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The Impact of the Libyan Crisis on the Tunisian Economy

An Estimation of the Macroeconomic and Fiscal Impacts of the Libyan crisis on the Tunisian Economy

United Nations
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PREFACE

This paper is a joint product of the United Nations Economic and Social Commission for Western Asia (ESCWA), the World Bank and the Tunisian Institue of Competitivness and Quantitative Studies.
This paper presents the results of a computable general equilibrium model developed to estimate the macroeconomic and fiscal impacts of the Libyan crisis on the Tunisian economy. The model captures five different effects of the Libyan crisis on the Tunisian economy: i) the impact of the presence of Libyans in Tunisia on aggregate demand; ii) the effect of the crisis on remittances of Tunisian workers in Libya; iii) the impact of the deteriorating business environment on private investments; iv) the consequences of domestic and regional security challenges on the tourism sector and v) the impact of the crisis on government security spending. Our results suggest that the Libyan crisis is responsible for 24% of the deceleration of economic growth in Tunisia during the 2011-2015 period. This is equivalent to a welfare loss of 8.8 billions of Tunisian dinars (TND) or 880 million USD per year or about 2% of 2015 GDP per year. These impacts are mainly driven by the effects of the crisis on private investment and tourism through their consequence on investor confidence and international tourists demand for Tunisian tourism services. In fact, the fall in investments, (resp. tourism) explains 60 percent (resp. 36 percent) of the overall impact of the crisis. The fall of remittances from Libya, the increased government spending on security and the weakened purchasing power of Libyan residents and visitors account respectively for 1.4 percent, 1.2 percent and 0.8 percent of the estimated impact. The fiscal cost of the Libyan crisis (increased government security spending and reduced tax revenues) is estimated at 5.8 billion of Dinars over the 2011-2015 period (580 million USD per year, which is equivalent to 1.36% of 2015 GDP per year). Simulations show that financing these costs through taxes would considerably increase tax rates. Indeed, income taxes would have to increase by 41% cumulatively during the period of 2011-2015 in addition to the need to strengthen tax administration as tax rates and incentives to evade increase. Financing this cost with debt would increase government-financing needs by 7 billion TND over the five years (which is equivalent to 15% of the 2015 public debt-to-GDP ratio) due to additional interest payments TND for and additional debt amortization costs for TND.

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List of Abbreviations

CGE	Computable General Equilibrium
ESCWA	Economic and Social Commission for Western Asia
GDP	Gross Domestic Product
IMF	International Monetary Fund
INS	Institut National de Tunisie
ITCEQ	Institut Tunisien Business de la Compétitivité des Etudes quantitatives
MENA	Middle-East and North Africa
SAM	Social Accounting Matrix
TND	Tunisian Dinar
VAT	Value-added tax
WTO	World Tourism Organization

References to dollars ($) are to United States dollars, unless otherwise stated.

I. INTRODUCTION

Between 2011 and 2015, Tunisia has lost on average 3.86 points of growth every year relative to the 2010 projections of the International Monetary Fund (IMF). This poor performance is in line with predictions from the literature on the state of economies undergoing democratic transitions which are characterized by increased social demands and tensions, a lack of visibility for investors and a weakening of the State. In addition to these internal challenges, Tunisia has also been affected by the security and economic crisis in Libya (a neighboring country and its sixth most important economic partner of Tunisia). The main objective of this chapter is to quantify the macroeconomic and fiscal impacts of the Libyan crisis on the Tunisian economy during the 2011-2015 period while controlling for a number of endogenous and exogenous factors including the cost to the economy of the political transition that Tunisia has been undergoing since 2011.

The economic literature clearly illustrates that civil war in a given country has negative consequences on neighboring countries. Conflicts in general, both minor and extended ones, have a significant effect on development factors in neighboring countries. Murdoch and Sandler (2004)[1] illustrate that an armed conflict in a country reduces economic growth in bordering countries by 85% in the short run and 31% in the long run. Unsurprisingly, these effects are more important when these neighboring countries themselves are facing political, security and economic instability. Negative impacts are amplified when economic, trade and financial linkages between the countries are strong.

The situation in Libya has been marked by different events since 2011. The political revolution that started in 2011, although not very violent, has occurred over an extended period. Despite the 2012 and 2014 elections, elected officials have neither been able to neutralize armed groups, nor have they been able to stop the civil war. The Libyan economy is heavily dependent on revenues from oil and gas. High oil prices before 2014 and foreign exchange reserves have kept public finances in a relatively good position and prevented a humanitarian crisis despite the conflict. However, an extended period of instability and plummeting oil prices have had a heavy toll on Libya's financial resources and weakened the Libyan government in their role of maintaining internal peace and social stability.

Because of the strong ties linking the two countries, a poor performance of the Libyan economy has echoes in the Tunisian economy through various intricate channels. In addition, internal conflict in Libya could negatively affect Tunisia in general and its business environment in particular due to a heightened sense of insecurity and a negative perception of the region as a whole. Besides, the Libyan economy has been immobilized since 2012 by I) a slowdown in the oil and gas industry; ii) political instability that allowed an inflow of arms and militants; iii) and most importantly by a surge of armed groups and their training camps in the country.

The chapter is organized as follows. Section 2 presents the main effects of the Libya crisis incorporated in the Computable General Equilibrium (CGE) model used to estimate its macroeconomic and fiscal impact on Tunisia. Section 3 presents the model, the main hypotheses, and

1 Murdoch, James C., and Todd Sandler. 2004. "Civil Wars and Economic Growth: Spatial Dispersion. American Journal of Political Science, 48(1): 138–51.

scenario. Section 4 and 5 summarize the findings on the macroeconomic and fiscal impact of the Libyan crisis on Tunisia. Section 6 concludes.

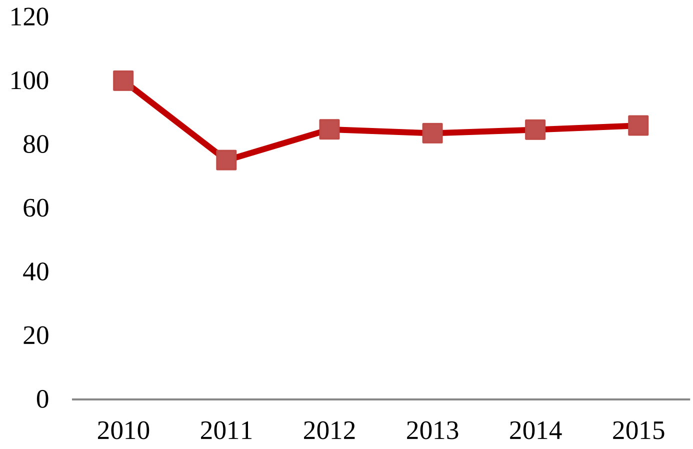
II. FIVE MAJOR EFFECTS OF THE LIBYAN CRISES ON TUNISIA ARE INCORPORATED IN THE COMPUTABLE GENERAL EQUILIBRIUM MODEL.

