Lost in Transition*

Bart Kudrzycki†

October 29, 2022

Abstract

This paper uses a novel longitudinal dataset of 752 youth living in Cotonou, Benin, collected over 2 years, to characterize the school-to-work transition in a highly informal, urban environment. The baseline survey was conducted face-to-face in Cotonou, followed by three mobile-phone based surveys conducted over the course of the next year. The contribution is three-fold: first, we estimate the duration and age of transition to the labor market using both reported employment and education histories and the panel data. Second, we analyze transition matrices to systematically study the paths youth take between states of schooling, training, inactivity, and formal and informal employment. Finally, we use reported life satisfaction and various other measures of well-being to estimate the effect of transitioning successfully to the labor market and, conversely, the potential psychological costs of unsuccessful transition. We find evidence of queuing for wage jobs: relatively well-educated youth endure long periods of inactivity waiting for wage employment. Even wage jobs are informal and low-paying, and almost none fulfill the ILO formality criteria. Quantifying the transition, we find that the average youth in our sample needs between 5.18 and 18 months to find their first employment after graduation and between 23 and 27 months to find steady employment - among the shortest among sub-Saharan African countries for which data exists. Transition propensities show that casual, but full-time work following a spell of inactivity is the most common path taken to employment; it is more likely to occur directly after graduation for men than from women. Finally, we find that youth who have transitioned to the labor market experience more life satisfaction, though no effect is detected for particular types of transitions.

JEL codes: I26
Keywords: Informal labor markets, Dual training, Apprenticeship

The transition to the labor market marks a critical point in the productive and social development of young individuals. Delayed entry into formal employment has been shown to depress future earnings in high-income and developing countries alike (Bridges et al., 2017), while a semipermanen3t state of "waithood" is commonly reported among youth (particularly males) in Sub-Saharan Africa, impeding their social integration and reducing the self-worth of those unable to find employment (Honwana, 2012; Mains, 2011).

The dynamic process of the school-to-work transition (SWT), including all the activities of young people between full-time schooling and stable employment, is best studied with detailed, longitudinal data; as a result, most studies of the SWT have been conducted in developed countries [Nilsson (2019)}. In addition to data scarcity, the informality inherent to most youth labor markets in the developing world make traditional data sources insufficient to capture the details of the SWT. While the path from formal education to formal employment is sequential and quantifiable, the path to the informal sector is more complicated, often leading through halting periods of formal education and informal training, stints at the family household enterprise, prolonged school absences or repeated years, and periods of complete economic inactivity. Official labor market data in developing countries is often too infrequent and unreliable to capture such dynamics.] show that, despite the demographic pressures placed on labor markets by the youth bulge in SSA, transition durations are significantly lower in low-income countries than middle- and high-income countries. The authors point to extreme poverty and a lack of unemployment insurance as two factors likely reducing reservation wages and pushing youth into employment.

We use two separate sets of longitudinal data investigate the paths youth take from the moment of leaving school to labor market entry and attachment. The first is retrospective data on 667 youth on their primary activities in each of the seven years previous to the survey, i.e. 2013-2019. We refer to this as "event history" data. Each of the nine possible responses is mapped to one of the five activities used for classification in Section 2 (apprenticeship, self-employment, employment, school, or NEET). Second, we use the observations from the baseline and three follow-up survey conducted over approximately one year between August 2019 and September 2020. We refer to this as the "panel data". To characterize the school-to-work transition for our sample of urban Beninese youth, we first calculate five properties of the SWT: the graduation age, first employment age, age at which youth reach "steady" employment (employment states from which there is no reversion to schooling or inactivity in the data), and the transition duration to both first and permanent employment using both datasets.

Table 1: Transition statistics

Measure	Overall, N=752	Female, N=396	Male, N=356
Graduation age (years)			
Event history 2013-2019	20.90 (326)	20.64 (155)	21.09 (171)
Panel data 2019-2021	22.15 (447)	21.90 (206)	22.33 (241)
Combined measure	21.72 (569)	21.39 (261)	21.95 (308)
First Employment Age (years)			
Event history 2013-2019	21.89 (298)	21.60 (138)	22.10 (160)
Panel data 2019-2021	22.9 (467)	22.7 (210)	23.0 (257)
Combined measure	22.21 (362)	22.10 (167)	22.29 (195)
Steady Employment Age (years)			
Event history 2013-2019	22.15 (267)	21.93 (118)	22.30 (149)
Panel data 2019-2021	24.06 (324)	24.06 (137)	24.07 (187)
Combined measure	22.50 (288)	22.60 (123)	22.44 (165)
Transition Duration (months)			
To first employment	5.18 (380)	6.48 (173)	4.25 (207)
To permanent work	27.09 (132)	25.88 (53)	27.73 (79)

Statistics reported: weighted mean (N)

The ILO's *Work4Youth* program takes school-leaving age to be the of the onset of the school-to-work transition, as do several studies of the school-to-work transition in OECD countries (e.g. Bowers (1998), Quintini et al. (2007)). We refer to this as the **graduation age**. The top panel of Table 1 shows that when both retroactive job data and panel data is considered, 568 youth (52.4 percent) of youth finish school or training between 2013 and the final survey, with a mean (weighted) graduation age of 21 years and 9 months. As nearly a third of our sample is still in school or training at baseline, the data is, again, right-censored and the mean age of school-leaving will be downward-biased.

