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"Labour Market Policies and Informality in Algeria"

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Managing the Transition of the South Med Countries

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Labour Market Policies and Informality in Algeria

Abstract

The report reviews the labour market policy mechanisms implemented by the Algerian government in 2008 and assesses their impact upon informality -informal employment and the informal sector, using data from household employment surveys conducted by the National Statistical Office (ONS) from 1997 to 2013. We examine the situation of three categories: employees, new employees and the self-employed focusing on the effect upon social security registration for employees, and on administrative and fiscal registration of the self-employed. We use the Difference in Difference (DID) methodology and we compare two periods: 1997-2007 and 2008-2013; applying the DID estimator as a falsification test in the first period only. According to results, the impact of labour market policy devices upon informality proves heterogeneous. It has a negative impact on informal employment for the employees who are working in businesses with at least 10 workers. No significant effect is documented for employees in businesses with staff from five to nine workers. For the new employees, the impact is not very significant. Labour market devices also contributed to enhance registration thus shrinking the informal sector, but only for the businesses with staff from one to four workers, whereas no impact upon businesses with staff from five to nine workers.

Keywords: Algeria; Employees; Informal employment; Informal sector; Labour market programs, Self-employed; Unemployment.

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1. Introduction

Following the application of the Structural Adjustment Program (SAP) over 1990-1994, Algeria experienced dramatic changes as regards employment (CNES 1998); including the entry each year of a large number of young people on the labour market, the development of women participation and increased layoffs resulting from economic restructuring, especially in the public sector. These developments have triggered a significant increase in unemployment, the development of the informal sector and the emergence of new forms of jobs. Increasing youth unemployment and, in recent times, that of young graduates, is an economic drawback, a social factor of destabilization and a political unrest.

The Algerian government undertook several interventions upon the labour market, which entailed both changes in labour policies as well as in the institutions that implement them. The interventions consist mainly of active labour 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 supply and demand matching on the labour market (Barbier 2007).

According to Freeman (2005), there is an extensive debate in the labour market literature regarding the achievements of labour market regulations and interventions. Some argue that labour 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.

Since the end of 1996, Algeria has opted for the aforementioned interventions under the auspices of the Ministry of Labour. Other players in this arena include the National Employment Agency (ANEM); the National Agency for Microcredit (ANGEM), established in 2004; the National Agency for Support to Youth Employment (ANSEJ) that established in 1996 and became operational in 1998; in addition, the National Unemployment Insurance Fund (CNAC) established in 1994 and subjected to major reforms in 2003. The Ministry of National Solidarity undertakes additional interventions fighting poverty, in cooperation with the ANGEM and the Agency for Social Development (ADS). Besides these agencies, other public bodies play a role in employment policies including 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. ANGEM, ANSEJ and CNAC support the creation of new economic activities. ANDPME and ANDI promote investment.

Despite these interventions, the unemployment rate in Algeria remained high, albeit on a declining trend. In 2001, the unemployment rate was 27.3 percent, with 2.339 million unemployed individuals. It began declining in 2002 reaching 13.8 percent, with 1.375 million unemployed individuals, by 2007. This decline remained insufficient in light of the government's target unemployment rate of 10 percent (Ministry of Labour 2008), whereupon unemployment rate stalled at 10-11 percent between 2009 and 2013.

In addition, much of recent job creation consisted primarily in the growth of non-permanent jobs and jobs with definite duration contracts. Of course, this pattern applies to employees whose social safety net accounts for most of subsidised wage employment up to 2007 (see Figure A1 and Table A2 in Appendix), but not to self-employment supported by the ANSEJ, CNAC and especially the ANGEM scheme promoting small businesses (See Figure A3 and Table A2 in Appendix).

The growth of formal jobs has been shrinking in the aftermath of the 1990s economic crisis and the informal economy continued to grow. Such growth is due to the inability of the formal sector to create enough jobs for the massive influx of young new entrants onto the labour market.

The share of the informal sector, as defined by the ILO (1993), 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 share of informal employment in total employment. Informal employment, as defined by the ILO (2013), increased from 21.9% of total employment in 1997 to 43.8% of total employment in 2007. By 2010, it reached 45.60% (See Figure 1).

The Algerian government decided in April 2008 to implement the Action Plan for Promoting Employment and Fighting Unemployment (hereafter Action Plan). Its main axes were promoting youth employment by supporting the development of entrepreneurship and providing incentives for firms to create jobs.

Few studies who have focused on the impact assessment of employment policies in Algeria. CNES (2002, 2010) has undertaken several studies on employment policies assessment that did not include an impact assessment component. The World Bank (2010) conducted an assessment but without assessing the impact on the labour market. The ILO undertook a comparative analysis of labour market intermediation in the three Maghreb countries (Barbier 2007). In 2010, the ILO put together a synthesis of labour market policies for some Arab countries including Algeria (Musette 2014). Adair and Bellache (2008, 2009) assessed the Algerian policies addressing job creation in very small businesses, whereas Hammouda (2009) focused on the impact of Algerian policies from aggregate data rather than micro econometric analyses. Hammouda and Souag (2007) assessed the impact of labour market flexibility that was initiated by the 1990 reforms on business competitiveness. Other studies focused on the measures and determinants of the informal economy but did not address its formalization: Adair (2002), Musette and Charmes (2006), Adair and Bellache (2012), Hammouda and Souag (2012) and Bensidoun and Souag (2013). In March 2012, the Ministry of Commerce and CARE (Circle of Action and Reflection upon the Enterprise) organised the first symposium on the informal economy in Algeria, entitled "the Transition of the Informal Economy to the Formal Economy", an issue echoed in discussions at the 2014 International Labour Conference. (ILO, 2014).

The contribution of this report is to provide an empirical analysis of the impact of the Action Plan upon the formalization of the informal economy. The basic assumption according to the segmentation theory is that if informal employment in Algeria is not a voluntary choice and would be a last resort to escape unemployment (Adair and Bellache, 2012; Souag et al, 2016 b); hence, any economic policy implemented to combat unemployment should have a negative impact upon informality.

We evaluate the impact on informal employment of wage earners and new employees. With regard to self-employment, we focus on the impact upon the administrative and tax registration reforms. We use cross section data from the national employment household survey conducted by the Algerian National Statistics Office (ONS) over the period 1997-2013. We rely primarily on a Difference in Difference (DID) methodology to examine the impact of the policy. Our basic identifying assumption is that the policies should affect the formalization of employed workers in formal enterprises (wherein staff is over five employees), but should not affect workers in informal enterprises below five employees. Wahba and Assaad (2016) use a similar approach to assessing the effects of changes in labour

regulations in Egypt. We also tried to relax some of the assumptions of the DID estimation by using a local instrumental variables (*LIV*) estimator similar to that proposed by Heckman and Vytlacil (2005), but it proves very difficult to find instruments that satisfy the necessary exclusion restrictions in the case of informality.

2. Literature review and empirical tests

In the economics literature, labour market intermediation is often addressed from a macroeconomic perspective⁴ wherein the intermediation process is considered as an explanatory factor and is used to explain imbalances on the labour market. It assumes that labour market programs and institutions help match labour supply and demand. In particular, these programs act as countercyclical measures 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 labour income during unemployment, and the possible long-run losses associated with accepting jobs that pay less than previous ones. It is important to evaluate carefully 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 impacts on job-search effort, post-unemployment wages, labour market equilibrium outcomes (i.e. employment, unemployment, and labour force participation), restructuring and overall economic adjustment, labour 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 labour market policies. Active labour market programs include employment services, training and retraining, public works, wage and employment subsidies, and self-employment assistance. These programs are implemented to enhance labour supply (e.g., training), increase labour demand (e.g., public works, subsidies) and improve the functioning of the labour market (Beckerman et al. 2004).

The assessment of labour policies is challenging due to the need to design a convincing counterfactual, addressing what would have happened in the absence of such policies (Khandker, Koolwal, and Samad, 2010). The method used must be able to identify the causal effects of the policy and should take into account potential selection bias, subject to reasonable identification assumptions. Among several methods, dealing with the selection bias issue, Rubin (1977), and Rosenbaum and Rubin (1983) propose the propensity score matching method. Dehejia and Wahba (1999, 2002) and Heckman, Ichimura and Todd (1997, 1998) use this method to assess American job training programs. However, this non-parametric method takes into account only the selection upon 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). 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 selection issue is the use of the Double-Difference estimator. This method has been widely used in the assessment of various policies. Binswanger, Khandker and Rosenzweig (1993) used this method to estimate the impacts of rural

⁴ Pissarides (1990) assessed the sensitivity of hirings to vacancies and unemployment, whereas Abraham (1983) focused on unemployment resulting from frictional adjustments (inadequacy) rather than insufficient demand.

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 it also in Indonesia to assess the impacts of providing basic health care services through midwives on children's nutritional status.

Difference-in-difference methodology (DID) was also used in estimating the economic effects of employment regulations and is well documented in the literature review provided by Ravallion (2008). Micco and Pages (2006) exploit time and geographical variation, as well as sector differences across countries, to implement a DID methodology. They argue that expanding the sample to developing countries and using DID estimation reduce the likelihood of omitted variable bias. They find that employment protection legislation reduces job flows, especially in more volatile sectors. They conclude that, by reducing the size of the most affected industries, labour regulations are likely to curtail firm entry, employment, and value added at the aggregate level. Haltiwanger et al (2006) also use a DID 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. They exploit a harmonized firm-level data set from business registers and enterprise census data. Their results suggest that stringent hiring and firing costs reduce job turnover, especially in those industries that require frequent labour adjustment. Regulations also seem to distort the size patterns of industry flows.

