

SOCIAL PROTECTION AND JOBS

2019 CORE COURSES

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UPGRADING APPRENTICESHIP SYSTEMS: CHALLENGES AND OPPORTUNITIES (IN LOW-INCOME AND LOWER MIDDLE INCOME SETTINGS)

November 7th, 2019

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World Bank (DEC/DIME and SPJ)

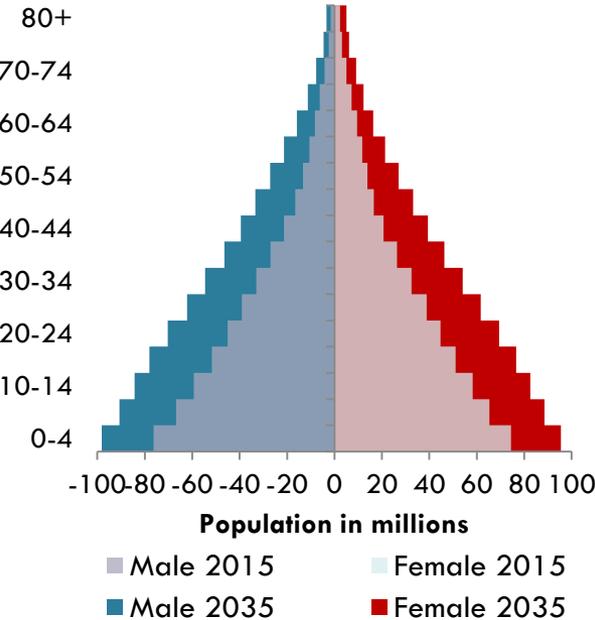
[Jobs, Labor & Migration Course](#)



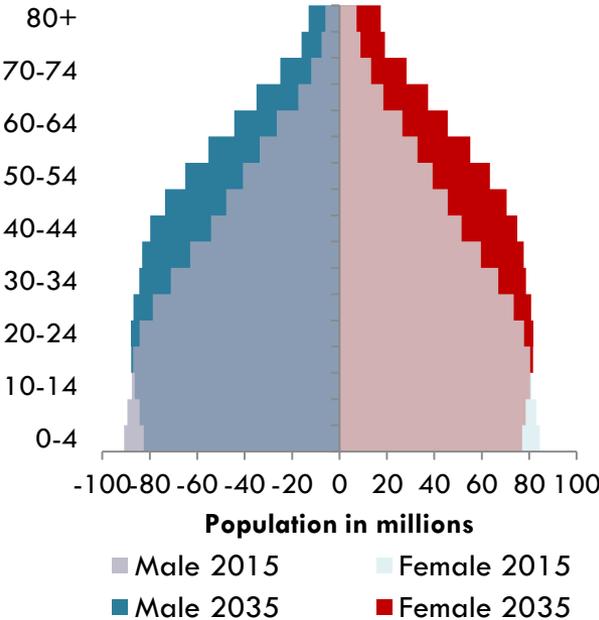
YOUTH EMPLOYMENT CHALLENGES

FAST-GROWING LABOR FORCE IN SOME REGIONS

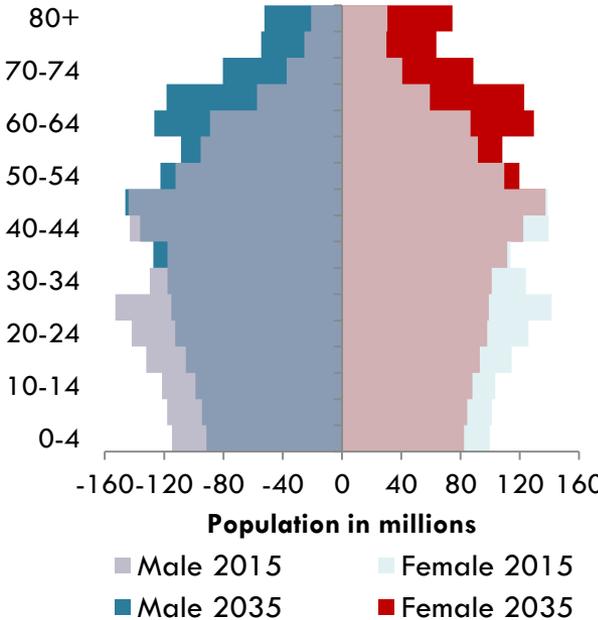
Sub-Saharan Africa



South Asia



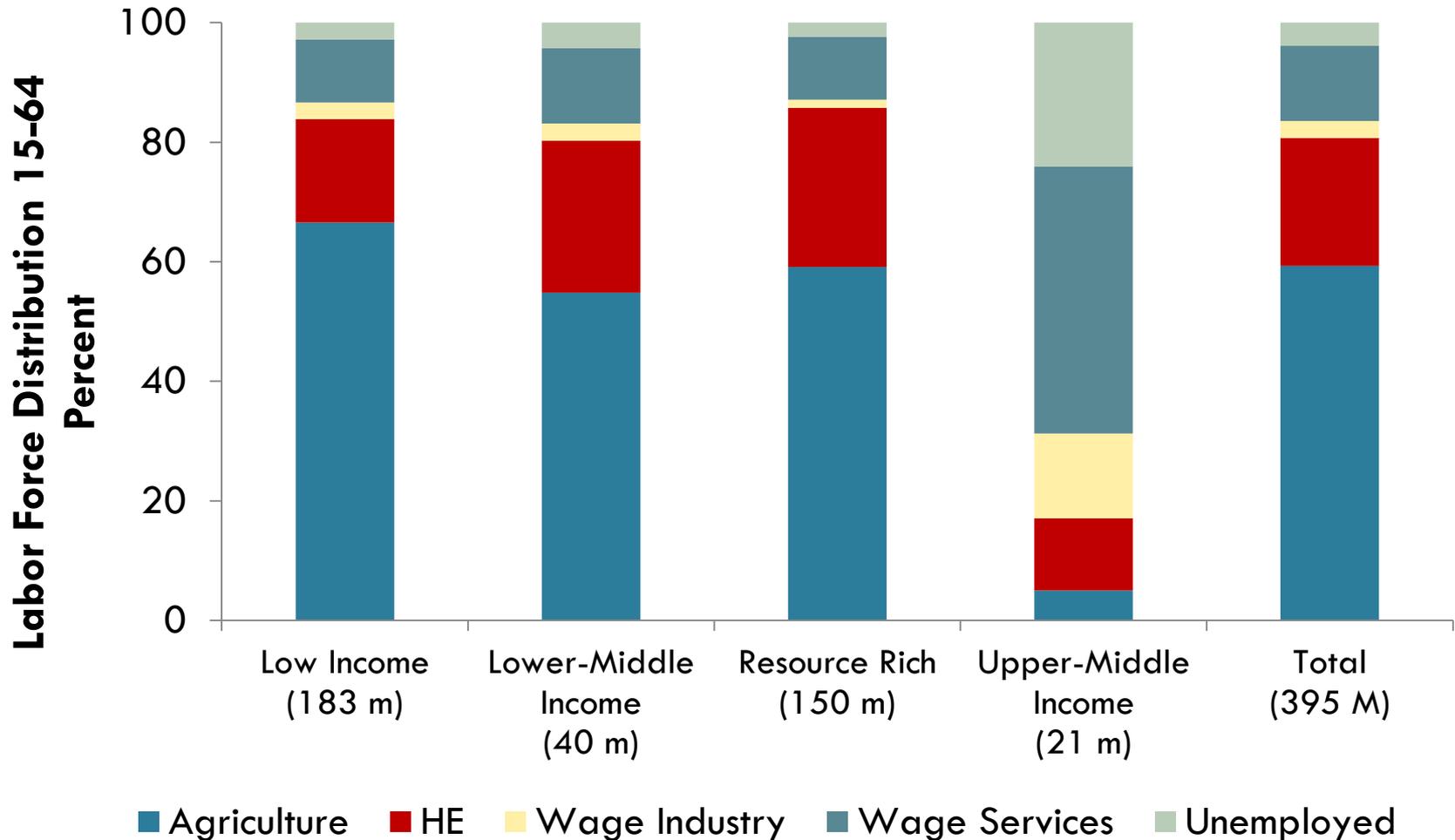
East Asia and Pacific



Source: United Nations, Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision.

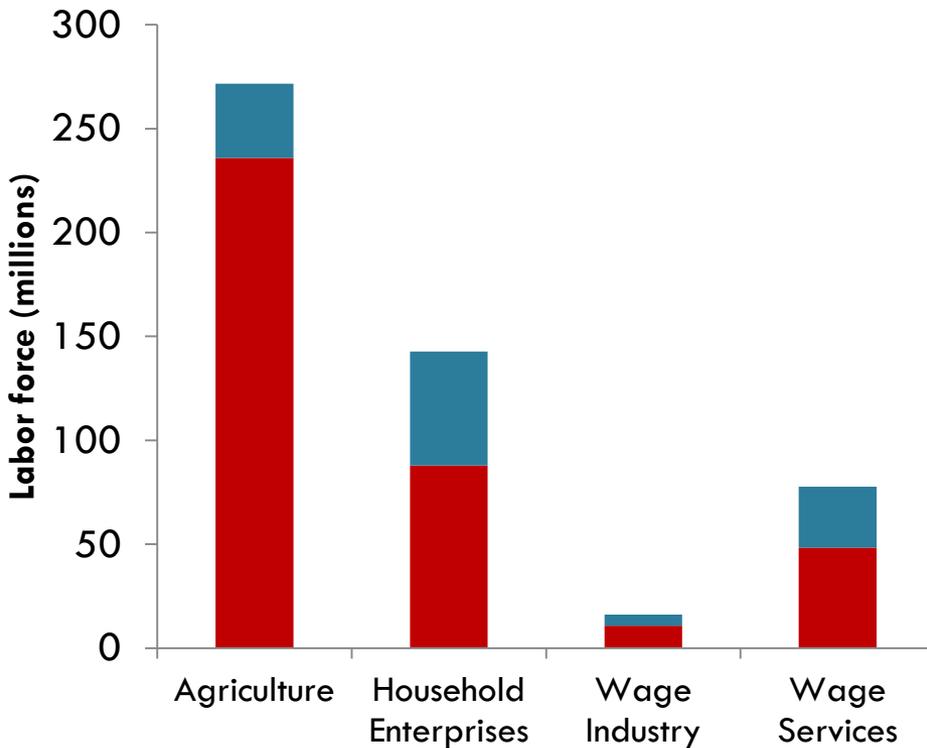
<http://esa.un.org/wpp/Excel-Data/population.htm>

MOST INDIVIDUALS IN LOW-INCOME COUNTRIES WORK IN AGRICULTURE AND HOUSEHOLD ENTERPRISES



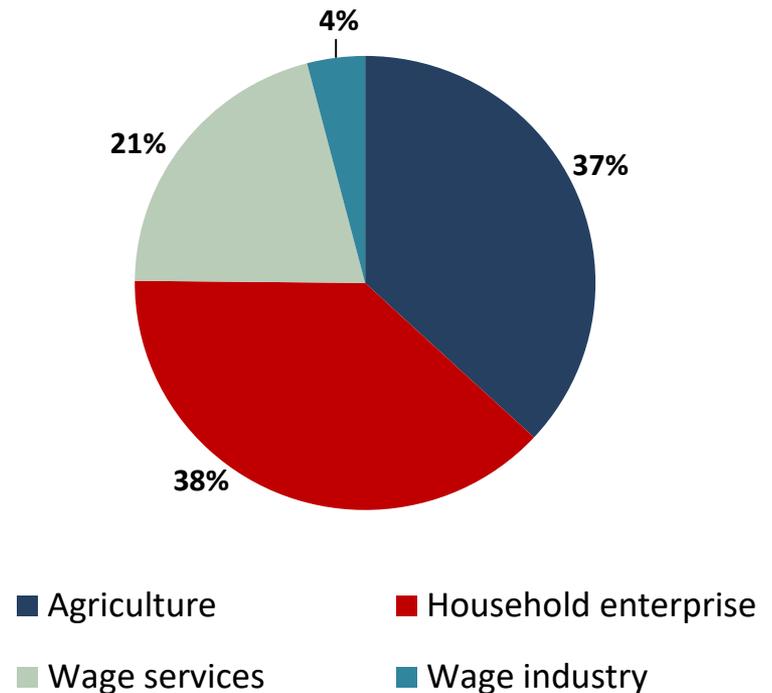
STRUCTURAL TRANSFORMATION IS SLOW... WHERE ARE THE NEW JOBS COMING FROM?

