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Abstract

The goal of this paper is to investigate the effects of the global financial crisis on the employment conditions in Tunisia. This is a comprehensive study of the Tunisian labor market as it applies to job creation and job loss. Comparison is made to the period before the 2008 financial crisis with a study of the aftermath of the crisis. The key findings of this analysis pose an interesting viewpoint not only about the vulnerability of the Tunisian labor market to a global slowdown, but also the deeper composition and reasoning that lie behind typical labor statistics. This paper uncovers the underlying conditions of the market and how it responds to external shocks such as the 2008 crisis. The paper investigates the fact that the higher educated are the hardest hit during a downturn as they remain in the unemployment count while actively seeking employment. We also find that there are many reasons behind labor force participation such as working conditions, pay, sector outlook, and other factors of underemployment. Furthermore, the issue of emigration amidst a global slowdown is pivotal as many Tunisians simply return home. Lastly, the response of the Tunisian government is analyzed with some pointers for combative labor policy.

JEL Classification: E24, G01, J23, J63

Keywords: Economic crisis, Labor market, Hiring rate, Separation rate, Tunisia

ملخص

الهدف من هذه الورقة هو دراسة آثار الأزمة المالية العالمية على ظروف العمل في تونس. هذه دراسة شاملة لسوق العمل التونسية من حيث انطباقه على خلق فرص العمل وفقدان الوظائف. يتم مقارنة فترة ما قبل الأزمة المالية لعام 2008 مع دراسة أعقاب الأزمة. النتائج الرئيسية لهذا التحليل تشكل وجهة نظر مثيرة للاهتمام ليس فقط عن تعرض وتأثر سوق العمل التونسية بالتباطؤ العالمي، ولكن أيضا عن تكوين أعمق للمنطق الذى يكمن وراء إحصاءات العمل النموذجية. تكشف هذه الورقة الظروف الكامنة وراء السوق، وكيفية استجابته للصدمات الخارجية مثل أزمة 2008. تحقق الورقة في حقيقة أن الحاصلون على التعليم العالي هم الأكثر تضررا خلال الأزمة، إذ أنهم يبقون في عداد البطالة في الوقت الذي يسعون فيه بنشاط للعمل. نجد أيضا أن هناك العديد من الأسباب وراء المشاركة في القوى العاملة مثل ظروف العمل، والأجر، والنظرة العامة على القطاع، وعوامل أخرى من العمالة الناقصة. وعلاوة على ذلك، فإن مسألة الهجرة وسط التباطؤ العالمي هى مسألة محورية حيث أن العديد من التونسيين يعودون إلى ديارهم. وأخيرا، يتم تحليل رد الحكومة التونسية مع بعض المؤشرات لسياساتة العمل.

1. Introduction

The current financial and economic crisis has quickly spread from the housing and credit markets in the United States resulting in the worst global recession since World War II. As a consequence of the downturn, many workers have been dismissed, while for those lucky enough to hold on to their jobs, many have experienced cuts in hours worked, wages and others benefits as firms seek to reduce labor costs in order to survive (Verick 2010; Roushdy and Gadallah 2010; Boyer2009).

This is a natural generalization of the impact of the current crisis on the labor market, which varied across (and within)countries according to the structure of the economy, the institutions in place and how policymakers have responded. In particular, this recession has had different implications for different segments of the population as defined by characteristics such as gender and age. These traits make individuals more vulnerable to a recession because of the obstacles they face in the labor market, in addition to having a job in a sector that is most affected by changes in macroeconomic conditions. Tunisia is no exception (Tzannatos 2010; Brosius 2011).

The global crisis has considerably slowed the momentum of Tunisian economic growth. With a decline in exports and manufacturing products, the GDP decreased from 6.3 percent in 2007 to 4.5 percent in 2008. Compared to other economies in the region, Tunisia performed better than the average of the MENA region as some of oil exporting countries (like Algeria and Libya) were strongly affected by the decrease of income from oil exports. After reaching its lowest level at 3.1 percent in 2009, the Tunisian growth rate rose again in early 2010 (World Bank 2009). The external sector was the main transmission mechanism of the impact of the crisis, which suffered from the collapse in demand in the European market. The growth of exports of goods and serviceshasslowedfrom8.5 percent in 2007to 3.5 percent in 2008, slowing to 1.6 percent in 2009. Overall, exports decreased in all sectors in 2009compared to 2008 (Tunisian central bank 2009).

The crisis has had a negative impact on FDI programs of transnational corporations. According to the Tunisian Foreign Investment Promotion(FIPA), Tunisia has been able to attract a flow of Foreign Investments (IE) of the order of1,595,700,000Tunisian dinars in the first nine months of 2009 against 2.2793 billion Tunisian dinars during the same period the previous year; a decrease of 30%. The Central Bank of Tunisia indicates that foreign direct investment flows fell by 36% in the first half of2009 (CNUCED 2009).

