LABOR MARKET FLEXIBILITY IN EGYPT: WITH APPLICATION TO THE TEXTILES AND APPAREL INDUSTRY

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Abstract

Labor market rigidity is a major constraint to doing business in Egypt where labor regulations are perceived as a major constraint to 27 percent of surveyed firms in Egypt. This rigidity is considered one of the causes of high and persistent unemployment. This paper addresses the effect of labor laws and institutions on the three dimensions of labor market flexibility, namely wage, functional and numerical flexibility. Then, it identifies the effect of labor market rigidities on the performance of the Egyptian labor market, specifically its effect on employment in the textiles and apparrel industry. The labor laws and regulations affected firms differently according to size and ownership structure where small firms and private firms are the most affected. In addition, the laws affect differently women employment and male employment. Some proposed policies are introduced. First, striking a balance between workers' rights and flexibility in doing business is crucial. Second, it is important to revise the financial benefits given to workers because the existing package is negatively affecting employers and constraining hiring activity. And finally, awareness campaigns about the laws and regulations are required to insure that the firms do not create rigidities for themselves due to ignorance of the existing laws and their implications.

ملخص

يعد جمود سوق العمل بمثابة العقبة الرئيسية التي تواجه ممارسة الأعمال في مصر، حيث يرى نحو 27% من شركات العينة التي شملها المسح أن لوائح العمل تمثل عقبة رئيسية في مصر. كما أن هذا الجمود يمثل أحد أسباب ارتفاع معدلات البطالة واستمرارها. وفي هذا السياق، تتناول هذه الدراسة تأثير قوانين ومؤسسات العمل على الأبعاد الثلاثة لمرونة سوق العمل وهي: الأجور والمرونة الوظيفية والعددية. ثم تقوم بتحديد تأثير أوجه الجمود في سوق العمل على أداء سوق العمل المصرية، وخاصة على التشغيل في صناعة المنسوجات والملابس الجاهزة. وتجدر الإشارة هنا إلى أن قوانين ولوائح سوق العمل تؤثر على الشركات بدرجات متفاوتة وفقا لحجم الشركات وهيكل ملكيتها، فالشركات الصغيرة والخاصة هي الأكثر تأثرا. كما أن للقوانين آثار متفاوتة على تشغيل كل من الإناث والذكور. وتطرح الدراسة بعض السياسات المقترحة في هذا الخصوص. فأولا، لا بد من الموازنة بين حقوق العمالة والمرونة اللازمة لممارسة الأعمال. وثانيا، من الأهمية بمكان مراجعة المزايا الممنوحة للعمال لأن حزمة المزايا الحالية تؤثر بشكل سلبي على أصحاب العمل وتعمل على تقويض التشغيل. وأخيرا، لا بد من إطلاق حملات للتوعية بالقوانين واللوائح اللازمة لضمان عدم تسبب الشركات في خلق أوجه جمود لجهلها بالقوانين القائمة ومدلولاتها.

I. INTRODUCTION

Persistent unemployment, high informal employment and inadequate scope to increase formal jobs in the private sector are all negative features of the Egyptian labor market and symptoms of labor market rigidity. Furthermore, unemployment levels are likely to rise further as a result of the demographic bubble with expected 700,000 new entrants to the labor force every year. This suggests that any solution will need to boost labor demand which requires greater labor market flexibility and higher quality of the labor supply through educational reforms.

This study focuses on the effect of labor market rigidity on firms' employment in the textiles and apparel sector, with a view to boost labor demand towards decreasing unemployment and increasing formal jobs. This is done by determining the level of rigidity according to three types of flexibility that have been introduced by Atkinson (1984) and have been developed by other authors (e.g., Auer 2007): nominal wage flexibility, functional flexibility and numerical flexibility.[1] This will help to understand how to increase the flexibility of the labor market. If higher flexibility is achieved, we expect an increase in total employment.

The analysis is focused on one sector only because the same conditions and regulations can affect firms differently across sectors. The reason behind focusing on the T&A industry specifically is twofold. First, the relative importance of the T&A industry whose exports accounted for 20 percent of total manufacturing exports in 2008. In addition, T&A employed 24 percent of total employment in the manufacturing sector in the same year. This high employment intensity implies that any economic change, positive or negative, might affect employment dramatically at the aggregate level. The second reason for selecting T&A is the less heterogeneity of products and technology used across this industry. This will make the comparison across a number of firms valid (Chaffai, et al. 2010; CAPMAS 2009).

The novelty of this paper lies in analyzing the level of labor market rigidity after the introduction of the law which aimed at increasing the flexibility of the labor market in 2003. In a previous study, El Ehwany and Metwally (2001) tackled the effect of the labor market flexibility on Egypt's competitiveness. Yet, this paper was written before the introduction of

[1] There are other types of flexibility that are considered supply side flexibility (i.e., giving workers flexible work conditions and work location flexibility). However, these are out of the scope of this paper, as the paper focuses on demand side flexibility.

the new unified labor law of 2003. Another study (Wahba 2009) tackled the effect of the new labor law on informality and its potential effect to increase formal jobs.

The analysis in the paper depends on doing business indicators and a survey of the opinions of firms. Doing business indicators give a brief description of the regulations in Egypt and how they compare to MENA countries and highlights the main deficiencies in the unified labor law of 2003. In addition, the study relies on a survey of the views of employers to identify the most binding constraints as a result of labor market rigidity. The survey is done in order to take into consideration the degree of enforcing the law, which might differ from what is being stipulated. Accordingly, the research is based on a survey of firms to solicit their views on how every dimension of the labor law is affecting the level of employment. The survey results are analyzed qualitatively and quantitatively. The paper uses some econometric models to estimate the effect of rigid labor regulations on employment in a sample of 75 T&A firms. Furthermore, an estimation method is used to indicate the change in total employment, and the size of employment creation and destruction if labor regulations were more flexible.

The firm-level survey includes a total of 75 textiles and apparel firms.[2] It was conducted in 6 governorates, namely Cairo, Giza, 6th of October, Sharqeya, Gharbeya and Alexandria with an objective to have a diversified sample. The effect of labor market regulations is expected to vary across firms, by size and ownership structure. So, the sample is distributed over small, medium and large enterprises as 39, 10 and 26 firms, respectively, and includes both public (13 percent) and private (86 percent) enterprises.[3] Furthermore, 36 percent of the surveyed firms produce for exporting, while 64 percent produce only for the domestic market. Hence, the data collected is representative of several governorates, different ownership structure, firms' size, and targeted markets.

In what follows, section II summarizes the symptoms of labor market rigidities in Egypt. Section III analyzes the aspects in which the Egyptian labor market is rigid according

[2] Some basic information about the surveyed firms are shown in table 1, Appendix 1.

[3] There is no consensus among economists as to what constitutes a small business. Depending on the scope of this research and data availability, small firms are defined as firms employing 10 to 49 employees, while medium firms are identified as those employing 50 to 99 employees and large firms are those employing 100 or more employees. The micro businesses are not covered since they are mostly informal and were not easy to capture in the survey. However, they stand to benefit the most from increasing flexibility of labor rules towards reducing their vulnerability to economic downturns and helping the scope of growing employment in the economy.

to the forms of labor flexibility. Section IV presents a quantitative analysis of the effect of labor market rigidities on the total, permanent, and male/female employment, by firm size and ownership structure. Section V offers some proposals for enhancing labor market flexibility in Egypt.

II. Symptoms of Egypt's Labor Market Rigidities

Labor laws and regulations determine the level of labor market flexibility. Governments usually enact these laws to protect workers' rights. First, governments provide the workers with some basic rights to reduce exploitation or increase welfare (i.e., maternity leaves, minimum wages, etc.). Second, it protects the employment relationship by identifying the hiring and firing regulations. In addition, it empowers labor unions to defend workers' rights. Finally, governments provide social insurance against illness, unemployment and death. However, such protection for workers results in increasing the costs of formal labor and negatively affects labor market flexibility. Specifically, it affects the speed with which labor markets adapt to fluctuations and changes in the society, the economy or production. Hence, the ability to adjust the labor force, given any economic shock (positive or negative) on either the firm or sectoral levels, is hindered (Atkinson 1984; Caballero et al. 2004; Djankov and Ramalho 2009).

Labor market rigidity results in less formal hiring by firms during economic upturns to avoid layoffs and associated costs during downturns or negative shocks. This increases the unemployment rate especially among youth and hinders women participation rate and raises informal employment. Hence, the overly protective hiring and firing regulations designed to protect workers have, instead, discouraged firms from hiring formal employment, which weakens the demand for labor and reduces firms' ability to properly allocate and employ human resources (Freeman 2005; Botero et al. 2003; Sharma 2009; Ahsan and Pages 2008).

