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**The Search for Good Jobs:**  
**Evidence from a Six-Year Field Experiment in Uganda**

Oriana Bandiera [LSE], Vittorio Bassi [USC], Robin Burgess [LSE]  
Imran Rasul [UCL], Munshi Sulaiman [BRAC], Anna Vitali [UCL]

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## Motivation

- 420 million young people in Africa today: 140 million are unemployed; 130 million are underemployed [AfDB 2-18]
  - in many low-income countries, pressing need to find large cohorts of young labor market entrants gainful employment
  - study context: Uganda
  - key labor market frictions:
    - skills mismatch: entrants lack skills demanded by firms
    - credit constraints: inability to invest in HK post labor market entry
    - information: workers and firms imperfectly informed
  - youth rely on casual jobs, slow transition up the job ladder to regular work
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## This Paper: Experiment

- **Q:** how do workers search for jobs in urban labor markets?
  - **A:** six-year field experiment tracking youth in urban labor markets in Uganda
  - understand the job search process through the randomized provision of two standard labor market interventions:
    - offer of vocational training
    - offer of vocational training + offer of matching workers to firms
    - match offers only
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## This Paper: Measurement Tools

- granular evidence on job search process
  - interventions → expectations → job search behaviors → long run labor market outcomes
  - foundational role of worker expectations:
    - job offer arrival rate from firms in good sectors
    - expected earnings conditional on employment in a good sector
  - underpinning job search behaviors:
    - search intensity
    - directed search (desired job/firm characteristics)
  - labor market outcomes: employment, earnings, sorting (job/firm characteristics), spells..
-

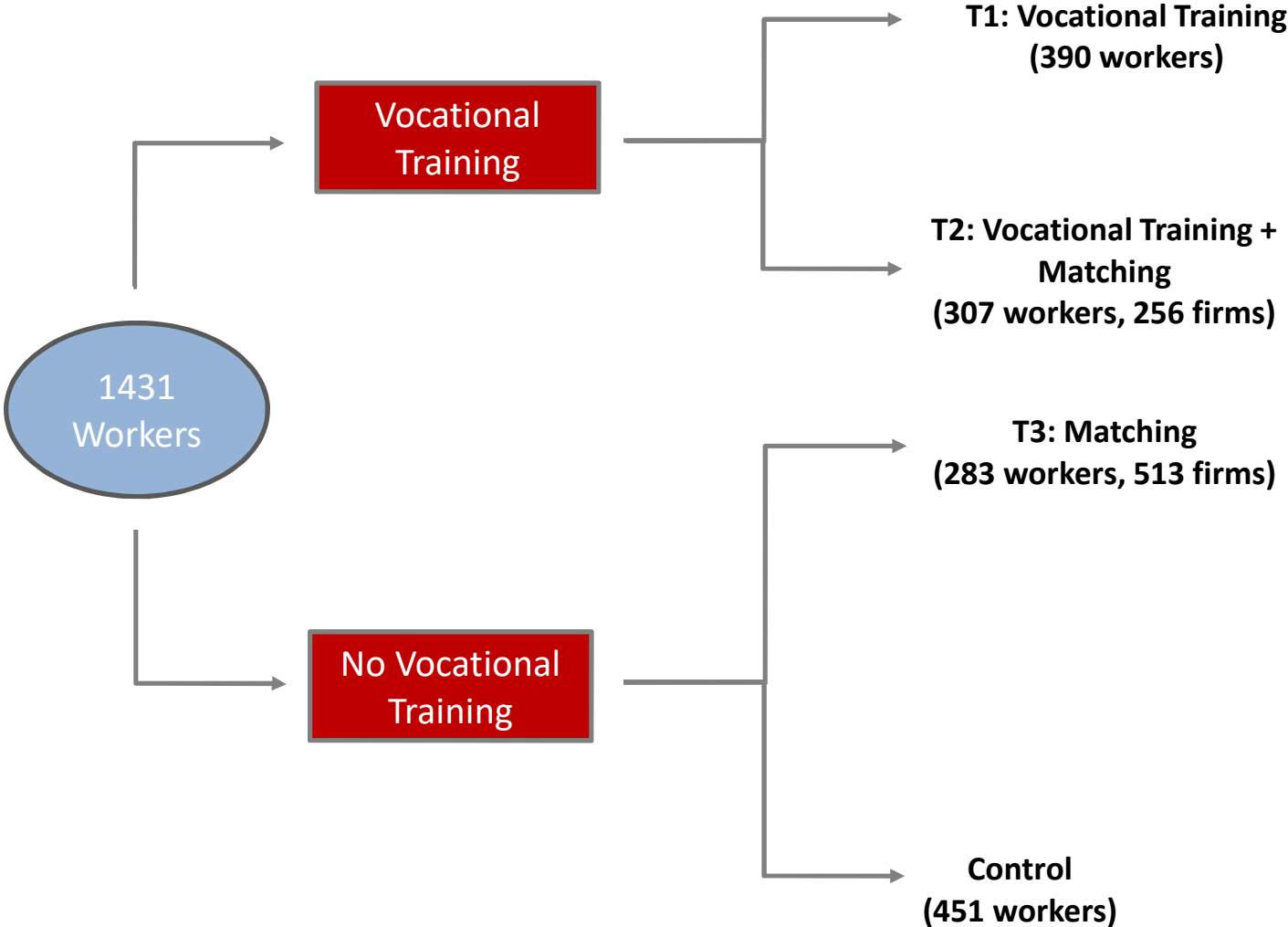
## **Design**

[Figure 1: Design of the Field Experiment]

[Table 1: Worker Characteristics at Baseline]

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# Figure 1: Design of the Field Experiment



# Table 1: Baseline Balance on Labor Market Histories

Means, robust standard errors from OLS regressions in parentheses

	Any work in the last month	Any regular wage employment in the last month	Any self employment in the last month	Any casual work in the last month	Total regular earnings in last month [USD]	Total regular earnings in last month [USD]   regular employment
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Control</b>	<b>.401</b>	.120	.038	<b>.296</b>	5.11	13.0
<b><i>N=451</i></b>	(.052)	(.026)	(.017)	(.051)	(1.29)	(2.41)

## Treatment 1: Vocational Training

- provided by pre-existing vocational training institutes (VTIs)
  - business-as-usual model of private training provision
  - 6 months sector-specific training
    - sectors with good jobs (regular, formal) [manufacturing, service sectors]
  - covered entire total cost: \$470 per trainee
  - not the kind of HK investment labor market entrants can self-finance
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## Treatment 2: Match Offers

