Annex 2

COTE D'IVOIRE YOUTH EMPLOYMENT AND PRODUCTIVITY IMPACT EVALUATION (P150249)

DESIGN FOR APPRENTICESHIP IMPACT EVALUATION

1) Project Description

The Cote d'Ivoire Emergency Youth Employment and Skills Development (US$50M) was put in place in the context of the crisis that followed the 2010 presidential elections. The Project Development Objective is to improve access to temporary employment and skills development opportunities for young men and women in Côte d'Ivoire.

The first component of the project (US$18m) supports transitory employment opportunities through labor intensive public works (LIPW) accessible to unskilled/low skilled youth, in urban and peri-urban areas. The target group is youth, defined as 18-30 years of age, not enrolled in any form of education, whether formal or informal. 12,500 men young and women will benefit directly from an increased temporary income for the duration of six months. The project promotes the participation of women by reserving a percentage of LIPW jobs.

The second component (US$22m) focuses on Skills Development and Employment Support for Youth, including: (a) basic life skills and entrepreneurship training for LIPW participants (described under component 1 above); (b) apprenticeships; (c) internships for skilled graduates in their respective profession; (d) professional training programs of short duration; (e) entrepreneurship training for skilled graduates.

The apprenticeship sub-component targets 5000 low-skilled youths aged 18 to 24 years old. The apprenticeship sub-component is operating in the main urban areas of the country. Apprenticeship positions are collected by the local institution in charge of apprenticeships (AGEFOP) and private sector organizations (Chambres consulaires (Commerce, Métiers,…) and faitières (FIPME,…)), before being validated by the PEJEDEC management team. Eligible apprentices are selected among a pool of applicants, and matched to enterprises after a screening interview organized by AGEFOP. Apprenticeships are expected to last 12-24 months and cover sectors such as construction, mechanics, wood working, textile, services, and electronics,... Selected apprentices receive an allowance of 30 000 CFA monthly (approximately USD 60). In addition to practical on-the-job training, apprentices participate in 180 hours of complementary training per year. They are also advised by apprenticeship counsellors from AGEFOP. Apprentices take a test at the end of the apprenticeship, and receive a certification if they pass the exam. A firm can train up to three apprentices by profession at any given time. Employers who take-on apprentices receive a package of tools, may receive some additional training as well as some non-monetary recognition if their apprentices pass the final test. These modalities of support to firms are being finalized.

Critically, informal apprenticeships are routinely provided by private providers in West Africa. For instance, approximately one third of young adults aged 25 to 34 years old in Cote d'Ivoire reported having at some point worked as an apprentice in 2008 (ENV 2008). Informal apprenticeships are based

on private arrangements between young people (or their parents) and mastercraftsmen. Apprentices typically pay a fee to start the apprenticeship, and then a monthly fee to pursue the training. At some point the mastercrafstmen may stop requiring a fee, and start paying apprentices. Such informal apprenticeships can be of long durations.

In this context, the rationale for public provision of formal apprenticeship in part depends on how public provision of formal apprenticeships may improve the quality or crowd-out the private provision of apprenticeships. Many policies and programs seek to subsidize access to apprenticeships. This often relies on the assumption that the supply of apprenticeship will adjust, although there is very little data on the matter. To date, no impact evaluation of apprenticeship as tackled this fundamental question of the rationale of public intervention in the private market for apprenticeships.

While informal apprenticeships are one of the most common forms of skills training available for out-of-school youth, many governments are attempting to introduce public provision or subsidies for more formal apprenticeships. There are only a handful of rigorous studies on the effectiveness of apprenticeship schemes in Sub-Saharan Africa (Frazer, 2006; Cho et al., 2013). There is very little data on the type of public intervention that is justified and cost-effective in the private apprenticeship market. In addition, there is very little evidence on how best to design formal apprenticeships, including whether to provide theoretical training in addition to practical training. The government of Cote d'Ivoire is attempting to reform the apprenticeship system, and formal apprenticeship being piloted as part of PEJEDEC will provide important evidence for the reform

The main objectives of the apprenticeship impact evaluation is (i) to assess the rationale for public subsidies of formal apprenticeship by evaluating whether it has an indirect effect of the provision of private and informal apprenticeships, and (ii) to assess what is the effectiveness of providing a formal apprenticeship (including theoretical and practical training) on access to apprenticeships among youth, as well as skills acquisition and employment outcomes of young participants.

Overall, the evidence from the impact evaluation will inform the design of the national apprenticeship system, and future public investments in apprenticeships in Cote d'Ivoire and beyond.

2) Main evaluation questions

The impact evaluation of the apprenticeship sub-component is designed with two main objectives.

First, the evaluation will assess the rationale for public provision of formal apprenticeship by evaluating whether it has an indirect effect of the provision of private and informal apprenticeships. The key policy questions are the following:

- To what extend does the public provision of apprenticeship creates new apprenticeships, and to what extent does it crowd out the supply of private apprenticeships in the short-term?
- Does the public supply of apprentices affect firm productivity, investment or level of hiring in the short-term?

