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**Tackling Graduate Unemployment through Employment Subsidies:
An Assessment of the SIVP Programme in Tunisia**

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Office of the Chief Economist

¹ Development Research Department, African Development Bank. The author is grateful to the Observatoire National de l'Emploi et des Qualifications (ONEQ) for granting access to the data as well as for clarifications about the SIVP programme. Loubna Bourkane, Ousman Gajigo and Amadou B. Diallo provided useful comments on earlier drafts.

Abstract

High unemployment and disillusioned youth lie at the basis of the ‘Arab Spring’ which has recently swept through much of the Middle East and Northern Africa. Despite changes in governments, the root problem has not been solved and political leaders, aware of the delicate and potentially explosive situation, have put the issue high up the policy agenda. This paper evaluates Tunisia’s largest labour market programme, the SIVP: an employment subsidy aimed at university graduates. Using a tracer survey of the 2004 graduating cohort, a range of matching techniques are applied to estimate the effect of the programme on a number of

labour market outcomes. Although selection into the programme is not random, we cannot rule out that graduates who benefited from a SIVP have better labour market outcomes than those who did not: they are less likely to be inactive, and less likely to be unemployed – an effect which is particularly strong for graduates at highest risk of being unemployed. The results do indicate, however, that the programme is poorly targeted and hence not very cost-effective. The paper ends with recommendations for re-designing the policy, as well as pointers for future research.

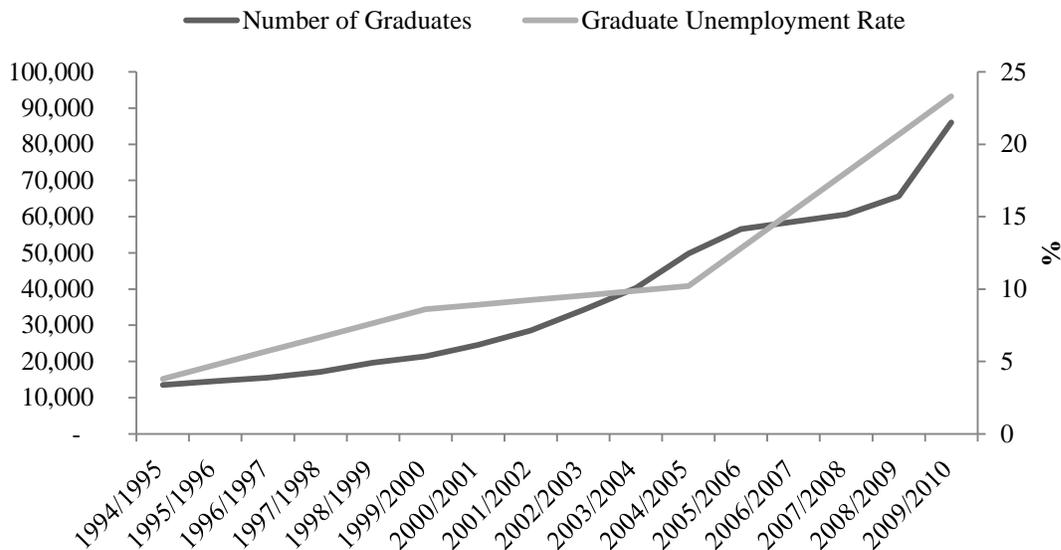
Keywords: graduate unemployment, employment subsidy, MENA

JEL classification: J08, J20

1. Introduction

On 17th December 2010, Mohamed Bouazizi, a street vendor in the rural town of Sidi Bouzid in Tunisia, set himself on fire. His death two weeks later sparked demonstrations and riots across the country which led to the Tunisian revolution and the Arab Spring more widely. Although it was later denied (including by his own family members) that he had a university degree, his desperate act was blamed at least in part on the high level of graduate unemployment in the country. Irrespective of the truth regarding Mohamed Bouazizi's qualifications, it is widely agreed that the level of unemployment among university graduates in Tunisia contributed to the rise of social unrest. As shown in Figure 1, while the number of graduates in Tunisia increased five-fold over the period 1994-2009, so did the graduate unemployment rate. In 2009/10, one year prior to the Tunisian revolution, nearly one in four university graduates were unemployed.

Figure 1: Number of graduates and graduate unemployment rates in Tunisia, 1994-2009