Projected net new jobs in 2020 compared to 2010 in Africa



■ 2010 ■ New Jobs in 2020

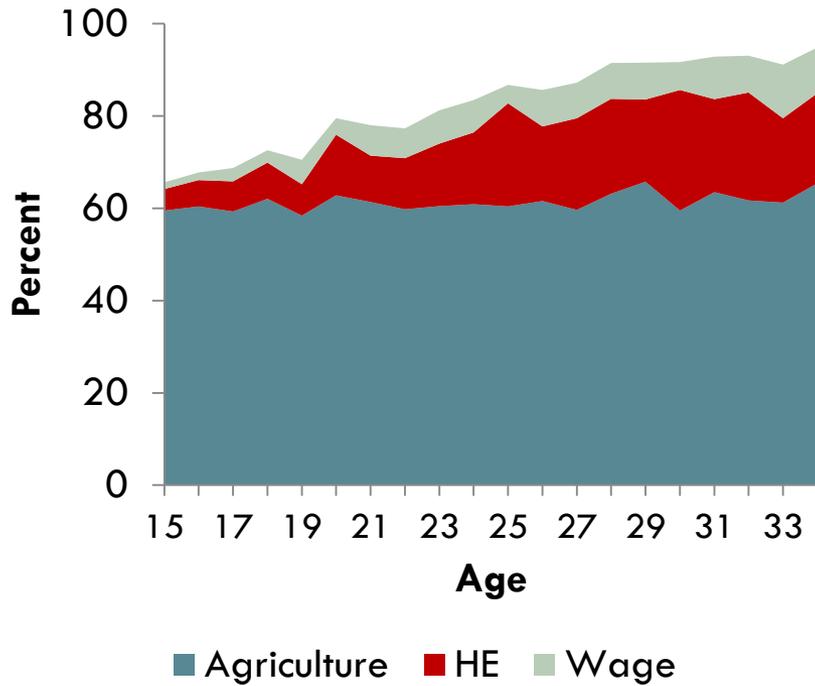
Gross job flows between 2010 and 2020 in Africa (percent of new entrant individuals)



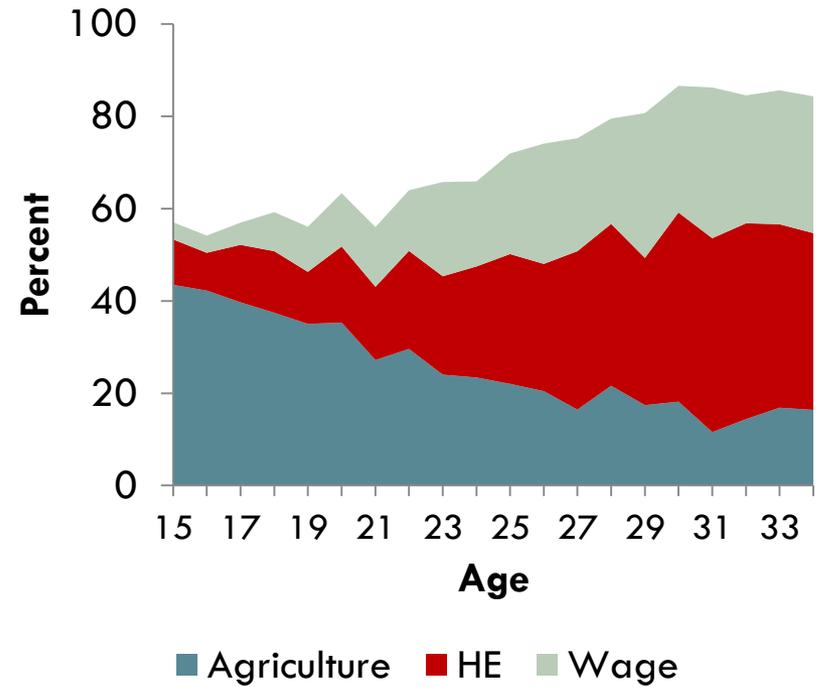
■ Agriculture ■ Household enterprise
■ Wage services ■ Wage industry

YOUTHS OFTEN FACE SLOW SCHOOL TO WORK TRANSITIONS, IN PARTICULAR TO GET INTO WAGE JOBS

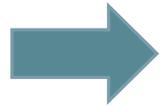
Rural



Urban



TACKLING THE EMPLOYMENT CHALLENGE



Disenchanted urban youth who want to work in the wage sector are just the tip of the iceberg



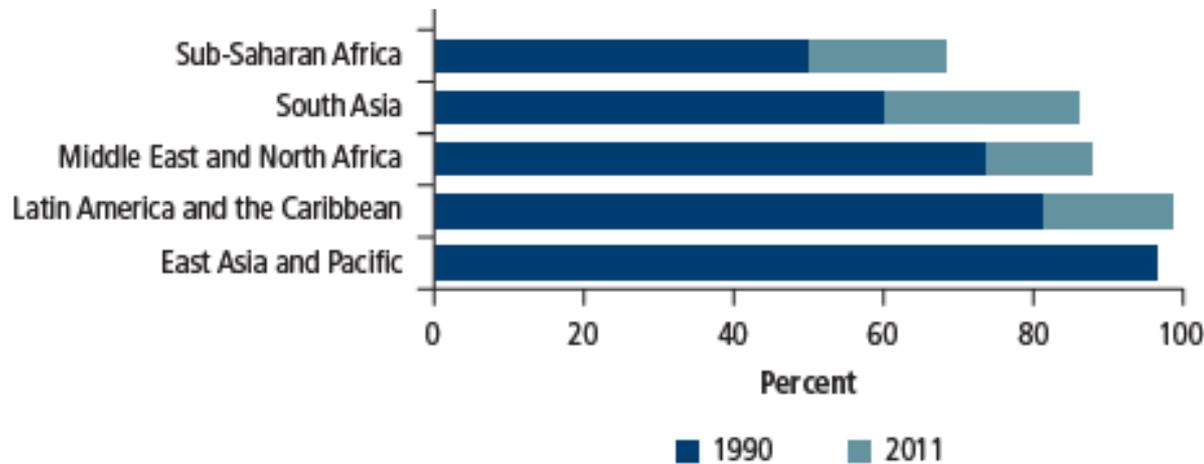
The broader employment challenge is about pathways to productive work in **agriculture**, **household enterprises**, as well as the **modern wage sector**



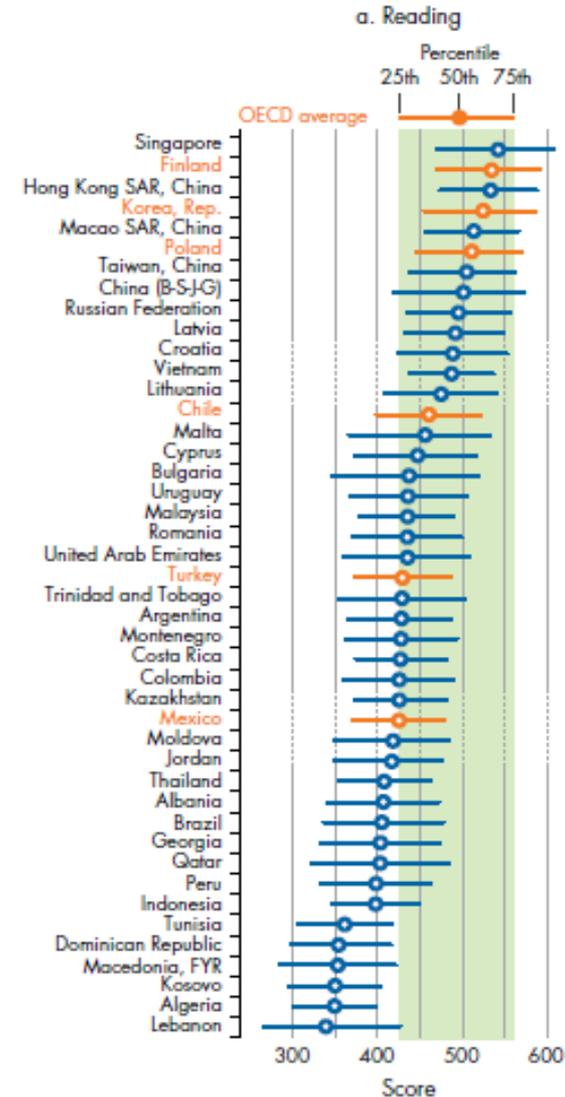
Implies focusing not only on unemployment and share of people (wage) employed, but also on how to improve the quality of employment and earnings across occupations

SCHOOL ENROLLMENT HAS INCREASED, BUT NOT EVERYONE LEAVES SCHOOL WITH SUFFICIENT SKILLS TO BE PRODUCTIVE

Primary Completion Rates



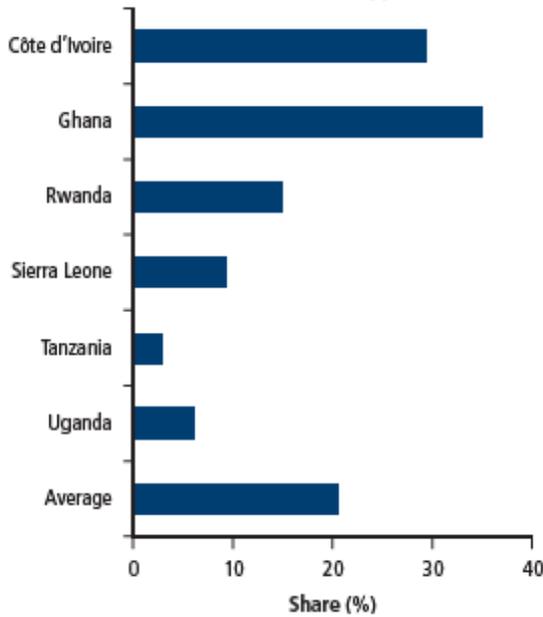
- But there is still a large stock of youths with limited education and skills
 - And even individuals who attended school may not have acquired sufficient skills
- Limited skills hinder labor mobility and productivity
- Opportunities to acquire skills outside of school are often limited