Second, the evaluation will document what is the effectiveness of providing a formal apprenticeship (including theoretical and practical training) on access to apprenticeships among youth, as well as skills acquisition and employment outcomes of young participants. The key policy questions are the following:

- Does the provision of public apprenticeship changes the profile of youths' having access to apprenticeships?

- Does the participation to formal apprenticeship improve the skills, employment outcomes and earnings of youths in the medium term?
- Does participation to formal apprenticeship facilitate exit from apprenticeships, and improve prospects of youths being in wage employment or self-employment?

3) Main outcomes of interest

The impact evaluation will measure impacts on a broad range of outcomes indicators.

At the firm level (12 months after baseline):

- Hiring decisions: Number of apprentices hired, profile of apprentices hired, overall number of employees hired, wage bill.
- Productivity: Investment and profits

At the youth level (24 months after baseline):

- Individual employment (employment, unemployment, inactivity, ownership of household enterprises, self-employment, wage employment, hours worked, underemployment, pluriactivity, job search,…).
- Employment aspirations (preference for self-employment, preference for private wage employment, reservation wage,…)
- Individual earnings (wage earnings, profits in household enterprises and self-employment)
- Savings, assets and credit
- Technical skills, attitudes towards the future and time-perspective *(STPI scale),* negative affects (*CES-D depression scale*), self-confidence, emotional regulation, time use and participation in violent behavior.

4) Evaluation design, identification strategy and sampling

The impact evaluation is a randomized control trial with randomization at two levels.

To date, PEJEDEC has placed 3000 apprentices. The impact evaluation will focus on the 2000 apprentices that remain to be placed. PEJEDEC has established target in terms of (i) apprentices to be placed (2000), (ii) apprenticeship offers to be identified (4000), (iii) number of firms by which to collect apprenticeship offers (1200) and (iv) number of potential apprentices to identify (3000). Table 2 summarizes the targets by localities.

Table 2

Locality	**Apprentices to be placed**	**Apprenticeship offers to be identified**	**Number of firms by which to collect apprenticeship offers**	**Potential apprentices to recruit**
Adzopé	138	276	83	200
Daoukro	133	266	80	150
Gagnoa	167	334	101	207
Bouaké	67	134	41	251
Divo	133	266	80	233
Yamoussoukro	67	134	41	200
Bondoukou	155	310	93	399
Abengourou	100	200	60	101

Mankono	67	134	41	1061
Man	266	532	160	101
Abidjan	707	1414	425	101
Total	**2000**	**4000**	**1205**	**3004**

A first level of randomization will take place at the firm level. It is expected that 4000 apprenticeship positions in 1200 enterprises will be identified. A baseline survey will be collected among the 1200 firms. Subsequent to the baseline phase, half the firms that offer apprenticeship positions will be randomly chosen to receive apprentices through the program, resulting in 2000 apprenticeship positions to be filled in approximately 600 firms. These 600 firms will constitute the treatment group at the firm level. The remaining 600 firms (and related 2000 apprenticeship positions) will constitute the control group at the firm level.

Randomization at the firm/apprenticeship level will allow testing whether firms not receiving apprenticeships through the public program nevertheless end up hiring apprentices through the private market, as well as whether firms receiving apprentices through the formal system benefit in terms of productivity. As such, the impact evaluation will document to what extent the publicly provided apprenticeship program creates new apprenticeships, and to what extent it may replace informal apprenticeship with formal apprenticeships of higher quality.

The baseline survey data collected at the firm level will also provide a provider assessment on a range of private firms offering apprenticeships. This will allow better understanding the profile, characteristics and motivation of private apprenticeship providers, most of which are small informal firms and household enterprises. In itself, the baseline survey and provider assessment will provide useful information for the design of the national apprenticeship system in Cote d'Ivoire.

A second randomization will take place at the individual level. The available apprenticeship positions will be advertised (by profession and location). Interested applicants will be invited to apply. From the pool of applicants, a sample of 3000 eligible youths will be drawn. The 3000 youths eligible for the apprenticeship will participate in the baseline survey. After the baseline survey, 2,000 out of the 3,000 applicants will be randomly selected to participate in interviews with apprenticeship counsellors, will be matched to apprenticeship positions and receive the full intervention. The remaining 1000 youths will serve as a control group.

Although the randomization will involve two steps, in practice these two steps will be undertaken jointly. The randomization will be stratified by professions and location. Homogenous groups of apprenticeship positions by professions and locations will be formed. Similar groups of youths by location and professional interests will be formed. The randomization will be undertaken within these strata.

The control group of firms and control group of young applicants will not receive any additional services through the program. At the design phase, it was considered to provide information to youths in the control group about control firms that offered apprenticeship positions but were not selected to be filled, and vice versa. However, if this is done, the impact evaluation would assess the effectiveness to the full program to a matching intervention, rather than the statu quo in absence of any public intervention. It was deemed more relevant to test the effectiveness of the apprenticeship intervention compared to a situation with no public intervention at all. Therefore, no matching of individuals in the control group to firms in the control group will be made.

