LABOR MARKET DYNAMICS AND DEVELOPMENT

Online Only Appendix*

Kevin Donovan

Will Jianyu Lu

Todd Schoellman

April 2023

This appendix provides additional details on the data sources and data construction as well as additional empirical results for Donovan, Lu and Schoellman (forthcoming).

*The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis, the Federal Reserve System, the Central Bank of Chile, its Board members, or the data providers. Aggregated results, code, and documentation are available online at www.lfsdata.com.

Table of Contents for Appendix

A Data Sources

This appendix provides details on our data sources, data construction, and sample coverage. In addition, we are making documentation, code, and results on labor market flows by country available at the project website, www.lfsdata.com.

A.1 Countries with Rotating Panel Labor Force Surveys

We are aware of a large number of countries that have instituted a rotating panel labor force survey for at least some years (many countries have added a rotating panel design, while a few have moved away from one). All European Union countries have labor force surveys with such a design, organized and collected under the European Union Labour Force Survey. Additionally, at least 35 other countries have instituted a rotating panel labor force survey at some point. Basic information for most countries' labor force surveys can be found under the name given at the website of the International Labour Organization at https://www.ilo.org/dyn/lfsurvey/lfsurvey.home.

We have been able to clarify with the national statistical agencies of most countries the conditions (if any) under which they will make the microdata with individual identifiers available for research purposes. Table A1 shows the countries included in our data set. The second column gives the reference to the data set or data sets that we use to study labor market flows for each country. The hyperlink leads to the appropriate reference in the reference list, which gives the name of the statistical agency who produces the data, the distributor (if different), the name of the data set, the version of the data set or the date it was accessed, and a url for further information. The third column provides a brief description of how we acquired the data. *Available online* indicates that the data can be easily accessed online; the reference includes a url. In some cases they can simply be downloaded, but we also include countries that have a short and minimal registration or application process. *Application required* indicates that data can be accessed under somewhat stricter conditions. This typically includes submitting a formal application and research proposal to the relevant national statistical agency. It might also include

assurances that the researcher will not disseminate the data, plans to safeguard the data, or a fee. *Personal correspondence* indicates that the data were acquired through direct communication with the national statistical office.

The European Union Labour Force Survey is a complicated case. Eurostat does not make the data with longitudinal identifiers available to researchers. However, roughly half of EU countries use consistent household and person identifiers within some or all years, which makes it possible to match people across quarters within a calendar year.[1] For France and the United Kingdom, we are also able to access microdata with longitudinal identifiers directly from the national statistical office (via Quételet PROGEDO Diffusion and the Office for National Statistics, respectively). We use these data instead so that we can also match individuals across calendar years and because they include additional information about certain variables of interest. In the European Union Labour Force Survey it is not possible to match data for Greece or Spain, but we acquired the data separately from the national statistical offices (Hellenic Statistical Authority [ELSTAT] and the Instituto Nacional de Estadistica [INE], respectively).

A number of countries appear to have rotating panel labor force surveys that we cannot access or that are not useful for our research design. One prominent example is the remaining countries in the European Union Labour Force Survey that randomize identifiers across quarters within every year. Table A2 gives the remaining countries we are aware of, again with the name of the survey and the reason why the data are not included.

Restricted access indicates data that are available under one or more of three restrictive conditions: researchers have to be citizens/nationals of the country; they have to be affiliated with a university or research institute of the country; or they have to travel to a secure location in the country. *Confidential* indicates that data are not available to researchers. *Wrong rotation scheme* indicates that the workers can be matched at a

[1]We thank Nik Engbom for bringing this point to our attention. We were able to confirm that these identifiers are consistent for some countries with Eurostat. We determined which countries could be matched in this way through experimentation; the relevant countries have extremely high rates of agreement over time on age and sex, while others do not.