APPRENTICESHIPS ARE COMMON IN LOW-INCOME/LOWER MIDDLE INCOME COUNTRIES

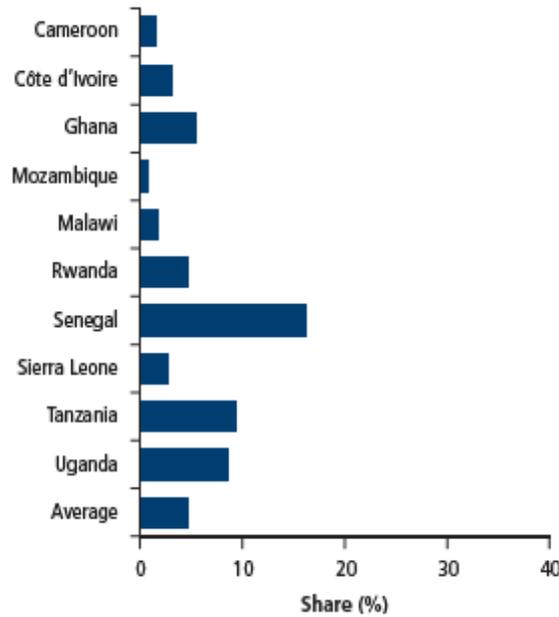
Ever been an apprentice

a. Ever been an apprentice



Ever attended TVET

b. Ever attended a TVET institute



Source: Filmer et al. (2014), *Youth Employment in SubSaharan Africa*

- Apprenticeship is one of the most common sources of training in Africa
 - Particularly for low-skill youths and informal sector operators
- Traditional apprenticeships involve on-the-job training in small informal firms
 - They are private arrangements that have existed for decades
- But it is not a model without questions (accessibility, quality,...)
 - Is the level of training optimal in the economy?
 - How to provide the right mix of firm-specific and general skills?



APPRENTICESHIP MARKETS AND PUBLIC INTERVENTIONS

WHAT ARE THE POTENTIAL MARKET FAILURES TO ADDRESS? (1)

- Key questions: Is the training provided in firms and individuals' investment in training at the **'optimal' level**?
- General human capital theory (Becker, 1962)
 - Firms pay for training in firm-specific skills
 - Individuals pay for training in general skills (because they get returns on the labor-market)
 - The level of training provided is optimal if firms and individuals share the cost of training
 - If there are **capital market imperfections**, individuals may not be able to cover the cost of training (both direct costs and indirect costs such as forgone earnings while training)
- **Labor market imperfections** can mitigate this issue (Acemoglu and Pischke, 1998, 1999)
 - Firms may still invest in general skills training if labor market frictions limit worker's mobility

WHAT ARE THE POTENTIAL MARKET FAILURES TO ADDRESS? (2)

- But even in presence of labor market imperfections, there might be **commitment failures in firms**
 - Firms may not be able to credibly commit to a certain level of training: in absence of complete contracts, they have incentives to provide less training (Dustman and Schönberg, 2012)
 - Youths expect firms not to keep promises of providing training
 - Leads to an underinvestment in general training
- **Role of ‘institutions’: certification and regulation** can help ensure individuals get returns from training (Acemoglu and Pischke, 2000)
- Lastly, there can be **information asymmetries and imperfect intermediation** mechanisms that can hinder matches between youths and firms (Hardy and McCasland, 2015)

CAN WE IDENTIFY SYMPTOMS OF THESE MARKET FAILURES?

- Market failures are not observable...
 - Ideally use impact evaluation to test whether they are binding and can be addressed
 - But some symptoms in observational data may signal market failures/constraints
- Issues related to access:
 - Share of youths with access to apprenticeship
 - Share of apprentices hired through connection
 - Access by education level, income level,...
 - Magnitude of training costs (entry and regular fees)
- Issues related to training quality:
 - Magnitude of drop-outs
 - Share of apprentices that obtain certification
 - Existence of formal apprenticeship/training contract
 - Employment outcome by type of training received
 - Labor mobility post-training/apprenticeship
- Ideally collect broad data on the market for training from individuals and firms

POLICY APPROACHES TO UPGRADE APPRENTICESHIP SYSTEMS

Example

Facilitating access to apprenticeship

Ghana : « matching » system to facilitate youth' placement as apprentices into firms. Job fairs organized to facilitate intermediation/matching between youths and firms (Hardy & McCasland, 2017; Hardy et al., 2019)

Uganda: « subsidized traditional apprenticeships » (Alfonsi et al., 2019)

Improving training quality

Bénin: improve access to technical training opportunities and facilitate certification for youths already in (traditional) apprenticeships

Senegal: improve quality of traditional apprenticeship (e.g. master skills, grant/technology for workshops, complementary training in literacy, socio-emotional or business skills)

Facilitating access and improving training quality

Côte d'Ivoire: subsidized dual apprenticeships (Crepon & Premand, 2019)

- Screening of applicants, placement and wage subsidies
- Dual training: on-the-job training with follow-up by counsellors, and theoretical training in centers

INFORMAL AND FORMAL APPRENTICESHIPS COMPARED TO OTHER TRAINING SCHEMES

| Characteristic/Type of training | | Pre-apprenticeship or Traineeship | Internship | Informal apprenticeship | Workplace learning | Apprenticeship |
|---------------------------------|--|-----------------------------------|---------------------------|-------------------------|--------------------|-----------------|
| 1 | Wage | Maybe | Maybe | Maybe | ✓ | ✓ |
| 2 | Contract agreement* (bilateral or tripartite) | ✗ | Maybe | Maybe | ✓ | ✓ |
| 3 | Legal framework | ✗ | ✗ | ✗ | ✗ | ✓ |
| 4 | Workplace based | ✗ | ✓ | ✗ | ✓ | ✓ |
| 5 | Structured learning plan | ✓ | Maybe | ✗ | Maybe | ✓ |
| 6 | On-the-job training | Maybe | Maybe | ✓ | ✓ | ✓ |
| 7 | Off-the-job training | ✗ | ✗ | ✗ | ✗ | ✓ |
| 8 | Formal assessment | ✗ | ✗ | ✗ | ✗ | ✓ |
| 9 | Industry-recognized certification | Maybe | ✗ | ✗ | ✗ | ✓ |
| 10 | Curriculum established with private sector at the industry level | Maybe | Maybe | ✗ | ✗ | ✓ |
| 11 | Duration | Minimum 3 months | From 2 months to 6 months | Variable | Minimum 3 months | At least 1 year |

A FORMAL APPRENTICESHIP IS A JOB THAT INCLUDES...



Learning a skilled occupation that is certified and recognized by the industry upon completion.

MAIN FEATURES FOR THE SUCCESSFUL IMPLEMENTATION OF APPRENTICESHIPS



TRAINING PROVIDERS AND
EMPLOYERS WORK
TOGETHER



EMPLOYERS AND TRAINING
PROVIDERS FULLY INVEST IN
THEIR APPRENTICES AT AN
EARLY STAGE



OPPORTUNITIES TO
PROGRESS UPON
COMPLETION

10 CORE ELEMENTS



Align



Develop
curricula



Certify



Engage
employers



Deliver



Promote



Set
structure



Assess



Ensure
quality



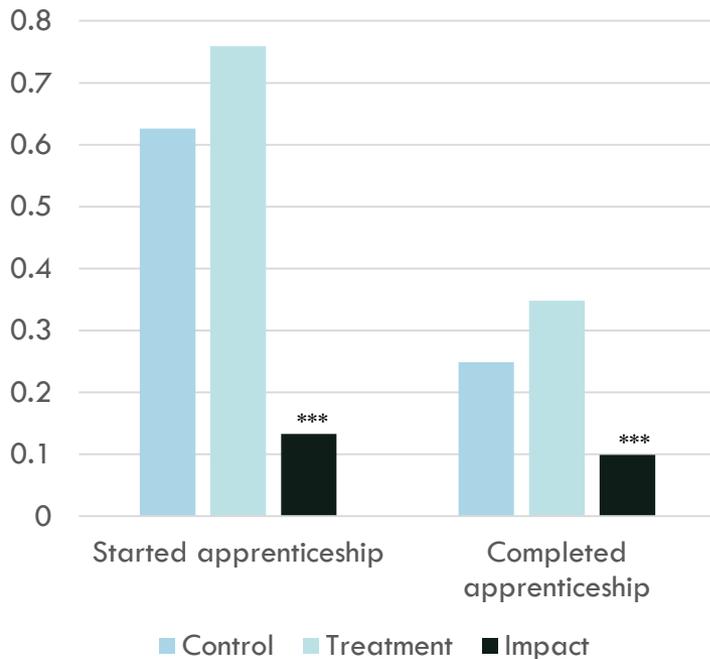
Fund
& incentivize



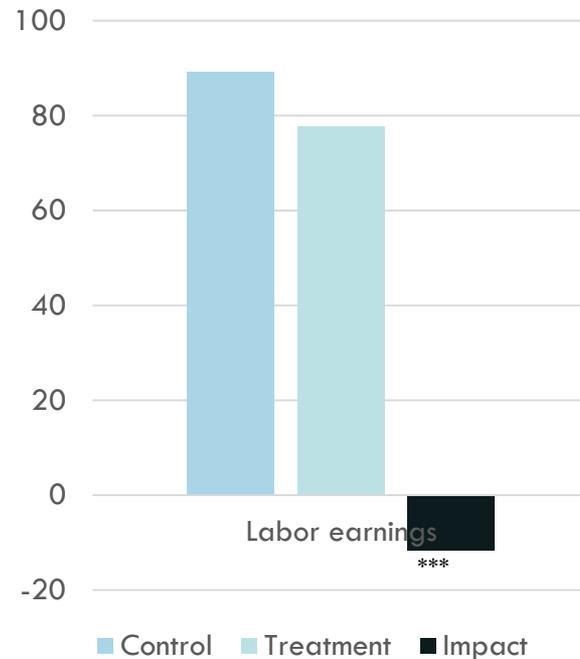
RECENT EVIDENCE ON APPRENTICESHIP PROGRAMS

GHANA APPRENTICESHIP PLACEMENT INTERVENTION

Limited effect on access to apprenticeship



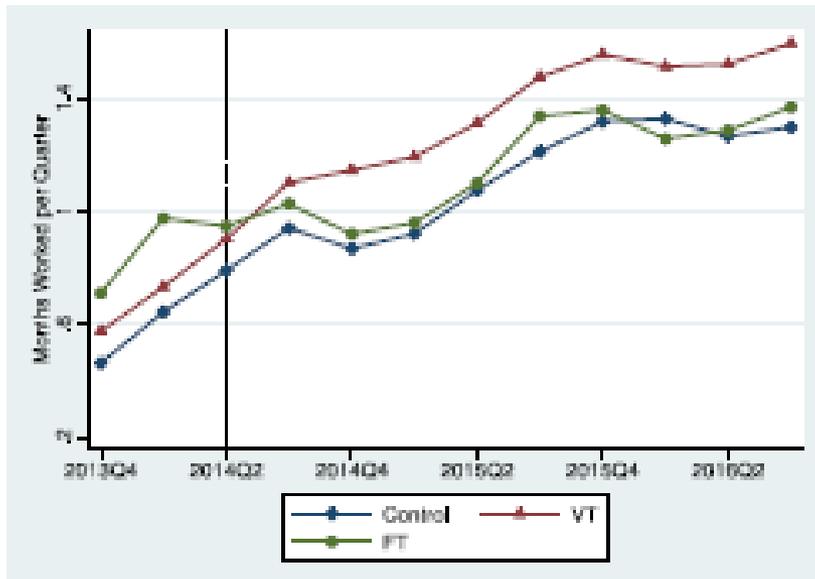
Negative effects on earnings 4 years later



