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2013

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A GENERAL EQUILIBRIUM ANALYSIS FOR JORDAN**

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**Working Paper No. 824**

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**December 2013**

We gratefully acknowledge the financial support provided by the Economic Research Forum. We would also like to thank Denise Konan and Chahir Zaki for fruitful discussions. This paper has also benefited from comments of Ahmed Ghoneim and Björn Nilsson, participants in the ERF Workshop on "Capital and Labor Mobility within the ERF Region" and participants in the DIAL-Dauphine research seminar. Finally, we would like to thank all the policy makers met at the different stages of the research project.

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First published in 2013 by  
The Economic Research Forum (ERF)  
21 Al-Sad Al-Aaly Street  
Dokki, Giza  
Egypt  
[www.erf.org.eg](http://www.erf.org.eg)

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## Abstract

The global crisis had a negative impact on growth and unemployment in Jordan and this effect is likely to persist in the coming years. Besides, Jordan is a significant migrant sending country, thus providing an interesting context within which to investigate the interactions between international labor mobility and domestic labor market outcomes. The crisis scenario shows that the rise in unemployment is due to a simultaneous increase of labor supply, induced by lower transfers and a decrease in labor demand. Emigration decreases at the beginning of the period, but rebounds once the Gulf countries recover from the global crisis. The counterfactual increase of service exports has a positive impact on GDP growth and on aggregate unemployment. Emigration decreases, mainly for high skilled workers. The increase of receiving countries' wages has a positive impact on unemployment reduction and wages. The effects are channeled through increased migration incentives and higher remittances which lower the pressure on the local labor market, mainly through higher emigration and a lower labor participation rate. When the wage increases are limited to highly skilled workers, the observed reduction of unemployment and the wage increase for high skilled workers is much higher than in the previous scenario. However, low and medium skilled workers' unemployment levels increase. Finally, education transitions are significantly increased by the higher wage premium.

**JEL Classifications:** J6, F2

**Keywords:** Labor Mobility, Unemployment, Jordan.

## ملخص

كان للأزمة العالمية تأثير سلبي على النمو والبطالة في الأردن ، ومن المرجح أن يستمر هذا التأثير في السنوات القادمة. الى جانب ذلك، الأردن هو بلد إرسال كبير ومهاجرين ، وبالتالي فان توفير سياق نهتم من خلاله إلى تحقيق التفاعل بين حركة اليد العاملة الدولية و نتائج سوق العمل المحلي هي خطوة هامة. يظهر السيناريو أزمة ارتفاع البطالة ترجع إلى زيادة المعروض من العمالة في وقت واحد ، وهذا ناجم عن انخفاض التحويلات وانخفاض في الطلب على اليد العاملة . تقل الهجرة في بداية الفترة ، ولكن تزداد فجأة بعد تعافى دول الخليج من الأزمة العالمية . زيادة صادرات الخدمات المغاير له تأثير إيجابي على نمو الناتج المحلي الإجمالي و البطالة. تقل الهجرة ، وذلك أساسا للعمال ذوي المهارات العالية . زيادة الأجور في البلدان المتلقية لديها تأثير إيجابي على الحد من البطالة والأجور. وتوجه الآثار من خلال زيادة حوافز الهجرة والتحويلات العالية التي تقلل من الضغط على سوق العمل المحلية ، وذلك أساسا من خلال ارتفاع الهجرة و انخفاض معدل المشاركة في سوق العمل . عندما يتم الزيادات في الأجور تقتصر على العمال ذوي المهارات العالية ، والحد من البطالة ويحظى العمال ذوي المهارات العالية بزيادة الأجور بشكل أكبر مما كانت عليه في السيناريو السابق. ومع ذلك ، فان مستويات البطالة العمال المهرة المنخفضة والمتوسطة تزيد. أخيرا ، زادت تحولات التعليم من ارتفاع أقساط التأمين للأجور بشكل ملحوظ.

## 1. Introduction

While studies on the impact of migration on host countries are still dominant, interest in the emigration impact on the home country's labor market is increasing (Hanson, 2009). The objective of this article is to analyze how labor mobility affects the dynamics of local labor markets in the MENA region, characterized by the highest unemployment rates in the world. Jordan offers an interesting case with what has been characterized by the World Bank (2008) as the paradox of "strong investment, strong GDP growth and high unemployment"<sup>1</sup>. Indeed, despite a strong economic growth and a growing interest from investors, Jordan displays unemployment rates that average 13%, with rates that reach 30% for the high skilled youth.

This particular situation has multiple origins such as massive low-skilled immigration, skilled unemployment due to an investment policy that favors low-skill low-wage job creation and geographical mismatch between high unemployment areas and job creation areas World Bank (2008). Moreover, studies show that Jordanian youth has difficulties entering the labor market and they face job instability as well as high risk of holding an informal job, that lower their chances of getting a stable and protected contract in the future (Amer, 2012).

