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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

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Preface

The present paper is a joint effort between the United Nations Economic and Social Commission for Western Asia (ESCWA), the World Bank and the Tunisian Institute of Competitiveness and Quantitative Studies. It presents the results of a computable general equilibrium (CGE) model developed to estimate the macroeconomic and fiscal impacts of the Libyan crisis on the Tunisian economy. The model captures the following five effects of the Libyan crisis on the Tunisian economy: the impact of the presence of Libyans in Tunisia on aggregate demand; the effect of the crisis on the remittances of Tunisian workers in Libya; the impact of the deteriorating business environment on private investments; the consequences of domestic and regional security challenges on the tourism sector; and the impact of the crisis on government security spending.

Results suggest that the Libyan crisis is responsible for 24 per cent of the deceleration of economic growth in Tunisia over the period 2011-2015, equivalent to a welfare loss of 8.8 billion Tunisian dinars ($880 million per year, equivalent to 2 per cent of 2015 GDP per year). These impacts are mainly driven by the effects of the crisis on private investment and tourism through their impact on investor confidence and international tourists demand for Tunisian tourism services. The decrease in investment and tourism explains 60 per cent and 36 per cent of the overall impact of the crisis, respectively. Fewer remittances from Libya, increased government spending on security and the weaker purchasing power of Libyan residents and visitors account for 1.4 per cent, 1.2 per cent and 0.8 per cent of the estimated impact, respectively.

The fiscal cost of the Libyan crisis for Tunisia (increased government security spending and reduced tax revenues) is estimated at 5.8 billion Tunisian dinars (TND) for the period 2011-2015 ($580 million per year, which is equivalent to 1.36 per cent of 2015 GDP per year). Simulations show that financing these costs through taxes would considerably increase tax rates in Tunisia: income taxes would have to increase by 41 per cent cumulatively for the period 2011-2015, and tax administrations would need to be strengthened to tackle tax evasion incentives. Financing this cost with debt would increase government-financing needs by TND 7 billion over the five years (equivalent to 15 per cent of the 2015 public debt-to-GDP ratio).

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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 de la Compétitivité et 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.

Introduction

Between 2011 and 2015, Tunisia lost on average 3.86 growth points per 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 neighbouring country and its sixth major economic partner). The main objective of the present paper is to quantify the macroeconomic and fiscal impacts of the Libyan crisis on the Tunisian economy over the period 2011-2015, 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 country has negative consequences on neighbouring countries. Conflicts in general, both minor and extended, have a significant effect on development factors in neighbouring countries. Murdoch and Sandler[1] illustrate that armed conflict in a country reduces economic growth in bordering countries by 85 per cent in the short run, and 31 per cent in the long run. Unsurprisingly, these effects are greater when neighbouring 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 various events since 2011. Although the political uprisings that started in 2011 have not been very violent, the crisis has yet to be resolved. Despite the 2012 and 2014 elections, elected officials have not been able to neutralize armed groups, or 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 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 taken a heavy toll on Libya's financial resources, and weakened the Libyan Government's ability to maintain internal peace and social stability.

Because of the strong ties between the two countries, poor economic performance in Libya reverberates 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, owing to a heightened sense of insecurity and a negative perception of the region as a whole. The Libyan economy has been immobilized since 2012 by a slowdown in the oil and gas industry; political instability that led to an inflow of arms and militants; and a rise in armed groups and militant training camps.

The paper is organized as follows. Chapter I presents the main effects of the Libya crisis incorporated in the CGE model, used to estimate its macroeconomic and fiscal impact on the Tunisian economy. Chapter II presents the model, the main hypotheses and scenario. Chapters III and IV summarize the findings on the macroeconomic and fiscal impact of the Libyan crisis on Tunisia. Chapter VI sets on the conclusion.

[1] Ames C. Murdoch and Todd Sandler, Civil wars and economic growth: spatial dispersion, *American Journal of Political Science*, vol. 48, No. 1, pp. 138-151, 2004.

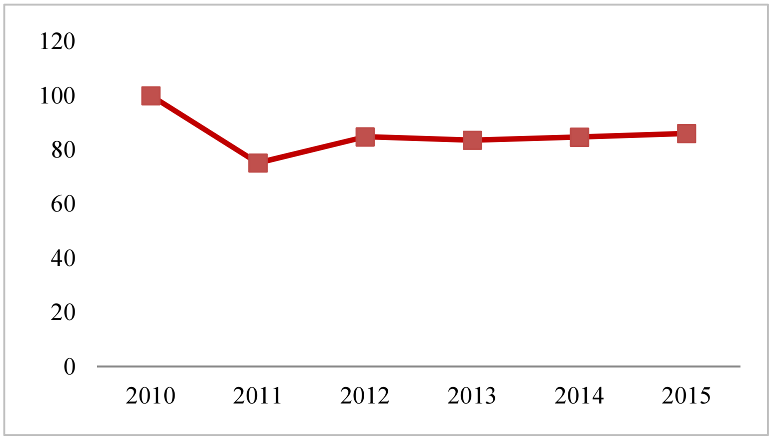
I. FIVE MAJOR EFFECTS OF THE LIBYAN CRISES ON TUNISIA

The effects of the Libyan crisis on Tunisia are complex, with both positive and negative effects at the macroeconomic and sectoral levels. The present chapter sets out the following five major effects, which are incorporated into the CGE model.