The effects of the Libyan crisis on Tunisia are complex with both positive and negative effects at the macroeconomic and sectoral level. In this section we identify five major effects that are incorporated in the computable general equilibrium (CGE) model.

A. First effect: A worsening business environment and a fall in private sector investments

The political transition in Tunisia has been accompanied by investment levels lower than the predicted and pre-2011 investment rates. As illustrated in the graph below, holding prices constant, private sector investments have shrunk by 20% in 2011 and have remained constant at these relatively low levels (see figure 1).

Figure 1: Private investments, constant prices (index 100 in 2010)



Source: INS

Even though the domestic environment and social tensions have greatly contributed to this situation, the level insecurity is undoubtedly one of its main causes. In fact, as far as investors are concerned, insecurity is a source of uncertainty and thus an important risk factor. Additionally, investors are generally risk averse and this risk aversion is heightened in the context of a security crisis. This negative effect is noticeable both for new investors (Tunisian or foreign) and for those renewing fixed cost factors of production. The 2015 annual survey of The Tunisian Competitively and Quantitative studies Institute (ITCEQ[2]) reveals that 47% of investors interrogated affirm that the crisis in Libya is a major obstacle for their current business dealings and for future business growth (see text box 1).

Box 1: The Tunisian Business environment survey by ITCEQ

2 l'Institut Tunisien de la Compétitivité et des Etudes Quantitatives (ITCEQ)

Since 2000, the Tunisian Competitively and Quantitative Studies Institute (ITCEQ) conducts on a yearly basis a survey on the business environment and the competitively of enterprises. This study draws its samples from the population of private enterprises in Tunisia. Its central purposes are: i) to identify the main constraints that enterprises are faced with in their business operations, ii) to evaluate business performance and strategies for the maintenance or improvement of competitively in an increasingly tough business environment, iii) and to collect information on businesses' predictions in regards to the state of the business environment in general and also in regards to job creations and investments in the private sector. The 2015 field survey took place between October 1st 2015 and November 15th 2015. About 833 enterprises participated, which was equivalent to a 70% response rate. Seventy percent of individuals in the sample were either the head of their respective businesses or the second or third in the leadership hierarchy. The data collection method involves a one on one interview of business leaders by members of the ITCEQ team.

The study is based upon the perception of business leaders of the legal and institutional environment in which they operate. The 2015 survey results reveal that the political situation, insecurity and corruption are what business leaders consider to be the greatest obstacles. As far as the Libyan crisis is concerned, 47% of enterprises interviewed consider it to be a major challenge for business operations and growth.

Table 2 shows that on average, private sector investment volumes are 25% lower than IMF predictions published in the Article IV of the 2010 IMF review.

Table 2: An estimation of the contraction of private investments

2010 Review : projections 2011-2015	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
GDP (millions of Tunisian Dinars, MTND)	**64,633**	**69,791**	**75,601**	**82,113**	**89,166**	**96,712**
Investment to GDP ratio (%)	27.6	27.4	27.8	27.8	27.6	27.3
Public Investments to GDP ratio(%)	6.6	6.7	6.7	6.8	6.8	6.8
Private Investments to GDP ratio(%)	21	20.7	21.1	21	20.8	20.5
Total private Investments (MTND)	13572.9	14446.7	15951.8	17243.7	18546.5	19826.0
2015 Review: performances 2011-2015						
GDP (millions of Tunisian Dinars, MTND)		64690	70658	76350	82562	87399
Investment to GDP ratio (%)		23.6	24.3	22	21	21.5
Public Investments to GDP ratio(%)		7.3	6.6	4.9	4.2	4.6
Private Investments to GDP ratio(%)		16.3	17.7	17.1	16.8	16.9
Total private Investments (MTND)		10544.47	12506.47	13055.85	13870.416	14770.431
% differences between the 2010 total private investments predictions and performances	0%	-27.01%	-21.56%	-24.29%	-25.21%	-25.50%

Source: IMF

B. Second effect: The presence of Libyans in Tunisia

So far, the Libyans that have moved to Tunisia are not considered as refugees. They left their country for both political and usual reasons such as healthcare, leisure and shopping. To quantify the effect of their presence in Tunisia, we estimate the number of Libyans that have moved to Tunisia after 2010 and the average amount of money that they have injected in the Tunisian economy. The surveys undertaken in the context of this study tell us that Libyans residing in Tunisia have two sources of revenue: (i) revenues transferred to bank accounts in Tunisia (Chapter 2 and Appendix 2); and (ii) revenues transiting in the form of cash through the border with Libya (Chapter 3 and Appendix 3). The aggregate revenues of Libyans in Tunisia is presented in table 3 below:

Table 3: Total Revenue of Libyan households in Tunisia (in million Tunisian Dinars)

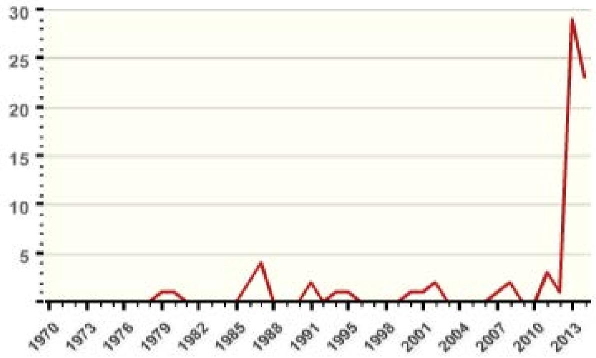
	2010	2011	2012	2013	2014	2015
Through the banking sector	75.18	71.03	106.82	87.96	108.07	36.88
Through the border	2725	2441	2345	2416	1868	814
Total	**2800.18**	**2512.03**	**2451.82**	**2503.96**	**1976.07**	**850.88**

Source: Survey administered at Tunisian customs (Chapter 3) and banks (Chapter 2)

C. Third effect: Worsening security situation and increased government security spending

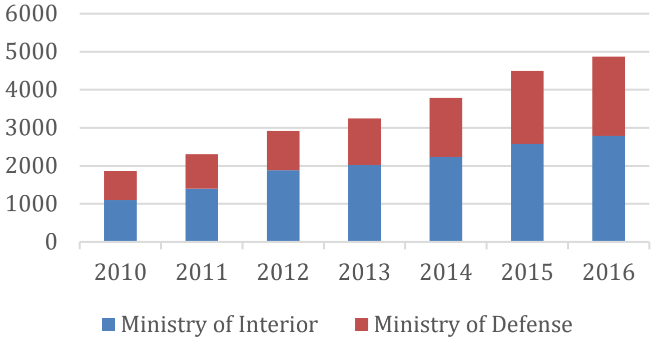
Since 2011, Tunisia has been struck by a number of terrorist attacks (see figure 2). Consequently, the Tunisian government has responded to this situation by increasing spending on national defense and security. The increase of the budgets allocated to the ministries of interior and defense is considerable. In 2010, this budget amounted to close to 11% of the government's budget and in 2015 this number was 18% (see figure 3 and Appendix 1). To increase spending on security, the government had to face difficulties finding funding while possibly having to cut down spending on social engagements and investments.