Jordan is also characterized by large outflows and inflows of labor. The country witnesses a real brain-drain phenomenon with an outflow of skilled workers. Indeed, as stressed by (Mryan, 2012), Jordan is close to the rich Gulf countries, which have abundant natural resources and a small population. The availability of opportunities and the higher wages in the GCC have pulled a significant number of Jordanian skilled workers to migrate to those countries. Moreover, Jordan is surrounded by neighbors with larger populations such as Egypt, Iraq and Syria whose citizens can enter without visas to Jordan. Economic or security conditions push many of them to migrate to Jordan. The flows are significant, but irregular, with an impact on labor supply (Mryan, 2012).

In terms of interregional integration, Jordan has strong economic ties both within the MENA region and the rest of the world, as a WTO member and having accessed various Free Trade Agreements. To our knowledge, the impact of this progressive liberalization on the labor market has yet to be studied. Using a CGE model, Feraboli and Trimborn (2009) find that a reduction in import duties for EU products under the Association Agreement between the European Union and Jordan induces a welfare loss for households, but offer no information on its impact on labor outcomes.

This paper provides a dynamic general equilibrium analysis of the interactions between migration and the labor market in Jordan and analyzes the impact of an increase in emigration flows and of higher exports of Mode 4 services which imply temporary movements of professionals.

In section 2 we present the Jordanian context. In section 3 we describe the structure of the model and the data. The experiments that we run, as well as their results, are discussed in section 4 and section 5 concludes.

## 2 The Jordanian Context

High population growth rates and massive immigration make the Jordanian case very interesting in terms of labor market behavior. Projections show a rapid increase in population, but a stagnation of the labor force participation rate.

As a matter of fact, the Jordanian labor force participation rate is one of the lowest in the world World Bank (2008).

As in other Arab countries, the low participation rate is partly due to the female participation rate which only reaches 15%. Nevertheless, there is a significant difference with the other

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<sup>1</sup>See Figure3

countries in the region and this is a high labor market participation of skilled (Amer, 2012), (Assaad, 2012).

The labor force is also increasingly educated, with the share of university graduates moving from 8% to 13% over the last decade and that of those with no education declining from 18% to 12% over the same period.

Arouri estimates that over the next years there will be around 50,000 to 70,000 new entrants on the Jordanian labor market each year, meaning that 60,000 to 90,000 jobs need to be created each year in order to maintain a stable unemployment rate Saif and El-Rayyes (2010). In a thorough analysis of the Jordanian labor market, Saif and El-Rayyes (2010) highlight that even though there is no alarming trend in the labor force increase, **the projections were made assuming that net migration is nil, pointing out the Government's strategy of encouraging outmigration in order to lower unemployment.** Despite this, unemployment represents a significant challenge, with rates averaging 13.8% between 2003 and 2007 Saif and El-Rayyes (2010). Moreover, high unemployment rates increasingly concern the youth (more than the double of the national average) and the highly educated as their unemployment rate went from 12.1% in 1995 to 15.5% in 2007 for those holding a university diploma. A major concern is the unemployment's slow response to economic growth, as was the case between 2004 and 2007 when unemployment barely fell from 14 to 12% while GDP annual growth rates were averaging 8% (Assaad, 2012). A World Bank report identifies mismatches that concur to a high unemployment in Jordan. The first one is of geographical order since job creation is focused in areas with already low unemployment and Jordanian workers have insufficient regional mobility. Furthermore, high unemployment might also be due to the fact that Jordanian workers "maintain a false optimism about their employment prospects and earning potential" World Bank (2008). (Assaad, 2012) also notices this shift in the structure of Jordanian labor force towards more educated youth which, given that job creation mainly concerns low quality jobs, is willing to choose unemployment to downgrading.

Another feature of the Jordanian labor market is the significant share of public jobs, which, despite having decreased sharply between 1990 and 2000, now amounts to one third of total employment.

In terms of migration, the most striking fact is the outflow of high skilled labor to GCC countries and the immigration of low-skilled foreign workers (Corm, 2009). The major destination for Jordanian migrants are the GCC countries, with an estimated stock of 141 202 Jordanian workers in 2008 (Ministry of Labor).

The direct consequence is the temporary nature of Jordanian migration and (Wahba, 2012) shows that 38% of Jordanian migrants have left in the last two years. Using the 2010 Jordan Labor Market Panel Surevy (JLMPS), she analyzes the main characteristics of Jordanian migration and its interlinkages with the local labor market. The study points out the high skill intensity of outmigration, with 62% of emigrants holding a university degree, and finds evidence of an increase in local wages due to emigration. It is important to notice that despite the high expatriation rate of skilled workers, (Beine et al., 2008) find that Jordan, together with Syria and Egypt, experiences a beneficial brain drain. OECD countries attract fewer Jordanian migrants, their number having been estimated at 36 thousands according to DIOC-E database, with the United States as the main destination.