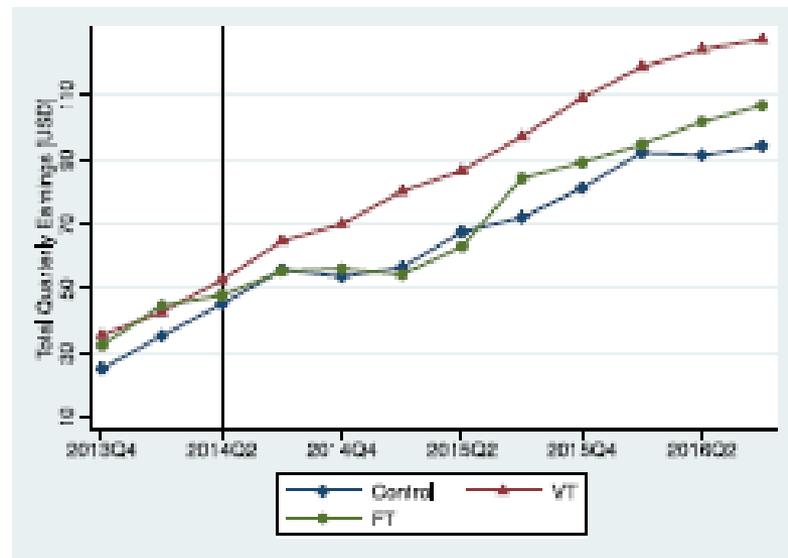
But note: more encouraging results in better-quality trainers/firms (though effects on earnings still not positive)

SUBSIDIZED TRADITIONAL APPRENTICESHIP IN UGANDA

Facilitate entry into employment



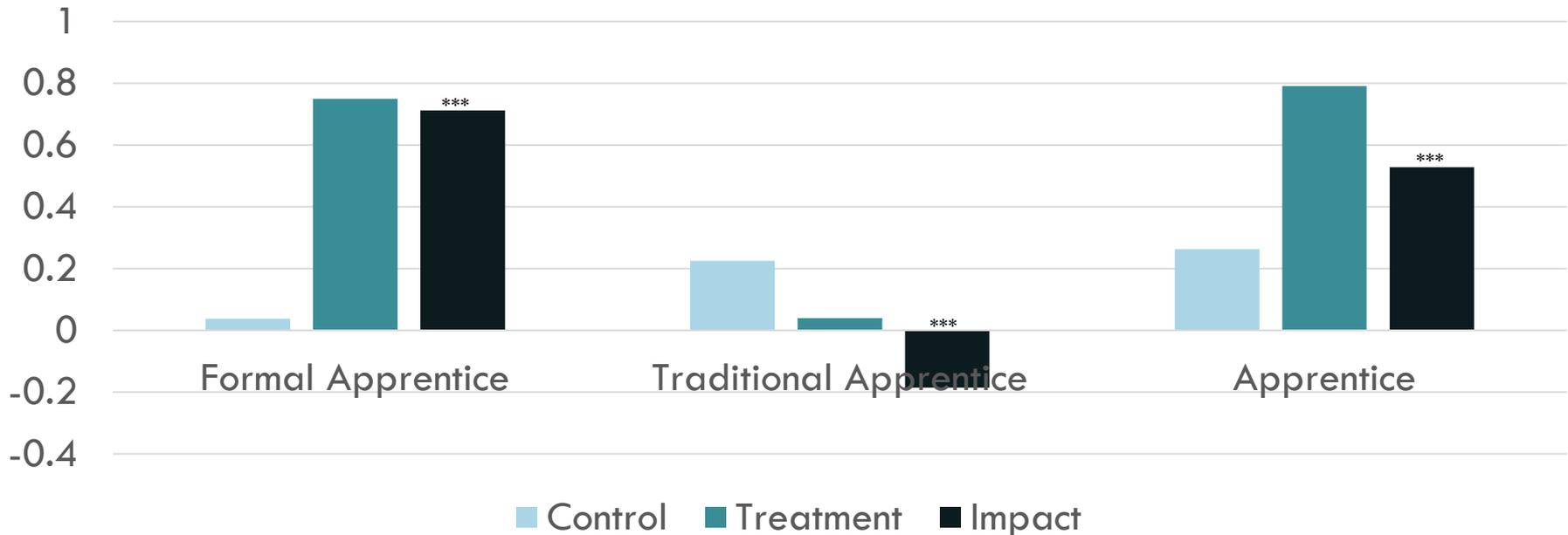
Positive effects on earnings in the short-term



But effects on earnings dissipate relatively quickly in the year after the end of the apprenticeship intervention

(In contrast: vocational training has more sustained impacts: possibly because it facilitated labor mobility by certifying skills)

SUBSIDIZED DUAL APPRENTICESHIP IN COTE D'IVOIRE IMPACTS ON PARTICIPATION IN APPRENTICESHIP

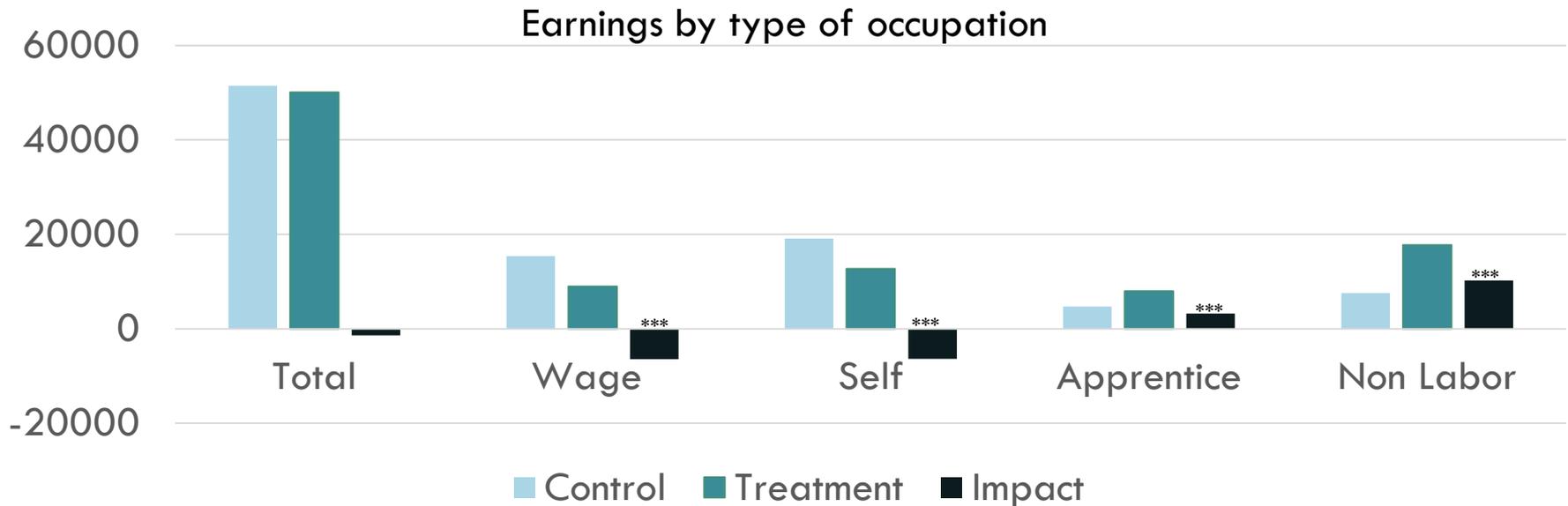


Large increase in participation in formal apprenticeships (71.2pp)

This is partly driven by youth not entering traditional apprenticeship (-18.5pp) (“windfall effect”: 26 percent of formal apprentices would have been in traditional apprenticeship)

Hence net increase in youths in apprenticeship is slightly lower: 52.8pp.

THE SUBSIDY OFFSETS LARGE OPPORTUNITY COSTS OF PARTICIPATION IN APPRENTICESHIP



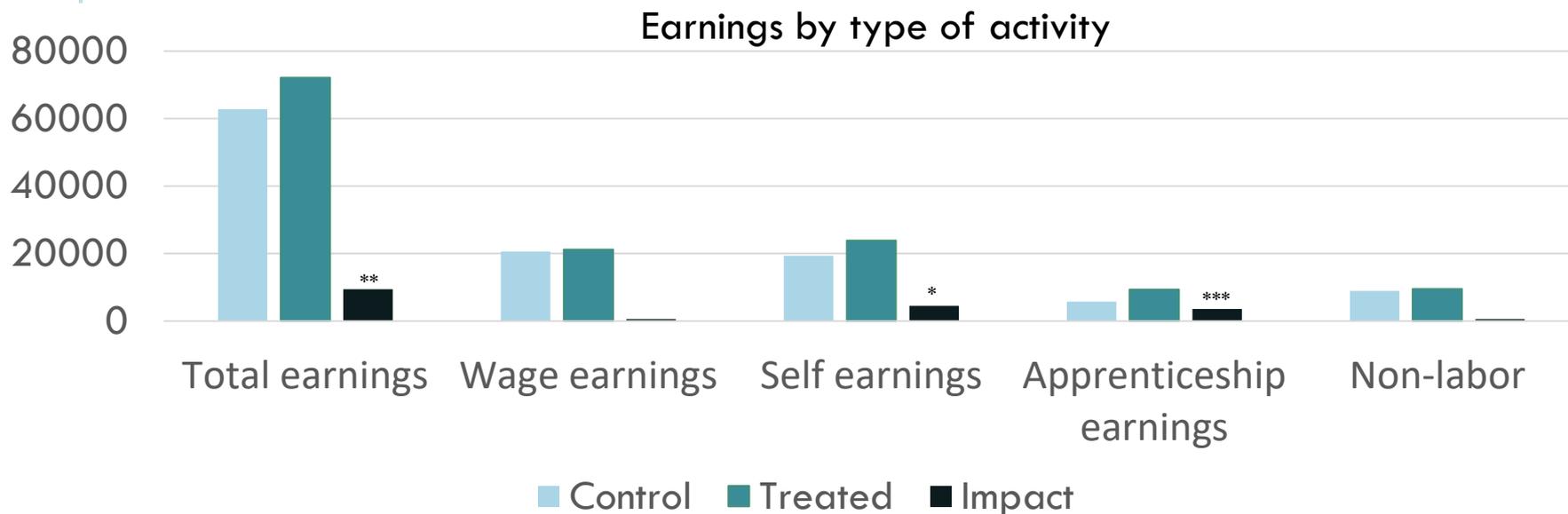
Treatment youths and control youths have a similar level of earnings

- Higher earnings from apprenticeship and non-employment income (program stipend)
- Lower wage income and self-employment income

Substantial opportunity costs for youths to participate in apprenticeship

- Foregone earnings from other wage jobs or self-employment
- The program stipend is key to allow youths to participate