TABLE A1: Rotating Panel Labor Force Surveys – Included

Country	Data Reference	How Acquired[a]
Albania	Albanian Institute of Statistics (2012–2013)	Available online
Argentina	Instituto Nacional de Estadística y Censos, República Argentina (2003–2020)	Available online
Austria	Eurostat (2005–2020)	Application required
Bolivia	Instituto Nacional de Estadística, Estado Plurinacional de Bolivia (2015–2018)	Available online
Botswana	Statistics Botswana (2019)	Personal correspondence
Brazil[b]	Instituto Brasileiro de Geografia e Estatística (2002–2011)	Available online
	Instituto Brasileiro de Geografia e Estatística (2012–2021)	Available online
Bulgaria	Eurostat (2005–2020)	Application required
Chile	Instituto Nacional de Estadística de Chile (1986–2021)	Available online[c]
Costa Rica	Instituto Nacional de Estadística y Censos de Costa Rica (2010–2021)	Available online
Croatia	Eurostat (2005–2020)	Application required
Cyprus	Eurostat (2005–2020)	Application required
Czech Republic	Eurostat (2005–2020)	Application required
Denmark	Eurostat (2005–2020)	Application required
Dominican Republic	Banco Central República Dominicana (2016–2017)	Personal correspondence
Ecuador	Instituto Nacional de Estadística y Censos, Ecuador (2007–2021)	Available online
Egypt, Arab Rep.	OAMDI (2008–2012)	Application required
Estonia	Eurostat (2005–2020)	Application required
France	INSEE - producers; ADISP - distributor (2003–2017)	Application required
Georgia[b]	National Statistics Office of Georgia (2009–2016)	Available online
	National Statistics Office of Georgia (2017–2020)	Available online
Greece	Hellenic Statistical Authority (2005–2018)	Application required
Guyana[d]	Beuermann, Flores Cruz and Guyana Bureau of Statistics (2017)	Available online
	Guyana Bureau of Statistics (2018–2021)	Available online
Hungary	Eurostat (2005–2020)	Application required
Iceland	Eurostat (2005–2020)	Application required
India	Ministry of Statistics & Programme Implementation (2017–2018)	Available online
Ireland	Eurostat (2005–2020)	Application required
Italy	Eurostat (2005–2020)	Application required
Latvia	Eurostat (2005–2020)	Application required
Lithuania	Eurostat (2005–2020)	Application required
Luxembourg	Eurostat (2005–2020)	Application required
Malta	Eurostat (2005–2020)	Application required
Mexico	Instituto Nacional de Estadística y Geografía, Mexico (1995–2021)	Available online
Mongolia	National Statistical Office of Mongolia (2019–2020)	Available online
Netherlands	Eurostat (2005–2020)	Application required
Nicaragua	Instituto Nacional de Información de Desarrollo de Nicaragua (2009–2012)	Personal correspondence
Palestine	OAMDI (2000–2020)	Available online
Paraguay	Instituto Nacional de Estadística, Paraguay (2010–2017)	Available online
Peru	Instituto Nacional de Estadística e Informática, Peru (2003–2018)	Available online
Philippines	Philippine Statistics Authority (1988–2003)	Application required
Poland	Eurostat (2005–2020)	Application required
Portugal	Eurostat (2005–2020)	Application required
Romania	Eurostat (2005–2020)	Application required
Slovak Republic	Eurostat (2005–2020)	Application required
Slovenia	Eurostat (2005–2020)	Application required
South Africa	Statistics South Africa - producer; DataFirst - distributor (2008–2021)	Available online
Spain	Instituto Nacional de Estadística, Spain (2000–2020)	Application required
Sweden	Eurostat (2005–2020)	Application required
Switzerland	Swiss Federal Statistical Office (2010–2019)	Application required
United Kingdom	Office for National Statistics (1997–2021)	Available online
United States	Bureau of Labor Statistics creator, National Bureau of Economic Research - distributor (1976–2021)	Available online

[a] Brief description of how data were acquired. See text for details.
[b] Data come from multiple sources that agree sufficiently on outcomes of interest that we combine them.
[c] Data for 2010 onward are available online; earlier data accessed at Central Bank of Chile.
[d] Data for 2017 were collected through a joint effort by Guyana's Bureau of Statistics and the Inter-American Development Bank. Subsequent years were collected solely by the Bureau of Statistics.

