Labor Market Program and Informality in Algeria

by

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Abstract

Does the intermediation on labor market reduce informality? This paper examines the effects of Action Plan for Promoting the Employment and Fighting the Unemployment adopted by the Algerian government in 2008 on the informality. Using the cross section data derived from household workforce surveys conducted by the ONS from 1997 to 2010, and Difference-in-Difference estimator that measures the difference in the before and after the plan, we identify the impact on the probability to get an informal job for the employee, and the impact on the administrative and taxes registration for the self-employment. Our result show that the Action Plan has contributed to reduce the informality but with heterogeneous effects. More precisely, it has a negative impact on being in the informal employment for the employees who are working in the establishments of 10 workers and more but no significate effect for who are working in those of 5 to 9 workers. For the new workers, the impact is not very significate. The plan has also contributed to reduce the informal sector, but only for the enterprises for 1 to 4 workers comparing with those of 10 and more; no impact on the enterprise of 5 to 9 workers.

Keywords: Algeria, Informality, Labor market program

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1. Introduction

Following the application of the Structural Adjustment Program (SAP) during the period 1990-1994, Algeria has experienced significant changes in their employment situation (CNES 1998). Including the arrival each year on the labor market of a considerable number of young people[3], the development of women activity and increased layoffs resulting from economic restructuring, particularly in the public sector. These developments have led to a significant increase in unemployment, the development of the informal sector and the emergence of new forms Job. Increasing youth unemployment and, in recent times, that of young graduates, is both a shortfall in economic, a social factor of destabilization and insecurity a political element.

Faced with this situation, the Algerian government undertook a number of labor market interventions, which entailed both changes in labor policies as well as in the institutions that implement them. The interventions consist mainly of active labor market programs, such as wage subsidies for new entrants and vocational training programs, as well as passive measures, such as assistance for retrenched workers and the unemployed. All these programs attempt to improve the intermediation process in the labor market to better match labor supply and demand (Barbier 2007).

There is an extensive debate in the labor market literature about the merits of labor market regulations and interventions. Some argue that labor market regulations harm economic efficiency and are therefore an impediment to growth. Others argue that they are essential to correct market imperfections and achieve redistribution goals (for an excellent review of this debate, see Freeman, 2005).

Since the end of 1996, Algeria has opted to undertake the interventions mentioned above under the auspices of the Ministry of Labor. Other players in this arena include the National employment Agency (ANEM), the National Agency for Microcredit (ANGEM), established in 2004, and the National Agency for Support to Youth employment(ANSEJ), created in 1996 and which became operational in 1998. In addition, the National Unemployment Insurance Fund CNAC was established in 1994 and subjected to major reforms in 2003. The Ministry of National Solidarity undertakes additional interventions linked to fighting poverty (in cooperation with the ANGEM and the Agency for Social Development (ADS) Besides these agencies, other ministries that have some role in employment policies include the Ministry of Agriculture, the Ministry of Industry and Promotion of Investment, the National Agency for Development of Small and Medium Enterprises (ANDPME), established in 2005, and the National Agency for the Development of Investment (ANDI). ANEM and ADS provide placement services for the unemployed (ANEM and ADS). ANSEJ, CNAC and ANGEM promote the creation of new economic activities. ANDI and ANDPME are engaged in investment promotion.

Despite all these interventions, the unemployment rate in Algeria remains high, albeit declining somewhat. In 2001, the unemployment rate was 26%, with 2.3 million unemployed individuals. It began declining in 2002 and by 2007, it had reached 15.9%, with 1.6 million unemployed individuals.This decline remains insufficient given the Ministry of Labors target of 10%

[3] The average rate of growth of the population of working age between 1996-2002 was 3,4 % (Hammouda and Souag ,2007.). The female labor force participation rate was 9.2 % in 1990 and increased to 17.1% in 2000 (Hammouda and Souag, 2007).

unemployment (Ministry of labor 2008). In addition, the growth of the informal economy has not slowed down. It is noteworthy that the recent job creation, which aims to reduce the unemployment rate by increasing the number of jobs covered by the more flexible definite duration contracts. In the face of a shrinking supply of formal jobs in the aftermath of the 1990s economic crisis, informal employment has grown in importance. Its growth can be explained by the inability of the formal sector to create enough jobs for the massive influx of young new entrants onto the labor market. The share of the informal economy, as defined by the ILO, in the non-agricultural private sector in Algeria increased from 68.5 % in 1997 to 72.8 % in 2007. According to our estimates, the number of informal workers in the non-agricultural private sector increased from 1.2 to 3.3 million between 1997 and 2007, and up to 3.9 million by 2010, representing a substantial increase in the proportion of informal employment in total employment. Informal employment increased from 21.9% of total employment in 1997 to 43.8% of total employment in 2007. By 2010, it had reached 45.60 %.

Faced with this situation, the Algerian government decided in April 2008 to implement the Action Plan for Promoting Employment and Fighting Unemployment. The principal axes of this plan were; promoting youth employment by supporting the development of entrepreneurship and by providing incentives for firms to create jobs.

Few studies who have focused on the impact evaluation of employment policies in Algeria. One attempt at an external evaluation was carried out by CNES but it did not include an impact evaluation component[4]. The World Bank (2010) also attempted to conduct an evaluation but without assesing the impact on the labor market. The ILO (2007) has undertaken a comparative analysis of labor market intermediation in the three Maghreb countries. In 2010, it put together a synthesis of labor market policies for some Arab countries including Algeria. Musette (2014), Hammouda (2009) attempted to evaluate the impact of the Algerian policies, but they only drew conclusions from aggregated data rather than microeconometric analyses. Hammouda and Souag (2007) assessed the impact of labor market flexibility, including that brought about by the 1990 reforms on the competitiveness of enterprises. Other studies focused on the measures and determinants of the informal economy: Adair (2002), Bensidoun and Souag (2013), Musette and Charmes (2006), (Adair and Bellache, 2012), (Hammouda and Souag, 2012), but not on formalization. In March 2012, for the first time, the Ministry of Commerce and the CARE club (Circle of Action and Reflection around the Company), organized the first symposium on the informal economy in Algeria. This symposium, entitled "the Transition of the Informal Economy to the Formal Economy" reflected discussions at the 2014 International Conference of Labor Statisticians. (ILO, 2014).

The contribution of this paper is to provide an empirical analysis of the impact of the Action Plan on the Formalization of the Informal economy. The basic idea is that if informal employment in Algeria is not chosen (segmentation thesis) and would be a last resort to escape unemployment (Souag, Adair and Hammouda 2016), then any economic policy implemented to combat unemployment will have a direct impact on on informality.

[4] CNES has undertaken several studies on evaluation of employment policies, 2002, 2010.

We evaluate the impact on informal employment of wage and salary workers and new employees. With regard to self-employment, we focus on the impact on the administrative and taxes registration reforms. To do this, we make use of cross section data from the national employment household survey conducted by the Algerian National Statistics Office (ONS) for the period from 1997 to 2010.We rely primarily on a Difference in Difference methodology to discern the impact of the policy. Our basic identifying assumption is that the policies should affect the formalization of the employment workers in formal enterprises (> 5 workers), but should not affect workers in informal enterprises of fewer than 5 workers.[5] We also tried to relax some of the assumotions of the DID estimation by using a local instrumental variables (*LIV*) estimator similar to that proposed by Heckman and Vytlacil (2005). But in case of the informality, it is very difficult to find instruments that satisfy the necessary exclusion restrictions.

2. Literature review and empirical tests

In the economics literature, labor market intermediation is often treated from a macroeconomic perspective[6] where the intermediation process is considered as an explanatory factor and is used to explain imbalances in the labor market. It assumes that labor market programs and institutions help match supply and demand of labor. In particular these programs act as countercyclical measures, particularly by providing some security provisions for workers (Barbier 2007).

The governments can use passive instruments to help workers deal with the risk of involuntary job loss, the short-term loss associated with not receiving labor income during unemployment, and the possible long-run losses associated with accepting jobs that pay less than previous ones. It is important to carefully evaluate the strengths and weaknesses of all options for providing income support to unemployed workers. Vodopivec (2002) identifies two main classes of performance criteria: distribution effects and efficiency effects. Distribution effects include coverage, adequacy of support, and income distribution effects. Efficiency effects include effect on job-search effort, post-unemployment wages, labor market equilibrium outcomes (i.e. employment, unemployment, and labor force participation), restructuring and overall economic adjustment, labor supply of other family members, taking jobs in the regular versus informal sector, and aggregate output and growth.

