Information Frictions in Labor Markets: Cross-Country Evidence from Employment Durations

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Motivation:

- A third of the worlds population is aged 16 to 35 and lives in a less developed country.
- A large number are unemployed or, more often, underemployed in that they have fewer hours of work than they would like at prevailing wages (Behrman 1999; World Bank 2012).
- Tackling unemployment is among the highest priorities in developing countries (World Bank 2012)

Motivation: Economic Development and Labor Markets

- High self-employment (Gollin, 2002)
- Average hours worked are higher in low-income countries - Bick, Fuchs-Schündeln & Lagakos (2018)
- Unemployment does not vary systematically with income per capita - Caselli (2005)
- Ratio of unemployment to the labor force excluding self-employment is much higher in poorer countries - Poschke (2018)
- Labor market flows - Donovan, Liu & Schoellman (2018)
  - Exit rates 3 times higher, and
  - Job finding rates 2 times higher.

Motivation:
Economic Development and Labor Market Flows

There are reasons to believe that high degree of labor market turnover is costly to an economy:

- High returns to tenure and low returns to experience (Lagakos et al., 2018)
- Encourages low-productivity own-account work & self-employment (Poschke, 2013 & 2016)
- Small firms are less productive (Hsieh & Klenow 2009)

Motivation: Labor Market Flows and Frictions

Credit friction

- Impedes entrepreneurship, formation of new firms, and thereby slows reallocation of labor to non-ag. (Blattman, Fiala & Martinez, 2014, Bianchi & Bobba, 2013)

Matching friction

- Job training / Skill certification RCT (Adebe et al. 2017)
- Two-sided constraints: 1/ firms' reluctance to hire inexperienced candidates and 2/ mismatched reservation wages. (Adebe et al. 2017)
- Provision of information improves allocation of jobs and employee welfare (Banerjee & Chiplunkar, 2018)

Motivation: Research question

- How does labor market turnover evolve with economic development?
- Can information frictions rationalize the observed patterns?
- Information friction:
  - speed and scope of learning about worker's productivity in a particular job
  - symmetric for worker and employer.

Motivation: Contributions

1. Consolidate 211 household and labor force surveys for 32 countries.
2. New stylized facts on labor market turnover and development.
   - Using distribution of *ongoing* employment durations we document that:
   - Labor market turnover is higher in low income countries.
   - Job stability is lower in low income countries.
   - Estimate hazard function and distribution of *completed* durations.
3. Estimate a model of labor market turnover to match the distribution of *completed* durations.
   - Separation cost
   - Noise of signal.
   - Variance of match quality.

Motivation: Outline of talk

1. Empirical Evidence
   - Cross-country patterns of labor market turnover.
   - Based on *ongoing* employment durations.
2. Measurement
   - Link *ongoing* employment durations and hazard function
   - Link hazard functions to *completed* employment durations
   - Account for reporting biases.
   - Estimate hazard rates.
3. Model of Labor Market Turnover to disentangle potential channels:
   - Low skill dispersion
   - Information friction

A dataset of labor market turnover: Overview

Harmonized cross-country dataset of labor force and household surveys from 32 countries.

- Repeated cross-sections containing individual information on labor market outcomes and employment duration.
  ▸ Dataset Structure
- Questionnaire question:
  - *"When did you start this job?"*
  - *"How long have you been doing this job?"*
- Range from Niger ($745) to US ($50'000)

ongoing rotating panels and administrative data. ▸ Brazil

Name	Years	Sample size (in thds)	GDP per capita (PPP)	Source
Albania	2002–2012	59	5'076–10'002	LSMS
Argentina	2004–2006	234	13'357–15'327	LFS
Armenia	2013–2013	3	8'382–8'382	STEP
Austria	2004–2013	1'304	37'829–47'443	LFS
Belgium	2004–2013	764	35'779–43'441	LFS
Benin	2001–2001	7	1'503–1'503	123
Burkina Faso	2001–2001	7	1'100–1'100	123
Bulgaria	1995–2013	524	7'842–16'809	LSMS, LFS
Bolivia	2012–2012	2	5'859–5'859	STEP
Brazil	1996–2006	1'320	8'350–10'086	LSMS, LFS
China	2012–2012	2	10'945–10'945	STEP
Cote d'Ivoire	1985–2002	32	2'410–2'742	LSMS, 123
Colombia	2012–2012	3	11'932–11'932	STEP
Cyprus	2004–2013	258	29'237–36'179	LFS
Germany	2013–2013	365	44'522–44'522	LFS
Denmark	2004–2013	649	36'823–44'585	LFS
Spain	2004–2013	1'038	29'515–35'178	LFS
Estonia	2004–2013	153	16'398–27'560	LFS
Ethiopia	2013–2014	83	1'246–1'323	LFS, UES
France	2003–2017	1'729	32'188–39'374	LFS
Georgia	2013–2013	3	9'040–9'040	STEP
Ghana	2013–2015	13	3'716–3'716	STEP, LFS
Greece	2004–2013	1'257	25'632–32'072	LFS
Hungary	2004–2012	1'609	18'943–23'451	LFS
Ireland	2004–2013	1'489	40'824–49'726	LFS
Iraq	2006–2006	69	5'233–5'233	LSMS
Italy	2004–2013	4'557	32'516–36'437	LFS
Kenya	2013–2013	4	2'717–2'717	STEP
Kyrgyzstan	1998–1998	9	2'033–2'033	LSMS
Lao People's Democratic Republic	2012–2012	3	4'828–4'828	STEP
Sri Lanka	2012–2012	3	8'807–8'807	STEP
Lithuania	2004–2013	441	15'367–26'730	LFS
Latvia	2004–2013	243	13'943–22'581	LFS
Mexico	2005–2005	316	13'328–13'328	LFS
Macedonia, The Former Yugoslav Republic of	2013–2013	4	12'462–12'462	STEP
Mali	2001–2001	7	1'135–1'135	123
Niger	2002–2002	8	745–745	123
Nicaragua	2005–2005	20	3'554–3'554	LSMS
Netherlands	2004–2013	1'022	39'897–47'092	LFS
Peru	2009–2009	25	8'552–8'552	LFS
Philippines	2015–2015	3	Inf—Inf	STEP
Portugal	2005–2013	1'160	24'139–27'658	LFS
Romania	2004–2013	1'814	9'918–19'954	LFS
Senegal	2002–2002	11	1'833–1'833	123
Slovakia	2004–2013	455	17'222–27'691	LFS
Slovenia	2013–2013	49	29'149–29'149	LFS
Togo	2001–2001	6	1'135–1'135	123
Uganda	2009–2013	32	1'619–1'798	LSMS
Ukraine	2012–2012	2	10'463–10'463	STEP
United States	1998–2004	340	43'902–49'398	CEPR
Viet Nam	2012–2012	3	4'919–4'919	STEP
		23'513	745–49'726	

▸ Sub-sample ▸ Employment duration ▸ Hours worked ▸ Wage workers ▸ Ind. characteristics

A dataset of labor market turnover: Employment Duration

1. **Turnover:** Share of workers with $t < 24$ months. ▸ X country plot

   - There is more labor market turnover in low income countries.

2. **Job stability:** Share of worker with less than $t < 120$ months.
   ▸ X country plot

   - There is less job stability in low income countries.