In Egypt, despite the introduction of the unified labor law no.12 for 2003, with the aim of addressing the shortcomings and the rigidities of the previous law, labor market rigidity is still a major problem constraining the flexibility of firms' performance in response to changes in the economic environment. In 2010/11, Egypt fell behind a number of MENA countries, having a rank of labor market efficiency of 133 out of 139 countries.[4] Furthermore, Egypt

[4] The rank of labor market efficiency in the Global Competitiveness report is a reflection of three sub-indicators, namely rigidity of employment, redundancy costs and female participation in labor force.

ranks 76 and 128 out of 139 countries in hiring and firing practices, and the firing costs, respectively in the same year (i.e., high social security payments, severance payment and notice payment requirements, pressure for higher wages through strikes or other channels, etc.). This indicates that the Egyptian labor market is overly regulated, which is evident in the deteriorating performance of the labor market (the Global Competitiveness Report 2010/2011).

The unemployment rate in Egypt is high and persistent; it stayed above 8 percent for the last two decades, reaching 12.4 percent in December 2011(Figure 1). Despite high growth rates, the unemployment rate remained persistently high, which was further exacerbated post the January 25 revolution. Another key problem in the Egyptian labor market is the concentration of unemployment among the educated and youth. The unemployment rate across those with tertiary education is 36 percent in 2009. On the other hand, the unemployment rate is the highest in the age bracket (20-24) years, reaching 47 percent in 2009 (CAPMAS 2009).

Figure 1. Egypt's Unemployment and Real GDP Growth, 1992-2009

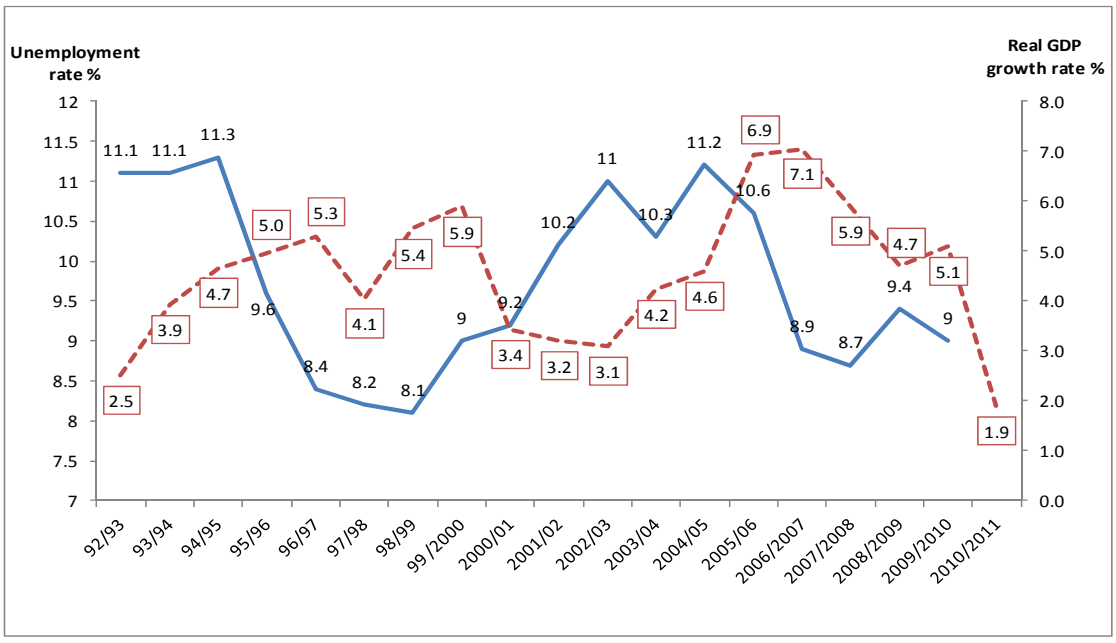
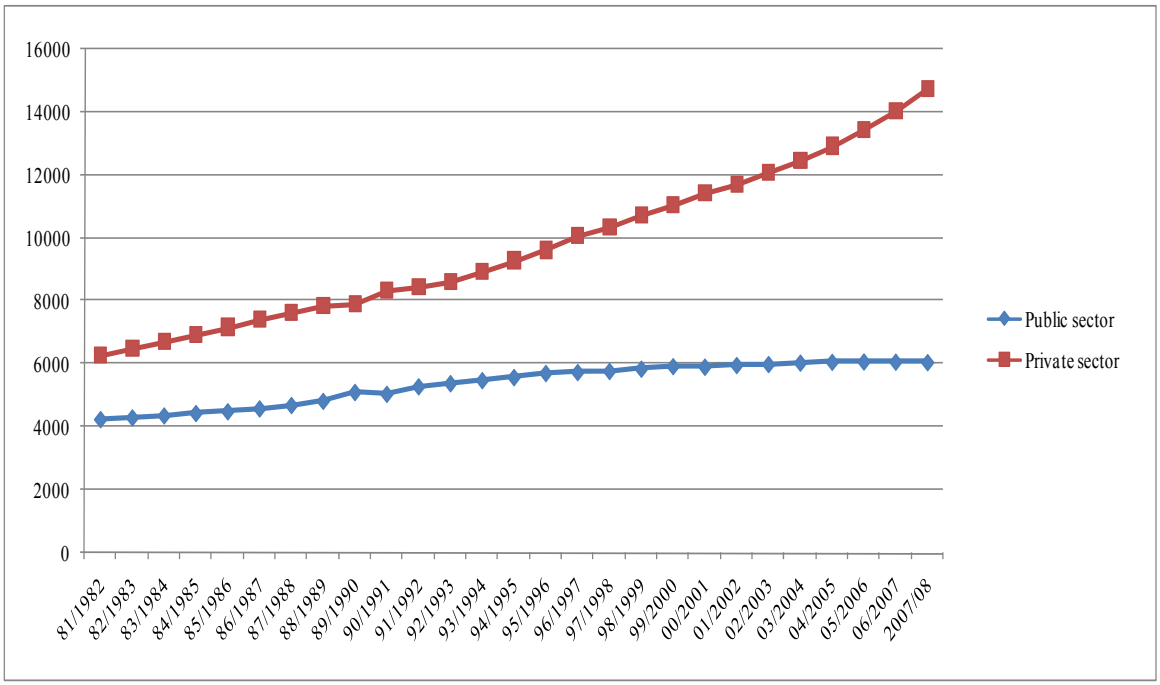


Figure 2. Employment in the Public and the Private Sector (1981/82–2007/2008)



These high levels of unemployment across youth and the educated are due to the constant growth level of job creation in the private sector (Figure 2). The compound rate of annual employment growth in the private sector across several periods has not changed;[5] 3 percent for the periods 1981/82–1990/91, 1991/92–2002/03, and 2003/04–2007/08. The small share of jobs in the formal private sector resulted in reliance on the informal economy. Total employment in the informal non-agricultural private sector (outside establishments and workers in private firms employing less than 5 workers) declined to reach 52.9 percent in 2009 compared to 85 percent in 1996.[6] If we exclude from the definition of the informal sector employment in firms employing less than five employees, informal employment in non-agriculture private firms becomes 18 percent in 2009. This is still high despite the introduction of the new labor law no. 12 for 2003 that aims at increasing the flexibility of the

[5] The compound annual growth rate (CAGR) is calculated as follows:

$$CAGR = \left(\frac{\text{Ending Value}}{\text{Beginning Value}}\right)^{\left(\frac{1}{\#\text{ of years}}\right)} - 1$$

[6] The method used in calculating the informal economy excluding agriculture is based on the assumption that the employment size is represented by all workers in the private sector outside the establishments, in addition to all workers in the private establishments employing less than 5 workers. Another method of calculating informal employment is defined as the difference between total employment in the non-agricultural private sector and the total employment in the non-agricultural private sector establishments using more than 10 employees. However, this method has not been used here since it inflates the number of informal employment (El-Ehwany and Metwally 2000).

labor market and the formalization of jobs. This high percent of employment in the informal unorganized sector means that those employees are not protected by the labor laws as intended by the government. In order to reduce this informality, labor laws need to be less rigid. Formalizing jobs will result in extending the umbrella of protection to workers in formal jobs. In contrast, more stringent regulations will deter formal employment and increase informality (CAPMAS 2009; Sharma 2009).

Hence, it is apparent that there exist labor market rigidities in the Egyptian economy. This rigidity has reduced the flexibility of employment in T&A industry. According to survey results, almost one third of the surveyed firms see labor regulations as a major constraint to hiring new employees.[7] This number suggests that there is a substantial enforcement of labor laws and that they represent a burden on some firms. This burden negatively affects the performance of firms, since the readymade garments industry is considered one of the high labor intensive manufacturing industries.[8] This means that any change in output, if not reflected in a corresponding change in the employment level, will have a negative effect on firms. The next section will highlight the main rigidities of the Egyptian labor market according to the three types of flexibility (Nominal wage flexibility, functional flexibility and numerical flexibility), on the macro level and on the micro level, in the textile and apparel industry.