Income support policies tend to work better when complemented with effective active labor market policies. Active labor market programs include employment services, training and retraining, public works, wage and employment subsidies, and self-employment assistance. These programs are implemented to enhance labor supply (e.g., training); increase labor demand (e.g., public works, subsidies); and improve the functioning of the labor market (Beckerman and al. 2004)

In practice, the evaluation of labor policies is challenging due to the need to construct a convincing counterfactual, that which would have happened in the absence of the program (Khandker, Koolwal, and Samad, 2010). The method used must enable us to identify the causal effects of the policy and should take into account potential selection bias, subject to reasonable identification assumptions. In the literature, several methods have been proposed to deal with the selection bias problem. Rubin (1977) and Rosenbaum and Rubin (1983) propose in this context the propensity

[5] See Wahba and Assaad (2016) for a similar approach used in evaluating the effects of changes in labor regulations in Egypt.

[6] For example, the work of Pissarides (1990) evaluated the sensitivity of hiring for vacant jobs and unemployed, while those of Abraham (1983) have focused on unemployment of inadequacy resulting from frictional problems more than 'insufficient demand

score matching method. Dehejia and Wahba (1999, 2002) and Heckman, Ichimura and Todd (1997, 1998) use this method to evaluate American job training programs. Note, however, that this non-parametric method takes into account only the phenomena of selection on observables. Heckman (1976) suggests using instrumental variables to correct this problem. This method was subsequently used in Heckman and Vytlacil (2005) and Heckman, Urzua and Vytlacil, (2006). However, the difficulty in using this method lies in finding an appropriate instrumental variable. In the context of employment policies, this variable should affect the participation in the program without directly affecting the outcome variable.

Another way to deal with the problem of selection is the use of the Double-Difference estimator. This method has been widely used in the evaluation of different policies. Binswanger, Khandker and Rosenzweig (1993) used this method to estimate the impacts of rural infrastructure on agricultural productivity in India, Duflo (2001) used it for estimating the impact of school construction programs on schooling and earnings in Indonesia. Frankenberg, Suriastini and Thomas (2005) use the same method to assess the impacts of providing basic health care services through midwives on children's nutritional status (height-for-age), also in Indonesia.

Difference-in-difference methodology was also used in estimating the economic effects of employment regulations. Micco and Pages (2006) exploit time and geographical variation, as well as sector differences across countries, to implement a difference-in-differences methodology. The authors argue that by expanding the sample to developing countries and by using difference-in-differences estimation, the likelihood of omitted variable bias is reduced. They find that employment protection legislation reduces job flows, particularly in more volatile sectors. The study concludes that, by reducing the size of the most affected industries, labor regulations are likely to reduce firm entry, employment, and value added at the aggregate level. Haltiwanger et al (2006) also use a difference-in-difference approach to minimize possible endogeneity and omitted variable problems associated with cross-country regressions. The authors review the process of job creation and destruction across a sample of 16 industrial and emerging economies over the past decade. They exploit a harmonized firm-level data set from business registers and enterprise census data. Their empirical results suggest that stringent hiring and firing costs reduce job turnover, especially in those industries that require more frequent labor adjustment. Regulations also seem to distort the patterns of industry/size flows[7].

Other authors have preferred using other methods such as regression discontinuity design and fixed effects models to evaluate the impact of public programs. Krafft and al. (2015) following Khandker, Koolwal and Samad, (2010), apply regression discontinuity and fixed effect models to identify the impact of the National Initiative for Human Development (INDH), on economic outcomes and early childhood development (ECD) in Morocco. While they find some transitory impacts of the program on economic outcomes, they find no impacts on early childhood development..

Efforts to evaluate active labor market policies, in particular job training programs have been pursued in Latin America and the Caribbean. Tan and Lopez Acevedo (2003) use panel firm- level data to study in-firm training in Mexican manufacturing in the 1990s, its determinants, and its effects on productivity and wages. The authors find that over this decade, not only did the incidence of employer provided training become more widespread among manufacturing enterprises, but a higher proportion of the workforce received training within firms. Mc Ardle (2006) analyzes firm

[7] All this revue of literature comes from Ravallion (2008)

and worker training in the Caribbean and concludes that a significant amount of training is taking place in the region, both in the firms and through publicly-financed programs. Betcherman et al (2004) review the overall experience in developing and transition countries. They examine 49 evaluations of training programs primarily aimed at the unemployed. They conclude that the clear majority of subsidy programs do not appear to have net positive impacts on the longer-term employability or earnings of participants. In the case of Europe, Kluve (2006) point out that the vast majority of evaluation studies continue to focus on effectiveness at the microeconomic level. A more complete evaluation requires an investigation of general-equilibrium effects.

Wahba (2009) examined the impact of employment protection reforms on the formalization of employment in Egypt. She found evidence of positive effects two years after the introduction of the law. However to examine the long-term effects and the sustainability of those effects, Wahba and Assaad (2016) apply difference-indifference methods on longitudinal retrospective data from two suveys to show that the passage of the new labor law did in fact increase the probability of transitioning to formal employment for non-contractual workers employed in formal firms.

According to Stampini and Verdier-Chouchane (2011), most of the existing literature on employment in Tunisia adopts a macroeconomic perspective. Marouani (2010) provides a prospective cost-effectiveness analysis of the impact of alternative labor market policies using a dynamic general equilibrium model. The main finding is that a wage subsidy targeted at highly skill-intensive sectors is more effective than tax reductions or investment subsidies. Broecke (2013) adopts a micro analysis and evaluates Tunisia's largest labor market program, the SIVP: an employment subsidy aimed at university graduates. Using a tracer survey of the 2004 graduating cohort, a range of matching techniques he estimate the effect of the program on a number of labor market outcomes. The results do indicate, however, that the program is poorly targeted and hence not very cost-effective. Bellakhal and Mahjoub (2015) estimate the impact of vocational training programs offered in Tunisia on employment and wages of individuals. They use the data issued from a study carried out in Tunisia in 2001 by the ministry of vocational training and employment on the graduates of the national vocational training. The estimated model corresponds to three simultaneous equations determining the participation in training, the insertion in the labor market and the wages observed. The results show that job training in Tunisia improves employability and increases potential wages.

In Morocco, most analyses of vocational training have used primarily duration models to explore the correlates of post-graduation performance. Montmarquette and al. (1996) find that assistance with job search from a center or family members, an advanced degree, and success in school increase the likelihood of employment. Boudarbat (2007) reports that informal activities, support with job search, and father's connections accelerate hiring – he also finds that internships are more helpful for women than men. El Aoufi and Bensaïd (2005) indicate that vocational training graduates perform worse than their peers, and suggest that this is due to adverse selection into these programs.

3. The Algerian Labor Market

Following the fall in oil prices of the second half of the 1980s and the application of the structural adjustment program (SAP) in the1990-1994 period, the situation of the Algerian labor market deteriorated sharply. Among other things, labor market reforms introduced in the late 1980s allow for limited duration employment contracts and introduced the possibility of layoffs for economic reasons. This period prior to 1997 was characterized by very high unemployment rate (26.4 % in

1997) ; The loss of more than 400,000 jobs; negative economic growth (around 1.2% in 1991 - 2% in 1993 and - 0.7% in 1994) and double-digit inflation (29.8% in 1995. There was weakness in business investment particularly in terms of agriculture and construction, and depletion of foreign exchange reserves ($ 2.11 billion in 1995). All these factors, combined with the deterioration of security to influence the level of job creation and therefore the unemployment rate.

3.1 Period 1: 1997-2007

In response to the deteriorating labor market situation, the Algerian government introduced various programs, particularly targeting youth, with the objective to reduce unemployment in the short term. These programs included recruiting incentives for businesses, aid to entrepreneurship and public works programs at the community level.