Figure 2: Evolution of the Global terrorism index in Tunisia



Source: Institute for Economic and Peace

Figure 3 : Evolution of the share of the government budget on security (interior and defense) in Tunisia 2010 onward



Source: Ministry of Finance

D. Fourth effect: The return of Tunisian workers in Libya

Before 2011, tens of thousands of Tunisians were official residents in Libya. The return of many of them has resulted in the contraction of remittance volumes and in a demand shock in the Tunisian labor market. In 2010, official figures reveal that 91,669 Tunisians were living in Libya. This number has shrunk since then, after waves of Tunisians returned from Libya in 2011 and in subsequent years. In 2015, only 31,681 Tunisians were residing in Libya.

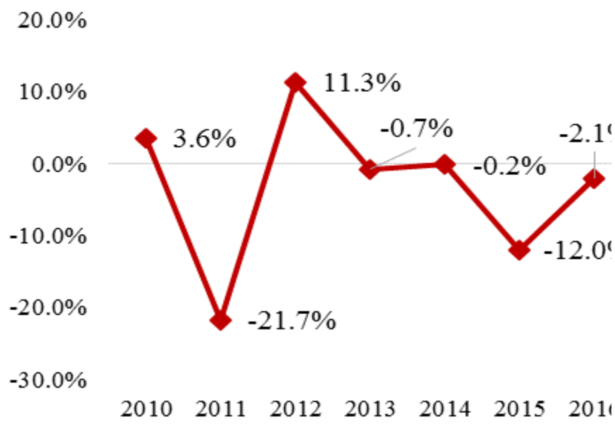
Recorded remittance inflows from Libya in 2010 amount to 55.9 million of dinars leading us to estimate monthly remittance volumes per worker to 600 dinars. Nevertheless, this number is probably higher as many transactions are performed in liquidities and considerable amounts of cash enters

Tunisia through informal channels. Indeed, studies suggest that the remittance volumes per worker per month is 2.5 times greater than the estimate from formal sector data.

E. Fifth Effect: The impact on the tourism sector

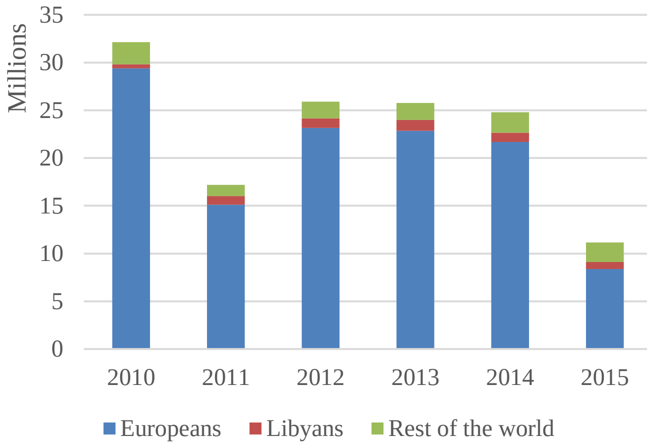
The Libyan conflict has had adverse impacts on Tunisian tourism, one of the economy's most important sectors. Indeed, the turmoil in Libya has tainted tourists' perception of the overall security in the region, which contributed to a fall in demand for tourism in Tunisia. Because tourism is a great source of foreign currency, the challenges it faces resonate throughout the whole economy. This trickledown effect is inevitable in a context of structural deficit in the current account balance. Moreover, the situation in the tourism sector has been worsening since 2011. Prior to the 2015 Bardo and Sousse terrorist attacks that were directly targeted at the tourism sector, Libya's closeness to Djierba, a central place for tourism and the effect of the Libyan crisis on tourist perception of the region were the root causes of the deceleration of Tunisian tourism. In 2015, the attacks on this strategic sector worsened this situation. Overall tourist night stays fell by 34.4% compared to 2014 numbers and by 50% with 2010 as a base year.

Figure 4: Annual growth rate of the hotel and restauration services sector



Source: INS Quarterly bulletins

Figure 5: Tourist night stays in hotels and similar establishments (foreigners only)



Source: WTO and Tunisian National Office for Tourism

III. A COMPUTABLE GENERAL EQUILIBRIUM MODEL WAS USED TO LINK THE COMPLEX EFFECTS OF THE LIBYAN CRISIS IN A COHERENT MACROECONOMIC FRAMEWORK

A. Methodology

A computable general equilibrium model is the only tool that can link all the effects of the crisis on different sectors of the economy in a coherent macroeconomic framework. The channels through which challenges in Libya are echoed in Tunisia are complex and are most easily understood in light of the computable general equilibrium model. This model also enables us to measure the impacts of the flow of migrants on a series of macroeconomic indicators including the national accounts (growth, consumption, investments) and external accounts (exchange rate, trade, debt, current account balance). The computable general equilibrium model used in this study is a country specific dynamic recursive model, which was calibrated with data on the Tunisian economy (2010 social computability matrix).[3]

This approach enables us to model the convergence of prices and quantities towards their new values while linking the sequence of static equilibria to a system of equations that update the main macroeconomic variables at each period.

To account for the effect of the presence of Libyans on the Tunisian economy, a representative Libyan household was introduced in the Social Accounting Matrix (SAM) of 2010. Here we assume that this household which does not pay income tax faces the same consumption/savings arbitrage (see Appendix 4). The consumption bundle of the representative Libyan household was computed with data from the survey of Libyan households in Tunisia conducted in collaboration with INS (see table 4).

Table 4: Consumption profile of Libyans residing in Tunisia

	Consumption level (per year per household member) in Dinars	**Share of Total Consumption**
Food	4555.4	30.70%
Clothing	516.3	3.50%
Other services	7736.7	0.52
Transport & Communication	1313	8.80%
Other expenditures	737.4	5.00%
Total	14858.8	100.00%

Source: Survey of Libyan households in Tunisia conducted in collaboration with INS

To incorporate the effect on private sector investment of the security threat, a risk factor was inputted in the investments function of the model. The risk factor was calibrated so as to reproduce the exogenous fall in investments.