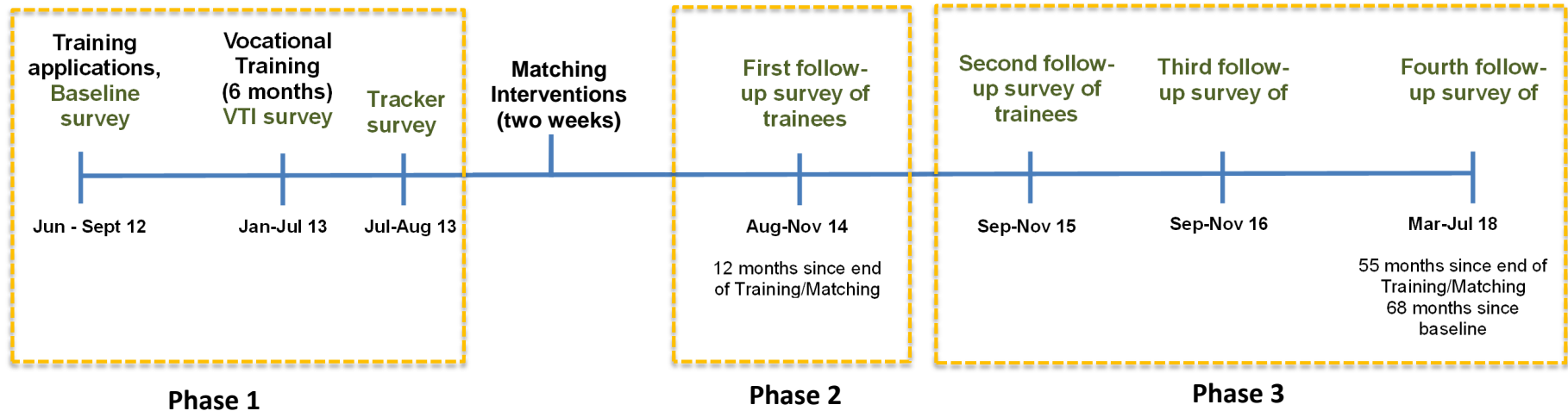
- *offer* to match workers to firms [scripted]
  - matches offered to those with/without earlier offer of vocational training
  - near 100% take-up by workers
  - firms: profitable, established SMEs in high-wage sectors  
[manufacturing, service sectors]
  - stratified worker-firm match offers by sector and location
  - each firm matched to two workers
    - either both skilled or both unskilled
  - each worker matched to one or two firms
  - start-to-finish of match offer process: two weeks
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## Timeline

[Figure 2: Timeline]

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**Figure 2: Timeline of Worker Surveys and Interventions**



## Expectations

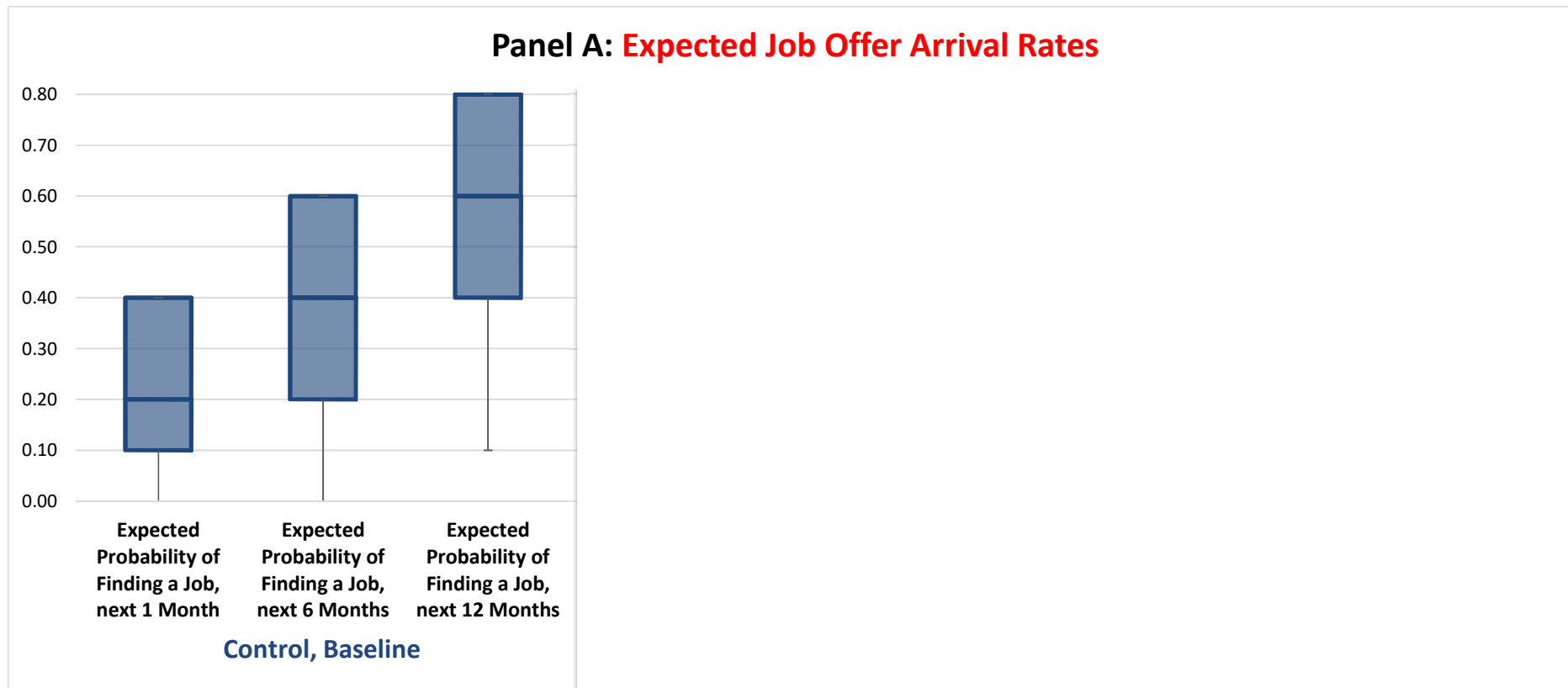
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## Expectations

- controls: expectations vs reality
  - the evolution of expectations until the eve of match offers being announced
  - match offers: call back rates and their determinants
  - response to call backs
  - [Figures 3A, 3B: Baseline Expectations Among Controls]
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# Figure 3: Expectations Among Controls