A. DETERIORATING 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 figure 1, holding prices constant, private sector investments shrunk by 20 per cent in 2011 and have remained constant at these relatively low levels.

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



Source: Institut National de Tunisie (INS).

Even though the domestic situation and social tensions have greatly contributed to this situation, the insecurity level is undoubtedly one of its main causes. As far as investors are concerned, insecurity is a source of uncertainty and thus a significant risk factor. Moreover, investors are generally risk averse, and 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 Institut Tunisien de la Compétitivité et des Etudes Quantitatives (ITCEQ) reveals that 47 per cent of investors questioned affirmed that the crisis in Libya was a major obstacle to their current business dealings and for future business growth (see box).

Box. Tunisian business environment survey by ITCEQ

Since 2000, ITCEQ has conducted an annual survey on the business environment and competitiveness of private enterprises in Tunisia. Its main objectives are to identify the main constraints that enterprises face in their business operations; to evaluate business performance and strategies for the maintenance or improvement of competitiveness in an increasingly tough business environment; and to collect information on businesses' predictions with regard to the state of the business environment, in general, and job creation and investments in the private sector, in particular. The 2015 field survey took place between 1 October 2015 and 15 November 2015. A total of 833 enterprises participated, equivalent to a 70 per cent response rate. Around 70 per cent of respondents were either the head of their respective businesses or second or third in the leadership hierarchy. Data was collected by ITCEQ through one-on-one interviews with business leaders.

The study is based on the perceptions of business leaders on the legal and institutional environments in which they operate. The 2015 survey results reveal that the political situation, insecurity and corruption are the greatest obstacles in business leaders' opinion. Regarding the Libyan crisis, 47 per cent of respondents considered it a major challenge for business operations and growth.

Table 1 shows that, on average, private sector investment volumes are 25 per cent lower than IMF predictions published in the Article IV of the 2010 IMF review.[2]

Table 1. Estimation of private investment contractions

	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: www.imf.org/en/Publications/CR/Issues/2016/12/31/Tunisia-2010-Article-IV-Consultation-Staff-Report-Public-Information-Notice-on-the-Executive-24195; and www.imf.org/external/pubs/ft/scr/2014/cr14362.pdf.

B. Presence of Libyans in Tunisia

So far, Libyans who have moved to Tunisia are not considered refugees. They left their country for both political and personal reasons, such as health care, leisure and shopping. To quantify the effect of their presence in Tunisia, we estimated the number of Libyans who moved to Tunisia after 2010 and the average amount of money that they have injected into the Tunisian economy. The surveys undertaken in the context of this study show that Libyans residing in Tunisia have two sources of revenue: revenues transferred to bank accounts in Tunisia (chapter II and appendix II); and revenues transiting in the form of cash through the border with Libya (chapter III and annex III). The aggregate revenue of Libyans in Tunisia is set out in table 2.

Table 2. 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

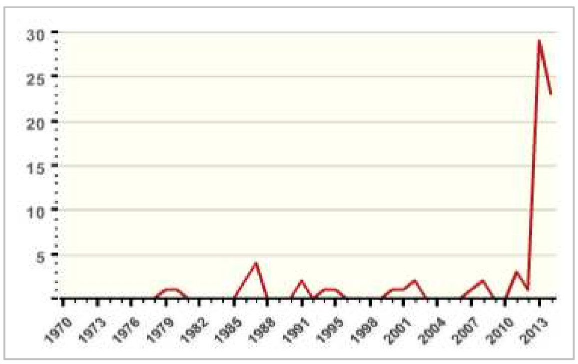
Source: Survey administered at Tunisian customs and banks.

[2] IMF, Tunisia: 2010 Article IV Consultation: Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Tunisia, 2010.

C. Worsening security situation and increased government security spending

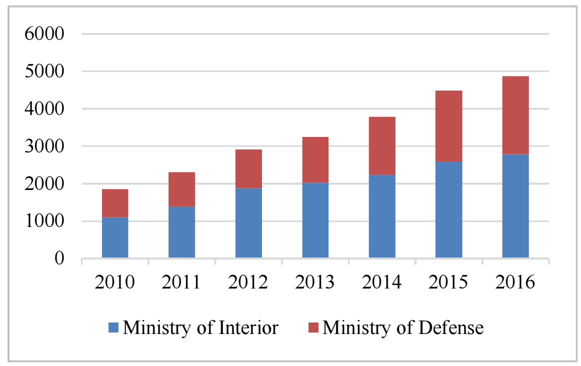
Since 2011, Tunisia has suffered a number of terrorist attacks (figure 2). The Tunisian Government has responded to this situation by increasing spending on national defence and security. The increase in the budgets allocated to the ministries of interior and defence is considerable. In 2010, this budget amounted to around 11 per cent of the Government's budget, reaching 18 per cent in 2015 (figure 3 and annex I). To increase spending on security, the Government faced difficulties finding funding, while possibly having to cut spending on social engagements and investments.

Figure 2. Evolution of the global terrorism index in Tunisia



Source: Institute for Economics and Peace.

Figure 3. Evolution of the share of the government budget on security (interior and defence) in Tunisia from 2010 onwards



Source: Ministry of Finance.