Following the outbreak of the current crisis, a national commission in Tunisia was formed to monitor closely the progress of the crisis and try to propose economic measures in order to mitigate its adverse effects. The first measures of financial and monetary policy were implemented in early 2008. The primary objective was to secure foreign currency reserves by choosing safer instruments to ensure the soundness of the banking system and financiers. Furthermore, and in order to improve the business climate, the government reduced the money market rate (MMR) by 75 basis points. Similarly, several measures for banks have been introduced to facilitate their activity but also to boost the money market, and better support businesses and households. Other measures were taken at the end of 2008, 2009, and even in the current year to help companies sustain their competitiveness. For example, the commission decided to extend the period of rescheduling of credits to a maximum of five years instead of three years as before. Furthermore, the share of sales of exporting companies in the local market increased to 50% of turnover for exports instead of 30%. The commission also worked to ensure that all firms in difficulty would benefit from the partial support of the government regarding employer's social security contribution (2011). The specifics of the commission’s policies are stated in section 3 of this paper. All these measures were taken

mainly to support the demand and create jobs. Bearing in mind the size of the shock, the Tunisian unemployment rate increased initially only to a limited extent.

The aim of this paper is to quantify these flows of employment on the labor market in Tunisia and analyze how the economic crisis has affected job destruction and hiring. After a comprehensive analysis of changes in hiring and separation rates, the objective is to investigate whether certain groups of employees are more exposed to difficulties caused by the crisis. In order to have a better understanding of the elements influencing the labor market response, one needs to examine the upward and downward movements in unemployment driven by inflows into (job creation) and/or outflows from employment (job destruction), which respond differently to shocks and to the constraints and incentives created by labor market institutions.

Moreover, the global downturn of the last three years has already demonstrated that translating the aggregate economic impact to outcomes in the labor market is complex and is influenced by a number of factors, not only the magnitude of the economic contraction. For this reason, a micro-level analysis of the labor market is crucial to provide policymakers with insights into how the Tunisian labor market has been affected and which segments have been hit hardest. To this end, the focus of this paper is on consequences of the 2007-2009 downturns in terms of changes to labor force status in Tunisia and how this varies across the population of employees.

The structure of the paper is as follows. Section 2 briefly summarizes the relevant literature. Section 3 analyzes the Tunisian global flows of employment in Tunisia. It describes how the employment and unemployment behave before, during, and after the current recession. A panel data model is used to explain the quarterly relationship between the hiring and separation rates during and after the crisis in Section 4. In Section 5, in order to understand the most significant variables that affect the variation of the hiring and separations rates, a fixed effect model was estimated. The analysis will be distinguished by sector of activity, age of employees, their gender, and professional category. Section 6 concludes.

2. Literature Review

According to the ILO (International Labor Organization), the inefficient remuneration practices taken by risk-lovers in the financial sector under the inappropriate financial regulations have resulted in the current crisis (ILO 2009: 10), which then spreads from the financial system to all aspects of the economy, from the United States to almost all countries in the world.

There have been many studies about this financial crisis, ranging from its causes, theories and overall effect on the global economy. Elul and his co-author show that the mortgage market played a very important role in the cause of the financial crisis and suggests the option model of mortgage default for studying the crisis (Elul et. al. 2010). In contrast, Stulz (2010) investigates the crisis by focusing on how credit default swaps have induced the credit crisis. As suggested in his paper, the financial crisis is primarily driven by two factors: (1) Failure to predict a dramatic decline of real estate prices and (2) Cash hoarding by financial institutions and reluctance to lend. In 2009, Cecchetti talks about the responses to the financial crisis until early 2008 in Europe. By looking at the response in Europe, it is shown that lack of short-term funds caused the interest rates in Europe to shoot up overnight, and by 2007 the global financial system began to crack. Meanwhile, there arise many theories about the crisis. In 2000, Diamnd and Dybvig develops a model focusing on bank runs, while in 2004, Chari and Kehoe (2004) suggest the herding models and learning models of economic crisis.

In this paper, what we are interested in is the impact of financial crisis on the labor market. As mentioned above, there has been a myriad amount of research investigating the affect of

financial crisis on employment conditions around the world. In 2009, Kritikidis found that the affect of this crisis on employment are mainly on paid male employees and people working as assistants in family enterprises. For part time employment, there exists a large increase. In 2010, Barakat and his co-authors investigate the influence on European labor market and education decisions. It shows that young male workers tend to be hit the hardest in Europe, compared to other groups of workers, such as older males or young females. In the same year, Roushdy and Gadallah declare that there has not been a substantial impact of the financial crisis on the Egyptian labor market using data from Egypt. In addition, the effect of the crisis on hours worked has been minimal. In general, all these studies tend to suggest that (1) the crisis appears to be affecting some groups of workers more than others and (2) formal employment generally falls during recessions. In 2011, Brosius studied the impact of the financial crisis on the Luxembourg labor market. He shows that the economic crisis has affected this market during the last quarter of 2008, by decreasing the number of recruitments. During 2009 and 2010 the firing percentages were not as much larger as in 2007. He found a difference in separation and hiring rates between ages, gender, geographical origin, sectors and job.

By using data from Tunisian labor market, and based on Brosius' (2011) study, this paper will investigate the affects of the global financial crisis on the employment conditions in Tunisia.

3. Global Employment Flows and Job Creation

To analyze employment global flow we used monthly data from "The National Observatory for Employment and Skills" of Tunisia over the period December 2005 to December 2010. This database offers information on employment dynamics and unemployment rates for all economic sectors. Our objective in the present paper is to identify whether there is a considerable gap between recruitment and job destruction, ex ante and ex post of the international financial crisis. Since the beginning of 2008 and till 2010, the Tunisian labor market has been adversely impacted by the global turmoil (Fig. 1), with an upward trend of employment rising at a slower pace than in the previous period (prior the crisis), translated into an average annual rate of 3%.