TABLE A2: Rotating Panel Labor Force Surveys – Excluded

Country	Name[a]	Status[b]
Armenia	Labour Force Survey	Wrong rotation scheme
Australia	Labour Force Survey	Restricted access
Bangladesh	Labour Force Survey	Confidential
Canada	Labour Force Survey	Restricted access
Indonesia	National Labor Force Survey (Sakernas)	Only alternating quarters released
Israel	Labour Force Survey	Restricted access
Japan	Labour Force Survey	Wrong rotation scheme
Kenya	Quarterly Labour Force Survey	No response
Korea	Economically Active Population Survey	Restricted access
New Zealand	Household Labour Force Survey	Confidential
Nigeria	Household Labour Force Survey	No response
Pakistan	Labour Force Survey	Wrong rotation scheme
Russia	Labor Force Survey	Wrong rotation scheme
Rwanda	Labour Force Survey	Wrong rotation scheme
Saudi Arabia	Labor Force Survey	Confidential
Senegal	Labour Force Survey	Wrong rotation scheme
Taiwan	Manpower Survey	Wrong rotation scheme
Thailand	Labour Force Survey	Restricted access
Turkey	Household Labour Force Survey	Confidential

[a] Name of data set, in English if the national statistical office designates such a name.
[b] Brief description of why data cannot be acquired or are not useful for our purposes. See text for details.

different frequency, typically monthly or annually. Indonesia operates a quarterly rotating panel labor force survey but makes only semi-annual data available, which for our purposes is the same as the wrong rotation scheme. Rwanda operates a quarterly rotating panel labor force survey where each household is matched across six month spells. We explore using this data along with other countries where we can measure six-month flows in Appendix B. Finally, *no response* indicates that the country appears to collect the appropriate data, but we were unable to find the data or secure a response from the national statistical agency despite numerous attempts to do so.

Table A3 gives further details about the final data set. For each of the 49 countries it shows the years for which we have obtained data; the number of observations that can be matched across two consecutive quarters; the range of GDP per capita across those years, taken from World Bank (2021); and whether it is possible to track workers for three consecutive quarters.

TABLE A3: Sample Overview

Country	Years	Obs (1000s)	GDP per capita	3 Qtr Panel
Albania	2012 – 2013	37	11,200 – 11,400	Y
Argentina	2003 – 2020	872	16,700 – 24,600	
Austria	2010 – 2020	743	51,800 – 55,800	Y
Bolivia	2015 – 2018	247	8,000 – 8,700	Y
Botswana	2019 – 2019	1	16,300 – 16,300	
Brazil	2002 – 2021	9,431	11,800 – 15,800	Y
Bulgaria	2005 – 2007	92	14,800 – 17,100	
Chile	1986 – 2021	6,914	9,800 – 25,000	Y
Costa Rica	2010 – 2021	452	16,800 – 20,900	Y
Croatia	2010 – 2020	89	24,100 – 29,300	
Cyprus	2005 – 2020	261	33,200 – 40,500	Y
Czech Republic	2005 – 2010	591	30,400 – 34,600	Y
Denmark	2007 – 2020	306	50,100 – 57,200	
Dominican Republic	2016 – 2017	52	16,200 – 16,700	Y
Ecuador	2007 – 2021	394	9,800 – 12,100	
Egypt	2008 – 2012	205	9,800 – 10,300	
Estonia	2005 – 2020	90	25,300 – 36,400	
France	2003 – 2017	3,070	40,400 – 44,600	Y
Georgia	2009 – 2020	210	9,100 – 15,000	Y
Greece	2005 – 2018	1,452	27,800 – 37,600	Y
Guyana	2017 – 2021	19	12,000 – 13,100	
Hungary	2005 – 2020	1,640	24,200 – 32,600	Y
Iceland	2005 – 2020	67	47,500 – 56,900	
India	2017 – 2018	190	6,200 – 6,500	Y
Ireland	2007 – 2016	705	52,300 – 72,200	Y
Italy	2005 – 2020	2,019	39,000 – 45,400	
Latvia	2007 – 2016	78	21,200 – 27,500	
Lithuania	2005 – 2020	227	21,100 – 37,200	
Luxembourg	2015 – 2019	30	113,200 – 116,500	
Malta	2009 – 2020	59	31,300 – 44,000	
Mexico	1995 – 2021	18,012	14,800 – 19,900	Y
Mongolia	2019 – 2020	28	11,700 – 12,500	Y
Netherlands	2005 – 2005	182	49,500 – 49,500	Y
Nicaragua	2009 – 2012	194	4,500 – 5,100	Y
Palestine	2000 – 2020	674	3,400 – 6,400	
Paraguay	2010 – 2017	45	10,400 – 12,600	Y
Peru	2003 – 2018	248	6,900 – 12,800	
Philippines	1988 – 2003	1,989	4,000 – 4,700	Y
Poland	2010 – 2020	878	24,000 – 33,200	
Portugal	2010 – 2020	544	30,000 – 34,900	Y
Romania	2005 – 2020	929	16,800 – 29,900	
Slovak Republic	2005 – 2020	639	20,100 – 31,900	Y
Slovenia	2014 – 2020	116	33,100 – 38,900	Y
South Africa	2008 – 2021	1,448	12,700 – 14,100	Y
Spain	2000 – 2020	7,197	34,800 – 40,800	Y
Sweden	2006 – 2020	1,631	45,500 – 52,900	Y
Switzerland	2010 – 2019	464	65,800 – 70,900	
United Kingdom	1997 – 2021	3,878	35,700 – 47,400	Y
United States	1976 – 2021	10,027	39,900 – 62,600	
Total:				
49 countries	628 country-years	79,666	3,400 – 116,500	28 countries