D. Return of Tunisian workers from Libya

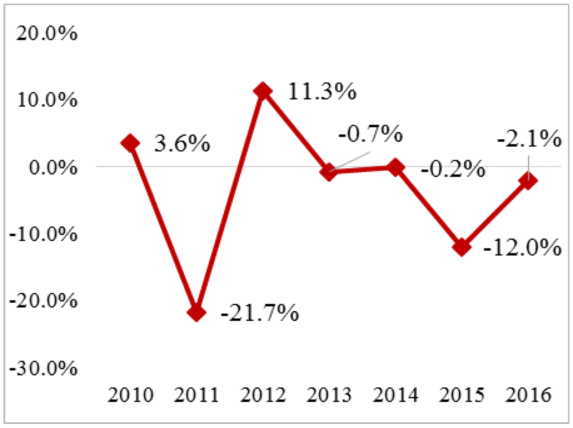
Before 2011, tens of thousands of Tunisians were official residents in Libya. The return of many has resulted in reduced remittances v and in a demand shock in the Tunisian labour market. Official figures show that 91,669 Tunisians lived in Libya in 2010. This number has shrunk after waves of Tunisians 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 amounted to TND 55.9 million, with monthly remittances estimated at TND 600 per worker. This number is probably higher as many transactions are performed in liquidities and considerable amounts of cash enters Tunisia through informal channels. Some studies suggest that the monthly remittance volume per worker is 2.5 times greater than the estimate from formal sector data.

E. Impact on the tourism sector

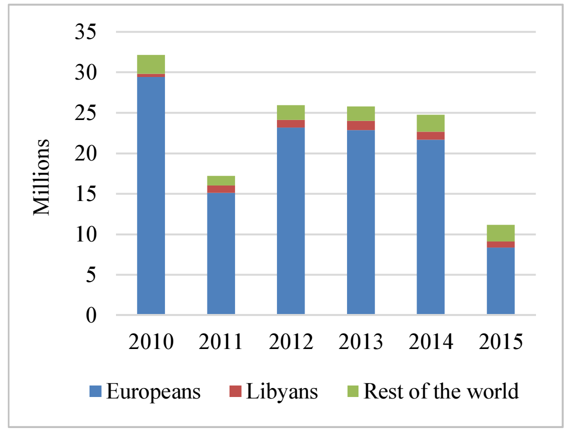
The Libyan conflict has adversely impacted Tunisian tourism, one of the economy's most important sectors. The turmoil in Libya has tainted tourists' perception of the overall security in the region, thus reducing demand for tourism in Tunisia. Since tourism is a significant source of foreign currency, the challenges it faces reverberate 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 deteriorating since 2011. Prior to the 2015 Bardo and Sousse terrorist attacks that directly targeted the tourism sector, Libya's proximity to Djierba (a tourism hotspot) and the effect of the Libyan crisis on tourists' perception of the region were the root causes of the deceleration in Tunisian tourism. In 2015, the attacks on this strategic sector exacerbated this situation. Overall, tourist night stays fell by 34.4 per cent compared with 2014 numbers, and by 50 per cent with 2010 as a base year.

Figure 4. Annual growth rate of the hotel and restaurant service sector



Source: INS quarterly bulletins.

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



Source: World Trade Organization and Tunisian National Office for Tourism.

II. COMPUTABLE GENERAL EQUILIBRIUM MODEL

A. Methodology

A CGE 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 reverberate in Tunisia are complex, and most easily understood through a CGE model. This model also enables us to measure the impacts of the flow of migrants on a series of macroeconomic indicators, including national accounts (growth, consumption, investments) and external accounts (exchange rate, trade, debt, current account balance). The CGE model used in the present study is a country-specific dynamic recursive model, 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 as the Tunisian consumer (annex IV). 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 (table 3).

[3] For a detailed description of the model, see www.uneca.org/sites/default/files/PublicationFiles/atpc62_fr.pdf (in French).

Table 3. 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 and 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 of the security threat on private sector investment, a risk factor was inputted in the investments function of the model. The risk factor was calibrated to reproduce the exogenous fall in investments.

In the final stage of model building, a fixed budget rule was incorporated into 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, the present paper takes as a reference point the IMF macroeconomic framework presented in the Article IV of the 2010 IMF review. This framework was selected for the following reasons:

- Its predictions were validated by the incumbent Government at that time;
- The review was finalized several months before the onset of the uprising and transition in Tunisia and the current situation in Libya; and these shocks were not integrated into the model;
- For Tunisia and the other countries in the region, the IMF projections were relatively precise. However, they did not capture exogenous shocks such as the 2008 world financial crisis or the ongoing MENA region crises that begun in 2011 (annexes 5 and 6).

Four shocks were introduced in the model to estimate the overall impact of the crisis in a central case scenario.[4] Moreover, to test the robustness of the main hypothesis in the central case scenario, we performed sensitivity analyses consisting of a lower bound estimation; an upper bound estimation; and a simulation with an alternative closure rule for the financing of the government budget. These sensitivity analyses allowed 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 that attributes only 15 per cent of the decrease in investments to the Libyan crisis. This is equivalent to a 4 per cent drop in private investments when compared with 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 4). They do not join the labour force and thus do not pay income tax.