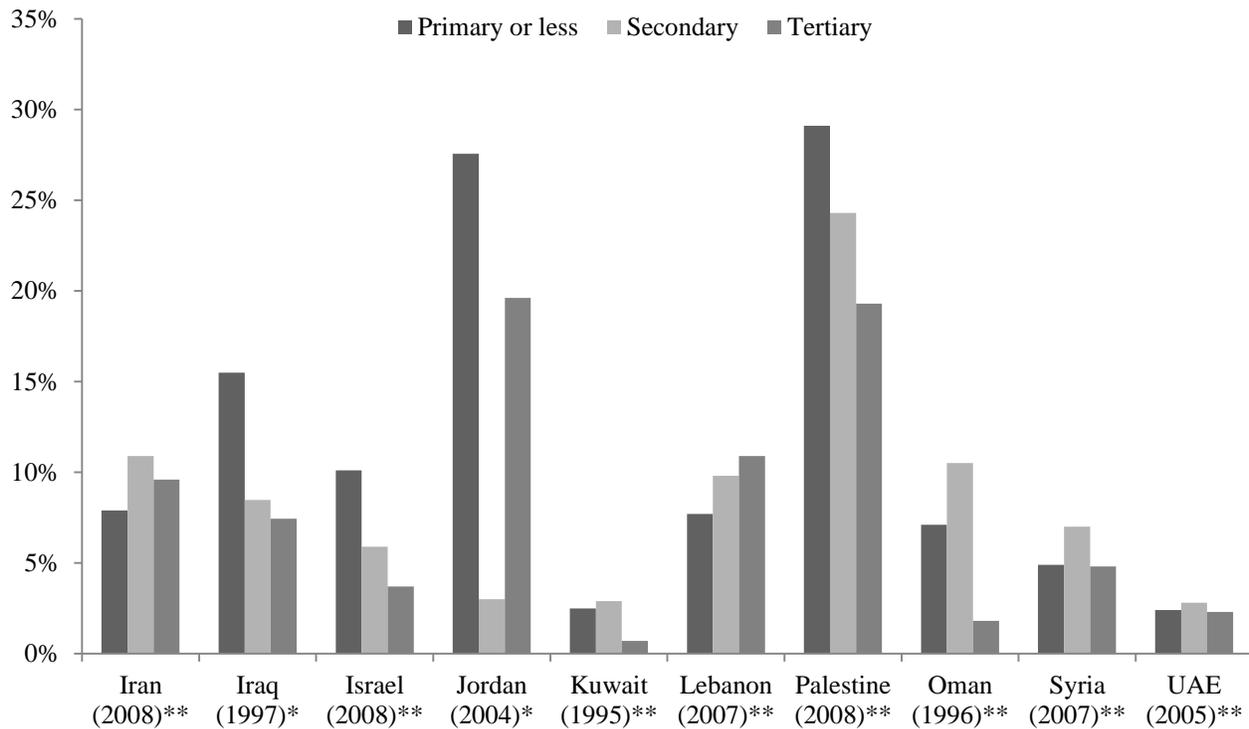


Source: *Ministère de l'Enseignement Supérieur et de la Recherche Scientifique, 2011*

High levels of graduate unemployment are not unique to Tunisia. In neighbouring countries Egypt, Morocco and Algeria graduate unemployment rates stood at 18.9%, 19.4% and 21.4%, respectively². Although not universally applicable throughout the MENA region, some other countries (e.g. Iran, Jordan, and Lebanon) also face considerable graduate unemployment problems (Figure 2).

² Egypt data is from the Central Agency for Public Mobilization and Statistics and is for 2010. Morocco data is from the Haut-Commissariat au Plan and is for 2011. Algeria data is from the Office National des Statistiques and is for 2010.

Figure 2: Unemployment rate by level of education in a selection of MENA countries



* Authors' calculations based on Minnesota Population Center (2011). Integrated Public Use Microdata Series, International: Version 6.1

** ILO Key Indicators of the Labour Market, 7th Edition

Unemployment represents a drama in the lives of young individuals and amounts to a significant waste of personal and social investments in higher education. At a time when many of these countries are riding demographic waves, with both fertility and mortality rates falling, leaving so much human capital idle represents a very inefficient use of resource. In addition, as recent events across the Arab world have demonstrated, it feeds social discontent and leads to political instability. Unsurprisingly, therefore, tackling graduate unemployment is regarded as one of the key priorities for many countries in the region, including Tunisia.

Although the causes of graduate unemployment in Tunisia are likely to be more than frictional and solving the problem will require long-term interventions and structural changes to the economy, it is thought that active labour market policies can alleviate at least some of the pressure in the short to medium run. Until recently, the main policy intervention aimed at promoting paid employment for graduates was the Stage d'Initiation à la Vie Professionnelle (SIVP).

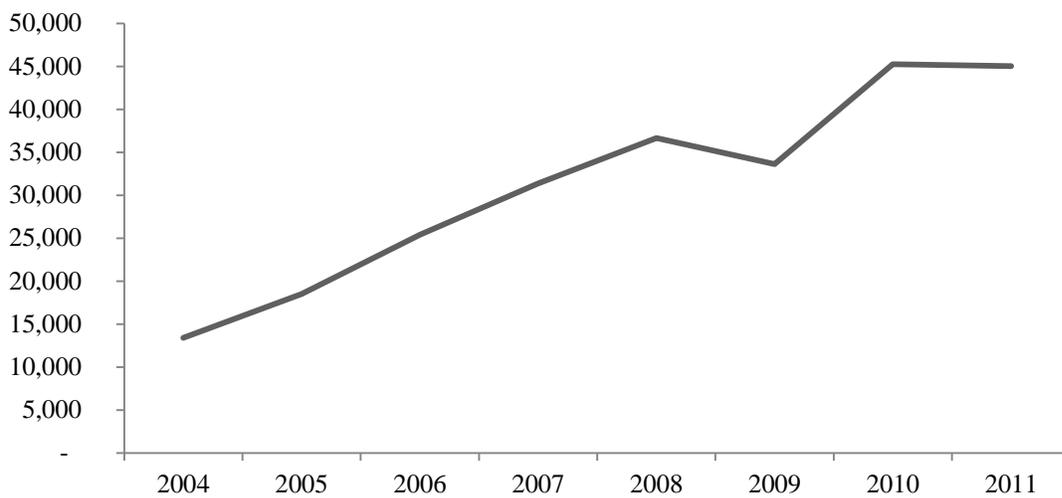
First introduced in 1987, the SIVP is akin to a wage subsidy with graduates receiving between 100 and 250 Tunisian Dinars (TND) per month³ (approximately €50 to €125), depending on their qualifications, and payable for a period of one year (with a possible extension of one more year in the same

³ 3.5 years after graduation, respondents to the Graduate Tracer Study report an average government contribution of around 121 TND per month (2007 prices).

organisation⁴). Firms receive exemption from taxes and national insurance contributions and can top up the graduate's salary with a tax-free supplement⁵. To be eligible, graduates need to be registered with the national employment agency (ANETI) and be looking for work. Eligible firms need to be part of the social security system, have an intern-to-permanent-staff ratio not exceeding 40% and, in order to obtain any new interns, need to demonstrate that they have absorbed half of their previous interns into their regular headcount.

As with the number of graduates overall, the number of graduates benefiting from a SIVP has grown rapidly over time, from under 15,000 in 2004 to just over 45,000 in 2011 (Figure 3). In 2010, the national SIVP budget was approximately TND 45.5 million (or around €22 million).

