Okun's law, informal employment and the impact of labour market policies in Algeria since 1997

Philippe Adair, Ali Souag

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Philippe ADAIR[1] et Ali SOUAG[2]

[1] ERUDITE, Université Paris-Est Créteil, France. Email: adair@u-pec.fr
[2] ERUDITE, Université Paris-Est Créteil, France. Email: souag_ali@yahoo.fr

Abstract

The paper tackles the job creation issue with respect to the framework of labour market policies implemented in Algeria since the late 1990s, in particular in 1997 and 2008. First, the sharp decline in unemployment rate and high elasticity *vis-à-vis* GDP growth rate questions the relevance of Okun's law. Second, the quantitative impact in terms of job creation is assessed as regards three employment schemes: intermediation on the labour market, safety net job creation and the effect of entrepreneurship promotion upon employment within SMEs. Third, the interplay between rising informal employment and unemployment decline before and after 2008, is addressed thanks to a DiD experiment testing informal wage employment as well as informal businesses. The overall impact of employment policy schemes proves weak upon both the unemployment rate and informal employment.

Keywords: Algeria; DiD, Informal employment; Labour market policies; Okun's law; Unemployment.

JEL: E26; J46; J48.

1. Introduction

We assess labour market policies conducted in Algeria since the implementation in 1997 of a first set of schemes fighting unemployment and poverty. To our best knowledge, no impact assessment of such policies has been yet carried out (Musette, 2013, Benhabib 2017).

The unemployment rate in Algeria increases first from 1987 (21.4%) to 1997 (26.4%), following the fall in oil prices and the Structural Adjustment Plan that took place from 1994 to 1997; restructuring and liquidation of state-owned enterprises would have resulted in more than 400,000 job losses between 1995 and 1998 (Musette et al., 2003). From the peak in 2000 (29.5%), the trend is reverted and the unemployment rate drops to 9.9% in 2016 (ONS, 2012, 2017); during this period, the rise in oil prices favours the increase in both export earnings and public expenditure throughout three plans.

According to the typology designed by the OECD (2015), active labour market policies in Algeria encapsulate three schemes: support for business creation or self-employment, professional inclusion with fixed-term contracts or temporary jobs, and improved employability of the unemployed thanks to training and job search assistance.

Musette (2011) classifies these schemes into three generations. The first generation covers the period 1989-1997 and aims at cushioning the negative effects of the Structural Adjustment Plan upon the labour market. It results in the establishment of the National Unemployment Insurance Fund (CNAC) in 1994, the Social Development Agency (ADS) in 1995 and the National Youth Employment Support Agency (ANSEJ) in 1997. The second generation (1998-2007) includes the establishment of the National Employment Agency (ANEM) and the National Agency for Microcredit Management (ANGEM) in 2004. The third generation starts in 2008 with the implementation of the Action Plan promoting employment and fighting unemployment (hereafter Action Plan) which brings in incentives for employers and social security coverage for employees, enhancement of temporary jobs and the targeting of informality to enforce compliance with tax and labour regulations, i.e. formalize the informal sector.

Our question is threefold: to what extent are changes in unemployment the outcome of economic growth, the activation of employment policies, or the substitution of informal employment for formal employment?

The paper is structured as follows. Section two tackles the relevance of Okun's law in Algeria, through the decomposition of the relationship between economic growth and employment as well as labour productivity and work force. Section three estimates the impact upon jobs creation from three employment schemes: supply and demand intermediation on the labour market, safety net jobs and employment within SMEs as an outcome of promoting entrepreneurship and microenterprises. Section four focuses on the interplay between informal employment and unemployment decline before and after 2008. Section five is devoted to the conclusion and discussion. Section six sketches policy recommendations.

2. The relationship between growth and employment: how relevant is Okun's law in Algeria?

2.1. Demography and labour market trends: some stylized facts

We first present some stylized facts drawn from the data in Table A1 (See Appendix 1).

The employment rate increases by 10% between 2000 and 2014, while the working-age population increases by only 4.6%. The change in the employment rate accelerates until 2005 and then declines until 2012. The change in the working-age population declines continuously and becomes negative from 2010. Hence, there is a potentially virtuous demographic effect upon unemployment.

The working-age population is stabilizing, the working population is rising with the increase in the employed population and the number of unemployed is dramatically dropping from 2,511 million

in 2000 to 1,241 million in 2006 and 1,072 million in 2009. The unemployment rate almost reached 30% in 2000, dropped to 20% in 2004 and 10% in 2009. Over the period 2001-2015, the average annual increase in the employed population nearly amounts to 300,000 workers (290,000) and the decline in unemployment benefits nearly 100,000 people (-98,000) per annum. It is worth noticing the fall in unemployment occurs before the implementation of the 2008 Action Plan

2.2. Labour force, labour productivity, unemployment and GDP: Okun's law

Box 1. Two specifications of Okun's law

Okun's law covers two specifications: the first difference model and the gap model.
According to the first difference model, the relationship between the logarithm of the actual observed output (y) and the observed unemployment rate (u) is expressed by:
$(u_t - u_{t-1}) = \alpha + (y_t - y_{t-1}) + \varepsilon_t$. Hence, $\Delta u_t = \alpha + \beta \Delta y_t + \varepsilon_t$.
β corresponds to the Okun coefficient, which measures the elasticity of unemployment to GDP.
According to the gap model, the relationship between the observed unemployment gap (u_t) to the natural unemployment rate (u^*_t) and the difference between observed GDP (y_t) and potential GDP (y^*_t) is expressed by: $(u_t - u^*_t) = a + \gamma (y_t - y^*_t) + \omega_t$.
γ corresponds here to the Okun coefficient.
The problem with the gap model is that y^* and u^* are not observable and must be estimated. The estimation requires smoothing (e.g. Hodrick-Prescott filter) in order to impute the trend and cyclic components of these two variables respectively.
The elasticity coefficient is assumed to be negative and less than 1. Okun's law would be verified in the long term (Ball et al., 2017). Labour productivity and the labour force are decisive factors.