YOUTHS' EARNINGS ARE HIGHER 4 YEARS AFTER THE START OF THE PROGRAM

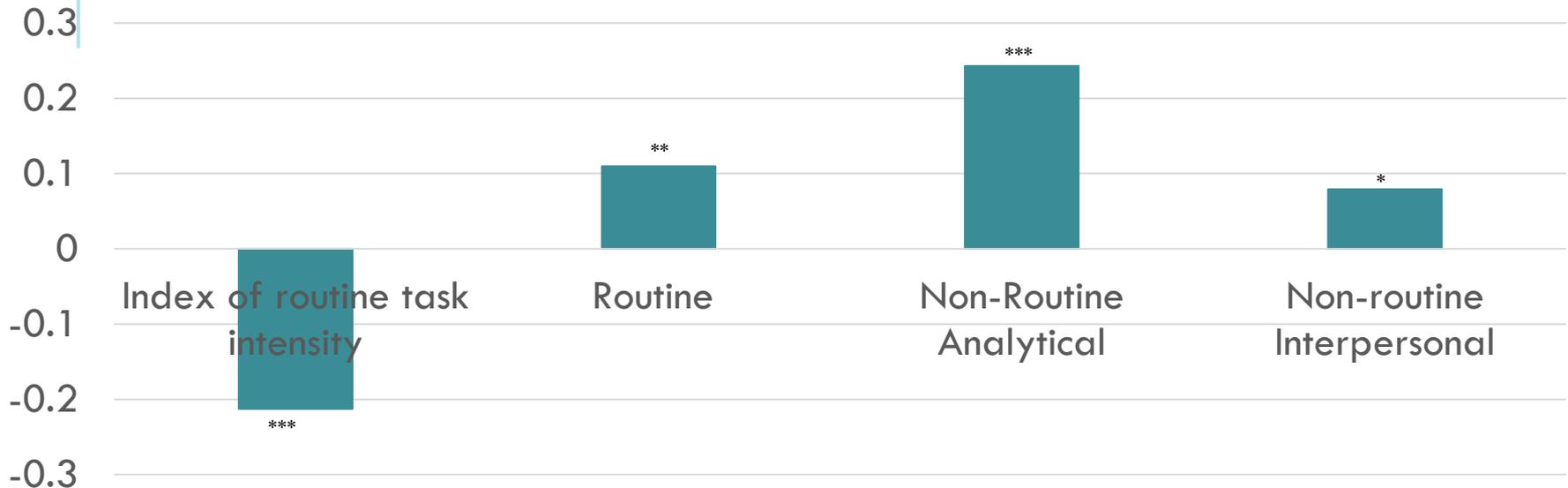


Treated youths have significantly higher earnings 18-24 months after the program (+9394 CFA per month, or 15 percent)

Higher earnings stem from higher earnings in self-employment (+4512 CFA per month, or 23 percent) and apprenticeship (+3593 CFA per month, or 62 percent)

Earnings in wage employment are stable.

YOUTHS PERFORM MORE COMPLEX TASKS



Treated youths are engaged in more complex tasks in their primary occupations :

- A broader mix of tasks
- In particular more non-routine analytical tasks
- But also slightly more routine and non-routine interpersonal tasks.

Consistent with treated youths having higher skills and being more productive

INTERPRETATION OF VARYING RESULTS ACROSS PROGRAMS ?

- Ghana (Hardy et al., 2019) : placement intervention that addresses intermediation failures and entry costs has small effect on entry and negative effects on earnings
 - Cote d'Ivoire: subsidized dual apprenticeships has large effects on entry and positive effects on earnings
- Suggests that the **most binding constraints may not be related to information asymmetries or intermediation inefficiencies, but rather financial constraints and inability for firms to commit to provide general skills training.**
- Uganda (Alfonsi et al., 2019): the impacts of traditional apprenticeship are concentrated in the year after the start of the intervention
 - Cote d'Ivoire: subsidized dual apprenticeships combining theoretical training and a certification scheme with on-the-job training have impacts on earnings four years after the start of the intervention.
- Suggests that the **dual approach can help overcome some limitations of traditional apprenticeships.**

PENDING QUESTIONS

- What are the long-term impacts of apprenticeships?
- Which element of subsidized dual apprenticeship make the it (cost-)effective?
 - It would be interesting to isolate the impact of the subsidy, on-the-job training, theoretical training, follow-up by apprenticeship counsellors,...
 - Scope to formally test the relative effectiveness of various design features of dual/formal apprenticeship programs.
- Is upgrading informal apprenticeships more cost-effective?
 - Need more impact evaluation studies of programs that seek to improve the quality of training (e.g. Benin, Senegal)



WHAT ARE EFFECTS ON FIRMS?

IS THE PROVISION OF APPRENTICESHIP COSTLY OR BENEFICIAL TO FIRMS?

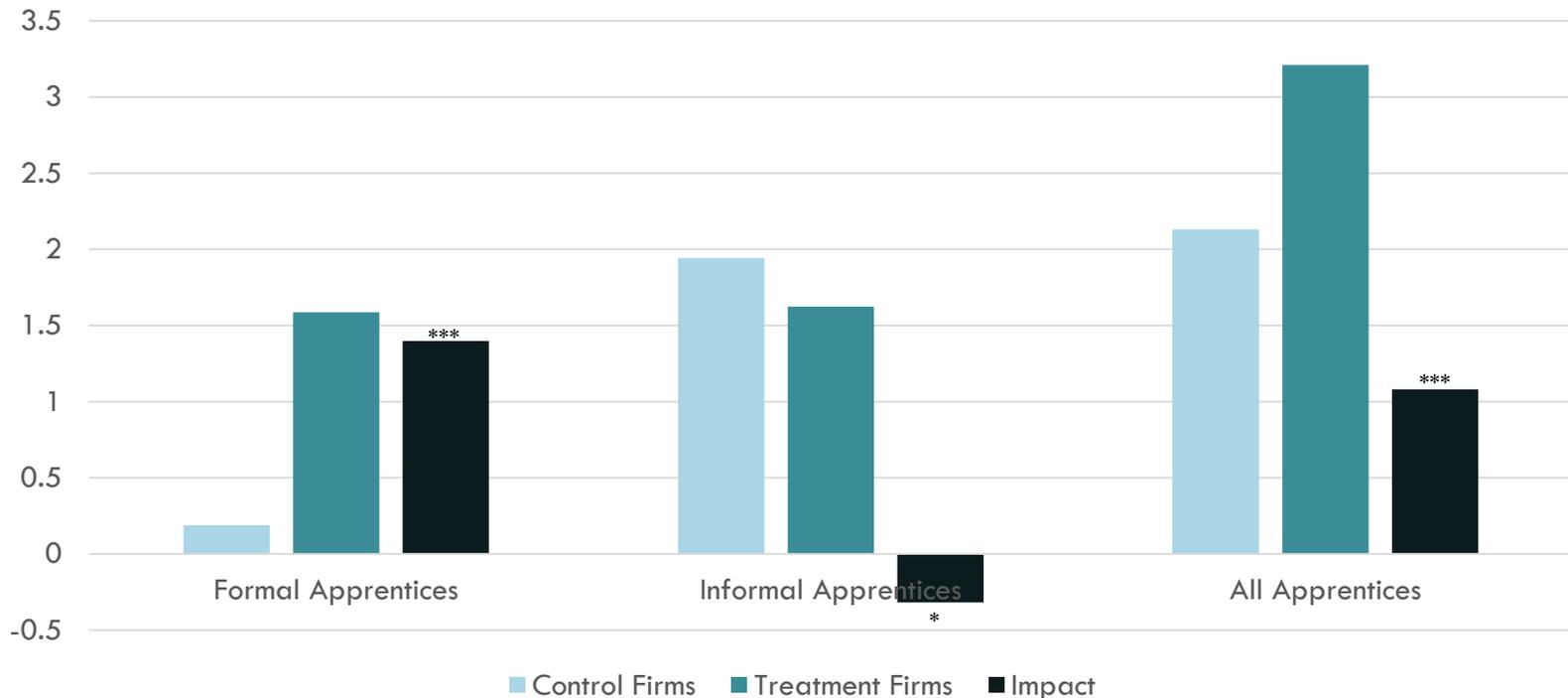
- Various potential benefits and costs of apprenticeships for firms:
 - Benefits: apprentices perform productive tasks, can help firms screen and retain workers
 - Costs: providing training is costly (time needed to train, payments to apprentices,...)
- Whether there is a net cost or net benefit to firms may depend on context (both apprenticeship institutions and labor-markets)
 - E.g. training costs exceed benefits in Germany, whereas the opposite is true for Switzerland. (Dionisius et al. (2009))
 - The 2 countries have similar apprenticeship institutions, but varying employment protection (strong in Germany, weaker in Switzerland).
 - Difference in net costs between Germany and Switzerland amounts to 25,000 Euros for a 3-year apprenticeship.
 - differences in relative wages of apprentices and skilled workers (higher differential in Switzerland)
 - apprentices contribute more to the production process in Switzerland than in Germany (they are assigned more complex tasks).
 - Other comparative analysis of Germany, Switzerland and Austria (Muehlemaann & Wolter. 2014; Muehlemaann et al., 2010)

EVIDENCE ON INDIRECT EFFECTS IN FIRMS IN DEVELOPING COUNTRIES

- Recent findings tend to confirm potential indirect benefits to firms in development countries:
 - Subsidized traditional apprenticeship in Ghana (Alfonsi et al., 2019):
 - firms absorb a significant part of the surplus.
 - Placement intervention in Ghana (Hardy and McCasland, 2015) :
 - improves the matching between potential apprentices and firms, leading to increases in employment and profits in firms.
 - Subsidized dual apprenticeship in Cote d'ivoire (Crépon and Premand, 2019):
 - Limited substitution effects in firms.
 - Firms see a substantial increase in the value of the work provided by apprentices net of their compensation during the program. Firms pay formal apprentices less than traditional apprentices, despite higher productivity.

ARE SUBSIDIZED DUAL APPRENTICESHIPS JUST REPLACING TRADITIONAL APPRENTICES BY FORMAL APPRENTICES?

IMPACTS ON INFLOW OF APPRENTICES IN FIRMS



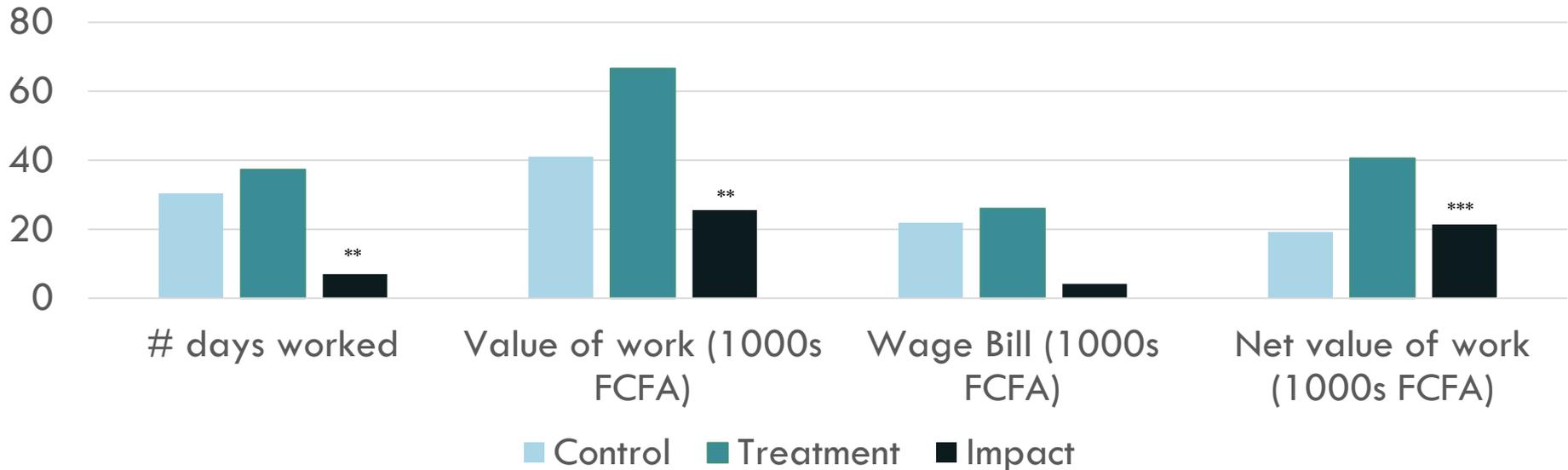
The number of formal apprentices increases strongly (+1.4), but the number of all apprentices increases a little less (+1.1).

