

**THE EFFECTIVENESS OF VOCATIONAL TRAINING IN MOROCCO:
QUASI-EXPERIMENTAL EVIDENCE**

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Abstract

In 1984, Morocco implemented an ambitious reform of its vocational training system, with the main goal of increasing youth employment. The intent of this reform was to (1) increase the system's capacity and (2) develop several specific fields of training designed to fit the evolving needs of the labor market. We analyze three types of programs that were implemented as part of these reforms using data from the "2004 Follow-up" survey which collected data on graduates of urban vocational training facilities four years after their graduation. While we find that both the privatization of VT and policies designed to encourage entrepreneurship among graduates were largely ineffective, we show that participating in a traineeship after graduation has a lasting and strongly positive impact on subsequent labor market outcomes.

Keywords:

JEL Codes:

1. Introduction

Vocational training programs, which are common through both OECD and developing countries, are often seen as a potentially cost-effective way of addressing youth employment. However, there is limited empirical evidence of the long-term effectiveness of youth training programs in the developing world (Card et al. 2011).¹ Further, there are no analyses of the effectiveness of these programs in the countries of the Middle East and North Africa (MENA) region where youth unemployment, at 26%, is nearly half again as large as the next highest region of Sub-Saharan Africa.

During the 1980s and 1990s, in response to a rapidly rising unemployment rate, the Moroccan government enacted several of policies designed to improve the efficacy of technical and vocational training. One effort was the expansion and improvement of vocational training programs in 1984, which was designed to assist youth in gaining access to the private labor market by providing them with skills that were practical and appropriate. Later extensions of this program include a co-operative training program beginning in 1996 that sought to involve students in the private labor market during their vocational schooling and an apprenticeship program. Additionally, policies designed to encourage recent graduates of these programs to form small businesses by providing tax or other incentives were implemented in the 1990s (see Boudarbat and Lahou 2007 for a more detailed review).

Our analysis uses quasi-experimental techniques to assess the long-term effectiveness of these Moroccan vocational training programs. Specifically, using data that tracked all graduates from 2000 for four years post-graduation, we estimate the average treatment effect among the treated (ATT) following Imbens (2004) among those

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¹ Card et al. (2011) reports that most long-term evidence – i.e., greater than 2-3 years – of youth training programs are from either Britain or the United States.

that participated in a traineeship. We find a dramatic positive effect for the traineeship. Unemployment rates among individuals participating in a traineeship after graduation from a VT center are roughly one-half the rates among other graduates. Further, the length of training is positively correlated with employment prospects at the completion of the traineeship - youth who have a longer traineeship are less likely to be unemployed at the completion of their training.

However, a program designed to support vocational training graduate entrepreneurs was largely ineffective. This is demonstrated by the extraordinary low take-up rates of this program. Law 16/87, which was designed to encourage small business formation through a preferential tax program, was targeted to have approximately 1,000 participants annually. However, in practice this program only had an average of 100 annual participants reaching a total of less than 600 youth during the first six years of its application.² We provide evidence suggesting that the failure of 16/87, which was designed to provide incentives to small business formation in the formal sector, can be largely attributed to two factors. The first is that the program seems to have been poorly publicized as nearly 80% of the eligible individuals were simply unaware that it existed. The second is that this program was simply unable to adjust for the increased costs associated with joining the formal sector.

The following section provides a brief review of the known effectiveness of training programs. Section 3 discusses vocational training in Morocco and Section 4 discusses the recent reforms to vocational training. Section 5 describes the data and Section 6 discusses our empirical methodology and results. We conclude in Section 7.

2. Effectiveness of Training Programs

Vocational training programs are often seen as an important tool in addressing youth unemployment in both developed and developing countries. The differential in youth unemployment rates in Europe between countries with well-developed vocational training system and those without is often offered as an example of their importance (Ryan 2001). However, experimental or quasi-experimental assessments using individual-level longitudinal data suggest that the effects of these programs are modest (Card et al. 2011).

Despite demonstrating modest effects on average, several generalized findings have emerged from this experimental literature. First, on-the-job training is typically seen as more effective (Friedlander et al. 1997). Second, private sectors appear to be more effective than public sector programs (Kluve 2006). Importantly, evaluating these programs is often complicated by adverse selection into these programs. As an example, while Magnac (1997) finds that the French “stages” do not have significant impact on employment of youth, this program was likely functioning as a refuge against unemployment.