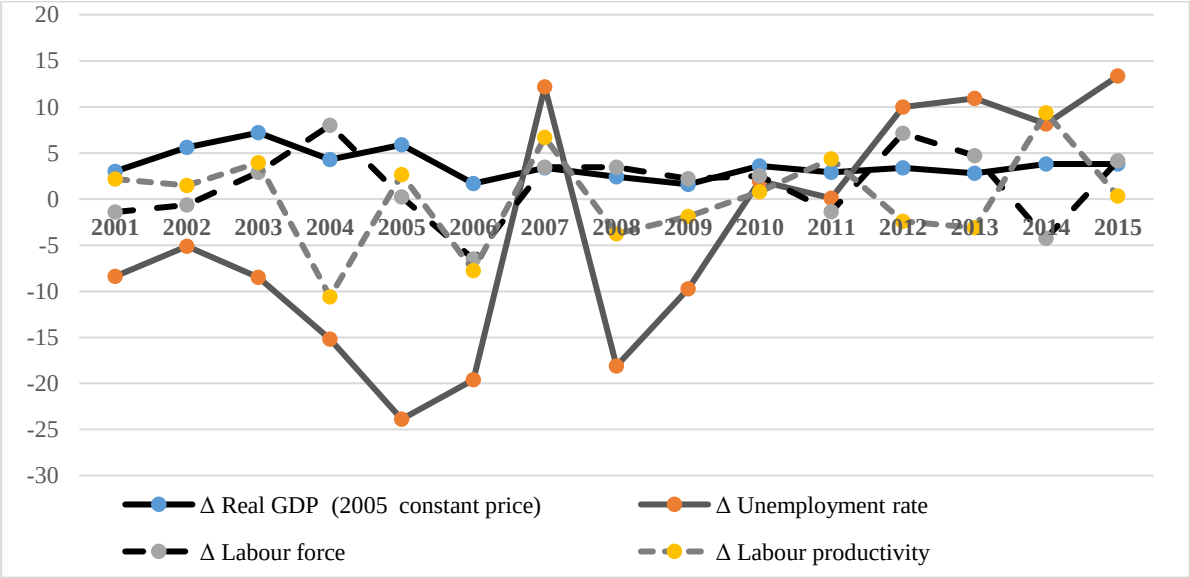
Source: authors

Okun's law (Box 1) proves controversial, with respect to two strands of literature addressing the relationship between economic growth and unemployment in Algeria.
The first strand includes two studies claiming that Okun's law does not exist under the gap model.
Yousefat (2011) uses an error-correction model (henceforth ECM) over the period 1970-2009 and concludes that there is a low causality of unemployment upon economic growth; however, no balancing relationship shows up either in the long or short term.
Driouche (2013), also using an ECM over the period 1980-2011 to determine the growth rate required to absorb long-term unemployment, concludes that there is no co-integration relationship between unemployment rate and economic growth.
The second strand gathers three other studies claiming that Okun's law is valid.
Furceri (2012) explores the impact of labour market institutions on the relationship between unemployment and growth over the period 1980-2008. He observes a negative relationship between employment and the output gap. The Okun coefficient appears low (-0.05) due to the preponderance of industries experiencing low employment growth (hydrocarbons) and the rigidity of the labour market characterized by the opposition of insiders and outsiders.
Adouka and Bouguell (2013) use an ECM validating Okun's law over the period 1980-2010: a 1% increase in real GDP around its potential GDP results in a 0.2% decline in the unemployment rate.
El Aynaoui and Ibourk (2016) test Okun's law on a sample of 39 countries during the period 1991-2015. They validate the gap model in the case of Algeria for which a 1% growth reduces unemployment, approximately, in the same proportion.
However, any increase in GDP does not necessarily imply a fall in unemployment due to the variation in labour productivity and the labour force, which is the sum of the growth rate needed to stabilize the unemployment rate. This growth rate can stand as a first approximation of the growth rate of potential GDP.
According to Figure 1, during the period 2001-2015, the annual average change in labour productivity is 0.1526% and it fluctuates in line with real GDP up to 2010, while the change in the labour force is 1.644% and fluctuates in line with the unemployment rate until 2010. The annual average change in real GDP is 3.693% and the change in unemployment is -3.458%. The sum of the

change in labour productivity and the change in the labour force (i.e. the growth rate requested to stabilize the *Yώgt* unemployment rate) averages 1.749%.
We use alternatively a simplified version of the first difference model and the gap model[3].
The elasticity of the unemployment rate / GDP averages -1.398 over the period 2001-2015. The elasticity is strong and negative from 2001 to 2009, then becomes positive between 2010 and 2015 when the unemployment rate reaches 10%, without possibly inferring that it is the natural rate of unemployment.
The simplified model in first difference is written as follows: $\Delta ut = + \beta \Delta yt$
Where Δut represents the average change in the unemployment rate over the period 2001-2015 and Δyt represents the average change in GDP growth rate over the same period.
Hence: -3.458% = -0.936 (3.693%), where the multiplier (β) is very close to -1 (-0.936).
The simplified gap model can be written: $U_t - U_{t-1} = -\gamma (Yg_t - Y\acute{w}g_t)$
Where $U_t - U_{t-1}$ is the average difference in the unemployment rate over the period 2001-2015, Yg_t is the average change in GDP growth rate over the same period and $Y\acute{w}g_t$ is the growth rate requested to stabilize the unemployment rate.
Hence: -3.458% = -1.778 (3.693% -1.749%), where the multiplier (γ) is higher than 1 (1.778).
With our simplified gap model, we obtain a comparable multiplier although a little higher than that (1.5) in the gap model that El Aynaoui and Ibourk (2016) apply over the same period (2000-2015).

Figure 1 shows that real GDP varies in line with labour productivity, whereas the unemployment rate varies in line with the labour force.

Figure 1. Okun's law, labour force and labour productivity: the gap model



Source: authors (See Table A1 in Appendix 1).

Whether using the difference or the gap model, Okun's law may be a valid long-run relationship. However, it sheds little light upon the short-run pattern of unemployment[4]. Of course, if Okun's law is not valid, one cannot explain the change in unemployment rate. Hence, it is worth examining the role of employment policy schemes in this respect.

[3] We use the OIC statistics database (OICStat) for real GDP rather than National Accounts series. Actually, the Algerian Statistical Office (ONS) compiles real GDP from 1989 constant price, which becomes obsolete. Other data come from Table A1 (Appendix 1). Calculations are available upon request.
[4] This is a main difference between the short-run employment multiplier (Kahn, 1931) and Okun's coefficient.

3. Employment policy schemes and the trend in unemployment

According to the literature review addressing the assessment issue of employment policies in Algeria, most studies are descriptive. The CNES (2002, 2010) provided two studies on employment policies assessment that did not include an impact assessment component. The World Bank (2010) conducted an assessment 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 policies tackling job creation in very small businesses (microenterprises), whereas Hammouda (2009) focused on the impact of employment policies from aggregate data rather than micro econometric analyses.

