

Employment Mobility and Returns to Technical and Vocational Training: Empirical Evidence for Tanzania

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Motivation and Background

- The human capital theory is clear on the critical role education plays in enhancing individuals' labor market outcomes in terms of labour mobility, higher earnings and increase the productivity (Becker, 1964; Mincer, 1974).
- That is better-educated people: earn higher wages; are less likely to be unemployed; and, are more likely to be in better paid jobs than their less educated counterparts.
- This in turn is critical in attain structural transformation in terms of industrialization; addressing rinsing youth unemployment and so is poverty and inequality.

- Even though, labour market outcomes may differ widely based on the level and type of education, hence a substantial difference in focus of education both in the level and types across countries, and even within countries.
- Some countries have given more emphasis to skills training (i.e. the TVET) and apprenticeships towards developing the job related specific skills, other have attached importance to the basic knowledge through general education (GED) to strengthening the foundations of basic knowledge

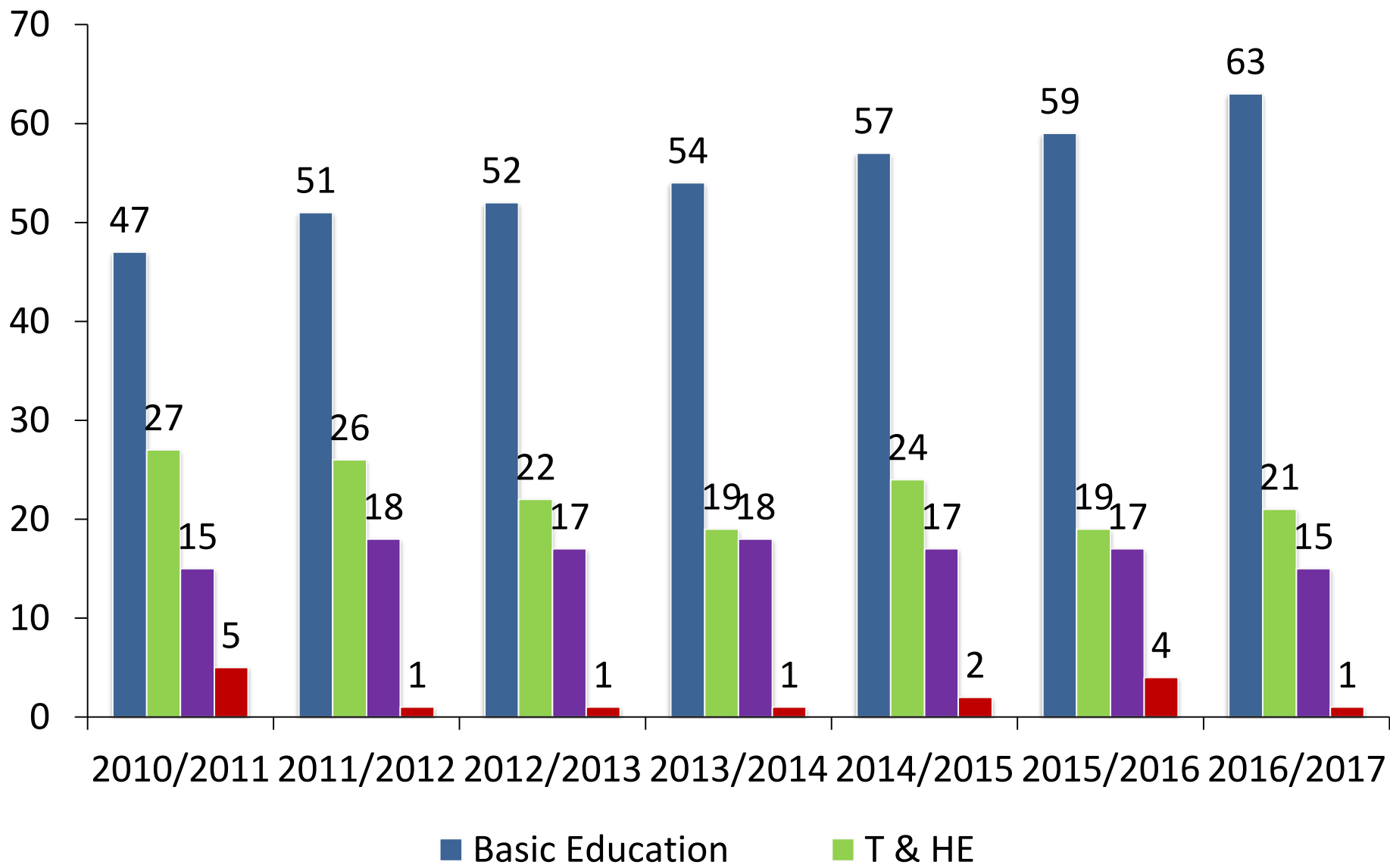
- While some countries in Europe such as Germany, Switzerland, Austria, Netherlands, Denmark and Finland that have placed TVET at the core of their education and training system, in term of: curriculum review to reflect industry needs; financing support to parents/ student, increase share of national budget and work with the private sector.
- Have ultimately succeed in attaining structural transformation, maintaining low youth unemployment rates and attain prosperity; that has not been the case for most developing countries and especially those SSA.
- As in Table 1, these countries have managed to make TVET the first option for most parents/students, remove the stigma - as the result TVET enrolment and graduates makes more than 50 % of all graduates; with most of TVET graduates earnings equal or relatively higher than those with university degrees (Cedefop, 2013).