Formal apprentices replace some informal apprentices (-0.3, “substitution effect”), but the effect is small (23% of subsidized apprentice placed)

NET IMPACTS OF SUBSIDIZED DUAL APPRENTICESHIP ON NUMBER OF POSITIONS CREATED

- **The net number of apprenticeship positions created by the program is between 0.74 and 0.77 percent of the number of formal apprentices placed**
 - **Effects for youth.** Large increase in youth participation in formal apprenticeships, but **26 percent** of formal apprentices placed did not enter traditional apprenticeships (“windfall effect”)
 - Provided a lower bound for # of positions created: $1 - 0.26 = 0.74$
 - **Effects for firms.** Increase in the inflow of apprentices into firms but there are **23 percent** fewer traditional apprentices per formal apprentice placed in firms (“substitution effect”)
 - Provides an upper bound for # of positions created: $1 - 0.23 = 0.77$
- **The program substantially expands access to apprenticeship**

APPRENTICES MAKE A POSITIVE NET CONTRIBUTION TO FIRMS



Firms see an increase in the value of work from apprentices

- Program apprentices are more productive than traditional apprentices, even if they work fewer hours
- Firms pay formal apprentices less than traditional apprentices, despite higher productivity. This is consistent with firms indirectly receiving compensation for the direct cost of training, such as the time spent teaching apprentices.

CONCLUSION

Critical to carefully assess context and scope for public interventions in apprenticeship market

- What are the most prevalent market failures?
- Consider potential interactions with prevalent forms of (informal) apprenticeships

Even if many youths are already in apprenticeship, there may still be scope to expand access

- Need to consider the opportunity costs for youths to participate in apprenticeship
- But also carefully consider if barriers to access are the most binding constraint

Issues related to training quality, general skill acquisition and certification seem critical to address

- Subsidized dual apprenticeships improve earnings (Cote d'Ivoire), which contrasts with more limited effects from interventions addressing barriers to access (Uganda, Ghana).
- Scope for more testing and learning on programs that mostly seek to improve quality (ongoing work in Senegal, Benin,...)

Apprenticeships can be beneficial to firms

- (Direct compensation may not necessarily be required)



Thank you!

REFERENCES

- General references on skill challenges and market failures
 - Fazio, Fernández-Coto & Ripani (2016). [Apprenticeships for the XXI century: a model for Latin America and the Caribbean?](#)
 - Wolter & Ryan (2011). [Apprenticeship chapter In Handbook of the Economics of Education](#)
 - Filmer et al. (2014). [Youth Employment in Sub-Saharan Africa](#) (see chapter skills and training)
 - Christiaensen & Premand (2016). [Cote d'Ivoire jobs diagnostic](#) (see chapter on skills and training)
- Recent evidence from impact evaluations of specific programs
 - Cote d'Ivoire subsidized dual apprenticeship (Crepon & Premand, 2019): [Policy report in French with short-term results](#) ; [Paper with short-term results](#); [Policy Note on Apprenticeship as part of initiative on evidence-base policy making in the employment sector in Cote d'Ivoire](#)
 - Ghana apprenticeship placement intervention (Hardy & McCasland, 2015, Hardy et al., 2019): [Results on firms](#), [results on youths](#)
 - [Uganda subsidized traditional apprenticeship and vocational training](#) (Alfonsi et al., 2019):
- Comparative analysis in European countries:
 - [Dionisius et al. \(2009\)](#); [Muehlemann & Wolter \(2014\)](#); [Muehlemann et al. \(2010\)](#); [Lerman \(2014\)](#)



THE CASE OF SUBSIDIZED DUAL APPRENTICESHIPS IN COTE D'IVOIRE

SOURCE: CRÉPON & PREMAND, 2018

EMERGENCY YOUTH EMPLOYMENT AND SKILLS DEVELOPMENT PROJECT (PEJEDEC)

- Set-up in 2012 following the post-electoral crisis
 - US\$50 million, with additional financing of US\$50 million in 2015
 - Managed by Coordination Office for Employment Projects (BCPE)
- Objective to improve access to temporary employment and skills development opportunities for young men and women in Côte d'Ivoire
- Tested different approaches
 - Component 1: Labor intensive public works (LIPW) for youths ([IE Policy Report](#), [IE technical Paper](#))
 - Component 2: Skills Development and Employment Support for Youth
 - Apprenticeship (in partnership with AGEFOP, national training agency)
 - Internship for skilled graduates, Professional training programs, Entrepreneurship training
 - Integrated economic inclusion/micro-entrepreneurship program in post-conflict setting ([IE Design](#))
 - Component 3: Strengthening institutional capacity

COTE D'IVOIRE SUBSIDIZED DUAL APPRENTICESHIP PROGRAM (PEJEDEC)

- Selected youths sign an **apprenticeship contract**
 - **Subsidy** (FCFA 30,000, ~\$60/month, half minimum wage): not “salary”, but stipend to cover transport costs and meals.
 - Duration 12-24 months (depending on trades)
 - Health insurance
- **Dual Training approach:**
 - **On-the-job-training**
 - Supervision from master craftsman in firms
 - Regular visits from AGEFOP apprenticeship counsellors (monitoring of skill acquisition)
 - **Theoretical training**
 - Training centers (mix of private and public centers)
 - Specific training curriculum (and development of core set of skills for certification)
 - Approximately 180 hours per year (periodicity varies)
- **Certification:** Joint between mastercraftsmen, AGEFOP counsellor and expert
- **Equipment:** safety equipment for youths, toolkit for firms
- **Average Costs:** FCFA 1,135,030 (approximately USD 2,045 par apprentice)