Besides the fact that impact assessment is a hot political issue, uncoordinated various agencies provide only gross data that prove sometimes disparate and net flows are unavailable. Table A2 (Appendix 2) lists the mechanisms implemented by the public authorities, under the auspices of two separate ministries whose various agencies intervene in the labour market (Figure A1, Appendix 1): the Ministry of Labour, Employment and Social Security (MTESS) as well as the Ministry of National Solidarity and Family (MSNF).

We examine successively the adjustment of the employment level resulting from labour market intermediation, from safety net precarious contracts and from job creation generated by the promotion of very small businesses (microenterprises).

3.1. Labour market intermediation and the role of the ANEM

The ANEM played a central role in regulating the functioning of the labour market with around two million job placements between 2006 and 2016 (See Table 1). The placement trend follows that of job vacancies, although gap is widening since 2004 (See Figure 2). According to the ANEM (2017), three out of four placements in 2016 were made in the private sector, but only 9% of the placements were permanent contracts and the remaining under temporary contracts; industries providing these jobs are respectively services (35%), manufacturing (32%) and building & construction (29.7%).

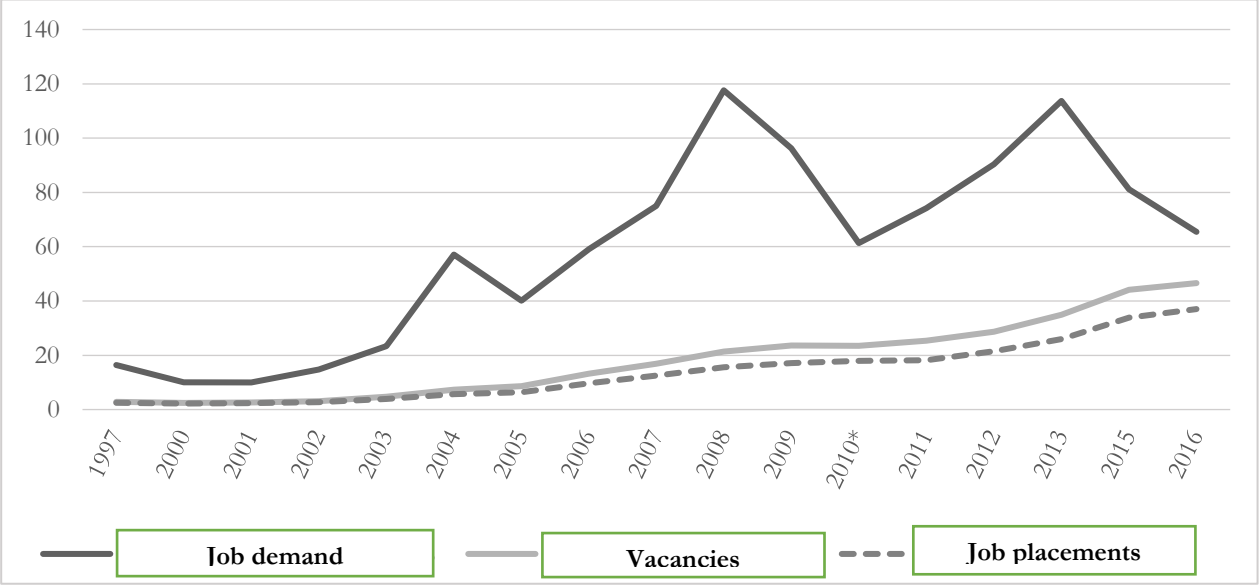
Table 1. ANEM balance sheet: data in stocks (2006-2016)

Job placements			DAIP placements / Inclusion (since 2008)	Total
ANEM	Private OPAP (2010-2014)	CTA (since 2009)		
2,093,262	37,043	261,990	2,033,583	4,425,878

Source: ANEM (2015; 2016; 2017)

Regarding the promotion of wage employment for young people, the DAIP (with its three components CID, CIP and CFI) enabled the inclusion of more than two million young people over the period 2008-2015 (Table A1). Women get a 53% share in 2014, particularly in the CID and CIP schemes. The CTA gathers a total of 261,990 workers with a permanent contract between 2009 and 2016 (ANEM, 2017). However, the inclusion of young people remains fragile because jobs are temporary; the duration of contracts is limited to a maximum of two years (one year renewable once), which temporarily delays unemployment on the labour market.

Figure 2. Job demand, vacancies and job placements - 1997-2016 (thousands)



Note: From 2010 up to 2014, placements from private placement job agencies (OPAP) are included in the series s. No data are available for 2014.
Sources: L'Algérie en quelques chiffres (ONS, 2000-2014) ; ANEM (2016 ; 2017)

3.2. Subsidized wage employment schemes

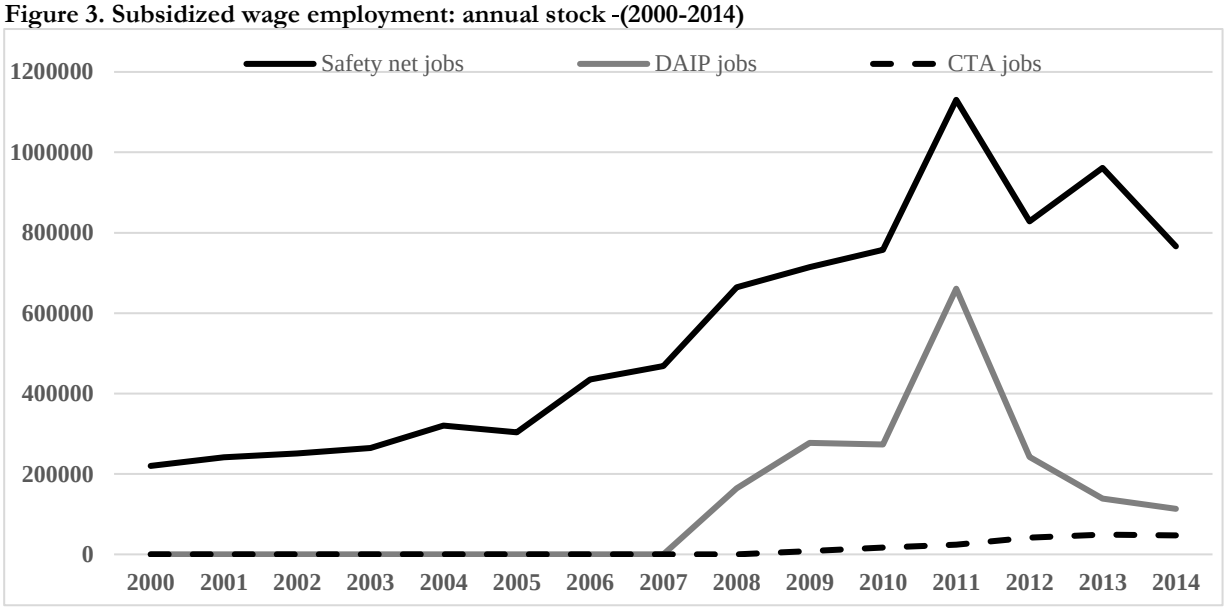
Subsidized wage employment schemes total more than 6 million jobs over the period 1997-2014, an annual average 342,300 beneficiaries (See Table 2, Figure 3 and Table A2 in Appendix 2). These "waiting" jobs intend to alleviate difficulties of the most disadvantaged social strata. Table 2 presents the results of the four programmes. The predominant part of the DAIS (formerly ESIL) and the IAIG that includes the DAIS from 2012 onwards. The proportion of young people under 30 benefiting from the DAIS dropped from nearly 88% in 2008 to 34% in 2014. (CNES, 2016). PID gathers a growing share of women who represent more than 79% of beneficiaries in 2014 compared to 63.8% in 2008 (CNES, 2016).