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

Hypothesis 3 on the impact of the Libyan crisis on Tunisian 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 per cent of the increase in security and defence expenditures.

Hypothesis 4: 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).

D. ALTERNATIVE SCENARIOS

The 'low' scenario includes the hypotheses listed above but with lower estimates for hypotheses 1, 3, and 4. Table 4 summarizes these hypotheses under the three scenarios:

Table 4. Hypotheses under the three scenarios

Hypothesis on	Low scenario	Central scenario	High scenario
Investments	2 per cent decrease in private investments	4 per cent decrease in private investments	6 per cent decrease in private investments
Presence of Libyans in Tunisia	Same hypothesis	Same hypothesis	Same hypothesis
Public finances	35 per cent of the increase in the security and defence budgets can be attributed to the situation in Libya	50 per cent of the increase in the security and defence budgets can be attributed to the situation in Libya	65 per cent of the increase in the security and defence budgets can be attributed to the situation in Libya
Tourism sector	12.5 per cent decline in the tourism sector	25 per cent decline in the tourism sector	37.5 per cent 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.

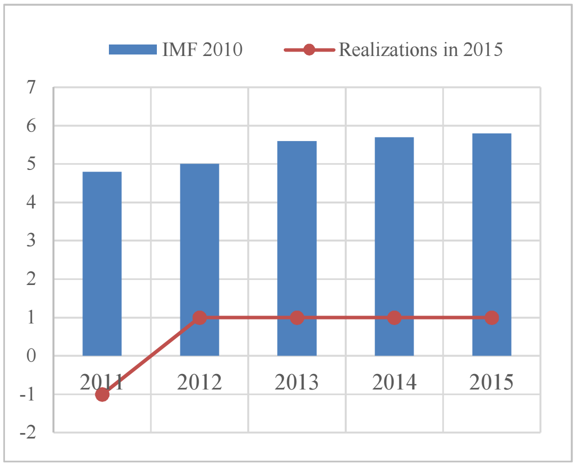
III. TUNISIAN PRIVATE INVESTMENT AND TOURISM

Contrasting Tunisian economic growth rates between 2011 and 2015 with the IMF 2010 projections, shows that Tunisia has lost on average 3.86 percentage points of growth per year (figure 6). Our results attribute 0.94 of these points to the situation in Libya (or 24 per cent of 3.86 percentage points), equivalent to TND 8.857 billion over five years. The remainder of the losses (2.74 basis points) are caused by other internal and external factors. In the 'low' framework, the 0.54 basis points loss (equivalent to TND 4.8 billion) is attributed to the Libyan crisis. In the upper end framework, this number is 1.2 points (equivalent to TND 10.7 billion) (figures 8 and 9).

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

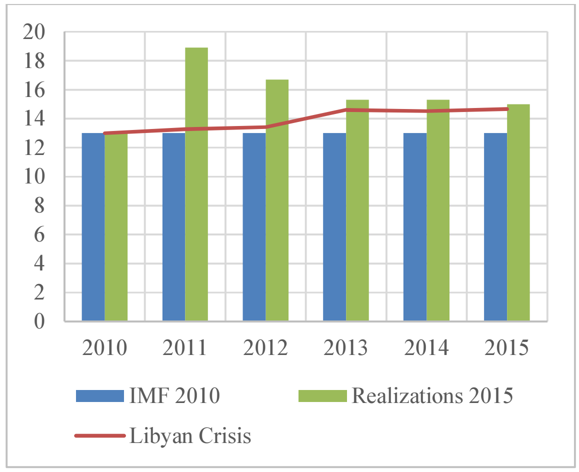
The model illustrates that the overall impact of the Libyan crisis on growth has been negative. Of all the impacts identified, the degradation of the business environment and the contraction of tourism activities have had the heaviest toll on the Tunisian economy (figure 11). The drop in investments by 3.8 per cent, 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)



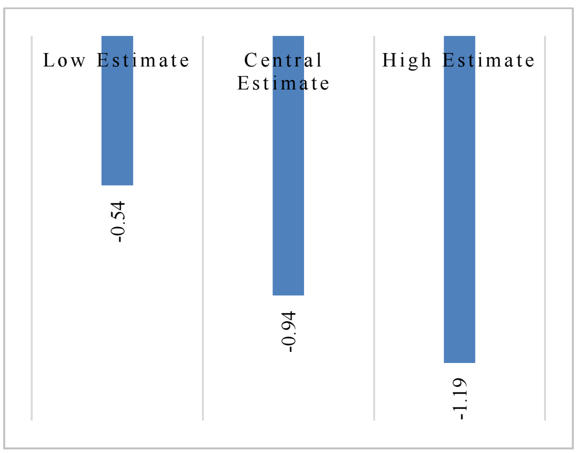
Source: Computations based on the CGE model.

Figure 7. Unemployment rates (predicted and observed)



Source: IMF and INS.

Figure 8. Estimated losses in growth (percentage points)



Source: Computations based on the CGE model.