Next, we examine the **first employment age**, defined as the age at which youth first report being employed or self-employed, conditional on being in education in at least one year since 2013 and not returning to school in subsequent periods. Youth who do not report being in education or training in any of the past seven years are excluded to avoid mistaking long-term unemployed as first-time job-seekers. We start by calculating the first employment age for the period up to the start of the survey, i.e. only using the event histories of youth. 298 entries into the labor market are observed, with a weighted mean age of 21.89 years. The same indicator is then recalculated using the panel data, conditioning on youth not having had any employment in their event histories, resulting in 467 reports of a first job experience, at an average age of 22.9 years. Combining the two data sources generates first employment age estimates for 362 youth (48 percent of the sample) with a mean age of 22.21 - a difference of approximately six months between mean school-leaving age and mean age at entry into the labor market.

Finally, we differentiate between the age at first employment —when youth first report working —and the **transition age], which is age at which employment can be considered "steady" and labor market attachment complete. For this purpose, we consider a transition to be completed if youth, once employed or self-employed, do not revert to NEET status, education, or apprenticeship in subsequent periods. The data is again right-censored, as we have no knowledge of future activities Manacorda et al. (2017). We observe 267 completed transitions to the labor market in the event history data, with a weighted mean age of transition of 22.15 years. Likewise, a total of 324 transitions at a mean age of 24.06 years are recorded in the panel alone (conditioned on no employment history in event history data, i.e. in the past seven years). For the combined measure, 288 "permanent" transitions are recorded, with a mean age of 22.5 years.

Using measures from the combined event history and panel data, we define the **transition duration} as the difference between the age at graduation and the age of both first employment and permanent transition for each individual (last panel, Table 1). The weighted average of the transition to first employment is 5.2 months, considerably shorter than the transition to final employment, which lasts, on average, 27 months (2.3 years). According to the combined measure, young women leave school six months earlier than men and take about two months longer to find their first job (6.5 compared to 4.3 months). However, they "catch up" to men after graduation, as men and women enter permanent employment at approximately the same age according to our measure.

As outlined above, the estimates provided in 1 may be biased due to the fact that only individuals who have completed their transition can be factored into the calculation of transition duration. To overcome this right-censoredness [Nilsson (2019)}, we apply survival analysis to the retrospective history data, following Nordman and Pasquier-Doumer (2015) and Manacorda et al. (2017). Figure 1 plots the estimated survival probability, i.e. the probability that a youth needs an additional year before "permanently" transitioning to the labor market after completing their schooling. The weighted restricted mean transition duration is 18.8 months to first employment (16.3 months for males and 20.6 for females) and 21.8 months to steady employment (18 months for males, 26.5 for females). Taking the estimates from Table 1 and Figure 1 as ranges, we find that the average youth in our sample needs between 5.18 and 18.8 months to find first employment after graduation and between 21.8 and 27 months to find steady employment. These estimate transitions are considerably shorter than the average duration calculated for Sub-Saharan Africa by Manacorda et al. (2017)}[1] 25.7 months to first employment and 129.7 months to steady employment; however, the much larger gap between duration to first and steady employment than our data suggests that our 7-year retrospective data (and sample age limit of 29 years) may simply be too limited to capture the true duration it takes for youth to find steady employment.

---

[1]Based on SWTS surveys from five countries in SSA: Benin, Madagascar, Tanzania, Togo, Uganda.