Table 2. Balance sheet of the social safety net schemes

TUP-HIMO (1997-2014)	DAIS (formerly ESIL) (1997-2014)	IAIG (1997-2012)	PID (formerly CPE) (1997-2014)	Total
659,299	2,558,244	2,439,415	502,280	6,159,238

Sources: CNES (2016); Gouvernement algérien (2010); Musette (2013); ONS (2003); Premier Ministre (2009; 2012).

Figure 3. Subsidized wage employment: annual stock -(2000-2014)



Source: Table A1 (Appendix 1).

3.3. Small business creation schemes

Support for the creation of activities and the encouragement of entrepreneurship, particularly among young people, results in an increasing number of microenterprise projects financed by ANSEJ, CNAC and ANGEM (See Table 1 in Appendix 1 and Table A2 in Appendix 2). Table 3 and Figure 4 present the outcomes of these schemes since their launch. More than one million projects have been funded generating more than two million direct jobs, having in mind this figure is projection and not necessarily net creation.

Together, the three schemes generate an average of nearly two jobs per project and an annual average of 141,000 jobs from 2005 to 2016, i.e. another 200,000 jobs created per year over the period 2008-2015, during which employment creation is particularly important up to 2012. The annual number of jobs doubled by 2008 and tripled by 2011, declining rapidly since 2012.

Overall, the ANGEM scheme generates on average nearly twice the job creation of the ANSEJ and about four times that of the CNAC. The average number of jobs per project is the lowest for the ANGEM (1.5) followed by the CNAC (2) and the ANSEJ (2.4).

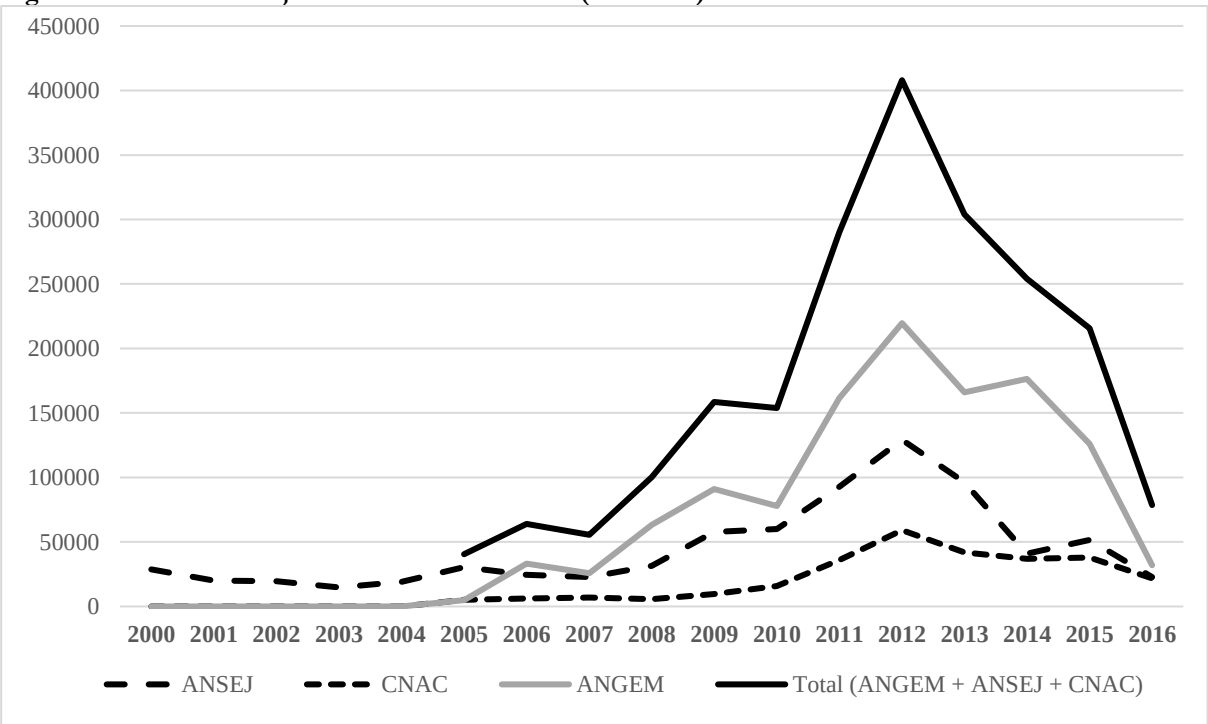
Tableau 3. Balance sheet of small business creation schemes

Funded projects	Potential jobs	Average number of jobs per project	Annual average number of jobs
ANSEJ (1997-2016)			
367,980	878,264	2.4	43,913
CNAC (2004-2016)			
138,716	288,721	2	22,209
ANGEM (2005-2016)			
785,317	1,177,976	1.5	98,165
ANSEJ + CNAC + ANGEM			
1,292,013	2,344,961	2	164,287 (2005-2016)

Sources: MIM (2017)

According to Seddiki (2013), the cost for a job from the ANSEJ scheme, including loan and interest charge would amount to DZD 200,000 in 2004 and has increased over time. This cost is higher than that of the ANGEM scheme. Unfortunately, there are no available disaggregated data regarding expenditure on labour market policies that would enable the compilation of comparative costs (Adair and Bellache, 2008).