III. EGYPTIAN LABOR MARKET RIGIDITIES

a. Nominal Wage Flexibility

Nominal wage flexibility indicates that the employee's wage can vary according to his performance and according to the firm's production plans. This means that the wage levels are not decided collectively and there are more differences between the wages of workers. In this case, the wages and labor costs reflect the performance of the company in terms of profits and losses and the performance of the employees, reflecting supply and demand of labor. This type of flexibility is achieved through variation in variable pay systems, such as rate-for-the-

[7] In the research paper, labor market rigidity is analyzed in line with the labor law, the social security law and labor unions law.

[8] Employment elasticity is defined as the change in employment relative to a change in output. Employment elasticity—whether with respect to GDP or investment - reflects the ability of a certain sector to create jobs in response to an increase in output. Readymade garments industry has employment elasticity to output reaching 0.74, where the highest employment intensive manufacturing industry is food, beverages and tobacco which has an employment elasticity of 0.87. On the other hand, spinning and weaving has lower employment intensity where its employment elasticity is 0.56 for the period 1980/81 – 2003/04 (El Ehwany, N. and N. El-Megharbel, 2009).

job systems, assessment based pay system or profit sharing policies. If the variable payment schemes are adequately designed, they can have a direct impact on the motivation of employees and their individual and group productivity.

The level of nominal wage rigidity is determined by labor regulations. There are two main institutional factors that affect the level of wage rigidity. The first is the level of minimum wages and minimum annual increase; if they are too high, firms can be discouraged from hiring employees formally. Another factor is the channels through which employees' pressure for higher wages (i.e., strikes and collective bargaining). In the next two sections, the paper will highlight these two factors and identify if they represent a source of rigidity or not.

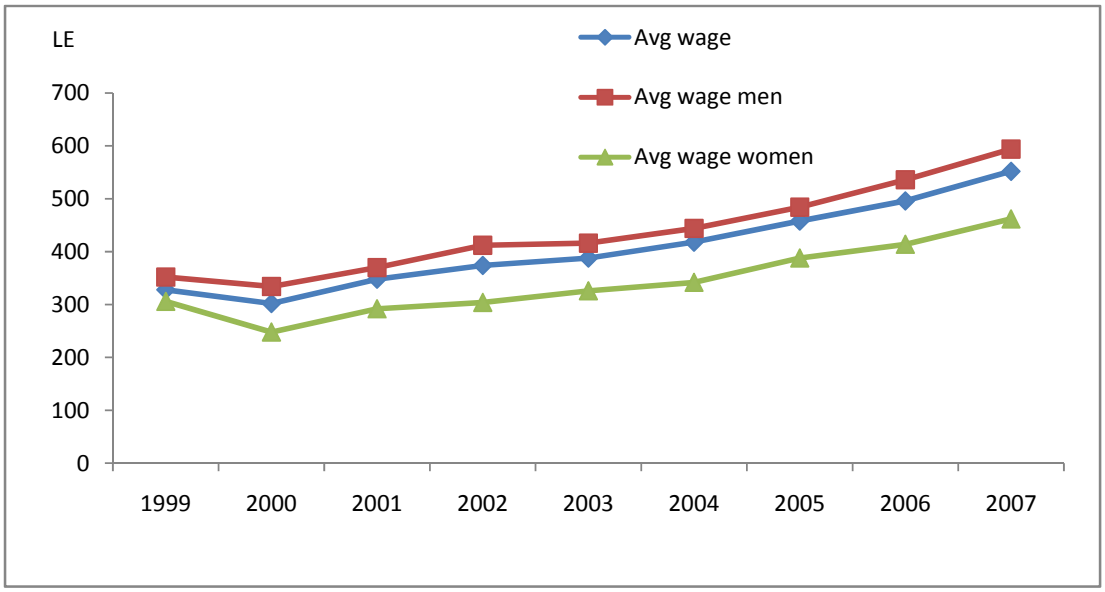
1. Minimum wage level and annual increase

According to the 2003 unified labor law, the National Council for Wages (NCW) is responsible for setting the minimum wage and the minimum annual increase. The minimum wage should take into consideration household expenditures and achieve the balance between wages and prices. To achieve this according to the law, the NCW is supposed to evaluate the minimum wages every three years. The implementation of this article is questioned where the NCW met only twice since its establishment and until early 2011 and the numbers announced were suggestions and not obligatory on firms to abide by. Until this period, the level of the minimum wages was very low and did not reflect the level of inflation. This has changed after the increase in the minimum wage to 689 Egyptian pounds in the public sector and has been accepted by the private sector. However, this rate is higher than the average wages in the T&A sector which will negatively affect their performance and subsequently their hiring (figure 3).

From figure 3, it can also be noticed that the average wages of women in the T&A sector is lower than that for men, where women's participation rate in the industry is 14 percent in 2008 (table 1). This indicates that the female participation rate in T&A is lower than that of the whole economy (22 percent). The lower average wages for women is deliberately established to compensate firms for the high benefits that the law gives to women, e.g., paid maternity and child care leaves. The paid maternity leave is one hour daily before delivering the baby and three months paid leave. The child care leave is one hour daily. So, firms opt to depress female wages and/or reduce female employment to negate the

effect of these benefits on their profitability. As evident, only 26 percent of surveyed firms in this study consider the maternity and child care leaves as a major constraint to hiring women.

Figure 3. Average Wages in the Textiles and Apparel Sector



Source: ILO Laborsta database, http://laborsta.ilo.org/STP/guest, accessed on 29th of March 2011.

Table 1. Women's Participation Rate in the T&A Industry in 2008

	Male employment	Female employment	Total employment	Women's participation rate
Private sector	50,238	9,633	59,871	16%
Public sector	57,235	9,149	66,384	14%
Total	107,473	18,782	126,255	15%

Source: Capmas (2008).

As to the minimum annual increase, according to the labor law it should not be less than 7 percent of the permanent/fixed salary unless the council decides otherwise. If the firm cannot pay the annual increase or the minimum wage due to economic conditions, it can file a complaint to the NCW to discuss the issue within 30 days. The surveyed firms who find difficulty in paying the minimum wage and the minimum annual increase (nine percent of the sampled firms, a total of 7 firms) were asked if they filed a complaint to the council. However, none of these firms complained to the National Council of Wages. As an answer for the reason behind not complaining, two firms indicated that they did not hear about the council while four of them said that they do not believe reporting a complaint would make a difference or generate a response to their complaint.

When these firms were asked how they get around the problem of payment disability, the public firm indicated that the wage deficit is covered by the holding company. Three companies said we increase the wages and give up to the status quo. Two of them said they dismiss some of the existing workers and do not hire new employees. The firms that chose to dismiss workers are small firms which indicate that they cannot bear any extra financial costs and their only solution is to fire workers. These responses highlight that despite the availability of a complaint channel, firms did not depend on it because it is either perceived as ineffective or they did not hear about it. Such rigidity has resulted in an extra burden on firms, producing lower probability of hiring, a higher probability of firing or a greater potential for extra financial burden.

2. Strikes and collective bargaining

Employees usually strike to show their disagreement with the employers' decision. Usually, they push for higher wages or to avoid a firing decision by management through strikes. The unified labor law of 2003 introduced the workers' right to strike, yet a number of restricting procedures are required to approve a strike.[9] Despite this, strikes take place where the number of strikes reached 122 in 2008 across all sectors in the economy as shown in table 2 (Solidarity report 2010). The survey results show that the main channel for calling for higher wages in the T&A industry is through strikes (reported by 61 percent of surveyed firms in this study). This is despite the fact that there is no downward flexibility (i.e., no flexibility to decrease wages). It is found that 75 percent of firms report that the wage adjustment is always upward, which implies downward nominal wage rigidity. This is due to the fact that employees are naturally resistant to nominal wage cuts, and hence employers are reluctant to impose them, particularly in light of growing cost of living. Despite the fact that there is almost no downward wage flexibility, employees form strikes to show their discontent with the current level of wages or to oppose a dismissal decision by the firm.

[9] The strike should be approved by two-thirds of the relevant general union executive committee. Afterwards, it should be ratified by the ETUF executive committee. After a strike is approved, the union must give the employer a ten-day notice. The planned duration of the strike should be announced in advance, where indefinite strikes are illegal. In addition, strikes held while collective agreements are in force or during mediation or arbitration procedures are forbidden. These conditions prohibit workers from having an effective right to strike. The law is not designed to protect workers' right to strike.