Other methods such as regression discontinuity design and fixed effects models are used to assess the impact of public programs. Following Khandker, Koolwal and Samad, (2010), Krafft and al. (2015) apply this method to identify the impact of the National Initiative for Human Development (INDH), on economic outcomes and early childhood development in Morocco. While they find some transitory impacts of the program on economic outcomes, they find no impact on early childhood development.

Efforts to evaluate active labour market policies, especially 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 industry in the 1990s, its determinants, and its effects on productivity and wages. They find that the incidence of training provided by employers became widespread among manufacturing enterprises and a higher share of the workforce received training within firms. Mc Ardle (2006) shows that a significant amount of firm and workforce training is taking place in the Caribbean region, both in the firms and through public-financed programs. Betcherman et al (2004) reviewing the overall experience in developing and transition countries, examine 49 assessments of training programs primarily targeting the unemployed. They conclude that most subsidy programs do not display net positive impact upon the long-term employability or earnings of the participants. Kluve (2006) points out that the vast majority of assessment studies in Europe continue to focus on effectiveness at the microeconomic level, whereas a more complete assessment requires an investigation of general-equilibrium effects.

Wahba (2009) examined the impact of employment protection reforms on the formalization of employment in Egypt, finding evidence of positive effects two years after the introduction of such reforms. In order to examine the sustainability of long-term effects, Wahba and Assaad (2016) apply DID methods on longitudinal retrospective data from two surveys. They show that the new labour law did actually 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 labour market policies

using a dynamic general equilibrium model. The main finding is that a wage subsidy focusing upon high skill-intensive sectors is more effective than tax reductions or investment subsidies. Broecke (2013) adopts a microeconomic analysis and evaluates Tunisia's largest labour market program, the SIVP: an employment subsidy targeting university graduates. Using a tracer survey of the 2004 graduating cohort and a range of matching techniques, he estimates that the program is poorly targeted and hence not very cost-effective. Bellakhal and Mahjoub (2015) estimate the impact of vocational training programs in Tunisia on employment and wages of individuals, using 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 includes three simultaneous equations determining the participation in training, the inclusion in the labour market and the wages observed; it shows that job training improves job access and increases potential wages.

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

3. The ebb and tide of the Algerian labour market: a background narrative

Following the fall in oil prices in the mid-1980s and the application of the structural adjustment program (SAP) in the 1990-1994 period, the Algerian labour market experienced a dramatic deterioration. Labour market reforms introduced in the late 1980s allow for limited duration employment contracts and the possibility of layoffs for economic reasons. Prior to 1997, over 400,000 jobs were destroyed; economic growth became negative (from 1.2% in 1991 to - 2% in 1993 and - 0.7% in 1994), double-digit inflation rocketed (29.8% in 1995) alongside with weak business investment, especially in the agriculture and construction industries, and depletion of foreign exchange reserves (\$ 2.11 billion in 1995). All these factors, combined with deteriorating security, did influence the level of job creation and thus a very high unemployment rate (26.4 % in 1997).

3.1. Period 1: 1997-2007

The Algerian government introduced various programs, particularly targeting youth, with the objective to reduce unemployment on the short term. These programs included recruitment incentives for businesses, support 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) endowed unemployed young people with skills training and basic experience to increase their chances of finding a job. This device was designed 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 per month in 1990 to 2500 dinars per month in 2004. For qualified young people, among whom unemployment is very high, a specific mechanism was implemented in 1998, the pre-employment contract (CPE), enabling businesses to employ them without compensation. The State would be responsible for paying them a monthly allowance equal to minimum wage.

3.1.2. Support for business creation

ANSEJ, CNAC and ANGEM are the three agencies involved in supporting the creation of small businesses, whereas ANDI support medium-size enterprises. Two data sources provide information upon these agencies: the 2011 business census (ONS, 2012) displays a snapshot of the distribution of businesses benefiting from these mechanisms (See Table A1); agencies themselves provide data upon job creation and the number of workers involved (See Table A2 and Figure A1 in the appendix).

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 benefits⁵ 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 imported equipment. The notion of youth is extensive 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 2003⁶ alongside with ANSEJ, it has supported redundant workers aged 35-50 in creating businesses.

The mission of ANGEM is to alleviate poverty by providing microcredit to poor people in order to promote small size economic activities, self-employment, working at home, small businesses, the craft sector and micro businesses.

For the three agencies, the granting of credit is based upon a triangular scheme: personal contribution (1% or 2%), interest-free agency support (28% or 29%) and a bank credit upon which interest must be paid (70%). The bank loan is guaranteed by a State fund.

3.1.3. Public Measures to Fight Poverty

Two other public devices have contributed significantly to an active employment policy: Allowance for General Activity of Interest (IAIG) remunerates community service activities, such as reforestation, and Public Utility Works using High Intensive Workforce (TUP-LI). This device was launched in 1997, although it is regarded as an active form of treatment of unemployment, it is still part of the fight against poverty thanks to rapid creation of temporary jobs.

3.2. Period 2: Post-2008

After 2008, economic conditions improved and economic growth was back (5% per annum on average throughout the period), whereas inflation averaging 2.5% per annum was under control. The unemployment rate dropped from 29.3 in 1999 to 13.8 percent in 2007 and 3.2 million net jobs were created over 2000-2007 (CNES, 2010). However, there were still over one million unemployed, with 70% new entrants to the labour market seeking their first job. About 300,000 new job seekers add to the Algerian labour force every year. The government decided in April 2008 to implement the Action Plan that includes several components we comment next.

⁵ Ordinance No 96-31 of 30 December 1996, amended and supplemented by Law No 3-22 on the 2004 Budget.

⁶ Presidential Decree No 03-514, December the 30th, 2003, supporting the creation of activities by older unemployed entrepreneurs aged 35-50.

3.2.1. Promoting Youth Employment

Young people constitute over 70% of the population searching for a job, among which an average of 120,000 graduates per annum (Ministry of Labour 2008). Hence, a new mechanism was designed to address the needs of unemployed graduates.

Support for the Development of Entrepreneurship

The ministerial council of 19 April 2008 was devoted to business creation devices. With regard to the diagnosis of the constraints that hampered the development of entrepreneurship, it decided to reform the mission of ANSEJ and CNAC devices. The reforms include:

1. A mixed financing system (agency-promoter) increasing the amount of non-payback credit (PNR): 70-30% and 50-50%.
2. Decentralisation at local level of the State granting decisions (PNR, tax benefits, subsidised interest rates and technological premium).
3. Shortening to three months the processing time of banks.
4. Motivating the refusal of funding from the bank by informing the agency concerned and the promoters.
5. Redirecting projects of local development based on market needs through the exploitation of local economic potential.
6. Orienting the micro business toward the management and maintenance of real estate, tourism, environment and art crafts.

Support the Promotion of Employment for Employees

The ANEM manages the new device supporting the promotion of youth employment: the “Device Helping Professional Inclusion (DAIP)”. Its main objective is promoting employment with four new contracts to make effective the attempt of economic inclusion, other contracts (social inclusion programs) being managed by the ADS that is designed for fighting poverty.

The DAIP also introduced the employment / training contract that can drive to sustainable recruitment of young people. Sixty percent of training costs being borne by the State budget within the limit of maximum six months (See Table A2 and Figure A2 in the appendix).

Table 1. Active Labour Market Programs

Program	Nature	Duration	Compensation	Comment
DAIP vocational inclusion assistance mechanism for young people, run under the Ministry of Labour, consists in three categories:				
Graduate inclusion contract (CID)	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 inclusion contract (CIP)	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 subsidised work contract (CTA) in firms. In case of refusal, the person loses the right to remain in the CIP.
Training inclusion contract (CFI)	Targets young Jobseekers without training or qualifications; they are placed in various work projects initiated by local authorities or by different sectors for the duration of	1 year, non-renewable	DAIP vocational integration assistance mechanism for young people, run under the Ministry of Labour, Employment and Social Security, consists of three categories)	

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Subsidised work contract (CTA)	Proposed when one of the above contracts comes to an end (and sometimes earlier if the employer agrees)	3 years	Labour costs shared between government and employer: CID Contract : Higher learning graduates 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.
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Source: Musette (2014, p. 32) completed from the Executives Decree.

Table 2. Passive Labour Market Programs

Program	Nature	Duration	Compensation	Comment
Social inclusion programs developed by the Ministry of National Solidarity are designed to fight poverty and youth unemployment.				
Inclusion program for graduates (PID)	Targets young University graduates and technicians without income, in precarious situations or with disabilities. Second criterion: youth aged 19-35 with no income.	1 year, renewable once	University graduates: DZD 10 000 per month Technicians: DZD 8 000 per month + social insurance paid by the government.	
Allowance for activity or community service (AIG)	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 committed to community based activities (IAIG)	Placement of unemployed, unskilled 18-59 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 included under this new label. IAIG is also included under this label since March 2012.

Source: (2014, p. 32) completed from the Executives Decree.

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, employers from the economic sector benefit from several advantages:

- 1- Deduction of social security contributions (20%, 28% or 36%). It is granted under law No. 06-21 of December the 11th 2006 on incentives and support to the promotion of

employment. The State budget balances the contributions not covered by the CNAC to reach full exemption for employers⁷.

- 2- Deduction of social security contributions for one year for non-employees to master artisans who recruit after the introductory period. The differential contribution is funded by the State budget.
- 3- Reducing the income tax (IRG) and taxes on corporate profits (IBS) for four years (act 59 of the 2007 law of finance). For the master artisans, the rate reaches a very low level.
- 4- Extending IBS exemption period from three to five years for companies creating 50 to 100 jobs and up to seven years for those creating more than 100 jobs.