[a] *Table notes:* Range of PPP GDP per capita World Bank (2021), rounded to the nearest $100. An observation is a person surveyed in and matched between two consecutive quarters.

A.2 Longitudinal Weights

All of our countries provide sample weights so that cross-sectional moments are representative of the population of interest (typically the population, adult population, or urban population). However, the provided weights are not sufficient when constructing longitudinal moments such as the job-finding rate. The underlying problem is what is called *margin error* in the literature, or the failure to match workers with complete information across periods. This failure could arise because of attrition, temporary absence from the sample, inability to create a unique match, or nonresponse to the relevant outcomes in either period. If we drop all such observations and use the cross-sectional weights, then we are assuming that these variables are *missing at random*, while substantial evidence suggests that attrition is correlated with labor market transitions (Abowd and Zellner, 1985; Bleakley, Ferris and Fuhrer, 1999; Fujita and Ramey, 2009).

Multiple solutions to this problem have been proposed in the literature (see, for example, Bleakley, Ferris and Fuhrer (1999) or Fujita and Ramey (2009)). We post-stratify our weights so that the population distribution is the same in the matched and unmatched samples along dimensions of interest. For example, if unemployed people are more likely to move to find work and drop out of the sample, then they will be underrepresented in the longitudinally matched sample. Post-stratification increases the weight of the unemployed people in the longitudinal sample so that the implied unemployment rate is the same in the longitudinally matched sample as in the cross section.

An important question with post-stratification is which dimensions to use in reweighting the data. Adding more dimensions and fitting joint distributions rather than marginal distributions allows for a better match of longitudinal and cross-sectional data and reduces concern about attrition bias. On the other hand, adding too many dimensions generates practical problems as cell sizes become small and the adjustments to the original weights become large. At the extreme, post-stratification breaks down in cases where the unmatched sample has observations in a cell but the matched sample does not.

We focus on four dimensions that are available in all countries and are important

for understanding labor force dynamics: labor force status (wage worker, self-employed, unemployed, or inactive), age (in 10-year bins), gender, and education (Barro-Lee categories). We focus on labor force status because it is important for labor market flows; the other categories are correlated with labor market flows. We cannot fit the full joint distribution of these characteristics. Our compromise is to rake the weights so that the matched and unmatched samples for each country-year have the same density by education-labor force status cells and age-gender cells. In some cases, we have to aggregate categories slightly before raking. For example, the number of unemployed workers with tertiary education in developing countries or primary education in developed countries can be quite small; in such cases, we merge adjacent educational categories.

Table A4 shows the impact of re-weighting by comparing the original and adjusted weights. The two are highly correlated for all countries. The median absolute deviation is generally small, on the order of 0–25 percent. Another way to make the same point is to use original versus longitudinal weights to construct key moments. Figure A1 reproduces some of the main figures in the text but compares the raw versus adjusted data. Re-weighting has a negligible effect on the implied flows.