3. **Separation rate:** Hazard function

   - We estimate *hazard functions* and *completed durations* that are consistent with reported *ongoing* employment duration.

→ Measurement

Measurement: From ongoing durations to hazard function

Dataset: we observe a density f_d of ongoing employment durations based on 1 cross-section.

Model in steady state:

- At each duration t, there is a separation probability s_t.

$\rightarrow \dot{f}_t = -s_t f_t$

- E_0 are (constant) per period employment inflows

$\rightarrow f_t = \exp(-\int_0^t s_t\, dt) E_0$

- Total employment is $E = \int_0^\infty f_t\, dt$

We observe :

$$f_{[\underline{t},\overline{t}]} = \frac{\int_{\underline{t}}^{\overline{t}} f_t\, dt}{E} = \frac{\int_{\underline{t}}^{\overline{t}} \exp(-\int_0^t s_t\, dt)\, dt}{\int_0^\infty \exp(-\int_0^t s_t\, dt)\, dt}$$

$\rightarrow$ We assume a functional form for s_t and estimate its parameters using data on $f_{[\underline{t},\overline{t}]}$.

Measurement:
From hazard function to completed durations

Let $\bar{f}_t$ and $\bar{F}_t$ be the *pdf* and *cdf* of completed durations.
The hazard function is:

$$s_t = \frac{\bar{f}_t}{1 - \bar{F}_t}$$

Integrating s_t and reshuffling yields:

$$\bar{f}_t \quad = \quad s_t \exp\left(-\int_0^t s_t \, dt\right) = \frac{s_t f_t}{E_0}$$

Let s be the average hazard. In steady state, $\frac{E_0}{E} = s$ holds.
Hence:

$$\bar{f}_t = \frac{s_t}{s} \frac{f_t}{E}$$

Measurement: Duration Reporting

Reported durations feature:

1. Rounding
2. Right-censoring
3. Heaping
   - Annual/bi-annual heaping/no heaping
   - Diebold (1997)
4. Heterogenous reporting across surveys

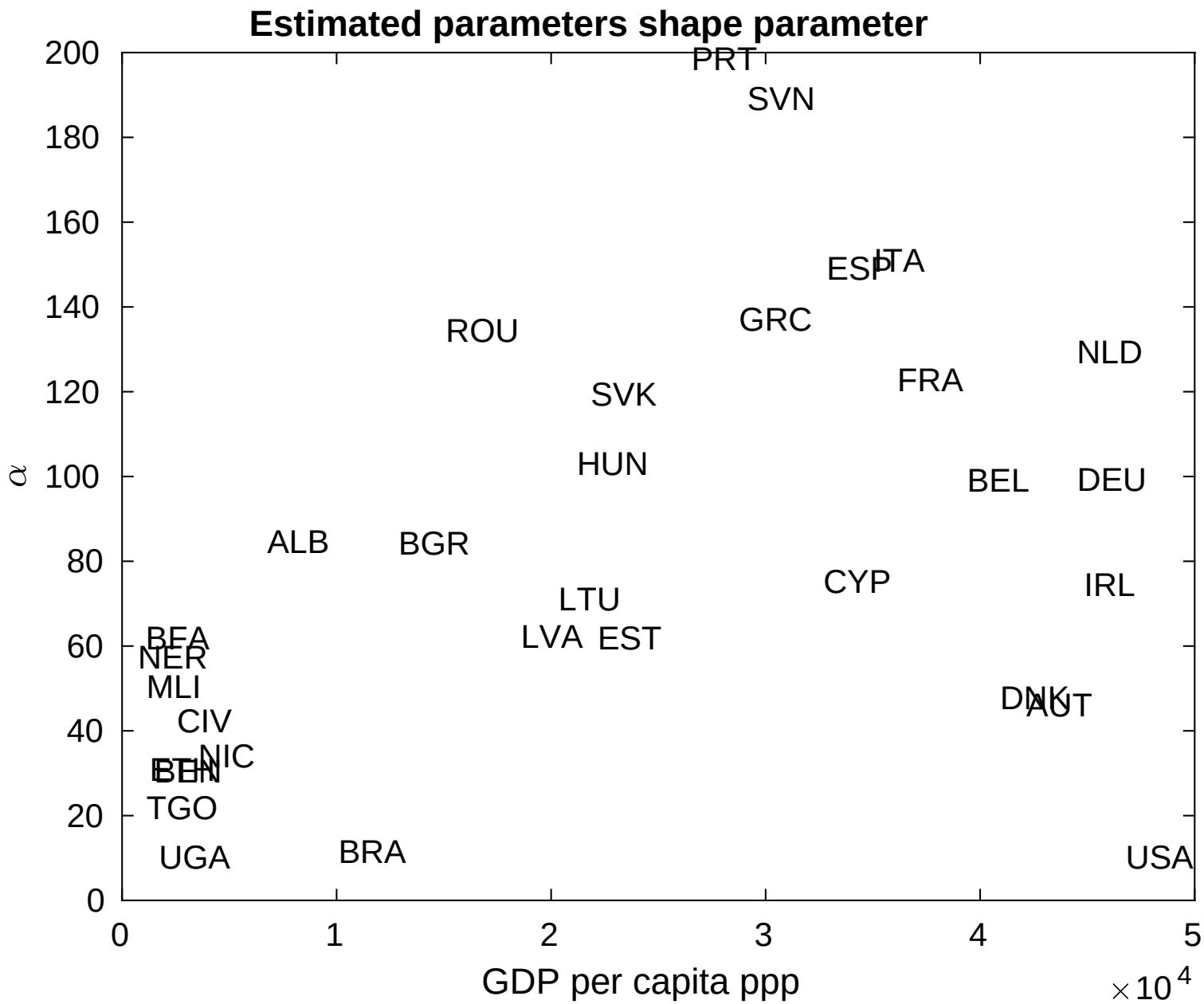
Measurement: A model of duration reporting

We assume that f_t follows a log-logistic distribution and estimate following parameters by maximum likelihood:

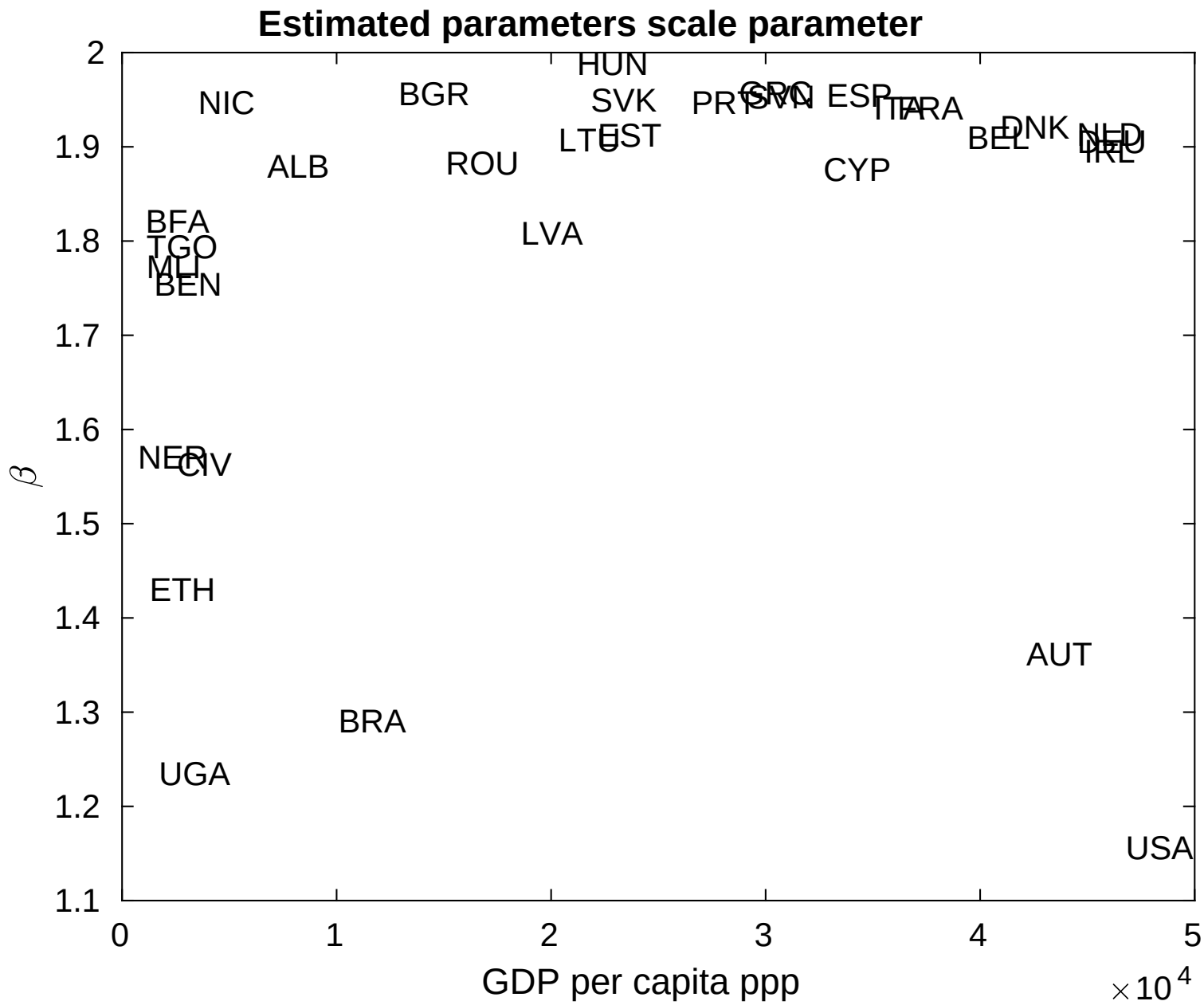
1. Scale parameter (α)
2. Shape parameter (β)
3. Misreport weight (δ)
4. Distaste in over-reporting (λ)
5. Distaste in year-rounding relative to half-year rounding (γ)

▸ Model of Duration Reporting ▸ Model fit : ETH ▸ Model fit : USA

Measurement: Estimated hazards



Measurement: Estimated hazards



Measurement: Summary

- Documented stylized facts based on ongoing durations
- Linked ongoing durations to hazard rates and completed durations
- Estimated the scale and shape parameters
- We now turn to the off-the shelf labor market turnover model

Distribution of completed employment durations are

1. hump-shaped and decrease with tenure
2.

- DMP model : (exogenous) constant separation rate.

$\rightarrow$ counterfactual distribution of employment duration

- Jovanovic learning model of labor market turnover : endogenous separation rate.

$\rightarrow$ in line with our empirical evidence

- Suggests two channels that drive labor market turnover:
  - s How much is there to learn from employer employer matches?
  - σ How long does it take to learn the match quality?

$\rightarrow$ We estimate the model to our datasets and disentangle the two mechanisms.

Model:

- Model of labor market turnover (Jovanovic, 1979a)
  - No unemployment / self-employment .
  - Focus on extensive margin.
- Firm worker match quality
  - $\mu \sim \mathcal{N}(m, s)$ is a measure of the quality of the match.
  - μ is **unknown** when match is formed.
- Output is observed with some noise σ
  - Identical for each firm-worker match.
- Separation rate varies with employment duration.

Model: Workers

- Risk neutral & infinitely lived.
- Let $X(t)$ be the output of worker

$$X(t) = \mu t + \sigma z(t)$$

where $z(t)$ is a Wiener Process.

- Draws of μ i.i.d. $\rightarrow$ firm-specific capital.

Model: Firms

- Risk neutral & maximize profits.
- Constant returns to scale technology
  - Labor is the only factor of production.
- Demand conditions are stationary.
- Labor demand
  - Competes for workers by offering wage contracts.
  - Lays-off workers by lowering wages.

Model: Information

- At tenure t, a worker has cumulative output $X(t) = x$.
- Available information on μ at time t

$$\begin{aligned} E_{x,t}(\mu) &= \frac{m/s + x/\sigma^2}{1/s + t/\sigma^2} \\ S(t) &= \frac{1}{1/s + t/\sigma^2} \end{aligned}$$

- $E_{x,t}(\mu) \sim \mathcal{N}(m, s - S(t))$
- As $t \to \infty, S(t) \to 0$
- State variables are $\{x, t\}$.

Model: Workers

- Worker choice
  1. If stay, receives wage $w[X(t), t]$
  2. If quit, incurs job switching cost c
- Present value of :
  1. Quit: Q
  2. Job: $\alpha\left(Q, w[X(t), t]\right)$

$$Q = \alpha\left(Q, w[X(t), t]\right) - c$$

Model: Choice problems

Workers choose both f and h s.t.:
Present value of a job with a firm that offers $w[X(t), t]$ when the value of quitting is Q:

$$\alpha\left(Q, [w]\right) = \int_0^\infty e^{-rt} \int_{-\infty}^\infty w\mathbf{h}\, dx\, dt + Q \int_0^\infty e^{-rt}\mathbf{f}\, dt$$

$h(x, t|w[X(t), t], Q) =$ probability that the worker does **not** quit before t

$f(t|w[X(t), t], Q) =$ the probability that the worker quits before tenure t

Firms maximize the discounted expected net revenue from employment of an employee with Q by setting wage contract $[w]$

$$\pi\left(Q, w[X(t), t]\right) = \int_0^\infty \int_{-\infty}^\infty E_{xt}(\mu)\mathbf{h}\, dx\, dt - \alpha\left(Q, [w]\right) + Q \int_0^\infty e^{-rt}\mathbf{f}\, dt$$

Model: Equilibrium

- The equilibrium wage contract states that the worker will be paid his expected match productivity

$$w(t) = m + I(t)$$

- $w(t) \sim \mathcal{N}(m, s - S(t))$
- The endogenous equilibrium object is $Q(s, \sigma, c)$ the value of quitting.

$$Q^\star = Q\left(w^\star(x, t)\right)$$

- Comparative statics $Q(s, \sigma, c)$:
  - s Higher variance in match quality *increases* the value of quitting (option value).
  - σ Higher noise *increases* the value of quitting.
  - c Higher separation cost *reduces* the value of quitting.