3.1.1 Incentives to businesses for job creation

The Local Jobs Initiative for Employees (ESIL) aimed to provide unemployed young people with skills training and basic experience to increase their chances of finding employment. This device is intended to employ first-time job seekers among young people without significant levels of education for a period not exceeding one year. The remuneration of ESIL increased in nominal terms from 1800 dinars / month in 1990 to 2500 dinars / month in 2004. For qualified young people, among whom unemployment is very high, a specific mechanism was put in place in 1998, the pre-employment contract (CPE), enabling businesses to employ them without compensation. The state would be responsible for paying them an allowance equal to the minimum monthly wage.

3.1.2 Support for business creation

Three agencies ANSEJ, CNAC and ANGEM are involved in supporting the creation of companies. ANSEJ supports youth employment and aims to encourage the creation and expansion of production activities of goods and services by young entrepreneurs through its micro enterprise program. It offers a series of benefits[8] over a period of three years or more. Such benefits include tax exemptions on income tax, corporate tax, lump sum payments and property tax. Micro businesses are also exempt from transfer duty and registration fees for all equipment imported. The notion of young is extended in Algeria: 19-35 year-olds and up to 40 for managers. The original mission of CNAC was to grant unemployment benefits to workers who were fired for economic reasons. Since 2003[9] like ANSEJ, it has supported redundant workers aged between 35 and 50 in creating companies to produce goods and services. ANGEM has a mission is to alleviate poverty by providing microcredit to poor people. Microcredit is introduced to promoting small economic activities: self-employment, working at home, small businesses, goods and services in the craft sector, micro businesses. For the three agencies, the mode of granting credit was offered was triangular: personal contribution (1% or 2%), interest-free agency support (28% or 29%) and a bank credit on which interest must be paid (70%). The bank loan is guaranteed by a fund created by the state.

3.1.3 Public Measures to Fight Poverty

Two other public facilities have contributed significantly to an active employment policy: Interest Activities allowance General (IAIG) remunerates community service activities, such as

[8] Ordinance No 96-31 of 30 December 1996, amended and supplemented by Law No 3-22 on the Finance law 2004.
[9] Presidential Decree No 03-514 of 30 December 2003 on support for the creation of activities by older unemployed entrepreneurs aged 35 to 50.

reforestation, and Utility Works public High intensity of work force (TUP-LI). This device was launched in 1997, although it is regarded as an active form of treatment of unemployment, but it is still part of the fight against poverty by rapid creation of temporary jobs.

3.2 Period 2 : Post-2008 :

This period was characterized by an improvement in economic conditions and a return to economic growth (5% on average during the period). Inflation was under control, averaging about 2.5% per year during the period. The unemployment rate fell from 29, 3% in 1999 to 15.9% in 2007 and net job creation during the period 2000-2007 reached 3.2 million jobs. However, there were still over one million unemployed, with 70% of them new entrants to the labor market seeking their first job. Annually, about 300,000 new job seekers are added to the Algerian labor force . The government decided in April 2008 to implement the Action Plan for the Promotion of Employment and Combating Unemployment. It was based on the following elements**:**

3.2.1 Promoting Youth Employment

By establishing a new mechanism making concrete burden of employability needs of young people who constitute over 70% of the population in search of employment. It grants attention to unemployed graduates whose annual additional request is evaluated, on average, 120,000 graduates per year (Ministry of Labor 2008).

A. Support for the Development of Entrepreneurship

At the ministerial council of 19 April 2008 devoted to business creation devices and after having diagnosis all the constraints who stopped the development of entrepreneurship, it has decided to reform the quality of function of ANSEJ and CNAC devices. The reforms decided include:

1. The introduction of mixed financing system (agency-promoter) with increasing the amount of the Credit Not Paid (PNR): (70 %, 30%) and (50%, 50%).
2. Decentralization of granting state aid decisions (PNR, tax benefits, subsidized interest rates and technological premium) locally.
3. Shortening the processing time by banks to three months.
4. Motivated by the refusal of bank financing by informing the agency concerned and the promoters
5. Redirecting based on market needs and projects of local development through the exploitation of local economic potential.
6. The orientation of the micro business to the management and maintenance of real estate, tourism, environment, art crafts...

B. Support The Promotion Of Employment Employee:

The new approach to supporting the promotion of youth employment will result in the creation of a new device called : The Device Help for Professional Insertion (DAIP)" managed by the ANEM, The principal objective is fighting the employment by four new contacts to make the economic inclusion essay, other contacts (social inclusion programs) managed by the ADS designed for fighting the poverty .

Table 1 : Active Labor Market Programs

Program	Nature	Duration	Compensation	Remark
DAIP vocational integration assistance mechanism for young people, run under the Ministry of Labor, Employment and social Security, consists of three categories :				

Graduate integration contract (CID)	Intended for first-time jobseekers, graduates of tertiary education or senior technicians who receive support for their sustainable recruitment, priority within public and private economic sector	Economic enterprises: 1 year Administration: 1.5 year	University graduates: DZD 15 000 per month Senior technicians: DZD 10 000 per month The employer's contribution to social security is paid by the state.	This measure replaces the pre-employment contract for graduates (CPE).
Professional integration contract (CIP)	Aimed at young, first-time jobseekers leaving secondary education or vocational education and training (VET) centers (CFPA) (including apprentices)	Firms: 1 year, nonrenewable Public and administration: 1 year, renewable	In firms: DZD 8 000 per month In public and administration: DZD 6 000 per month The employer's share of contributions to social security is covered by the state.	At the end of the CIP contract ANEM may propose a subsidized work contract (CTA) in firms. In case of refusal, the person loses the right to remain in the CIP.
Training insertion contract (CFI)	Targets young jobseekers without training or qualifications; they are placed either in various work projects initiated by local authorities or by different sectors for the duration of the project	1 year, non-renewable	DAIP vocational integration assistance mechanism for young people, run under the Ministry of Labor, Employment and social Security, consists of three categories)	
Subsidized work contract (CTA)	Is proposed when one of the contracts cited above comes to an end (and sometimes earlier if the employer agrees)	3 years	Labor costs shared between government and employer: **CID Contract** : ***Graduates of higher education***: 1st year: 55% of the category 11, index 498;2nd: 45% of the category 11, index 498;3rd year: 35% of the category 11, index 498 ***Technicians:*** 1st year: 50% of Class 10, index 453; 2nd: 40% of category 10, index 453; 3rd year: 30% of category 10, index, 453. **CIP contract** 1st year: 47% of category 8, index 379; 2nd year: 35% of Class 8, index 379. **CFI contract 53**% of Category 3, index 252.	

Source: Musette M S, 2014, Employment Policies and Active Labor Market Programs in Algeria, European Training Foundation, 2014, Page 32 and completed from the Executives Decree.

Table 2: Passive Labor Market Programs

Program	Nature	Duration	Compensation	Remark
Social inclusion programs developed by the Ministry of National Solidarity are designed to fight poverty and youth unemployment.				
Insertion program for graduates (PID)	Targets young	1 year, renewable	University graduates:	

	University graduates and technicians without income, in precarious situations or with disabilities. Second criteria: youth aged 19-35 with no income.	once	DZD 10 000 per month Technicians: DZD 8 000 per month + social insurance paid by the government.	
Allowance for activity or community service (AIG)	Its objective is the social inclusion of disadvantaged people who are active and of employable age. It addresses the social categories that have no income.	1 year, renewable, but can be permanent in specific local circumstances	DZD 3 000 per month + social insurance paid by the government	
Social inclusion programs (DAIS) replace a local initiative for wage workers (ESIL) and compensation for workers engaged in community based activities (IAIG)	Aims to place unemployed, unqualified 18-59 year-olds in temporary positions in the private or public sector.	2 years, renewable twice	DZD 6 000 per month + social insurance paid by the state	In 2008, ESIL is integrated under this new label. IAIG is also integrated under this label since March 2012.

Source: Musette M S, 2014, Employment Policies and Active Labor Market Programs in Algeria, European Training Foundation, 2014, Page 32 and completed from the Executives Decree.

The DAIP have also introduced the contract employment / training that can lead to sustainable recruitment of the young; 60% of training costs shall be borne by the state budget within the limit of maximum 06 months.