Table 1: TVET as a Share of Secondary Enrolment in Comparative Terms

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ghana	13.5	9.3	-	9.0	9.5	6.8	5.2	5.1	5.9
Tanzania	-	-	-	12.6	13.3	14.5	13.9	13.2	-
Côte d'Ivoire	-	-	-	-	15.1	-	15.0	13.7	11.6
South Africa	9.4	9.7	8.1	8.2	8.9	-	-	11.5	-
Cameroon	17.7	22.4	-	23.0	23.5	21.3	24.2	24.1	23.9
Sweden	59.5	59.7	59.6	59.0	48.8	46.9	43.7	38.2	-
Germany	57.5	53.2	51.5	48.6	48.3	47.5	47.8	46.8	-
Norway	55.2	54.1	53.9	52.6	52.0	51.9	50.7	50.1	-
Netherlands	67.6	67.8	67.9	68.4	68.5	67.7	-	68.5	67.5
Austria	77.1	77.3	76.8	76.7	76.1	70.2	69.8	69.6	68.8
Denmark	53.0	52.0	51.5	51.1	50.3	43.3	42.2	42.5	40.6

- On contrary, many developing countries including SSA have since 1970s to 1990s to put more emphasis towards general education in term of policies, strategies and financing at the expense of TVET; as the result, TVET performance, and its contribution, in most of these countries have suffered significantly;
- Most TVET graduates in these countries are of poor and low quality, irrelevant and incompetent to the labour market needs, which have worsen the skills the whole problem of skills gaps and mismatches, worsening youth.
- As in Figure 1, for the case of Tanzania, poor and low financing of TVET by both the public and private sectors and low returns the TVET graduates are facing have exacerbated the negative bias towards TVET, making TVET unattractive to parents and students, which have led to low TVET enrolment and few TVET graduates in these countries.

Figure 1: Education Budget Share by Level in Tanzania, 2010-2017



- Cognizant of the critical role TVET can play for ‘structural transformation’ by extension addressing the problem of rising youth unemployment; most of SSA countries reinvigorate their efforts towards revamping the TVET subsector by increasing TVET enrolment and graduates.
- However, that have remained problematic as the TVET program have remained unattractive to parents and students due to the whole issue of stigma, high costs and low return to TVET (i.e. the labour market outcome).
- Though there is some good rate of return of TVET analysis in advanced economies, there is little such empirical evidence in most of SSA mainly due to data and methodology issues. This study set to address that for the case of a low income country – Tanzania

Empirical Specification and Approach

- We have two empirical specification base on the theory of human capital: labour mobility theory and return to education and training theory.
- **On Labour Mobility theory:** the theory states that individual labour market outcome is a result of interaction between demand and supply of labour in the labour market.
 - While labour demand is a function of marginal productivity that can be improved through skills acquisition; on the other hand, labour supply depend not only on the individual willingness to supply their time to work activities, but also on the willingness of firms to hire those workers

- Hence the labour market mobility of an individual is determined by a combination of factors which include labour demand (preferences for education, observed and unobserved skills, experience, sex, etc), search for a job, etc.
- Using the multinomial logit model technique and focusing on the supply-side of the labour market this paper investigate the effect of technical and vocational training (TVET) relative to other education types on individual labour market mobility in particular sectors (formal, informal and agriculture) relative to unemployment.
- The *Multinomial Logit Model* use 4 employment status (not-working, wage employees, non-agricultural self-employed workers and agricultural self-employed workers).