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

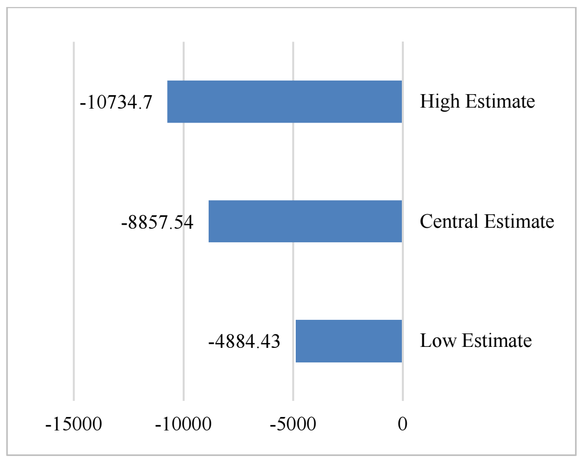


Figure 10. Breakdown of factors behind the decline in the growth rate

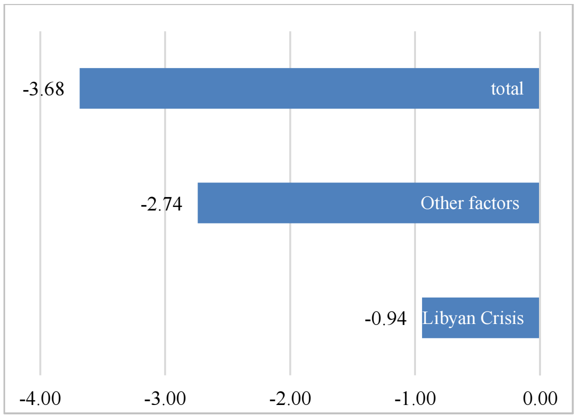
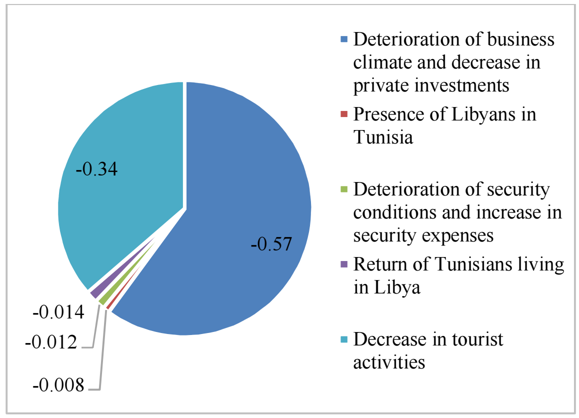


Figure 11. Breakdown of losses per channel of transmission



Source: Computations based on the CGE model.

The Libyan crisis has affected the Tunisian economy in two ways. The first effect is on aggregate demand (figure 12). All else equal, Libyan and Tunisian households have lost parts of their incomes and have thus reduced their consumption over the five-year period (-26 per cent for Libyan households and -3.4 per cent for Tunisian households). Moreover, the Government raised its spending by 2.2 per cent to face the security threat caused by the Libyan crisis. These additional government expenditures were funded through a 41 per cent increase in income tax rates (yielding TND 5.5 billion), which in turn put downward pressure on household consumption. The second effect is linked to investment volumes (figure 13) as the degradation of the business environment has lead to a 4 per cent shrinkage in investments. Furthermore, the income contraction of Libyan and Tunisian households in Tunisia has further reduced investment. Despite the maintenance of public investments at its baseline level, total investment points dropped by 4.7 percentage points (TND 3.9 billion).

Imports have fallen by 3.8 per cent and exports by 1.7 per cent. The fall in demand and the depreciation of the Tunisian dinar (figure 14) caused by a decline of money inflows have caused a contraction of imports. Lower production levels explain the contraction in export volumes (figure 15).

Figure 12. Aggregate consumption, variation in %

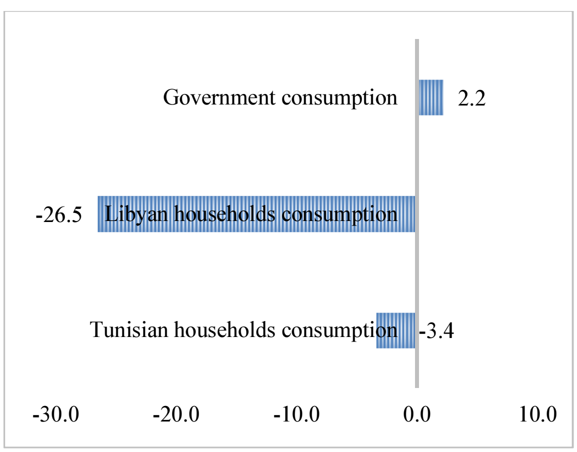
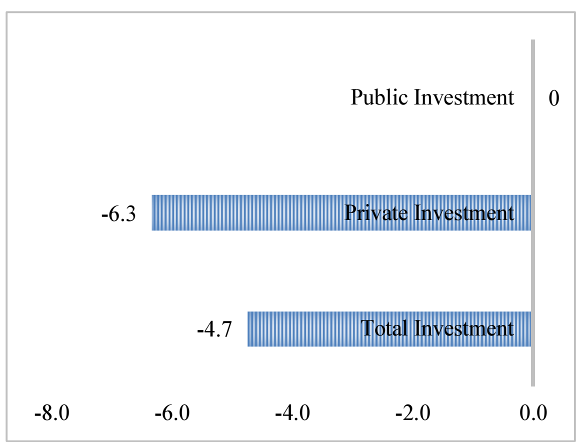


Figure 13. Investment, variation in %



Source: Computations based on the CGE model.