However, except the figures on migrant stocks coming from international institutions, there is very little general information on outmigration from Jordan and practically no data on emigration flows.

The World Bank ranked Jordan as 10th in terms of remittance receiving country proportionally to GDP. Remittances' share of GDP went from 16 percent in 2008 to 23 percent in 2009.

The importance of remittances is also stressed by (Chaaban and Mansour, 2012), who find that remittances have a significant positive impact on educational attainment in Jordan.

Finally, in terms of foreign trade, Jordan has recently experienced a progressive liberalization and has concluded several trade agreements with the EU, US and sixteen Arab states. Services play a crucial role in the economy as they account for more than 70% of GDP. Banking and financial services have the highest growth rate. In terms of employment, service sectors account for more than 78% of total employment, thus reinforcing the major role of services in the Jordanian economy.

### ***2.1 Trade and migration agreements***

Jordan is one of the countries that trades significantly with the other countries in the region, its non-oil regional exports accounting for more than 25% of total exports (Hoekman and Sekkat, 2010).

In terms of Free Trade Agreements, Jordan is a member of the Agadir Agreement, together with Egypt, Morocco and Tunisia, whose aim is 'harmonizing of general and sectoral economic policies in member countries in relation to foreign trade, agriculture, industry, financial and taxation systems, services, and customs with the view of achieving objective competition amongst member countries'. Outside the MENA region, Jordan has two<sup>2</sup> main bilateral agreements related to general services: one with the United States (signed in 2000 and entered into force in 2001) and one with Singapore (signed in 2004 and entered into force in 2005), but neither contains a chapter on temporary mobility.

## **3. The Model and Database**

### ***3.1 The Dynamic General Equilibrium Model***

The methodology consists in developing a dynamic general equilibrium model focused on migration and labor market interactions<sup>3</sup>. One of the model specificities is its detailed treatment of the labor market. Labor supply is endogenous, it increases with expected wages and decreases with transfers including migrants remittances. Labor demand is disaggregated by sector, skill and age. Wages by skill are set following an extended wage curve which allows a trade-off between wages and unemployment and takes into account the impact of public wage variation on private wages. Finally education is modeled with an endogenization of transition rates between cycles, following the evolution of the expected returns to skill.

The other model innovation is its formalization of the emigration decision, its duration and the evolution of the remittances rate. Migration outflows, disaggregated by skill and age, vary following the expected wage differential between the home and host countries. The remittance behavior is modelled using an altruistic hypothesis (Rapoport and Docquier, 2006).

The model has four closures. The macro closure is savings-driven (households' marginal propensity to save is exogenous), which means that the level of investment is determined by the level of total available savings in the economy (including foreign savings). The government closure chosen consists in fixing government expenditures as a constant share of GDP and tax rates and leaving the government budget balance endogenous. The foreign balance closure consists in fixing the current account balance at its observed level and leave

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<sup>2</sup>Jordan also signed a bilateral agreement with Canada, but it still has to be ratified

<sup>3</sup>See David And Marouani (2013c) for a detailed description of the model

the exchange rate endogenous. The labor market closure allows a joint determination of unemployment and average formal wages through the wage curve described above.

Model dynamics are of the recursive type. Each year the stock of capital in each sector corresponds to last year's stock plus new investment, minus the depreciation of capital. Sectoral investment has been modeled as a function of the sectoral stocks of capital, sectoral rates of return to capital and capital acquisition costs. The evolution of the active population by skill is modeled within the education block, which relies on the actual performance rates of the education system in Jordan (pass, repetition and drop-out rates by cycle and transition rates between cycles). Government and foreign debts increase with the yearly level of the net deficit of Government and foreign savings.

### **3.2 The Data**

In order to calibrate the model, we constructed a Social Accounting Matrix for the year 2006. Data from various sources<sup>4</sup> was used for both the SAM and the other macroeconomic aggregates. Data on employment, wages and labor market outcomes was inferred from the 2010 Jordanian Labor Market Panel Survey made available by the Economic Research Forum. Migration and education information was compiled using OECD, UNESCO and UNICEF databases.

Despite the importance of the immigration phenomenon in Jordan, we chose not to include it in our study for two main reasons. First of all, immigrants are not included in most of the official statistics, therefore including them could create a data inconsistency. Secondly, our study is mainly focused on outmigration and its impact on the labor market.

## **4. Experiments**

This section discusses the impact of various shocks on labor supply and demand, unemployment, emigration, remittances and the other variables mentioned above. The results presented in the tables are in comparison to the baseline or reference scenario. Three experiments are run: Simulation (1): What would have been the situation without the global crisis? Simulation (2): What would be the effect of a Mode 4 agreement? Simulation (3): What are the effects of an increase in all foreign wages by 5%? Simulation (4): What happens if the increase in foreign wages only concerns the skilled workers (increase by 10%)?