Figure 3: Number of SIVP Beneficiaries, 2004-2011



Source: ANETI, 2011

Given the seriousness of graduate unemployment in Tunisia⁶ (and other countries in the MENA region), the urgency to do something about it, and the importance of the SIVP in the Government's employment policies, an assessment of the programme is timely. Moreover, as a recent review of active labour market programmes in the Arab-Mediterranean region concluded: "despite considerable international evidence, there is little systematic analysis on the effectiveness of active labour market policies in Arab-Mediterranean countries" (Angel-Urdinola, Semlali and Brodmann 2010)⁷. The purpose of this paper is to contribute to this limited evidence base.

⁴ In some cases, graduates may be eligible for a second spell in another organisation.

⁵ In 2007, this supplement was on average 238 TND per month, according to the GTS data.

⁶ For a recent article discussing the issue of youth unemployment in Tunisia, see Stampini and Verdier-Chouchane (2011) and for an in-depth analysis of graduate unemployment see Ministère de l'Emploi et de L'Insertion Professionnelle des Jeunes and World Bank (2009).

⁷ The same review notes that "while ALMPs are widely used in AMCs, there are notable differences in their provision and implementation: ALMPs are mostly provided in Tunisia, Morocco and Algeria, while in countries like Egypt, Jordan and Syria programs are often provided by civil society, international organisations and line ministries."

Unsurprisingly, the key issue we face in assessing the SIVP is that selection into the programme is non-random. The paper relies on a variety of matching methods to estimate the effect of the programme. The dataset employed is a graduate tracer study of over 4,000 university graduates who qualified in 2004 and were interviewed in both 2005 (one and a half years after graduation) and 2007 (three and a half years after graduation). This dataset also contains a “calendar” recording monthly activities over the entire period since graduation (44 months).

Although selection into the programme is not random (see Section 3), we cannot rule out that graduates who benefited from a SIVP have better labour market outcomes than those who did not: they are less likely to be inactive and less likely to be unemployed – and this effect is particularly strong for graduates at the highest risk of unemployment. There is little evidence that SIVP beneficiaries end up in more precarious employment (as measured by contract type) or worse-paid jobs – despite anecdotal evidence to the contrary. We do find, however, that the programme is poorly targeted and hence not very cost-effective.

The remainder of this paper proceeds as follows. Section 2 provides a brief review of the literature on the effectiveness and design of employment subsidies. Section 3 describes the datasets used in this paper and offers some descriptive statistics on the characteristics of SIVP beneficiaries. Section 4 uses multivariate analysis to predict the probability of benefiting from a SIVP and, in doing so, addresses the issue of how effectively the programme is targeted. Section 5 then estimates the impact of the programme on a range of employment outcomes. Section 6 concludes and offers some recommendations on how to improve the programme, as well as pointers for future research.

2. Literature review

The objective of employment subsidies (which usually take the form of either direct wage subsidies or social security waivers) is to reduce the cost of hiring new employees and, as a result, increase the demand for labour. Wage subsidies can be used either to keep on existing employees and avoid job losses, or to encourage firms to hire new workers. In the latter case, if targeted exclusively at the unemployed and provided only for a limited period of time, they are also sometimes referred to as “hiring vouchers” (Brown, Merkl and Snower, 2011). They are often targeted at particular sub-groups⁸ and allow employers to pre-test workers prior to committing to permanently hire them at full wage. They also provide workers with an opportunity to gain valuable work experience. One key advantage of employment subsidies is that they are flexible and can be scaled up relatively quickly, making them a particularly useful countercyclical tool. As a result, there appears to be increasing interest in such programmes in developing countries that are facing growing unemployment problems. The SIVP in Tunisia is one example at hand, but Morocco (Idmaj) and Algeria (CTA) have similar programmes (Subrahmanyam, 2011), and South Africa is about to launch one (Groh et al, 2012).

However, the evidence on the effectiveness of employment subsidies is mixed at best. In their review of active labour market programs in developing and transition countries, Betcherman et al (2004) conclude that the clear majority of subsidy programs do not appear to have net positive impacts on the longer-term

⁸ In particular, employers may be averse to hiring young workers based on the assumption that they are less productive than workers in their prime. Subsidies to employers may encourage the hiring of young workers since they compensate the employer’s (perceived) risk of low productivity until the worker can demonstrate his or her real productivity (Isbell and Smith, 1991).

employability or earnings of participants. Whilst Kluve (2010) is more lenient in his conclusions and argues that, although it has been shown that employment subsidies can have a beneficial impact on individual employment probability, their effectiveness crucially depends on their design features because deadweight losses (hiring from the target groups that would have occurred also in the absence of the program) and substitution effects (the extent to which jobs created for the target groups replaces jobs for other groups) can be important⁹. The best designed employment subsidies are those that are: targeted at the long-term unemployed (Brown, Merkl and Snower, 2011); offered for a limited time period of time, and combined with other programmes such as on the job training, counselling and job search assistance (Kluve, 2006). Despite concerns from an economic perspective, employment subsidies are often popular because there is a strong social element to these programmes.

The literature available about the evaluation of employment policies in Tunisia is scarce. According to Stampini and Verdier-Chouchane (2011) most of the existing literature on employment in Tunisia adopts a macroeconomic perspective. Ministère de l'Emploi et de L'Insertion Professionnelle des Jeunes and World Bank (2009) provide an insight on the employment opportunities of a sample of university graduates, but no evaluation of employment policies. In one of the only studies I am aware of, Marouani (2009) 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 targeted at highly skilled intensive sectors is more effective than tax reductions or investment subsidies. However, wage subsidies are not enough to reduce unemployment significantly.

3. Data and descriptive statistics

The graduate tracer study (GTS) data used in this paper consists of an initial sample of 4,763 individuals who qualified in 2004 and were surveyed on two occasions: once in 2005 (1.5 years after graduation) and then again in 2007 (3.5 years after graduation). The sample attrition over time was relatively low: 89% responded to the first survey (n=4,250) and 79% (n=3,751) to the second. The surveys contain a range of socio-demographic and labour market information on the graduates as well as month-by-month calendar data on their main activity. The analysis presented here will be on the 3,751 graduates who responded to both surveys, appropriately weighted to be representative of the original sample contacted.