Studies focusing on apprenticeship or traineeship programs specifically, which are a key focus of our analysis given its importance to the Moroccan vocational training

² Other programs which provide technical and financial assistance to young entrepreneurs are also far from achieving their objectives. For instance, the program “Moukawalati” (my enterprise) aimed at attracting university graduates toward self-employment, participated in the creation of 600 small businesses so far, whereas the initial objective was creating 30,000 enterprises by 2008. Hence, the realizations are only 2% of the expectations.

system (discussed below), are limited. However, existing research suggests that these programs can have a positive impact. First, apprenticeship programs have been shown to have positive impacts on employment outcomes in both developing and developed countries (e.g., Frick 2006, Rosholm et al. 2007). Second, in a review of the impact of different types of educational programs, van der Sluis (2005) review 15 different studies on apprenticeship and conclude that there is “mild evidence” of a positive impact of these programs on entrepreneurship.

3. Vocational Training in Morocco

The Moroccan vocational training model uses a mixture of training and apprenticeships.³ Previous analyses of vocational training in Morocco have used primarily duration models to explore the correlates of post-graduation performance. Montmarquette et al. (1996) finds that assistance with job search from a center or family members, an advanced degree, and success in school increased the likelihood of employment. Boudarbat (2007) reports that informal activities, support with job search, and father’s connections accelerate hiring – he also finds that internships are more helpful for women than men. El Aoufi and Bensaïd (2005) indicate that vocational training graduates perform worse than their peers, and suggest that this is due to adverse selection into these programs.

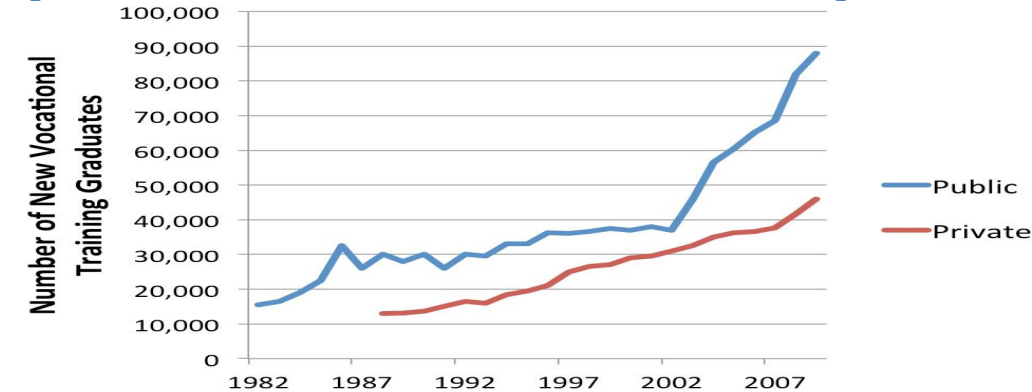
In 1984, the vocational training system in Morocco underwent significant reform, whose goal was to make it a genuine tool for socio-economic development in a context marked by rising unemployment among graduates and high drop-out rates. One of the reforms main goals was to develop human capital and social inclusion by providing training to a large number of youth. At the same time, a qualitative goal was to better adapt the system to the constantly evolving needs of the labor market and to improve youth employment.

The first year of the reform was marked by a spectacular increase in the number of trainees. A sustained growth rate was maintained thereafter in both public and private sectors (see Figure 1). The number of graduates from public vocational centers increased by 3.5% on average per year between 1984 and 2003. The development of private sector training was even greater under the impetus of public authorities. The number of graduates from the private sector increased by 6.5% on average per year between 1988 and 2003. Moreover, the number of private training institutions reached 1650 in 2003, compared to only 584 in 1992, which corresponds to the net creation of about 100 institutions on average per year. The private sector's involvement in the VT system is

³ This model commonly thought of as a version of the “French” model of vocational training. Vocational training programs – targeted at both youth and adults – are common throughout the world. Programs targeted at youth have been implemented through, broadly, four distinctive international training models: (1) the “Japanese” model, which emphasizes workplace training; (2) the “German” model, which combines formal training in professional training centers and workplace training; (3) the “French” model, which focuses on formal training in professional training centers; and (4) the “American” model, which provides common training common to all pupils until the end of the secondary, introducing professional topics in the traditional course of the studies (Gaude 1997).

encouraged by the government, which is seeking to transfer a portion of the cost of training to individuals and their families.⁴