4. Econometric Model

We examine the effect of the Action Plan on reducing informality; hence, we conduct our test upon three categories of workers: employees, new employees and the self-employed.

Let Y_i be the outcome indicator. For the employee and the new employee, we focus only on the impact of the Action Plan on informal employment such as $Y_i = 1$ if the individual i has an informal employment and 0 if not, for any $i = 1, \dots, n$.

For the self-employment, we are interested by the impact on the administrative and /or tax registration, such as $Y_i = 1$, if the activity i is non-registered and 0 if not, for any $i = 1, \dots, n$.

Let T_i be the dummy variable indicating whether enterprise i was treated or not, whereby:

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

Y_i^C is the outcome indicator for the individual i under 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 of treatment and non-treatment.

We do not necessarily have a panel data for calculating DID. All one needs is the set of four means that make up DID; the means do not need to be calculated for the same sample over time. The data over both time periods and across treatment status being pooled, we run the following regression:

$$\Pr(Y_{it} = 1) = F(\alpha + \beta T_i Post + \gamma T_i + \delta Post + \lambda X_i), (Post = 0, 1 ; i = 1, \dots, n) \quad (2)$$

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

5. Data and Empirical Specification

In this analysis, we use cross sectional data derived from the official labour force survey, conducted on a regular basis by the ONS. We have data from 1997 to 2013. The sample consists in a stratified random sample of households drawn from the population and housing census (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 and 2000, the employment survey was not conducted because the population census (1998) and the income - expenditure survey (2000) took place. Implementation of the labour force survey resumed in 2001 and the last one was conducted in April 2017.

⁷Table A3 in appendix shows the distribution of social security contributions in Algeria.

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 Labour Statisticians (ILO, 2003). The criterion of non-registration with Social Security insurance is used to identify informal workers. Therefore, workers who are not registered to Social Security are considered informal. Unpaid family workers are included among employees, contrary to Pages and Stampini (2009) and Tansel and Kan (2012), who include them with the self-employed. The analysis excludes agriculture as 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 Social Security insurance (Bensidoun and Souag 2013).

As for the impact on the social insurance registration of all employees and new employees in the databases, we do not observe directly the establishments, which are affected by the Action Plan, assuming that all formal sector establishments were affected. Our assumption is that an enterprise should be officially registered in order to get advantages provided by the Action Plan. Although we do not directly observe the registration status of enterprises in the employee data, we assume that registration is closely linked to the size of enterprise. Hence, we define the informal sector according to the recommendations of the 15th International Conference of Labour Statisticians (ILO, 1993) that the size of the enterprise should be used as a relevant criterion.

According to the principles of the UN System of National Accounts, unincorporated enterprises with less than ten employees are included in the household sector, which encapsulates the informal sector. However this ten employee threshold may be lowered to less than five employees in order to better grasp the informal sector (ILO, 2013).

Actually, most unincorporated enterprises in Algeria have less than five employees. Unfortunately, the 2011 business census (ONS, 2012) does not disaggregate the category of unincorporated enterprises, which makes 98.7% of all private businesses (See Table A4 in Appendix). However, according Business Register updates (Adair and Bellache, 2008; ONS, 2012), as well as the average number of jobs per business created by the ANSEJ (2.5 workers), ANGEM and CNAC (1.5 worker), micro-enterprises are overwhelmingly employing below the size of 5 employees. In addition, the labour force surveys provide data regarding the size of the business, whereupon the distribution of informal workers can be calculated for most years (See Table A5 in Appendix).

In addition, informal employment encapsulates all workers in both the informal and formal sectors who are not registered to Social Security (ILO, 2013).

Following Souag et al (2016a, 2016b), we consider all enterprises with less than five employees as informal and those with at least five employees as formal.

We further subdivide formal enterprises into two groups: from five to nine employees and with at least 10 workers. The treatment variable in our model is being employed by a formal enterprise, looking separately at enterprises with 5-9 and 10 or more employees.

As for the impact upon the administrative and tax registration of self-employed workers, the program for creating enterprises targets both the informal and new businesses. Therefore, our treated group is the informal sector, those enterprises with less than five workers. However, we are not sure that enterprises of at least 10 workers are an appropriate control group, because 20% of the enterprises of this size in the sample are informal. Therefore, to reduce the selection bias, we estimate a heterogeneous impact, using the DID estimator and taking the enterprise of at least 10 workers as a comparison group.

We compare two periods: before and after the reforms. The period 'before' spans from 1997 to 2007, and the period 'after' from 2009 to 2013. To test the soundness of our identification assumption, we conduct a falsification test whereby we apply the DID estimator to two sub-

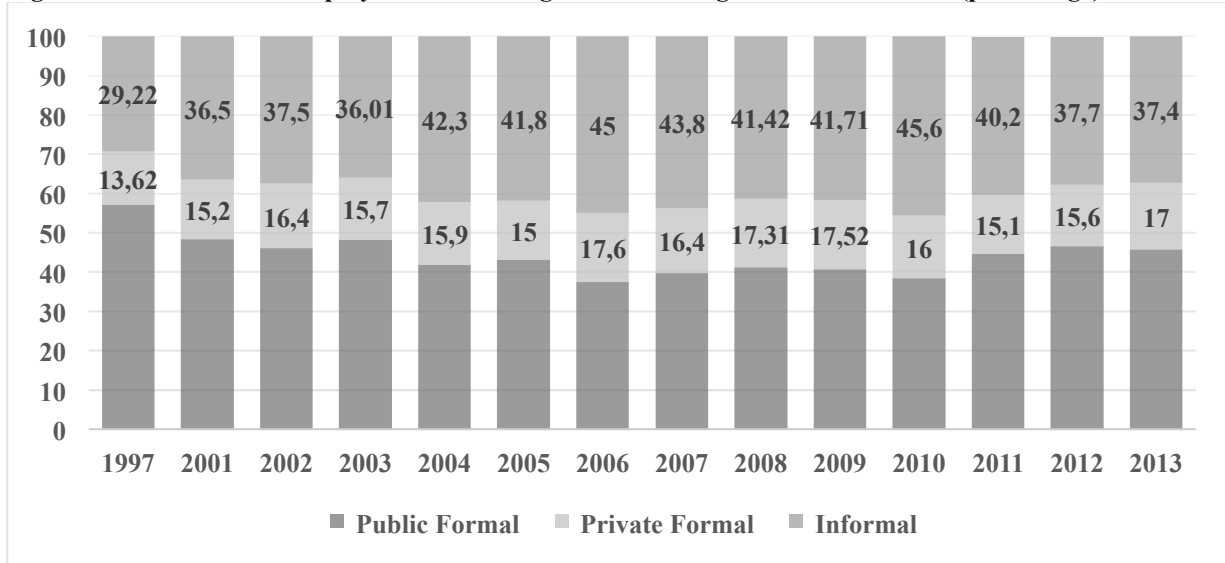
periods within the ‘before’ period. This test is used as a statistical argument to attribute any potential difference to the implementation of the Action Plan and not to the various reforms that were implemented prior to 2008. As for the test on the informal employment, the falsification test is run on the overall period 2001 -2007 and by choosing an arbitrary cutoff year. For the administrative and tax registration 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.

6. Results

6.1 Descriptive Results

We first present the trend of employment by institutional sector over 2001-2013 using cross sectional data. Figure 1 shows that the share of informal employment in total employment excluding agriculture has increased by 9.1 points between 2001 and 2010. Over this period, the formal jobs, constituted approximately 70% by the public jobs, experience a weak growth. Public employment in total employment has been declining by almost 10 points. The withdrawal of the State from the economic sector was not accompanied by sufficient dynamics of the formal private sector remains stable over the period with a share between 15 and 17.6% in total employment. In 2011, informal employment begins to decline from 45.6% in 2010 to 37.4% in 2013, decline being accompanied by a recovery in public employment in total employment from 38.4% in 2010 to 47.7% in 2013.

Figure 1. Distribution of employment outside agriculture in Algeria over 1997-2013 (percentage)



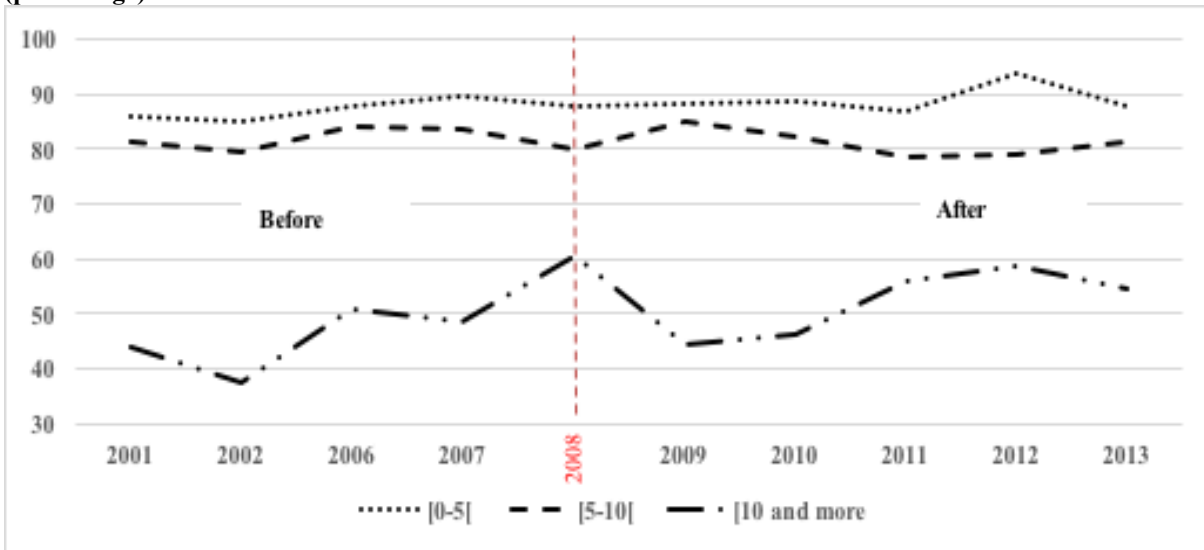
Source: authors from the ONS databases.