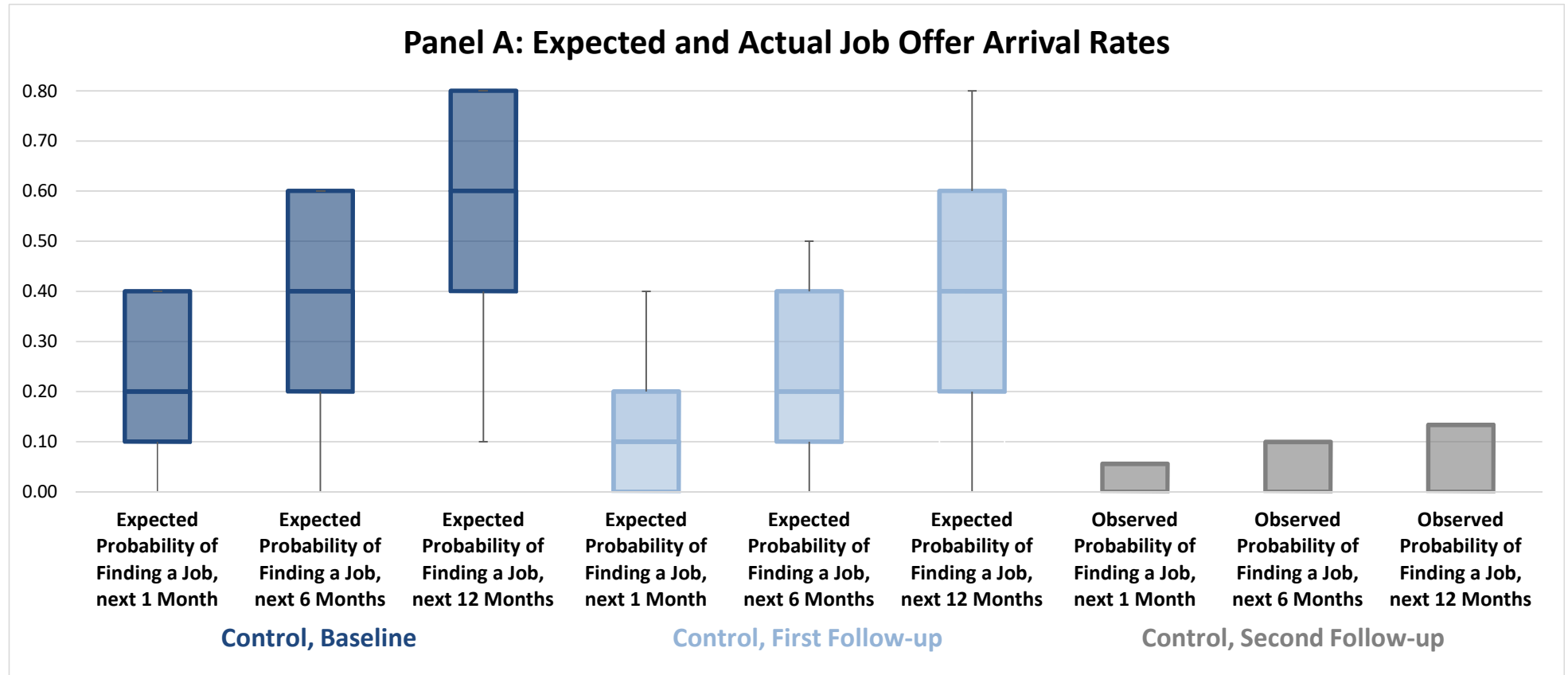
10th, 25th, 50th, 75th and 90th percentiles



**Reality: actual employment rates in good sectors for unskilled youth in nationally representative survey data is 20% [UNHS]**

### Figure 3: Expectations Among Controls

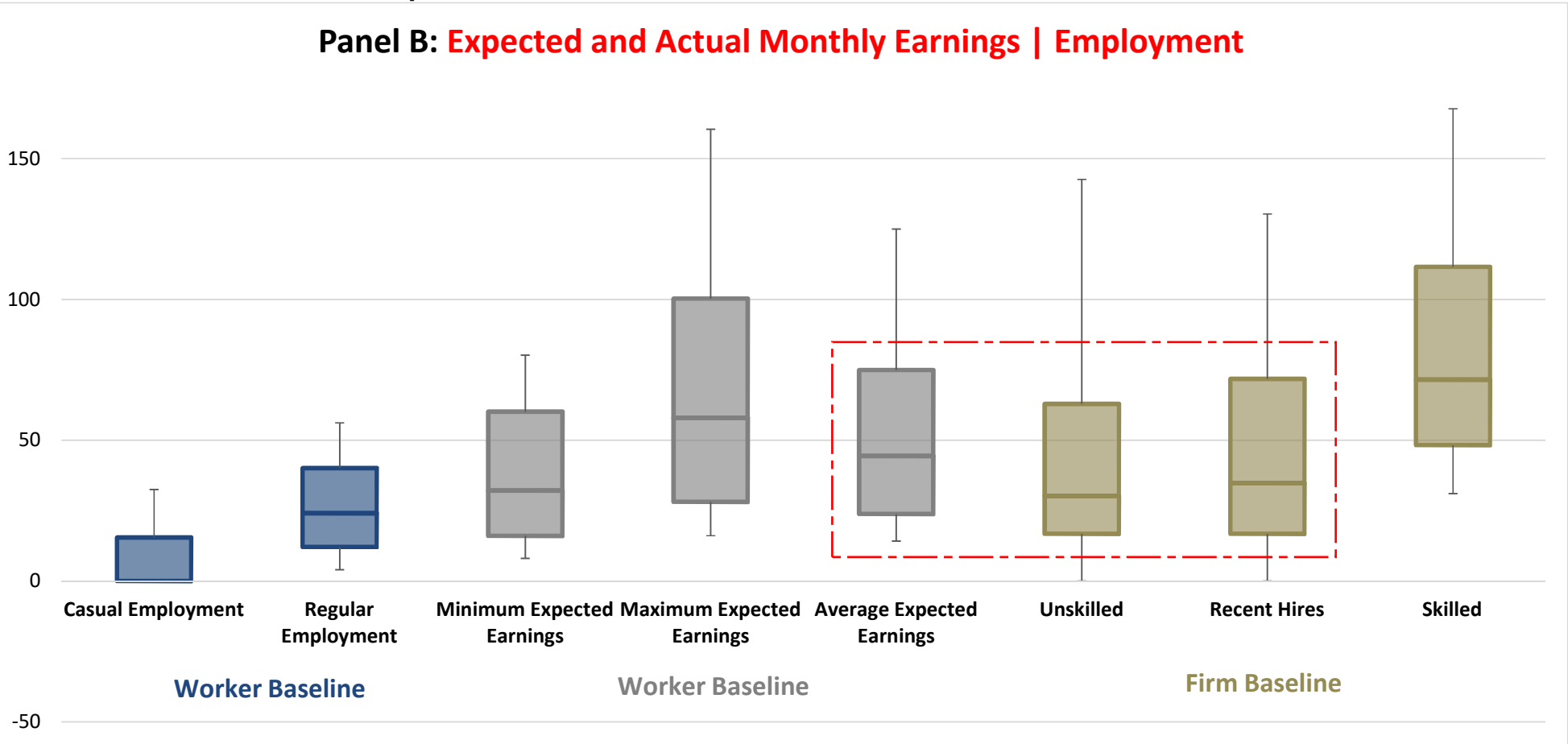
10th, 25th, 50th, 75th and 90th percentiles