Figure 1: Number of Public and Private Sector Vocational Training Graduates

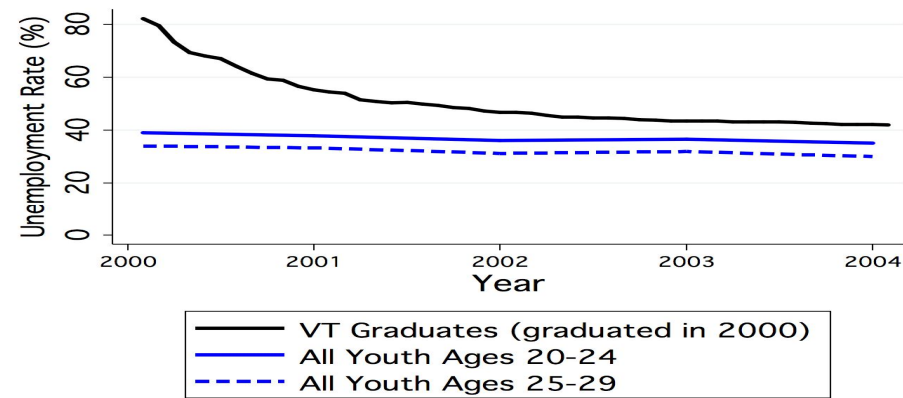


Source: Statistics from the *Secrétariat d'État chargé de la formation professionnelle*.

Despite the variety of efforts to improve the vocational training system and to make it more responsive to the labor market, job prospects for graduates of these programs are quite poor. As seen in Figure 2, the unemployment rate among recent graduates of these programs is extraordinarily high. Though the unemployment rate for all youth is itself very high, with rates among comparable aged youth nearly 40 percent, the unemployment rate among vocational graduates is close to 60 percent one year after graduation and is nearly 50 percent even two years after school.

The high unemployment rate among recent graduates of vocational training programs is particularly perplexing in light of the fact that these programs were specifically designed to provide employable skills and they were very selective in choosing applicants with only around 20% of total applicants accepted.

Figure 2: Unemployment Rates among VT Graduates



Source: Authors' estimates based on 2004 FVTG data.

⁴ Training in public schools is fully subsidized, whereas students pay tuitions at private schools.

Boudarbat (2007) examines the factors favoring or hindering employment of this population. Using a duration analysis applied to the length of unemployment before the first job, the author finds that training geared to informal activities offers a greater potential for employment. There are, however, factors not related to training which significantly affect the hazards of quitting unemployment. For example, social networks (personal connections) increase substantially access to employment, particularly for girls. In the same vein, the father's profession is instrumental, with children of managers and skilled trades are more likely to find employment.⁵ Further, while these vocational programs do provide specific skills that are useful in a particular vocation, they are not very effective in preparing individuals for the realities of the private labor market. Graduates are unwilling to take low paying jobs that offer valuable experience and instead delay employment in hopes of obtaining high wages that they feel their education entitles them to.

4. Vocational Training Policy Reforms

Morocco has experimented a variety of different initiatives to support its vocational training programs over the past three decades. This section reviews four general classes of vocational training reforms that have been implemented in Morocco: traineeship programs, direct support of VT entrepreneurs, the creating of a job promotion agency, and a reform of vocational training classroom teaching methods.

4.1. Traineeship Programs

Morocco's traineeship programs have the explicit objective of facilitating the transition between training and employment. These programs require training in the workplace as a component of the vocational training program. The belief was that on-the-job training would ease the employment of graduates of these programs. These programs were implemented as a direct result of the poor labor market outcomes of graduates from traditional vocational training and other educational programs.

The first type of traineeship program, cooperative training, was the first initiative designed to improve the existing vocational training system. Participants in this program must spend at least one-half of the training period in a workplace and at least one-third in a vocational training center. This professional immersion should allow trainees to develop a profile that corresponds to the needs and specificities of local businesses.

A pilot project was implemented in 1993, then, cooperative training becomes available throughout the country in 1996-1997 starting with a modest one thousand trainees.⁶ This number increased rapidly thereafter, reaching 16,240 participants in 2004-2005 and 35,818 participants in 2009-2010.⁷

The second type of traineeship program is the apprenticeship program, which was introduced in 2000. Participants in this program must spend 80% of the training period in the workplace while a minimum of 10% of the training periods is to be spent on general and technological training in a training center. Thus, in apprenticeship training, the share of the training period that takes place in a workplace is higher compared to co-operative

⁵ An early study by Montmarquette (1996) on OFPPT graduates lead to very similar findings.