Focusing on the private non-agricultural sector (Figure 2 and Figure 3), for both all employees and new employees, informal employment affects specially those who are working in the enterprises of five to nine or below five workers, although the shares differ. In 2001, the share of informal jobs in enterprises below five employees is over 80% for all employees and around 98% for the new employees. At the beginning of the period, the share of informal employment for new employees in companies with five to nine employees and those below five employees grow together with a significant difference (about 20%). However, over time, the two shares converge to reach about 90% in 2009 and then diverge from 2011.

In enterprises with at least 10 employees, informal employment is relatively low. In general, for both categories of employees, just after the Action Plan, the trend in the share of informal jobs begins to decline although it does not last and resumes in 2010. Comparing both trends,

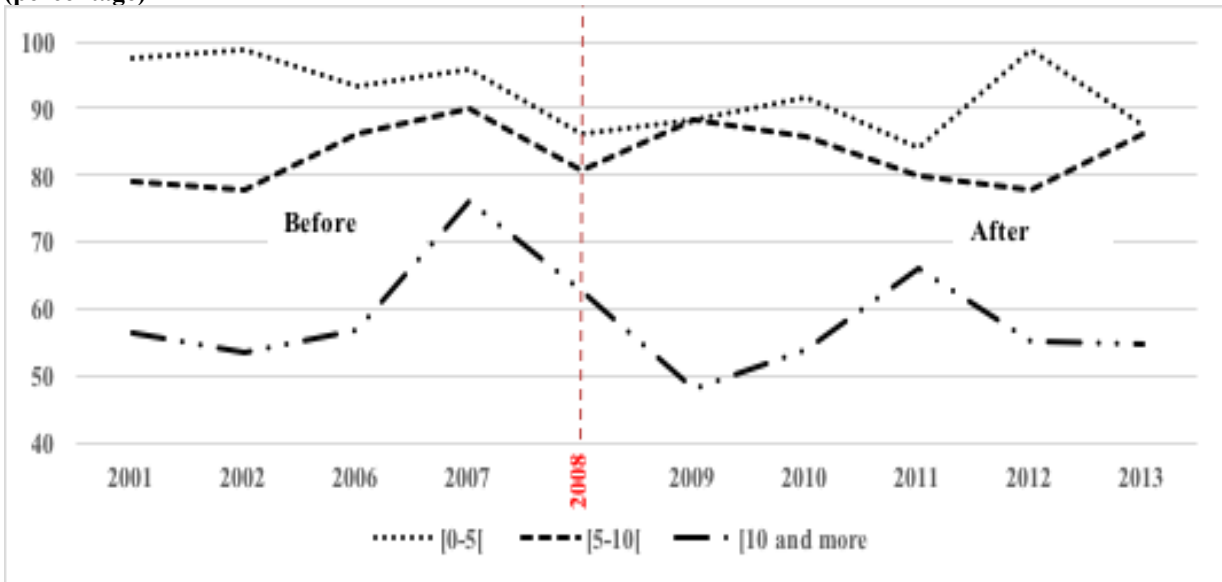
the share for new employees is over 60% in 2001 and 44% for all employees. It remains stable until 2006, growing in 2007 and immediately after the Action Plan declines to a low level in 2009. In 2010, it increases again and peaks in 2011, then decreases throughout the end of the period. As for the informal share of all employees, it increases significantly between 2001 and 2006, then stabilizes until 2008 and declines after the Action Plan. From 2011, it increases again, peaking in 2012 and declines again.

Figure 2. Informal employment outside agriculture by size in the private sector: All employees (percentage)



Source: authors from the ONS databases.

Figure 3. Informal employment by size in the private Sector outside agriculture: New employees (percentage)

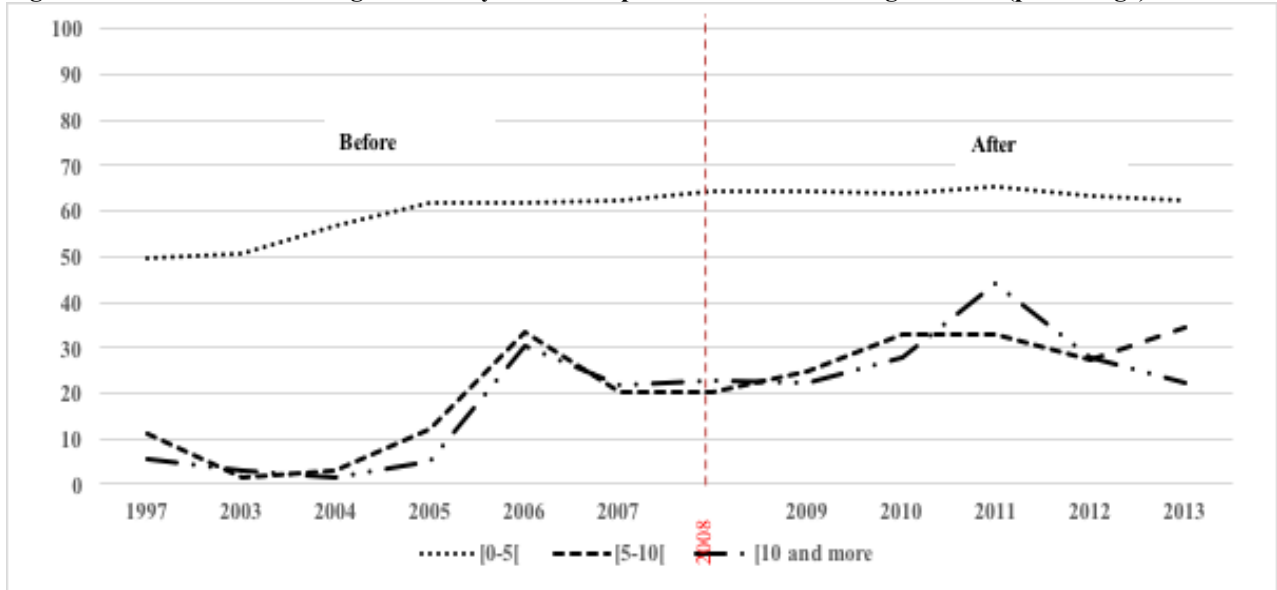


Source: authors from the ONS databases.

Still focusing only on the private non-agricultural sector,

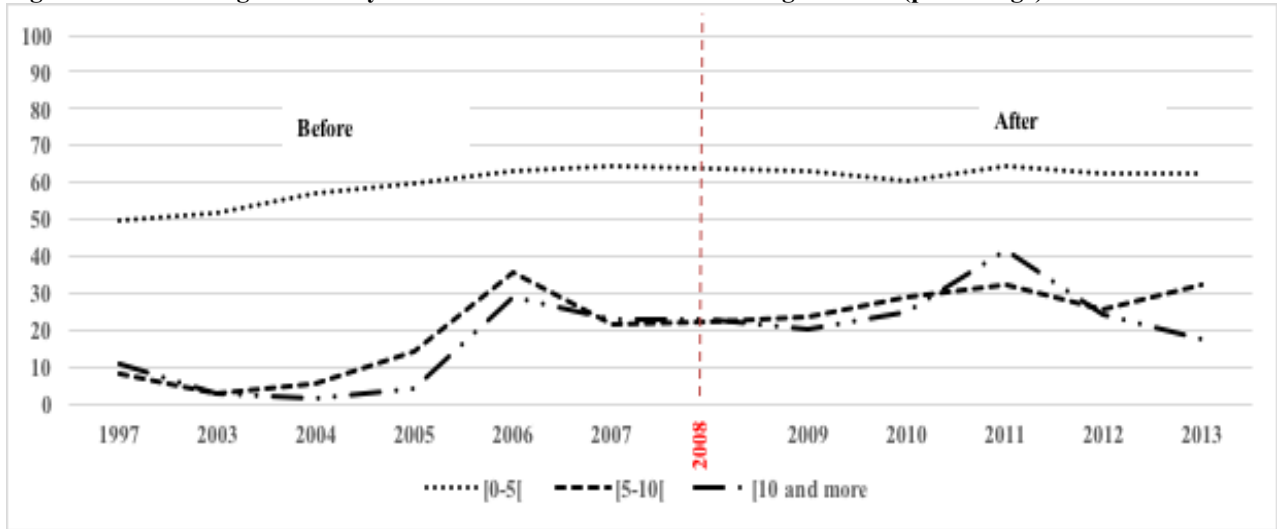
Figure 4 and Figure 5 show that escaping administrative and /or tax registration is most likely for the establishments below five workers than for other companies. Both shares are on rise from 1997 to 2006, then remain stable or slightly decline in the end of the period. Before the Action Plan, we do not observe a large difference comparing the enterprises of 5-9 to those of at least 10 employees; both shares move together with some fluctuations; whereas they diverge after the Action Plan.