- **On Returns to Education and Training** the earning differential theory is based on Jacob Mincer (1974) framework. On the basis of human capital theory, the Mincerian framework is used to model the link between education and training and labour market earnings.
- Mincer measured the extra income earned over and above a fixed return to education and training to measure the value of post-schooling training of workers in the labour market with different levels of formal education and training, thus addresses the separability difficulties
- Mincerian earnings equations therefore relate the wage rate of an individual to a host of individual characteristics including the level of education and training attainment status

$$\ln Wage = \beta_0 + \beta_1^i GE_i + \beta_2^i TVET_i + \beta_3 EX + \beta_4 EXSQ + \alpha' X_i$$

Data and Descriptive Statistics

- The 2014 Integrated Labour Force Survey (ILFS) for Tz. is key data set that collect two types of information: the household and personal characteristics and employment-related information.
- The employment-related information include information on employment status:
 - full-time or part-time jobs, job-seeking, informality, earning from main job, earning from wage employment, earnings from business and agriculture jobs, hours of work, underemployment, over-employment, economic sector, ownership type, social security, firm size, and employment contract (important implication on earning determination and transition into employment).

- The sample contains 19,198 individuals: the informal employment - 6,965 (36 percent); in agriculture 5, 939 (31 percent); formal employment - 4,287 (22 percent) and are unemployed 2,007 (11 percent)
- Those with primary education work in agriculture and informal sector (77%), while a large proportions of individuals with secondary education are in both informal sector (about 38%) and in formal sector (29%) and the majority of workers with vocational training, tertiary non-university and tertiary university are in formal sector employment (account more than 60%)
- More female are in informal employment and agriculture - 70 % and 14 are in formal employment. For male, a significant size of them are in formal sector (30%). Informal and formal are more in urban areas than in rural areas

Figure 2: Sample Distribution of Monthly Earnings by Education and Training Levels