Table 2. Number of Protestors and Strikes in 2008 According to the Sector

Sector	Number of protestors	Number of strikes	Protestors per strike
Private sector	29,341	68	432
Public business sector	17,896	17	1,053
Governmental sector	15,554	37	420

Source: Solidarity report.

Employees resort to strikes due to ineffective dispute resolution regulations. Collective bargaining is not utilized, where its coverage is 2.1 percent of total employed in 2008. In addition, net union density is very low and mainly limited to public sector employees. There are 23 official trade unions, each representing a different industry or service. Labor unions' membership represents 25 percent of total employed in 2006, an increase from 23 percent in 1998[10]. Public employees' union membership represents 78 percent of total union membership in 2006. The result of the low unionization level in the private sector is a low level of law enforcement, where some firms employ workers informally to achieve more flexibility (Hayter and Stoevska 2011 and ELMPS 2006).

It is argued that collective bargaining will be less costly on firms since it will significantly decrease the number of strikes and lost working days (Lesch 2004). Strikes put a financial burden on firms. This is due to the days lost in the strikes. The number of days lost in the manufacturing sector due to the strikes is 19,420 in 2003 and the number of days not worked/lost per worker is 23 days (ILO statistics). This entails a huge loss for business. Regarding T&A sector, forty percent of surveyed firms perceive the cost of workers' strikes as a major constraint to hiring new employees.

b. Functional Flexibility

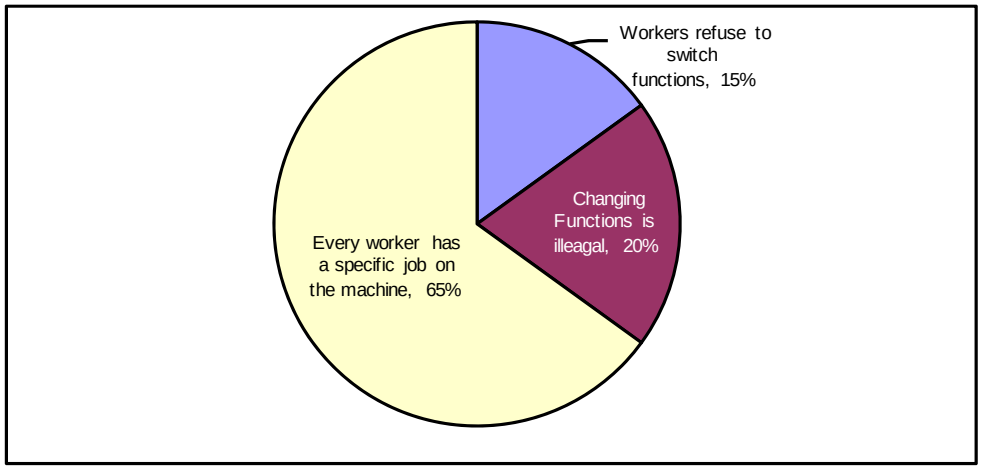
It is the extent to which employees can be transferred to perform other jobs or tasks within the same firm (i.e., job rotation and also called Inter-firm mobility). This allows the firm to have a greater adaptation capacity to unforeseen situations and changes in the environment, thereby creating a substitution system ideal in an emergency. On the side of employees, it requires a multi-skilled workforce ready to gain new knowledge and skills to face rapid technological

[10] This is out of the total sample of 6895 and 6181 who answered this question in the ELMPS of 2006 and 1998 respectively.
Egyptian Trade Union Federation (ETUF) is the only legally recognized trade union federation. Any trade union must be affiliated to the ETUF.

changes. On the side of the firm, functional flexibility requires important investments in training (Klau and Mittelstadt 1986).

The unified labor law allows for functional flexibility where it states in article no. 76 in chapter 6 that it is possible for an employer to change the job of an employee to adapt him/her to the technological change in the firm by providing them with the necessary training. As to the survey results, 79 percent of surveyed firms change the function of employees, whenever necessary, while 21 percent do not change the function of their employees. The latter group was asked about the reason behind not changing the functions of employees. As shown in Figure 4, the responses indicate that every worker has a specific job (65 percent), changing functions is illegal (20 percent) and workers refuse to switch functions (15 percent). These results show that firms do not understand that changing the functions of employees is possible under the unified labor law no. 12 for 2003. This means that despite the fact that the law allows changing the functions of employees, some firms did not benefit from this flexibility because of their ignorance of the law.

Figure 4. The Reason Behind not Changing Employees' Functions



Source: Own calculations, survey results.

c. Numerical Flexibility

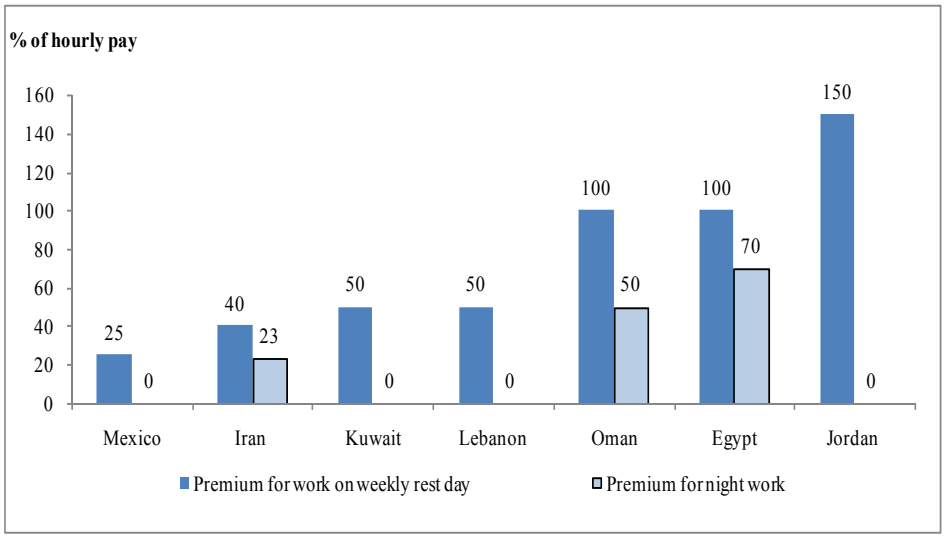
It refers to the adjustment of the labor quantity according to the production plan in the firm, through hiring/firing of employees or adjusting working hours. In particular, a firm can easily increase or decrease its total number of workers in the short term to accurately achieve an exact coincidence between the needed workforce and those who are effectively employed. This type of flexibility is normally achieved through the use of different types of contracts and

relaxed hiring and firing regulations (external numerical flexibility) and variations in working time (i.e., internal numerical flexibility) which may facilitate the introduction of shift work, six days workweek or continuous workweek (Klau et al. 1986).

1. Overtime regulations

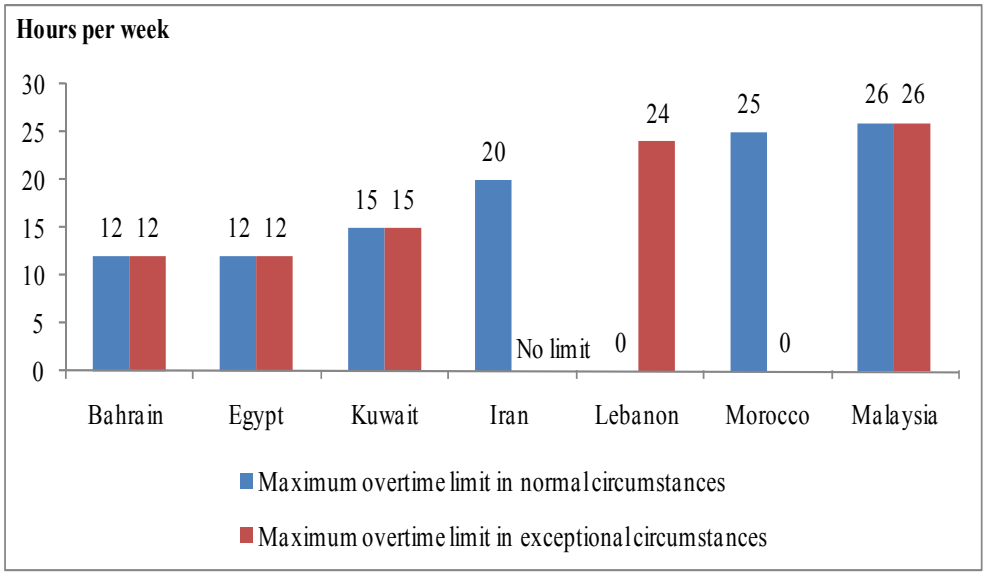
The unified labor law sets the rules for the normal working time and the overtime. The normal working hours set by the law is 8 hours per day. The overtime premium in Egypt is too high and generous, in comparison to other countries, particularly the premium for night work or on weekends (Figure 5). In addition, it has the lowest maximum overtime limit across these countries, 12 hours per week, which is far below the limit in other countries (Figure 6). This negatively affects flexibility of doing business, and therefore, obscures hiring decisions. According to the survey results, 44 percent of firms perceive the overtime cost as hindering employment of new workers, hence affecting the hiring decision. The firms find their only solution is hiring employees informally or increasing the shift beyond the hours stated by the law. This is evident in the private sector where some employees work a 12-hour shift (ILO statistics 2010). This shows that the rigidity of the labor law results in low compliance rate.