Figure 4. No administrative registration by size in the private sector outside agriculture (percentage)



Source: authors from the ONS databases.

Figure 5. No Tax Registration by Size in the Private Sector outside agriculture (percentage).



Source: authors from the ONS databases.

6.2. Difference in Difference Estimation

We test our two categories: the employees to check the impact on informal employment and self-employed to check the effect on the informal sector. As for the employees, we added the impact on the new employees who just begun working because in the executive decrees corresponding to the Action Plan, the employers have specific advantages for encouraging inclusion of new employees.

Using the DID estimation, we estimated four models. The first one is the basic model estimated without any covariates. The second model controls for gender and the human capital variables, which are time variant such as age, age squared, and four levels of education (at less primary, intermediary, secondary and superior as reference. In the third model, the industry is included as dummy variables such as Extractive industries, Manufacturing, Electricity & Gas and water, Construction (reference), Trade & Hotels and Restaurants, Transport and Communication, Finance and Real Estate, Public & social and personal

services. In the fourth model, we include the linear trend over time and some conjectural co variables such as real GDP growth rate and unemployment rate per annum.

Table 3. DID Estimation: Probability to Get an Informal Job: Employees.

	] 5-10 [workers			At least 10 workers		
	Post	Treatment	DID	Post	Treatment	DID
All employees						
Model 1: Basic	0.101*** (0.038)	-0.551*** (0.049)	-0.083 (0.063)	0.101*** (0.038)	-2.012*** (0.039)	-0.087* (0.051)
Model 2: including individual characteristics	0.546*** (0.040)	-0.554*** (0.053)	-0.143** (0.068)	0.546*** (0.040)	-1.863*** (0.043)	-0.185*** (0.056)
Model 3: including industry	0.488*** (0.041)	-0.801*** (0.055)	-0.089 (0.070)	0.488*** (0.041)	-2.104*** (0.046)	0.221*** (0.058)
Model 4: including trend and conjectural variables	2.098*** (0.077)	-0.789*** (0.058)	-0.107 (0.072)	2.098*** (0.077)	-2.188*** (0.049)	0.162*** (0.060)
New employees						
Model 1: Basic	-0.430** (0.195)	-0.987*** (0.286)	0.583* (0.326)	-0.430** (0.195)	-2.108*** (0.228)	0.085 (0.261)
Model 2: including individual characteristics	-0.164 (0.203)	-0.712** (0.301)	0.268 (0.343)	-0.164 (0.203)	-1.883*** (0.241)	-0.2 (0.277)
Model 3: including industry	-0.232 (0.205)	-0.798** (0.312)	0.254 (0.353)	-0.232 (0.205)	-1.929*** (0.250)	-0.289 (0.284)
Model 4: including trend and conjectural variables	1.425*** (0.402)	-0.973*** (0.330)	0.441 (0.370)	1.425*** (0.402)	-2.132*** (0.269)	-0.049 (0.300)

Note: * p<0.10, ** p<0.05, *** p<0.01. Outcome is the probability to get an informal job.

Source: authors from the ONS databases.

Our results show that the Action Plan has a significant negative impact on the probability to get an informal job for the employees working in businesses with at least 10 workers. The effect is not significant for employees working in smaller enterprises (5-9 workers). In all regressions, the coefficient associated with the Action Plan is significant. However, this coefficient is not significant when the sample is restricted to new employees.

To check for the accuracy of our results, we use a falsification test by applying the DID methodology only on the period preceding the Action Plan, over 2001-2007 (Table A6). Year 2003 being arbitrarily chosen as threshold, the test brings in no significant effect. This result comforts our baseline results and supports the assumption of a significant effect of the Action Plan in 2008.

Regarding the impact on the probability of being employed in the informal sector, we analysed the impact on all the possible combinations of the administrative and/or tax

registration. Thus, we look at the influence of the Action Plan on respectively the administrative registration alone, the tax registration alone, the administrative or tax registration, and eventually on the administrative and tax registration. Our control group is composed of informal enterprises because the measures undertaken under the 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 with at least 10 employees represent an appropriate control group. The measures should not affect enterprises of 10 workers if they belong to the formal sector. Hence, we estimate a heterogeneous effect upon the three categories of enterprises using DID estimator to reduce the selection bias, and taking enterprises with at least 10 workers as a comparison group.

Table 4. DID Estimation: Probability to have no Administrative or / and Tax Registration, Enterprises.

	Post	[1-5]	DID	Post	[5-10]	DID
Administrative registration						
Model 1: Basic	0.760*** (0.132)	2.015*** (0.114)	-0.656*** (0.134)	0.760*** (0.132)	0.141 (0.145)	0.141 (0.145)
Model 2: including individual characteristics	0.600*** (0.147)	1.458*** (0.126)	-0.258* (0.149)	0.600*** (0.147)	-0.119 (0.163)	0.105 (0.191)
Model 3: including industry	0.861*** (0.153)	2.640*** (0.132)	-0.607*** (0.155)	0.861*** (0.153)	0.193 (0.169)	0.147 (0.201)
Model 4: including trend and conjectural variables	1.550*** (0.164)	2.600*** (0.133)	-0.539*** (0.155)	1.550*** (0.164)	0.199 (0.171)	0.153 (0.202)
Tax registration						
Model 1: Basic	0.664*** (0.134)	2.060*** (0.115)	-0.601*** (0.136)	0.664*** (0.134)	0.299** (0.144)	-0.23 (0.170)
Model 2: including individual characteristics	0.474*** (0.148)	1.528*** (0.126)	-0.205 (0.150)	0.474*** (0.148)	0.065 (0.160)	-0.023 (0.190)
Model 3: including industry	0.719*** (0.154)	2.693*** (0.132)	-0.545*** (0.156)	0.719*** (0.154)	0.401** (0.167)	0.000 (0.199)
Model 4: including trend and conjectural variables	1.214*** (0.165)	2.669*** (0.133)	-0.513*** (0.157)	1.214*** (0.165)	0.397** (0.169)	0.004 (0.201)

Administrative and tax registration						
Model 1: Basic	0.718*** (0.130)	2.041*** (0.111)	-0.683*** (0.131)	0.718*** (0.130)	0.216 (0.141)	-0.215 (0.166)
Model 2: including individual characteristics	0.566*** (0.144)	1.496*** (0.123)	-0.299** (0.146)	0.566*** (0.144)	-0.024 (0.158)	-0.019 (0.187)
Model 3: including industry	0.833*** (0.151)	2.703*** (0.130)	-0.664*** (0.152)	0.833*** (0.151)	0.309* (0.165)	0.003 (0.197)
Model 4: including trend and conjectural variables	1.411*** (0.162)	2.668*** (0.130)	-0.606*** (0.153)	1.411*** (0.162)	0.315* (0.166)	0.006 (0.198)
Administrative or tax registration						
Model 1: Basic	0.710*** (0.137)	2.042*** (0.118)	-0.580*** (0.139)	0.710*** (0.137)	0.227 (0.149)	-0.132 (0.175)
Model 2: including individual characteristics	0.509*** (0.151)	1.495*** (0.129)	-0.167 (0.153)	0.509*** (0.151)	-0.025 (0.166)	0.099 (0.195)
Model 3: including industry	0.750*** (0.157)	2.641*** (0.135)	-0.493*** (0.158)	0.750*** (0.157)	0.291* (0.172)	0.141 (0.204)
Model 4: including trend and conjectural variables	1.355*** (0.168)	2.612*** (0.136)	-0.450*** (0.159)	1.355*** (0.168)	0.287* (0.173)	0.149 (0.205)

Note: * p<0.10, ** p<0.05, *** p<0.01. Outcome is the probability to be unregistered, comparison group is the enterprises of at least 10 workers.

Source: authors from the ONS databases.

According to Table 4, the Action Plan has a negative and significant impact on both administrative and tax registration. However, the effect is significant only for enterprises employing up to four workers and it proves insignificant for enterprises of 5-9 workers. In most of the regressions (10 over 12), the coefficient corresponding to the impact of the Action Plan is negative and significant. The falsification test applied taking only the period before and using the DID on two sub-periods (Table A6), did not bring any significant impact: all the coefficients are statistically insignificant.

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 entrepreneurship could only help very small businesses moving from the informal to the formal sector; they were unable to move those with 5-9 employees.

Regarding the sign of control variables for the impact upon both the informal employment and informal sector, our results suggest that the informal economy in Algeria plays a counter-cyclical role during the period under review. The informal employment and informal sector display a negative relationship with the growth of GDP and inflation, whereas the relationship with the unemployment rate and trend is positive. However, the relationship requires additional scrutiny over the period under review, especially after 2008 (See below our comment regarding Okun's law in the conclusion). The overall informal economy involves mainly young and less educated people, women, and workers operating in the building

Conclusion and policy recommendations

We first sketch main findings

The core of employment policy in Algeria has been the implementation of active labour market programs by various public agencies, which have absorbed a substantial amount of resources. We assess the impact of the Action Plan adopted by the Algerian government in 2008 for promoting employment and fighting informal employment, which is the second intervention on the labour market since the first one dating back to 1997.

Using a cross section data over 1997-2013 and a DID estimator, we designed a test upon wage-employment and self-employment. Our results show that the Action Plan has contributed to reduce the chance of being an informal employee only for those working in enterprises with at least 10 workers.

Despite incentives for the recruitment of new job seekers on the labour market, the impact of the Action Plan upon these employees proved insignificant.