# Figure 3: Expectations Among Controls

10th, 25th, 50th, 75th and 90th percentiles

## Panel B: Expected and Actual Monthly Earnings | Employment





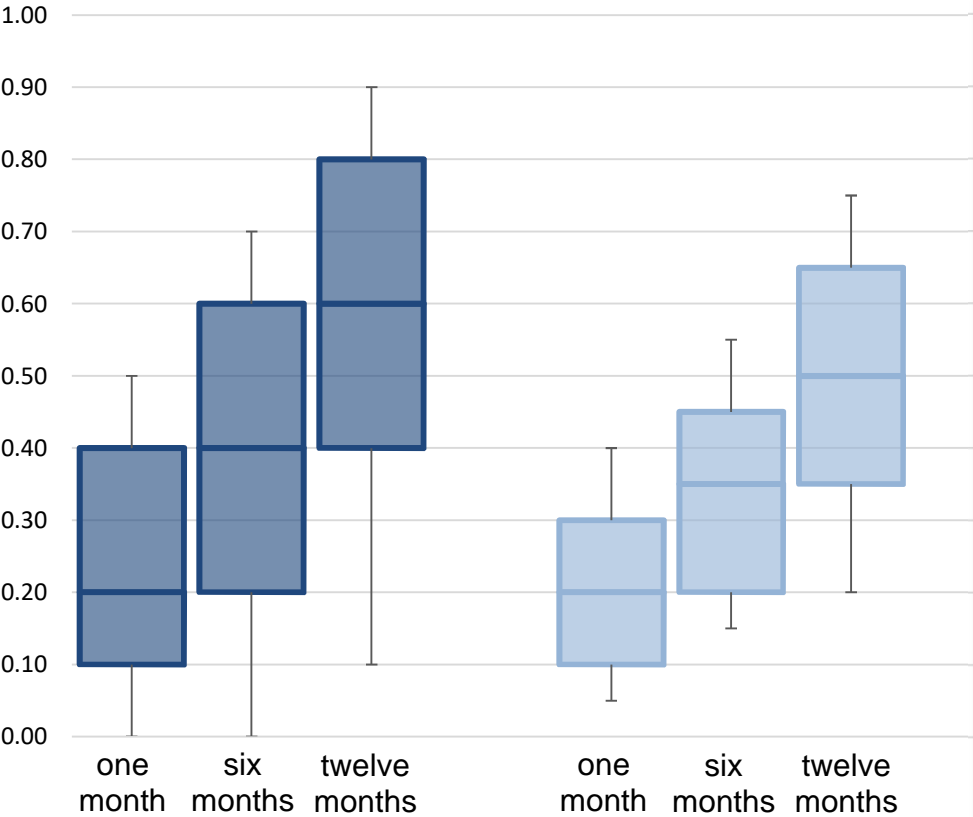
## Evolution of Expectations Until the Eve of Match Offers

- do so for:
    - controls
    - workers assigned to vocational training
  - [Figures 5A, 5B: Evolution of Expectations]
  - [Table 3: Evolution of Expectations]
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# Figure 5: The Evolution of Expectations Until Match Offers are Announced

10th, 25th, 50th, 75th and 90th percentiles

## A: Expectations over Job Offer Arrival Rates



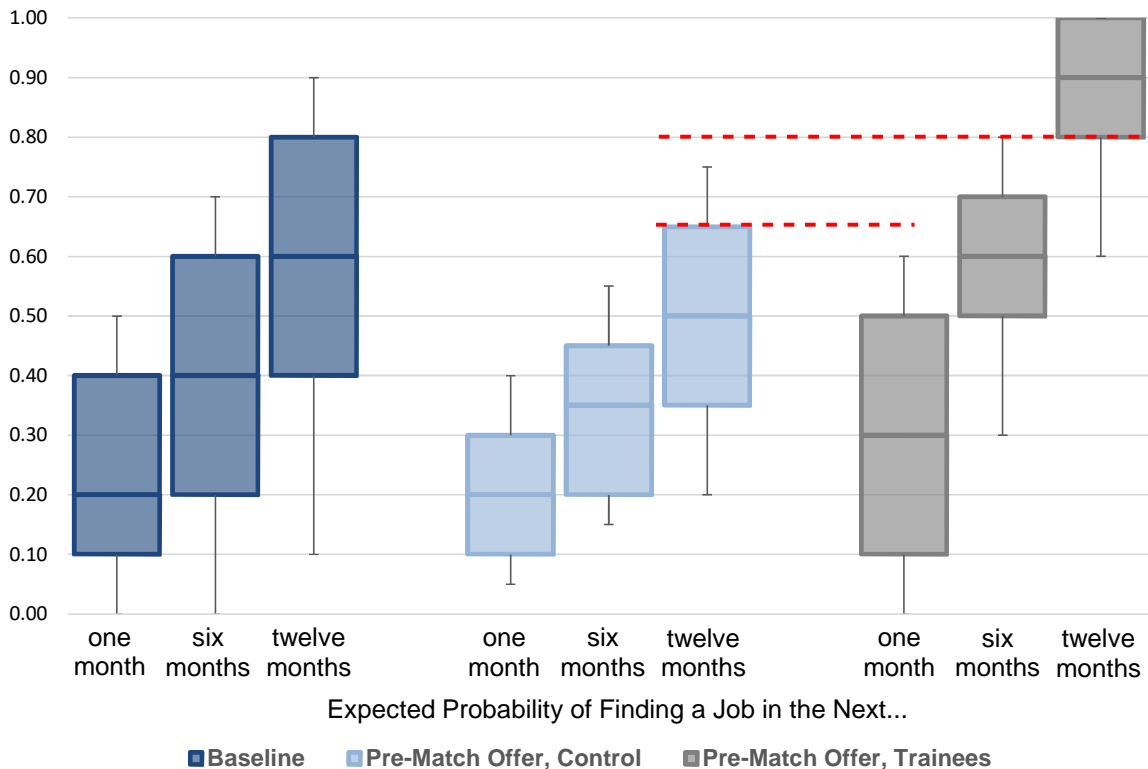
Expected Probability of Finding a Job in the Next...