Figure 5. Overtime Premium for Night Work and Work on Rest Days



Source: Doing business 2011, World Bank.
Note: In all of the above mentioned countries, the working week is 6 days with the standard working day in the manufacturing sector 8 hours a day with the exception of Oman with 9-hour a day.

Figure 6. Maximum Overtime Limit in Natural and Exceptional Circumstances



Source: Doing business 2011, World Bank.
Note: In all of the above mentioned countries, the working week is 6 days with the standard working day in the manufacturing sector 8 hours a day with the exception of Oman with 9-hour a day.

2. Social security

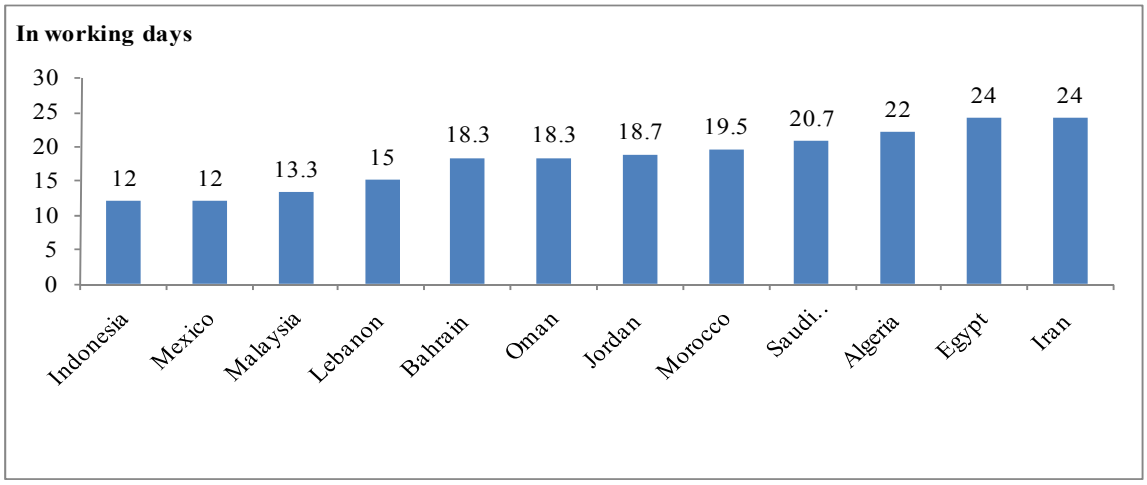
In the old law, the contribution rate of the employer and the employees for social security (i.e., old age, disability, unemployment insurance, sickness and work injuries) were 26 and 14 percent out of the total wage insured on. The new law no.135 for 2010 decreased these rates to be 16 percent for employers and 9 percent for employees, and it will be effective starting year 2012. Based on the old rates, 39 percent of surveyed firms see the social security requirements as a major constraint to hiring. In addition, 13 percent of surveyed firms said that there are employees willing to work for less social security benefits (i.e., informally). The surveyed firms were asked if social security contributions were decreased, how many employees will be hired. The mean of the increase in employment is almost 31 percent of the current employment. As suggested by the responses of the surveyed firms, introducing these new social security rates will decrease the hiring costs which will result in higher compliance rate, formalization of jobs and creation of new jobs.

3. Paid leaves and vacations balance

The figure below shows that the average paid annual leave for workers with 1, 5 and 10 years of tenure is 24 working days in Egypt which is the highest and the most generous annual leave compared to other countries. In addition, the national holidays (a maximum of 13 days a year according to the unified labor law) and the sick leave should be added on to this figure to

measure the extent of the generous leave policy. This puts a burden on employers. This is in line with the survey results showing that 58 percent of firms consider annual and sick leaves as a major constraint to hiring new employees.

Figure 7. Paid Annual Leave (Average for Workers with 1, 5 and 10 Years of Tenure)

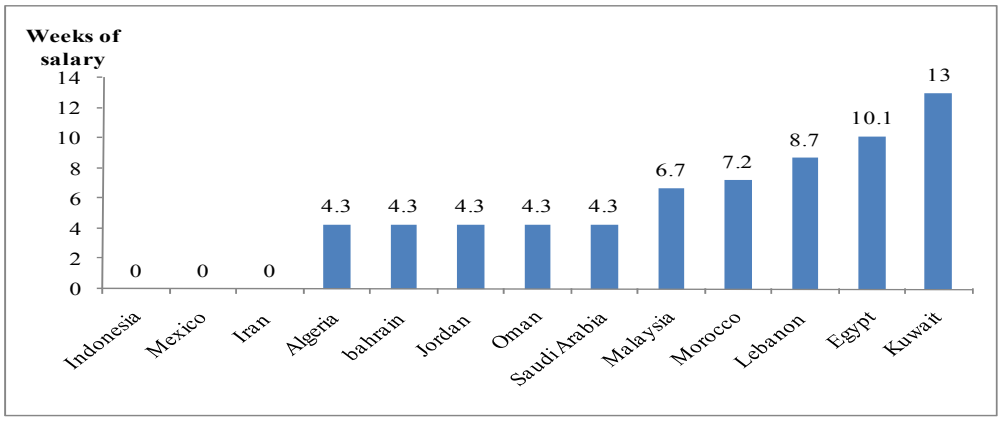


Source: Doing business 2011, World Bank.

4. Firing constraints

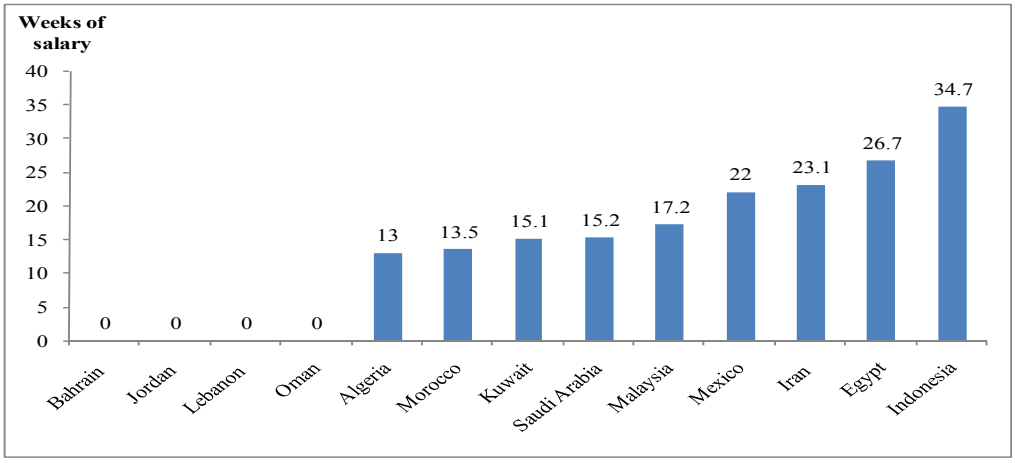
According to the labor law, the notice period is two months for an employee who passed less than ten years in the company, while it is 3 months if the period the employee has worked in the company is more than 10 years. As shown in Figure 8, Egypt's notice period and pay are one of the highest across a number of countries where the average notice pay for workers with 1, 5 and 10 years of tenure is 10 weeks of salary. Regarding the severance pay, it is also one of the highest where the average severance pay for workers with 1, 5 and 10 years of tenure is 27 weeks of salary (Figure 9).

Figure 8. Notice Period for Redundancy Dismissal



Source: Doing business 2011, World Bank.

Figure 9. Severance pay for Redundancy Dismissal



Source: Doing business 2011, World Bank.