The Action Plan has also contributed to shrink the informal sector. The devices for creating and developing entrepreneurship have a negative significant impact on the administrative and tax registration for enterprises with 1-4 workers, as compared with those with at least 10 workers; it is insignificant for enterprises employing 5-9 workers. Advantages granted by the Algerian government, which takes a share of the costs for developing entrepreneurship, did help the move from the informal to the formal sector only for very small businesses with less than five employees, but they were unable to help moving those with 5-9 employees.

The falsification test was based upon the period following the first intervention on the Algerian labour market and used the DID over two sub-periods. It did not show any significant impact upon informal employment and the informal sector, all coefficients of the regressions being statistically insignificant. This result justifies the need for the second intervention on the Algerian labour market in 2008 to achieve a significant impact.

Beyond the DID test, we address two major issues: the institutional framework regarding business conditions and macroeconomic trends.

As for the institutional framework, the issue is to make it more business friendly and disentangle new start-up businesses from those that are already operating. Although property registration improved since 2008, regulations applying to start-ups has experienced very little progress in terms of time, procedures and cost, with the exception of minimum required capital that will drive the creation of smaller scale businesses. Contract enforcement did not change, whereas tax burden (including time, procedures and tax rate) has slightly improved since 2008 (See Table A9 in Appendix). The business index has deteriorated.

As regards the macroeconomic trends, Algeria has experienced a rising trend in oil prices and oil export receipts between, which help funding the various plans, including the Action Plan.

Elasticity of employment to output is negative until 2009, which complies with the predicted behaviour of Okun's law: a rise in real GDP growth drives a decline in the unemployment rate and Okun's coefficient is close to 1. However, Okun's law misbehaves since 2010 and its coefficient become positive (See Table A10 in Appendix).

There is some impact from 2009 global recession, although oil prices do not drop dramatically. The reason is twofold, one is the business cycle and the other one is the change in labour productivity that remains almost constant alongside with the change in informal employment and the unemployment rate.

Over 2001-2013, there is a close positive relationship between the change (or elasticity) in labour productivity and the unemployment rate; whereas the relationship proves negative between the change in informal employment and that of the unemployment rate. Hence, rising informal employment absorbs unemployed workers (See Table A11 in Appendix).

We now address some policy recommendations

Public spending rocketed over the period and the substantial share devoted to employment policies has been rising. The Support Plan for economic recovery (2001-2004) amounted to DZD 14.76 billion; whereas the Supplementary Support Plan for growth (2005-2009) spent over twice as much (i.e. DZD 33.36 billion) and expenditure multiplied by factor 2.5 (i.e. DZD 83.86 billion).as for the Five-year Development Plan (2010-2014).

Despite the resources agencies absorb, limited information is available regarding operations and results. Little is known about the average cost per job created, the number of beneficiaries, dropout rates, and follow-up of beneficiaries and assessment of policy effectiveness in terms of job placement rates, impact on duration of unemployment and the quality of employment (Musette, 2014).

Charmes (2010) pinpointed that social protection coverage according to social security schemes does not match that of labourforce surveys. Hence, a thorough understanding of disparate statistics is needed.: Extending social protection should be better grounded upon more reliable data in order to tame informality with appropriate policies.

Data collection should enable to provide a measurement in terms of nets flows. Mosts agencies provide cumulative figures regarding gross job creation: hence, gross flows are calculated as mere changes in the stock, bringing in misleading results that blur impact assessment.

Change in the magnitude of informal employment depends upon the pro- or counter-cyclical characteristics of its components according to economic upturn vs. slowdown. Informal wage employment is rather pro-cyclical, whereas self-employment and the informal sector may be counter-cyclical, shrinking with recovery and expanding with downturns. Beyond the controversy as for Okun's law, the employment multiplier seems quite substantial (equal to one), but the role and share of informal employment is overlooked. Hence, a quarterly economic survey of SMEs would provide a better understanding of the impact of short-run economic growth upon informality.

Missing monitoring policies should be enforced. A joint taskforce from Ministries in charge of employment policies should overcome the lack of coordination within the public administration. It should address specifically the informality issue, with the help of the National Statiscal Office (ONS) and provide a report every year under the auspices of the National Economic and Social Council (CNES).

The 'stick and carrot' policies implemented so far to enforce labour regulation and extend social protection should go on, alongside with monitoring and impact assessment devices. Incentives (granting credit, temporary tax exemption, improvement in doing business thanks to swift and limited number of procedures) go hand in hand with penalties (reinforced control from labour inspection and from banks). The balance must avoid the disincentive effect of extending social protection as a windfall benefit in the process of formalising informality, e.g. discouraging employers to hire formal employees. Such mechanisms should be tailored according to the heterogeneous segments they address: promoting income-generation activities to the working poor, extending social protection to non-permanent informal paid employees as well as to informal entrepreneurs. Targeting new labour market entrants, micro entrepreneurs and employees, will prove easier than changing the behaviour of already existing categories of informal workers.

Other general conditions that will improve the formalization of informality require enhancing the quality and productivity of services, improving human capital, fostering innovation, and promoting both competition and subcontracting for small-scale activities.

This contribution calls for completion, with regard to the impact of the Action Plan upon the duration of job placement. We observe that aggregate unemployment data display a substantial decline since 2002, but we ignore the individual impact on sustainable long-term employment.

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Appendix

Table A1: Distribution of subsidies for business start-ups according to schemes and the size of staff

Scheme / Staff	ANSEJ (%)		ANGEM (%)		CNAC (%)		ANDI (%)		Total	(%)
0 – 9 employees	16500	(78.5)	2200						21000	(100)
50 - 249 employees							6914			
Total	24500	(67.3)	2200	(5.9)	2275	(6.1)	8310	(22.3)	37300	(100)

Source: Authors' calculation from ONS (2012, p. 28)

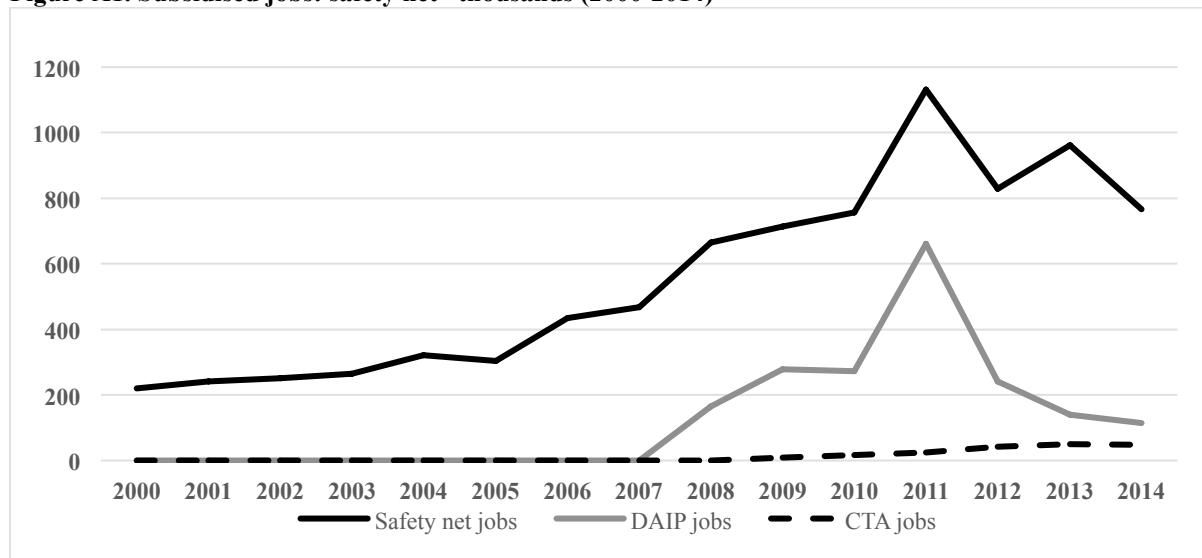
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Table A2. Employment, unemployment and subsidised job devices (1997-2015)