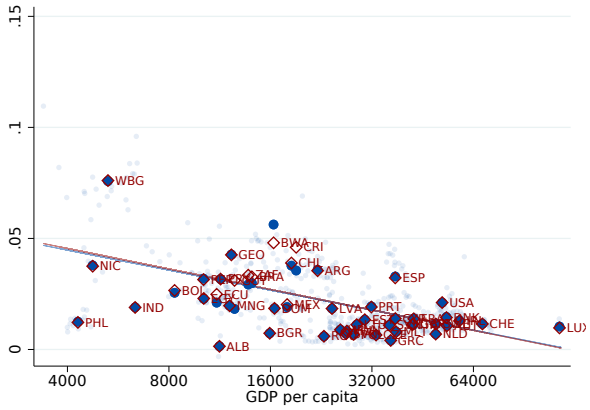
TABLE A4: Impact of Re-Weighting

Country	Weight Correlation	Median Absolute Change
Albania	0.997	0.039
Argentina	0.998	0.032
Austria	0.999	0.017
Bolivia	0.893	0.200
Botswana	0.713	0.255
Brazil	0.999	0.025
Bulgaria	0.994	0.017
Chile	0.998	0.035
Costa Rica	0.998	0.038
Croatia	0.998	0.021
Cyprus	0.993	0.024
Czech Republic	0.999	0.008
Denmark	0.989	0.047
Dominican Republic	0.999	0.011
Ecuador	0.991	0.060
Egypt	0.971	0.042
Estonia	0.996	0.026
France	0.998	0.026
Georgia	0.999	0.013
Greece	0.999	0.010
Guyana	0.981	0.087
Hungary	1.000	0.009
Iceland	0.952	0.037
India	1.000	0.004
Ireland	0.989	0.032
Italy	0.999	0.015
Latvia	0.996	0.030
Lithuania	0.998	0.021
Luxembourg	0.976	0.100
Malta	0.993	0.038
Mexico	0.999	0.020
Mongolia	0.995	0.052
Netherlands	0.998	0.034
Nicaragua	0.997	0.020
Palestine	0.998	0.016
Paraguay	0.990	0.040
Peru	0.994	0.038
Philippines	0.993	0.044
Poland	0.999	0.014
Portugal	0.997	0.024
Romania	0.999	0.011
Slovak Republic	0.998	0.010
Slovenia	0.998	0.024
South Africa	0.997	0.036
Spain	0.998	0.031
Sweden	0.995	0.025
Switzerland	0.999	0.012
United Kingdom	1.000	0.000
United States	0.994	0.043

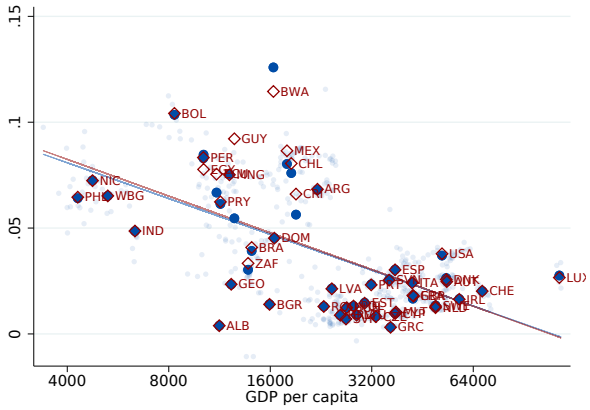
Table notes: Weight correlation is the correlation between the original cross-sectional weights and post-stratified weights. Median absolute change is the median of the absolute log deviation between cross-sectional weights and post-stratified weights.

Figure A1: Labor Market Flows (Adjusted vs Raw Data)

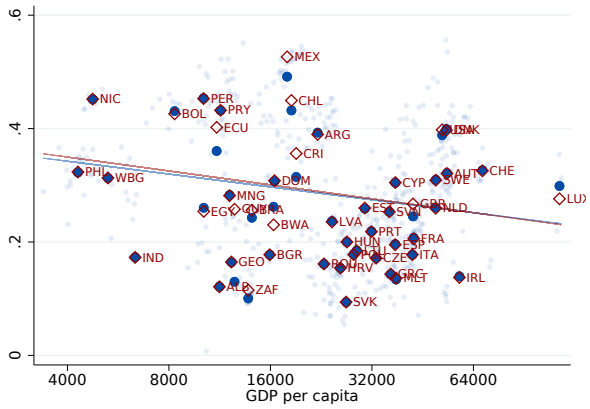
(a) Employment-Exit Rate to Unemployment