These high dismissal costs constrain the layoff of workers as indicated by firms in the survey results. As evident, regarding the high notice pay and severance pay, 80 percent of firms see the advance notice requirements as a major constraint while 78 percent of firms see the severance payments as a major constraint. This increases the burden on employers, so they either fire workers informally or resort to fixed-term contracts and minimize the number of years the workers renew in the firm. The high notice period and cost is due to ineffective unemployment insurance scheme. So it is a way of protecting the rights of workers. At the same line, the high severance payment is due to the low level of social security, thus it is a way of protecting workers as well.[11]

5. How do you cope with these constraints

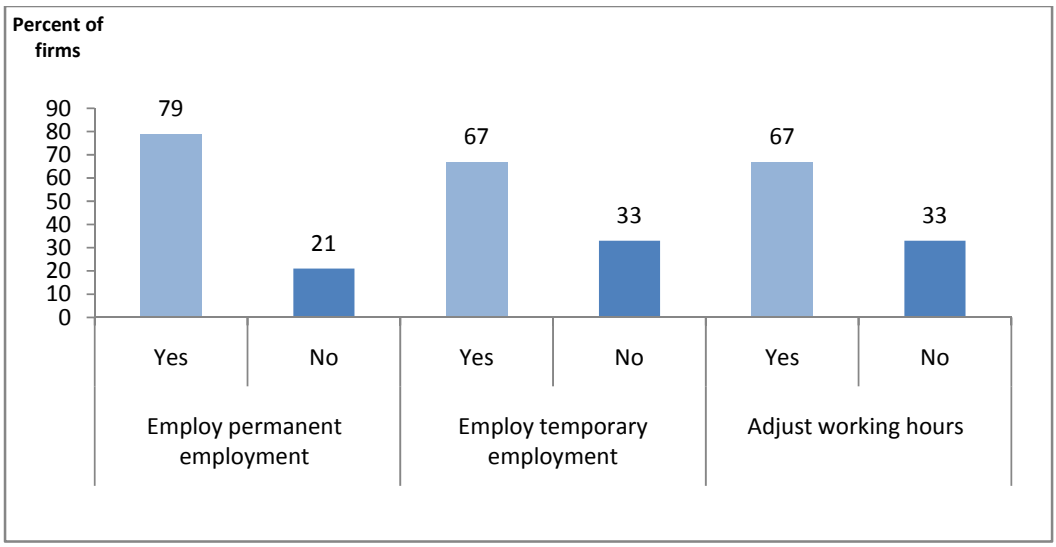
Given the constraints of hiring and dismissal, which method do you apply to balance between production plans and demand for labor? As shown in figure 10, 79 percent of surveyed firms employ permanent employment[12] while 67 percent use temporary employment or adjust working hours. The firms that reported no hiring of temporary employment or adjusting working hours (33 percent) were asked about the reason behind this. They cited reasons behind not employing temporary workers that include the high training cost (16 percent of surveyed firms) or preference to employ permanent employees (24 percent). The reason

[11] There is a maximum for social security payments, regardless of the worker's pay, which should be revisited in line of the increase in the cost of living.

[12] Permanent employment hereafter is defined as those with fixed term contracts and indefinite contracts. This excludes the temporary employment that is for less than a year.

behind not adjusting the working hours for more flexibility is that working hours are fixed according to the labor law.

Figure 10. How Do You Adapt your Employment to a Change in Production Level?



Source: Own calculations, survey results.

IV. The Effect of Labor Market Regulations on Employment

a. Effect of Regulations on Employment of Different Groups

Some econometric models are estimated using a cross section data set of the 75 surveyed firms. Separate regressions are executed to identify the effect of rigid labor market regulations on the employment level across firms and possible variation in the effect on employees based on gender and type of contract. In order to do this, we estimate the following linear model using Ordinary Least Squares method:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon$$

Where the dependent variable (Y_i) is total employment in 2009 for firm i. The independent variables are total investment in 2008 for firm i (X_{1i}), the percent hiring procedures present a constraint (X_{2i}), the percent firing procedures present a constraint (X_{3i}), where the higher the percentage the more it represents a constraint to the hiring and firing procedures for the firm. In addition, the function has a constant (α) and the error term (ε). In separate regressions, the dependent variable is changed to women employment, male employment, temporary employment and permanent employment in order to see how the regulations affect the

employment of these groups differently. Total investment is expected to have a positive relation with total employment, while the hiring and firing constraints are expected to have a negative effect on employment in the firm. Furthermore, it is expected that the effect of labor regulations is stronger on females than males.[13] As the correlation matrix illustrates, there is no substantial correlation among any pair of explanatory variables simultaneously used in our model (Appendix 1, table 2).

Table 3 represents the main results for the model regressing employment on labor constraints and lagged investment. Regarding total employment, the hiring constraints are significant while the firing constraints are insignificant. The hiring constraint coefficient is negative, as expected, which shows the negative relationship between the hiring constraints and total employment. This means that relaxing hiring constraints will result in an increase in total employment. As for permanent employment, the hiring constraints are significant while the firing constraints are insignificant. This indicates that the hiring constraints negatively affect permanent employment, especially due to the burdensome hiring requirements, such as the social security requirements.

The next step is differentiating between the effect of the regulations on the employees with fixed-term contracts as opposed to those with indefinite contracts. The hiring constraints are significant for those employed on a fixed-term contract and not for those with an indefinite contract. This can be justified by the fact that the cost of hiring is divided over a longer period of employment for those employed with an indefinite period. In addition, the turnover cost is zero given the nature of the contract (i.e., unlimited).

The Egyptian legislation grants the right to equal treatment to fixed-term workers and workers hired for an indefinite period of time with regard to access to pension schemes and other social benefits. Yet, doubts may easily be expressed on the actual application of this norm, given that private companies do not always provide benefits related to social protection. When the hiring regulations are too burdensome, this decreases the compliance rate and hence increases informality of employment. Hence, relaxing hiring burdens will have a positive effect on the level of fixed-term employment, which will help in formalizing a number of jobs resulting in stable options for employees.

[13] This has been identified by Feldman, H. (2008) and Amin, M. (2008).

Table 3. Effect of Labor Regulations on the Whole Sample

Variable	Total employment	Permanent employment	Fixed contracts	Indefinite contracts	Women employment	Male employment
Constant	-2.527 (0.6854) *	-2.222 (0.7316) *	2.172 (1.086)***	-0.7915 (0.9342)	-3.4060 (0.9485) *	-2.803 (0.7483) **
Investment	0.8253 (0.1064) *	0.7931 (0.1137) *	0.3817 (0.1619)**	0.8553 (0.1392) *	0.7955 (0.1473) *	0.8572 (0.1162) **
Hiring constraints	-0.0050 (0.0028) ***	-0.0076 (0.0031) **	-0.0174 (0.0055)*	-0.00617 (0.00384)	-0.0030 (0.0039)	-0.00554 (0.0030) ***
Firing constraints	-0.0027 (0.0030)	-0.0034 (0.0032)	0.0106 (0.00818	-0.0011 (0.0040)	0.0007 (0.0042)	-0.00417 (0.0033)
R^2	0.5791	0.5686	0.6202	0.5602	0.3769	0.563
N	55	51	18	40	55	55

- Bracketed magnitudes are the standard errors of estimated coefficients.
- All standard errors are robust. Employment and investment are in natural logarithm forms. Employment value is for 2009, while, investment is for year 2008 since it has a lagged effect on employment.
- * indicates 1% significance level, ** indicates 5% significance level while *** indicates 10% significance level.

The hiring constraints are not statistically significant for women's employment. This is consistent with the fact that 74 percent of surveyed firms do not see the regulations governing the employment of women as a major constraint (namely, obligatory maternity leave with pay and child care leave). Furthermore, the average wage for women is lower than that of men. This offsets the hiring burden and the extra cost incurred in maternity leaves and other vacation balances. As evident, the hiring constraints are statistically significant for males with a negative effect on their employment level.

The firing constraints are insignificant for all the groups examined, as shown in Table 3. This is due to the flexibility introduced in the unified labor law, where firms can lay off employees due to economic reasons as well as misbehavior, subject to providing a notice period. In addition, some firms oblige employees to sign their resignation letters upon appointment to avoid the requirements of the notice period and pay. Moreover, the use of fixed-term contracts further eases the firing procedures.

The analysis is further taken to identify the effect of regulations according to ownership structure. However, the model is replicated only for private firms, since it is not possible to estimate the regression for public firms due to the limited number of observations. Regarding the effect of hiring and firing regulations on employment in the private firms (table 4), it is the same as the effect on the total sample. Hiring constraint is statistically significant for total employment with a negative impact on total employment and the firing constraint is statistically insignificant. Furthermore, the hiring constraint is statistically significant with a negative effect on private permanent employment. Regarding the differentiation across fixed

and indefinite contracts, also the results are robust for the sample of private firms. As regards to female employment, the hiring and firing constraints are insignificant for private firms, in line with the larger sample results. On the other hand, the hiring constraints are statistically significant for male employment, with a negative effect. The robust evidence reflects the dominant share of private firms in the sample (86 percent of the sample). Further, the evidence reflects the adverse effects of hiring and firing rigidity on employment in the private sector. Indeed, the high level of informal employment in the private sector (18 percent in non-agriculture private firms in 2009), which has been cyclical and growing, indicates the adverse effects of rigidity in the labor market at large.