Figure 4 below shows the main activity of graduates over a 44-month period covered by the survey. As shown by the graph, the first six months of the calendar fall halfway through the academic year, so many students are still inactive/studying (month 1 of the calendar coincides with February 2004). The initial unemployment rate is very high (74% in month 9, or about three months after graduation for most students in the survey), but falls steadily over time (to 35% in month 44). The proportion on SIVP at any one point in time never exceeds 10%, and reaches a peak around month 18 (or around 15 months after graduation).

⁹ In addition, some authors (Burtless, 1985; Dubin and River, 1993) have found that such programmes could have a stigmatising effect.

Figure 4: Main activity after graduation, by month

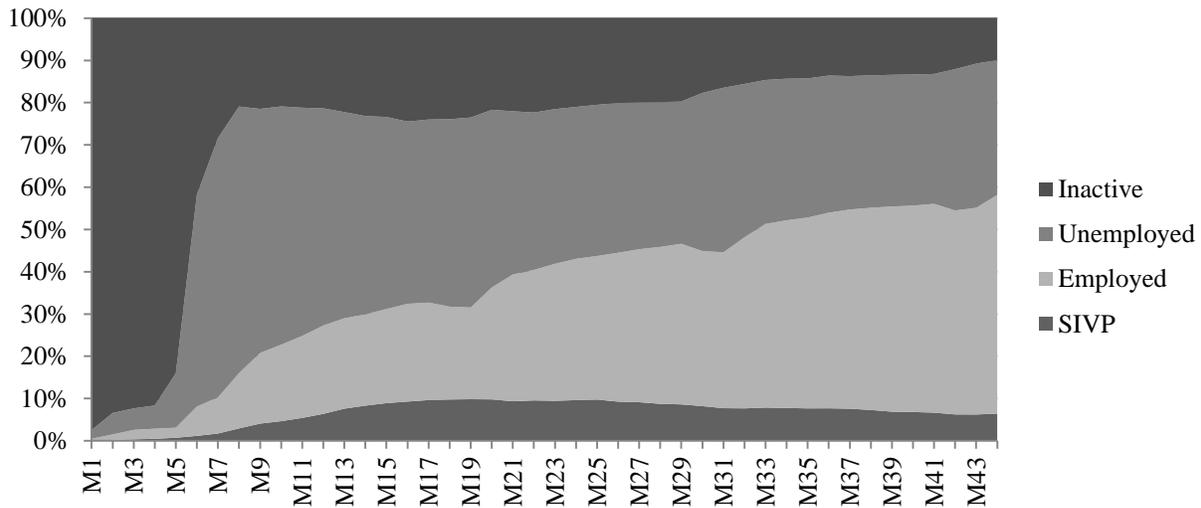


Table 1 below summarises some of the key characteristics of graduates by SIVP status. Women were slightly less likely than men to have benefited from a SIVP in the first three and a half years (44 months) after graduation¹⁰, and SIVP recipients were marginally younger. The distribution of SIVP by governorate of residence in 2004 shows a bias towards large urban areas (e.g.: Tunis, Ariana, Nabeul, Bizerte¹¹). Those with a “good” or “satisfactory” degree (as opposed to those with just a “pass” or a “very good” degree) are more likely to benefit from SIVP. And, at the major level, Social Science, Law and Language graduates are considerably less likely to benefit, and those with Finance and Management degrees most likely to benefit. Overall, therefore, these descriptive statistics suggest that the programme may not be targeting those most in need – an issue explored in more depth in Section 4 below.

¹⁰ Once in receipt, women and men benefit from the programme for an equal period of time: the average length of a SIVP in the data is just over 11 months.

¹¹ A finding confirmed by World Bank (2012).

Table 1: Characteristics of SIVP beneficiaries, GTS

	no SIVP	SIVP	ALL
Gender: Female	57.7%	56.0%	57.2%
Age	28.0	27.8	28.0
Father's Education: Primary or less	57.4%	54.3%	56.6%
Father's Education: Secondary	30.3%	33.2%	31.1%
Father's Education: Tertiary	12.3%	12.6%	12.4%
Internship	61.5%	76.0%	65.4%
Major: Architecture	0,2%	0,2%	0,2%
Major: Arts	1,6%	3,2%	2,0%
Major: Finance and Management	24,4%	39,1%	28,3%
Major: Engineering	8,3%	6,9%	7,9%
Major: Health and Social	5,1%	6,0%	5,3%
Major: IT and Media Studies	8,6%	8,7%	8,6%
Major: Law and Languages	17,2%	10,0%	15,3%
Major: Medicine	2,2%	2,2%	2,2%
Major: Other	8,5%	2,3%	6,9%
Major: Science	15,5%	16,5%	15,8%
Major: Social Science	8,6%	5,0%	7,6%
Degree Attainment: Pass	62.9%	58.3%	61.7%
Degree Attainment: Satisfactory	22.8%	24.1%	23.1%
Degree Attainment: Good	10.5%	13.9%	11.4%
Degree Attainment: Very Good	3.9%	3.7%	3.8%
Bac: Mathematics	21.6%	22.1%	21.8%
Bac: Technical	10.4%	12.8%	11.0%
Bac: Science	23.3%	29.2%	24.9%
Bac: Economics and Management	13.5%	17.5%	14.5%
Bac: Arts	31.2%	18.4%	27.8%
Governorate: Tunis	13,9%	20,0%	15,5%
Governorate: Ariana	5,9%	8,1%	6,5%
Governorate: Ben Arous	7,7%	7,8%	7,7%
Governorate: Manouba	3,2%	3,5%	3,3%
Governorate: Nabeul	5,5%	8,4%	6,3%
Governorate: Zaghuan	1,1%	1,1%	1,1%
Governorate: Bizerte	3,3%	4,3%	3,6%
Governorate: Beja	2,0%	1,1%	1,8%
Governorate: Jendouba	1,9%	1,2%	1,7%
Governorate: Le Kef	2,4%	1,4%	2,2%
Governorate: Siliana	2,3%	0,9%	1,9%
Governorate: Sousse	7,1%	4,8%	6,5%
Governorate: Monastir	5,6%	6,1%	5,7%
Governorate: Mahdia	3,3%	2,7%	3,1%
Governorate: Sfax	9,9%	10,6%	10,1%
Governorate: Kairouan	3,2%	1,6%	2,8%
Governorate: Kasserine	3,4%	0,8%	2,8%
Governorate: Sidi Bouzid	2,7%	2,6%	2,7%
Governorate: Gabes	3,8%	1,7%	3,2%
Governorate: Medenine	3,7%	3,6%	3,6%
Governorate: Tataouine	1,4%	0,2%	1,1%
Governorate: Gafsa	4,5%	3,5%	4,2%
Governorate: Tozeur	0,9%	1,3%	1,0%
Governorate: Kebili	1,4%	2,7%	1,7%