Even though Tunisian economy has created additional employment opportunities, the demographic development and social structure redesign led to an even more rapid growth of labor supply, resulting in almost constant levels of unemployment. The issue of employment opportunities, not necessary in terms of insufficient jobs, but the mismatch between seekers' expectations (financial, workplace conditions, quality) and companies' requirements translates into low labor force participation rates, especially for young people as they refine their education through university studies, and thus delay labor market entry or wait for more suitable employment chances, while depending on family financial support or remittances. Alternatives like emigration, both of skilled and unskilled workforce to more powerful states, have historically reduced some of the labor market pressures and provided a constant flow of remittances. The limited increase of the total employees' number, of only 43,500 during 2008 and 2009 was accompanied by a stronger growth of unemployment, from 12.4% to 13.3% (Figure 2).

Women have been particularly affected by the crisis. If the rate of Male unemployment has remained stable during this period, the female rate increased from 15.3 percent in 2007 to 18.8 percent in 2009. This is due mainly to the larger number of women with low qualifications employed in the export sector, 80 percent of textile workers and clothing are women, who underwent significant job losses.

If the analysis of the recruitment evolution from 2005 to 2010 is broken down by economic sectors (Figure. 3), the results show a constant orientation, except for the Energy and Mining

category with a maximum only in 2006, and the Services domain with a positive tendency for the entire time sample. Most of the jobs lost were in manufacturing due to the downturn of the textile and clothing industry, but also in other branches of significant importance such as the mechanical and electrical components sectors. However, in the most important activities, such as wholesale and retail trade, transport and communications, education and health, where employment is concentrated, the net job creation has accelerated or remained stable throughout the crisis. Ultimately, the overall unemployment rate rose only one point percentage during this period. So, the impact of the crisis in the service sector has taken the form of partial loss of jobs, which suggests that firms have reduced working hours rather than dismiss workers (Dimassi and Hassen 2011).

Splitting the unemployment by instruction levels (Figure 4), it is evident that the employees who have been affected by the crisis are those with higher instruction level (i.e. University). This is evident in the trend of increasing unemployment rates of the higher education group, compared to workers with lower education. It rose from18.2percent in2007 to 21.9percentin 2009 for those with higher education, while it increased from 4.4to 6.1cent over the same period for people with lesser instruction levels.

A major impact of the financial crisis on the labor market was restriction of the flow of emigrants to Europe related to the decrease of job opportunities abroad. In addition, policy instability experienced by other Arab countries has prompted migrants to return back home to Tunisia. In particular, the civil war that erupted in Libya led a number of European countriesto reducing their quotas of migrants (e.g. Italy) or strengthening admission criteria (e.g. France) (J.C. Dumont and J.P. Garson 2010).

The response of the Tunisian government has been primarily to support the hard-hit export sector, and to take measures to assist small and medium enterprises. Furthermore, other measures were implemented to strengthen domestic demand. These measures consisted essentially of tax credits allocated to export companies for employer's social security contributions, as well as increased salaries for the civil service to stabilize domestic demand. Public investment was increased from 20 percent, which resulted in strong job creation in the public and construction area, which helped offset the losses in other sectors such as the manufacturing industry. Additional measures targeted at SMEs have been used to improve the flow of credit to small businesses by injecting more liquidity into the economy through facilities for deposit and credit, and reducing the interest rate to 5.25 percent (ILO 2011).

These significant changes that took place in the labor market explain an increase in the total number of employees. In fact, the available statistical data on net job creation shows only the quantitative changes and not the composition of the workforce. The total employment increase may be the consequence of a combination of many labor market movements; while some individuals became unemployed or inactive, others entered the market as graduates or after a career break. One of the many questions brought to light by the experience of the present crisis is related to its impact on recruitment and job destruction (having in mind the parameters before and after the unfolding of the international tensions). Weak labor demand is reflective of the company's inability to create as many new jobs as before, coupled with the exposure to the risk of having to dismiss a larger number of employees. To test this hypothesis, the 2009 statistics (and in some cases the figures of 2010) will be compared with the 2007 data considered as a representative pre-crisis period. Instead of comparing gross values from one period to another, an optimal solution would be to test the differences in percentages of separation and hiring in total employment between 2007 and 2009, and thus to neutralize the jobs number growth in Tunisia registered during the same period. In addition, and in order to eliminate the seasonal effects, we will compare these two rates for each quarter of 2007 to respective ones for 2009.

4. Data Description and Model Estimated

4.1 Data and descriptive analysis

To calculate the separation rate and hiring rate a dataset was gathered from the Social Security fund (CNSS) of Tunisia concerning 503 firms (five or more workers) operating in five sectors (Construction, Finance, Manufacturing, Services and Trade) over the period of January 2007 to December 2009. This data is firm level, informing the employment status in these firms. For each firm, we have collected information on hiring and separation of the employees classified by gender (male or female), age, job level (top, middle and low management) and sectors (Tables 1 and 2). An employee is included in the total number of hires if that individual will find a job in the firm at time t1. For those leaving the firm at time t, they will be counted in the total number of separation. For the remaining group of workers, they will have three choices: to work in another firm, start their own business, or leave the workforce as unemployed. This kind of information is not available in The CNSS of Tunisia, which needs to conduct a survey in order to have it, for that reason we have focused our analysis on the firm level. Tables 1 and 2 show the trend of the average number of employees by variables.