Figure 14. Exchange rate

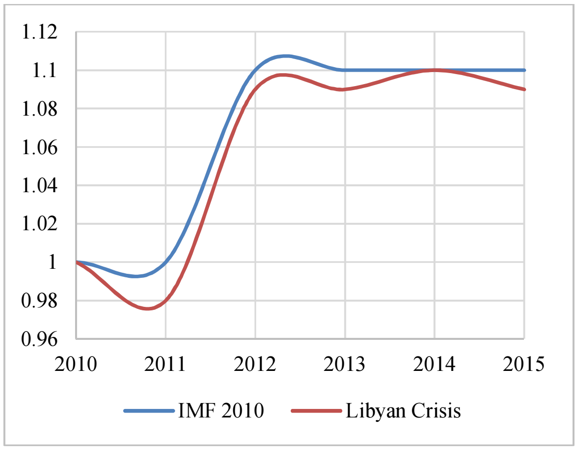
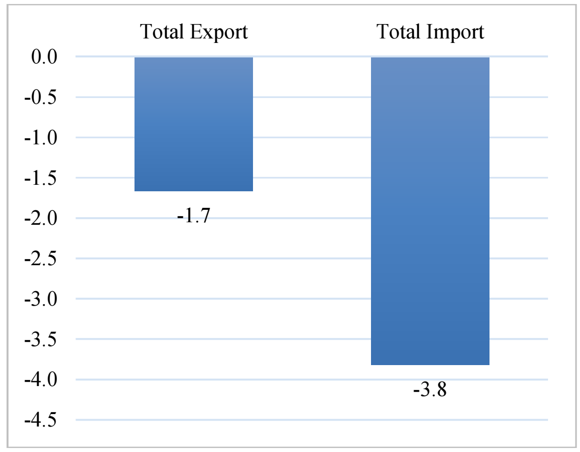


Figure 15. Exports and imports, variation in %



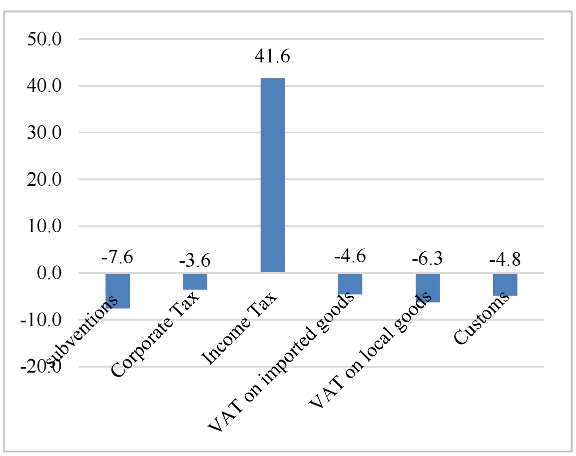
Source: Computations based on the CGE model.

IV. FISCAL COST OF THE LIBYAN CRISIS

At the fiscal level, aside from income taxes used to close the government budget, revenues from all other taxes have noticeably contracted (figure 16). All other things equal, VAT revenues fall by 6.3 per cent over the five years (equivalent to TND 1.17 billion) for domestic products against 4.6 per cent (TND 522 million) for imported goods. Customs duties have shrunk by 4.8 per cent (TND 104 million) against 3.6 per cent for corporate taxes. The only positive impact on the government budget is the significant drop in subsidies by 7.6 per cent (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 over the five-year period would have fallen by 7.08 per cent (TND 458 million).

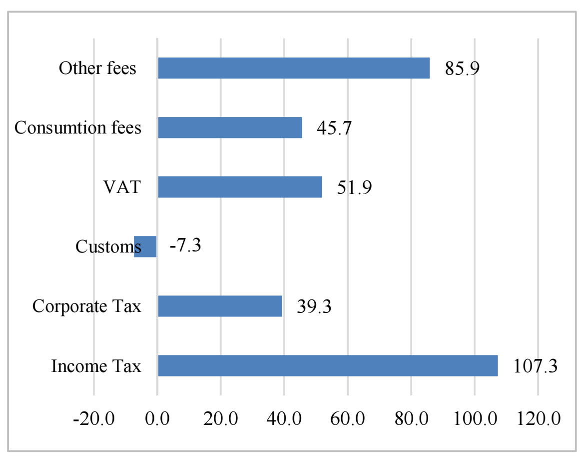
This result is in line with the trend in fiscal receipts by tax type observed from 2010 onwards. Between 2010 and 2015, the individual tax burden increased by 107 per cent, while receipts from other types of tax grew by less than 85 per cent (figure 17).

Figure 16. Model estimate of fiscal revenues, variation in %



Source: Computations based on the CGE model.

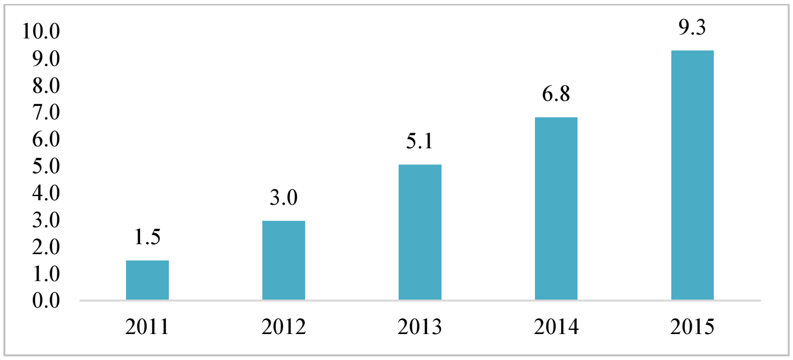
Figure 17. Observed tax revenues, variation in %



Source: Ministry of Finance.