Table 2 describes some of the key outcome variables in the GTS data, by SIVP status. SIVP appears to reduce the risk of joblessness and unemployment. There is no statistically significant effect on the likelihood of working with a contract. However, those who benefited from SIVP are less likely to obtain an open-ended contract. There is no statistically significant difference in salary, but SIVP beneficiaries are more likely to end up working in the private sector, and less likely to work for very large organisations (200+ employees).

Table 2: Employment outcomes of SIVP beneficiaries

	No SIVP	SIVP	Difference	P-value
Jobless	0.394	0.313	-0.081	0.000
Unemployed	0.328	0.266	-0.062	0.001
Contract	0.844	0.854	0.011	0.548
Open-ended contract	0.522	0.377	-0.145	0.000
Salary (monthly, TND)	552.6	530.7	-21.830	0.245
Firm type				
Public administration	0.260	0.101	-0.159	0.000
Public body/enterprise	0.300	0.177	-0.123	0.001
Private national business	0.339	0.566	0.227	0.000
Private mixed/foreign	0.100	0.156	0.055	0.000
Firm size				
None	0.013	0.013	0.000	0.978
<6	0.107	0.116	0.009	0.567
6-9	0.035	0.081	0.046	0.000
10-19	0.058	0.090	0.032	0.011
20-49	0.078	0.081	0.002	0.858
50-199	0.143	0.177	0.034	0.063
200+	0.566	0.443	-0.123	0.000

4. Participation in SIVP

The descriptive statistics presented in the previous section suggested that participation in the SIVP is not random, but also that the programme may not necessarily be targeting the graduates at highest risk of being unemployed. This section presents the results of multivariate analysis to discover the factors that are associated with increased likelihood of benefiting from the programme. In particular, it investigates whether the risk of unemployment is at all related with the probability of participating in SIVP. In addition, it documents differences in the timing of SIVP take-up, and the factors associated with that. The results from this analysis suggest that SIVP take-up (and its timing) is not at all related to the risk factors predicting graduate unemployment. If anything, individuals residing in the most unemployment-stricken governorates are the least likely to benefit from a SIVP subsidy. All this suggests that the SIVP programme should be revised to be better targeted on those who need them most.

4.1 Unemployment

This section starts with an analysis of the determinants of unemployment in the first six months after graduation. In theory, graduates are not entitled to participate in the SIVP programme in the first six months after graduation, so a variable is constructed measuring the number of months a graduate spent unemployed in those first six months¹². The results of these regressions (with an increasing number of explanatory variables as we move from left to right) are presented in Table 3 below. Women, older students and graduates with less educated fathers are more likely to be unemployed. So are those graduating with certain degrees (Finance and Management; IT and Media Studies; and Science), those with worse degree outcomes, and those resident in certain governorates (Nabeul, Siliana, Gabes, Tataouine and Gafsa).

4.2 Participation in SIVP

The next set of regressions estimate the characteristics associated with SIVP take-up. Although we would hope that SIVP participation would be related to the likelihood of being unemployed (or with the characteristics associated with unemployment risk), Table 4 demonstrates that this is far from so. In fact, none of the characteristics associated with increased unemployment predict the likelihood of SIVP take-up. Even the time spent unemployed in the first six months after graduation does not predict SIVP participation. More surprisingly even, it is found that individuals residing in the governorates with the highest likelihood of unemployment after graduation are also least likely to participate in the SIVP programme. All this points to a serious miss-targeting of the SIVP employment subsidies.

4.3 Timing of SIVP participation

Not only does the allocation of SIVP subsidies not appear to be related to the likelihood of unemployment. In addition, we find that the timing of SIVP take-up is negatively related to the risk of unemployment in the first six months after graduation (see Table 5) – i.e. individuals least at risk of unemployment in the first six months after graduation are quickest in obtaining a SIVP subsidised placement. Similarly, some of the individuals residing in governorates associated with a high risk of graduate unemployment are likely to face the longest delays in obtaining a SIVP (Nabeul, Kairouan, Sidi Bouzid and Gabes).

¹² I have also experimented with a measure of joblessness rather than unemployment, and the main conclusions drawn in this section remain essentially unchanged.