■ Baseline    ■ Pre-Match Offer, Control

# Figure 5: The Evolution of Expectations Until Match Offers are Announced

10th, 25th, 50th, 75th and 90th percentiles

## A: Expectations over Job Offer Arrival Rates

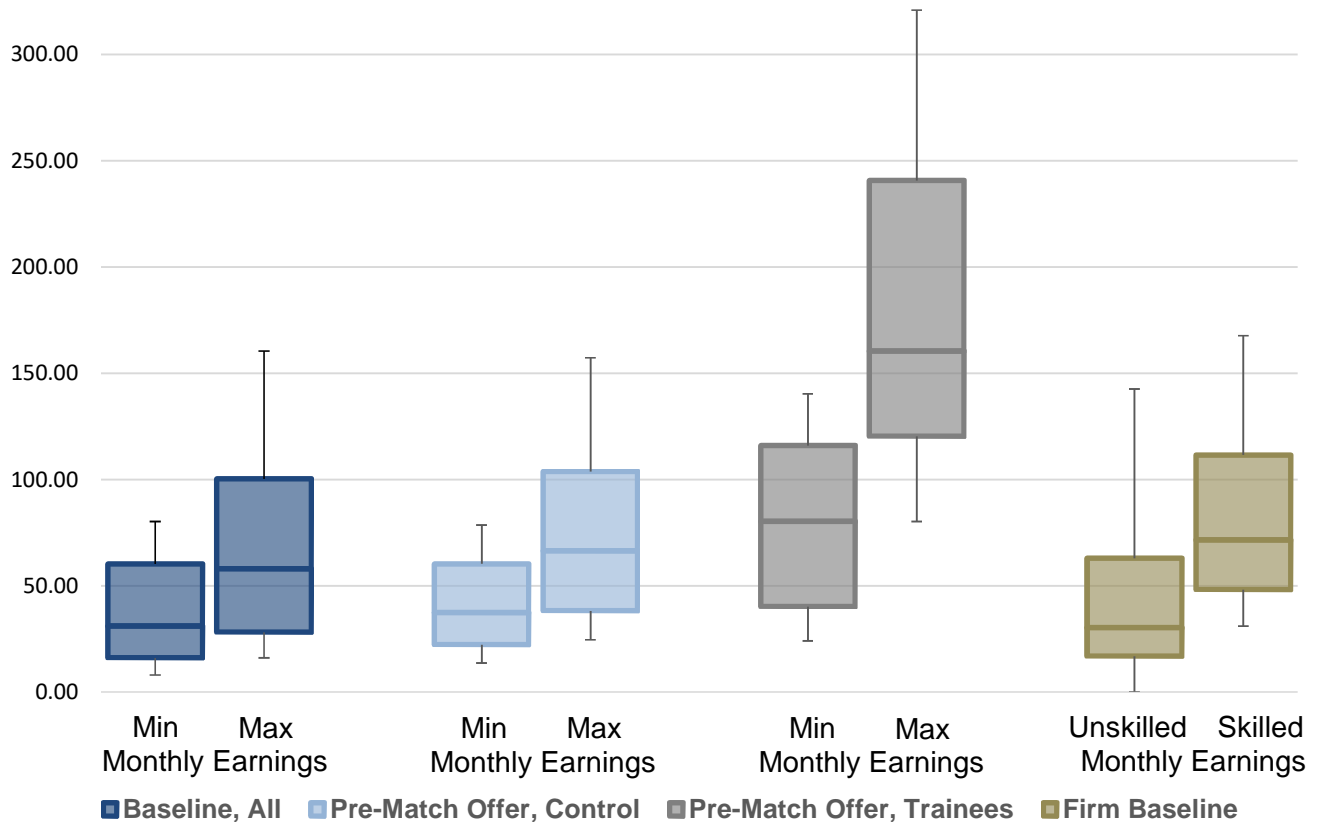


**Reality: actual employment rates in good sectors for skilled youth in nationally representative survey data is 35% [UNHS]**

# Figure 5: The Evolution of Expectations Until Match Offers are Announced

10th, 25th, 50th, 75th and 90th percentiles

## B: Expected Monthly Earnings | Employment



***Slight optimism over returns to vocational training:***

***expected earnings | employment rise by 41%***

***experimental/structural estimates from Alfonsi et al. [2020]: 20-30%***

## Match Offers and Call Backs

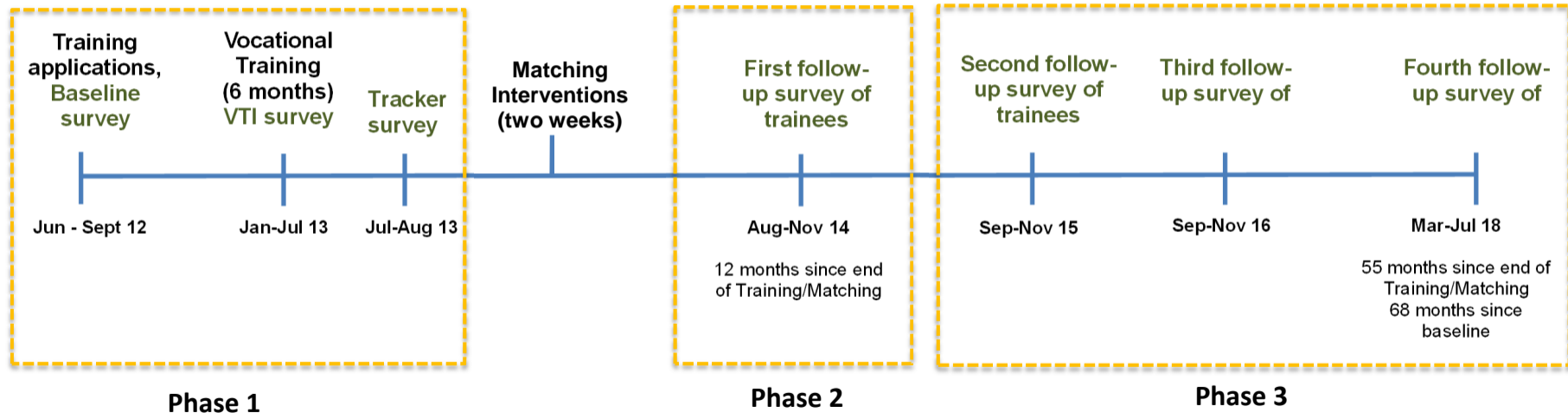
- on eve of match offers: increasingly realistic controls vs euphoric trainees
  - key outcome for worker from match offers: **call back**
  - **expected** versus **actual** call back rates:
    - skilled: 30% vs 13%
    - unskilled: median = 15% vs 19%
  - why are call back rates so low?
    - lack of vacancies/firm characteristics
    - **not** due to worker chars (almost by design)
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## Response to (Lack of) Call Backs

- null: workers perfectly informed → no reason to update based on few draws from a large pool of firms ( $\simeq 40$ )
  - alternative: workers imperfectly informed → misattribute lack of call back as informative of their job prospects
    - biased beliefs to begin with
    - match offer is salient to youth: no market substitutes
  - for those offered vocational training: 30% vs 13% → bad news on average
  - for those randomized out of vocational training: 15% vs 19% → confirmation
  - [Figure 2: Timeline]
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**Figure 2: Timeline of Worker Surveys and Interventions**



## Results

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## Skills

- offer of vocational training does lead to skills accumulation
  - developed sector-specific test
    - ITT T1 vs C: skills increase by 21% ( $.29\sigma$ )
    - ATE T1 vs C: skills increase by 28% ( $.37\sigma$ )
    - ITT T3 vs C: no impact of match offer on measurable skills
  - no differential skill impacts between vocational trainees with and without match offers
  - no impact of VT on cognitive skills, personality and psychological traits
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## Expectations One Year Post Intervention

- job offer arrival rate from firms in good sectors (8 study sectors)
  - expected earnings conditional on employment in one of the 8 study sectors
  - is this really misattribution?
    - updating expectations about labor market conditions?
  - [Table 4: Expectations]
  - [Table 5: Expectations Over Labor Market Conditions]
-

# Table 4: Expectations Over Own Job Prospects

OLS regression coefficients, robust standard errors in parentheses

	Job Offer Arrival	Expected Earnings Conditional on Employment			
	Rate	[USD]			
	Exp. prob of finding a job in the next year (0 to 10 scale)	Minimum	Maximum	Mean	Coefficient of Variation
	(1)	(2)	(3)	(4)	(5)
Vocational Training	1.84*** (.205)	17.7*** (3.06)	31.8*** (4.85)	25.4*** (4.37)	-.002 (.005)
Vocational Training + Matching	1.45*** (.217)	12.0*** (3.28)	23.6*** (5.37)	17.9*** (4.67)	.009 (.006)
Matching	.242 (.216)	3.21 (3.05)	6.04 (4.97)	3.47 (4.44)	-.000 (.007)
<i>P-value: VT = VT + Matching</i>	<b>[.082]</b>	<b>[.095]</b>	<b>[.129]</b>	<b>[.105]</b>	<b>[.036]</b>
Mean in Control Group	4.19	42.9	72.5	57.8	.107
N. of observations	1,171	952	946	801	797