3.2.2 Promoting a Policy of Incentives for Enterprises Engaged in Job Creation

In case of recruitment at the end of the introductory period, the economic sector employers benefic:

1- Deduction of social security contributions from 20% to 28% and 36% depending on the case, granted in the framework of the measures under law No. 06-21 of 11 December 2006 on incentives and support for the promotion of employment through support from the state budget balance of employer contributions not covered by the CNAC to reach a total exemption from Employer's contribution[10].
2- Deduction of social security contributions for one (01) year for non-employees to master artisans who recruit after the introductory period. The differential contribution will be supported by the state budget.
3- Reducing the tax on total income (IRG) and taxes on corporate profits IBS (act 59 of the law finance 2007) for four years. For the master artisans, it will be to reduce the rate at a symbolic level.
4- Lengthening IBS exemption period from 3 years to 5 years for the enterprises creating 50 to 100 jobs and 7 years for companies creating more than 100 jobs.

[10]Table A1 in appendix shows the distribution of social security contributions in Algeria.

4. Econometric Model

We are interesting in examining the effect of the action plan on reducing informality. We conduct our test on three categories of workers: employees, new employees and the self-employed. Let`s define Y_i is outcome indicator. For the employee and the new employee we focus only on the impact of the Action Plan on informal employment so, $Y_i = 1$ if the individual i has an informal employment and 0 if not, for$i = 1, \dots\dots, n$. For the self-employment, we are interesting on the impact on the administrative and /or taxes registration, so Y_i =1, if the activity i is non-registered and 0 if not, for $i = 1, \dots\dots, n$,

Let us define the dummy variable T_i indicating whether enterprise i was treated or not. It results:

Y_i^T: is the outcome indicator for the individual i under the treatment.

Y_i^c: is the outcome indicator for the individual i under the non-treatment.

The impact of the policies is given by:

$$G_i = \Pr(Y_i^T = 1) - \Pr(Y_i^c = 1) \quad (1)$$

Where $\Pr(Y_i^T = 1)$ and $\Pr(Y_i^c = 1)$ are the probabilities under the treatment and the non-treatment.

We are looking for the estimating average impacts given some characteristics, which included individual characteristics: gender, education, age,...; job characteristic : sector of activity, and the trend and some conjectural indicator like the rate of the unemployment, so we have:

$ATE = E(G/X)$: is the average treatment effect of the treated given X

$ATE = E(G/X, T = 1)$: is the expected impact of the treatment on those who are affected by the program given X .

$ATE = E(G/X, T = 0)$ is the expected impact of the treatment on those who did not participate given X [11].

The simplest method of introducing X, is assuming that the no observed latent variable Y^* is linear function of the X, s and the error terms (u^T and u^C), giving:

$$\begin{cases} Y_i^{T^*} = X_i B^T + u_i^T & T_i = 1 \quad (i = 1, \dots\dots\dots, n) \\ Y_i^{c^*} = X_i B^c + u_i^c & T_i = 0 \quad (i = 1, \dots\dots\dots, n) \end{cases} \quad (2)$$

We define the parameters B^T and B^c such that X is exogenous ($E(u^T/X) = E\,(u^c/X = 0)$ but $E(u^T/X, T = 1) \neq E\,(u^c/X, T = 0) \neq 0)$, because the selectivity. The conditional mean impacts are then:

$$\begin{cases} ATT(X) = ATE(X) + E(u^T - u^c/X, T = 1) \\ ATU(X) = ATE(X) + E(u^T - u^c/X, T = 0) \\ ATE \;=\; X\,(B^T - B^c) \end{cases} \quad (3)$$

[11] The ATE can be written as a function of the other averages: $ATE = ATT * \Pr(T = 1) + ATU * \Pr(T = 0)$

It is not possible to estimate any of these effects because we only observe Y^T for the treated $(T=1)$ and we only observe Y^C for the controls $(T=0)$ and can therefore not estimate the two equations for the entire population.

The DD estimator gives an issue. The essential idea is to compare samples of participants and non-participants before and after the intervention (two periods:$Post = 0,1$). By definition $\Pr(Y_{it}{}^T = 1) = \Pr(Y_i^c = 1) + T_{it}G_{it}$, it is assumed that we can observe T_{it}, Y_{it}^T when $T_{it} = 1$, Y_{it}^c for $T_{it} = 0$, but $G_{it} = \Pr(Y_{it}^T = 1) - \Pr(Y_{it}^c = 1)$ is not directly observed for any i. To solve the missing-data problem, the DD estimator assumes that the selection bias (the unobserved difference in mean counterfactual outcomes between treated and untreated units) is time invariant, in which case the outcome changes for non-participants reveal the counterfactual outcome changes, i.e.:

$$E[(\Pr(Y_1^c = 1) - \Pr(Y_0^c = 1)/T_1 = 1] = E\,(\Pr(Y_1^c = 1) - \Pr(Y_0^c = 1)/T_1 = 0] \qquad (4)$$

Since period 0 is a baseline, with $T_{it} = 0$ for all i (by definition), $Y_{io} = Y_{i0}^c$ for all i. Then it is plain that the double-difference estimator gives the mean treatment effect on the treated for period 1:

$$DD(X) = E[\Pr(Y_1^T = 1) - \Pr(Y_0^T = 1)/X, T_1 = 1] - E[\Pr(Y_1^c = 1) - \Pr(Y_0^c = 1)/X, T_1 = 0]$$
$$DD(X) = E(G_1/T = 1) = ATT(X) \qquad (5)$$

We do not necessary have a panel data for calculatingDD. All one needs is the set of four means that make upDD; the means need not be calculated for the same sample over time. The data over both time periods and across treatment status are pooled and one runs the regression:

$$\Pr(Y_{it} = 1) = F\,(\alpha + \beta T_i\, Post + \gamma T_i + \delta Post + \lambda X_i)\ ,\ (Post = 0,1\ ; i = 1, \ldots\ldots\ldots, n) \qquad (6)$$

Where: F is the logit cumulative function, α is a constant, β is the effect of the plan, X is a matrix of co-variables and λ are their effects.

5. Data and Empirical Specification

In this analysis, we utilize cross sectional data derived from the official labor force survey, conducted on a regular basis by the ONS. We have data from 1997 to 2010. The sample consists of a stratified random sample of households drawn from the census of population and housing (RGPH) carried out every 10 years. The purpose of this survey is to provide statistics on employment and unemployment, but it contains no information on income. In 1998, 1999 and 2000 the employment survey was not conducted because of the priority given to the implementation of the population census in 1998 and the income - expenditure survey in 2000. Implementation of the labor force survey was resumed in 2001 and the last one was conducted in April 2016[12].

Informal jobs are identified from the characteristics of employment, following the statistical definition of informal employment approved in 2003 at the 17th International Conference of Labor Statisticians (ILO, 2003). The criterion of non-affiliation to social insurance is used to identify informal workers, whether they are employees or self-employed. Unpaid family workers are included among employee, contrary to Pages and Stampini (2009) and Tansel and Kan (2012) who include them with the self-employed. The analysis is conducted excluding the agricultural sector

[12] Table A2 in appendix summarize the survey`s methodologies.

as is recommended by the international experts of the Delhi Group on Informal Sector Statistics. Furthermore, we only include the private sector, since all workers in the public sector, are likely to be registered with the social insurance system (Bensidoun and Souag 2013) .

For the impact on the social insurance registration of all employees and new employees, in the data bases, we do not observe directly the establishments which are affected by the plan, but we assume that all formal sector establishments were affected. Our hypothesis is justified by the fact that in executive decrees, for any enterprise to benefit from the benefits provided by the Action Plan, it should be officially registered. Although we do not directly observe the registration status of enterprises in the employee data, we assume that registration is strongly linked to enterprise size. Thus we define the informal sector according to the recommendations of the 15th International Conference of Labor Statisticians (ILO, 1993) that recommends that the size of the enterprise be used as a basis.. Therefore, we consider all the enterprises of five or more employees as formal and those with less than five employees as informal. We further subdivide formal enterprise into two groups: 5 to 9 employee those with 10 workers and more. Thus the treatment variable in our model is being employed by a formal enterprise, but looking separately at enterprises with 5-9 and 10+ employees.