Figure 4. Small business job creation: annual stock (2000-2016)



Source: Table A1 (Appendix 1) and MIM (2016; 2017).

Young people (aged 18-29) account for 37% of the total beneficiaries (ANGEM, 2017). Higher education leavers account for only 4% of all interest-free loans (PNR) compared with almost 50% for average education level. The ANGEM also focuses on improving the skills of young first-time applicants: 156,537 promoters have been trained over 2005-2016.

In addition, it is worth looking at some comments regarding the rise in SMEs throughout the period under review.

Job creation in SMEs induced by the 2001 SME Guidance Act would have tripled between 2000 and 2013. The average gross annual creation of more than 25,000 businesses (whose net balance is lower due to their mortality), which employs an average of 2.4 employees, generates an annual average of 60,000 gross jobs. Job creation occurs mainly in labour-intensive sectors with low productivity: services for half and BTPH for one third (Nemiri Yaici, 2014).

It should also be mentioned the role of the National Agency for Investment Development (ANDI) established in 2001. ANDI supported 48,363 projects generating 748,409 gross jobs from 2002 to 2011, 15 jobs per project and almost an annual average of 75,000 jobs (Kadi, 2013).

According to Kadi (2013), the contribution of SMEs to total employment would amount to almost one million jobs (981000). However, this contribution covers just over a quarter of the 3.55 million net new jobs created over the 2001-2010 period. It remains to explain nearly three quarters of job creation. If we add the 250,000 social net jobs created during the period (Annex 1), we reach 1,231 million.

It therefore remains to explain nearly two-thirds of job creation, which results from the demand for work of existing companies and which corresponds in particular to the 900,000 job placements made by ANEM during this period (Appendix 3).

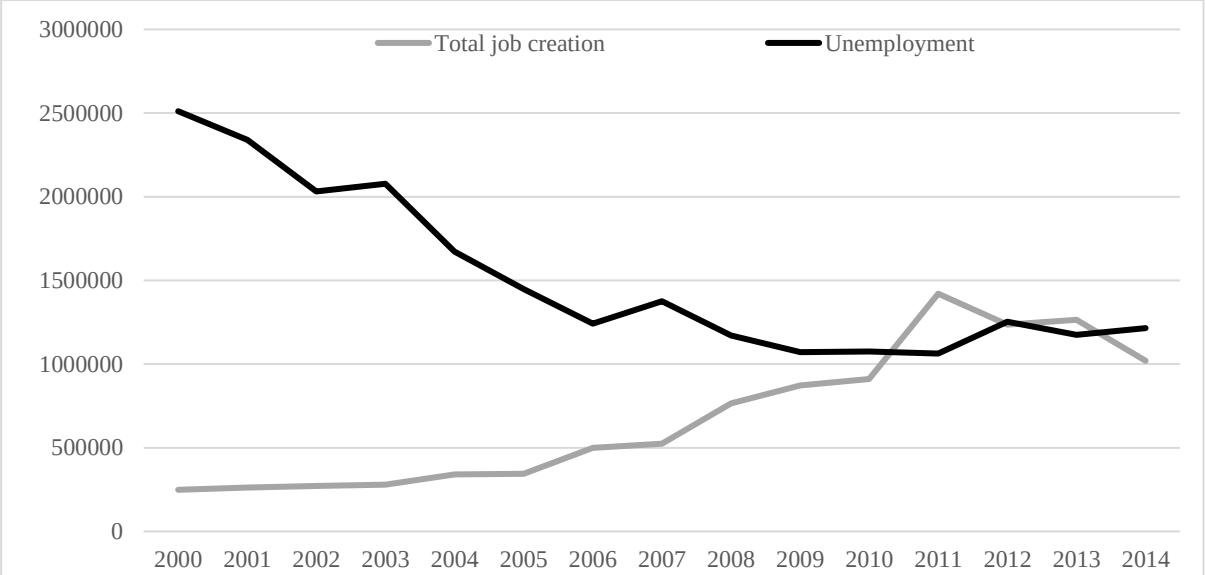
The rest of the job created did not transit through intermediation on the labour market.

3.4. The overall impact of employment policy schemes upon unemployment dynamics

The contribution of job creation from the various schemes to the growth of the employed population is weakly significant from 2000 to 2005 (4% of total employment) and is mainly limited to the social safety net. It has increased significantly since 2006, with the ramp-up of business

creation schemes; accounting for nearly one in seven jobs in 2011 (14.82%) and another one in ten jobs in 2013 and 2014 (See Figure 5).

Figure 5: Rising job creation and declining unemployment



Source: Table A3 (Appendix 3).

The macroeconomic assessment of employment policies is based on the estimated net effect of schemes upon employment and unemployment levels (impact variable) and the output level. Section two has already took care of the output level. Here, we compare the outcomes of these schemes according to the annual number of jobs created and the corresponding unemployment level. It should be reminded that the number of jobs created can be overstated and that the published data (in stock) are disparate and unadjusted.

From 2000 to 2014, job creation schemes helped reducing unemployment. However, the impact seems quite low, since the halving of the unemployment rate occurs between 2000 (29.5%) and 2005 (15.3%) and the impact does not persist beyond 2011, when the unemployment rate reaches 10%.

Macroeconomic assessment points out two major deficiencies. First, labour market policies prove mildly efficient before 2008. Second, reinforced policies after 2008 are neither timely, because the drop in unemployment slows down, nor cost-effective in the light of growing expenses throughout the three successive plans (See Section five).

Hence, we look for another driver of the sharp decline in unemployment: expanding informal employment.

4. Informal employment and employment policy

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).