## Table 5: Expectations Over **Labor Market Conditions**

OLS regression coefficients, robust standard errors in parentheses

Randomization inference and Romano-Wolf adjusted p-values in braces

	Lack of firms is a serious problem	Job opportunities not being advertised is a serious problem	Difficulty to show possession of practical skills is a serious problem	Difficulty to show possession of soft skills is a serious problem	Market believes index
	(1)	(2)	(3)	(4)	(5)
<b>Vocational Training</b>	-0.045 (.037)	.014 (.036)	-0.016 (.037)	-0.038 (.036)	-0.048 (.046)
<b>Vocational Training + Matching</b>	-0.058 (.041)	.027 (.040)	-0.039 (.040)	-0.031 (.040)	-0.054 (.052)
<b>Match Offer</b>	-0.026 (.041)	.017 (.041)	-0.004 (.041)	-0.054 (.040)	-0.039 (.053)
<i>P-value: VT = VT + Matching</i>	<i>[.749]</i>	<i>[.752]</i>	<i>[.569]</i>	<i>[.873]</i>	<i>[.907]</i>
<b>Mean in Control Group</b>	.581	.592	.441	.438	.028
<b>N. of observations</b>	1,227	1,228	1,229	1,228	1,231

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## Underpinning Changes in Search Behavior

- from  $\Delta$ expectations  $\rightarrow$   $\Delta$ search behavior
  - can link directly rather than infer one from the other  
[Mueller and Spinnewijn 2021]
  - $\Delta$ job offer arrival rate  $\rightarrow$   $\Delta$ returns to search
    - MC=MB:  $\phi'(s) = \lambda_s(s, \theta, \mathbf{x}_i(T_i)) \times E[V - U]$
    - income vs subs effects
  - earnings | employment  $\rightarrow$  directed search
  - [Table 6: Search Intensity]
  - [Table 7: Directed Search, Credit]
-

## Table 6: Search Intensity

OLS regression coefficients, robust standard errors in parentheses

	Has actively looked for a job in the last year (1)	Number of days has actively looked for a job in the last year (2)
Vocational Training	.175*** (.036)	.617 (6.04)
Vocational Training + Matching	.097** (.040)	-.713 (6.70)
Matching	-.036 (.041)	-11.2* (6.44)
<i>P-value: VT = VT + Matching</i>	<b>[.053]</b>	<b>[.845]</b>
Mean in Control Group	.490	41.7
N. of observations	1,231	1,211

**Income effect dominates on extensive margin of search intensity**

**Table 6: Search Intensity**

OLS regression coefficients, robust standard errors in parentheses

Randomization inference and Romano-Wolf adjusted p-values in braces

	Has actively looked for a job in the last year	Number of days has actively looked for a job in the last year	Has attempted to migrate to find a job	Main channel through which looked for a job is through family members/friends	Main channel through which looked for a job is by walking into firms and asking for a job	Search Index
	(1)	(2)	(3)	(4)	(5)	(6)
Vocational Training	.175*** (.036)	.617 (6.04)	.084** (.033)	.053 (.033)	.088*** (.028)	<b>.089**</b> <b>(.042)</b>
Vocational Training + Matching	.097** (.040)	-.713 (6.70)	.060* (.036)	-.005 (.036)	.056* (.030)	<b>.019</b> <b>(.046)</b>
Matching	-.036 (.041)	-11.2* (6.44)	-.036 (.033)	-.000 (.036)	-.004 (.028)	<b>-.003</b> <b>(.041)</b>
<i>P-value: VT = VT + Matching</i>	<i>[.053]</i>	<i>[.845]</i>	<i>[.523]</i>	<i>[.125]</i>	<i>[.338]</i>	<b><i>[.146]</i></b>
Mean in Control Group	.490	41.7	.217	.270	.139	<b>-.032</b>
N. of observations	1,231	1,211	1,231	1,231	1,231	<b>1,231</b>

**On other margins of search intensity, substitution effects appears to also be at play (expected returns to search)**

## Table 7: Directed Search

OLS regression coefficients, robust standard errors in parentheses

Randomization inference and Romano-Wolf adjusted p-values in braces

	Ideal Firm Searched For (1)	Ideal Job Searched For (2)	Credit Index (3)
Vocational Training	<b>.103***</b> (.036)	-.054 (.040)	.040 (.049)
Vocational Training + Matching	.030 (.039)	-.022 (.041)	-.035 (.043)
Matching	.042 (.039)	-.064 (.042)	<b>.090*</b> (.048)
<i>P-value: VT = VT + Matching</i>	[.102]	[.465]	[.133]
Mean in Control Group	-.046	.020	-.021
N. of observations	1,215	1,231	1,231

**Driven by VT workers searching over larger more formal firms**

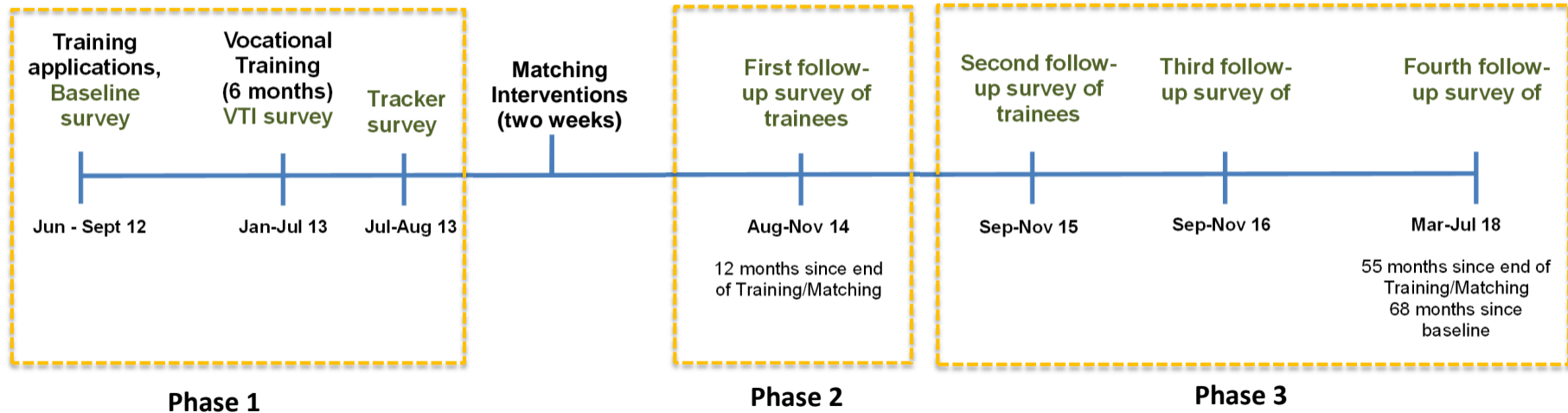
**Match only workers report borrowing to set up in self-employment**



## Summary: Interventions and Job Search

- differences in expectations and job search behaviors among treatment arms
  - T1: persistent exuberance of vocational trainees
  - T2: those additionally offered matching are discouraged (still better off than controls)
  - those only offered matching: use credit to finance moves into SE
  - to what extent does any of this matter for labor market outcomes in long run?
    - null: in frictionless labor markets, initial conditions will not matter
    - Alfonsi *et al.* [2020]: certified skills increase job mobility (JJ, UJ transitions)
  - [Figure 2: Timeline]
-