### **4.1 The impact of the global crisis**

The objective of this experiment is to assess the effects of the global crisis. As shown by table 5 the scenario induces a decrease in investment and labor demand in Jordan (-8.8%<sup>5</sup> and -0.4% per year on average during the 2008-2015 period). The crisis also reduces the level of remittances sent by Jordanian emigrants (-8.6%), which has a positive effect on the labor force participation rate (+0.8 percentage point) through the disincentive effect of remittances on labor supply. The decrease of capital income plays a similar role in the increase of labor supply. The combined effect of lower labor demand and higher labor supply results in much higher unemployment rates (+2.1 percentage points on average). Migration slightly increases by 0.9% on average during the considered period, but this low variation hides a decrease in emigration from 2008 to 2011 and an increase from 2012 to 2015. This switch is mainly due to a faster recovery from the economic crisis in the Gulf countries than in Jordan.

If we dig deeper into the disaggregated impact of the crisis on the labor market and in particular on unemployment we find that the high skilled are the least affected (12.4% on average versus 19.2% and 21.9% for medium and low skilled) mainly due to initial high unemployment. This is due to their lower reliance on transfers given their very high activity

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<sup>4</sup>The Jordanian Department of Statistics, the Central Bank of Jordan, the Jordanian Ministry of Finance, the IMF, the World Bank

<sup>5</sup>When commenting the results, we will use the yearly average of the variation between the simulation results and the baseline scenario



rates (close to 75%). Moreover, real wages decrease for all categories, but the highest cost is borne by the low skilled who lose on average 5.9% for the youth and 5.1% for the non youth. These results explain why high skilled workers have lower incentives to migrate than the other categories and that low skilled have the highest increase in migration intentions.

#### **4.2 The impact of a Mode 4 agreement**

The simulation shows a limited positive impact on GDP growth (0.1% on average during the 2012-2015 period), an increase in labor demand (0.5% on average) and in the labor force participation rate (0.1 percentage point). Unemployment decreases by 0.2 percentage point per year on average. Labor supply increases because remittances decrease (-1.6% on average). This drop in remittances is due to the exchange rate appreciation (-0.5%) induced by the increase of exports, but also to the households' income increase. Indeed, given the altruistic behavior of migrants, their remittance rate decreases when their origin households are better off.

The positive effects of the shock are not equally distributed across skills. The gains are increasing with the skill level for both unemployment and wages (see table 9). The main beneficiaries are high skilled non youth, given the intensity of the selected service sectors in this category of workers.

The impact of the shock by skill is reflected in the migration patterns, with the highest reduction for high skilled workers. These increasing returns to skill act as incentives for education by increasing transition rates (1.7% from primary to secondary and 0.5% from secondary to higher education).

#### **4.3 The Impact of An Increase in Foreign Wages**

As expected, higher foreign wages induce an increase in emigration (2.7% on average) and remittances (10.4%), which have a negative impact on the local labor market participation rate (-0.5 percentage point). Higher emigration and lower participation induce lower unemployment (-1 percentage points) and higher local wages. These wage increases have a negative impact on labor demand (-0.3% on average). Given that remittances represent a significant share in GDP, their rise induces a significant increase in investment (by 3.5% on average), which leads to higher economic growth (0.2 percentage point on average).

The main beneficiaries in terms of unemployment reduction are the low and medium skilled (respectively -11.8% and -10.2%) who witness a higher reduction in their activity rates (respectively -0.5 percentage points and -0.6 percentage points) due to the higher share of remittances in their total revenues. The consequence is a higher incentive to migrate for high skilled workers (3.4% on average) as compared to the other categories.

#### **4.4 Increase in high skilled wages**

The macroeconomic results' trend is similar to the one observed in the previous scenario, but with a lower magnitude, except for GDP growth. Moreover, aggregated labor demand no longer decreases as the drop in the activity rate is lower. The aggregate unemployment rate decreases (-0.3 percentage point on average), but this evolution hides a significant disparity at the skill level. While high skilled unemployment decreases by 14.1%, low and medium skilled unemployment levels increase by 1.1% and 0.1% respectively. This drop in high skilled unemployment is due to the increase in high skilled emigration (8.2% on average) and to the decrease of high skilled workers' activity rate (-0.9 percentage points), driven by the increase of high skilled migrants' remittances (21.4%).

If we look at the age dimension for high skilled workers, we notice that the non youth witness a higher drop in their unemployment level (-22%) than the youth (-12.5%). The reason is the very significant gap in initial unemployment rates (six times higher for the youth), which

means that a similar variation of activity rates will have a much larger impact on non youth unemployment. The consequence is a higher rise in high skilled non youth wages (4.9%) compared to youth (2%). Finally the impact on transition rates, mainly from secondary to tertiary education, is very high (5.3%) due to the skill premium induced by the shock.