For the impact of the action plan on the administrative and taxes registration status of self-employed workers, the program for creating enterprise targets both the informal and new enterprise. Therefore, our treated group is informal sector enterprises (those with fewer than 5 wokrers. However, we are not sure that enterprises of 10 workers and above are an appropriate control group because in the sample, we have 20 % of the enterprises of this size are informal. Therefore, to reduce the selection bias, we estimate a heterogeneous impact, using the DID estimator and taking the enterprise of 10 workers and more as a comparison group[13].

We compare two periods: before and after the reforms. The before period is the period from 1997 to 2007, and the after period is from 2008 to 2010. To test the soundness of our identification assumption, we conduct a falsification test where we apply the DD estimator to two sub-periods within the before period. This test will be used us a statistical argument to attribute any potentially difference to the implementation of the action plan and not to the various reforms that were implemented prior to 2008. For the test on the informal employment, the falsification test will be run on all the period 2001 -2007 and by choosing and arbitrary cutoff year. For the administrative and taxes registrations reforms, we take only the period 1997-2005, because for some variables we do not have the same corresponding questions in the survey`s questionnaire (See table A2).

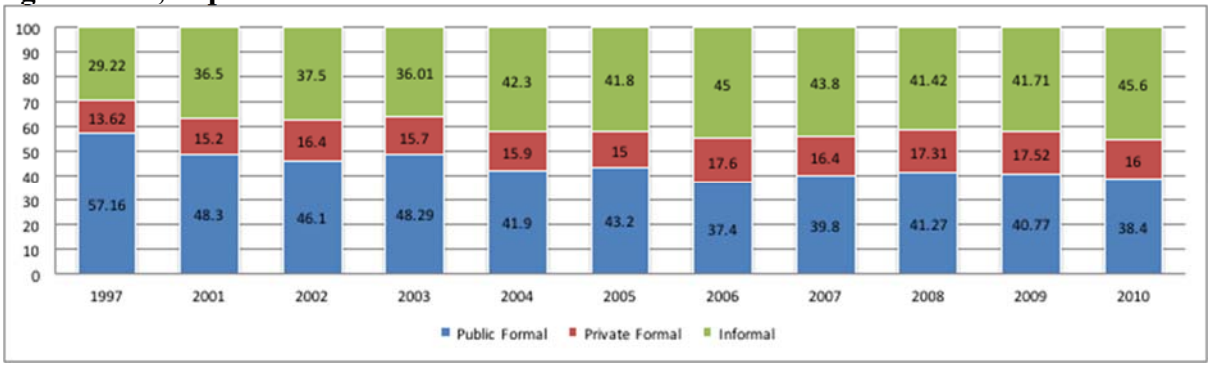
6. Results

6.1 Descriptive Results

We start by presenting the evolution of employment by institutional sector between 2001 and 2010 using cross sectional data. Figure 1 shows that the share of informal employment in total employment excluding the agricultural sector has increased for 9.1 points between 2001 and 2010. Over this period, the formal jobs, constituted approximately 70% by the public jobs, have a weak growth. Excluding the agricultural sector always, there has been a decreasing of almost 10 points of public employment in total employment. The withdrawal of the state from the economic activity was not accompanied by sufficient dynamics of the private formal employment. This is remains stable during all the period with a share between 15 and 17.6% in total employment.

[13] Mathematically it is the same calculation.

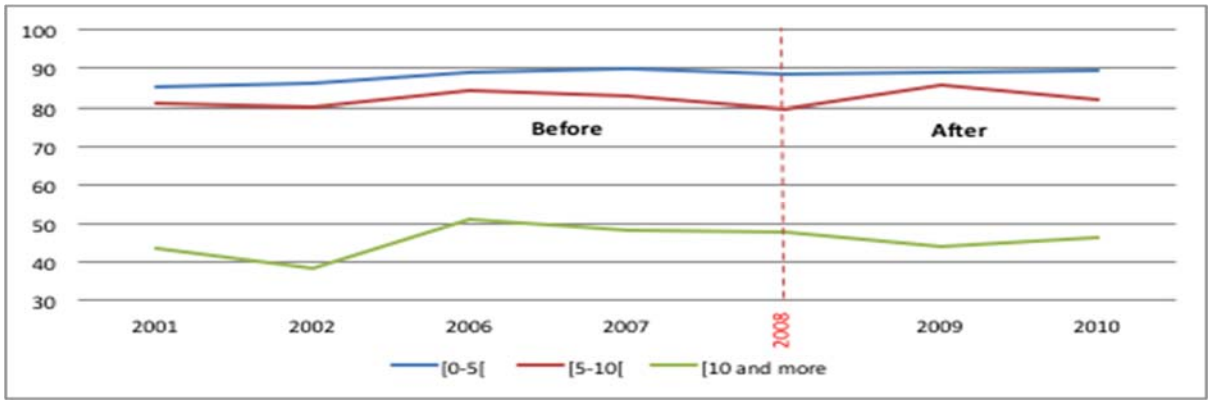
Figure 1 : Distribution of Employment in Algeria from 2001 to 2010 outside the agriculture, in percent.



Source: elaborated by authors from the databases, ONS.

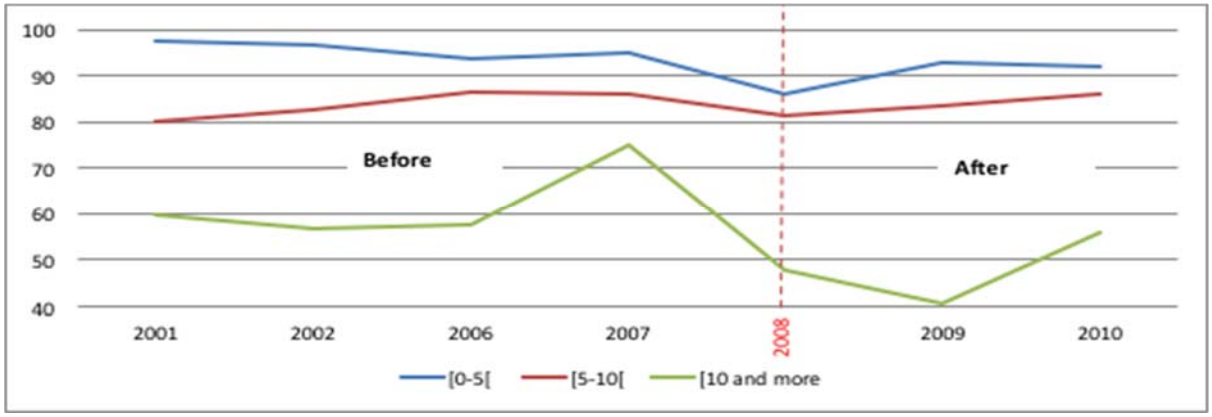
Zooming in on the Private Non-Agricultural sector (Figure 2 and Figure 3), for both all employees and new employees, the informal employment affect specially who are working in the enterprises of 5 to 9 or less to 5 workers. The shares are not the same. In 2001, the share of informal jobs for the all employees in the enterprise less than 5 employees is more the 80 %, it`s is more important for the new employees; it`s around 98 %. A special remark for the new employees, in the begging of the period, the shares of informal employment in the two categories of enterprise start the evolution with significate difference (around 20 %) but towards the end of period, the tow shares converge to be around 90%. In the companies with 10 or more employees, the informal jobs are relatively low present. In general, for both all employees and the new ones and in the end of the period, the share of the informal jobs changes the trend and starts decreasing. However, comparing the two categories of employees, the share for the new is more important: 59, 1 % in 2001 (comparing with 43, 7). It remains stable until 2006, after jump in 2007 and in the end, a significate decreasing. For the all employees, we observe a significate increasing between 2001 and 2006 then stabilization and in the end decreasing.

Figure 2: Informal Employment by Seize in the Private Sector, Outside the Agriculture, All Employees, in percent



Source: elaborated by authors from the databases, ONS.