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

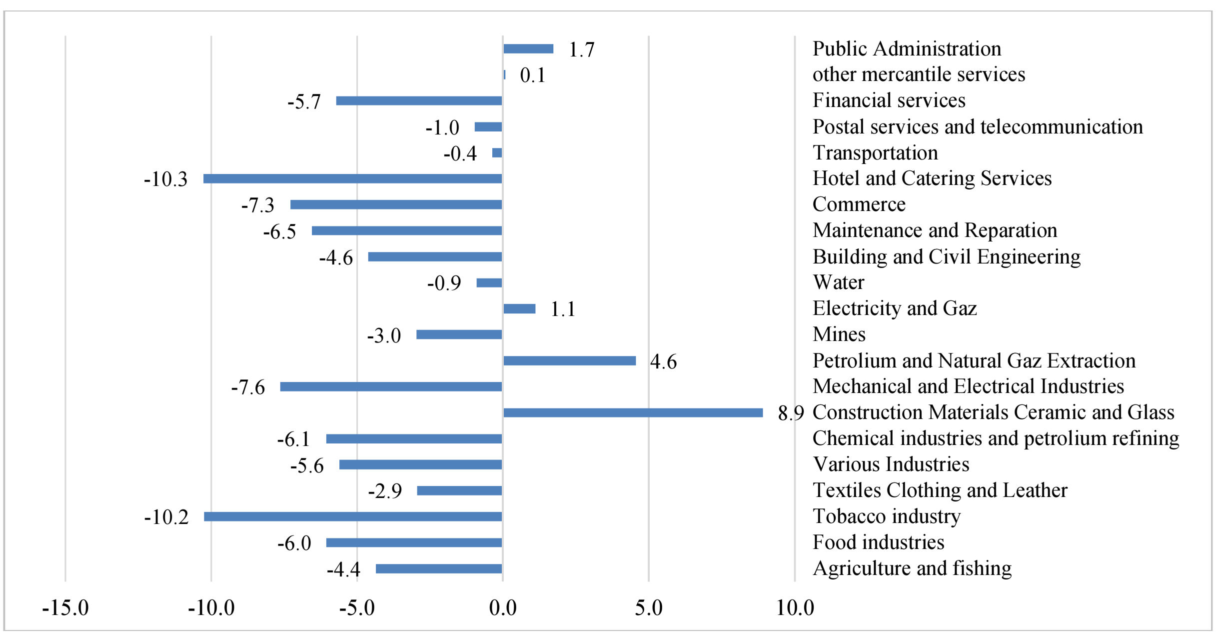
Figure 18. External debt-to-GDP ratio, variation in %



Source: Computations based on the CGE model.

When looking at the impact by sector, we find that production has shrunk in almost all economic sectors (figure 19), with the hospitality sector most affected. All other things being equal, this industry has experienced a fall of 10.3 per cent. The second most affected segment of the economy is the final consumption industry. For instance, the agribusiness sector lost 6 per cent in revenues and the tobacco industry lost 10.2 per cent. 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.

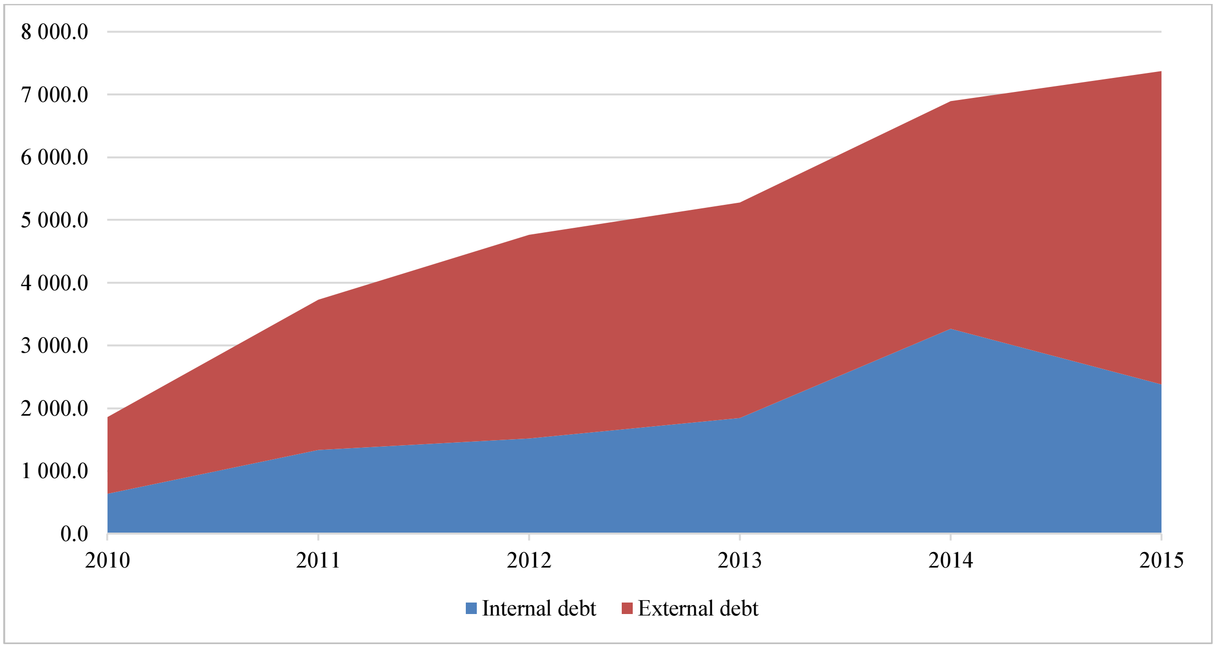
Figure 19. Sectoral impacts, growth variation in %



