0
Total estimated costs	1118.5	4665.6	5697.6	7251.3
Grand total	-119.1	-1546.9	-2585.6	-3451.3
Aggregate outcome as edtimated in the study			-4232.1	-5097.0

The above trial balance shows huge net losses sustained by Jordan throughout the previous years, rising from JD1.2 billion in 2012 to over JD1.5 billion in 2013. Furthermore, the study expects the losses (costs) to outweigh the benefits in 2014 by over JD2.5 billion in the base influx scenario and by up to JD3.5 billion in the overflow scenario. Estimates reached by this study show that hosting such large numbers of Syrian refugees and residents in Jordan ultimately amount to losses above JD4.2 during the period 2012-2014 in the base influx scenario and JD5.1 billion in the overflow scenario, accounting for 16% and 20% of expected 2014 GDP, respectively. It also accounts for at least 20% of Jordan's public debt and over 60% of estimated 2014 public spending.

In sum, the discussion about benefits and costs or, so to speak, gains and losses, has emerged in the context of Syrians seeking refuge in Jordan. The estimated trial balance in this study shows a large debit account reading around JD5 billion besetting a Jordanian economy that is already challenged by tremendous distortions in financial deficit (public debt, trade deficit, structural unemployment and other problems, as pointed out in Chapter I). This study has found that whatever benefits have accrued to Jordan as a result of the Syrian refugee crisis, the costs have dwarfed the benefits.

5. Key Social Impacts of the Crisis: Non-Quantity Estimates

There are implications in reality that the continuous flows of refugees for extended period of time necessarily have numerous socio-cultural impacts. These can be felt through the quality and size of the flow of refugees into any economy and defy an accurate quantity-based impact assessment, whether positive or negative. Refugees, by their nature, come with their own cultural and sociological diversities and perceptions of economic, social, cultural and political issues. The range of such perceptions and impacts are not restricted to a specific territorial space in the host country but rather spread out at the local community level. In the case of Jordan, it is evident that over 80% of Syrians live outside the official camps and spread nationwide, though most of them live in Mafrq and Irbid governorates. There are also Syrians who have been regular residents in the country before the crisis and are not registered as refugees, with a relatively high concentration in Mafrq, Irbid and Amman. Accordingly, the social impact that such groups have by virtue of their mobility moves across all governorates, without exception, though the highest concentration is in the three governorates of Mafrq, Irbid and Amman.

The Syrian refugee crisis, therefore, as seen by this study, has had four social non-quantity impacts, namely on poverty, education, marriage customs and the environment. In addition, there are other social impacts related to unemployment and competition with Jordanians for jobs. This results in the loss to some Jordanians of job opportunities and hence loss of coverage by the safety net provided by the Social Security Corporation to workers and their families.

Several Jordanian studies have cited poverty as a top social challenge facing Jordan's economy, with poverty pockets increasing from 22 in 2006 to over 36 by the end of 2012. It is believed that the presence of Syrians all over the country has posed an intrinsic challenge to efforts to combat poverty. There is competition for financial resources, which have been channeled to poor population sectors through the various donation mechanisms. Widespread popular sympathy with the Syrian issue led many to extend their support to the Syrians at the expense of the poor people of Jordan. Though it is not easy to be certain about the exact impact of such a phenomenon, it is strongly believed that it has had an impact on efforts made by civil society organizations and individuals in combating poverty.

On the social impacts on education and culture, all interviews conducted by the researcher and his team revealed, in many respects, huge adverse impacts on the quality of education at those schools hosting Syrian refugees. Overcrowded classes are one issue. They increase the ratio of students to teachers, decreasing attention for individual students, before one considers the fact that classrooms are not designed to accommodate such large numbers of students. The two-shift system is another problem with the schools concerned, which are forced to resort to such a system to deal with the increasing numbers of students. Another direct effect of this system is the reduction of each classroom lesson from 45 to 35 minutes, which impacts on the quality of content delivery and understanding. The third issue has been mentioned in Chapter IV of this study. It relates to complaints made by some parents, who request the separation of Jordanians from Syrians because of different cultural perceptions and because of fear that their children may be affected by undesirable socio-cultural impacts arising from the Syrian presence. This latter issue, however, did not seem to be an overwhelming concern by the respondents of the study.

On the issue of intermarriages, it seems that several local, regional and international media have been exaggerating the issue. This is not a concern for this study as official statistics in Jordan show that this is not even a notable phenomenon. The Supreme Judge's Department (SJD), which is the authority responsible, denied any abnormal increase in marriages with Syrians since the outbreak of the crisis. Statistics, for example, show that SJD issued less than 200 marriage contracts with Syrian women in 2012 compared with 270 in 2011. It is notable that intermarriages between Jordan and Syria are not new. It is a traditional practice that has occurred since the establishment of the two countries. For that reason, there is no reason to make a firm claim that the crisis has resulted in an abnormal trend of Syrian women marrying Jordanians. There are also other stories of Syrian women marrying non-Jordanians and other forms of undocumented marriages in the camps. Some people in positions of authority said they saw, though infrequently, some marriage documents inside the camps executed on detergent boxes. Others pointed to several social challenges imposed by the non-official marriage culture that results in an unofficial and non-documented marriage contract, even if it is vouched for by legally mandated witnesses. In many cases, this has resulted in the man abandoning his wife for good when the woman falls pregnant, for example.

The last non-quantity issue, in the researcher's opinion, relates to an important burden on the Jordanian economy and society. It is the environmental impact of the numbers of residents on the economy. From an economic perspective, every individual in a country serves as an important input to production. This individual uses agricultural, industrial, commercial and service resources and as such he or she produces a diversity of outputs that pollute the environment. It follows that any abrupt increase in the population in the range 3-16% which is diverse in age, demographic and geographic nature, as seen by Jordan, will necessarily pose a serious challenge to health and the environment. It is, therefore, recommended that specialists tackle this issue through an approach that helps to identify the estimated quantitative impact of such influxes on the Jordanian environment.

Also relevant to this discussion is the concern that pollution may affect the water basin underneath Al Za'atari Camp because of the large numbers of refugees. That basin is instrumental in supplying water for Mafraq, Irbid and Zarqa in addition to the eastern parts of Amman, which rely on the basin to meet around 30% of their needs. It is too risky to leave this issue unaddressed, having worsened over the past few years. The situation is exacerbated by the introduction into the camps of new refugees who find it difficult to use collective latrines and thus have established their own sanitation facilities. Such practices risk the leakage of waste water into the underground water reservoirs, which prompts the researcher to recommend moving the camp as soon as possible. There is no exaggeration in saying that this must happen before the end of the first half of 2014. Otherwise, the result will be devastating for the environment and people, an outcome Jordan cannot afford.