We fit a panel data model to explain the quarterly relation between the hiring and separating rates, during and after the crisis. The hiring rate has been computed by the following formula:

$$y_{it}^{hr} = \frac{H_{it}}{S_{it}} (i = 1, \dots\dots, 503); (t = 2007_{q1}, \dots\dots, 2010_{q2}) \quad (1)$$

Where y_{it}^{hr} is the hiring rate, H_{it} is the number of the employees in the firm *i-th* at the time *t* and S_{it} represents the size of the firm *i-th* at the time t.

In the same way, we obtained the separate rate:

$$y_{it}^{sr} = \frac{Fi_{it}}{S_{it}} (i = 1, \dots\dots\dots, 503); (t = 2007_{q1}, \dots\dots\dots, 2010_{q2}) \quad (2)$$

Where y_{it}^{sr} is the separate rate and F_{iit} is the number of the employees dismissed at time t in the *i-th c*ompany.

The evolution of hiring and separation mean rates over the period 2007_{q1}-2010_{q2} is shown in Figure (5). Since 2007, and until the end of 2009, the hiring rate has had a decreasing trend. The recruitment rate, in the last quarter of 2008, rapidly decreases up to the end of the 2009 dropping to about 2.5% of the hiring rate. In 2010, there is an evident positive trend stabilizing the hiring rate at 4%. Despite this situation and in terms of hiring, it is emphasized that this is only a slowdown in hiring over the period of crisis: the hiring rate remains positive (+1% in 2009) and as a whole, companies have stopped hiring. The decrease in hiring rates was accompanied by a stagnation effect in the number of employees who know of an employment termination. The separation rate fluctuates around 1.5% (see Fig. 5) up to the third quarter of 2008. From the last quarter of 2008 the separation rate rises reaching its maximum of 3.5% and rolls back around the 1.5% in 2010.

To explain this we will refer to: 1) the decline in the number of job changes, and 2) to certain human resources policies implemented by firms. The decrease in job changes is another source of explanation for the overall decline in the rate of separation. Indeed, in all separations, there are two groups of employees: those who resign and are found in an unemployment situation (inactivity, unemployment and activity in a country other than Tunisia) and those who resign and work the following month in other firms in Tunisia (job changes continuously). For the last group, in order to explain the decrease in job changes we can say that they have postponed their plans when facing limited employment opportunities. On the other hand, people who, before the crisis, have changed jobs after a layoff or non-renewal of a Contract (involuntary changes), could not follow up with another job in times of

crisis, due to low demand for labor. Rather than appearing in the statistics of job changes, they are now recorded as unemployed.

Finally, another explication can be found on the side of human resources management strategies of firms: some firms in Tunisia have reacted to the recession by keeping their workforce and employment adjusting downward the number of hours worked (the Anglo-Saxons use the term “Labor hoarding") (Arpaia and Curci 2010; Brosius 2011; Moller 2010). Such a strategy may be justified by the fact that firms have invested in training their staff and try to avoid the cost to train new workers when demand recovers. The increase in part-time employment (which is high in Tunisia) can be another source of adjustment that prevents the separation of certain employees.

4.2 Model description

To analyze the data-set described in section (4.1), we applied the linear panel data models used in econometrics (Baltagi2001). The general model is the following:

$$y_{it} = \alpha_{it} + \beta_{it}^{T} x_{it} + u_{it} \quad (3)$$

Where $i = 1, \ldots, n$ identifies the subjects (group, company, country etc.), $t = 1, \ldots, T$ is the time index, x_{it} represent the independent variables, y_{it} is the dependent variable, α_{it} and β_{it}^{T} are coefficients have to be estimated and u_{it} is the random error with zero mean.

We decompose the random component u_{it} in two components, a person specific error μ_i and an idiosyncratic error ϵ_{it}:

$$u_{it} = \mu_i + \epsilon_{it} \quad (4)$$

The appropriate estimation method depends on the assumptions/properties of the two error components. The person-specific error does not change over time. Every person/firm has a fixed value on this latent variable (fixed-effects). μ_i represents person-specific time-constant unobserved heterogeneity. The idiosyncratic error varies over the individual and time and it is usually assumed well behaved and independent of both regressors x_{it} and the individual error μ_i.

If $corr(x_{it}; \varepsilon_{it}) \neq 0$ the model (3) is called the fixed effects or within model and the OLS estimators are used for β:

$$y_{it} = \beta_{it}^{T} x_{it} + \mu_i + \epsilon_{it} \quad (5)$$

If $corr(x_{it}; \varepsilon_{it}) = 0$ the model (3) is named random effect model:

$$y_{it} = \alpha + \beta_{it}^{T} x_{it} + \mu_i + \epsilon_{it} \quad (6)$$

The OLS estimators are inconsistent for the random effect model (6) because the error term u_{it} is serially correlated and the GLS estimators are used.