According to 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), most unincorporated enterprises in Algeria (below 10 workers) count actually less than five 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

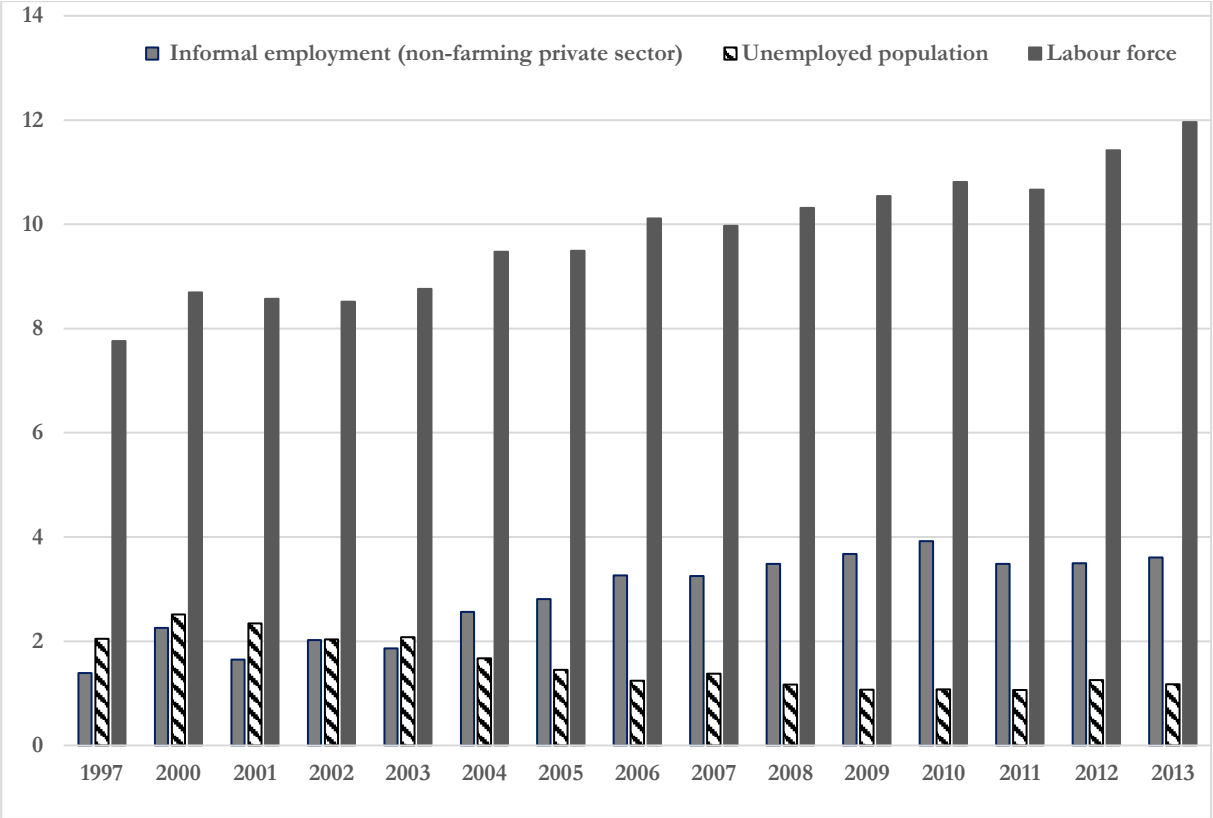
In line with the ILO definition (ILO, 2013), informal employment of the non-agricultural employed population consists in informal employees of both formal and informal enterprises, as well as non-

wage earners of microenterprises (below 10 employees) in the informal sector, who are not registered with Social Security.

4.1. Is informal employment a substitute for employment policy?

Figure 6 displays two observations of the change in labour force from 2000 to 2013. First of all, the unemployed population experiences a sharp decline and varies inversely with the labour force. Then, informal employment increases significantly until 2010 and varies directly with the labour force. From 2003 onwards, the number of informal workers exceeds that of the unemployed, suggesting that growing informal employment absorbs unemployment.

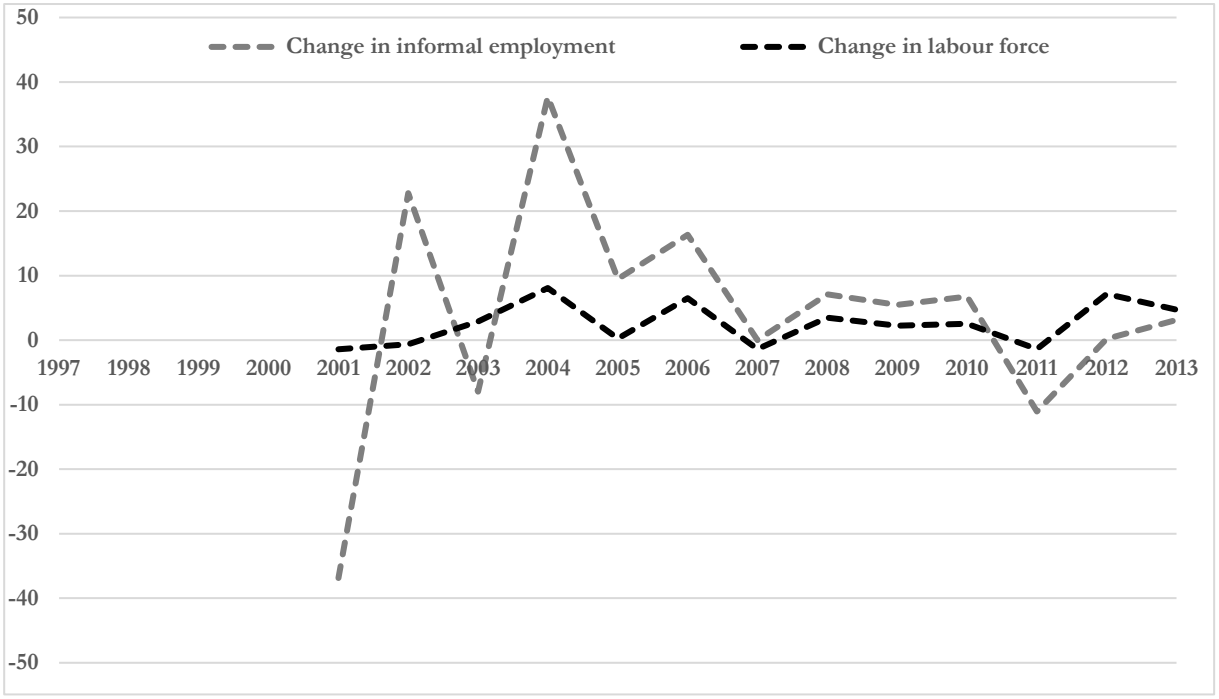
Figure 6. Labour market adjustment: the absorption of unemployment with informal employment



Source: authors' calculation from ONS data. See Table 1 (Appendix 1). Units are thousands.

Such absorption is evidenced by the joint variation in informal employment and labour force that follows exactly the same pattern from 2003 to 2011 (See Figure 7 and Table A3 in Appendix 3).

Figure 7. Joint variation in informal employment and labour force



Source: Authors' calculation from ONS data.