Model: Implications for employment duration

- Given Q and wage policy w, the distribution of *completed* employment duration is

$$f(t) = \phi\left(\frac{rQ - m}{p(t)^{1/2}}\right)(m - rQ)p(t)^{-3/2}\frac{S(t)^2}{\sigma^2}$$

  where $p(t) = s - S(t)$ is the precision of the signal at time t, and ϕ is the normal pdf.

- It is non-monotonic, with a peak in $t^\star$.
- Comparative statics of $t^\star$
  - s Higher variance in match quality *reduces* the peak of employment duration.
  - σ Higher variance of noise *increases* the peak of employment duration - it takes longer to learn.
  - c Higher separation cost *increases* the peak of employment duration - outside option is less attractive.

Model: Implications for returns to tenure

- Given Q and wage policy w, the pdf of wage tenure profile $w(t)$ is:

$$w(t) = \frac{1}{\sqrt{p(t)}} \left[\phi \left(\frac{y-m}{\sqrt{p(t)}} \right) - \phi \left(\frac{2rQ-m-y)}{\sqrt{p(t)}} \right) \right]$$

  where ϕ is the normal pdf.

- Probability of absorption decreases in y.
- Comparative statics of $\bar{w}$ w.r.t.
  - s Higher variance increase returns to tenure
  - σ Higher variance of noise increases returns to tenure
  - c Higher separation cost lowers returns to tenure.

Calibration:

- We calibrate the model to monthly frequency.
- Use s to hit return to tenure
- Use σ and c to hit distribution of employment duration
- We estimate (s, c, σ) for each country by SMM s.t. we match the distribution of *completed* employment durations:

$$\min_{s,c,\sigma} (f(t|w,Q) - \bar{f}_t)\mathbf{I}(f(t|w,Q) - \bar{f}_t)'$$

Conclusion:

- We document that labor market turnover is higher and job stability lower in low income countries for permanent wage workers in urban labor markets.
- We estimate hazard function and completed employment durations for 31 countries.
- Lean on the standard model of labor market turnover to analyze cross-country pattern of employment durations.
- Work in progress.
  - Heterogeneity: Estimate hazards controlling for individual characteristics.
  - Estimate s, c, σ for each country.

Appendix: A Model of Duration Reporting

- The employment durations of individual i follows a log-logistic distribution with scale α and shape parameter β:

$$D_i^* \sim F(\alpha, \beta)$$

- Each individual has some preference for reporting captured by U_i.

$$U_i \sim \mathrm{U}[0, 1]$$

- An individual $i \in I$ is characterized by (D_i^*, U_i) where $\{(D_i^*, U_i)\}_{i \in I}$ is i.i.d.

Appendix: A Model of Duration Reporting

Given D_i^*, an agent i has the following choice set:

$$\mathcal{C}(D_i^*) = \{D_0(D_i^*), D_{s,+}(D_i^*), D_{s,-}(D_i^*), D_{b,+}(D_i^*), D_{b,-}(D_i^*)\}$$

1. **Mere-Rounding (MR)**
2. **Small-Over-Reporting (SOR)**
3. **Small-Under-Reporting (SUR)**
4. **Big-Over-Reporting (BOR)**
5. **Big-Under-Reporting (BUR)**

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1. **Mere-Rounding (MR)** $D_0(D_i^*) = \lfloor D_i^* \rceil$
2. **Small-Over-Reporting (SOR)**
3. **Small-Under-Reporting (SUR)**
4. **Big-Over-Reporting (BOR)**
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1. **Mere-Rounding (MR)**
2. **Small-Over-Reporting (SOR)**

$$D_{s,+}(D_i^*) = \begin{cases} \min_{m \in \mathbb{N}} \{c_s \cdot m \ : \ c_s \cdot m - D_i^* \geq 0, \ 1 \leq m \leq \bar{m}\} & \text{if } D_i^* \leq c_s \bar{m} \\ \infty & \text{otherwise} \end{cases}$$

3. **Small-Under-Reporting (SUR)**
4. **Big-Over-Reporting (BOR)**
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1. **Mere-Rounding (MR)**
2. **Small-Over-Reporting (SOR)**
3. **Small-Under-Reporting (SUR)**

$$D_{s,-}(D_i^*) = \begin{cases} \min_{m \in \mathbb{N}} \{c_s \cdot m \ : \ D_i^* - c_s \cdot m \geq 0, \ 1 \leq m \leq \bar{m}\} & \text{if } D_i^* \leq c_s \bar{m} \\ \infty & \text{otherwise} \end{cases}$$

4. **Big-Over-Reporting (BOR)**
5. **Big-Under-Reporting (BUR)**

Appendix: A Model of Duration Reporting

Given D_i^*, an agent i has the following choice set:

$$\mathcal{C}(D_i^*) = \{D_0(D_i^*), D_{s,+}(D_i^*), D_{s,-}(D_i^*), D_{b,+}(D_i^*), D_{b,-}(D_i^*)\}$$

1. **Mere-Rounding (MR)**
2. **Small-Over-Reporting (SOR)**
3. **Small-Under-Reporting (SUR)**
4. **Big-Over-Reporting (BOR)**

$$D_{b,+}(D_i^*) = \min_{m \in \mathbb{N}} \{c_b \cdot m \ : \ c_b \cdot m - D_i^* \geq 0\}$$

5. **Big-Under-Reporting (BUR)**

Appendix: A Model of Duration Reporting

Given D_i^*, an agent i has the following choice set:

$$\mathcal{C}(D_i^*) = \{D_0(D_i^*), D_{s,+}(D_i^*), D_{s,-}(D_i^*), D_{b,+}(D_i^*), D_{b,-}(D_i^*)\}$$

1. **Mere-Rounding (MR)**
2. **Small-Over-Reporting (SOR)**
3. **Small-Under-Reporting (SUR)**
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5. **Big-Under-Reporting (BUR)**

$$D_{b,-}(D_i^*) = \min_{m \in \mathbb{N}} \{c_b \cdot m \ : \ D_i^* - c_b \cdot m \geq 0\}$$

Ex: parameter choice - EU LFS $c_b = 12$ - ETH
$c_s = 6, c_b = 12, \bar{m} = 6$

Appendix: A Model of Duration Reporting

Define a distance function $\rho\left(D_i^*, D_k\right)$

$$\rho\left(D_i^*, D_k\right) = \begin{cases} \left|D_i^* - D_0\right| & \text{if } D_k = D_0\left(D_i^*\right) \\ \lambda\left|D_i^* - D_k\right| / \left(\delta \boldsymbol{D_i^2}\right) & \text{if } D_k = D_{s,+}\left(D_i^*\right) \\ \left|D_i^* - D_k\right| / \left(\delta \boldsymbol{D_i^2}\right) & \text{if } D_k = D_{s,-}\left(D_i^*\right) \\ \lambda\gamma\left|D_i^* - D_k\right| / \left(\delta \boldsymbol{D_i^2}\right) & \text{if } D_k = D_{b,+}\left(D_i^*\right) \\ \gamma\left|D_i^* - D_k\right| / \left(\delta \boldsymbol{D_i^2}\right) & \text{if } D_k = D_{b,-}\left(D_i^*\right) \end{cases}.$$