⁶ The passing of Law 36.96 in 1996 instituted cooperative training (formation professionnelle alternée) as a formal component of the vocational training system.

⁷ <http://enseignementsuperieur.lavieeco.com/news/La-formation-professionnelle-au-Maroc-de-plus-en-plus-priee-18663.html>.

training, in which a maximum of 67% can be spent in the workplace. The training period varies from one to two years, and can lead to a diploma (specialization and qualification levels) or be qualifying only (a certificate that recognizes the skills acquired).

In addition to improving youth employment, the apprenticeship program in Morocco aims at providing an avenue of training to youth who either left the education system too early or who do not qualify for other forms of vocational training. The program was also designed to support small and medium-sized enterprises (SMEs) in Morocco, with a particular focus on saving some traditional arts and crafts trades which are endangered. Thus, these SMEs take advantage of the apprenticeship program by employing apprentices during and after training.⁸

4.2. Direct Support for VT Entrepreneurs

A second class of programs provide financial support for entrepreneurship activity among VT and postsecondary graduates. Since the late 1980s, graduates who wish to start their own business can receive loans at preferential interest rates. The first program, the "Young Entrepreneurs' Loans" program, was replaced in 2006 by another program called "Moukawalati", which provides technical assistance and loans for graduates who opt for entrepreneurship, discussed further below.

In parallel, a targeted program (Law 16/87), implemented in the early 1990s, provides tax exemptions exclusively for young entrepreneurs holding vocational training diplomas. Specifically, any necessary equipment can be purchased tax free, and business related taxes are waived for 5 years, then reduced by 50% during the following 5 years. In addition, Law 16/87 listed 20 trades that could be carried out only by graduates holding vocational training diplomas or by experienced workers who succeed at professional aptitude tests. This latter component was never implemented and the program lapsed following the enactment of the "Investment Charter" in 1995.

4.3. ANAPEC

A third effort to support youth employment is the National Agency for the Promotion of Employment and Skills (ANAPEC). Established in 2002, ANAPEC is designed to implement public employment policy. It also connects employers to job seeker, and provides information and guidance to job seekers and young entrepreneurs.

ANAPEC has at least three important characteristics. First, being supported by a variety of European governments, it supports legal migration to Europe and functions as a liaison between European entrepreneurs and Moroccan candidates. Second, it encourages returnees to Morocco. Third, it targets primarily high-skilled workers.

Currently, the government's employment policy is based on three main programs for post-secondary and VT graduates⁹:

- TAEHIL (*qualification*) provides training to jobseekers with the aim of enabling them to acquire appropriate skills to fit identified or potential job positions in the private sector.

⁸ The "Charte Nationale d'Éducation et de Formation" had recommended an apprenticeship program as a means to support both youth employment and to improve the pool of skilled labor available to SMEs.

⁹ More information on the website of the Moroccan Department of Employment:
<http://www.emploi.gov.ma/index.php/fr/emploi.html>

- "Moukawalati" (*my enterprise*) aims to promote entrepreneurship among youth through financial and technical supports and follow-up during the start-up period.
- The "Idmaj" (*insertion*) aims to increase the employability of jobseekers through on-the-job training. Financial incentives are granted to private companies involved in the program.

4.4. Skills Based Approach

The modernization of the educational practices of vocational training establishments is a fourth type of vocational training reform that has been implemented. This modernization, which would replace existing teaching methods with the skills-based approach (SBA), was first implemented in 2003 as a four-year pilot project. Five training sectors were targeted: (1) textile/clothing industries, (2) tourism/hotel and catering industry, (3) tertiary (in particular information and communication technology), (4) mechanical, metallurgical and electrical industries, and (5) agriculture. A second phase, also four years long, will help to evaluate the first phase and generalize the approach to the entire vocational training system.

The goal is to strengthen the links between the vocational training system and its economic environment. Training programs will be designed based on the skills actually required by the workplace. Graduates are expected to get easy access to employment.