Table 4. Effect of Labor Regulations on Private Firms

Variable	Total employment	Permanent employment	Fixed contracts	Indefinite contracts	Women employment	Male employment
Constant	-2.4871 (0.7711) *	-2.0197 (0.8273) *	2.528 (1.8353)	-0.6367 (1.0583)	-3.564 (1.1091) *	-2.602 (0.8144)*
Investment	0.8306 (0.1193) *	0.7744 (0.1276) *	0.32714 (0.2783)	0.8501 (0.1581)*	0.81527 (0.1716) *	0.8486 (0.126)*
Hiring constraints	-0.0051 (0.0031) ***	-0.00813 (0.0034) **	-0.0189 (0.0083)**	-0.0068 (0.0042)	-0.00215 (0.00447)	-0.0067 (0.0032)**
Firing constraints	-0.0035 (0.0031)	-0.0042 (0.0033)	0.0118 (0.0096)	-0.0022 (0.0041)	0.0007 (0.0044)	-0.005 (0.0032)
R2	0.5808	0.5709	0.6212	0.5587	0.3552	0.5846
N	48	45	17	35	48	48

- Bracketed magnitudes are the standard errors of estimated coefficients.
- All standard errors are robust. Employment and investment are in natural logarithm forms. Employment value is for 2009, while, investment is for year 2008 since it has a lagged effect on employment.
- * indicates 1% significance level, ** indicates 5% significance level while *** indicates 10% significance level.

The same model is repeated to measure the effect of the independent variables on total, permanent, and male and female employment in small and medium-sized firms, in contrast to their effects on large firms. The goal is to identify variation in the effect of labor market rigidity on these groups according to firms' size in these two models (small and medium size firms vs. large firms). However, the effect cannot be identified according to contract type (fixed and indefinite contracts), where the model turned to be insignificant for these dependent variables.

Regarding the small and medium-sized firms, the results in Table 5 show that the firing constraints are statistically insignificant for all groups tested, while the hiring constraints are significant for total employment and permanent employment. This indicates that the hiring constraints (i.e., social security requirements and the minimum wage) burden small and medium-sized firms, as suggested by the literature. Yet, in this group, there is no clear

difference of the effect of these constraints based on gender. Hence, small and medium enterprises, which account for 75 percent of total employment in the T&A sector, could mobilize additional employment, provided that labor market rules governing their activity are less rigid.

Table 5. Effect of Labor Regulations on Small and Medium-Sized Firms:

Variable	Total employment	Permanent employment	Women employment	Male employment
Constant	-0.2107 (0.5608)	0.2632 (0.7259)	-1.459 (1.1931)	-0.3793 (0.7877)
Investment	0.3263 (0.0969)*	0.2627 (0.1286)**	0.4015 (0.2062)***	0.3344 (0.1361)**
Hiring constraints	-0.0025 (0.0018)***	-0.0055 (0.0025)**	-0.0008 (0.0040)	-0.0032 (0.0026)
Firing constraints	-0.0006 (0.0017)	-0.00124 (0.0022)	-0.00096 (0.0037)	-0.00122 (0.0024)
R^2	0.3064	0.2411	0.1125	0.2044
N	35	32	35	35

- Magnitudes in parentheses are the standard errors.
- Employment and investment are in natural logarithm forms. Investment is for year 2008 since it has a lagged effect on employment.
- * indicates 1 percent significance level, ** indicates 5 percent significance level while *** indicates 10 percent significance level.

As regards to large firms (Table 6), the hiring constraints are insignificant suggesting variation in their effects according to the firms' size. The hiring constraints do not have an effect on large firms, while burdening small and medium-sized firms. Regarding the firing constraints, they are significant only in the case of women employment, yet with an opposite sign. This means that increasing the firing regulations is accompanied by an increase of women employment. The reason behind this is two folds. First, this might be attributed to the fact that firms operating on a large scale find alternative ways to avoid the burdensome of labor regulations. Second, they resort to less expensive labor as the firing constraints become more expensive and binding, i.e. hiring more women where the average wages of women in the T&A industry is lower than that of men, mitigating the burden of firing regulations.

The fact that hiring regulations are insignificant on employment in large firms indicates that the cost could be easily accommodated with the increase in available financial resources, which are significantly larger for larger size firms.

Table 6. Effect of Labor Regulations on Large Firms

Variable	Total employment	Permanent employment	Women employment	Male employment
Constant	-0.4050 (1.3401)	-0.475 (1.2164)	-2.2702 (1.8819)	-0.5079 (1.3959)
Investment	0.5125 (0.2039)**	0.4737 (0.1850)**	0.5746 (0.2864)***	0.52801 (0.2124)**
Hiring constraints	-0.0047 (0.0047)	-0.0054 (0.0047)	-0.0050 (0.0066)	-0.0043 (0.0049)
Firing constraints	0.0044 (0.0076)	0.0066 (0.0071)	0.0237 (0.0107)**	-0.00062 (0.0079)
R^2	0.2911	0.3234	0.3211	0.2934
N	20	19	20	20

- Magnitudes in parentheses are the standard errors.
- Employment and investment are in natural logarithm forms. Investment is for year 2008 since it has a lagged effect on employment.
- * indicates 1% significance level, ** indicates 5% significance level while *** indicates 10% significance level.

As indicated in these regression results, some firms are not affected by labor regulations, as follows. First, firms can substitute temporary workers for permanent workers, where 30 percent of employees in the sample are temporary, thus avoiding the burden of regulations. Second, firms can avoid the enforcement of regulations by employing workers informally. As indicated before, Egypt has a large informal economy. Firms may be able to substitute informal workers for formal hiring, thereby avoiding the regulatory costs. As evident in the sample, 9 percent of surveyed firms do not use contracts while 7 percent of firms are faking the contracts for social insurance needs. This is due to high social security costs and requirements, as discussed above. The combined evidence suggests that the compliance rate to the law is a function of the burden of the instituted regulations; higher burdens deter additional formal employment as the evidence has indicated.

b. If Labor Regulations Were More Flexible

Having identified the effect of labor regulations on employment, the investigation turns to an estimation of job creation and destruction in addition to the change in net employment if the labor regulations were made more flexible.

In order to measure the effect of labor market rigidity on employment, the surveyed firms were asked: "how many employees will your firm hire/fire if labor regulations were made more flexible?" As shown in Appendix 2, the responses of surveyed firms were used to calculate the net change in employment, creation and destruction if labor regulations were

made more flexible. These values are aggregated to give a proxy for the net change at the industry level. As shown in Table 7, aggregate T&A employment would increase by 1.09 percent, if labor regulations were made more flexible. This increase will be accomplished by 1.10 percent increase in job creation, partially offset by 0.01 percent in additional job destruction. The results are fairly similar across spinning & weaving and apparel.

There are, however, important differences by size. The net employment change that would occur if labor regulations are more flexible would be 0.96 percent for small firms, 0.07 percent for medium-sized firms and 0.07 for large firms. In support of the econometric evidence above, rigid labor regulations have a larger effect on small firms in terms of net employment growth. This is due to the size limitations as small firms employ less than 50 employees, increasing the cost per employee of regulation, compared to medium and large firms. In addition, small T&A firms employ 66 percent of the total industry employment in 2008, while medium and large firms employ only 9 percent and 25 percent, respectively (CAPMAS 2010). Together with the analysis in the previous section, the evidence illustrates that inside the small and medium group of firms, small firms are affected more, than medium or large firms, by regulations. Therefore, the impact of hiring and firing rigidity on employment in the T&A industry is quite large. This result is consistent with the conclusion of Pierre and Scarpetta (2004) and Kaplan (2008) who find that small firms are the most negatively affected by the rigid labor regulations, than large or medium sized firms.

Table 7. Change in Employment If Labor Regulations are More Flexible

Percent	Change in total employment	Employment creation	Employment destruction
Total	1.095	1.101	0.007
According to Size			
Small	0.956	0.963	0.007
Medium	0.066	0.066	0.000
Large	0.072	0.072	0.000
According to Ownership Structure			
Private	0.680	0.693	0.007
Public	0.408	0.408	0.000
According to the Industry			
Apparel	0.476	0.482	0.006
Spinning and weaving	0.450	0.450	0.000

Source: Own calculations; methodology in appendix 1 by Kaplan, S. (2008).

Regarding ownership structure, private firms are more affected by rigid labor regulations. The increase in total employment is 0.68 percent, reflecting an increase of 0.69 percent in additional job creation, offset by 0.007 percent in additional job destruction. As for public firms, regulations are less effective. The increase in total employment is only 0.408 percent. This is due to the fact that public firms are always backed by the holding company that can pay for any deficit or losses, resulting from the costs and burdens of regulations. These numbers indicate that there will be a change in net employment as a result of more flexible labor regulations, reflecting largely a change in the level of job creation and, to a lesser extent, a change in the level of job destruction.