The conditional probability of reporting the duration $D_k^* \in \mathcal{C}$ given D_i^* is

$$\Pr\left(D_k \mid D_i^*\right) = \frac{1/\rho\left(D_i^*, d_k\right)}{\sum_{k'} 1/\rho\left(D_i^*, d_{k'}\right)}.$$

The choice is deterministic for i, i.e. the location of U_i determines which of D_k is reported. Back

Appendix: Regressions

	Mean employment duration				Var of employment duration, log			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita, log	13.51***	−13.67***	−21.29***	−9.94	0.21***	−0.29***	−0.35***	0.11
	(1.40)	(5.02)	(6.66)	(11.01)	(0.02)	(0.07)	(0.11)	(0.17)
EPLEX				−75.52				−0.23
				(51.10)				(0.81)
Sample average	108.5	108.5	108.5	114.38	9.36	9.36	9.36	9.43
Country FE	N	Y	Y	Y	N	Y	Y	Y
Year FE	N	N	Y	Y	N	N	Y	Y
Observations	218	218	218	55	218	218	218	55
R^2	0.30	0.92	0.96	0.99	0.39	0.92	0.95	0.99

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix: Regressions

	Employment duration	
	(1)	(2)
Gender	-8.08^{***}	-7.88^{***}
	(0.08)	(0.08)
Age 26-36	45.33^{***}	43.20^{***}
	(0.15)	(0.15)
Age 36-46	87.02^{***}	84.34^{***}
	(0.22)	(0.23)
Age 46-56	138.93^{***}	136.54^{***}
	(0.15)	(0.15)
Age 56-66	204.04^{***}	204.30^{***}
	(0.18)	(0.18)
Secondary	15.56^{***}	24.50^{***}
	(0.26)	(0.28)
Tertiary	17.04^{***}	29.57^{***}
	(0.26)	(0.28)
Country-Year FE	N	Y
Observations	5,938,434	5,938,434
R^2	0.28	0.30
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$	

Appendix: Dataset

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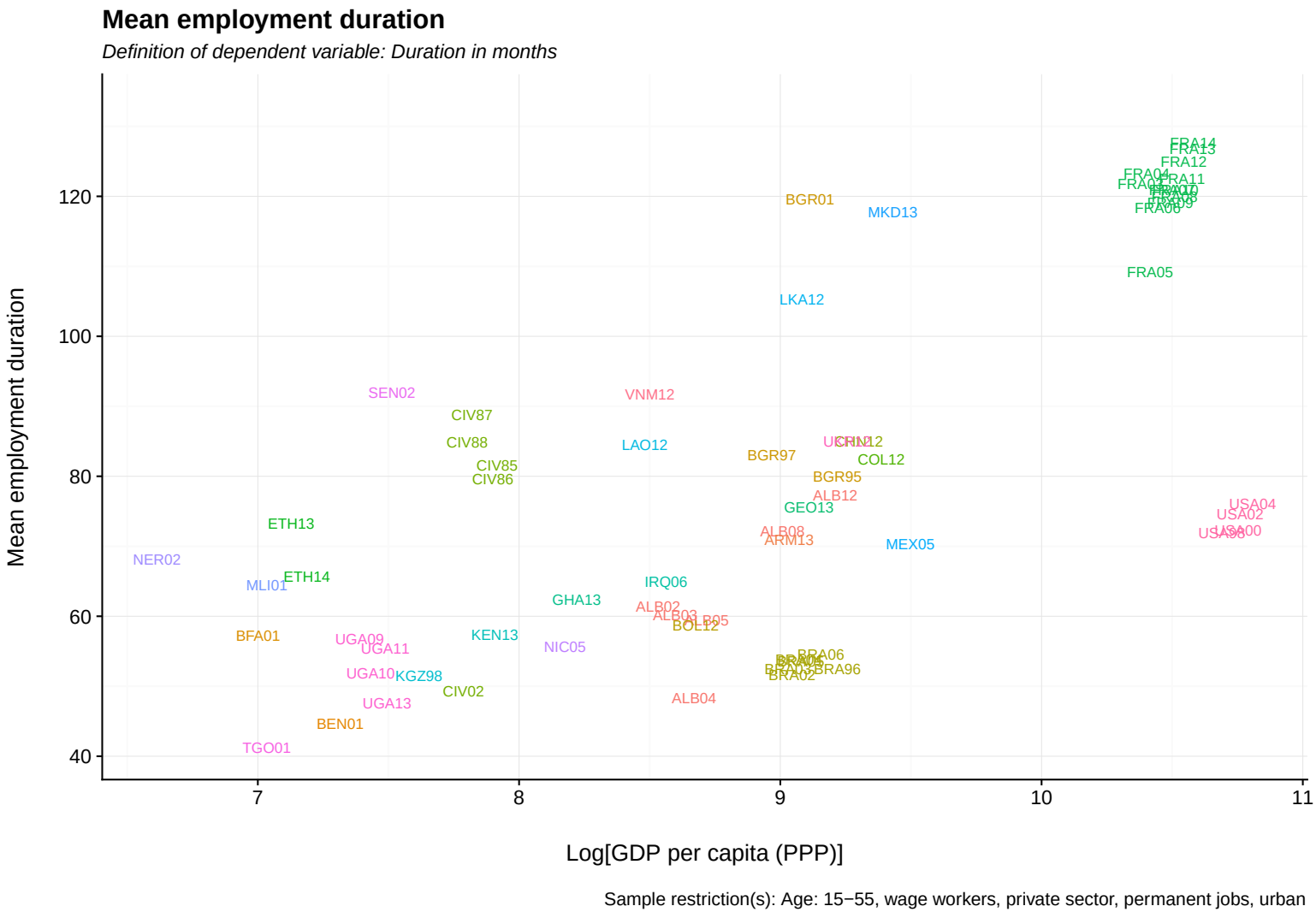

Sample restriction(s): Age: 15−55, wage workers, private sector, permanent jobs, urban