5. Data

Each of the policy reforms examined in this paper is assessed using a different type of data. The first, the analysis of the traineeship programs, draws on longitudinal survey data from the "Follow-up of Vocational Graduates" (FVTG). This survey is carried out by the Moroccan Department of Vocational Training, and collects relevant information on the evolution of the situation of VT graduates on the labor market during the four years following their graduation. Data used here include VT graduates from the 2000 cohort, surveyed in 2004. Questions on the evolution of the labor force status are retroactive covering the period between July 1, 2000 and July 31, 2004. The 2004 FVTG included a total of 6,381 graduates - about 10% of the 2000 cohort. Female represent approximately 50% of the sample, and 90% of the respondents were between 20 and 30 years old at the time of interview.

Unfortunately, the survey did not collect information on the type of the completed program (traditional, cooperative or apprenticeship). Since cooperative and apprenticeship programs are based on the-job-training, we evaluate their performance from that of graduates who benefited from workplace training after graduation in 2000.

The second, the evaluation of the Law 16/87 which provides support to VT entrepreneurs, relies on a non-longitudinal component of the 2004 FVTG. This component collects graduates' opinions on the quality of their training compared to the reality of the workplace, the support that they have received post-graduation, and their knowledge about the myriad of programs that they could potentially benefit from.

The third, the assessment of ANAPEC, relies on 2009 data collected by Silatech and the World Bank. These data contain information on nearly 2,900 Moroccan youth and ask basic questions on education and labor force participation in addition to the types of job placement services that these youth received, with a specific focus on ANAPEC.

6. Estimating the Effectiveness of VT Policy Reforms

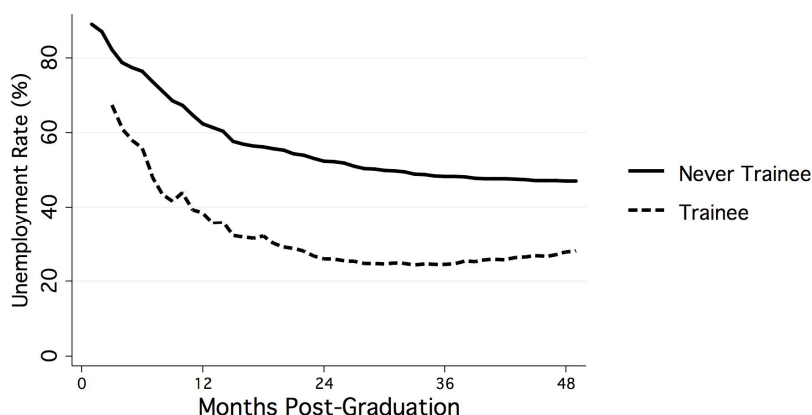
This section, evaluates three of the reforms to Morocco's VT program. We show that a traineeship after graduation has a lasting and strongly positive impact on subsequent labor market outcomes. However, we find little evidence that privatization of VT, policies designed to encourage small business formation among graduates, or job placement services were effective.

6.1. Traineeships

We assess the effectiveness of the traineeship program by comparing the unemployment rate of participants in a workplace training after graduation to VT graduates that did not benefit from such training. We find that the traineeship leads to long-term increases in the likelihood of being employed. Importantly, we provide evidence that this result does not seem to be driven by selection or other forms of endogeneity.

The short- and long-term difference in the employment trajectories of the participants in a workplace training is demonstrated in Figure 3. In particular, participating in a workplace training after graduation seems to lead to a permanent reduction in the probability of unemployment - trainees have an approximately 20 percent lower unemployment rate during each month following the completion of their VT program.

Figure 3: Comparing Trainees with other VT Graduates*



*: The "Trainee" line includes all individuals who have participated in an on-the-job training by the corresponding month.

Further, longer traineeships seem to be associated with enhanced employment outcomes. This is demonstrated in Figure 4 which reports the employment trajectories of individuals with different lengths of traineeships. Longer traineeships are associated with lower unemployment rates during all points post-completion of the VT program.