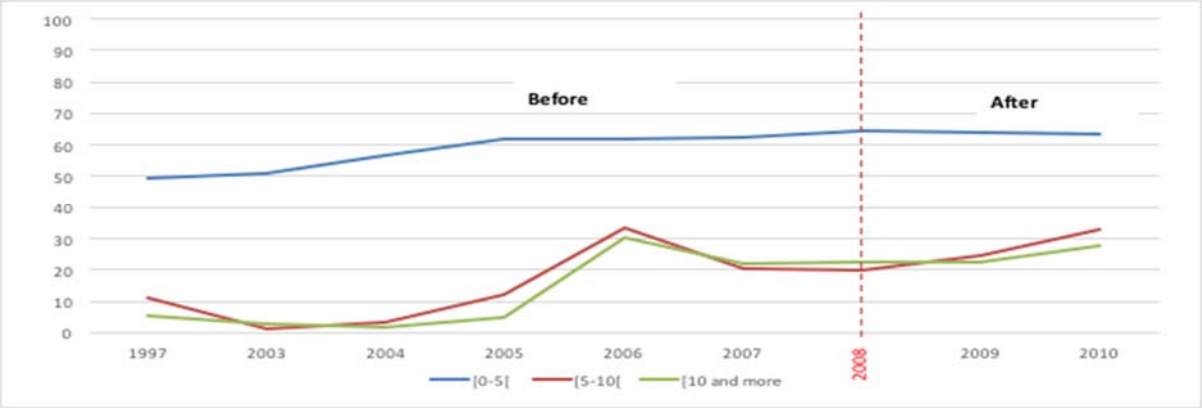
Figure 3 : Informal Employment by Seize in the Private Sector, Outside the Agriculture, New Employees, in percent



Source: elaborated by authors from the databases, ONS.

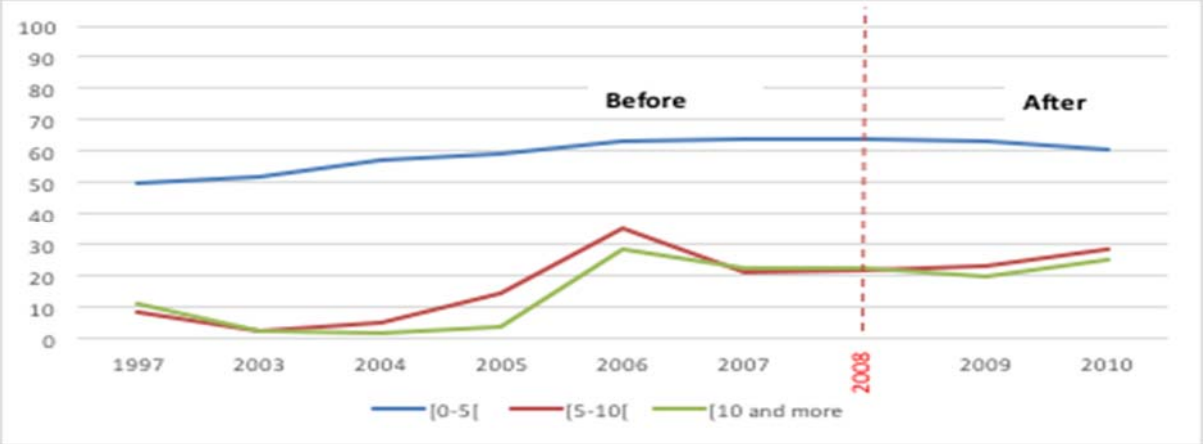
Always focusing only on the private and no agricultural sector, the Figure 4 and Figure 5 show that to be no registered (administrative and /or taxes) is very likely for the establishments of less to 5 workers than other companies. The both share, have been increasing from 1997 to 2006, then, they remain stable or a slight decreasing in the end of the period. Before the plan, we do not observe a big difference comparing the enterprises of 5 to 9 to those of 10 and more registration; both shares of no registration progress together with some fluctuations. However, after the plan, we are facing a divergence that has just begun developing.

Figure 4 : Administrative No Registration by Seize in the Private sector, outside the agriculture, in percent



Source: elaborated by authors from the databases, ONS.

Figure 5 : Taxes No Registration by Seize in the Private Sector, outside the agriculture, in percent



Source: elaborated by authors from the databases, ONS.

6.2 Difference in Difference Estimation

Us we said before, we do test our on too categories: on the employees to check the impact on the informal employment ant the self-employment to check the effect on the informal sector. For the employees, we have added the impact on the new employees how have just begun working because in the executive decrees corresponding to the plan, they have a specific advantages for encouraging their insertion.

Using the difference in difference (DiD) estimation, we have estimated four models. The first one is the basic, esteemed without any covariates. The second model controls for the gender and the human capital variables, which are time variant such as age, age square, and education. In the third model, we add the sector of activity and in the last one; we add the time trend and some conjectural covariables such as annual real GDP growth rate and annual unemployment rate).

Table 3 : Difference in Difference Estimation: Probability to Get an Informal Job, Employees

	[5-10 [workers	10 workers and more

	Post	Treatment	DID	Post	Treatment	DID
			All Employees			
Model 1 : Basic	0.100	-0.503***	-0.126	0.100	-2.149***	-0.126
	(0.066)	(0.059)	(0.108)	(0.066)	(0.045)	(0.084)
Model 2 : Adding individual characteristics	0.198***	-0.514***	-0.140	0.198***	-1.989***	**-0.192****
	(0.068)	(0.062)	(0.113)	(0.068)	(0.048)	(0.089)
Model 3 : Adding sector of activity	0.117*	-0.758***	-0.083	0.117*	-2.206***	**-0.195****
	(0.069)	(0.065)	(0.116)	(0.069)	(0.053)	(0.092)
Model 4 : Adding Trend	1.465***	-0.776***	-0.070	1.465***	-2.232***	**-0.176***
	(0.489)	(0.065)	(0.116)	(0.489)	(0.054)	(0.092)
			New Employees			
Model 1 : Basic	-0.478	-1.231***	0.554	-0.478	-2.366***	0.153
	(0.347)	(0.344)	(0.577)	(0.347)	(0.281)	(0.447)
Model 2 : Adding individual characteristics	-0.31	-1.085***	0.478	-0.31	-2.218***	0.118
	(0.356)	(0.357)	(0.597)	(0.356)	(0.292)	(0.468)
Model 3 : Adding sector of activity	-0.365	-1.132***	0.557	-0.365	-2.172***	0.033
	(0.362)	(0.375)	(0.612)	(0.362)	(0.313)	(0.479)
Model 4 : Trend + conjectural variables	1.465***	-0.776***	-0.070	1.465***	-2.232***	**-0.176***
	-0.489	-0.065	-0.116	-0.489	-0.054	-0.092

* p<0.10, ** p<0.05, *** p<0.01, outcome is the probability to get an informal job. Source: elaborated by authors from the databases, ONS.

Our results show that the plan has a significant negative impact on the probability to get an informal job for the employees working in the establishments of 10 workers and more. The effect is not significant for employees working in the small enterprises (5 to 9 workers). In three over four regressions, the coefficient associated with the plan is significant. However, this coefficient is not significant in most regressions when the sample is restricted to new workers: it is significant in one model when all the controls are included.

To check for the accuracy of our results, we use a falsification test by applying the DID methodology only on the period preceding the plan, from2001 to 2007 (table A3). We choose arbitrarily the year 2003 as threshold. Doing that brings no significant effect. This result consolidates our baseline results and supports the assumption of a significant effect of the Action Plan run in 2008.

Regarding the impact on the probability of being in the informal sector, we have analyzed the impact on all the possible combination of the administrative and/or taxes registration of the activity. Thus, we look at the influence of the plan on the administrative registration alone, on the taxes registration, on the administrative or taxes registration, and finally on the administrative and taxes registration. Our control group is composed of informal enterprises because the measures undertaken under the 2008 Action Plan aim at developing entrepreneurship and creating new activities. Therefore, these measures target new or previously unregistered enterprises. The only

issue concerns the control group. We cannot assert that enterprises of ten workers and more represent an appropriate control group, The measures should not affect enterprises of 10 workers if they belong to the formal sector. So, face to this situation, we estimate heterogeneous effect on the three categories of enterprises using DID estimator to reduce the selectivity bias, and taking enterprises of 10 workers and more as a comparison group. The results show (

Table **4**) that the plan has a negative and significant impact on both registrations :, administrative and taxes. However, the effect is significant only for enterprises from 1 to 4 workers comparing with ten and more, it is no significant comparing the enterprises of 5 to 9 workers with those of 10 workers and more. In most of the regressions (9 over 12), the coefficient corresponding to the impact of the plan is negative and significant. The falsification test applied taking only the period before and using the DID on two sub-periods (Table A5), did not bring any significant impact: all the coefficients are statistically not significant.