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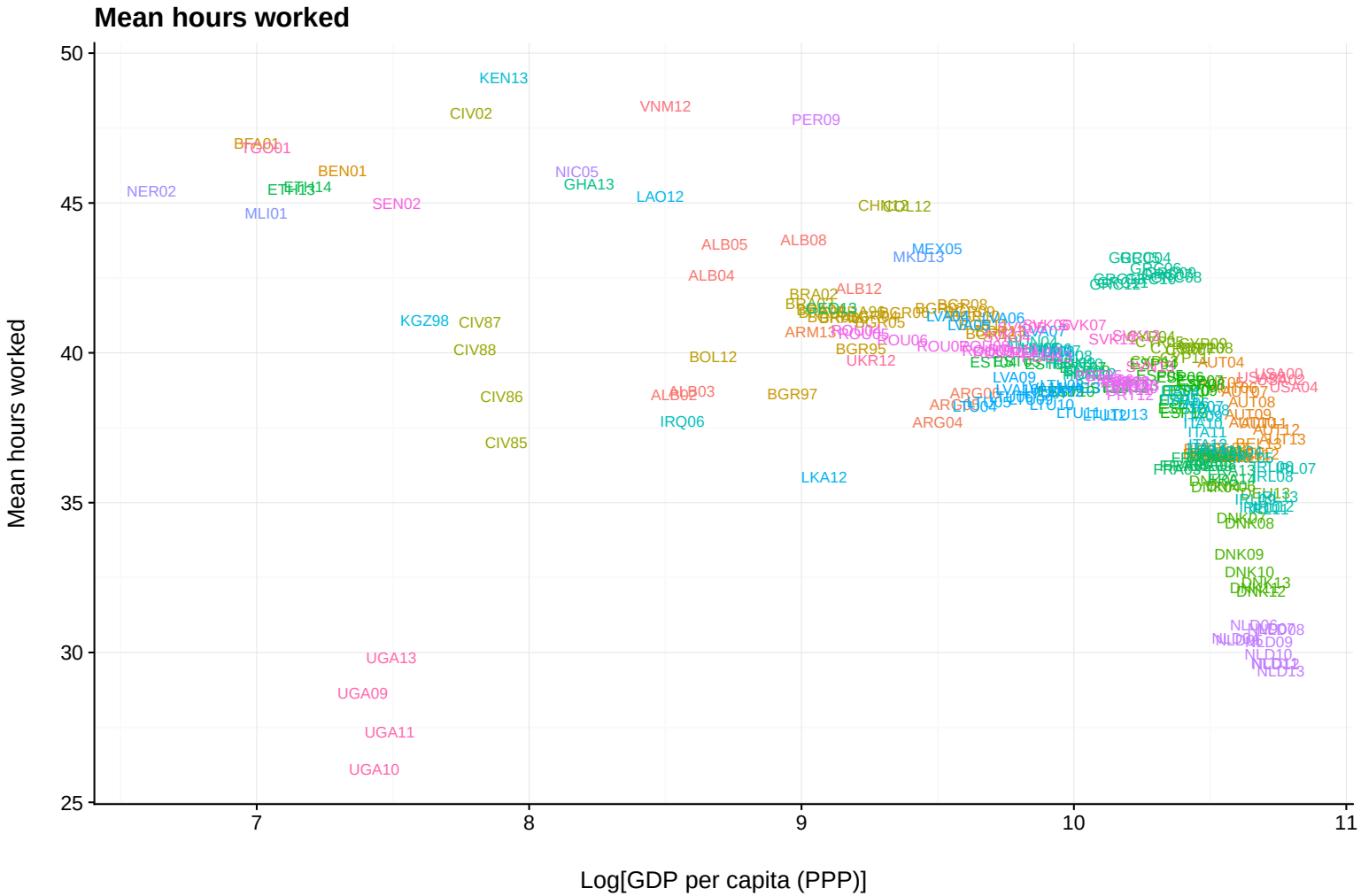

Sample restriction(s): Age: 15−55

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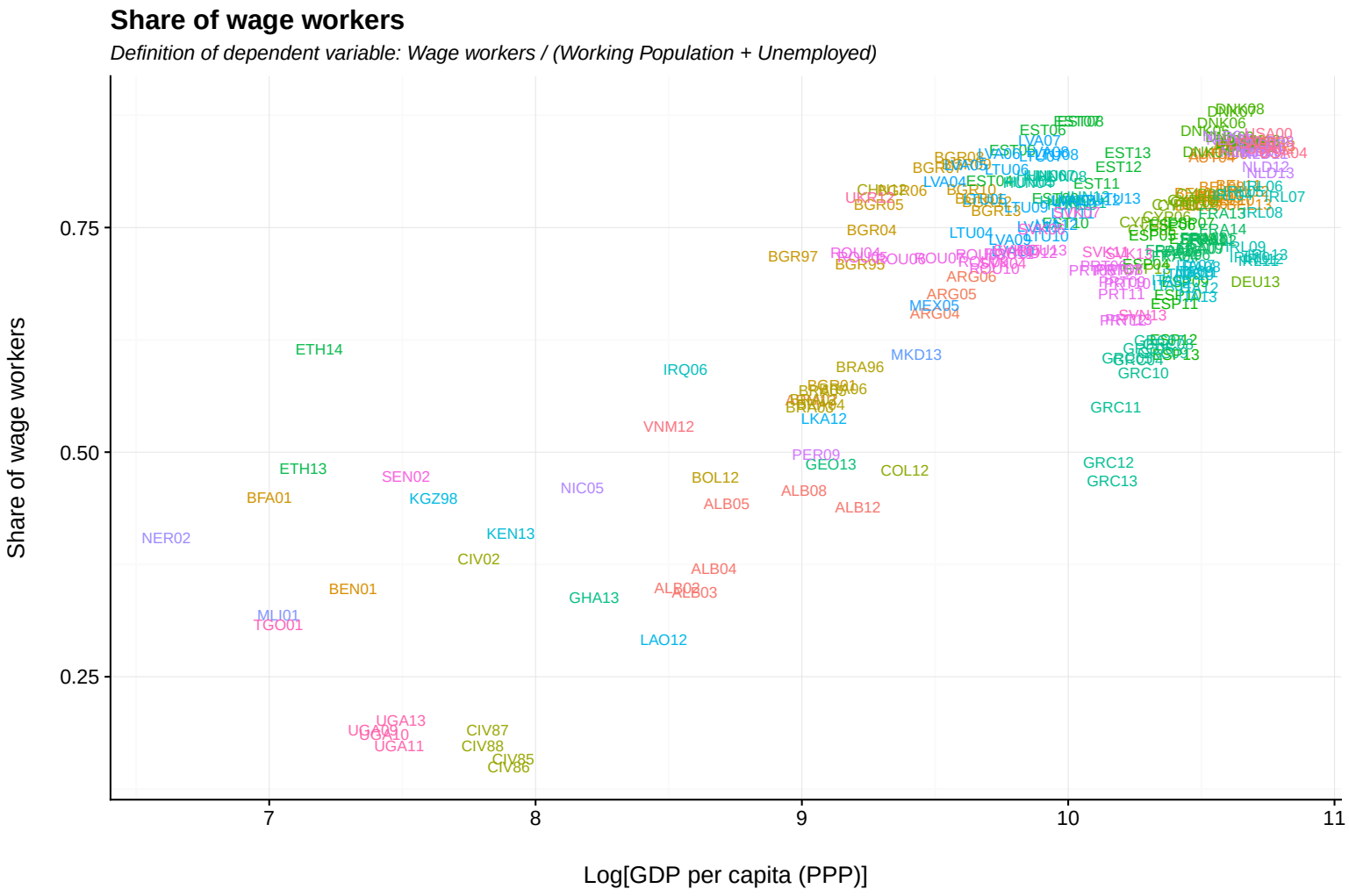