	1997	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<i>Δ real GDP (2005 constant prices)</i>			3	5.6	7.2	4.3	5.9	1.7	3.4	2.4	1.6	3.6	2.9	3.4	2.8	3.8	
<i>Δ unemployment rate</i>			-8.39	-5.13	-8.49	-15.19	-23.88	-19.61	12.19	-18.11	-9.73	1.96	0.1	10	10.91	8.16	
<i>Δ working pop.</i>			-1.41	-0.63	2.91	8	0.23	-6.51	3.47	3.47	2.22	2.53	-1.37	7.13	4.72	-4.26	
<i>Δ labour productivity</i>			2.19	1.48	3.96	-10.6	2.66	-7.76	6.7	-3.77	-1.9	0.8	4.35	-2.4	-3.1	9.36	
Working pop.	7,757,000	8,691,000	8,568,000	8,514,000	8,762,000	9,470,000	9,492,000	10,110,000	9,969,000	10,315,000	10,544,000	10,811,000	10,662,000	11,423,000	11,963,000	11,453,000	11,963,000
Employed pop.	5,708,000	6,180,000	6,229,000	6,482,000	6,684,000	7,798,000	8,044,000	8,869,000	8,594,000	9,145,000	9,472,000	9,735,000	9,599,000	10,170,000	10,788,000	10,239,000	10,788,000
<i>Employment rate</i>	-	30.5%	29.8%	30.3%	30.4%	34.7%	34.7%	37.2%	35.3%	37.0%	37.2%	37.6%	36.0%	37.4%	39.0%	36.4%	
Unemployed pop.	2,049,000	2,511,000	2,339,000	2,032,000	2,078,000	1,672,000	1,448,000	1,241,000	1,375,000	1,170,000	1,072,000	1,076,000	1,063,000	1,253,000	1,175,000	1,214,000	1,175,000
<i>Unemployment rate</i>	26.4%	29.5%	27.3%	25.9%	23.7%	17.7%	15.3%	12.3%	13.8%	11.3%	10.2%	10.0%	10.0%	11.0%	9.8%	10.6%	
<i>Δ employed pop.</i>			49,000	253,000	202,000	111,4000	246,000	825,000	-275,000	551,000	327,000	263,000	-136,000	571,000	618,000	-549,000	327,000
<i>Δ unemployed pop.</i>			-172,000	-307,000	46,000	-406,000	-224,000	-207,000	134,000	-20,500	-98,000	4,000	-13,000	190,000	-78,000	39,000	134,000
Safety net jobs	355,305	220,013	241,787	251,355	264,463	320,580	303,342	434,658	468,043	664,228	714,574	757,489	1130,578	828,444	961,431	766,441	664,228
DAIP jobs	-	-	-	-	-	-	-	-	-	164,296	277,618	273,141	660,810	241,993	138,973	113,417	96,143
CTA jobs	-	-	-	-	-	-	-	-	-	-	8,027	16,937	24,188	41,753	49,076	47,262	32,716
Business jobs		28,735	20,152	19,631	14,771	19,111											
ANSEJ jobs		28,735	20,152	19,631	14,771	19,077	30,376	24,500	22,685	31,418	57,812	60,132	92,682	129,203	96,233	40,856	40,856
ANGEM jobs	-	-	-	-	-	-	4,994	33,331	25,847	63,148	91,101	77,934	16,1417	219,641	166,053	176,315	176,315
CNAC jobs	-	-	-	-	-	34	5,159	6,078	6,949	5,781	9,574	15,804	35,953	59,125	41,786	37,000	37,000
Total safety net+ business jobs (	355,305	248,748	261,939	270,986	279,234	339,691	343,871	498,567	523,524	764,575	873,061	911,361	1420,631	1236,413	1265,503	1020,612	873,061
<i>Subsidised jobs / working pop. (%)</i>	4.58	2.86	3.05	3.18	3.18	3.59	3.62	4.93	5.25	7.41	8.28	8.43	13.32	10.82	9	8.91	
<i>Safety net jobs / working pop. (%)</i>	4.58	2.53	2.82	2.95	3.02	3.38	3.19	4.3	4.69	4.84	4.07	4.32	4.18	4.77	4.89	5.29	

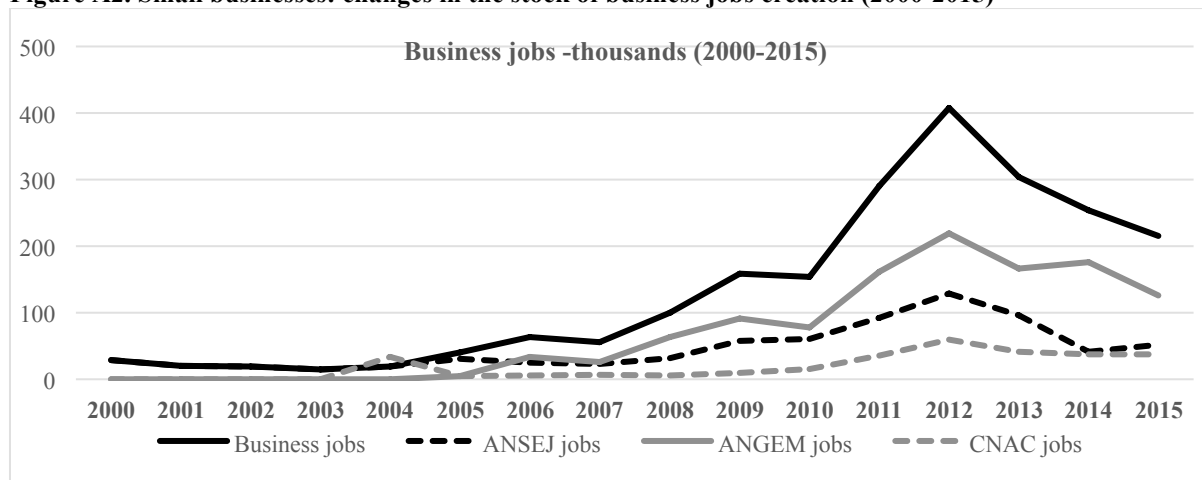
Source : Authors' calculations from ANEM (2015) ; ANGEM (2017) ; CNES (2016) ; Comptes Nationaux (portail ONS) ; Gouvernement algérien (2010) ; MIM (2015a ; 2015b ; 2016a ; 2016b) ; Musette (2013) ; ONS (2012 ; 2016) ; Portail Premier Ministre (2009 ; 2012).

Figure A1. Subsidised jobs: safety net –thousands (2000-2014)



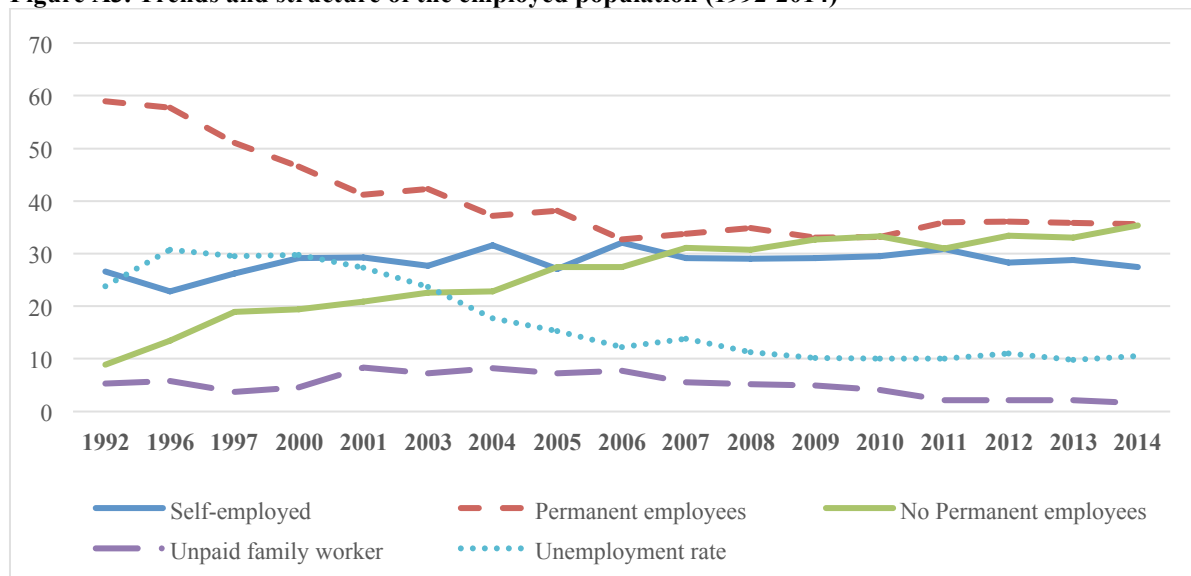
Source: Table A2; MIM (2016; 2017).

Figure A2. Small businesses: changes in the stock of business jobs creation (2000-2015)



Source: Table A2; MIM (2016. 2017).

Figure A3. Trends and structure of the employed population (1992-2014)



Source: Authors from the ONS databases

Table A3. Distribution of Social Security Contribution

Industry	Share of employer	Share of employee	Share of social fund	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%

Note: Social contributions for the self-employed amount to 15%, equally divided (7.5%) between social insurance and retirement calculated upon annual taxable income (from DZD 216,000 to 1,728,000).

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

Table A4: Distribution of businesses according to sector and the size of staff

Staff (employees)	0-9 (%)	10-49 (%)	50-249 (%)	250+ (%)	Total (%)
Private sector	903,501 (98.7)	9,503 (1.03)	2,037 (0.22)	275 (0.03)	915,316 (100)
Total	914,106	15,379	3,833	932	934,250

Source: ONS (2012, p. 64)

Table A5 Trends in the percentage distribution of working population in the private sector according to the size of businesses (with premises or not).

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
0-4 employees	77	78				73	73		69	68	72	76	76	67	72.9
Formal sector	21	19				18	19		18	17	17	20	23	22	
<i>Informal sector</i>	<i>79</i>	<i>81</i>				<i>82</i>	<i>81</i>		<i>82</i>	<i>83</i>	<i>83</i>	<i>80</i>	<i>77</i>	<i>78</i>	<i>80.4</i>
5-9 employees	9	10				13	13		15	14	16	12	15	14	13.0
Formal sector	24	22				17	21		18	20	20	23	22	27	
<i>Informal sector</i>	<i>76</i>	<i>78</i>				<i>83</i>	<i>79</i>		<i>82</i>	<i>80</i>	<i>80</i>	<i>77</i>	<i>78</i>	<i>73</i>	<i>78.8</i>
0-9 employees	86	88				86	86		84	82	88	88	91	81	86
10 employees	15	11				14	15		16	18	12	11	10	19	14.0
Formal sector	41	52				45	49		53	50	38	41	43	62	
<i>Informal sector</i>	<i>59</i>	<i>48</i>				<i>55</i>	<i>51</i>		<i>47</i>	<i>50</i>	<i>62</i>	<i>59</i>	<i>57</i>	<i>38</i>	<i>52.7</i>
Total	100	100				100	100		100	100	100	100	100	100	100

Note: Informal = registered with Social Security Insurance

Source: Authors' calculations from the Labour Force Surveys (ONS, several years).

Table A6. Falsification Test: Probability to Get an Informal Job (2001-2007).