Table 3: Predicting unemployment after graduation

	(i)	(ii)	(iii)
Gender: Female	0.33***	0.32***	0.34***
Age	0.06**	0.05*	0.05**
Father's Education: Secondary	-0.51***	-0.49***	-0.38***
Father's Education: Tertiary	-1.03***	-0.97***	-0.85***
Internship	0.06	0.01	0.00
Major: Arts	1.72	1.65	1.64
Major: Finance and Management	2.13*	1.99*	1.98*
Major: Engineering	1.39	1.35	1.33
Major: Health and Social	1.81	1.73	1.67
Major: IT and Media Studies	2.54**	2.49*	2.42*
Major: Law and Languages	1.86	1.64	1.63
Major: Medicine	0.99	0.98	1.05
Major: Other	1.08	0.91	0.77
Major: Science	2.35*	2.28*	2.09*
Major: Social Science	2.01*	1.89	1.81
Degree Attainment: Satisfactory	-0.48***	-0.49***	-0.49***
Degree Attainment: Good	-0.35*	-0.39**	-0.36*
Degree Attainment: Very good	-0.32	-0.32	-0.26
Bac: Technical		0.57***	0.56***
Bac: Experimental science		0.30*	0.32**
Bac: Economics and Management		0.57***	0.51***
Bac: Arts		0.42**	0.36*
Governorate: Governorate: Ariana			-0.28
Governorate: Ben Arous			0.66***
Governorate: Manouba			0.31
Governorate: Nabeul			1.40***
Governorate: Zaghuan			-0.21
Governorate: Bizerte			0.68**
Governorate: Beja			0.54
Governorate: Jendouba			0.87**
Governorate: Le Kef			-0.45
Governorate: Siliana			1.44***
Governorate: Sousse			0.40*
Governorate: Monastir			-0.20
Governorate: Mahdia			0.25
Governorate: Sfax			-0.40*
Governorate: Kairouan			0.58*
Governorate: Kasserine			0.63*
Governorate: Sidi Bouzid			0.84**
Governorate: Gabes			1.50***
Governorate: Medenine			0.63**
Governorate: Tataouine			1.53***
Governorate: Gafsa			1.17***
Governorate: Tozeur			0.59
Governorate: Kebili			1.06***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Omitted categories: Gender: Male; Father's Education: Primary; Major: Architecture; Degree Attainment: Pass; Bac: Mathematics; Governorate: Tunis

Table 4: Predicting SIVP take-up

	(i)	(ii)	(iii)	(iv)
Months Unemployed	-0.00	-0.00	0.00	
Gender: Female	-0.02	-0.02	-0.01	-0.01
Age	-0.00	-0.00	-0.00	-0.00
Father's Education: Secondary	0.01	0.01	0.00	0.00
Father's Education: Tertiary	-0.00	-0.00	-0.02	-0.02
Internship	0.09***	0.08***	0.08***	0.08***
Major: Arts	0.19	0.21	0.22	0.23
Major: Finance and Management	0.15	0.17	0.18	0.19
Major: Engineering	0.00	0.00	0.01	0.01
Major: Health and Social	0.07	0.08	0.12	0.12
Major: IT and Media Studies	0.03	0.04	0.07	0.07
Major: Law and Languages	0.01	0.06	0.08	0.08
Major: Medicine	0.02	0.01	0.04	0.04
Major: Other	-0.12	-0.08	-0.05	-0.04
Major: Science	0.07	0.06	0.09	0.09
Major: Social Science	-0.00	0.03	0.05	0.05
Degree Attainment: Satisfactory	0.01	0.01	0.00	0.00
Degree Attainment: Good	0.05	0.04	0.03	0.03
Degree Attainment: Very good	-0.02	-0.02	-0.02	-0.02
Bac: Technical		0.05	0.05	0.05
Bac: Experimental science		0.03	0.03	0.03
Bac: Economics and Management		-0.01	-0.02	-0.02
Bac: Arts		-0.04	-0.04	-0.04
Governorate: Governorate: Ariana			-0.02	-0.02
Governorate: Ben Arous			-0.08*	-0.08*
Governorate: Manouba			-0.08	-0.08
Governorate: Nabeul			0.01	0.01
Governorate: Zaghuan			-0.04	-0.04
Governorate: Bizerte			-0.01	-0.01
Governorate: Beja			-0.17**	-0.17**
Governorate: Jendouba			-0.15**	-0.15**
Governorate: Le Kef			-0.16**	-0.16**
Governorate: Siliana			-0.18***	-0.18***
Governorate: Sousse			-0.14***	-0.13***
Governorate: Monastir			-0.06	-0.06
Governorate: Mahdia			-0.09	-0.09
Governorate: Sfax			-0.06*	-0.06*
Governorate: Kairouan			-0.19***	-0.19***
Governorate: Kasserine			-0.22***	-0.22***
Governorate: Sidi Bouzid			-0.07	-0.07
Governorate: Gabes			-0.21***	-0.21***
Governorate: Medenine			-0.09*	-0.09*
Governorate: Tataouine			-0.27***	-0.27***
Governorate: Gafsa			-0.10*	-0.10*
Governorate: Tozeur			0.01	0.02
Governorate: Kebili			0.08	0.08

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Omitted categories: Gender: Male; Father's Education: Primary; Major: Architecture; Degree Attainment: Pass; Bac: Mathematics; Governorate: Tunis

Table 5: Predicting timing of SIVP take-up

	(i)	(ii)	(iii)	(iv)
Months Unemployed	0.95***	0.96***	0.90***	
Gender: Female	1.09	0.89	1.01	1.35
Age	0.13	0.10	0.14	0.22
Father's Education: Secondary	-0.19	-0.25	0.05	-0.26
Father's Education: Tertiary	0.61	0.34	0.51	-0.32
Internship	-0.78	-0.64	-0.73	-0.72
Major: Arts	12.21	12.92	12.17	13.03
Major: Finance and Management	7.95	8.92	8.24	9.21
Major: Engineering	6.33	6.73	6.80	8.02
Major: Health and Social	4.42	4.58	3.18	3.56
Major: IT and Media Studies	6.36	7.05	6.56	8.35
Major: Law and Languages	7.96	8.91	8.30	9.21
Major: Medicine	6.21	5.50	5.58	6.69
Major: Other	7.04	7.74	7.13	8.06
Major: Science	8.49	9.00	8.54	10.18
Major: Social Science	10.60	11.25	10.32	11.40
Degree Attainment: Satisfactory	-1.57	-1.50	-1.69*	-1.90*
Degree Attainment: Good	-0.69	-0.52	-0.52	-0.83
Degree Attainment: Very good	-2.75	-2.41	-2.59	-3.10
Bac: Technical		-1.02	-1.10	-0.52
Bac: Experimental science		1.33	1.36	1.91*
Bac: Economics and Management		-1.85	-1.65	-0.81
Bac: Arts		-0.25	-0.02	0.29
Governorate: Governorate: Ariana			1.08	1.18
Governorate: Ben Arous			-1.85	-1.52
Governorate: Manouba			3.04	3.24
Governorate: Nabeul			2.05	3.41*
Governorate: Zaghuan			0.93	-0.09
Governorate: Bizerte			-1.95	-0.75
Governorate: Beja			2.63	2.67
Governorate: Jendouba			-0.45	-0.35
Governorate: Le Kef			0.76	0.10
Governorate: Siliana			0.76	1.44
Governorate: Sousse			2.09	2.40
Governorate: Monastir			-0.60	-0.98
Governorate: Mahdia			0.19	0.27
Governorate: Sfax			0.15	-0.30
Governorate: Kairouan			6.39*	7.07**
Governorate: Kasserine			-1.64	-0.78
Governorate: Sidi Bouzid			4.36*	5.07*
Governorate: Gabes			7.58**	9.01***
Governorate: Medenine			0.27	1.13
Governorate: Tataouine			0.37	0.46
Governorate: Gafsa			0.87	1.63
Governorate: Tozeur			4.00	4.17
Governorate: Kebili			0.82	1.93