Sample restriction(s): Age: 15−55

Name	Years	Sample size (in thds)	Source
Albania	2002–2012	8	LSMS
Armenia	2013–2013	1	STEP
Austria	2004–2013	367	LFS
Belgium	2004–2013	281	LFS
Benin	2001–2001	2	123
Burkina Faso	2001–2001	2	123
Bulgaria	1995–2013	84	LSMS, LFS
Bolivia	2012–2012	1	STEP
Brazil	1996–2006	428	LSMS, LFS
China	2012–2012	1	STEP
Cote d'Ivoire	1985–2002	4	LSMS, 123
Colombia	2012–2012	1	STEP
Cyprus	2004–2013	82	LFS
Germany	2013–2013	139	LFS
Denmark	2004–2013	229	LFS
Spain	2004–2013	229	LFS
Estonia	2005–2013	29	LFS
Ethiopia	2013–2014	10	LFS, UES
France	2003–2017	368	LFS
Georgia	2013–2013	1	STEP
Ghana	2013–2015	1	STEP, LFS
Greece	2004–2013	237	LFS
Hungary	2004–2012	271	LFS
Ireland	2004–2013	239	LFS
Iraq	2006–2006	7	LSMS
Italy	2004–2013	1'041	LFS
Kenya	2013–2013	1	STEP
Kyrgyzstan	1998–1998	1	LSMS
Lao People's Democratic Republic	2012–2012	0	STEP
Sri Lanka	2012–2012	0	STEP
Lithuania	2004–2013	97	LFS
Latvia	2004–2013	48	LFS
Mexico	2005–2005	48	LFS
Macedonia, The Former Yugoslav Republic of	2013–2013	1	STEP
Mali	2001–2001	1	123
Niger	2002–2002	1	123
Nicaragua	2005–2005	3	LSMS
Netherlands	2004–2012	451	LFS
Philippines	2015–2015	0	STEP
Portugal	2005–2013	281	LFS
Romania	2009–2013	191	LFS
Senegal	2002–2002	2	123
Slovakia	2007–2013	56	LFS
Slovenia	2013–2013	14	LFS
Togo	2001–2001	1	123
Uganda	2009–2013	1	LSMS
Ukraine	2012–2012	1	STEP
United States	1998–2004	150	CEPR
Viet Nam	2012–2012	1	STEP
		5'413	

Sample restriction: individuals aged 20-65, urban, permanent wage workers.

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Appendix: Dataset

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Sample restriction(s): Age: 15−55, wage workers, private sector, permanent jobs, urban

Appendix: Descriptives

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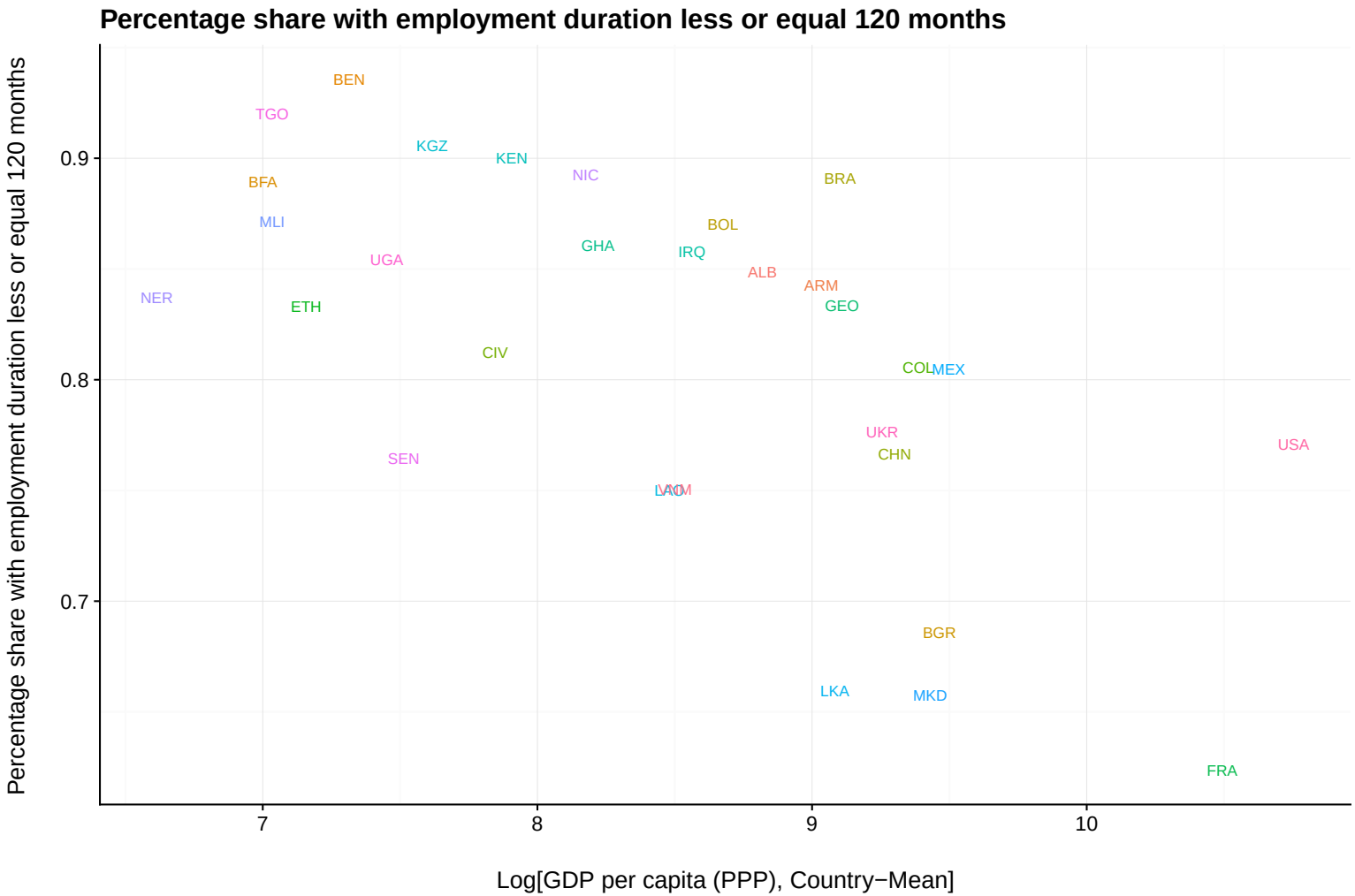

Sample restriction(s): Age: 15−55, wage workers, private sector, permanent jobs, urban

Appendix: Cross-Country Dataset

Harmonize following information:

- Individual characteristics : age, education, gender.
- Employment status
- Hours worked
- Labor income
- Employment duration
- Contract type
- Industry, occupation
- Location identifiers