5) Power calculations

The sample sizes were established based on detailed power calculations, but also taking into account operational constraints, particularly in terms of identification of firms interested in providing apprenticeship positions.

First, we consider power calculations for impacts at the level of firms. The sample size is 1200 and is equally divided between treatment and control. This provides with a minimum detectable effect[1] of 16.3% of the standard error of the outcome variable. The main outcome variable is the number of apprenticeship positions in the firm. If we consider it is distributed as a Poisson distribution with parameter 10 (mean and variance are equal to 10). This implies a minimum detectable effect of 0.52. If we consider a parameter 6 for the Poisson distribution, we get 0.40. We could compare this to the alternative case where there are 1800 firms in both treatment and control group. This would provide a 9.4% MDE turning to 0.30 and 0.23 with Poison distributions of parameters 10 and 6. The interest with having three positions per firm in 600 firms rather than one position in 1800 firms is that the treatment is stronger. If we compare the MDE to treatment for say a Poisson distribution of parameter 10, we get 0.52/3=0.17 in the case of three positions per firm and 0.30/1=0.30. Therefore, in terms of power to detect an impact on the number of apprenticeship positions, having 600 firms with an intensive treatment is not worse than 1800 firms with a reduced treatment. Operational constraints are such than 600 firms in the treatment and control group is expected to be the upper bound of what is achievable.

In these power calculations, it has been assumed that all firms are treated, although in practice non-compliance may occur. In such a case the power would be lower. If just 80% of firms get apprentices then the MDE is 16.3/0.8=20.4%, which makes 0.65 for a Poisson distribution of parameter 10. The impact evaluation team will closely monitor the collection of apprenticeships offer as well as the take-up of apprentices by firm. The stratified randomization and related matching procedure will seek to maximize the number of treated firms that will indeed receive apprentices.

Second, we consider power calculations at the level of youths. The planned sample includes 1000 youths in the control group and 2000 youths in the treatment group. At the same time, the average number of youth per firm is 3 so to some extent power will be between two polar cases corresponding to: 2000 individual units in the treatment group and 2000/3=666 individuals in the treatment group. This makes a power of 14.2% in the first case and 11.0% in the second. In both cases, the experiment is rather powerful. Still, power may worsen as time passes. The power will be very large for the first outcome variable: decision to enter apprenticeship, but then there might be problems tracking youth, especially in the control group. The team will put in place strong tracking protocol, including to maximize tracking of youths in the control group.

[1] 2.83xcomputed standard error

6) Timeline and data collection

The impact evaluation will rely on a randomized control trial including a baseline survey among enterprises and youths, a midline survey among enterprises and an endline survey among youths.

The design of the impact evaluation of the apprenticeship sub-component will be completed by mid-April 2014. The baseline firm survey among enterprises will be collected on a rolling basis across localities in April, May and June 2014. It will be followed by the baseline survey among applicants. Data collection will be undertaken by a small data collection team overseen directly by PEJEDEC, using tablets and the new World Bank CAPI application.

It is expected that a midline survey at the enterprise level will be collected 12 months after the baseline, and at endline survey at the youth level 24 months after he baseline.

7) Administrative data and cost-effectiveness analysis

In addition to the baseline and follow-up survey, a range of complementary administrative data will also be compiled. These include:

- Data on apprenticeship offers with basic information on all apprenticeship offers that have been collected, and whether they have been validated or not.
- Registration data with basic characteristics of on all youths who applied to participate in the apprenticeships
- Data on participation in apprenticeship and payments received
- Data on participation to training sessions
- Detailed cost data on the apprenticeship sub-component.

Detailed cost data will be collected by the program staff, with whom the evaluation team will work closely. Cost data will be collected using the ingredients approach (Dhaliwal et al., 2012). The team will be working closely with the client to obtain detailed information on cost, which will include costs of apprenticeship stipends, cost of contracting training providers, overall project administration cost, as well as private costs to beneficiaries. This impact evaluation is fully integrated into the project, so that cost data will be collected directly through the project financials.

8) Evaluation Team

The impact evaluation is being implemented in close coordination between the government of Cote d'Ivoire (PEJEDEC project), the World Bank, and international academics. The impact evaluation is overseen by a working group including both operational and technical staff from both institutions, with the objective to ensure a close coordination of the impact evaluation with project implementation.

The impact evaluation activity is led by Patrick Premand (Senior Economist at the World Bank and TTL for the impact evaluation) and Bruno Crépon (Professor at ENSAE, JPAL affiliate). A field coordinator also works as part of the World Bank team (Sondo Eloi Somtinda). The operational team overseeing the impact evaluation includes Hamoud Abdel Wedoud Kamil (Senior Education Specialist at the World Bank and PEJEDEC Task Team Leader), Adama Bamba (PEJEDEC project coordinator) and Herrmann Toualy

(Deputy project coordinator) provide oversight for PEJEDEC. At PEJEDEC, a strong technical M&E staff is led by Ismahel Barry and Fabrice Konan. A field coordinator for the impact evaluation (Alicia Marguerie) also works with PEJEDEC.