## **5. Conclusion**

The global crisis had a negative impact on growth and unemployment in Jordan, and this effect is likely to persist in the coming years if the IMF growth prospects are confirmed. The explanation lies in a simultaneous increase of labor supply due to lower transfers and a decrease in labor demand. The low and medium skilled are the most affected, given their higher reliance on remittances. Emigration decreases at the beginning of the period, but rebounds once the Gulf countries recover from the global crisis.

The counterfactual increase of services' exports has a positive impact on GDP growth and on aggregate unemployment, since labor demand increases more than labor supply. The increase in the participation rate is due to the decrease of remittances as a consequence of the exchange appreciation and the rise in capital gains, triggered by the increase of services exports. The highly skilled non youth are the main beneficiaries in terms of unemployment reduction and wage increases. Emigration decreases, mainly for high skilled workers thereby illustrating the potential of services exports in reducing brain drain. The scenario also shows their positive impact on education transitions.

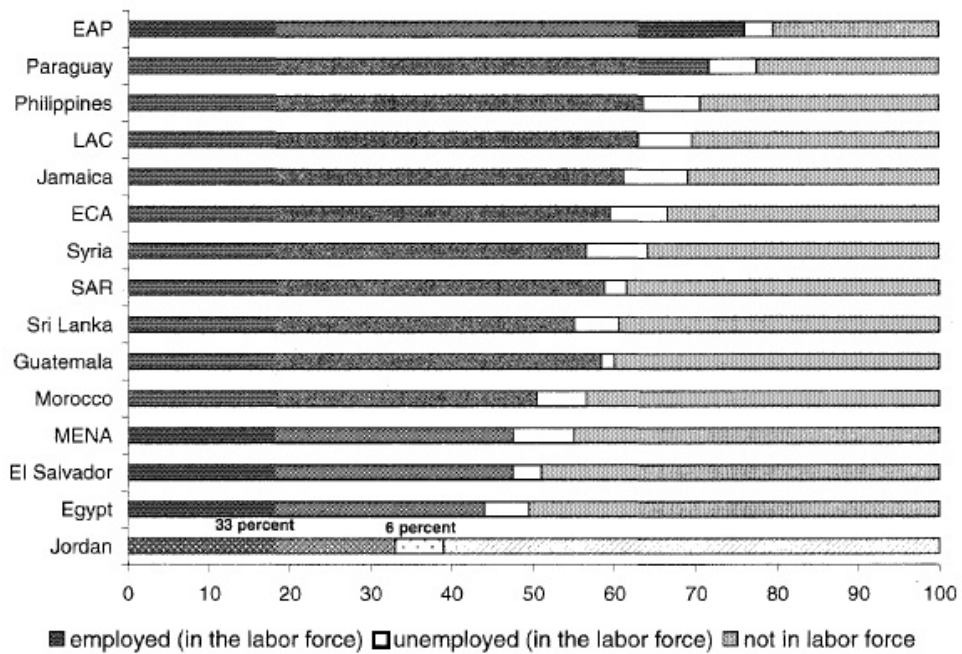
The increase of receiving countries' wages has a positive impact on unemployment reduction and wages in Jordan. The effects are channeled through increased migration incentives and higher remittances which lower the pressure on the local labor market, mainly through higher emigration and a lower labor participation rate. It has a positive impact on GDP through higher investment given the share of remittances in GDP. The main beneficiaries in terms of unemployment reduction are the low and medium skilled workers who witness a higher reduction in their participation rate.

When the wage increases are limited to highly skilled workers, the observed reduction of unemployment and the wage increase for high skilled workers is much higher than in the previous scenario. Non youth benefit relatively more than youth in terms of both outcomes. However, low and medium skilled workers unemployment levels increase. Finally education transitions are significantly increased by the higher wage premium.

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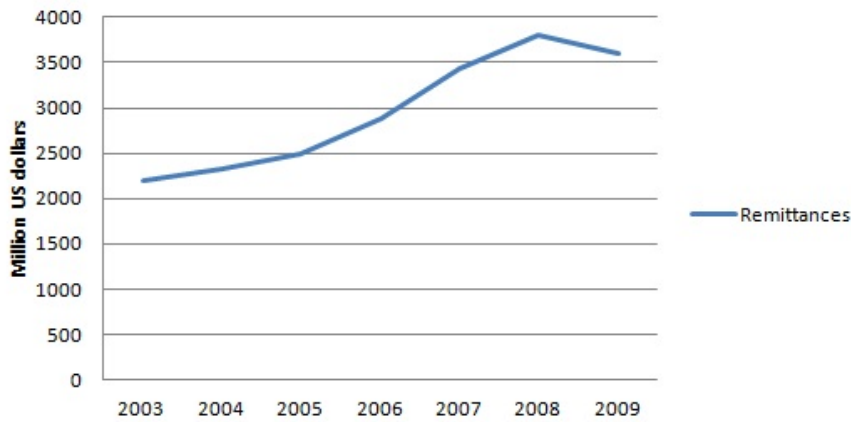
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**Figure 1: International Comparisons of Labor Force Status**



Source: World Development Indicators 2006, Department of Statistics Employment and Unemployment Survey 2005.