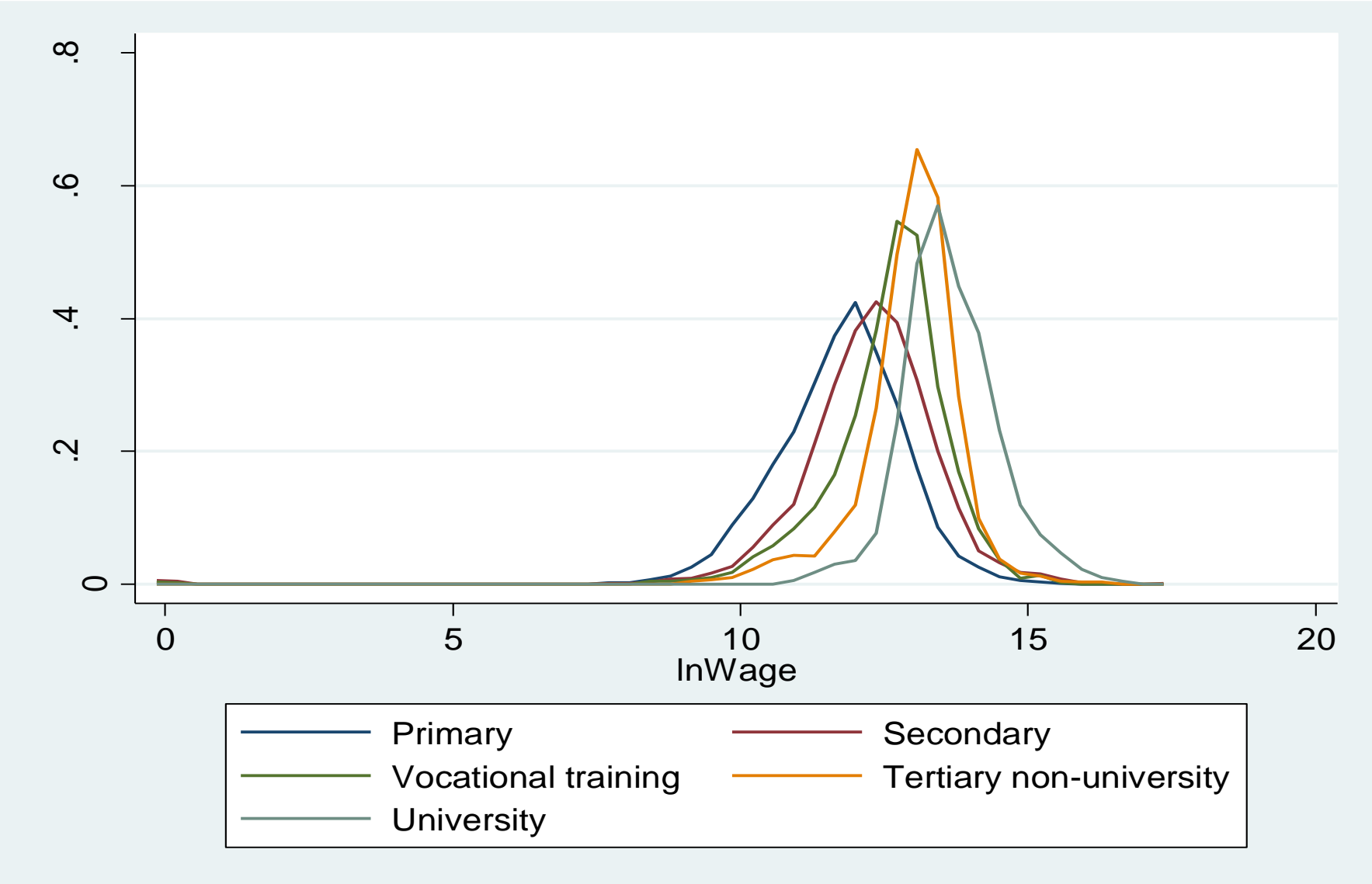


Figure 3: Sample Distribution of Monthly Earnings by Sex

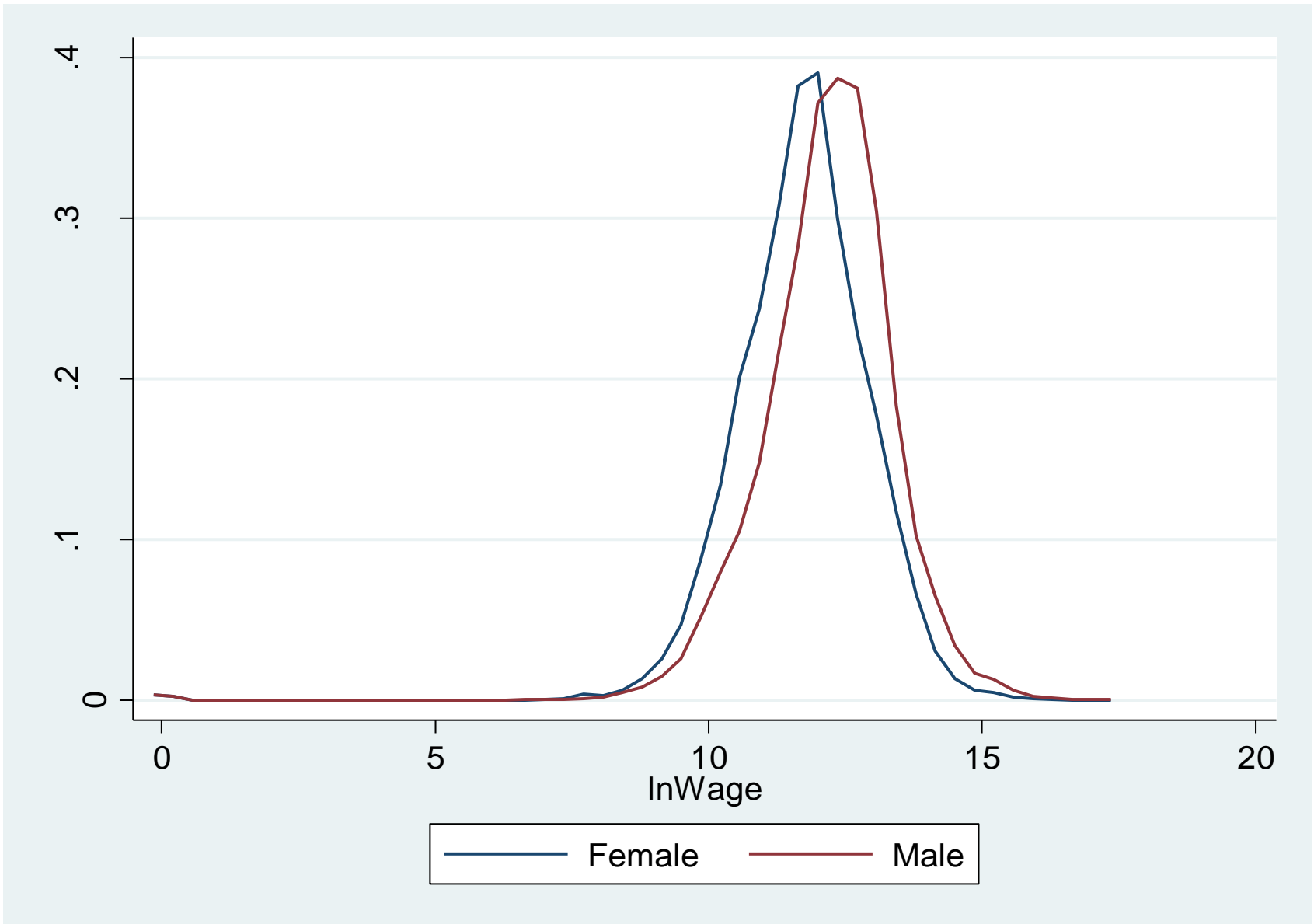


Figure 3: Sample Distribution of Monthly Earnings by Employment Categories

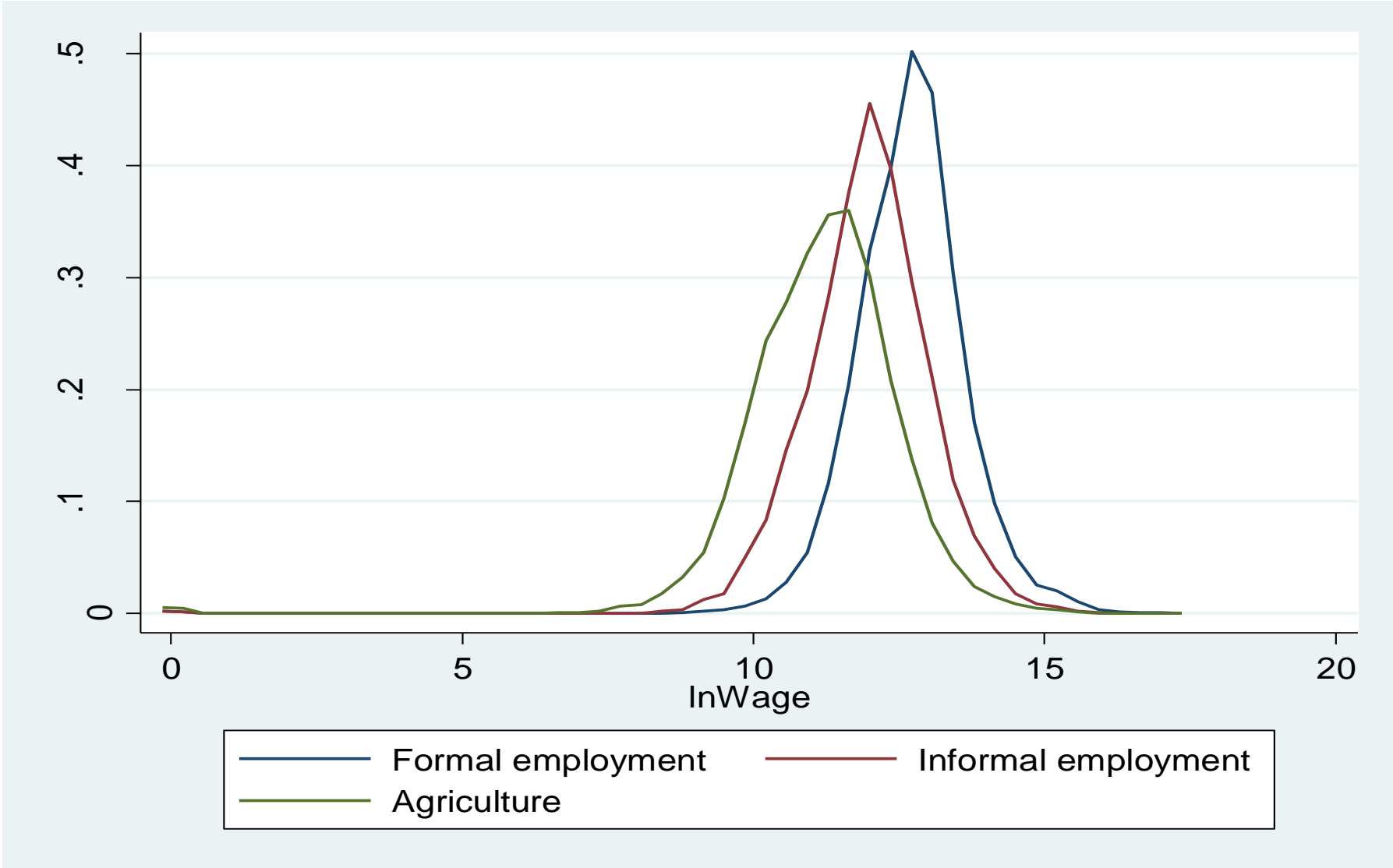


Figure 4: Sample Distribution of Monthly Earnings by TVET Types

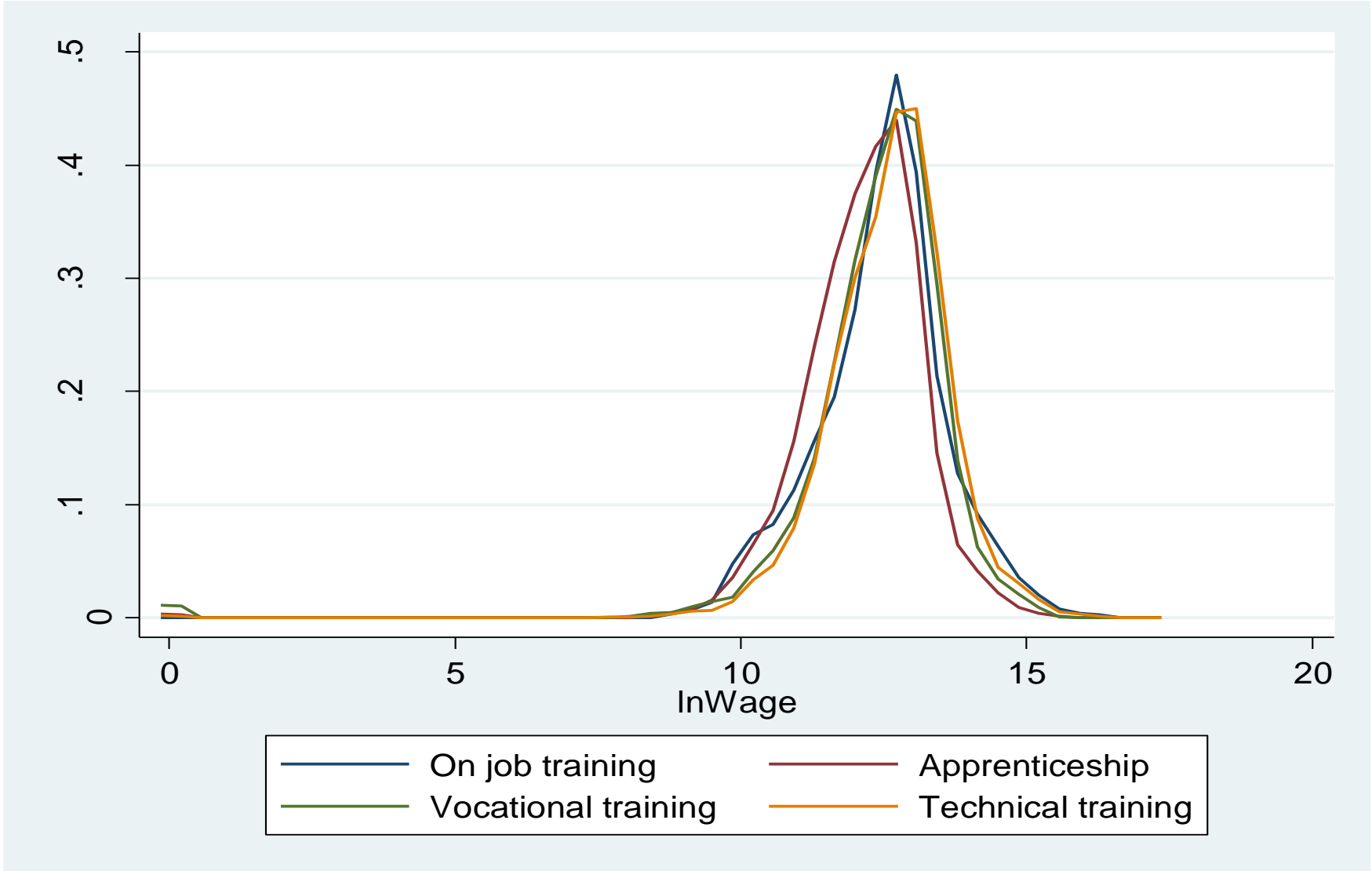