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Omitted categories: Gender: Male; Father's Education: Primary; Major: Architecture; Degree Attainment: Pass; Bac: Mathematics; Governorate: Tunis

5. The impact of SIVP on employment outcomes

This section tests the relationship between SIVP participation and a range of employment outcomes. This is achieved by using a variety of estimation techniques (OLS and various matching algorithms). It is found that SIVP has a positive outcome on the likelihood of having a job (particularly for those at highest risk of unemployment), but there is less strong evidence that the programme has any effect on the likelihood of having a contract, the type of contract, or on salaries. SIVP beneficiaries are less likely to find employment with a large firm, and more likely to enter the private sector.

Table 6 below provides the results of a series of regression and matching estimates of the effect of SIVP on labour market outcomes. The first row of each table presents the “raw” effect of the SIVP programme on the outcomes of interest. SIVP beneficiaries are 8.1 percentage points and 6.2 percentage points less likely to be jobless and unemployed, respectively. There is no statistically significant difference in the likelihood of having a contract (conditional upon being in employment) but, when in receipt of a contract, SIVP recipients appear to be less likely to have an open-ended one. We do not detect any statistically significant effect of the programme on the salaries of workers. SIVP beneficiaries are less likely to find employment with large firms, but more likely to find a job in the private sector.

The multivariate analysis slightly lowers the estimate of the effect of the programme on joblessness and unemployment – but they remain statistically significant and relatively stable across all specifications. Participation in the SIVP programme leads to an estimated reduction in the likelihood of joblessness of around 7 percentage points, and an estimated fall in the probability of being unemployed of around 6 percentage points. The effects on working for a contract, having an open-ended contract, and salaries are also considerably reduced in the multivariate/matching models – and most estimates have become insignificant. So, although SIVP appears to increase the likelihood of obtaining a job, it does not appear to have any impact on the quality of that job. The effect on the type of firm in which graduates find employment holds up in the multivariate analysis.

Table 7 breaks down the analysis by the graduate’s unemployment experience in the first six months after graduation, in order to explore heterogeneity in the programme’s impact by risk of unemployment. Two sub-samples are taken: individuals who spent zero to one month unemployed; and individuals who spent five to six months unemployed. 26% of those who spent zero or one month unemployed in the first six months after graduation benefited from a SIVP. Similarly, 26% of those who spent five or six months unemployed in the first six months after graduation benefited from a SIVP. The results are interesting and suggest that, among the group experiencing the highest unemployment incidence immediately after graduation, the SIVP has a much larger impact on both joblessness and unemployment. In this group, SIVP beneficiaries are also significantly more likely to obtain a job with a contract. In the group experiencing low unemployment in the first six months after graduation, the SIVP has some impact on salaries (with SIVP beneficiaries earning higher salaries) as well as on the likelihood of working for a large firm (the chance being lower). This suggests that focusing the SIVP on high risk groups only would result in larger employment gains.

Table 6: Effect of SIVP on labour market outcomes

	Joblessness T-stat		Unemployment T-stat		Contract T-stat		Open-ended contract T-stat		Salary T-stat		Large Firm T-stat		Private Sector T-stat	
Descriptive	-0.081	-4.13	-0.062	-3.20	0.011	0.60	-0.145	-5.46	-21.83	-1.16	-0.14	-6.49	0.38	18.33
OLS	-0.067	-3.34	-0.055	-2.78	0.027	1.46	-0.031	-1.23	13.45	0.75	-0.11	-4.98	0.24	11.46
PSM														
1 to 1 (no replacement)	-0.072	-3.01	-0.057	-2.41	0.013	0.60	-0.030	-0.94	35.47	2.13	-0.16	-6.12	0.27	11.01
Nearest Neighbour (3)	-0.075	-3.22	-0.059	-2.54	0.012	0.54	-0.030	-0.94	20.88	1.24	-0.14	-5.37	0.27	10.45
Radius Caliper (0.01)	-0.061	-2.97	-0.051	-2.51	0.023	1.19	-0.053	-1.88	2.54	0.14	-0.14	-5.61	0.24	10.63
Kernel	-0.064	-3.17	-0.056	-2.81	0.024	1.30	-0.052	-1.88	8.12	0.45	-0.13	-5.46	0.25	10.97
Local Linear	-0.063		-0.056		0.023		-0.049		5.22		-0.13		0.25	
Mahalanobis Matching	-0.084	-3.12	-0.078	-2.91	0.029	1.14	-0.038	-1.03	18.50	0.93	-0.12	-3.85	0.25	8.45