[3] cf. http://www.uneca.org/sites/default/files/PublicationFiles/atpc62_fr.pdf for a detailed description of the model

In the final stage of model building, a fixed budget rule was incorporated in the model. Personal income tax was used as an adjustment variable.

B. Hypotheses

To estimate the impact of the Libyan crisis on the Tunisian economy, this paper takes as a reference point the IMF macroeconomic framework presented in the 2010 Article IV. This framework was selected for different reasons:

- Its predictions were validated by the government in office at that time.
- The review was finalized several months before the onsets of the revolution and transition in Tunisian and the current situation in Libya; and these chocks were not integrated in the model.
- For Tunisia and for the rest of the countries in the region, the IMF projections were relatively precise. However, they did not capture exogenous chocks the like of the 2008 world financial crises or the ongoing MENA region crises that begun in 2011(see Appendix 5 and 6).

Four shocks are introduced in the model to estimate the overall impact of the crisis in a central case scenario[4]. Additionally, to test the robustness of the main hypothesis in the central case scenario, we performed a sensitivity analysis, which consisted of (i) a lower bound estimation; (ii) an upper bound estimation (iii) and a simulation with an alternative closure rule for the financing of the government budget. These sensitivity analyses allow us to establish the robustness of the findings and to develop confidence intervals around the main results.

C. Central scenario

Hypothesis 1 on the impact of the Libyan crisis on investment in Tunisia: We have opted for a relatively moderate hypothesis which attributes only 15% of the fall of investments to the Libyan crisis. This is equivalent to a 4% drop of private investments in comparison to the reference point.

Hypothesis 2 on the impact of the presence of Libyans in Tunisia: Libyan households depend solely on transfers coming from Libya (table 3). They do not join the labor force and thus do not pay income taxes.

Hypothesis 3 on the impact of the Libyan crisis on Tunisia's security spending: To account for the effect of the situation in Libya on public finances in Tunisia, we suppose the crisis in Libya accounts for 50% of the increase in security and defense expenditures.

HYP4: Impact of the Libyan crisis on the Tourism sector: We put forth that 50% of the fall in tourist night stays in 2015 (in comparison with the 2010 base year) is due to the Libyan crisis. This is equivalent to a 25% contraction in productivity in the tourism sector (in comparison with the scenario of reference).

[4] These hypotheses were framed after elaborate discussions with Tunisian officials as well as local and international experts.

D. Alternative Scenarios

The ‘low’ scenario (resp. ‘high’ scenario) includes the hypotheses listed above but with lower estimates (resp. higher estimates) for hypotheses 1, 3, and 4. Table 5 summarizes these hypotheses in the three scenarios:

Table 5: Hypotheses under the three scenarios

Hypothesis on	**‘Low’ scenario**	**‘Central’ scenario**	**‘High’ scenario**
Investments	2% decrease in private investments	4% decrease in private investments	6% decrease in private investments
The presence of Libyans in Tunisia	Same hypothesis	Same hypothesis	Same hypothesis
Public finances	35% of the increase in the budgets for security and defense can be attributed to the situation in Libya	50% of the increase in the budgets for security and defense can be attributed to the situation in Libya	65% of the increase in the budgets for security and defense can be attributed to the situation in Libya
Tourism sector	12.5% decline in the tourism sector	25% decline in the tourism sector	37.5% decline in the tourism sector

In addition to these three scenarios, we add one in which the government covers additional public expenditures generated by the Libyan crisis through external debt financing rather than increasing income tax.

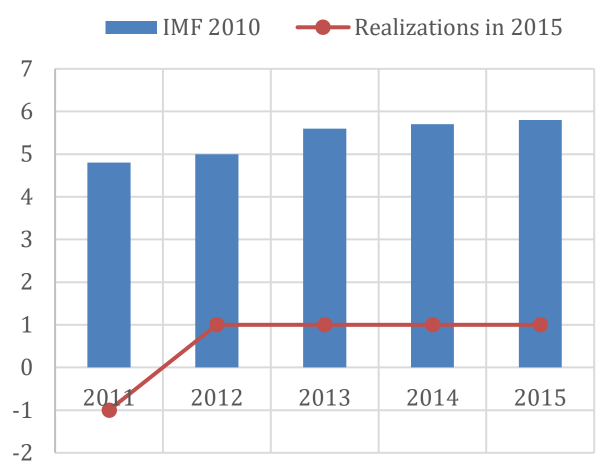
IV. THE LIBYAN CRISIS HAS CONTRIBUTED TO THE GROWTH SLOWDOWN IN TUNISIA MAINLY THROUGH ITS IMPACTS ON PRIVATE INVESTMENT AND THE TOURISM SECTOR

When growth rates of the Tunisian economy between 2011 and 2015 are contrasted with the IMF 2010 projections, we see that Tunisia has lost on average 3.86 percentage points of growth per year (see figure 6). Our results attribute 0.94 of these points to the situation in Libya (or 24% of 3.86) which is an equivalent to 8.857 billion of Dinars over five years. The remainder of the losses (2.74 basis points) are caused by other internal and also external factors. In the ‘low’ framework, the 0.54 basis points loss (equivalent to 4884.43 million of dinars) is attributed to the Libyan crisis. In the upper end framework, this number is 1.2 points (equivalent to 1.0734.7 million Dinars) (see figures 8 and 9).

A close look at the labor market reveals that the return home of 60,000 Tunisian workers from Libya has increased the unemployment rate in Tunisia by 1.68 percentage points despite government recruitments of security officers (see Figure 7).

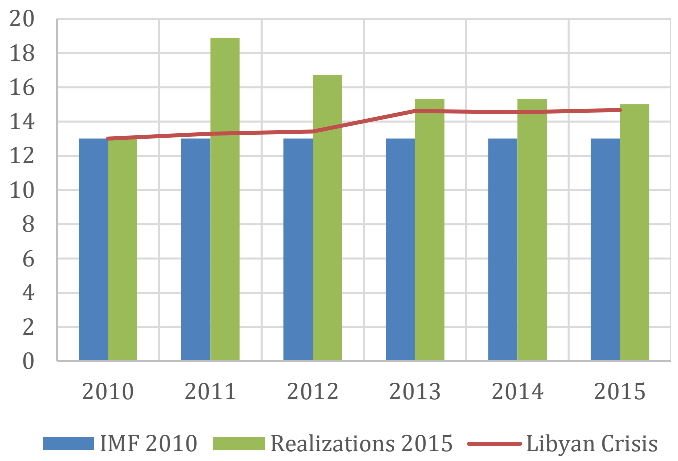
The model illustrates that the overall impact of the Libyan crisis on growth has been negative (see Appendices 7-15 for more information). Of all the impacts identified, the degradation of the business environment and the contraction of tourism activities have had the heaviest toll on the Tunisian economy (see figure 11). The drop in investments by 3.8%, exacerbated by the fall in savings of Libyan and Tunisian households in Tunisia, is responsible for a loss of 0.57 growth points. The contraction of business activities in the tourism sector has lead to a loss of 0.34 growth points.