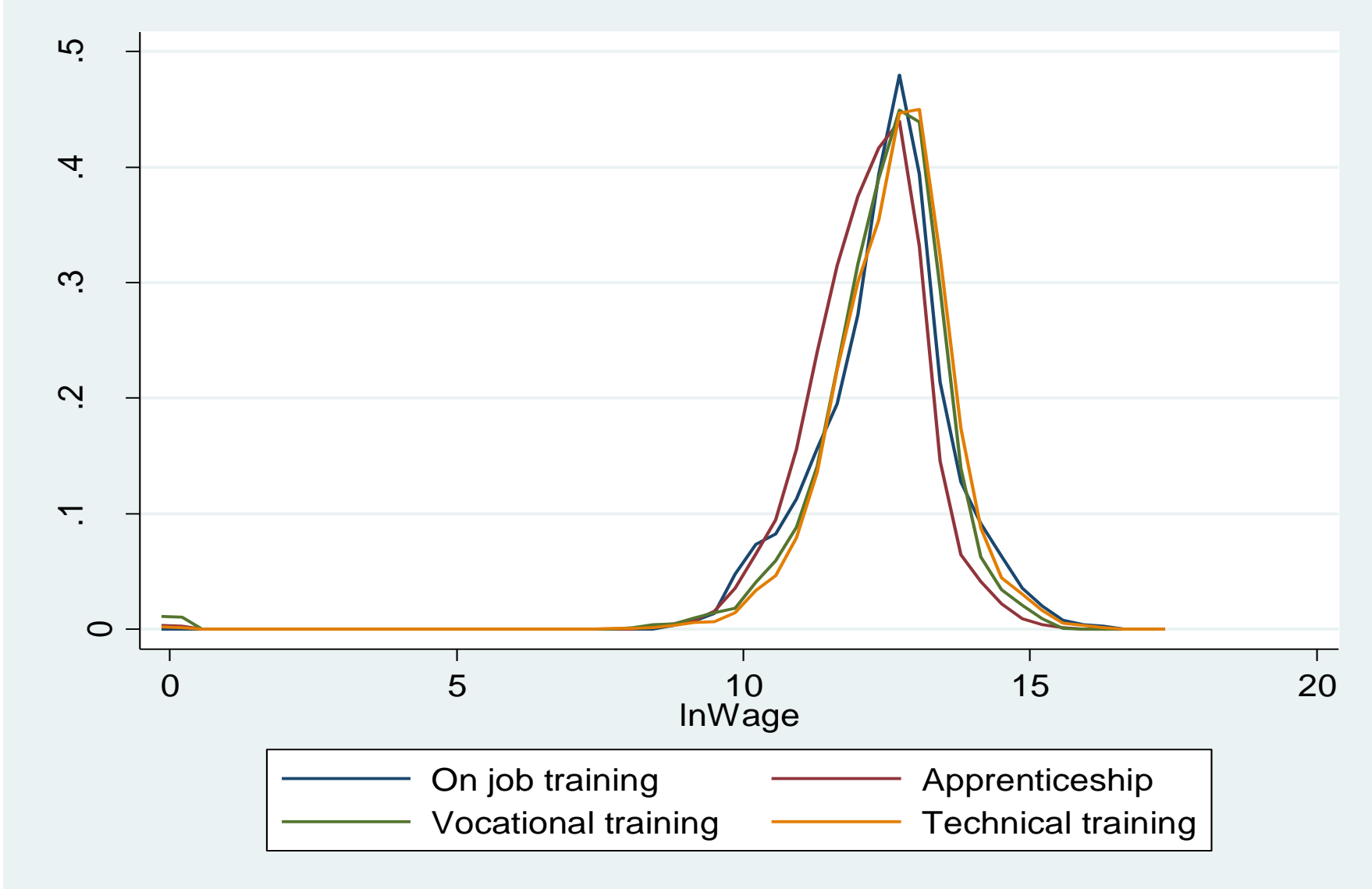


Figure 5: Sample Distribution of Monthly Earnings by TVET Types



Estimation Results

- We start by looking at the **employment mobility estimates** in Table 2 – where look at the result on education and training without decomposition and in Table 3 where we decompose.
- Results for the education and training variables in Table 2 reveal that relative to primary education, individual with secondary education is positively associated with probability of being unemployed, while those with TVET and tertiary education are negatively related with the probability of unemployed, are more likely to be in formal employment but are less likely to be working on agriculture and in the informal sectors.
- When TVET is decomposed in categories in Table 3, individual with technical, vocational or on job training is more likely to be in formal employment and less likely to be in agriculture and informal jobs, while individual received apprenticeship training is more likely to be in both in formal and informal occupations, but is less likely to be working in agriculture or being unemployed.