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

Note: * p<0.10, ** p<0.05, *** p<0.01, outcome is the probability to get an informal job.

Source: Authors from the ONS databases.

Table A7. Falsification Test: Probability to have no Administrative or / and Tax Registration, Enterprises

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

(1997-2005).

Note: * p<0.10, ** p<0.05, *** p<0.01. Outcome is the probability to be no registered, enterprises of at least 10 workers being the reference group.

Source: Authors from the ONS databases

Table A8. Descriptive Statistic Before and After the Action Plan.

	Before	After	Total
Education			
Without diploma	15.4	12.7	14.9
Primary school	23.5	21.1	23
Intermediate	36.2	41.2	37.2
Secondary school	18.8	18.9	18.8
University	6.1	6.2	6.1
Total	100	100	100
Gender			
Male	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
Industry			
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 Estate	0.4	0.3	0.4
Other services	9.5	9.8	9.5
Total	100	100	100
Social security registration			
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
Size of enterprises			
[0-4]	77	67.5	74.7
[5-9]	9.8	12.9	10.6
[10 and over]	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
Tax 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

Note: * All the absolute frequencies are over 40.

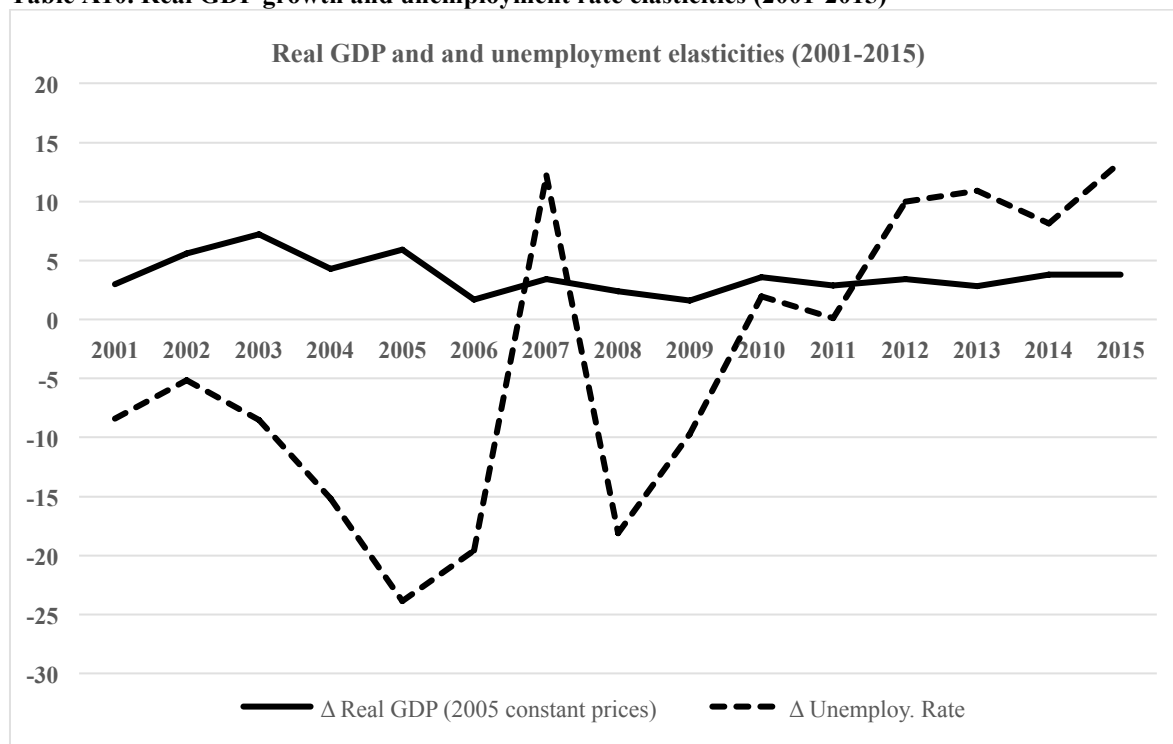
Source: Authors from the ONS databases.

Table A9. Doing Business indicators in Algeria (2005-2015)

Algeria	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Business start-up											
Procedures (number)	13	13	13	13	13	13	13	13	13	13	12
Time (days)	24	24	24	24	24	24	24	24	24	22	20
Cost (% GNI <i>per capita</i>)	12,4	13,4	13,2	10,8	12,1	12,9	12,1	12,1	12,4	11	10,9
Minimum Capital (% GNI <i>per capita</i>)	55,1	46	45,2	36,6	31	34,4	30,6	27,2	28,6	24,1	23,6
Property registration											
Cost (% of property value)	7,5	7,5	7,5	7,5	7,1	7,1	7,1	7,1	7,1	7,1	7,1
Procedures (number)	14	14	14	14	10	10	10	10	10	10	10
Time (days)	74	74	74	74	55	55	55	55	55	55	55
Contract enforcement											
Time (days)	630	630	630	630	630	630	630	630	630	630	630
Taxes											
Time to prepare and pay taxes (hours)	451	451	451	451	451	451	451	451	451	385	385
Tax payments (number)	39	39	27	27	27	27	27	27	27	27	27
Total tax rate (% of profit)	76,9	76,9	74,2	74,4	73	73	73	72,8	72,7	72,7	72,7
Ease of doing business index											
(1=easiest to 185=most difficult)				134	136	143	148	151	147	161	163

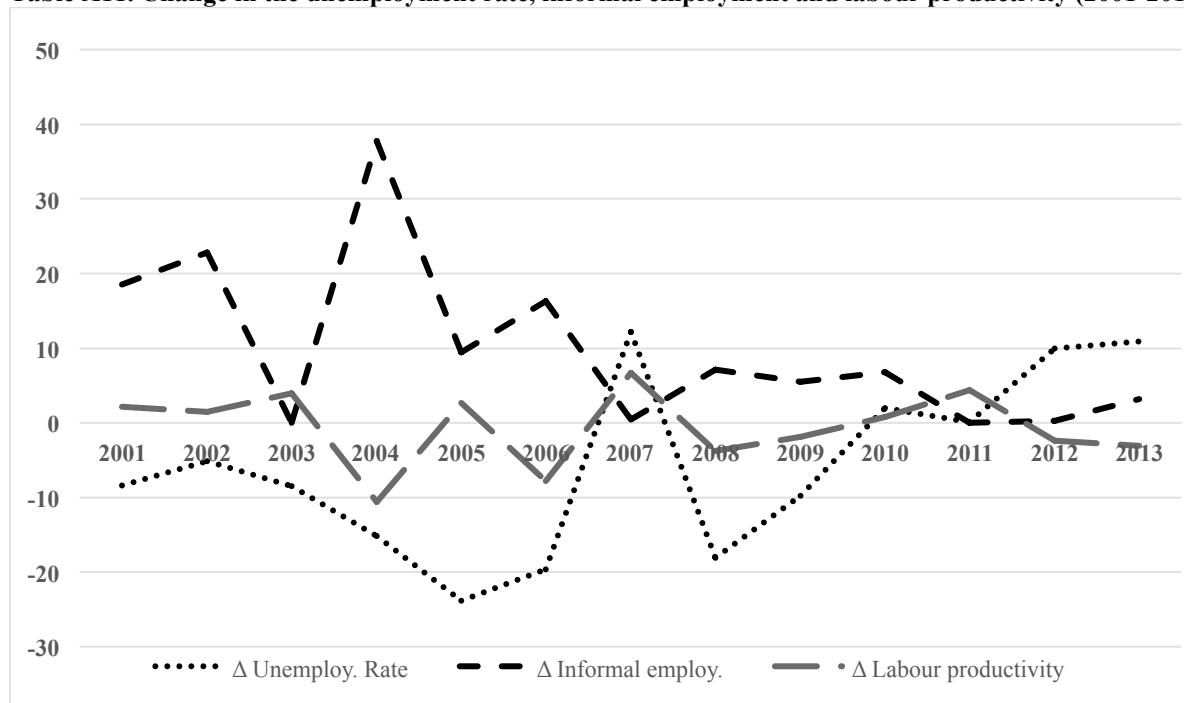
Source: World Bank Indicators data base (*Doing Business*)

Table A10. Real GDP growth and unemployment rate elasticities (2001-2015)



Source: Authors' calculations from ONS databases.

Table A11. Change in the unemployment rate, informal employment and labour productivity (2001-2013)



Source: Authors' calculations from ONS databases.

ADS	Agence de Développement Social
ANEM	Agence Nationale de l'Emploi.
ANGEM	Agence Nationale de Gestion de Micro- crédit
ANDI	Agence Nationale Développement à l'Investissement
ANDPME	Agence Nationale de Développement de la Petite et Moyenne Entreprise
ANSEJ	Agence Nationale de Soutien à l'Emploi des Jeunes.
CFI	Contrat de Formation-insertion
CID	Contrat d'Insertion des Diplômés
CIP	Contrat d'Insertion Professionnelle
CNAC	Caisse Nationale d'Assurance Chômage.
CPE	Contrat de Pré Emploi
CTA	Contrat de Travail Aidé
DAIP	Dispositif d'Aide à l'Insertion Professionnelle
DAIS	Dispositif d'Aide à l'Insertion Sociale
ESIL	Emploi Salarié d'Initiative Locale
IAIG	Indemnité pour les Activités d'Intérêt Général
IBS	Impôt sur le Bénéfice
IRG	Impôt sur le revenu global
PID	Programme d'Insertion des Diplômés
PNR	Part Non Rémunérée
SIVP	Stage d'Initiation à la Vie Professionnelle

Glossary

Source: Authors