Figure 1: Transition duration as survival probability
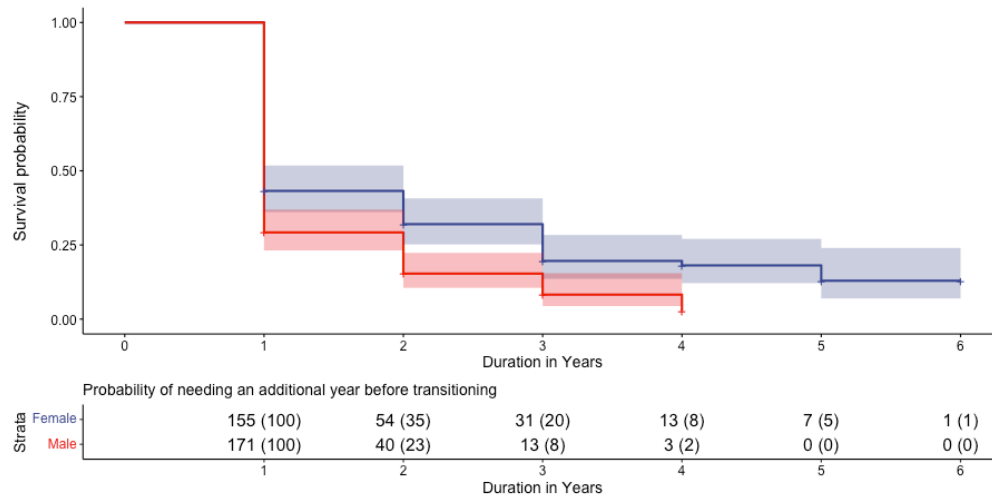
We further support these estimates with the reported time that youth spend actively looking for work after leaving school. We ask NEET youth, "How long have you been unemployed, available for work and actively looking for a job?". The majority of NEET youth report searching for work for at least seven months, whether for their first job or with past employment experience. In contrast, in 2005, the median duration of unemployment in a selection of OECD countries was less than three months [Quintini et al. (2007)]. A third of first-job seekers, and 37.7 percent of youth with job experience, have been out of the workforce for at least one year. In the OECD in 2005, this proportion was closer to 1 in 5. Comparison with the estimated mean transition rates from Manacorda et al. (2017)}, however, shows Benin to be somewhat of an outlier in SSA as well, with the lowest mean time to a first and to a permanent job among the five countries in SSA for which transition duration can be estimated.

5

0.1 Transition matrices

Table 3: Event history transition matrix, 2013-2019

From	School	NEET	Self-Employed	To Wage Employed	Apprentice	Total
School	2004	90	61	115	69	2339
	(85.68)	(3.85)	(2.61)	(4.92)	(2.95)	(100.00)
	[98.91]	[21.74]	[11.36]	[18.40]	[17.25]	[58.45]
NEET	7	250	43	55	30	385
	(1.82)	(64.94)	(11.17)	(14.29)	(7.79)	(100.00)
	[0.35]	[60.39]	[8.01]	[8.80]	[7.50]	[9.62]
Self-Employed	8	20	375	16	8	427
	(1.87)	(4.68)	(87.82)	(3.75)	(1.87)	(100.00)
	[0.39]	[4.83]	[69.83]	[2.56]	[2.00]	[10.67]
Wage Employed	6	34	22	399	9	470
	(1.28)	(7.23)	(4.68)	(84.89)	(1.91)	(100.00)
	[0.30]	[8.21]	[4.10]	[63.84]	[2.25]	[11.74]
Apprentice	1	20	36	40	284	381
	(0.26)	(5.25)	(9.45)	(10.50)	(74.54)	(100.00)
	[0.05]	[4.83]	[6.70]	[6.40]	[71.00]	[9.52]
Total	2026	414	537	625	400	4002
	(50.62)	(10.34)	(13.42)	(15.62)	(10.00)	(100.00)
	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]

Note: (row

Transitions between activity states can be depicted for any pair of survey rounds using transition matrices. Transition matrices can be interpreted as flows of youth between activities from the earlier time period (left-hand column) to the later time period (top row). Numbers in [brackets] represent the percent of youth flowing into a column activity from any given activity in the previous period, each with a given row. Numbers in (parentheses) represent the percentage of youth flowing out of a row activity to any given activity in the subsequent period, which corresponds to the column header. For instance, the first row, second column entry of Table 3 shows 90 reported transitions from school to NEET; 3.85 percent of those in schooling in any year transitioned to NEET the next year, while 21.74 percent of those observed to be NEET in any year had been in school the year before. Entries on the diagonal correspond to no transition.

An examination of the pooled transitions between past activities using the event history data (Table 3) shows that schooling was still the predominant activity of youth in the seven years prior to being interviewed, accounting for over half of all observations. In terms of transitions between different activities, we find that the largest absolute flows are from school to wage employment (115), inactivity (90), and self-employment (61). The most frequent transitions in relative terms (accounting for the number of youth starting from a given activity) are from NEET status into wage employment (14.29 percent) and into self-employment (11.17 percent) and from apprenticeship into wage employment (10.50 percent of apprentices) and into self-employment (9.45 percent). While we

observe similar rates of transition out of school (14.32 percent each year, on average), self-employment (12.18), and wage employment (15.11), the flow of youth out of school naturally increase over time (as youth approach graduation age), while the rates out of self- and wage employment remain relatively constant over time.