Figure 6: Growth Rates (Predicted and Observed)



Source: Computations based on the CGE model

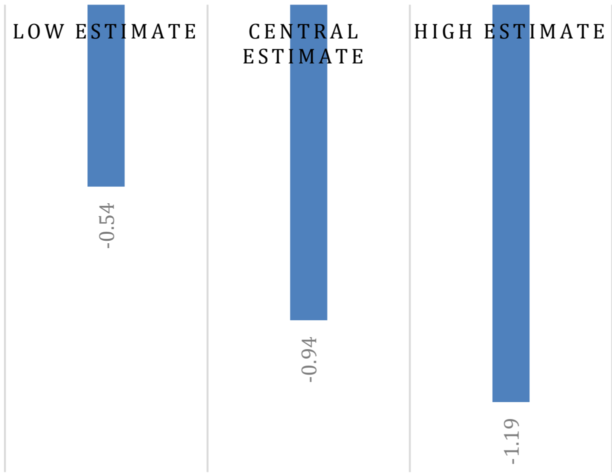
Figure 7: Unemployment rates (Predicted and Observed)

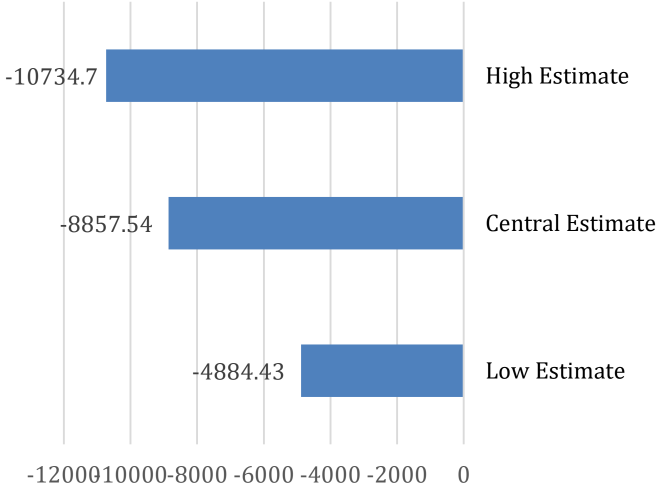


Source: IMF and INS

Figure 8: Estimated losses in growth (percentage points)

Figure 9: Estimated welfare losses (GDP in million TND)

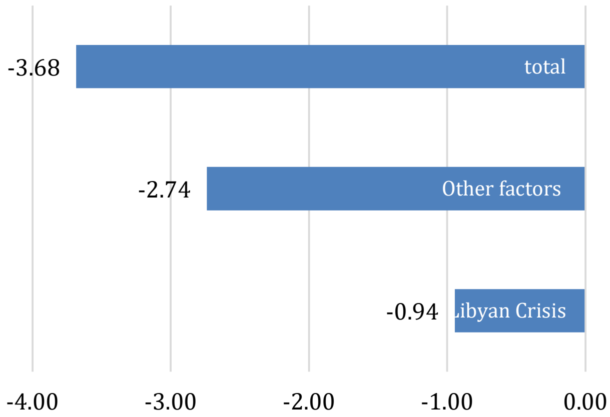


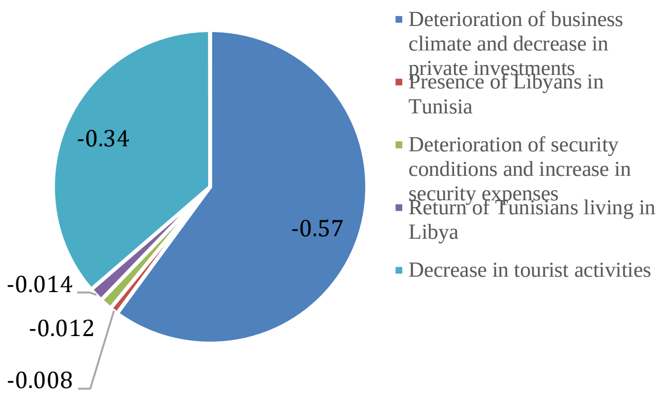


Source: Computations based on the CGE model

Figure 10: A Breakdown of factors behind the decline in the growth rate

Figure 11: Breakdown of losses per channel of transmission





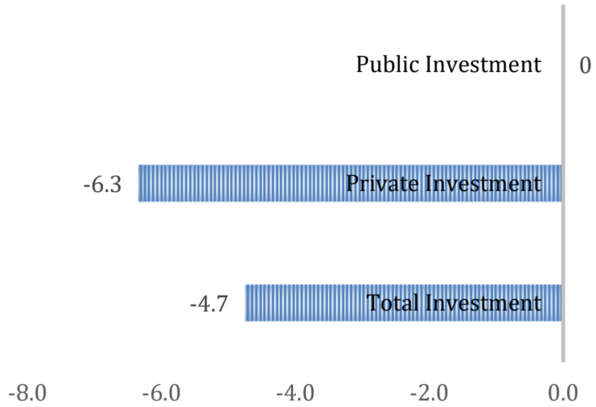
Source: Computations based on the CGE model

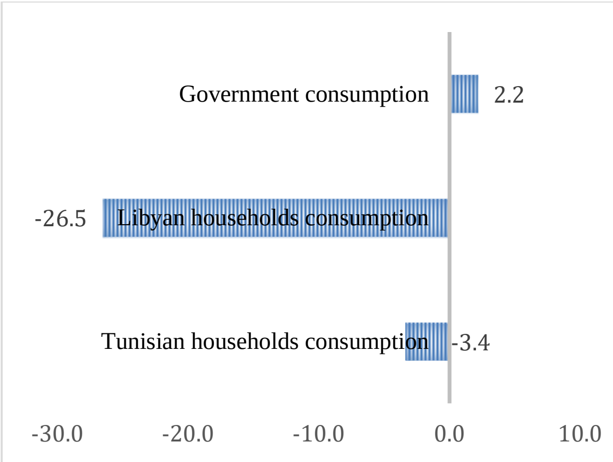
The Libyan crisis has affected the Tunisian economy in two ways. The first effect is on the aggregate demand (see figure 12). All else equal, Libyan and Tunisian households have lost parts of their incomes and have as a result reduced their consumption during the five-year period (-26% for Libyan households and -3.4% for Tunisian ones). Moreover, the government had to raise its spending by 2.2% to face the security threat caused by the Libyan crisis. These additional government expenditures were funded through the increase in income tax rates by 41% (yielding 5577.88 MTND) which in turn put a downward pressure on household consumption. The second effect is linked to investment volumes (see Figure 13) as the degradation of the business environment has lead to a 4% shrinkage in investments. Furthermore, the contraction of income of Libyans and Tunisian households in Tunisia have further reduced investment. Despite the maintenance of public investments at its baseline level, total investment points dropped by 4.7 percentage points (3940.58 M.TND).