**Figure 2: Inward Remittance Flows**



Source: World Bank

**Table 1: Population Projections**

	2000	2005	2010	2012	2020
Total Population (thousands)	5039	5473	6500	7720	9169
Working Age population (thousands)		3251	3861	4585	5446
Labor Force Participation Rate	39.4%	38.3%	38.9%	38.9%	38.9%
Labor Force (thousands)	1194	1308	1547	1837	2182

Source: DoS, Saif and El-Rayyes (2010)

**Table 2: Labor Force and Employment Structure**

2007 LSF data		Labor force (%)	Employment (%)
5[1]*Age	15-24	23.6	19.5
	25-34	34.8	35.2
	35-44	25.4	27.4
	45-54	11.0	12.1
	55-64	4.1	4.5
4[1]*Education level	None	4.0	4.2
	Primary	44.3	4.5
	Secondary	26.7	27.0
	University	24.9	24.3

Source: DoS, Saif and El-Rayyes (2010)

**Table 3: Unemployment Rates Trends by Age and Education Level**

		1995 (%)	2000 (%)	2007 (%)
5[1]*Age	15-24	27.9	26.7	28.3
	25-34	13.8	11.6	12.0
	35-44	6.7	6.7	6.3
	45-54	6.6	7.0	4.6
	55-64	6.6	5.2	3.8
4[1]*Education level	None	10.1	10.8	9.3
	Primary	14.0	14.9	12.6
	Secondary	20.8	13.5	12.4
	University	12.1	11.8	15.5

Source: DoS, Saif and El-Rayyes (2010)

**Table 4: Jordanian Workers in GCC Countries**

Country	Number of workers
United Arab Emirates	54 834
Saudi Arabia	50 928
Kuwait	18 880
Qatar	10 000
Oman	3 500
Libya	3 060
<b>Total</b>	<b>141 202</b>

Source: Saif and El-Rayyes (2010), MoL

**Table 5: Macro Results**

	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
GDP Growth differential (p.p.) <sup>6</sup>	1.2	-0.5	-3.7	-3.5	-3.2	-3.0	-2.7	-2.3
Emigration	0.0	-0.8	-1.0	-0.3	0.6	1.7	2.8	4.0
Total investment	1.3	0.1	-3.4	-6.8	-10.3	-13.9	-17.1	-20.1
Local labor demand	0.1	0.1	-0.1	-0.3	-0.5	-0.8	-0.9	-1.1
Total potential active population	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5
Total Unemployment (p.p.)	-0.3	0.0	0.9	1.8	2.6	3.3	3.9	4.3
Total activity rate (p.p.)	-0.1	0.1	0.4	0.7	1.0	1.2	1.3	1.4
Remittances	1.1	-1.6	-6.0	-8.7	-10.9	-12.8	-14.2	-15.3
Exchange rate	0.7	0.8	-1.2	-3.0	-4.5	-5.9	-7.2	-8.2

<sup>6</sup>Percentage Point

**Table 6: Results by Skill**

	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
<b>Number of unemployed</b>								
Low skilled	-3.0	0.4	10.9	20.1	27.8	34.5	40.0	44.5
Medium skilled	-2.5	0.4	9.0	16.8	23.7	30.0	35.6	40.5
High skilled	-1.2	0.3	4.6	9.3	14.2	19.2	24.1	28.9
<b>Activity rate (p.p.)</b>								
Low skilled	-0.1	0.1	0.3	0.6	0.8	0.9	0.9	0.9
Medium skilled	-0.1	0.1	0.5	0.9	1.3	1.5	1.7	1.8
High skilled	-0.1	0.0	0.4	0.7	1.0	1.2	1.4	1.5