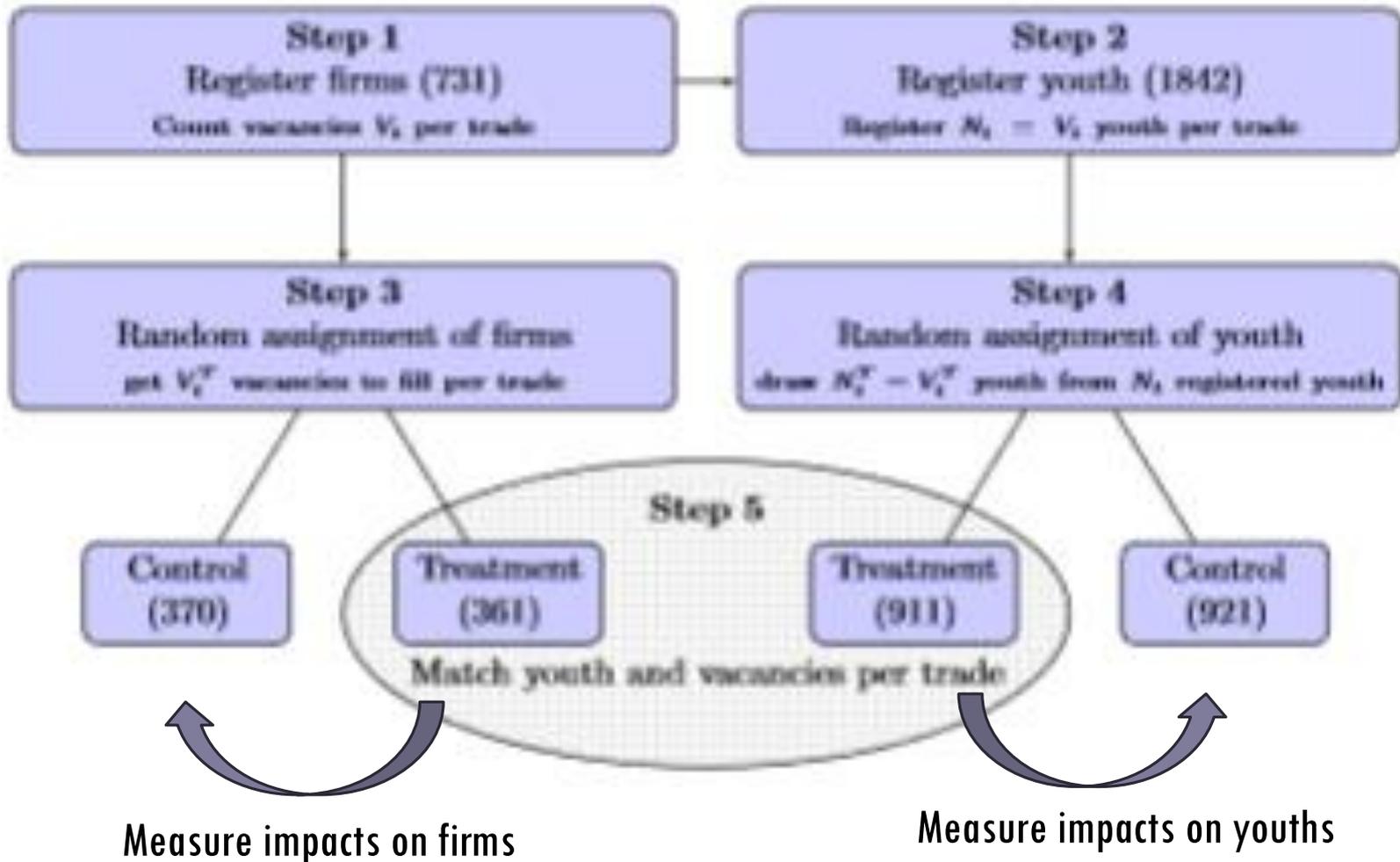
KEY POLICY QUESTIONS ON THIS APPROACH

- ❑ **What is the impact of the apprenticeship training program on youths?**

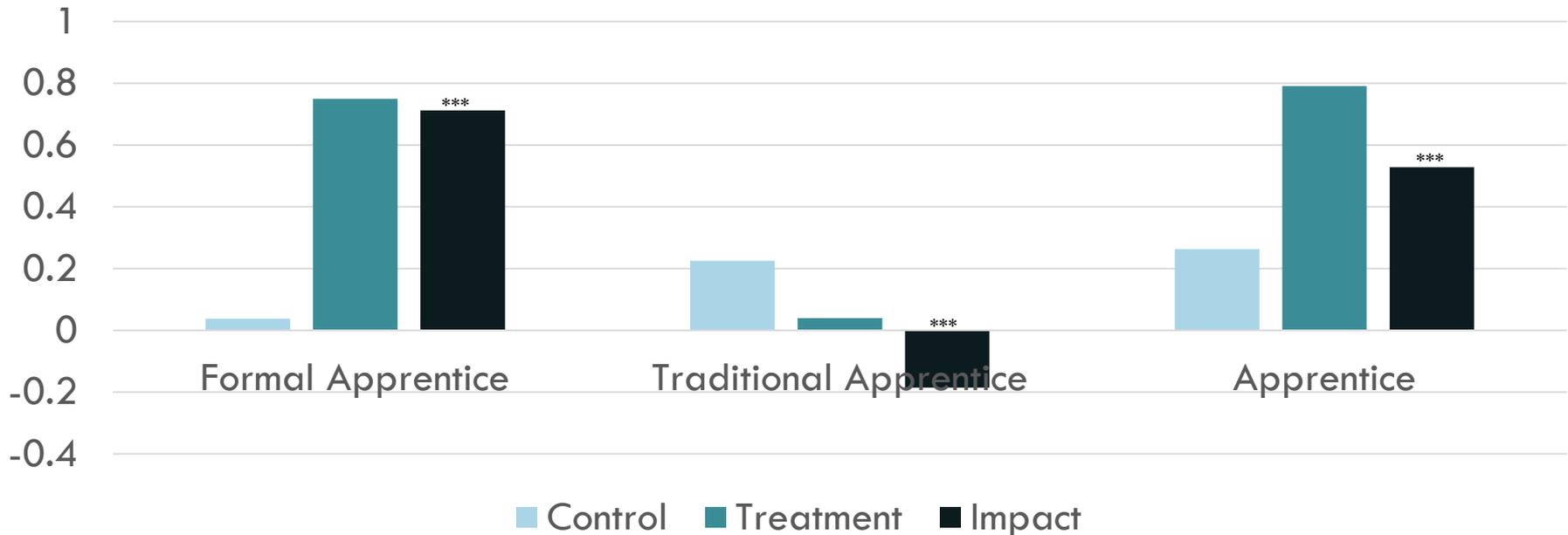
- ❑ **What is the impact on firms hosting apprentices?**
 - ❑ Has the program created new apprenticeship positions, or have formal apprentices displaced traditional apprentices?
 - ❑ How does the placement of formal apprentices affect labor demand and productivity in firms?

- ❑ **Does the program expand the population of youth who can access apprenticeships? Do participants in the program have different profiles than traditional apprentices?**

DOUBLE-SIDED RANDOMIZED EXPERIMENT



IMPACTS ON YOUTH PARTICIPATION IN APPRENTICESHIP

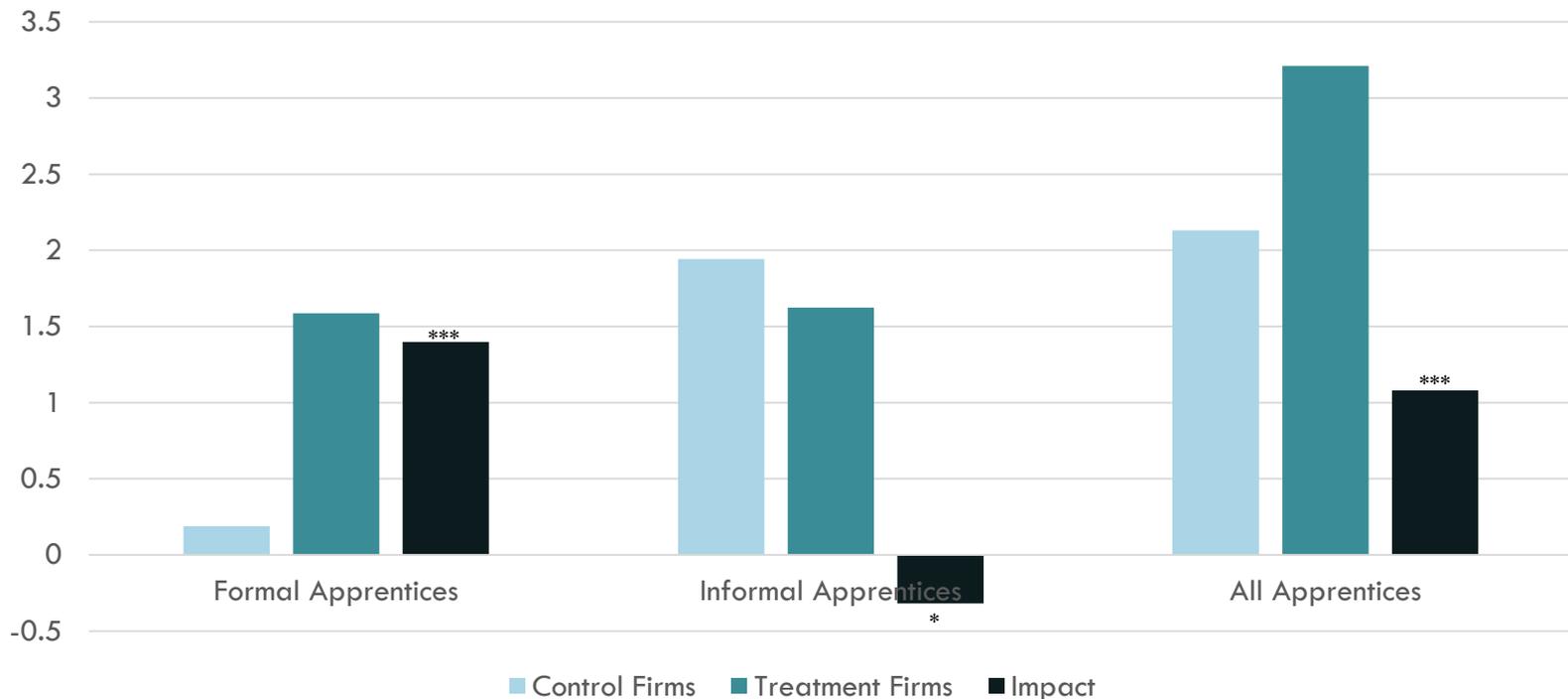


Large increase in participation in formal apprenticeships (71.2pp)

This is partly driven by youth not entering traditional apprenticeship (-18.5pp) (“windfall effect”: 26 percent of formal apprentices would have been in traditional apprenticeship)

Hence net increase in youths in apprenticeship is only 52.8pp.

ARE WE JUST REPLACING TRADITIONAL APPRENTICES BY FORMAL APPRENTICES? IMPACTS ON INFLOW OF APPRENTICES IN FIRMS



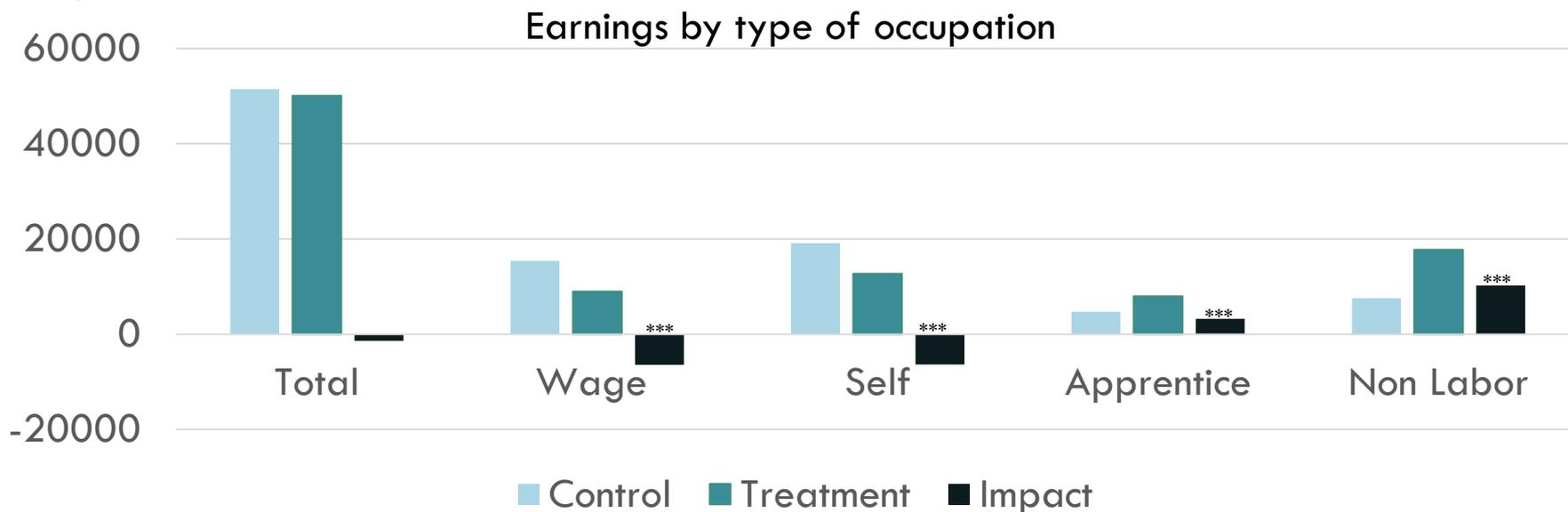
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SUMMING UP IMPACTS ON TOTAL NUMBER OF APPRENTICESHIP POSITIONS CREATED

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THE SUBSIDY OFFSETS LARGE OPPORTUNITY COSTS OF PARTICIPATION IN APPRENTICESHIP



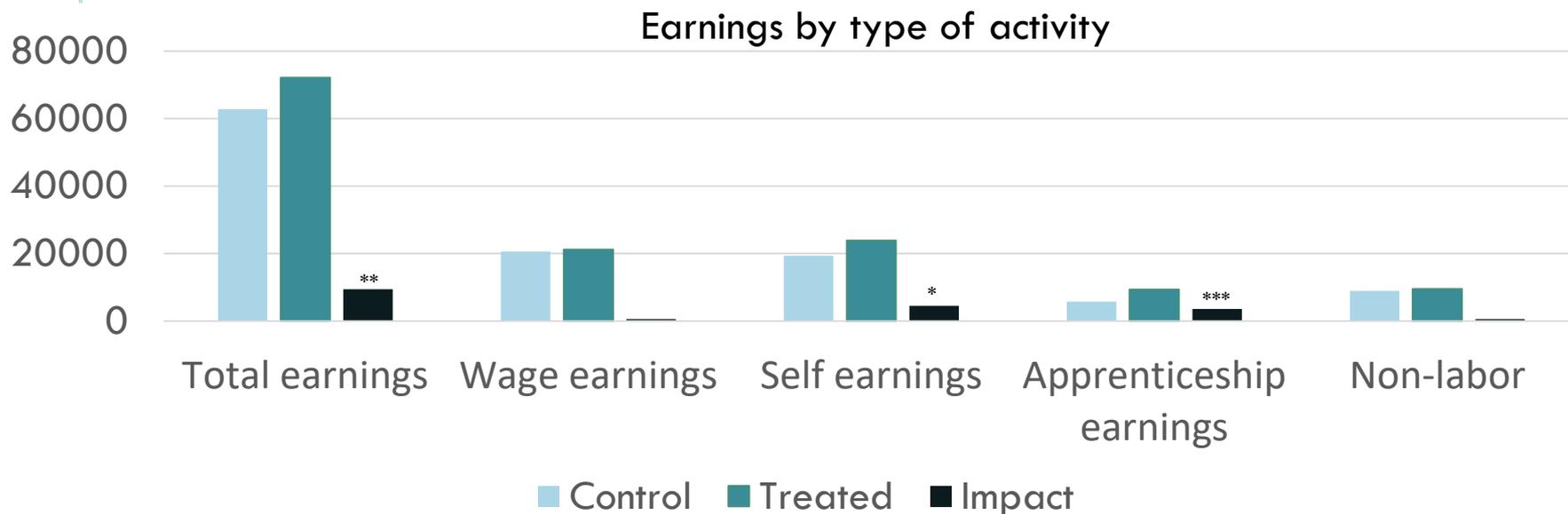
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Substantial opportunity costs for youths to participate in apprenticeship