Table 4: Activity transition matrix: Panel data, pooled, 2019-2021

From	School	NEET	Self-Employed	Wage Employed	Apprentice	Total
				To		
School	259	74	20	47	7	407
	(63.64)	(18.18)	(4.91)	(11.55)	(1.72)	(100.00)
	[78.72]	[12.19]	[5.18]	[7.70]	[5.79]	[19.82]
NEET	31	328	99	127	23	608
	(5.10)	(53.95)	(16.28)	(20.89)	(3.78)	(100.00)
	[9.42]	[54.04]	[25.65]	[20.82]	[19.01]	[29.62]
Self-Employed	11	79	203	47	5	345
	(3.19)	(22.90)	(58.84)	(13.62)	(1.45)	(100.00)
	[3.34]	[13.01]	[52.59]	[7.70]	[4.13]	[16.80]
Wage Employed	19	95	49	372	14	549
	(3.46)	(17.30)	(8.93)	(67.76)	(2.55)	(100.00)
	[5.78]	[15.65]	[12.69]	[60.98]	[11.57]	[26.74]
Apprentice	9	31	15	17	72	144
	(6.25)	(21.53)	(10.42)	(11.81)	(50.00)	(100.00)
	[2.74]	[5.11]	[3.89]	[2.79]	[59.50]	[7.01]
Total	329	607	386	610	121	2053
	(16.03)	(29.57)	(18.80)	(29.71)	(5.89)	(100.00)
	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]

Note: (row

Table 6 depicts the rates of transition between activities pooled across all survey rounds: baseline, three follow-up surveys, and endline. As expected, the rate of graduation (transition out of school) is even higher than the last period of the event history. On average, 40 percent of youth changed activities between each survey round, a significantly higher rate than the 17.2 percent observed in the event history data, reflecting both the higher instability associated with the transition phase (compared to school-age years) and, potentially, much higher variation in youth activity than can be captured by annual data. Surprisingly, the most stable activity is wage employment, with a 68% retention rate across all survey rounds.

Table 5: Transition rates: past and present

	2013-2019: Event History	2019-2021: Panel Data
Self- to Wage Employment	3.75%	13.62%
Wage- to Self-Employment	4.68%	8.93%
Self-Employment to NEET	4.68%	22.9%
Wage Employment to NEET	7.23%	17.3%
NEET to Wage Employment	14.29%	20.89%
NEET to Self-Employment	11.17%	16.28%
NEET to School or Training	9.61%	5.10%

Flows between activity states do not capture transitions between employers. The baseline interview indicates that job turnover is indeed frequent among employed youth. Only about 50 percent of the wage employed had been working for the same employer(s) for more than a year at the time of the interview. Almost three quarters of employed youth claimed that they would like to work more hours, and 65% were actively looking for a new job at the time of the survey. We find that personal networks are central to the job search, with over 60% of working youth in our sample finding employment either through direct prior acquaintance with or family relation to the employer or through a mutual friend. Unlike Nordman and Pasquier-Doumer (2014)}, however, we cannot comment on the importance of these networks relative to other job search mechanisms with the data at hand.

Finally, there are many paths a youth may take from schooling to employment, and the richness of the survey data allows us to analyze various types of employment states (beyond self- and wage employment) and the propensity to enter each state based on youth characteristics. For the different employment states, we first differentiate between formal and informal: formal wage workers have a verbal or written contract under a single regular employer, while self-employed youth are considered formal if they hire at least five employees. We use the underemployment threshold of 35 hours per week to determine which (wage or self-employed) youth are underemployed. We consider transitions from NEET status, apprenticeship, and schooling separately, and consider transition propensities by gender and age group.

Table 6: Transition propensities, 2019-2021

Characteristic	Formality			Working Hours		
	Informal	**Formal**	**p-value**	**Underemp.**	**Full Emp.**	**p-value**
From NEET						
Overall	0.110	0.014	<0.001	0.046	0.082	<0.001
Male	0.081	0.012	<0.001	0.041	0.056	0.13
Female	0.144	0.016	<0.001	0.052	0.112	<0.001
20-24	0.096	0.013	<0.001	0.034	0.075	<0.001
25-29	0.126	0.014	<0.001	0.060	0.090	0.026
From Apprenticeship						
Overall	0.017	0.000	<0.001	0.007	0.011	0.13
Male	0.023	0.000	<0.001	0.012	0.015	0.6
Female	0.011	0.000	0.015	0.001	0.007	0.034
20-24	0.023	0.000	<0.001	0.008	0.017	0.049
25-29	0.010	0.000	0.016	0.006	0.004	0.7
From School						
Overall	0.035	0.002	<0.001	0.017	0.026	0.060
Male	0.042	0.004	<0.001	0.024	0.026	0.8
Female	0.028	0.000	<0.001	0.009	0.026	0.010
20-24	0.049	0.002	<0.001	0.025	0.035	0.2
25-29	0.021	0.002	0.002	0.009	0.017	0.14

Table 6 shows the results of this exercise. Transitions from NEET to informal work and full-time employment (formal or informal) are the most common in the observed three-year period. We note the sparse transitions to formal work: while Cunningham and Salvagno (2011)} use data collected every six months and find that between 11 and 32 percent of youth in Argentina, Brazil and Mexico move into the formal sector directly after leaving school, this is only true for .2 percent of youth in urban Benin. Females and older youth are more likely to find informal employment after completing schooling or a spell of inactivity, and young women transition to formal work after inactivity at a higher rate than men as well. However, young men are more likely to find an informal job directly after completing school or training, supporting the finding from the previous section that women experience longer transitions. Transition into full-time employment is generally more common than into underemployment, suggesting that most jobs available to youth are informal, but full-time - regardless of whether youth transition into them directly after completing school or after a period of unemployment.