5. Random Effect Model

Our study aims to understand the most significant variables, among those described in the section (4), affect the variation of the hiring and separate rate and if a crisis effect exist. To estimate the crisis effect we introduce a dummy variable in the panel dataset, which assumes values zero for the pre-crisis period (from 2007 to 2009) and one for the post-crisis period (2010 for Q1 and Q2). The model has been fitted using the PLM package (Croissant and Millo2008) of R language (R Development Core Team 2012). Between models (5) (6)[1], we fitted the following random effect models:

[1]The choice between the two models has been based on the correlation between the residuals and each model and the regressors.

$$y_{it}^{hr} = \widehat{\beta_0} + \widehat{\beta_1}TM_{it} + \widehat{\beta_2}MM_{it} + \widehat{\beta_3}LM_{it} + \widehat{\beta_4}M_{it} + \widehat{\beta_5}F_{it} + \widehat{\beta_6}A_{25_{it}} + \widehat{\beta_7}A_{34_{it}} + \widehat{\beta_8}A_{44_{it}} + \widehat{\beta_9}A_{54_{it}} + \widehat{\beta_1}0A_{55_{it}} + \widehat{\beta_1}1CT_{it} + \widehat{\beta_1}2S_{F_{it}} + \widehat{\beta_1}3S_{M_{it}} + \widehat{\beta_1}4S_{S_{it}} + \widehat{\beta_1}5S_{T_{it}} \quad (7)$$

Where i = 1,……, 503, t = 2007q1, 2007q2, ……,2010q2 and the variables represent: Top Manager, Middle Manager, Lower Manager, Male, Female, Age (under 25, 25-34, 35-44, 45-54, over 55), crisis Time effect and economy sector (finance, manufacturing, services and trade).

The Table 3 shows the $\hat{\beta}$ estimates, p-values and standard errors for the hiring rate. The variables with the star (*) indicate those variables with p-values greater than 5%. As it can be noted the Crisis effect held a significant p-value, which means that switching from the period from pre to post crisis has a relevant role in the variation of the hiring rate. In fact, from the last quarter of the 2009 to the first quarter of the 2010 the average hiring rate has increased about 1%.

The separation rate variable has been fitted the same random effect model (7) and has been selected from different regressors. Table 4 shows the estimates, standard error and p-values of the model for the separate rate. As it can be noted, contrary with the hiring rate model, the separate rate has been affected by the crisis but in an opposite magnitude, namely the average dismissed rate is decreased about 1% from 2009 to 2010.

Generally, the coefficients estimated in the models for hiring and separate rates indicates how much the outcome variables (hiring and separation rates) change overtime, on average switching from pre-crisis to post-crisis, with the explicative increase of one unit.

Table 3 shows that the gender variable (Male and Female) does not affect the change in the hiring rate, ideally to be a man or a woman is not a key factor of influence at the hiring level. At the same time recruitment in the finance sector cannot be evaluated because the model has estimated a non-significant coefficient. The variables of top, middle, and lower manager related to the workers skills and experience have a positive impact on the recruitment while the age of the workers negatively affects the trend of the hiring rate. These behaviors can be related to the trade-off between experience and salary. It is also possible that some young people are discouraged by low paying jobs and decide to continue or initiate studies.

Furthermore, finance was the only variable in the sector group to be statistically significant. Finance is shown to negatively affect the change in hiring rate. This could be a result of the poor performance of the financial sector during the economic downturn causing many firms to cut jobs. The demand for financial talent has decreased while the immediate need to downsize became more of a priority during the crisis. These factors have contributed to the bleak employment outlook of this sector. A deeper analysis of this issue is explained in the Separate Rate model which produces a positive estimate for the finance sector; meaning that workers have shifted away from industry because of its negative effect on the change in hiring rates. We also see that manufacturing is negative in the separate rate model; meaning that workers have remained in the field. This is an interesting point because the quality of labor supply in manufacturing is relatively low, causing the unemployed in this sector to most likely leave the labor force or promote their specific skill-set to other firms in the industry. The same goes for trade and services, but clearly the finance sector bears the brunt of the economic downturn.

6. Conclusion

It is evident that despite Tunisia being adversely affected by the global financial crisis, its labor market has struggled to maintain a positive trend. The government labor statistics paint a general picture of the labor market, but a deeper analysis such as the one performed in this paper is crucial to understanding the hardships faced by the people of Tunisia. This deep

understanding of the labor market provides a solid foundation for policy that can combat external shocks and help the economy adjust to downturns by way of a strong labor market. The comprehensive study done in this paper provides some substance for recommendation.

Tunisia needs to influence the availability of private sector jobs. The data shows that due to an uptick in public development and construction, the demand for civil employment has increased, causing a spike in total employment. However, this is deemed to be artificial as the hiring rates decline in non-development sectors such as finance and manufacturing. Also, the types of jobs created by the government such as construction tend to be short-term. Policies enacted by the commission explained earlier in this paper are a positive step forward to incentivize the stabilization of employment by decreasing employment costs in the private sector. By focusing on easing the constraints of hiring in the private sector, the government of Tunisia can have greater power in focusing its efforts on ensuring productivity that comes at lower cost and human power to the administration. This paper highlights an important point that the government of Tunisia had to increase pay for public sector jobs in order to be competitive in the labor market. While some public jobs are necessary, the cost of doing this amidst a crisis reflects a puzzling shift in priority. The private sector will need support in maintaining current employment while hiring additional employees with less worry of the constraints involved in doing so.