- Foregone earnings from other wage jobs or self-employment
- The program stipend is key to allow youths to participate

YOUTHS' EARNINGS ARE HIGHER 4 YEARS AFTER THE START OF THE PROGRAM

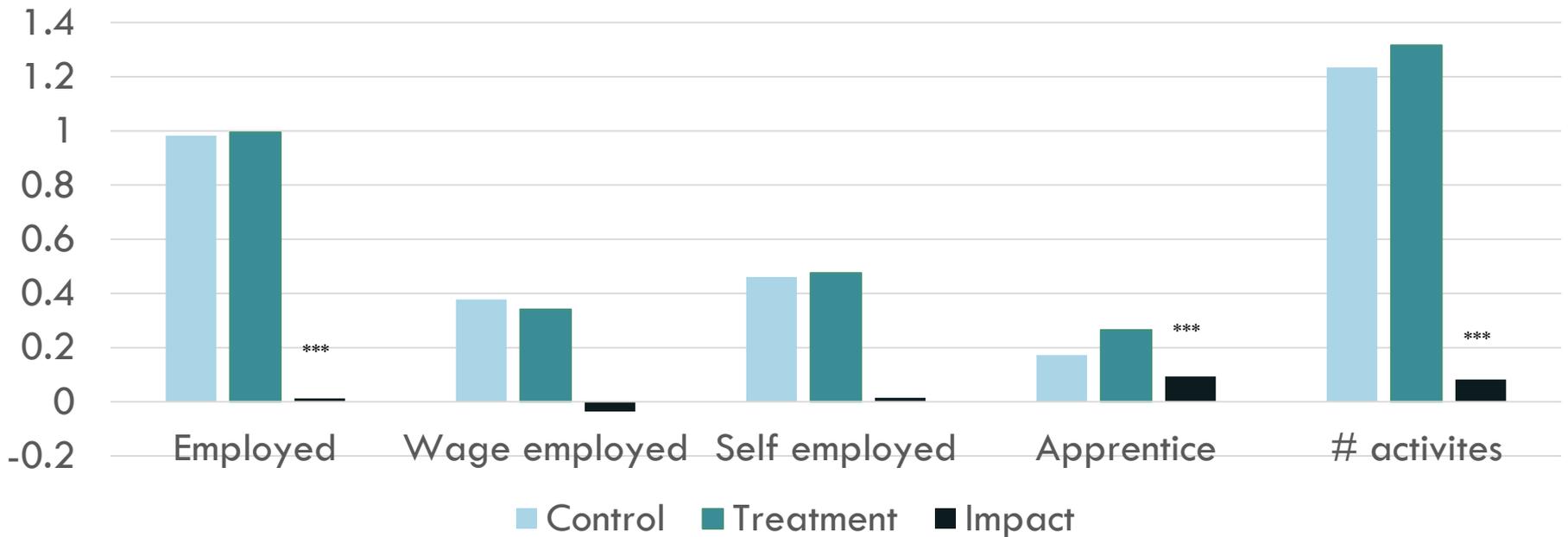


Treated youths have significantly higher earnings 18-24 months after the program (+9394 CFA per month, or 15 percent)

Higher earnings stem from higher earnings in self-employment (+4512 CFA per month, or 23 percent) and apprenticeship (+3593 CFA per month, or 62 percent)

Earnings in wage employment are stable.

THE TYPES OF ACTIVITIES YOUTHS ARE WORKING IN DOES NOT CHANGE MUCH

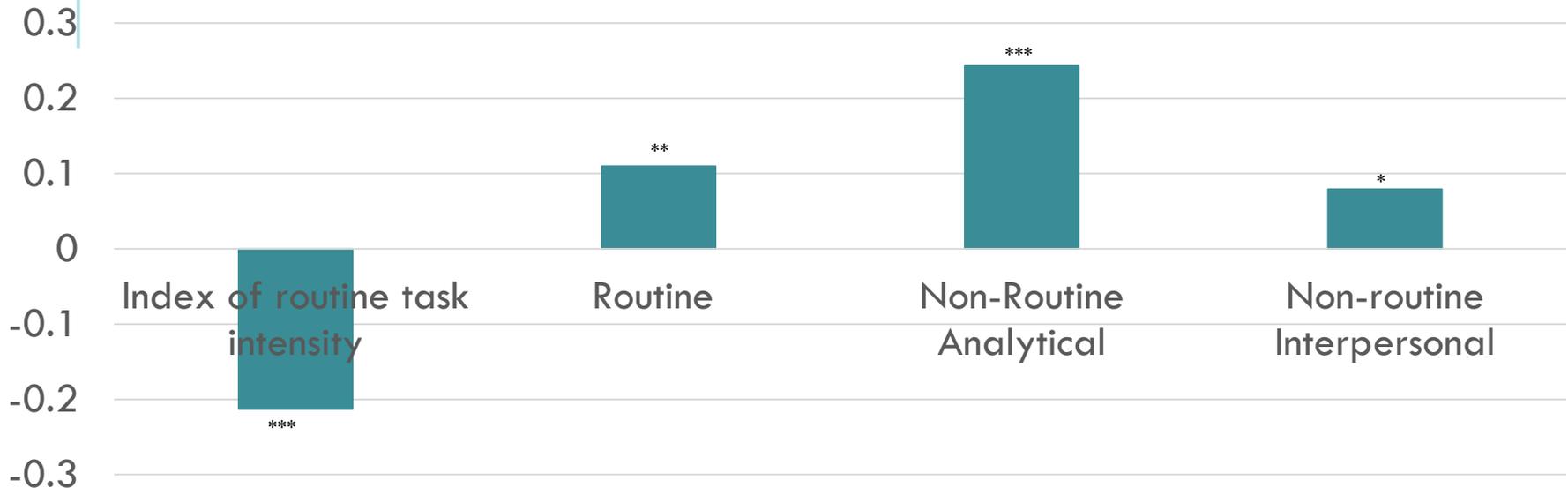


Limited impact on the share of youths employed

- Almost all youths work : 98.2% of control group, 99.5% of treatment group

Small effect on employment (+0.01 pp) and number of activities (+0.08) driven by a larger share of treated youths still in apprenticeship (+0.09)

YOUTHS PERFORM MORE COMPLEX TASKS

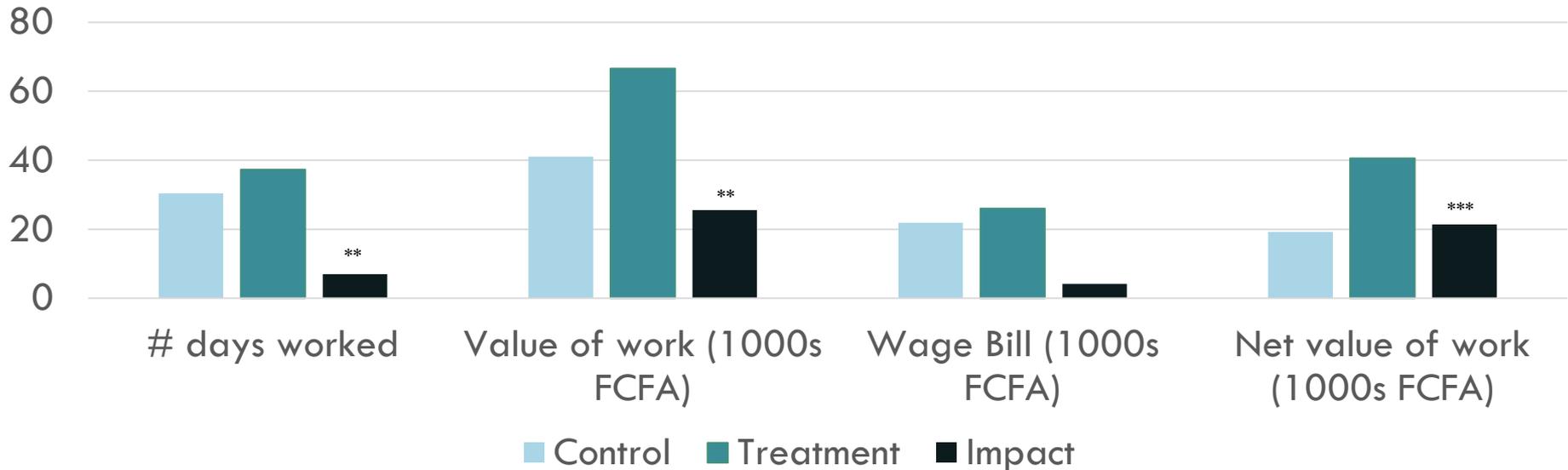


Treated youths are engaged in more complex tasks in their primary occupations :

- A broader mix of tasks
- In particular more non-routine analytical tasks
- But also slightly more routine and non-routine interpersonal tasks.

Consistent with treated youths having higher skills and being more productive

APPRENTICES MAKE A POSITIVE NET CONTRIBUTION TO FIRMS



Firms see an increase in the value of work from apprentices

- Program apprentices are more productive than traditional apprentices, even if they work fewer hours
- Firms pay formal apprentices less than traditional apprentices, despite higher productivity. This is consistent with firms indirectly receiving compensation for the direct cost of training, such as the time spent teaching apprentices.

CONCLUSION (1)

Importance to carefully assess context of interventions in apprenticeship sector

- Interactions with prevalent forms of informal apprenticeships
- Employment conditions and opportunity costs when underemployment predominates.

The Cote d'Ivoire formal apprenticeship program does expand access and create new apprenticeship positions

- Substitution and windfall effects are statistically significant but moderate in magnitude
- The net number of apprenticeship positions created is between 74 and 77 percent of the number of individuals placed
- Results do not support concerns that supply-side employment programs are purely redistributive.

Results show there is scope (and absorbing capacity in firms) to expand access to apprenticeship

CONCLUSION (2)

- Participation in apprenticeship has large opportunity costs for youth
 - The subsidy helps offset these opportunity costs and allows some youths to participate
 - While youths are in the program, their earnings are not statistically different from youths in the control group
- There are substantial impacts on earnings 4 years after the start of the intervention (+15%)
 - Youths are engaged in more complex tasks. Consistent with the program increasing skills and productivity
- The entry of new apprentices in treatment firms is associated with an increase in the net value of work provided by apprentices in these firms during the program.
 - Gap between the productivity of apprentices and how much they are paid
 - Firms receive indirect compensation for providing training
- In sum: subsidized dual apprenticeships can increase incentives for youths to participate, in a way that is beneficial for individuals over the medium-term.