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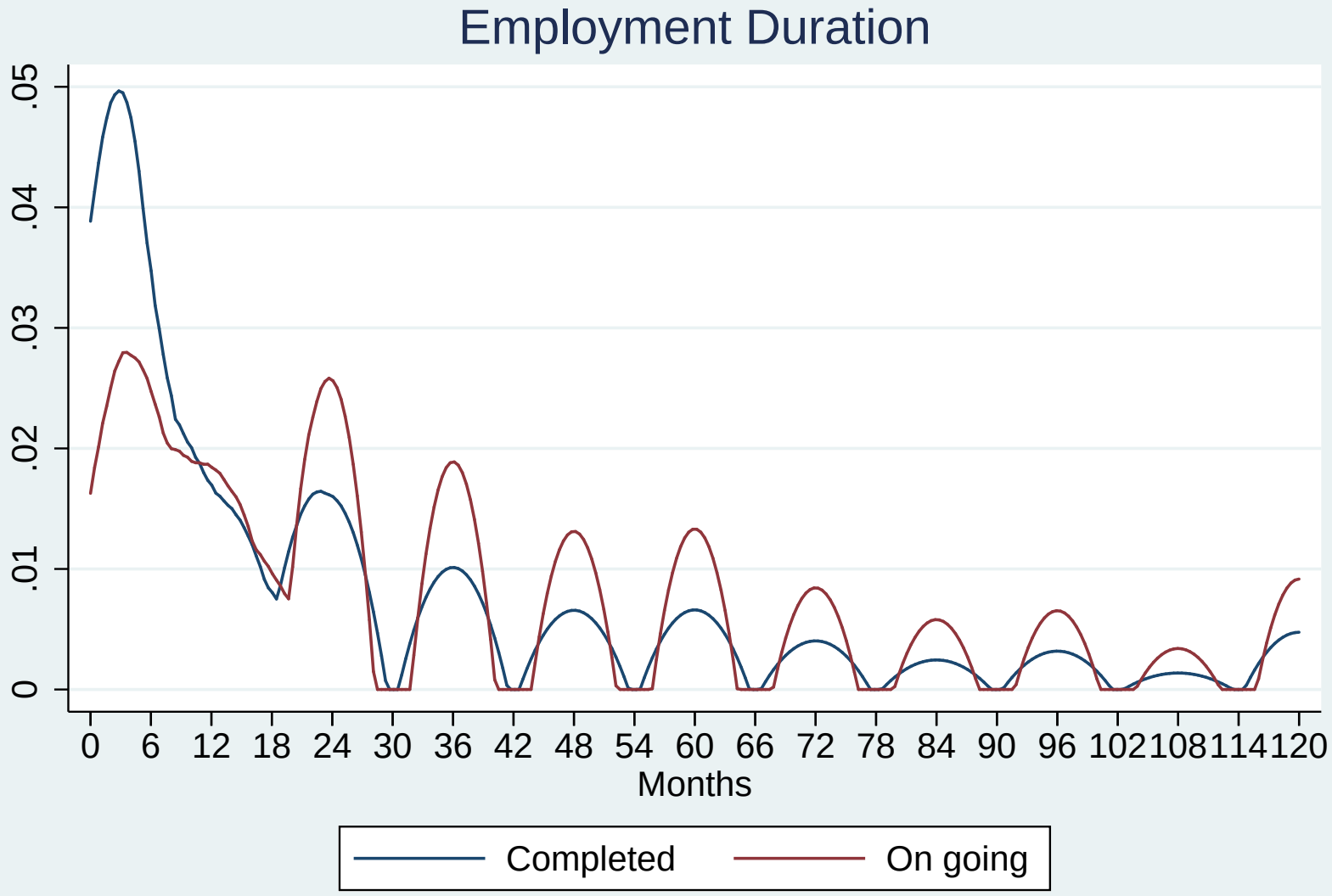
Appendix: Rotating panel



Sample: wage workers, age 20−65. Source: PME 2002−2006

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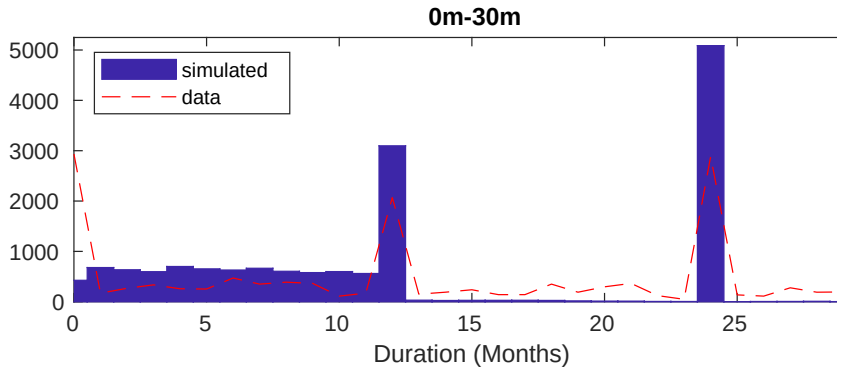
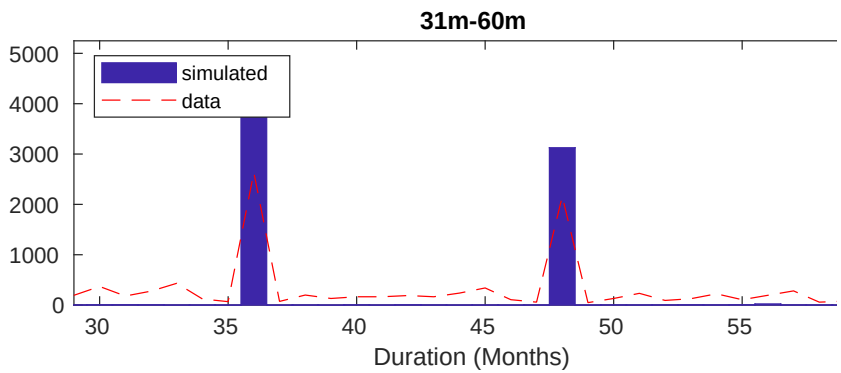
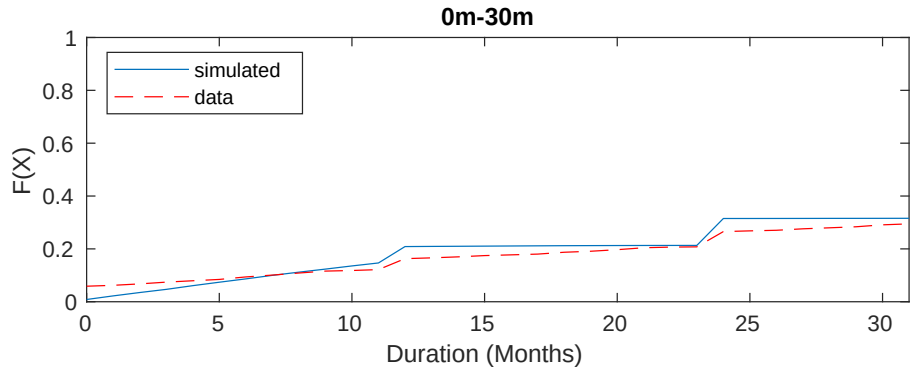
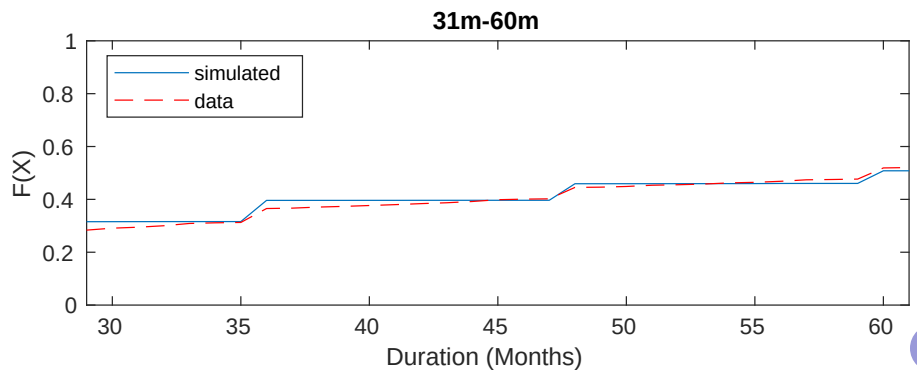
Appendix: Empirical model fit: ETH









Appendix: Empirical model fit: USA