Very little can be done with helping industries recover, as the data in this paper proves that an industry downturn is short-term and persists throughout the crisis period and then rebounds. However, keeping people in the labor force during this time should be encouraged. The declining labor force participation rate is a result of people with low skills (i.e. women in manufacturing and textiles) that simply give up. There needs to be a continued focus on strengthening the skill-set of workers in any economic environment. An educated work force that is skilled will enable movement away from an underperforming industry, thus expanding access to employment in adversely affected industries. Education helps, but we must also focus on utilizing highly educated recent graduates in the work force. This paper explains that most of the educated work force delay employment and continue higher education.

This paper supports the reason to continuously monitor labor market trends and data points to accurately forecast and establish sustainable policies to correct faults. Tunisia shares similar labor market problems with countries around the world, but the ability to combat external shocks will place it one step ahead. In doing so, Tunisia can be a beacon of hope for the influx of returning people in search of job opportunities. The economy will certainly welcome the demand for productivity, but the right policy will ensure that this is met.

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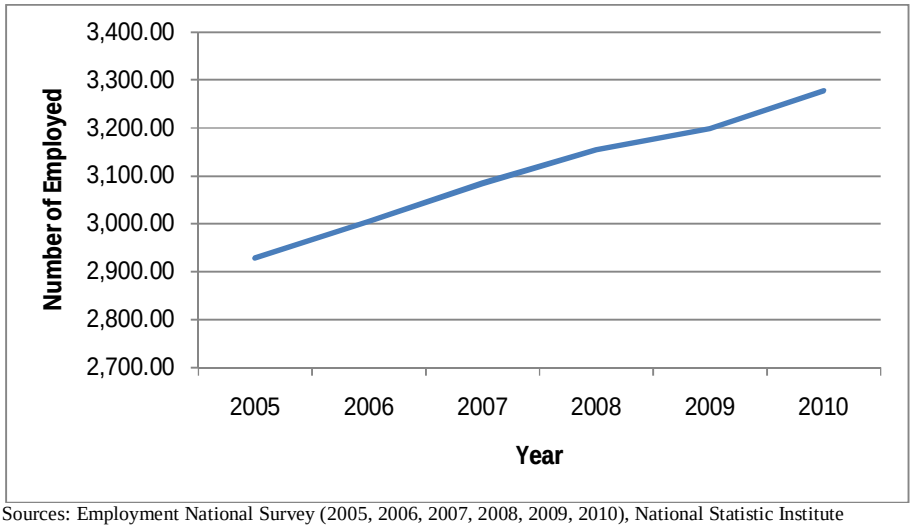
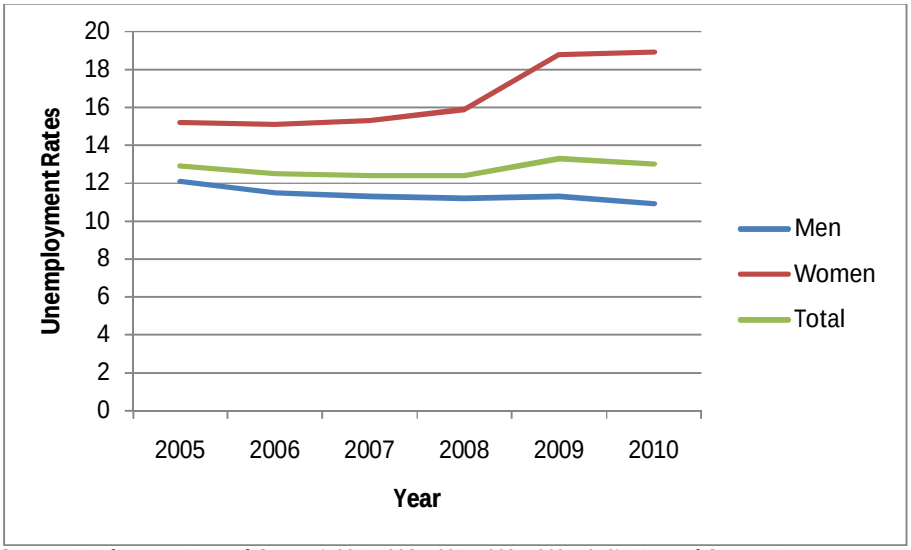
Figure 1: Labor Force Employment (in thousands)