Source: Computations based on the CGE model.

Figure 20 shows that estimations are in line with available data from 2010 onwards. External debt has grew between 2010 and 2015 to reach 307 per cent of its initial level, while internal debt increased by 275 per cent over the same period.

Figure 20. Evolution of the public debt structure in Tunisia, 2010-2015 (million TND)



Source: Ministry of Finance.

V. 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 although 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 averaging a 7-11 percentage points loss in GDP.[5] Transition experiences of central and eastern European countries or the former Soviet countries illustrate this phenomenon.

The present paper 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 TND 9 billion in current prices. These losses are even higher when fiscal losses resulting from the expansion of informal trade and losses of more than TND 300 million 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.

[5] ESCWA, *Effects of Recent Political Changes on Arab Countries – A Five-Year Review*, 2016.

The political situation in Libya is beginning to stabilize and there are hopes of a Libyan economic revival. This would provide many economic opportunities for both countries, if exploited appropriately. Libya and Tunisia would benefit from beginning to lay the groundwork in terms of logistics and regulations, to maximize gains from this opportunity. With a risk that the reconstruction of Libya will feed 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 informal trading.

Annex I. Budgets of the ministries of interior and defence

Ministry of Interior

	2010		2011		2012		2013		2014		2015		2016	
	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE
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 Defence

	2010		2011		2012		2013		2014		2015		2016	
	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE	CE	DE
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: CE: current expenditures; DE: development expenditures.

Annex II. Revenues of Libyan households in Tunisia transiting through the banking sector

	2010	2011	2012	2013	2014
Deposits and withdrawals (in millions TND)	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 TND)	112 295	27 615	86 412	66 220	97 318
Monthly average income per person for consumption (in TND)	9 350	2 300	7 200	5 520	8110

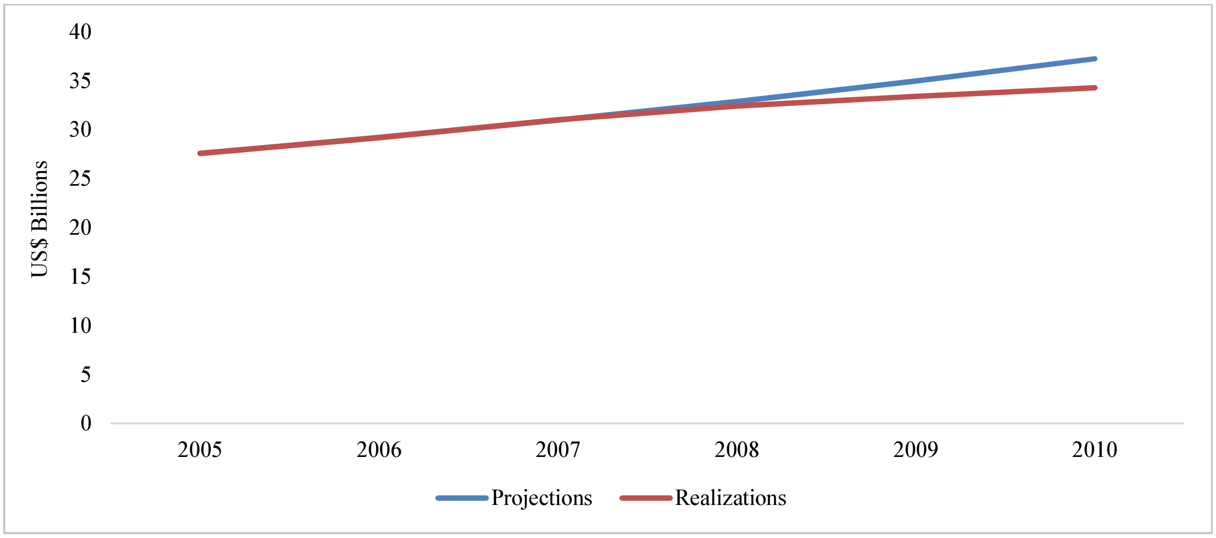
Annex III. Revenues of Libyan households transiting through the border

Year	Number of Libyan travellers	Average amount per traveler LYD	Total amount in millions of LYD	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

Annex IV. 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

Annex V. Comparison of GDP projections and actual GDP values in Tunisia between 2010 and 2015



Annex VI. Accumulated differences between IMF GDP estimates and realized GDP in the MENA region between 2010 and 2015