Imports have fallen by 3.8% and exports by 1.7%. The fall in demand and the depreciation of the Tunisian dinar (see figure 14) caused by a decline of money inflows are the reason behind the contraction of imports. The lower production levels explain the contraction in export volumes (see figure 15).

Figure 12: Aggregate Consumption, Variation in %

Figure 13 : Investment, Variation in %





Source: Computations based on the CGE model

Figure 14 : Exchange Rate

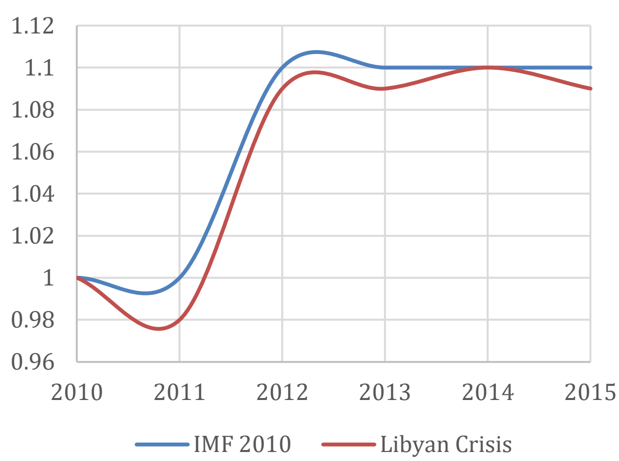
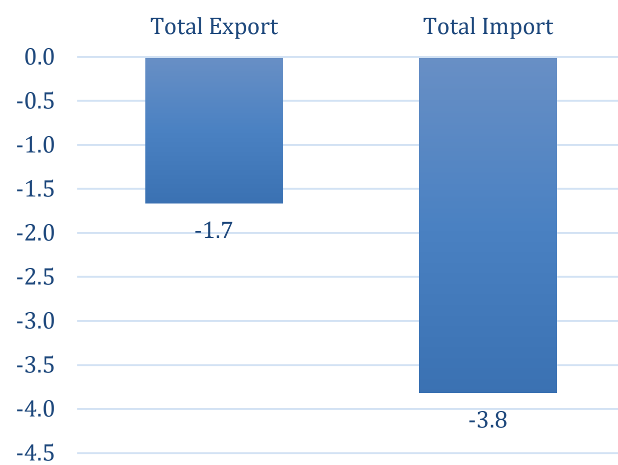


Figure 15: Exports and Imports, Variation in %



Source: Computations based on the CGE model

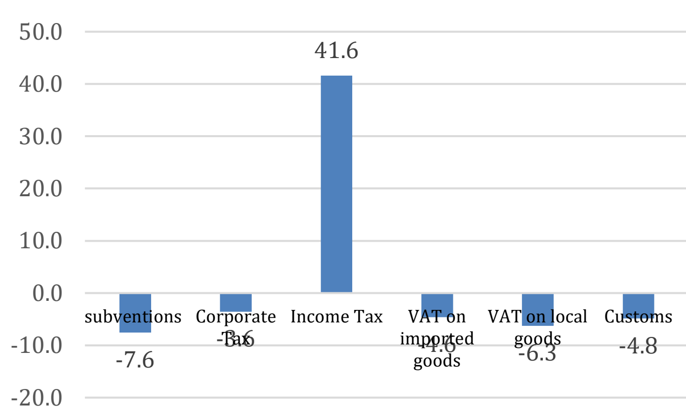
V. THE FISCAL COST OF THE LIBYAN CRISIS IS IMPORTANT PARTICULARLY IF FINANCED WITH DEBT.

A. Fiscal losses due to the Libyan crisis are estimated at 2.3 billion TND over the five years

At the fiscal level, aside from income taxes that were used to close the CGE model, revenues from all other taxes have noticeably contracted (see figure 16). All other things equal, VAT revenues fall by 6.3% over the five years (equivalent to 1.17 billion) for domestic products against 4.6 % (TND 522 million) for imported goods. Customs duties have shrunk by 4.8% (TND 104 million) against 3.6% for corporate taxes. The only positive impact on the government budget is the significant fall in subsidies, 7.6% (TND 492 million). This was a direct result of the reduction in the consumption of both Libyan and Tunisian households. In the scenario where fiscal costs are covered with debt rather than an increase in income tax, collected income tax in the 5-year period would have fallen by 7.08% (TND 458 million).

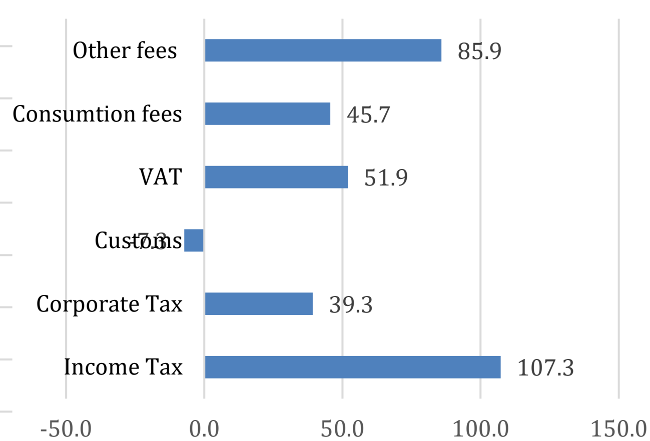
This result is in line with the trend in fiscal receipts by tax type observed from 2010 onward. In fact between 2010 and 2015, the individual tax burden increased by 107%, while receipts from other types of tax grew by less than 85 % (see figure 17).