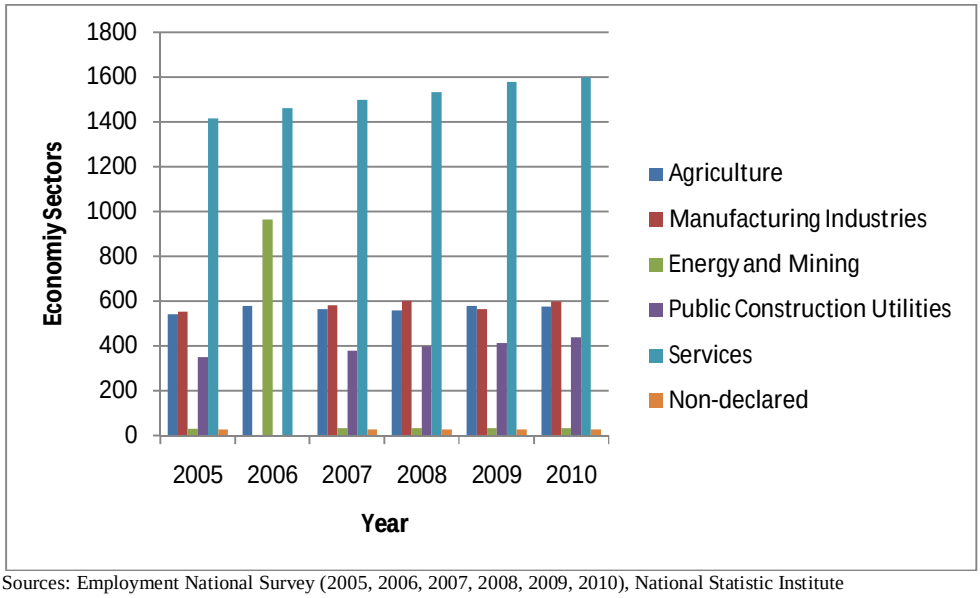
Sources: Employment National Survey (2005, 2006, 2007, 2008, 2009, 2010), National Statistic Institute

Figure 2: Unemployment Rate by Gender (15 years and more), (%)



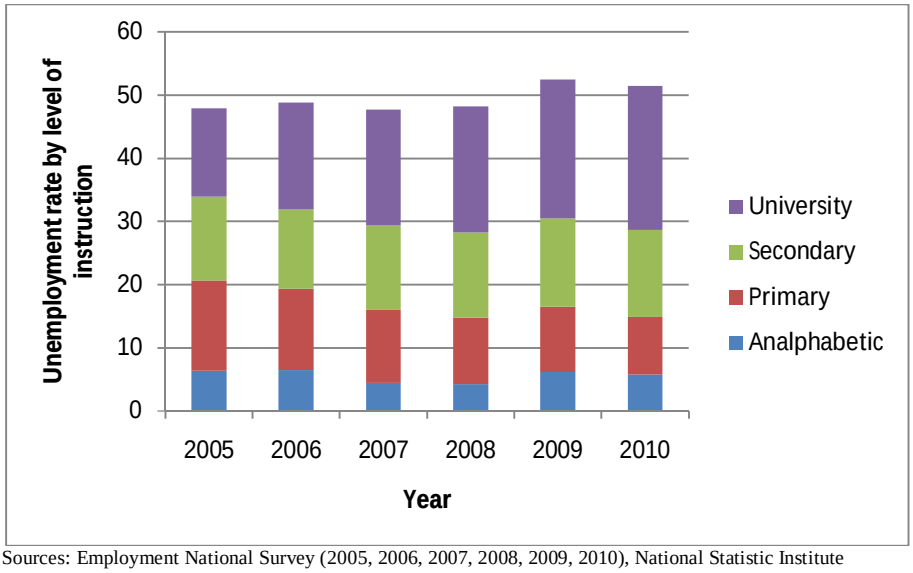
Sources: Employment National Survey (2005, 2006, 2007, 2008, 2009, 2010), National Statistic Institute

Figure 3: Labor Force Employment by Sector (in thousands)



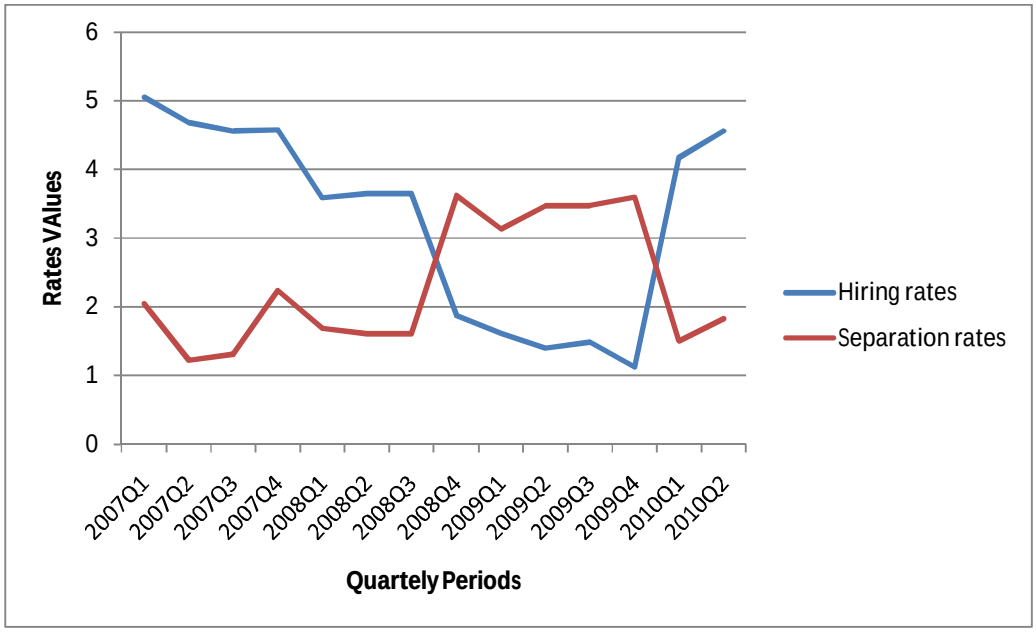
Sources: Employment National Survey (2005, 2006, 2007, 2008, 2009, 2010), National Statistic Institute