Table 7: Analysis by unemployment experience in first 6 months after graduation

LOW UNEMPLOYMENT	Joblessness	T-stat	Unemployment	T-stat	Contract	T-stat	Open-ended contract	T-stat	Salary	T-stat	Large Firm	T-stat	Private Sector	T-stat
Descriptive	-0.110	-3.47	-0.058	-1.98	0.015	0.54	-0.317	-7.87	-99.23	-4.24	-0.20	-5.14	0.40	10.94
OLS	-0.156	-4.73	-0.118	-3.74	0.048	1.63	-0.187	-4.34	-70.42	-3.17	-0.20	-4.95	0.24	6.45
PSM														
1 to 1 (no replacement)	-0.145	-3.88	-0.092	-2.60	0.040	1.26	-0.172	-3.50	-116	-4.05	-0.21	-4.56	0.27	6.14
Nearest Neighbour (3)	-0.144	-3.65	-0.082	-2.15	0.049	1.42	-0.172	-3.16	-99	-2.56	-0.19	-3.87	0.24	5.06
Radius Caliper (0.01)	-0.124	-3.39	-0.074	-2.10	0.043	1.26	-0.148	-2.78	-95	-2.72	-0.20	-4.03	0.24	5.17
Kernel	-0.119	-3.40	-0.072	-2.14	0.033	1.04	-0.169	-3.48	-106	-3.42	-0.22	-4.83	0.26	5.97
Local Linear	-0.125		-0.074		0.037		-0.167		-106		-0.22		0.26	
Mahalanobis Matching	-0.125	-2.78	-0.104	-2.40	-0.009	-0.22	-0.212	-3.57	-96	-2.91	-0.21	-3.83	0.26	4.72
HIGH UNEMPLOYMENT	Joblessness	T-stat	Unemployment	T-stat	Contract	T-stat	Open-ended contract	T-stat	Salary	T-stat	Large Firm	T-stat	Private Sector	T-stat
Descriptive	-0.210	-8.20	-0.200	-7.71	0.103	4.32	-0.316	-9.63	-69.84	-2.79	-0.10	-3.23	0.35	11.61
OLS	-0.209	-7.77	-0.195	-7.17	0.138	5.35	-0.202	-5.81	-30.81	-1.17	-0.06	-1.60	0.23	7.34
PSM														
1 to 1 (no replacement)	-0.211	-6.90	-0.191	-6.27	0.129	4.76	-0.252	-6.90	-34	-1.23	-0.09	-2.51	0.28	7.78
Nearest Neighbour (3)	-0.229	-7.30	-0.209	-6.60	0.122	3.99	-0.244	-5.83	-28	-0.92	-0.09	-2.08	0.26	6.47
Radius Caliper (0.01)	-0.219	-7.86	-0.211	-7.42	0.122	4.28	-0.235	-5.86	-34	-1.26	-0.08	-1.90	0.28	7.53
Kernel	-0.210	-7.78	-0.203	-7.44	0.126	4.88	-0.235	-6.42	-41	-1.47	-0.08	-2.29	0.26	7.70
Local Linear	-0.213		-0.206		0.125		-0.242		-43		-0.08		0.27	
Mahalanobis Matching	-0.217	-6.15	-0.197	-5.48	0.118	3.51	-0.188	-4.11	-6	-0.26	-0.04	-0.80	0.27	6.18

6. Conclusion

This paper looked at the SIVP – an employment subsidy in Tunisia aimed at increasing graduate employment. The effect of the programme on a range of outcome variables was estimated using a survey of graduates and a variety of matching techniques. Although non-random selection into the programme is an issue, we cannot rule out that SIVPs have positive effects on the likelihood of being in employment – an effect that is particularly strong for graduates at high risk of unemployment. There is also little evidence that SIVPs have a detrimental effect on the quality of employment (as measured by contract-type and salary), contradicting what is often claimed anecdotally.

Until recently, the SIVP absorbed the lion's share of Tunisia's active labour market policies budget. Given that: (i) in the best case scenario, we estimate that the SIVP programme leads to a 8 percentage point increase in the likelihood of a graduate finding employment; (ii) that, each year, around 45,000 graduates benefit from the programme; and that (iii) the average employment rate of graduates who did not benefit from SIVP was 60%, an additional 3,600 graduates find jobs each year thanks to the SIVP programme – at a cost of around €6,300 per graduate (or 12,600 TND), compared to an average graduate salary 3.5 years after graduation of around 6,600 TND per year.

As a result, although the programme should probably be kept (particularly in the short to medium run, while structural reforms are put in place), the targeting of its funds could and should be improved in order to minimise its deadweight loss¹³. To begin with, the subsidy should be restricted to job-seekers who have been registered with ANETI and who, despite demonstrating job-seeking efforts, have been unable to find work for a considerable period of time (18 months, for example)¹⁴. Second, the programme should be better targeted geographically. Part of the problem is that more deprived governorates also have a less-developed industrial base, so fewer SIVP subsidies are going to be available, by definition. One solution to this problem could be to drop the requirement that the company should be part of the social security system, so that smaller, informal enterprises also become eligible to recruit SIVP interns¹⁵. This, in turn, could help these smaller companies grow. Other aspects of the subsidy (the time limit as well as the combination with other programmes) should be kept as they have been demonstrated to be good practice in the design of employment subsidies.

This paper has looked at the effect of the SIVP programme on individual graduate outcomes. However, as pointed out previously, one important aspect of such programmes is the risk that they lead to substitution and displacement effects. Unfortunately, this is not something we could have investigated with the data available. Analysis of Labour Force Surveys over a number of years, possibly combined with administrative data on the availability of SIVP internships by geographical area and over time, would permit such analysis and represents an important avenue for future research.

¹³ World Bank (2012) finds that around 75% of firms who benefited from SIVP (and other programmes) said they would have recruited even in the absence of the programme.

¹⁴ The recently introduced AMAL programme is being revised to better target individuals: the long-term unemployed, as well as those who graduated in certain high unemployment disciplines. The SIVP should be revised in a similar vein. http://www.emploi.gov.tn/fileadmin/user_upload/PDF/Cadre_juridique/Francais/Emploi-fr/promotion_de_l_emploi/Decret2012_953-fran.pdf

¹⁵ Although this would, of course, make monitoring more difficult and hence increase the risk of abuse. One other option would be to turn the SIVP into a voucher following the graduate. This is a system already being proposed by the Government.

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