Figure 16: Model Estimate of Fiscal Revenues, Variation %



Source: Computations based on the CGE model

Figure 17: Observed Tax Revenues, Variation %

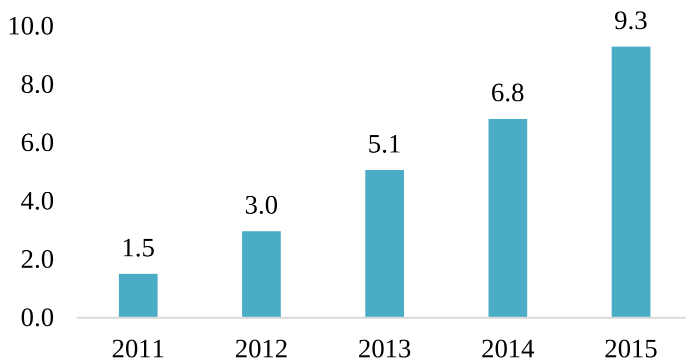


Source: Ministry of Finance

B. The fiscal cost (fiscal losses and security spending) amount to 5.8 billion Dinars over the five-year period, plus 1.2 billion Dinars of additional debt servicing if this fiscal cost is financed by debt

We estimate the fiscal cost of the crisis at 5.8 billion TND for the 2011-2015 period (an equivalent of 580 million USD per year or 1.36% of the 2015 per year GDP). These costs aroused because of increased government expenditure on security and losses in fiscal receipts. Our simulations illustrate that financing these costs with tax revenue would lead to a considerable increase in taxes. In fact, income tax have increased by 41% during the five-year period and additional deadweight loss cost related to the imposition of new tax rates have aroused. Debt financing of fiscal costs would have raised the government financing needs by 7 billion TND for the five year period (an equivalent of 15% of the public debt to the 2015 GDP ratio. To these costs would be added 274 million TND of interest payments and 920 million TND of additional depreciation costs.

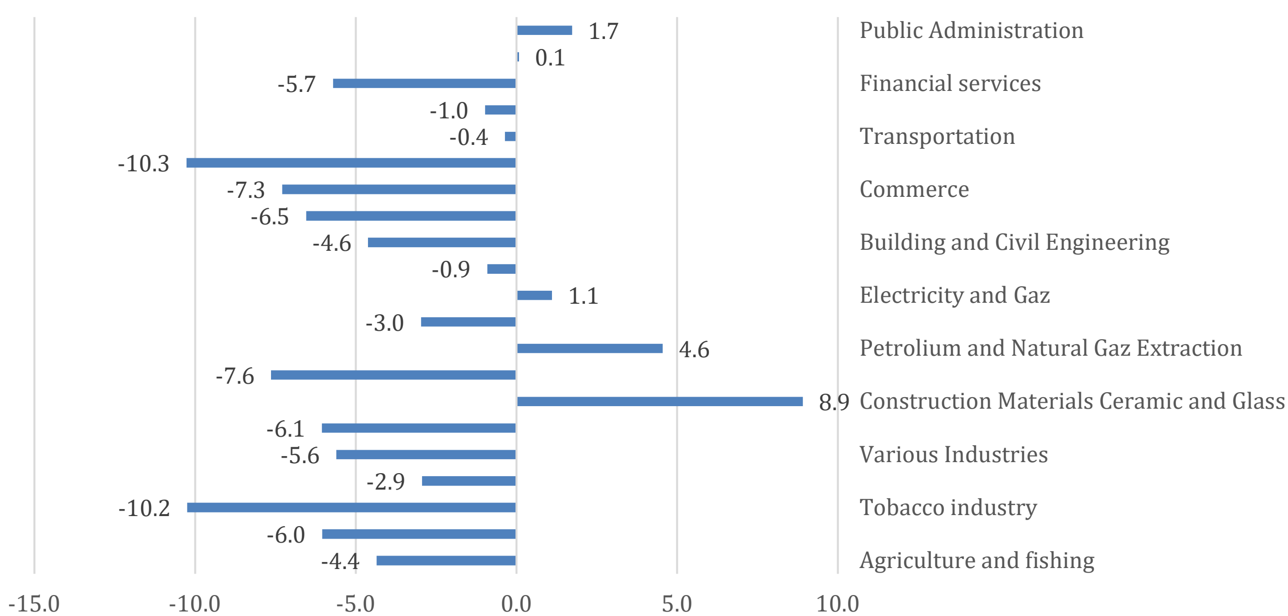
Figure 18: External Debt-to-GDP ratio, variation in %



Source: Computations based on the CGE model

When looking at the impact by sector, we find that production has shrunk in almost all sectors of the economy (see figure 9) with the most effected being the hospitality sector. All else equal, this industry has experienced a fall of 10.3%. The second most affected segment of the economy the final consumption industry. For instance, the agribusiness sector lost 6% in revenues and the tobacco industry lost 10.2%. Similar trends were observed in most industrial sectors. The rare industries that were resilient to the Libyan crisis are the administration, mining, and construction materials sectors.

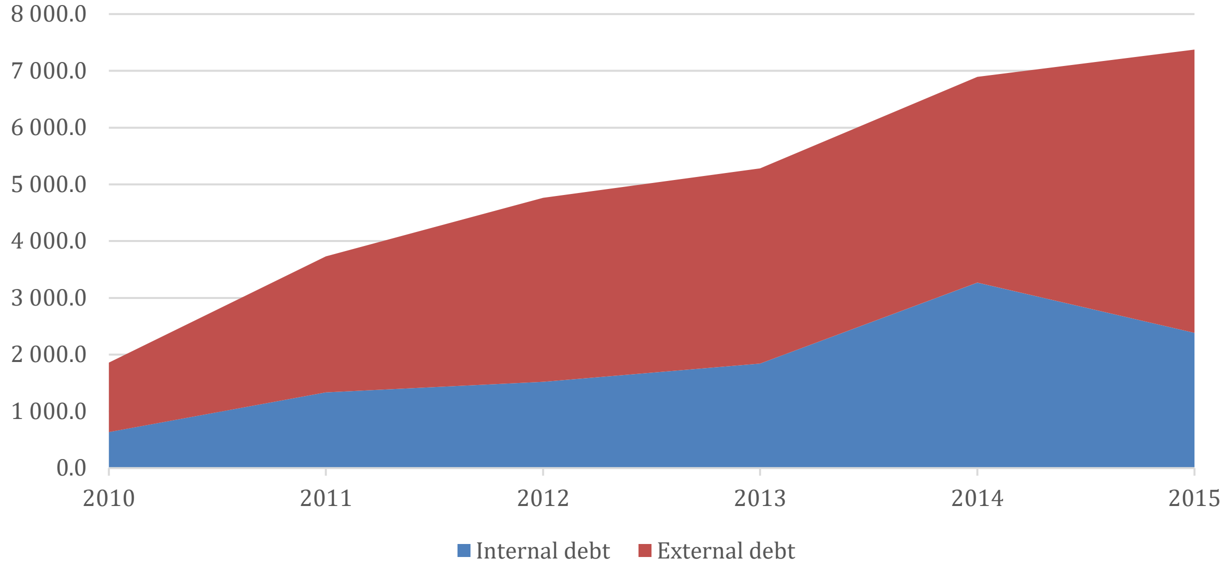
Figure 19: Sectoral impacts, growth variation in %



Source: Computations based on the CGE model

Figure 20 shows that estimations are in line with available data from 2010 onward. In fact, the external debt has been growing between 2010 and 2015 to reach 307% of its initial level while the internal debt increased by 275% during this time.