Table 8: Transition propensities II, 2019-2021

Characteristic	Wage Employed			Self-Employed		
	Casual	Regular	p-value	Employer	Independent	p-value
From NEET						
Overall	0.052	0.023	<0.001	0.015	0.046	<0.001
Male	0.048	0.019	<0.001	0.015	0.021	0.3
Female	0.056	0.028	0.008	0.015	0.076	<0.001
20-24	0.039	0.022	0.036	0.008	0.048	<0.001
25-29	0.068	0.025	<0.001	0.024	0.043	0.043
From Apprenticeship						
Overall	0.008	0.002	0.005	0.003	0.006	0.13
Male	0.012	0.003	0.020	0.004	0.007	0.4
Female	0.003	0.000	0.083	0.001	0.004	0.2
20-24	0.011	0.003	0.032	0.005	0.006	0.8
25-29	0.005	0.000	0.045	0.000	0.006	0.025
From School						
Overall	0.021	0.008	0.003	0.006	0.008	0.4
Male	0.028	0.008	0.002	0.008	0.007	0.8
Female	0.013	0.008	0.3	0.004	0.010	0.13
20-24	0.029	0.012	0.015	0.007	0.013	0.2
25-29	0.013	0.005	0.070	0.005	0.004	0.7

Table 8 reports transition propensities for transitions to distinctive types of wage and self-employment, respectively. For wage employment, we calculate the transition propensity to casual work - defined as wage work with one or more employers on an irregular basis or with a single employer on an irregular/task-based payment basis - or "regular" work, i.e. a single employer with regular wages. These categories are mutually exclusive. We also differentiate between self-employed who also employ others (at least one wage worker) and those who work independently.

Transitions to casual work are found to be more prevalent than transitions to regular employment, regardless of whether youth are coming from inactivity, apprenticeship, or school. Older, female inactive youth transition to from being NEET to wage employment at a higher rate, whereas younger men have an advantage when transitioning directly from education. However, overall, transitions from inactivity to casual and regular work occur 2.3 and 2.7 times more often, respectively, than from school.

Finally, we find that independent self-employment is much more prevalent than youth hiring others. Females are significantly more likely to transition from inactivity to independent self-employment than men, a statistic driven by relatively high underlying numbers of inactive women.

0.2 Impact of transition on youth

Table 10: Random effects probit regression of life satisfaction on successful transition

	Model 1	Model 2	Model 3	Model 4
Transitioned	1.26***			
	(1.07)			
Age at Baseline	1.01	1.01	1.01	1.01
	(1.01)	(1.01)	(1.01)	(1.01)
Male	0.98	0.99	0.99	1.00
	(1.07)	(1.07)	(1.07)	(1.07)
Years of Schooling	1.02**	1.02**	1.02**	1.02**
	(1.01)	(1.01)	(1.01)	(1.01)
Self->Wage		1.14		
		(1.17)		
Wage->Self			1.07	
			(1.12)	
NEET->Work				1.13
				(1.10)
Covariates	YES	YES	YES	YES
Log-Likelihood	−2936.78	−2905.09	−2911.95	−2897.20
Num. obs.	2443	2415	2412	2405

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$. Odds ratios reported.

In addition to measuring the relationship between past activities and current labor market outcomes, we are interested in the effects that a successful transition may have on youth. To this end, we estimate the impact of transition (in this case, moving from a non-employment state to either self- or wage employment for the remaining periods under observation) on a measure of youth well-being elicited in the interviews. The youth survey captures three candidate psychometric measures: feelings of agency, overall life satisfaction, and optimism about the future. As life satisfaction is both the simplest in interpretation and shows the most interesting variation different types of labor market transitions, we concentrate on this outcome variable.