4.2. The impact of employment policy upon informal employment: a DiD experiment

Informal employment in Algeria displays little barriers to entry and constitutes a last resort job position to escape unemployment (Souag et al. 2016a, 2016b). Hence, employment policies combating unemployment should exert a negative impact on informality.

Souag et al. (2017) analyze the effects upon informality of the Action Plan adopted by the Algerian government in 2008, being the second intervention on the labour market after the first one (1997) that occurred in a different context. Thanks to cross-sectional data from ONS labour force surveys over 1997-2013, they use the Difference in Difference estimator (henceforth DiD), which measures the difference between before and after labour market intervention. Comparing the average variation over time of the treatment group compared to a control group, they identify the impact of the Action Plan on the probability of obtaining an informal job for employees (informal employment), and the impact on the administrative and fiscal registration of their business for self-employed (informal sector).

Following Souag et al (2016a, 2016b), all enterprises with staff below five employees are considered informal, whereas those with at least five employees are formal. Formal enterprises are further subdivided into two groups: from five to nine employees and with at least 10 workers. The treatment variable in the model is being employed in a formal enterprise, looking separately at these two groups. As for the impact upon the administrative and tax registration of self-employed workers, the scheme promoting business creation targets both the informal and new businesses. Companies employing at least 10 workers stand as a control group, although it may not be appropriate because a share of these also includes informal employees.

The mixed results show that the Action Plan contributed to the reduction of the informality but with heterogeneous effects. It helped decreasing the chance of holding an informal job, but only in firms with at least 10 workers, whereas the effect is not significant for smaller businesses that constitute the bulk of the informal sector. For first-time jobseekers, the impact is not significant. The Action Plan also helped lessening the share of the informal sector. Business creation scheme had a significant impact on the administrative and fiscal registration of very small businesses employing one to four workers as compared to companies employing at least 10 workers. The impact is not

significant for small businesses employing five to nine workers. Hence, the Action Plan proved more efficient improving compliance with tax registration than labour regulation upon workers' social protection, the former being less expensive to implement than the latter.

5. Conclusion and discussion

We assessed the various employment policy schemes implemented in Algeria since 1997. One main limitation stems in particular from the fact that the data on job creation are unadjusted, allowing only the measurement of gross jobs rather than net flows.

Beyond the controversy as for Okun's law, the employment multiplier seems quite substantial (equal to one), but it does not help predicting unemployment trend. However, it suggests that labour market policies taming unemployment proved rather useless, whereas public spending spillovers may have positively influenced economic conditions.

In the short and medium term, the macroeconomic impact of employment schemes on unemployment proves positive but weak. From a qualitative point of view, subsidized jobs are precarious and the failure of young micro-entrepreneurs should be included, implying that net job creation is below figures expected from for gross job creation. We ignore the individual impact and the issue of the medium-term inclusion of the beneficiaries must be addressed.

Informal employment stands as a substitute for formal jobs and seems to play a positive (and unexpensive) role upon declining trend in unemployment. Informality remains almost immune as regards the very weak impact labour market schemes exert on formalization, whereas the improvement in informal businesses registration is not due to bureaucratic procedures alleviation, which did not take place yet.

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 requested: Extending social protection should be better grounded upon more reliable data in order to tame informality with appropriate policies.

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. 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.

6. Policy recommendations

Missing monitoring policies should be enforced. A joint taskforce from Ministries in charge of employement 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 employees as well as to informal entrepreneurs. Targeting new labour market entrants, micro entrepreneurs and employees, may prove easier than changing the behaviour of already existing categories of informal workers.

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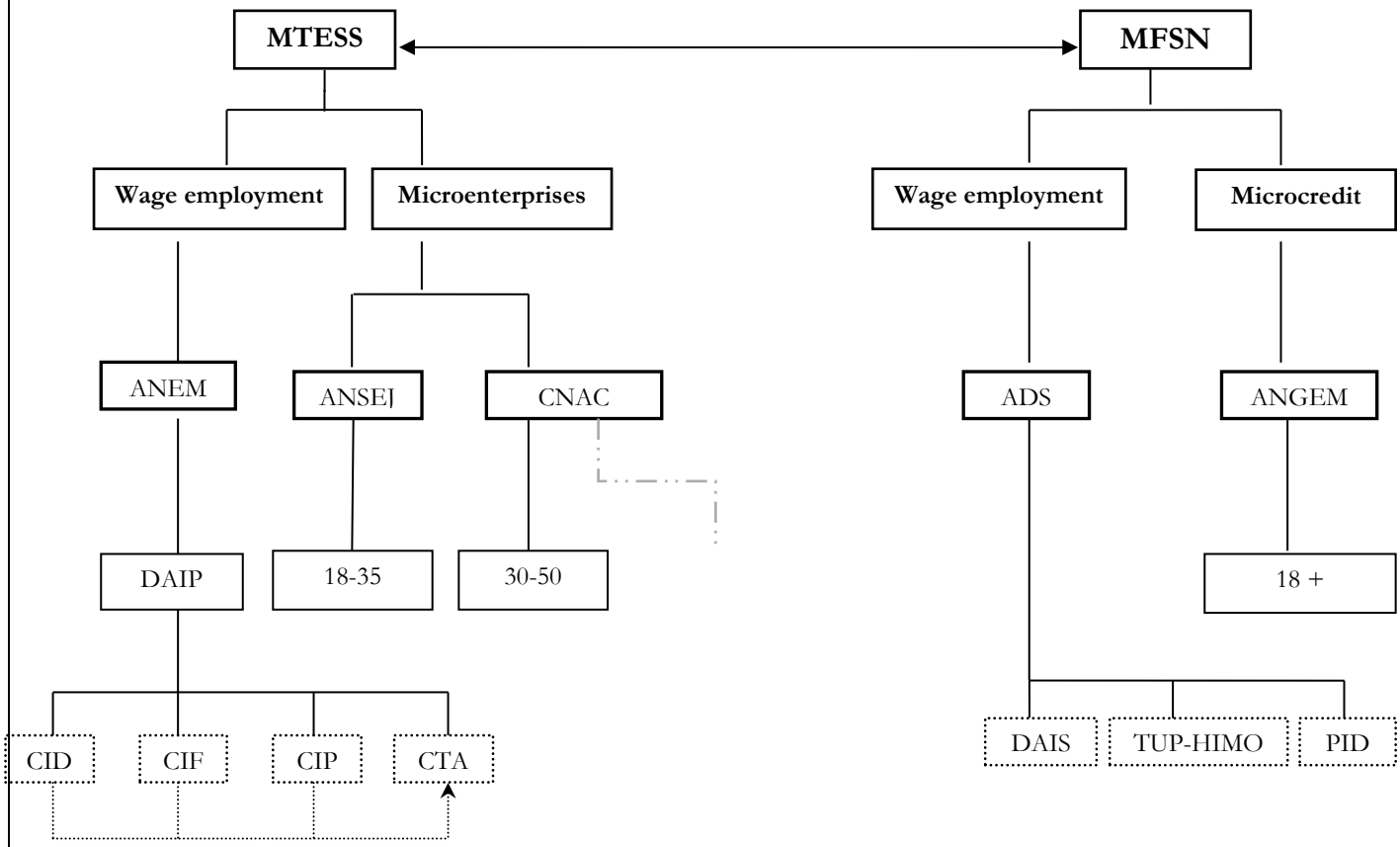
Appendix 1