Figure 20: Evolution of the public debt structure in Tunisia between 2010 and 2015 (million Dinars)



Source: Ministry of Finance

VI. CONCLUSION

Tunisia has been remarkably successful in its democratic transition despite the hefty cost that comes with such a change. The economic literature shows that though a political regime change has a positive impact on growth in the long term, its impact is negative in the transition period and is marked by adverse effects on growth with on average 7 to 11 percentage points loss in GDP (ESCWA 2016)[5]. Transition experiences of Central and Eastern European countries or the former USSR countries illustrate this phenomenon.

This chapter demonstrates that the impact of the situation in Libya, though not the root cause of all the problems that Tunisia has been facing since 2011, has significantly impacted the Tunisian economy. Manifest effects of the Libyan crisis on the economy of Tunisia are the deterioration of the business environment and a heightened security threat.

The accumulated losses during the 2011-2015 period are estimated at 0.9 growth points per year, which is equivalent to almost 9 billion TND in current prices. These losses are even higher when fiscal losses resulting from the expansion of informal trade and losses of more than 300 million TND in Tunisian investments in Libya are taken into account.

This fact could make a strong case for increased international aid for Tunisia. Additional aid could be directed towards the expansion of the security budget and the development of Tunisian regions at the border with Libya.

The political situation in Libya is beginning to stabilize and there are hopes of a revival of the Libyan economy. In this are many economic opportunities for both countries, if exploited appropriately. In fact, Libya and Tunisia would benefit from beginning to lay the ground in terms of logistics and regulations to maximize gains from this opportunity. With a lurking risk that the reconstruction of Libya feeds the informal sector, early preparation is primordial. For instance, the two governments could join forces to reinforce ground, air, and sea infrastructure linking the two countries. They could also set up a mechanism that facilitates the entry of consumption goods in Libya through formal channels to avoid the informal trading of such goods.

[5] The Effects of Recent Political Changes on Arab Countries – A Five-Year Review, ESCWA social and economic survey for the Arab region forthcoming 2016.

APPENDICES:

Appendix 1: Ministry of Interior and Defense Budgets

Ministry of Interior

	2010		**2011**		**2012**		**2013**		**2014**		**2015**		**2016**	
	DC	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**
Finance law	1.018	81	1.266	133	1,732	145	1,890	137	2.031	202	2,197	385	2,404	383
Actual disbursement	1.050	66	1.378	93	1,744	116	1,875	103	2.035	168				

Ministry of Defense

	2010		**2011**		**2012**		**2013**		**2014**		**2015**		**2016**	
	DC	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**	**DC**	**DD**
Finance law	654	106	787	118	910	129	1,014	206	1,152	400	1,318	590	1,487	598
Actual disbursement	658	127	874	107	975	85	1,050	198	1,191	345				

Note: DC Depenses courantes; DD depenses de developpement

Appendix 2: Revenues of Libyan households in Tunisia transiting through the banking sector

	2010	**2011**	**2012**	**2013**	**2014**
Deposits and withdrawals (en MDT)	95,9	25,6	74,4	59,4	90,7
Number of accounts	854	927	861	897	932
Annual average income per person for consumption (in DT)	112 295	27 615	86 412	66 220	97 318
Monthly average income per person for consumption (in DT)	9 350	2 300	7 200	5 520	8110

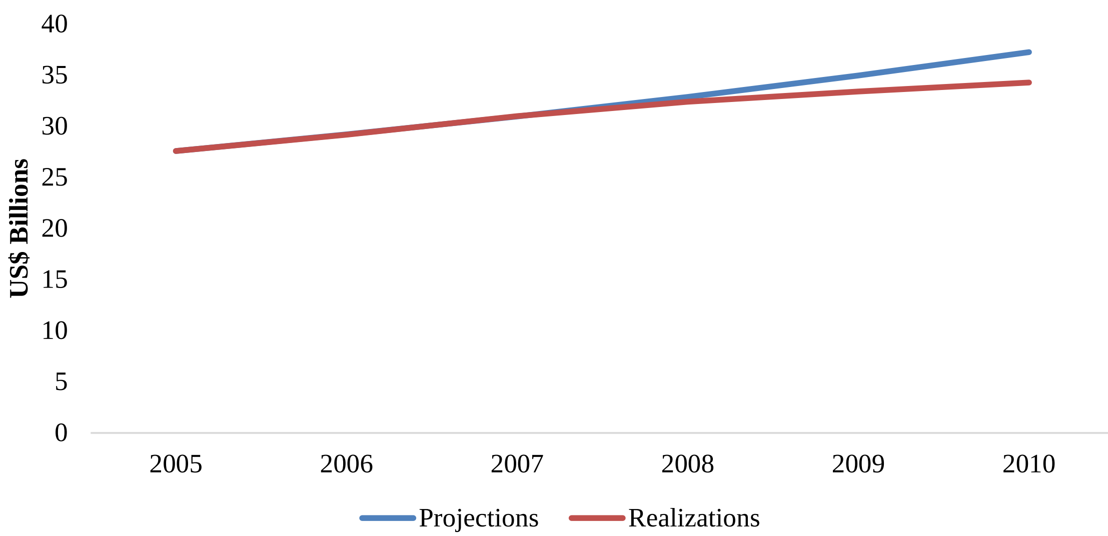
Appendix 3: Revenues of Libyan households transiting through the border

Year	**Number of Libyan travelers**	**Average amount per traveler DL**	**Total amount in millions of DL**	**Exchange rates**	**Value in TND**
2010	1 677 000	1250	2096	1,3	2725
2011	1 502 600	1250	1878	1,3	2441
2012	1 443 500	1250	1804	1,3	2345
2013	1 487 340	1250	1859	1,3	2416
2014	1 292 086	1250	1557	1,2	1868
2015	1 001 503	1250	1252	0,65	814

Appendix 4: Expenditures and savings of Libyan households in Tunisia in 2010

Nature of the operation	amount
Agriculture and fishing	2683.40
Food industries	7629.50
Tobacco industry	1145.50
Textiles, clothing and leather	3563.90
Other industries	1803.50
Oil refining and chemicals industries	3694.20
Constructions materials ,ceramic and glass	188.20
Mechanical and electricity related industries	3791.20
Oil and Natural gas extractions	99.00
Mines	15.70
Electricity and gas	622.80
water	202.10
Construction industry	50.10
Maintenance and reparations	374.40
trade	
Hospitality and restauration	5416.90
Transportation	1665.90
Telecommunication and postal services	1409.00
Financial services	1001.50
Other commercial services	7068.30
Public administration	225.50
TAX	5033.00
S-I	10075.80
TOTAL	**57759.40**

Appendix 5: Comparison of GDP projections and actual GDP values in Tunisia between 2010 and 2015



Appendix 6: Accumulated differences between IMF GDP estimates and realized GDP in the MENA region between 2010 and 2015