The last analysis shows that companies with at least five workers converge to have the same informality costs. Only very small-sized firms benefit from the reduction of this cost, because their costs are higher (entry barriers, scale economies, etc.). Therefore, all the advantages given by the Algerian government for developing the entrepreneurship could only move the very small companies from the informal sector to the formal but they were unable for moving those of 5 to 9 employees. This result makes us thinking that they are t others raisons added to the costs, could affect being in the formal or informal sector (for example the normality…).

Table 4: Difference in Difference Estimation: Probability to Don't Have Administrative Registration or / and Taxes Registrations, Enterprises

	Post	[1-5[	DID	Post	[5-10[	DID
			Administrative Registration			
Model 1 : Basic	0.578***	1.943***	**-0.462****	0.578***	0.098	0.143
	(0.181)	(0.122)	(0.184)	(0.181)	(0.160)	(0.247)
Model 2 : Adding individual characteristics	0.332*	1.440***	-0.110	0.332*	-0.13	0.365
	(0.200)	(0.132)	(0.204)	(0.200)	(0.173)	(0.274)
Model 3 : Adding sector of activity	0.816***	2.704***	**-0.695*****	0.816***	0.216	0.079
	(0.212)	(0.143)	(0.215)	(0.212)	(0.182)	(0.292)
Model 4 : Adding Trend + conjectural variables	-0.906	2.714***	-0.702***	-0.906	0.209	0.085
	(1.129)	(0.143)	(0.216)	(1.129)	(0.182)	(0.292)
			Taxes Registration			
Model 1 : Basic	0.494***	2.003***	**-0.521*****	0.494***	0.257	-0.087
	(0.185)	(0.124)	(0.188)	(0.185)	(0.159)	(0.251)
Model 2 : Adding individual characteristics	0.26	1.527***	-0.218	0.26	0.072	0.06
	(0.200)	(0.132)	(0.203)	(0.200)	(0.169)	(0.272)
Model 3 : Adding sector of activity	0.725***	2.687***	**-0.795*****	0.725***	0.431**	-0.271
	(0.210)	(0.142)	(0.214)	(0.210)	(0.178)	(0.288)
Model 4 : Adding Trend + conjectural variables	2.140*	2.707***	**-0.811*****	2.140*	0.406**	-0.246
	(1.102)	(0.142)	(0.214)	(1.102)	(0.178)	(0.289)
			Administrative and Taxes Registration			
Model 1 : Basic	0.620***	2.004***	**-0.563*****	0.620***	0.203	-0.015

	(0.179)	(0.121)	(0.182)	(0.179)	(0.156)	(0.244)
Model 2 : Adding individual characteristics	0.389**	1.520***	**-0.438****	0.389**	-0.002	0.168
	(0.198)	(0.131)	(0.205)	(0.198)	(0.170)	(0.270)
Model 3 : Adding sector of activity	0.873***	2.774***	**-0.835*****	0.873***	0.363**	-0.139
	(0.209)	(0.142)	(0.213)	(0.209)	(0.179)	(0.289)
Model 4 : Adding Trend + conjectural variables	0.383	2.790***	**-0.847*****	0.383	-1.893***	-0.133
	(1.132)	(0.142)	(0.213)	(1.132)	(0.208)	(0.289)
	Administrative or Taxes Registration					
Model 1 : Basic	0.447**	1.945***	**-0.415****	0.447**	0.152	0.077
	(0.188)	(0.125)	(0.191)	(0.188)	(0.162)	(0.255)
Model 2 : Adding individual characteristics	0.197	1.451***	-0.083	0.197	-0.051	0.255
	(0.203)	(0.133)	(0.206)	(0.203)	(0.173)	(0.276)
Model 3 : Adding sector of activity	0.663***	2.628***	**-0.655*****	0.663***	0.29	-0.056
	(0.214)	(0.143)	(0.217)	(0.214)	(0.182)	(0.293)
Model 4 : Adding Trend + conjectural variables	0.918	2.642***	**-0.665*****	0.918	0.265	-0.03
	(1.100)	(0.143)	(0.217)	(1.100)	(0.182)	(0.293)

* p<0.10, ** p<0.05, *** p<0.01, outcome is the probability to be no registered, comparing group is the enterprises of 10 workers and more. Source: elaborated by authors from the databases, ONS

Conclusion

The core of employment policy in Algeria has been the implementation of active labor market programs by various public agencies. Each agency runs different programs and has access to considerable resources. Despite the substantial amount of resources they absorb, however, limited information is available about their operations and results. For example, little is known about the number of beneficiaries, dropout rates, follow-up of beneficiaries and evaluation of policy effectiveness in terms of job placement rates, impact on duration of unemployment and quality of employment.

Therefore, the objective of this contribution is to evaluate the impact of the action plan adopted by the Algerian government in 2008 for developing the employment and fighting the employment on the informality. The plan corresponds to the second intervention in the labor market in Algeria because the first one dates in 1997.

Using a cross section date from 1997 to 2010 and DID estimator, we have contacted the test on the employee and the self-employment. For the employees, we have focused only on the impact to get an informal job. Our results show that the plan has contributed to reduce chances to being in the informal employment but only for whose are working in the enterprises for 10 workers and more, in the other the effect is not significate.

Other point important, despite the Algerian government has encouraged the recruitment of new arrivals on the labor market by specifying some advantages, but the impact of the plan on the employees have who have just began working is not very significate.

The plan has also contributive to reduce the informal sector. It`s has been showed that the devices for creating and developing the entrepreneurship have a negative significate impact on the administrative and taxes registrations. However, the effect is significate only for the enterprises for 1 to 4 workers comparing with 10 and more: it`s no significate comparing the enterprises of 5 to 9 workers with those of 10 workers and more. All the advantages granted by the Algerian

government by taking a share of the costs for developing the entrepreneurship could only move the very small companies from the informal sector to the formal but they were unable for moving those of 5 to 9 employees. This makes us thinking about others raisons added to the costs, could affect being in the formal or informal sector.

The falsification test applied taking only the period before witch corresponding to the first intervention on the labor market in Algeria, and using the DID on two sub-periods, did not manifest any significate impact on the informality (informal employment and informal sector): all the coefficients of the regressions are statistical no significate. This result justify the need to the second intervention on 2008 in the Algerian labor market to get a significate impact if we assume that both interventions (1997 and 2008) have target also the informality and the effect found in 2008 , it`s was expected and not indirectly conjugated.

This contribution needs to be completed by analyses of the impact of the plan on the duration of employment in so far as the all the employment policies have target fighting the employment. It is true that when we see the global data on the unemployment, we observe a significate decreasing since 2002, but we completely ignore the individual impact. Therefore, complete this study is very hopeful.

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Appendix

Table A1: Distribution of Social Security Contribution

Branches	Quote share of employer	Quote share of employee	Quote share of fund social works	Total
Social Security	11.50%	1.50%	---	13.00%
Work accidents and professional diseases	1.25%	---	---	1.25%
Retirement	11 %	6..75%	0.005	0.1825
Unemployment Security	1%	1%	---	2%
Early retirement	0.25%	0.25%	---	0.50%
Total	25%	9%	1%	35%

Source : Executive Decree No 15-236 of 03-09-2015 modifying the Executive Decree No 94-184 of 06/07/1994.

For the self-employed social contributions amounted to 15% divided equally (7.5%) between social insurance and retirement. They are calculated based on the annual taxable income (between 216,000 and 1,728,000 DA) or if the turnover or annual guaranteed minimum wage.