**Table 7: Crisis Impact by Skill and Age**

	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
<b>Equilibrium Formal Wage</b>								
<i>Low skilled</i>								
Youth	0.5	-0.1	-2.3	-4.7	-7.0	-9.3	-11.3	-13.0
Non youth	0.6	0.0	-2.1	-4.1	-6.0	-8.0	-9.8	-11.5
<i>Medium skilled</i>								
Youth	0.4	-0.1	-1.5	-2.9	-4.3	-5.8	-7.3	-8.9
Non youth	0.5	0.0	-1.9	-3.7	-5.5	-7.2	-8.9	-10.6
<i>High skilled</i>								
Youth	0.2	0.0	-0.6	-1.2	-2.0	-2.8	-3.8	-4.8
Non youth	0.5	-0.1	-1.7	-3.6	-5.6	-7.8	-10.1	-12.5
<b>Emigration by age</b>								
<i>Low skilled</i>								
Youth	-0.1	-0.8	-0.8	-0.1	0.7	1.3	1.8	2.2
Non youth	-0.1	-0.8	-0.6	0.5	1.7	2.9	4.0	4.9
<i>Medium skilled</i>								
Youth	-0.1	-0.7	-0.6	0.3	1.3	2.2	3.2	4.0
Non youth	0.0	-0.8	-1.1	-0.3	0.7	1.8	3.0	4.3
<i>High skilled</i>								
Youth	0.3	-0.7	-2.1	-2.3	-1.8	-0.9	0.4	1.9
Non youth	0.2	-0.8	-1.9	-1.7	-1.0	0.1	1.7	3.5
<b>Transition rates</b>								
<i>Secondary education</i>	-0.1	-0.1	0.0	0.0	-0.3	-0.8	-1.7	-2.8
<i>Higher education</i>	-0.2	-0.1	0.7	1.2	1.5	1.5	1.4	1.0

**Table 8: Macro Results**

	2012 (%)	2013 (%)	2014 (%)	2015 (%)
GDP Growth (p.p.)	0.1	0.1	0.1	0.2
Emigration	-0.5	-0.9	-1.3	-1.8
Total investment	0.2	0.3	0.6	1.0
Local labor demand	0.2	0.4	0.6	0.9
Total potential active population	0.0	0.0	0.1	0.3
Total unemployment (p.p.)	0.0	-0.1	-0.2	-0.3
Total activity rate (p.p.)	0.0	0.1	0.1	0.1
Remittances	-0.6	-1.2	-1.9	-2.7
Exchange rate	-0.2	-0.3	-0.5	-0.8

**Table 9: Results by Skill and Age**

	2012 (%)	2013 (%)	2014 (%)	2015 (%)
<b>Number of unemployed</b>				
<i>Low skilled</i>				
Youth	-0.3	-0.7	-1.2	-1.6
Non youth	-0.3	-0.4	-0.7	-1.0
<i>Medium skilled</i>				
Youth	-0.4	-0.9	-1.3	-1.9
Non youth	-0.7	-1.3	-1.9	-2.6
<i>High skilled</i>				
Youth	-0.5	-1.0	-1.6	-2.1
Non youth	-1.8	-3.5	-5.2	-7.0
<b>Equilibrium Formal Wage</b>				
<i>Low skilled</i>				
Youth	0.1	0.1	0.2	0.3
Non youth	0.1	0.1	0.2	0.2
<i>Medium skilled</i>				
Youth	0.1	0.2	0.4	0.5
Non youth	0.1	0.3	0.5	0.7
<i>High skilled</i>				
Youth	0.1	0.3	0.4	0.6
Non youth	0.4	0.8	1.3	1.7
<b>Emigration by age</b>				
<i>Low skilled</i>				
Youth	-0.4	-0.6	-1.0	-1.3
Non youth	-0.3	-0.6	-0.9	-1.2
<i>Medium skilled</i>				
Youth	-0.4	-0.9	-1.4	-1.8
Non youth	-0.5	-1.0	-1.5	-1.9
<i>High skilled</i>				
Youth	-0.6	-1.2	-1.7	-2.3
Non youth	-0.7	-1.5	-2.1	-2.7
<b>Transition rates</b>				
<i>Secondary education</i>	0.6	1.4	2.1	2.8
<i>Higher education</i>	0.2	0.3	0.6	0.8

**Table 10: Macro Results**

	2012 (%)	2013 (%)	2014 (%)	2015 (%)
GDP Growth (p.p.)	0.1	0.1	0.2	0.3
Emigration	1.2	2.3	3.2	4.1
Total investment	1.2	2.5	4.1	6.0
Local labor demand	-0.1	-0.2	-0.3	-0.4
Total potential active population	-0.1	-0.2	-0.3	-0.3
Total unemployment (p.p.)	-0.4	-0.8	-1.2	-1.7
Total activity rate (p.p.)	-0.2	-0.4	-0.6	-0.8
Remittances	3.9	8.1	12.5	17.1
Exchange rate	-0.8	-1.3	-1.9	-2.6

**Table 11: Simulation Impact by Skill**

	2012 (%)	2013 (%)	2014 (%)	2015 (%)
<b>Number of unemployed by skill</b>				
Low skilled	-4.5	-9.2	-14.1	-19.3
Medium skilled	-3.8	-8.0	-12.3	-16.8
High skilled	-2.4	-5.2	-8.3	-11.7
<b>Activity rate (p.p.)</b>				
Low skilled	-0.2	-0.4	-0.5	-0.7
Medium skilled	-0.2	-0.5	-0.7	-1.0
High skilled	-0.2	-0.4	-0.5	-0.7
<b>Emigration</b>				
Low skilled	1.1	2.1	3.1	3.9
Medium skilled	1.1	2.2	3.1	4.1
High skilled	1.3	2.5	3.6	4.6