Table 13 reports the results of a random effects probit regression, with coefficients representing the effect of having transitioned to work (Model 1) and transitioning from a specific state to another in a given period (Models 2-4) on reported life satisfaction. Youth who have transitioned to the labor market in a given period are more satisfied with their lives in general, though no effect is detected for particular types of transitions, whether between self- and wage employment or from inactivity to work. As the transition between work types or even into employment does not appear to explain changes in youth satisfaction from survey to survey, we examine the baseline results to help explain youth satisfaction for employed youth. Failure to secure a high-skilled job despite

having a tertiary education can lead to low job satisfaction and high job turnover, even for youth who are paid a wage ILO (2020)}; however, we find no significant differences in job satisfaction by education attainment. We do observe a labor demand shortage among the employed, with 73% of youth responding that they would like to work more hours than they currently do. These youth are also significantly more likely to be dissatisfied with their work. About half of the sample was working at least a year for their employer or employers at the time of the interview; 65% of employed youth were actively looking for a new job at the time of the survey. Relatively high turnover supports the view that the issue facing African youth is a massive shortfall in labor demand, as opposed to human capital Fox et al. (2020)}.

0.3 Conclusion

This paper studies the dynamics of the school-to-work transition for 752 youth aged 20-29 from urban Cotonou, Benin. A unique panel is created using mobile phone surveys; in each survey round, youth are classified into one of five groups reflecting their primary activity. Only about a quarter of youth is observed to have transitioned to the labor market, despite a mean respondent age of over 24 years. Higher rates of transition are observed for quarterly data than in yearly historical data (39.2 vs. 17.2), suggesting that annual data often used in hazard rate analysis of unemployment risk mask significant movements between activities for youth. Using a combination of retrospective employment history and panel data to calculate average ages of transition, we find that youth in Cotonou graduate at the age of 22 years, four months, and find their first employment opportunity about about 5 months later, on average, but find attachment to the labor market only after about two years on the job search. If this were the true national transition duration, it would rank Benin as a country with one of the shortest transitions to work in the world. However, given the higher availability of non-agricultural informal work in urban areas, one expects the transition speed to be shorter in urban Cotonou than in the rest of the country. We find that young women spend about two years less in the education system than men, but "catch up" after graduation, securing permanent employment at approximately the same age as men.

We make a unique contribution to the literature by estimating the effects of transition on youth well-being. We find that while youth who have transitioned to steady employment are more satisfied with their lives, none of the specific transitions examined, e.g. the transition from wage to self-employment, appear to have an effect on youth satisfaction. Finally, we show that mobile phone data collection are promising for tracking labor market performance, despite moderate attrition; however, we observed higher response to the in-person baseline and endline waves, despite these being more time-consuming than the follow-up surveys. Thus, while urban youth are an ideal subject for phone-based surveys due to their high literacy and relatively high phone ownership and high network coverage in cities, incentives for increasing response and reducing survey

fatique in longitudinal remote studies remains an important topic of research. On the balance, however, we agree that "the cost savings of a phone survey are substantial, as long as the questions of interest call for high frequency panel data" (Dillon 2012).

References

Bowers, N. (1998). Getting started, settling in: The transition from education to the labour market. In OECD (Ed.), *1998 Employment Outlook*.

Bridges, S., Fox, L., Gaggero, A., and Owens, T. (2017). Youth Unemployment and Earnings in Africa: Evidence from Tanzanian Retrospective Data. *Journal of African Economies*, 26(2). https://doi.org/10.1093/jae/ejw020

Cunningham, W., and Salvagno, J. B. (2011). *Youth employment transitions in Latin America*. The World Bank. https://doi.org/10.1596/1813-9450-5521

Fox, L., Mader, P., Sumberg, J., Flynn, J., and Oosterom, M. (2020). *Africa's 'Youth Employment' crisis is actually a 'missing jobs' crisis*. Brookings Institute.

Honwana, A. M. (2012). *The time of youth: Work, social change, and politics in Africa*. Kumarian Press Pub.

ILO. (2020). *Global Employment Trends for Youth 2020: Technology and the future of jobs*. International Labour Office.

Mains, D. (2011). *Hope is cut: Youth, unemployment, and the future in urban Ethiopia*. Temple University Press.

Manacorda, M., Rosati, F. C., Ranzani, M., and Dachille, G. (2017). Pathways from school to work in the developing world. *IZA Journal of Labor & Development*, 6(1), 1. https://doi.org/10.1186/s40175-016-0067-5

Nilsson, B. (2019). The School-to-Work Transition in Developing Countries. *The Journal of Development Studies*, 55(5), 745–764. https://doi.org/10.1080/00220388.2018.1475649

Nordman, C. J., and Pasquier-Doumer, L. (2015). Transitions in a West African labour market: The role of family networks. *Journal of Behavioral and Experimental Economics*, 54, 74–85. https://doi.org/10.1016/j.socec.2014.11.008

Nordman, C. J., and Pasquier-Doumer, L. (2014). Vocational education, on-the-job training, and labour market integration of young workers in urban West Africa. *PROSPECTS*, 44(3), 445–462. https://doi.org/10.1007/s11125-014-9320-3

Quintini, G., Martin, J. P., and Martin, S. (2007). The Changing Nature of the School-to-Work Transition Process in OECD Countries. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1884070