Figure 4: Unemployment Rate by Level of Education (%)



Sources: Employment National Survey (2005, 2006, 2007, 2008, 2009, 2010), National Statistic Institute

Figure 5: Evolution of Hiring and Separation Rates between 2007 and 2010



Source: Authors calculations

Table 1: Average Employees by Gender, Ages and Job Levels over the Period, 2007 Q1-2010 Q2

Period	Male	Female	Under25	25-34	35-44	45-54	Over55
2007 Q1	71.89	39.27	13.44	18.99	33.66	36.8	8.27
2007 Q2	72.74	41.06	13.51	20.49	33.65	36.78	9.37
2007 Q3	73.39	42.8	13.51	21.83	33.6	36.79	10.45
2007 Q4	74.06	44.17	13.54	22.93	33.6	36.79	11.36
2008 Q1	74.46	45.38	13.55	23.64	33.6	36.77	12.26
2008 Q2	75.3	46.61	13.5	24.46	33.6	36.77	13.57
2008 Q3	75.3	46.61	13.5	24.46	33.6	36.77	13.57
2008 Q4	75.58	46.41	13.49	24.77	33.59	36.73	13.43
2009 Q1	75.17	45.33	13.49	24.09	33.6	36.75	12.58
2009 Q2	74.23	43.8	13.47	22.66	33.57	36.69	11.61
2009 Q3	73.35	42.05	13.48	21.24	33.55	36.65	10.49
2009 Q4	72.34	40.08	13.42	19.71	33.47	36.63	9.2
2010 Q1	73.17	41.22	13.93	21.2	33.48	36.59	9.18
2010 Q2	74	42.64	13.95	22.14	33.49	36.6	10.45

Sources: Authors calculations

Table 2: Average Employees by Job Levels Over the Period 2007 Q1-2010 Q2

Period	Top Manager	Middle Manager	Low Manager
2007 Q1	11.05	29.4	70.7
2007 Q2	11.26	29.41	73.13
2007 Q3	11.43	29.41	75.36
2007 Q4	11.4	29.41	77.41
2008 Q1	11.46	29.41	78.97
2008 Q2	11.37	29.41	81.13
2008 Q3	11.37	29.41	81.13
2008 Q4	11.36	29.46	81.18
2009 Q1	11.28	29.46	79.78
2009 Q2	11.04	29.43	77.56
2009 Q3	10.96	29.26	75.21
2009 Q4	10.74	29.22	72.47
2010 Q1	11.01	29.23	74.16
2010 Q2	10.88	29.23	76.54

Sources: Authors calculations

Table 3: Estimate of the Hiring Rate Model

Coef Name	Estimate	Std.Error	T-value	P-value
Intercept	3.1144	0.1252	24.8709	0.00000
Top Manager	0.3678	0.0936	3.9289	0.00010
Middle Manager	0.4768	0.0916	5.2058	0.00000
Lower Manager	0.386	0.0924	4.179	0.00000
Mens*	0.1695	1.0371	0.2997	0.29970
Womens*	0.1693	0.9324	0.3512	0.35120
Under 25	-0.5603	0.153	-3.6612	0.00030
Age 25-34	-0.5276	0.1449	-3.6409	0.00030
Age 35-44	-0.6956	0.1537	-4.5256	0.00000
Age 45-54	-0.4963	0.1469	-3.3788	0.00070
Over 55	-0.6019	0.1451	-4.1476	0.00000
Time Crisis	1.1943	0.0714	16.7182	0.00000
SECTOR-Finance*	-0.2727	0.2244	-1.2148	0.22450
SECTOR-Manufacturing	-0.7414	0.1803	-4.112	0.00000
SECTOR-Services	0.8492	0.1515	5.6035	0.00000
SECTOR-Trade	0.487	0.1574	3.0952	0.00200

Sources: Authors calculations

Table 4: Estimate of the Separate Rate Model

Coef Name	Estimate	Std.Error	T-value	P-value
Intercept	2.7515	0.138	19.9387	0.0000
Top Manager*	-0.0771	0.0889	-0.8666	0.3862
Middle Manager*	0.0386	0.0872	0.4427	0.6580
Lower Manager*	-0.0146	0.0876	-0.1673	0.8672
Mens*	0.1575	-0.8461	0.3975	0.3975
Womens*	0.1574	-0.9194	0.3579	0.3579
Under 25*	0.2641	0.1417	1.8642	0.0623
Age 25-34*	0.1209	0.1337	0.904	0.3660
Age 35-44*	0.1836	0.1437	1.2779	0.2013
Age 45-54*	0.0919	0.1357	0.6775	0.4981
Over 55*	0.0898	0.1339	0.6705	0.5025
Time Crisis	-0.946	0.0653	-14.4812	0.0000
SECTOR-Finance	0.8847	0.2445	3.6186	0.0003
SECTOR-Manufacturing*	-0.2329	0.1994	-1.1684	0.2427
SECTOR-Services	-0.7347	0.1643	-4.4711	0.0000
SECTOR-Trade	-0.6194	0.1714	-3.6136	0.0003

Sources: Authors calculations