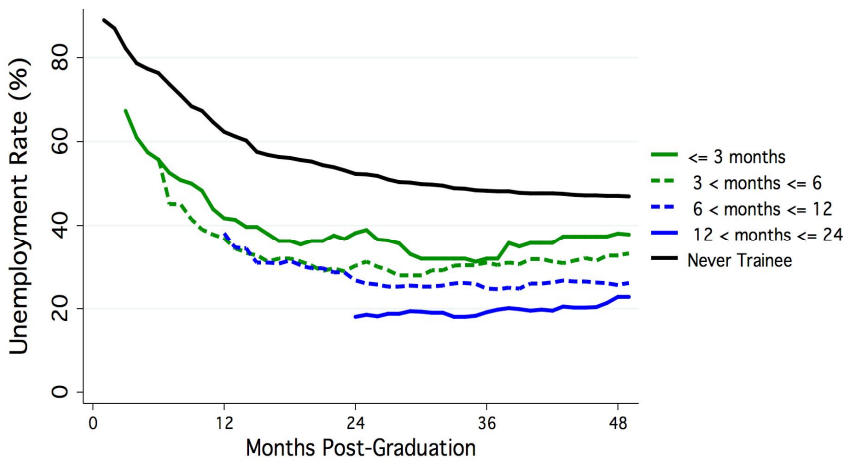
A significant empirical concern in assessing the effectiveness of the traineeship is that individuals who choose to participate in this traineeship are different in some important way from non-participants. Thus, rather than just comparing participants to non-participants, it is important to estimate the average impact of the traineeship program on the participants in the program. This is equivalent to estimating the average treatment

effect among the treated (ATT). In our case, the ATT is the difference in the unemployment rate among those in a traineeship and the unemployment rate for those same individuals if they had not participated in a traineeship. This ATT can be written as

$$ATT = E[U_1T - U_1N | T = 1]$$

where U_T is the unemployment among the treated, U_N is the unemployment among the non-treated and T is a binary indicating treatment or not. While we observe $E[U_1T | T = 1]$, we do not observe the counterfactual unemployment rate $E[U_1N | T = 1]$ directly. If the decision to participate in a traineeship was random, so that $E[U_1N | T = 1] = E[U_1N | T = 0] = E[U_1N]$, then we could estimate the ATT using the prevailing unemployment rate among all vocational graduates. However, this is unlikely to be the case.

Figure 4: Length of Traineeship*



*: The plot for each group of trainees begins at the end of the range for that group.

We estimate the ATT of the traineeship in two stages. In the first stage we calculate the probability of being a participant. Following Friedlander, Greenberg, and Robins (1997), who develop model a similar voluntary training program, we estimate the probability of participating in the traineeship as a function of specialization, region, field of study, father's vocation, gender, age, and age-squared.

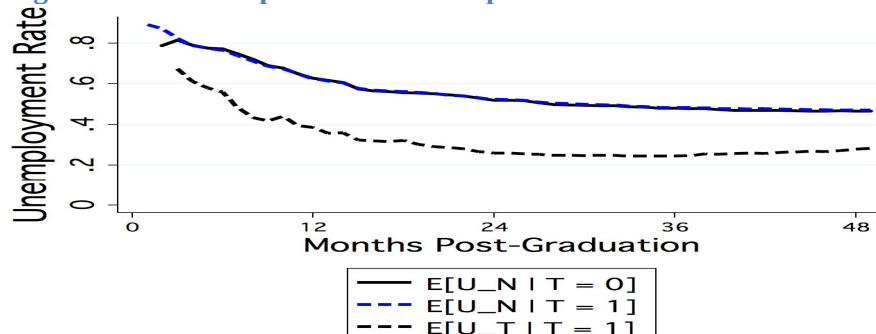
In the second stage, we estimate $E[U_1N | T = 1]$ following the approach suggested by Imbens (2004). Specifically we calculate

$$E[U_1N | T = 1] = \frac{(\sum_i (i \in \{T = 0\}) \hat{p}_i [U_{1i} (e_i) / (1 - (e_i)^{\hat{p}_i})])}{(\sum_i (i \in \{T = 0\}) \hat{p}_i (e_i) / (1 - (e_i)^{\hat{p}_i}))}$$

where $\hat{p}$ is the probability of an individual choosing to participate in a traineeship. This approach assumes that the decision to participate in a traineeship is independent of their unemployment outcome conditional on observables.

Figure 5 demonstrates the estimated causal impact of a traineeship. Specifically, the dashed blue line reports what the unemployment rate would have been among the trainees if they had selected not to participate in a traineeship. Thus the causal impact of the program is simply the difference between the dashed blue and the dashed black lines.