Table 2: Multinomial Logit Model for Employment Outcomes, Marginal Effects

Variables	Unemployed	Formal	Informal	Agriculture
<i>Primary Education is a reference category</i>				
Secondary	0.014***	0.200***	-0.123***	-0.091***
	(0.004)	(0.010)	(0.010)	(0.008)
TVET	-0.009***	0.192***	-0.034***	-0.149***
	(0.004)	(0.010)	(0.011)	(0.007)
Tertiary	-0.036***	0.670***	-0.453***	-0.182***
	(0.005)	(0.011)	(0.010)	(0.007)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3: Multinomial Logit Model for Employment Outcomes by TVET Types, Marginal Effects

Variables	Unemployed	Formal	Informal	Agriculture
<i>Primary Education is a reference category</i>				
Secondary	0.014***	0.185***	-0.108***	-0.091***
	(0.004)	(0.010)	(0.010)	(0.008)
On job training	-0.020	0.295***	-0.132***	-0.143***
	(0.013)	(0.030)	(0.029)	(0.011)
Apprenticeship	-0.015***	0.104***	0.045***	-0.134***
	(0.006)	(0.014)	(0.015)	(0.008)
Vocational	0.004	0.212***	-0.093***	-0.123***
	(0.016)	(0.030)	(0.030)	(0.013)
Technical	-0.008	0.269***	-0.127***	-0.134***
	(0.006)	(0.016)	(0.015)	(0.010)
Tertiary	-0.036***	0.666***	-0.448***	-0.182***
	(0.005)	(0.012)	(0.010)	(0.007)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

- We turn to the results on “**return to education and training**” in Table 4 where the un-weighted and weighted OLS estimates and Heckman procedures on returns to education and training are presented
- The estimation on the returns to education and training confirm what we saw in descriptive statistics that earnings tends to increase with the level of education suggesting existence of convex returns
- on average, attainment of secondary education, relative to primary education leads to higher earnings by 43.3 p%, workers that had attended TVET training earn higher income by 10.6 % and those with university degree even more higher 114%
- when we decompose training into its different categories, technical training gains an earning premium of 14.8 % compare to on job training premium returns of 12.3 %, those with apprenticeship trainings with premium returns of 7.6 % and those with the vocational training with returns of 5 %

Table 4 The Returns to Education and Training Estimates

	Un-weighted		Weighted		
Variables	OLS	OLS	OLS	OLS	Heckman
<i>Primary Education is a reference category</i>					
Secondary	0.434***	0.428***	0.412***	0.402***	0.390***
	(0.024)	(0.024)	(0.026)	(0.026)	(0.026)
TVET	0.107***		0.106***		
	(0.022)		(0.024)		
On job training		0.123**		0.121**	0.082
		(0.050)		(0.050)	(0.051)
Apprenticeship		0.076**		0.077**	0.020
		(0.030)		(0.031)	(0.032)
Vocational		0.049		0.052	0.013
		(0.076)		(0.077)	(0.078)
Technical		0.148***		0.147***	0.108***
		(0.030)		(0.032)	(0.031)
Tertiary	1.140***	1.137***	1.065***	1.056***	0.998***
	(0.035)	(0.035)	(0.041)	(0.041)	(0.040)
R-squared	0.319	0.319	0.313	0.314	

Dependent variable is log monthly earnings, Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Summary and Implications

- This paper examines the employment mobility and returns to TVET relative to GED in Tanzania, using data from the 2014 ILFS.
- The results show that relative to general education, TVET training facilitates individual easy transition into better employment.
- Both in descriptive statistics and regression results, technical, on job training, vocational and apprenticeship training are particularly important in acquiring formal employment.

- Though the returns to GED and TVET are both positive and statistically significant, on average those with TVET trainings are earning relatively less than those with general education, implying lower returns to TVET graduates compared to general education graduates.
- The descriptive statistics confirm this by showing that, in Tanzania, workers with university degree earns twice of those with technical training and three times those with vocational training.
- Clearly, two implications stand out here:
 - one, technical and vocational training are very instrumental in addressing the rising youth unemployment;
 - and two, to make it attractive to parents and students governments across the region has to work towards raising the returns to TVET.