A Appendix A

A.1 Attrition

Table 11: Sample Composition and Attrition

Characteristic	Baseline N=752	Remote 1 N=663	Remote 2 N=536	Remote 3 N=496	Endline N=574	p-value
Activity						<0.001
In School	169 (22%)	124 (19%)	95 (18%)	74 (15%)	60 (10%)	
NEET	238 (32%)	175 (26%)	132 (25%)	140 (28%)	173 (30%)	
Self-Employed	119 (16%)	148 (22%)	106 (20%)	93 (19%)	135 (24%)	
Employed	168 (22%)	176 (27%)	164 (31%)	165 (33%)	185 (32%)	
Apprentice	58 (7.7%)	40 (6.0%)	39 (7.3%)	24 (4.8%)	21 (3.7%)	
Baseline activity						0.31
Apprentice	58 (7.7%)	49 (7.4%)	45 (8.4%)	48 (9.7%)	51 (8.9%)	
In School	169 (22%)	151 (23%)	132 (25%)	124 (25%)	144 (25%)	
Employed	168 (22%)	153 (23%)	122 (23%)	107 (22%)	124 (22%)	
Self-Employed	119 (16%)	105 (16%)	74 (14%)	73 (15%)	94 (16%)	
NEET	238 (32%)	205 (31%)	163 (30%)	144 (29%)	161 (28%)	
Male	47%	48%	52%	52%	52%	0.26
Age	24.15 (2.67)	24.19 (2.67)	23.99 (2.65)	24.05 (2.67)	24.09 (2.67)	0.76
Years of Schooling	13.5 (4.7)	13.6 (4.6)	13.9 (4.5)	13.8 (4.5)	13.7 (4.4)	0.40

[1] n (%); %; Mean (SD)

[2] Pearson's Chi-squared test; Kruskal-Wallis rank sum test

Table 12: Descriptive statistics by baseline activity

Characteristic	Overall N=752	Occupation				
		1 N=169 (22%)	2 N=238 (32%)	3 N=119 (16%)	4 N=168 (22%)	5 N=58 (8%)
Male	50%	58%	33%	55%	56%	65%
Age at baseline	24.27	23.00	24.38	24.94	25.09	23.55
Education						
Highest educ. level						
<Primary	8.7%	0.6%	11%	15%	5.6%	17%
Collège	24%	10%	27%	29%	28%	28%
Lycée	25%	50%	18%	4.7%	26%	25%
None	6.2%	0.5%	8.5%	15%	0.8%	11%
Primary	10.0%	1.5%	11%	20%	10%	9.0%
Tertiary	26%	37%	25%	17%	29%	11%
Years of school	12.3	15.0	11.3	9.9	13.3	10.6
Baccalauréate	38%	73%	30%	18%	38%	17%
Past apprenticeship	24%	5.0%	20%	44%	26%	36%
Household						
No. of children	0.62	0.11	0.91	1.09	0.53	0.24
People in household	5.85	6.47	5.93	5.36	6.02	4.52
Home electrified	92%	94%	91%	92%	92%	87%
Assets						
Cell Phone	73%	62%	76%	80%	72%	80%
Smartphone	53%	64%	45%	43%	60%	48%
Motorcycle	27%	19%	21%	44%	34%	13%
Television	34%	22%	33%	46%	39%	34%

Mean; %. Calculated using responses from baseline survey. Sample weighting applied as described in the text.

A.2

Table 13: Activity transition matrix: Baseline and follow-up wave 1

						Follow-up 1
Baseline	In School	NEET	Self-Employed	Employed	Apprentice	Total
In School	62.25% (75.81%)	19.21% (16.57%)	8.61% (8.78%)	6.62% (5.68%)	3.31% (12.50%)	100.00% (119.34%)
NEET	6.83% (11.29%)	49.27% (57.71%)	18.05% (25.00%)	22.44% (26.14%)	3.41% (17.50%)	100.00% (137.64%)
Self-Employed	0.95% (0.81%)	11.43% (6.86%)	70.48% (50.00%)	16.19% (9.66%)	0.95% (2.50%)	100.00% (69.82%)
Employed	7.84% (9.68%)	13.73% (12.00%)	12.42% (12.84%)	63.40% (55.11%)	2.61% (10.00%)	100.00% (99.63%)
Apprentice	6.12% (2.42%)	24.49% (6.86%)	10.20% (3.38%)	12.24% (3.41%)	46.94% (57.50%)	100.00% (73.56%)
Total	84.00% (100.00%)	118.12% (100.00%)	119.76% (100.00%)	120.90% (100.00%)	57.23% (100.00%)	

Row % (column %)