Figure 5: Causal Impact of Traineeship*



6.2. Entrepreneurship Programs

There is little evidence that Law 16/87, which was designed to provide direct support to entrepreneurs among the vocational training graduates, was an effective program. The most striking evidence against the usefulness of the program was that less than 4% of all vocational training graduate entrepreneurs participated in the program. Indeed, while this program was targeted to have approximately 1,000 participants annually, it only had an average of 100 annual participants reaching a total of less than 600 youth during its first six years of operation. While this in part reflects ineffective publicity, as only 20% of graduates were aware of the program, the take-up rate among the population that were aware of the program was extremely low.

Table 1 provides key summary statistics comparing Law 16/87 to the two other Moroccan programs providing direct support to VT entrepreneurs, "Crédit Jeunes Promoteurs" and "Programme Auto-Emploi"; neither of these other programs provide preferential opportunities for vocational training graduates. The first row reports the take-up rate of each program, the second reports the overall awareness of each program, and the third and fourth report the average investment and size of firms benefiting from the specified program. The fourth column reports the average size and level investment for all firms surveyed.

Table 1: Comparing Different Types of Entrepreneurship Programs

	Loi 16/87	Crédit Jeunes Promoteurs	Programme Auto-Emploi	All Entrepreneurs
Take-up Rate Among Entrepreneurs	3.6%	1.1%	5.1%	-
% of VT Graduates Aware of Program	19.8%	61.2%	30.9%	-
Average Investment (DH) for Benefiting Firms	77,800	202,500	127,800	37,300
Average Firm Size for Benefiting Firms	2.5	3.7	3.1	1.9

The inefficacy of this law in reaching the target population is highlighted by the fact that nearly twice as many recent graduates of vocational programs claim to have received some type of other public assistance, despite the fact that Law 16/87 was specifically designed to target these individuals. This can be seen in Table 1 by

comparing the first to the second and third column - more than 6% of vocational training graduates entrepreneurs benefited from entrepreneurship programs targeted toward university graduates and only 3.6% benefited from Law 16/87.

The low take-up rate of the Law 16/87 benefits is likely driven by two factors. The first is ineffective publicity. As demonstrated in Table 1, less than 20% of entrepreneurs were even aware of this program. However, among the 20% that were aware of the program, the vast majority of respondents said that they just were not interested in the program.

The second factor is the additional cost to the firms associated with participating in the program. Specifically, while there are some short-term benefits from Law 16/87, a medium-term cost is that your firm must enter the formal sector eventually and begin to pay taxes, even if at a reduced 50% rate. It is thus unsurprising that those firms that were aware of the program and chose not to participate were significantly smaller than participating firms - the average participating firm had a total investment of approximately 75,000 MAD and 2.5 employees while a firm choosing not to participate had a total investment of 30,000 MAD and 2.0 employees.

6.3. ANAPEC

ANAPEC seems to have had very limited total impact among Moroccan youth. This limited impact seems to be driven primarily by the very limited awareness of the program - i.e., only 14% of youth interviewed in 2009 had heard of the program.

However, as youth unemployment rates among ANAPEC beneficiaries were one-half those of analogous Moroccan youth, there is some indication that ANAPEC may have supported job formation among these youth. Yet, assessing the impact of ANAPEC on Moroccan is complicated by the small number of youth that report benefiting from the organization - i.e., only 4% (N=106) of youth had received job information and just over 1% (N=37) reported receiving any kind of services or training from this program.

7. Policy Implications

Designing policies to reduce youth unemployment in the MENA region remains a key challenge facing both those countries government's as well as international and regional donors. Our findings offer three lessons about the potential role for vocational training programs in supporting those efforts.

First, entrepreneurship are still not a panacea. Various types of entrepreneurship programs (e.g., microfinance) have been attempted in Morocco and throughout the region. In almost every case, after much fanfare and hype, there have been some successes and many failures. Similarly, we find no evidence that they effectively support smaller entrepreneurs. However, we do find that entrepreneurship programs can help larger enterprises, but these individuals would probably do fine anyway.

Second, ANAPEC-like approaches might be attractive, particularly given the active role that Europeans have demonstrated to be willing to play in the process. However, there is very limited knowledge of these programs despite ten years of existence. More research is necessary to (1) establish impact and (2) understand why penetration has been so limited

Third, there is significant evidence that traineeship programs can be effective for supporting graduates of vocational training programs. Specifically they bring significant job stability which can support a positive long-term career trajectory for youth. However, as these programs require cooperative and interested members of the private sector, a

significant effort will need to be made by both interested donors as well as the private sector to expand the benefit of these programs. Further research exploring the benefit of these trainees to firms could help support that advocacy effort.

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