Figure A1. Framework of labour market policies: Ministries in charge, agencies, schemes and beneficiaries



Note: acronyms and content are explained in Table A2 (Appendix 2).
Source: adapted from Benhabib (2017).

Table A1. GDP, labour market and employment policy statistics (1997-2015)

	1997	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
⊿ real GDP (2005 constant prices)			*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*	*3.8*
⊿ unemployment rate			*-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*	*13.34*
⊿ working pop.			*-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*	*4.17*
⊿ labour productivity			*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*	*0.32*
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	11,931,000
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	10,594,000
Employment rate	-	*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%*	*37.1*
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	1,337,000
Unemployment rate	*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%*	*11.2%*
Δ employed pop.			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	355,000
Δ unemploy. pop			-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	162,000
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	95,084
CTA jobs	-	-	-	-	-	-	-	-	-	-	8,027	16,937	24,188	41,753	49,076	47,262	39,445
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	51,670
ANGEM jobs	-	-	-	-	-	-	4,994	33,331	25,847	63,148	91,101	77,934	16,1417	219,641	166,053	176,315	126,152
CNAC jobs	-	-	-	-	-	34	5,159	6,078	6,949	5,781	9,574	15,804	35,953	59,125	41,786	37,000	37,921
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	1,420,631	1,236,413	1,265,503	1,020,612	879,971
Subsidized jobs / working pop. (%)	*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*	
Safety net jobs /working pop. (%)	*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*	
Informal employ.	1,390,000	2,255,000	1,647,696	2,023,196	1,861,812	2,563,779	2,807,088	3,265,031	3,251,254	3,481,933	3,672,576	3,921,209	3,486944	3,494,756	3,604,726		
% Informal employ.	*29.22*	*36.5*	*37.5*	*31.21*	*36.01*	*42.3*	*41.8*	*45*	*43.8*	*41.42*	*41.71*	*45.6*	*40.2*	*37.7*	*37.4*		

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); Souag et al (2017).

Appendix 2

Table A2. Labour Market Programmes

Active: DAIP vocational inclusion assistance scheme, run by the Ministry of Labour (**MTESS**) consists in three categories:				
Program	Target	Duration	Compensation.	Comment
CID (contrat d'insertion): Graduate inclusion contract	First-time jobseekers, graduates of tertiary education or senior technicians who receive support for their sustainable recruitment, priority within public and private economic sector	Firms: 1 year Administration: 1.5 year	University graduates: DZD 15,000 per month Senior technicians: DZD 10,000 per month The employer's share of contributions to Social security is paid by the State.	Replaces CPE (Contrats de Pré-Emploi).
CIP (contrat d'insertion professionnelle): Professional inclusion contract	Young, first-time jobseekers leaving secondary education or vocational education and training (VET) centers (CFPA) (including apprentices)	Firms: 1 year, nonrenewable Public sector 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 paid by the State.	At the end of the 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.
CFI (contrat de formation-insertion) Training inclusion contract	Jobseekers without training or qualifications; they are placed in various work projects initiated by local authorities or various sectors for the duration of the project	1 year, non-renewable	DZD 4,000 per month	
CTA (contrat de travail aidé): Subsidized work contract	Proposed when one of the above contracts comes to an end (and sometimes earlier if the employer agrees)	3 years	Labour costs shared between the State and employer: CID: University graduates(category 11, index 498) 1st year: 55%; 2nd year : 45%; 3rd year: 35% CID: Technicians (category 10, index, 453). 1st year: 50%; 2nd year: 40%; 3rd year: 30% CIP contract (category 8, index 379). 1st year: 47%; 2nd year: 35% CFI contract. 53% of category 3, index 252	

Source: Authors, adapted from Musette (2014, p. 32).

Table A2. Labour Market Programmes (continued)

Passive: Social inclusion programs developed by the Ministry of National Solidarity (**MFSN**) to fight poverty and youth unemployment				
Program	Target	Duration	Compensation.	Comment
PID (Programme d'Intégration des Diplômés): Inclusion program for graduates	Young University graduates and technicians without income, in precarious situations or disabled. 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 State.	
AIG ((Activité d'Intérêt Général): Allowance for activity or community service	Social inclusion of disadvantaged active people with no income	1 year, renewable; permanent in specific local circumstances	DZD 3,000 per month. Social insurance paid by the State.	
DAIS (dispositif d'activité d'insertion sociale): Social inclusion programs	Temporary job position of unemployed, unskilled 18-59 in the private or public sector	2 years, renewable twice	DZD 6,000 per month. Social insurance paid by the State.	Replaces ESIL (Emplois Saisonniers d'Initiative Locale) in 2008 and IAIG (Activité d'Intérêt Général) since March 2012

Source: Authors, adapted from Musette (2014, p. 32).

Appendix 3

Table A3. Informal employment and labour market statistics

	1997	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Informal employment (non-farming private sector)	1,39	2,255	1,648	2,023	1,862	2,564	2,807	3,265	3,251	3,482	3,673	3,921	3,487	3,495	3,605
Unemployed population	2,049	2,511	2,339	2,032	2,078	1,672	1,448	1,241	1,375	1,171	1,072	1,076	1,063	1,253	1,175
Labour force	7,757	8,691	8,568	8,514	8,762	9,471	9,492	10,111	9,969	10,315	10,544	10,811	10,662	11,423	11,963
Change in informal employment			-36.86	22.79	-7.98	37.7	9.49	16.31	0.42	7.09	5.47	6.77	-11.07	0.22	3.15
Change in labour force			-1.415	-0.63	2.91	8.08	0.232	6.51	-1.39	3.47	2.22	2.53	-1.38	7.14	4.73

Source: Souag et al (2017). Units are thousands.