**Table 12: Macro Results**

	2012	2013	2014	2015
	( )	( )	( )	( )
GDP Growth (p.p.)	0.1	0.1	0.1	0.2
Emigration	0.6	1.1	1.4	1.5
Total investment	0.6	1.3	2.2	3.4
Local labor demand	0.0	0.0	0.0	0.0
Total potential active population	-0.1	-0.2	-0.3	-0.3
Total unemployment (p.p.)	-0.1	-0.2	-0.4	-0.6
Total activity rate (p.p.)	0.0	-0.1	-0.1	-0.1
Remittances	1.9	4.1	6.7	9.6
Exchange rate	-0.4	-0.7	-1.1	-1.6

**Table 13: Simulation Impact by Skill**

	2012	2013	2014	2015
	( )	( )	( )	( )
<b>Number of unemployed</b>				
Low skilled	0.3	0.8	1.3	2.0
Medium skilled	0.3	0.3	0.1	-0.3
High skilled	-4.8	-10.6	-17.1	-23.7
<b>Activity rate (p.p.)</b>				
Low skilled	0.1	0.1	0.2	0.2
Medium skilled	0.1	0.1	0.2	0.2
High skilled	-0.3	-0.7	-1.1	-1.5
<b>Emigration</b>				
Low skilled	-0.4	-0.6	-1.0	-1.3
Medium skilled	-0.4	-0.8	-1.5	-2.1
High skilled	3.9	7.1	9.8	12.0
<b>Remittances per migrant</b>				
Low skilled	-0.7	-1.5	-2.2	-3.0
Medium skilled	-0.9	-2.0	-3.1	-4.2
High skilled	8.2	16.7	25.6	34.9

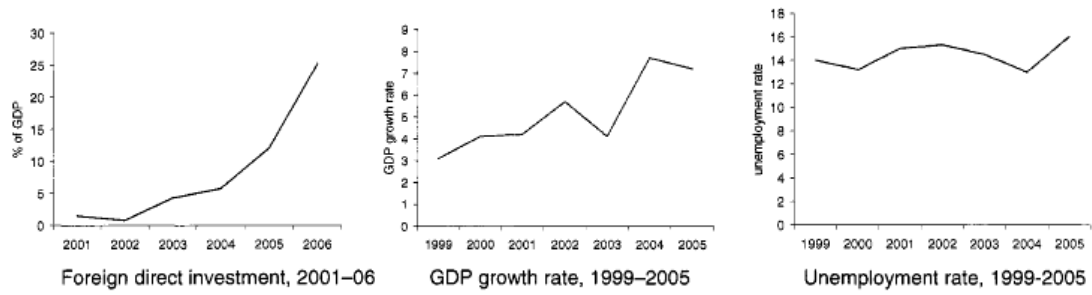
**Table 14: Simulation Results by Skill and Age**

	2012	2013	2014	2015
	( )	( )	( )	( )
<b>Number of unemployed</b>				
<i>Low skilled</i>				
Youth	0.2	0.5	0.7	0.9
Non youth	0.4	0.8	1.4	2.1
<i>Medium skilled</i>				
Youth	0.3	-0.1	-1.3	-2.9
Non youth	0.2	0.7	1.1	1.6
<i>High skilled</i>				
Youth	-4.2	-9.3	-15.1	-21.2
Non youth	-7.5	-16.6	-26.8	-37.0
<b>Activity rate (p.p.)</b>				
<i>Low skilled</i>				
Youth	0.0	0.1	0.1	0.2
Non youth	0.1	0.1	0.2	0.2
<i>Medium skilled</i>				
Youth	0.1	0.1	0.1	0.1
Non youth	0.1	0.1	0.2	0.2
<i>High skilled</i>				
Youth	-0.4	-1.0	-1.5	-2.1
Non youth	-0.3	-0.5	-0.8	-1.1
<b>Equilibrium Formal Wage</b>				
<i>Low skilled</i>				
Youth	0.0	0.0	0.0	0.0
Non youth	0.0	-0.1	-0.2	-0.3
<i>Medium skilled</i>				
Youth	0.0	0.1	0.3	0.6
Non youth	0.0	-0.1	-0.1	-0.2
<i>High skilled</i>				
Youth	0.6	1.4	2.4	3.6
Non youth	1.4	3.4	5.9	9.0
<b>Transition rates</b>				
<i>Secondary education</i>				
Secondary education	0.0	0.3	0.9	1.7
<i>Higher education</i>				
Higher education	2.2	4.4	6.4	8.3



## Appendix

**Figure 3: The Paradox of High Investment, High GDP Growth and High Unemployment**



Source: World Bank (2008), Central Bank of Jordan, World Development Indicators, Employment and Unemployment Surveys.