Table 14: Activity transition matrix: Follow-up wave 1 and follow-up wave 2

					Follow-up 2	
Follow-up 1	In School	NEET	Self-Employed	Employed	Apprentice	Total
In School	66.00% (78.57%)	12.00% (9.68%)	5.00% (5.00%)	16.00% (10.19%)	1.00% (2.63%)	100.00% (106.07%)
NEET	4.76% (8.33%)	51.02% (60.48%)	15.65% (23.00%)	21.77% (20.38%)	6.80% (26.32%)	100.00% (138.52%)
Self-Employed	8.42% (9.52%)	15.79% (12.10%)	56.84% (54.00%)	15.79% (9.55%)	3.16% (7.89%)	100.00% (93.07%)
Employed	1.59% (2.38%)	14.29% (14.52%)	11.11% (14.00%)	70.63% (56.69%)	2.38% (7.89%)	100.00% (95.48%)
Apprentice	2.86% (1.19%)	11.43% (3.23%)	11.43% (4.00%)	14.29% (3.18%)	60.00% (55.26%)	100.00% (66.86%)
Total	83.63% (100.00%)	104.52% (100.00%)	100.03% (100.00%)	138.48% (100.00%)	73.34% (100.00%)	

Row % (column %)

Table 15: Activity transition matrix: Follow-up wave 2 and follow-up wave 3

						Follow-up 3
Follow-up 2	In School	NEET	Self-Employed	Employed	Apprentice	Total
In School	67.05% (83.10%)	13.64% (9.52%)	4.55% (4.88%)	14.77% (8.61%)	0.00% (0.00%)	100.00% (106.11%)
NEET	3.74% (5.63%)	63.55% (53.97%)	13.08% (17.07%)	16.82% (11.92%)	2.80% (13.04%)	100.00% (101.64%)
Self-Employed	0.00% (0.00%)	19.28% (12.70%)	65.06% (65.85%)	14.46% (7.95%)	1.20% (4.35%)	100.00% (90.85%)
Employed	2.88% (5.63%)	17.99% (19.84%)	4.32% (7.32%)	71.94% (66.23%)	2.88% (17.39%)	100.00% (116.41%)
Apprentice	11.11% (5.63%)	13.89% (3.97%)	11.11% (4.88%)	22.22% (5.30%)	41.67% (65.22%)	100.00% (85.00%)
Total	84.77% (100.00%)	128.34% (100.00%)	98.12% (100.00%)	140.22% (100.00%)	48.55% (100.00%)	

Row % (column %)

Table 16: Activity transition matrix: Follow-up wave 3 and endline

Follow-up 3	In School	NEET	Self-Employed	Employed	Apprentice	Endline Total
In School	58.82% (80.00%)	19.12% (9.35%)	2.94% (2.53%)	17.65% (8.22%)	1.47% (5.00%)	100.00% (105.10%)
NEET	2.54% (6.00%)	49.15% (41.73%)	19.49% (29.11%)	27.12% (21.92%)	1.69% (10.00%)	100.00% (108.76%)
Self-Employed	3.85% (6.00%)	41.03% (23.02%)	50.00% (49.37%)	5.13% (2.74%)	0.00% (0.00%)	100.00% (81.13%)
Employed	2.05% (6.00%)	19.86% (20.86%)	8.22% (15.19%)	67.12% (67.12%)	2.74% (20.00%)	100.00% (129.18%)
Apprentice	4.17% (2.00%)	29.17% (5.04%)	12.50% (3.80%)	0.00% (0.00%)	54.17% (65.00%)	100.00% (75.83%)
Total	71.43% (100.00%)	158.33% (100.00%)	93.15% (100.00%)	117.02% (100.00%)	60.07% (100.00%)	

Row % (column %)

Table 17: Activity transition matrix: Baseline and endline

						Endline
Baseline	In School	NEET	Self-Employed	Employed	Apprentice	Total
In School	31.25% (75.00%)	18.75% (15.61%)	18.06% (19.26%)	30.56% (23.78%)	1.39% (9.52%)	100.00% (143.17%)
NEET	4.35% (11.67%)	37.27% (34.68%)	31.68% (37.78%)	25.47% (22.16%)	1.24% (9.52%)	100.00% (115.81%)
Self-Employed	3.19% (5.00%)	42.55% (23.12%)	32.98% (22.96%)	21.28% (10.81%)	0.00% (0.00%)	100.00% (61.90%)
Employed	3.23% (6.67%)	18.55% (13.29%)	17.74% (16.30%)	58.06% (38.92%)	2.42% (14.29%)	100.00% (89.46%)
Apprentice	1.96% (1.67%)	45.10% (13.29%)	9.80% (3.70%)	15.69% (4.32%)	27.45% (66.67%)	100.00% (89.66%)
Total	43.98% (100.00%)	162.22% (100.00%)	110.26% (100.00%)	151.05% (100.00%)	32.50% (100.00%)	

Row % (column %)

B   Appendix B