Table A2: Comparison of Methodologies of Workforce Surveys from 1997 to 2010

Years	1997	2001	2001	2002	2003	2004

Sample (households)	6 457	6 923	6 360	6 596	6 457	14 847
Base of survey	RGPH 87	RGPH 98	RGPH 98	RGPH 98	RGPH 98	RGPH 98
Reference period	Last week of September	Last week of September	Last week of December	Last week of March	Last week of September	Last week of September
Seize of establishment	Self-employment	All occupied	All occupied	All occupied	Self-employment	Self-employment
Status of establishment	All occupied	All occupied	All occupied	All occupied	All occupied	All occupied
Place of business	All occupied	All occupied	All occupied	All occupied	All occupied	All occupied
Administrative registration	Self-employment	No posed	No posed	No posed	Self-employment	No posed
Taxes registration	Self-employment	No posed	No posed	No posed	Self-employment	Self-employment
Accounting	No posed	No posed	No posed	No posed	Self-employment	Self-employment
Social security	All occupied	All occupied	All occupied	All occupied s	All occupied	All occupied
Years	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Sample (households)	14 939	14 323	14 866	14 000	14 000	14 592
Base of survey	RGPH 98	RGPH 98	RGPH 98	RGPH 2008	RGPH 2008	RGPH 2008
Reference period	Last week of September	Last week of September	Last week of September	Last week of September	Last week of September	Last week of September
Seize of establishment	Self-employment	All occupied	All occupied	All occupied	All occupied	All occupied
Status of establishment	No posed	No posed	No posed	No posed	No posed	No posed
Place of business	All occupied	All occupied	All occupied	All occupied	All occupied	All occupied
Administrative registration	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment
Taxes registration	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment
Accounting	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment	Self-employment
Social security	All occupied	All occupied	All occupied	All occupied	All occupied	All occupied

Source : elaborated by authors

Table A3: Falsification Test: Probability to Get an Informal Job, period 2001 to 2007.

	[5-10 [workers			10 workers and more		
	Post	**Treatment**	**DID**	**Post**	**Treatment**	**DID**
			New Employee			
Model 1 : Basic	0.332***	-0.423***	-0.117	0.332***	-2.183***	0.021
	(0.076)	(0.119)	(0.137)	(0.076)	(0.094)	(0.107)
Model 2 : Adding individual characteristics	0.428***	-0.434***	-0.123	0.428***	-2.001***	-0.015
	(0.080)	(0.125)	(0.144)	(0.080)	(0.100)	(0.114)
Model 3 : Adding sector of activity	0.447***	-0.735***	-0.1	0.447***	-2.260***	-0.027
	(0.081)	(0.131)	(0.149)	(0.081)	(0.107)	(0.118)
Model 4 : Adding Trend	0.898***	-0.739***	-0.097	0.898***	-2.269***	-0.021
	(0.274)	(0.131)	(0.149)	(0.274)	(0.107)	(0.119)
			New Employee			
Model 1 : Basic	-0.559	-1.875**	0.833	-0.559	-3.091***	0.929
	(0.638)	(0.741)	(0.842)	(0.638)	(0.665)	(0.735)
Model 2 : Adding individual characteristics	-0.42	-1.754**	0.799	-0.42	-2.754***	0.606
	(0.644)	(0.755)	(0.858)	(0.644)	(0.680)	(0.752)
Model 3 : Adding sector of activity	-0.471	-2.188***	1.089	-0.471	-2.929***	0.664
	(0.651)	(0.793)	(0.887)	(0.651)	(0.705)	(0.778)
Model 4 : Adding Trend + conjectural variables	-0.904	-2.241***	1.068	-0.904	-2.952***	0.613
	(1.567)	(0.797)	(0.891)	(1.567)	(0.706)	(0.781)

* p<0.10, ** p<0.05, *** p<0.01, outcome is the probability to get an informal job. Source: elaborated by authors from the databases, ONS.

Table A4: Falsification Test: Probability to Don't Have Administrative Registration or / and Taxes Registrations, Enterprises, period 1997 to 2005.

	Post	[1-5[	DID	Post	[5-10[	DID
			Administrative Registration			
Model 1 : Basic	0.927	3.872***	-0.604	0.927	0.744	0.025
	(0.830)	(0.716)	(0.832)	(0.830)	(0.814)	(0.967)
Model 2 : Adding individual characteristics	0.783	3.118***	-0.263	0.783	0.133	**0.599**
	(0.847)	(0.723)	(0.849)	(0.847)	(0.847)	(1.010)
Model 3 : Adding sector of activity	1.046	5.084***	-0.567	1.046	1.108	**0.132**
	(0.850)	(0.735)	(0.851)	(0.850)	(0.845)	(1.010)
			Taxes Registration			
Model 1 : Basic	0.316	3.468***	-0.119	0.316	0.467	0.753
	(0.746)	(0.589)	(0.747)	(0.746)	(0.692)	(0.876)
Model 2 : Adding individual characteristics	0.202	2.779***	0.137	0.202	0.036	**1.181**
	(0.758)	(0.595)	(0.760)	(0.758)	(0.713)	(0.904)
Model 3 : Adding sector of activity	0.401	4.428***	-0.126	0.401	0.874	**0.835**
	(0.763)	(0.607)	(0.764)	(0.763)	(0.717)	(0.912)
			Registration and Taxes			
Model 1 : Basic	0.509	3.536***	-0.19	0.509	0.593	0.435
	(0.723)	(0.589)	(0.725)	(0.723)	(0.682)	(0.849)
Model 2 : Adding individual characteristics	0.358	2.801***	0.152	0.358	0.052	**0.972**
	(0.742)	(0.597)	(0.744)	(0.742)	(0.713)	(0.891)
Model 3 : Adding sector of activity	0.609	4.741***	-0.143	0.609	1.001	**0.558**
	(0.745)	(0.612)	(0.746)	(0.745)	(0.715)	(0.896)
			Registration or Taxes			
Model 1 : Basic	0.734	3.805***	-0.531	0.734	0.583	0.380
	(0.850)	(0.716)	(0.851)	(0.850)	(0.829)	(0.996)
Model 2 : Adding individual characteristics	0.623	3.095***	-0.270	0.623	0.097	**0.838**
	(0.862)	(0.722)	(0.863)	(0.862)	(0.851)	(1.024)
Model 3 : Adding sector of activity	0.835	4.787***	-0.547	0.835	0.958	**0.448**
	(0.865)	(0.731)	(0.867)	(0.865)	(0.852)	(1.029)

* p<0.10, ** p<0.05, *** p<0.01, outcome is the probability to be no registered, comparing group is the enterprises of 10 workers and more. Source: elaborated by authors from the databases, ONS.

Table A5: Descriptive Statistic Before and After the Plan.

	Before	After	Total
Education			
Without diploma	15.4	12.7	14.9
Primary	23.5	21.1	23
Intermediate	36.2	41.2	37.2
Secondary	18.8	18.9	18.8
University	6.1	6.2	6.1
Total	100	100	100
Gender			
Mal	86.5	86.7	86.6
Female	13.5	13.3	13.4
Age			
Total	100	100	100
Age (Mean)	34,172	35,011	---
situation in the profession			
Self-employment	46.7	44.3	46.2
Employee	53.3	55.7	53.8
Total	100	100	100
Sector of activity			
Extractive industries	0.7*	1*	0.8*
Manufacturing	17.9	16.6	17.6
Electricity, Gas and Water	0.3*	0.5*	0.3*
Construction	27.2	34.1	28.5
Trade, Hotels and Restaurants	34.5	30	33.6
Transport and Communication	9.6	7.8	9.3
Financial and Real Activity	0.4	0.3	0.4
Other services	9.5	9.8	9.5
Total	100	100	100
Social security			
Yes	27.8	25.8	27.4
No	72.2	74.2	72.6
Total	100	100	100
Observations N	50.363	12.345	62.708
Seize of enterprise			
[0-4]	77	67.5	74.7
[5-9]	9.8	12.9	10.6
[10 and + more	13.2	19.6	14.8
Total			
Observations N	37.692	12.343	50.035
Administrative Registration			
Yes	41.1	39.4	40.7
No	58.9	60.6	59.3
Total	100	100	100
Taxes registration			

yes	40.6	42.5	41
No	59.4	57.5	59
Total	100	100	100
Observations N	19.698	5.471	25.169

* All the absolute frequencies are superior more than 40. Source: elaborated by authors from the databases, ONS