V. Proposals for Enhancing Labor Market Flexibility in Egypt

Finding the right mix between flexibility and security, which is recently known as "Flexicurity", is important for improving the performance of the labor market. Some regulations need to be revisited by policy makers to reach a balance between workers' rights and achieving flexibility in doing business. This would be a step towards mobilizing demand for employment and increasing the scope of creating formal jobs. These reforms should be coupled with effective institutions and coherent active labor market policies (Bassanini and Duval 2006; Boyer 2006).

In order to achieve flexibility, Egypt's hiring and firing regulations need to be revisited since they are too generous to employees and burdening the employers. The notice pay and the severance payment are too high in Egypt, compared to other countries, suggesting a scope for reforms. In addition, the government should speed up the implementation of the new social security rates. The lower rates will result in increasing the compliance rate, which will have positive effects on government revenues and on job creation in the private sector. For the government, the higher compliance rate will increase formality and, therefore, revenues that could be made available in support of the social agenda. For private firms, lowering the social security contributions will decrease the hiring costs and is expected to increase the level of job creation, decreasing unemployment and vulnerability in the informal market.

While trying to make the regulations more flexible, the varying effects of these regulations on firms should be taken into consideration. The evidence indicates hiring and firing regulations have had different impacts on firms, according to the firms' size and ownership. As indicated by the quantitative analysis, small and medium firms were more

affected by the burden of regulations than large firms. Also, private firms were more adversely affected than public firms. This is because large firms can always find loop holes to ensure flexibility, without jeopardizing financial stability. Similarly, public firms have the benefit of the support of the holding company on financial issues, reducing the risk of compliance to rigid rules. The hiring and firing regulations should be tailored to size and should not be unified across heterogeneous firms.

Survey results have shown that a number of firms were not aware of the regulations which created rigidity in the application of the law. To avoid this false rigidity, there should be awareness campaigns to educate firms and workers about pending changes in laws and regulations and the added benefits to workers and firms. In addition, the role of the National Council for Wages should be well publicized and integrated in the public debate to increase consensus building and public awareness of timely and important legislative reforms.

In order to achieve security, complementing the flexibility in the labor market with some targeted and well established security systems and active labor market policies (ALMPs) is better than holding on labor market rigidities in the name of job security. The unemployment insurance (UI) scheme is necessary to protect people in periods of unemployment, as a result of flexible firing regulations. Moreover, ALMPs are required to better direct workers to new jobs and reduce the mismatch between labor demand and supply. These programs make sure that the labor force has the required skills so that they are qualified to change jobs and easily find other jobs when dismissed, hence reducing the risks of future unemployment. Bassanini and Duval (2006) find that increasing spending on ALMPs would reduce the unemployment rate. In Egypt, ALMPs are not effective in creating and matching jobs due to the dispersion of the programs and lack of coordination across them. These skill training programs and matching programs need to be improved and coordinated to achieve more labor flexibility (El-Megharbel 2007). UI and ALMPs will be considered as the security buffer for those opposing labor market reforms that might result in increase in number of dismissals in the short-run.

Furthermore, the voice of employees should be channeled through institutionalized labor unions, instead of resorting to strikes. In order to avoid the high costs of strikes especially in the T&A industry, it is crucial to develop and strengthen the role of unions that channel labor demands in a peaceful manner. Collective bargaining and social dialogue is

much more beneficial for intermediation and protecting workers' rights. Collective bargaining between employers, workers and the government help resolve differences towards finding appropriate solutions to the crisis, reduce social unrest and ensure the smooth functioning of flexible labor markets. The role of these intermediaries should be organized, supported and facilitated in order to achieve the best out of the increased flexibility of labor market laws (ILO 2010).

Mobilizing additional employment in private small and medium enterprises, which carry the largest scope of mobilizing large employment in the short-term, requires relaxing rigidity governing hiring and firing rules in the labor market. This should be enhanced via an efficient unemployment insurance system and active labor market policies that back up the flexibility in the labor market. In addition, employees should be able to channel their voices through effective labor unions rather than resorting to strikes. This should top the agenda of labor market reforms post the January 25 revolution.

VI. CONCLUDING REMARKS

The labor market in Egypt suffers from a number of rigidities even after the introduction of the unified labor law for 2003. These rigidities have adversely affected the function of the labor market. It can be seen that some of these rigidities have been created in the application of the law and are not engraved in it. In other cases, the law provides very generous benefits in the name of job security to employees which have hindered growth of jobs in line with productivity and increased incentives for informality. Hence is the need to address sources of inflexibility and inefficiency via a comprehensive structural reform agenda that aims at mobilizing job growth and closing the gap between supply and demand in the Egyptian labor market. If higher flexibility is achieved, we expect an increase in total employment in line with higher productivity over time. This is particularly true for private small and medium firms which are highly burdened by existing labor regulations, which have increased discrimination against their activity.

The workers' desire for job security should not come at the expense of flexibility in the labor market to protect the rights of the unemployed and the underemployed and increase job opportunities in line with productivity indicators. Policy makers should aim at striking a better balance between labor market flexibility and job security via mobilizing active labor market

policies that would ensure a sustainable balance between short-term concerns about social justice and long-term vision for economic growth.

Appendix 1

Table 1. Descriptive Statistics

		Percentage that indicates the hiring constraint	Percentage that indicates the firing constraint	Total employment 2009	Total women employment 2009	Total investment 2009
All firms (62 firms)	Mean	58	38	594	92.64	2647482
	Std.	24	24	2471	182.514	6491963
	Min	20	20	9	1	15000
	Max	100	100	19200	960	40000000
Small firms (34 firms)	Mean	64	43	23	9	372586
	Std.	22	27	10	7	411336
	Min	20	20	9	1	15000
	Max	100	100	45	25	2000000
Medium-sized firms (7 firms)	Mean	46	37	78	29	1451429
	Std.	19	24	36	30	1679191
	Min	20	20	50	5	110000
	Max	60	80	150	80	5000000
Large firms (21 firms)	Mean	53	30	1690	216	6364700
	Std.	26	16	4089	247	9893923
	Min	20	20	95	3	357000
	Max	100	80	19200	960	40000000
Public firms (6 firms)	Mean	70	30	277	76	9303400
	Std.	24	11	410	98	17200000
	Min	20	20	10	3	200000
	Max	80	40	900	210	40000000
Private firms (56 firms)	Mean	57	39	650	98	2068204
	Std.	24	25	2643	194	4281282
	Min	20	20	9	1	15000
	Max	100	100	19200	960	25000000

*****The number of firms is less than the size of the total sample number due to missing observations (i.e., some firms did not answer some questions).

Table 2. Correlation Matrix

	Hiring constraints	Firing constraints	Investment level
Hiring constraints	1.000		
Firing constraints	-0.0359	1.000	
Investment level	-0.0355	-0.1896	1.000

Appendix 2

In order to calculate the net percentage change in employment, creation and destruction, we begin by defining some terms. Let the subscript i indicates the firm. Specifically, consider the following definitions:

$empl_i$ = the number of total employment in 2009 in firm i;

$hire_i$ = the number of employees that firm i would have hired in absence of rigid labor regulations;

$fire_i$ = the number of employees that firm i would have fired in absence of rigid labor regulations;

$Empl' = empl_i + hire_i - fire_i$

Empl' is the number of employees that firm i would have hired in absence of rigid labor regulations.

Net percentage change in employment $= 100 * W_i * \frac{empl - empli}{\frac{empl\ dash + empli}{2}}$

The numerator of the formula is the amount of increase in total employment if labor regulations had been more flexible. The denominator of the formula is the average of the two employment observations.

Wi is defined as employment in firm i divided by total industry employment. This indicates how many firms are represented by firm i. This shows the weight of firm i in the population in order to give an approximation of the effect on the whole population.

$create_i = \max(0, hire_i - fire_i)$

$Create_i$ is the number of jobs that will be created in the absence of rigid labor regulations. This is used to calculate the percentage of job creation as follows:

Creation percentage= $100 * W_i * \frac{createi}{\frac{empl + empl}{2}}$

Creation percentage is the sum of all increases in firm level employment as a percentage of total employment.

$destroy_i = \max(0, fire_i - hire_i)$

$destroy_i$ is the number of jobs that will be destroyed in the absence of rigid labor regulations. This is used to calculate the percentage of job destruction as follows:

Destruction percentage= $100 * W_i * \frac{destroyl}{\frac{empl + empl}{2}}$

Destruction percentage is the sum of all decreases in firm level employment as a percentage of total employment.

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