## Figure 2: Timeline of Worker Surveys and Interventions



## **Results: Labor Market Outcomes**

[Table 8: First Job]

[Table 9: Employment]

[Table 10: Earnings and Spells]

[Table 11: Realized Job and Firm]

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## Table 8: Labor Market Outcomes in the **Short Run**

OLS regression coefficients, robust standard errors in parentheses

Randomization inference and Romano-Wolf adjusted p-values in braces

### FIRST JOB

	Months between intervention and first job	First job in one of eight good sectors	Formal contract in first job	Monthly earnings in first job
	(1)	(2)	(3)	(4)
<b>Vocational Training</b>	-1.74*** (.605)	.227*** (.039)	.059* (.034)	8.32** (3.88)
<b>Vocational Training + Matching</b>	-1.61** (.696)	.222*** (.044)	-.020 (.033)	-4.88 (3.99)
<b>Matching</b>	-.719 (.702)	.013 (.043)	-.030 (.034)	-3.40 (3.80)
<i>P-value: VT = VT + Matching</i>	[.847]	[.917]	<b>[.022]</b>	<b>[.001]</b>
<b>Mean in Control Group</b>	<b>13.6</b>	.313	.118	60.2
<b>N. of observations</b>	1,037	1,051	722	974

# Table 9: Long Run Employment Outcomes

OLS regression coefficients, robust standard errors in parentheses

	Has done any work in the last month	Has done any casual work in the last month	Has done any regular work in the last month	Number of months of regular work in the last year	Number of months worked in one of the eight good sectors in the last year	Employment Index
	(1)	(2)	(3)	(4)	(5)	(6)
Vocational Training	.094*** (.021)	.000 (.015)	.113*** (.022)	1.33*** (.232)	1.94*** (.207)	.347*** (.040)
Vocational Training + Matching	.063*** (.023)	.005 (.017)	.066*** (.024)	.690*** (.257)	1.54*** (.228)	.248*** (.044)
Match Offer	.051** (.022)	-.003 (.017)	.054** (.023)	.510** (.246)	.556*** (.203)	.117*** (.040)
<i>P-value: VT = VT + Matching</i>	<i>[.152]</i>	<i>[.765]</i>	<i>[.043]</i>	<i>[.011]</i>	<i>[.104]</i>	<i>[.031]</i>
Mean in Control Group	.623	.169	.524	5.91	1.88	-.167
N. of observations	3,703	3,699	3,700	3,724	3,723	3,725

# Table 10: Long Run Earnings, and Spells

OLS regression coefficients, robust standard errors in parentheses

	Earnings in the last month [USD]	Length of last unemployment spell (months)	Length of last employment spell (months)
	(1)	(5)	(6)
<b>Vocational Training</b>	11.0*** (2.52)	-1.24*** (.235)	1.24*** (.234)
<b>Vocational Training + Matching</b>	6.11** (2.89)	-.667** (.259)	.619** (.258)
<b>Match Offer</b>	3.27 (2.71)	-.411 (.250)	.452* (.248)
<i>P-value: VT = VT + Matching</i>	<i>[.099]</i>	<i>[.023]</i>	<i>[.015]</i>
<b>Mean in Control Group</b>	43.3	6.20	5.63
<b>N. of observations</b>	3,125	3,693	3,693

# Table 11: Realized Jobs, Realized Firms and Self-Employment

OLS regression coefficients, robust standard errors in parentheses

	Realized Job	Realized Firm	Has done any self-employment in one of the eight study sectors in the last month
	(1)	(2)	(3)
Vocational Training	.096*** (.029)	.003 (.028)	.104*** (.013)
Vocational Training + Matching	.042 (.032)	-.058* (.031)	.076*** (.015)
Match Offer	-.013 (.030)	-.067** (.031)	<b>.040***</b> (.013)
<i>P-value: VT = VT + Matching</i>	<b>[.077]</b>	<b>[.035]</b>	<b>[.100]</b>
Mean in Control Group	-.025	.045	.061
N. of observations	2,429	2,504	3,699

***Differential sorting into firms and jobs based on initial expectations***

## Summary

- initial conditions matter
  - skills and expectations at labor market entry have persistent impacts on workers outcomes six years later
    - misattribution/bad news a form of scarring
  - skilled workers move up the job ladder relative to equally skilled workers with match offers:
    - speedier transition from casual to regular work/wage employment
    - better jobs in better firms
  - [Table 11: Labor Market Success]
-



## Table 11: Labor Market Success

OLS regression coefficients, robust standard errors in parentheses

	Labor Outcomes Index
	(4)
Vocational Training	<b>.115***</b> (.018)
Vocational Training + Matching	<b>.051***</b> (.020)
Matching	.020 (.018)
<i>P-value: VT = VT + Matching</i>	<i>[.001]</i>
Mean in Control Group	-.042
N. of observations	3,725

**Matching undoes around half the impact of vocational training**

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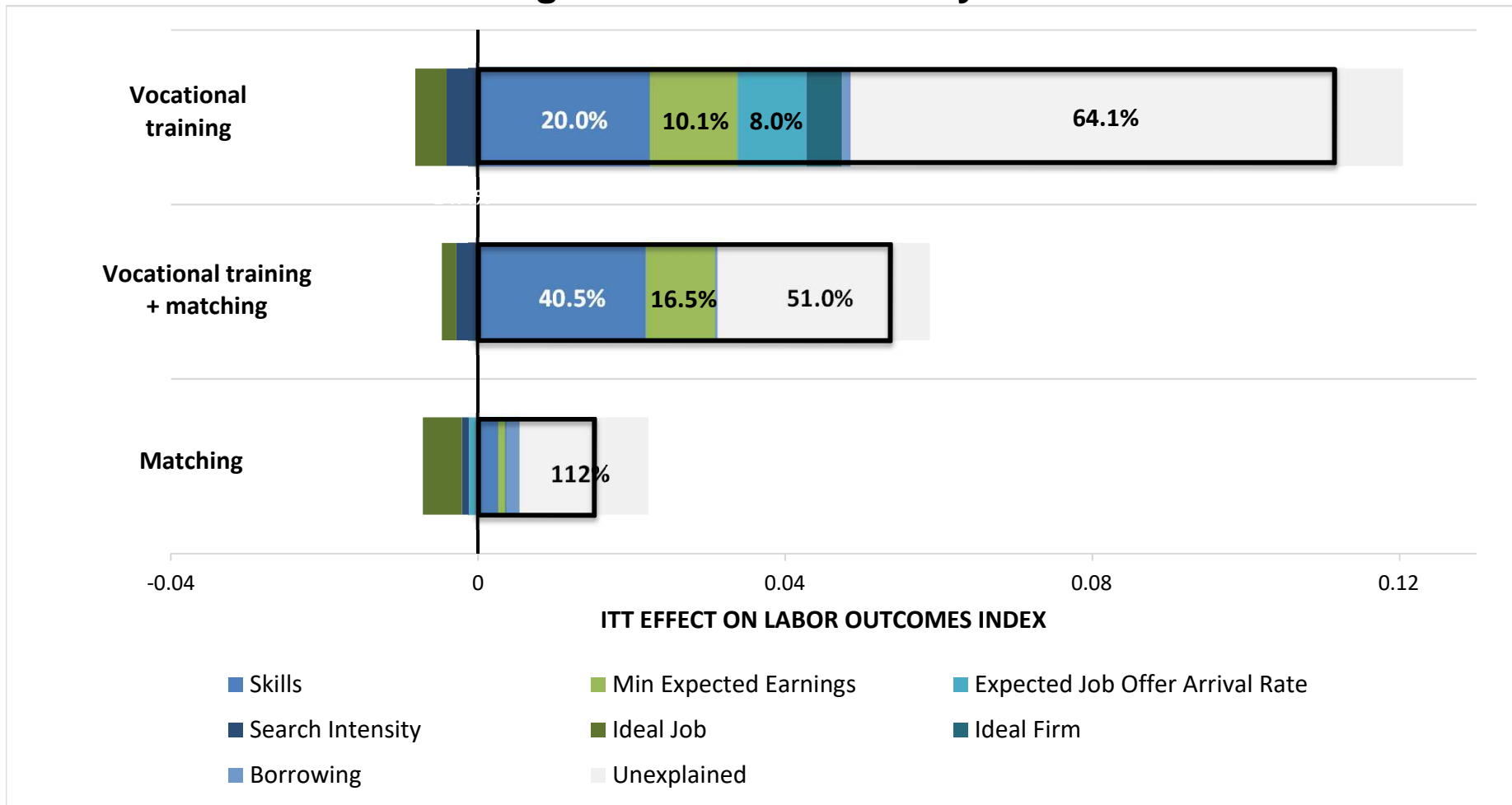
## Linking Outcomes to Expectations and Search Behavior

- use mediation analysis to decompose relative roles of skills, expectations and search behavior on labor market success [Gelbach 2016]:

$$\frac{dY}{dT} = \sum_{k=1}^K \frac{\partial Y}{\partial m_k} \frac{\partial m_k}{\partial T} + R$$

- [Figure 7: Mediation]
-

# Figure 7: Mediation Analysis



***Certified vocational skills remain the most important mediator: equal impact for VT and VT+M groups***  
***Expectations play an almost equally important role: VT+M impacts smaller because of revised expectations, not skills***

## **Discussion**

[External Validity]

[Policy Implications]

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## External Validity

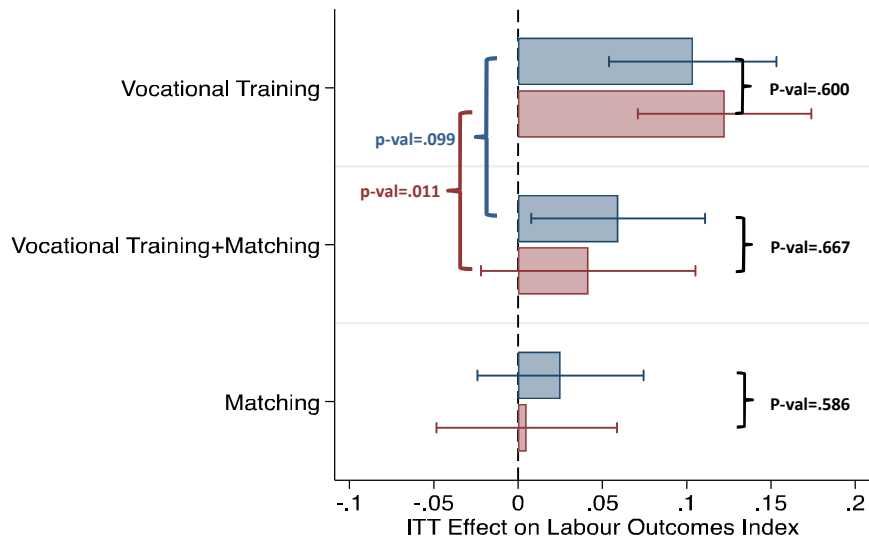
- treatments:
    - VT is scalable; match offers are low cost
    - unusual? no market substitute for match offers
    - provide information less likely to be interpreted personally?
  - firms:
    - improved targeting of firms with vacancies → higher call back rates
-

## External Validity

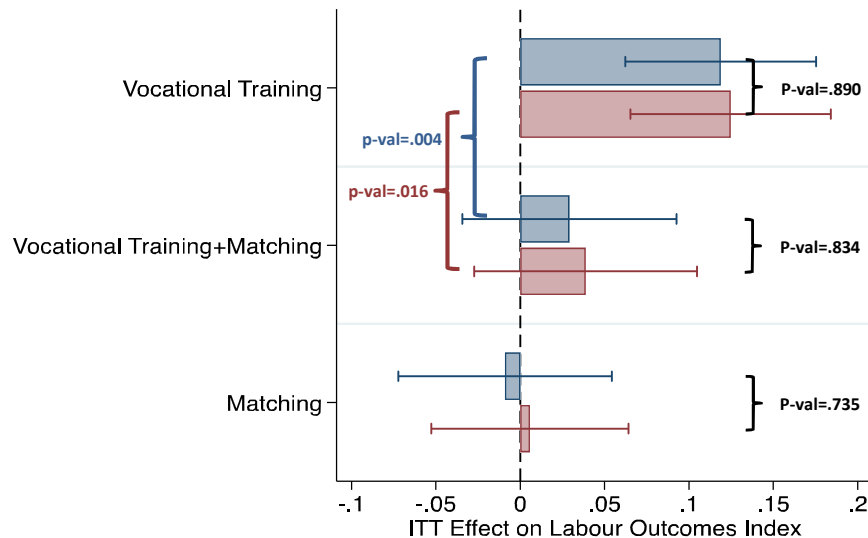
- workers: disadvantaged youth [Card *et al.* 2011, Attanasio *et al.* 2012]
  - consider if results hold in alternative samples:
    - cognitive ability
    - self-evaluation (composite measure combining LOC, self-esteem...)  
[Falk *et al.* 2006, Heckman *et al.* 2006, Dohmen *et al.* 2009, Caliendo *et al.* 2015]
  - [Figure A1: External Validity]
-

# Figure A1: External Validity

## PANEL A: Heterogeneity by Cognitive Skills



## PANEL B: Heterogeneity by Self-evaluation



Legend for Panel A:  high cognitive skills     low cognitive skills

Legend for Panel B:  high self-evaluation     low self-evaluation

## Implications for Job Assistance Policies: Debiasing Beliefs

- labor market entrants have biased beliefs
  - increasingly realistic controls vs euphoric trainees
  - should policy makers try to debias beliefs/target job assistance?
    - backfires for skilled workers
    - opposite for low skilled workers: info  $\succ$  credit
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## Conclusions

- how do workers search for jobs in urban labor markets?
- long run and granular evidence on job search process in a low-income context
- interventions → expectations → job search behaviors → long run labor market outcomes
- foundational role of worker expectations (alongside skills)
- implications for design and targeting of labor market interventions