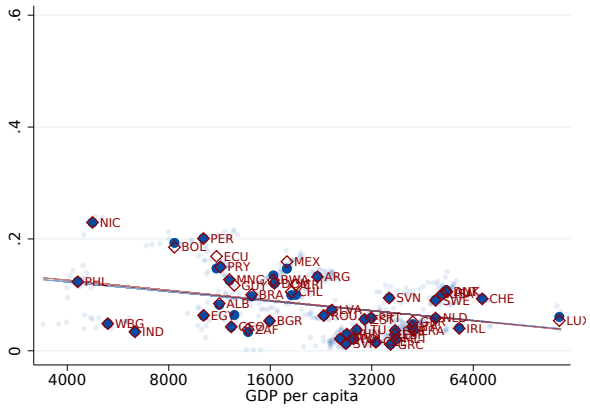
(b) Employment-Exit Rate to Inactivity



(c) Job-Finding Rate from Unemployment



(d) Job-Finding Rate from Inactivity



A.3 Seasonality

As we explain in Section II.A., we de-seasonalize all of our data on labor market flows before aggregating to the country-year level. This appendix provides details on how we do so as well as sensitivity analysis where we consider two alternative approaches.

Our starting point is to estimate and residualize off the effects of a multiplicative country-quarter specific interaction term. Mechanically, we construct the sample average flow $\overline{T}_{cyq}$ for country c in year y and quarter q. We regress log-flows on a country fixed effect and country-quarter interactions,

$$\log(\overline{T}_{cyq}) = d_c + d_{cq} + \varepsilon_{cyq}. \tag{1}$$

We do this separately for each flow. Our benchmark approach is then to residualize each flow of the country-quarter interactions and study the country-flow specific residuals. This approach normalizes each flow in each country by the level of the omitted category, which is the first quarter in all cases.

A potential concern is that the timing of seasonal cycles may vary by country. In this case, normalizing all country-flows to the first quarter level may not be innocuous. To explore this, we consider two alternative normalizations. Conceptually, the goal of these normalizations is to compare either the trough or the peak of the seasonal cycles across countries for each flow. To construct the trough, we identify for each country and flow the quarter of the year that has the lowest estimated fixed effect and we normalize to this level for each country-flow. To construct the peak, we identify for each country and flow the quarter of the year that has the highest estimated fixed effect and we normalize to this level for each country-flow.

Table A5 shows our main results for how labor market flows vary with development for each of these three methods of de-seasonalizing the data. Panel A shows our baseline approach, which is the same as Table I in the text. Panel B shows the same results if we normalize to the quarter with the lowest flows for each country-flow. The basic patterns remain largely unchanged. All flows are negatively correlated with development, and

TABLE A5: Aggregate Labor Market Flows with Different Seasonality Procedures

Panel A:	Exit Rate		Job-Finding Rate		Job-Job	Occupational
All countries	to U	to N	from U	from N	Rate	Switching
Log GDP per capita	-0.013***	-0.024***	-0.026	-0.017	-0.049***	-0.074***
	(0.005)	(0.004)	(0.022)	(0.014)	(0.009)	(0.014)
Observations	598	598	598	598	494	553
R-squared	0.323	0.363	0.019	0.037	0.390	0.314
Sample Average	0.022	0.037	0.292	0.085	0.057	0.105
Panel B:	Exit Rate		Job-Finding Rate		Job-Job	Occupational
Trough	to U	to N	from U	from N	Rate	Switching
Log GDP per capita	-0.014***	-0.026***	-0.032	-0.013	-0.038***	-0.091***
	(0.005)	(0.004)	(0.023)	(0.013)	(0.012)	(0.015)
Observations	548	554	574	562	465	500
R-squared	0.279	0.338	0.025	0.025	0.267	0.338
Sample Average	0.024	0.043	0.297	0.090	0.057	0.120
Panel C:	Exit Rate		Job-Finding Rate		Job-Job	Occupational
Peak	to U	to N	from U	from N	Rate	Switching
Log GDP per capita	-0.012**	-0.022***	-0.038*	-0.021*	-0.035***	-0.083***
	(0.005)	(0.003)	(0.020)	(0.011)	(0.010)	(0.016)
Observations	571	566	559	557	465	524
R-squared	0.288	0.344	0.043	0.078	0.271	0.320
Sample Average	0.020	0.034	0.264	0.074	0.051	0.111

Table Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered by country.

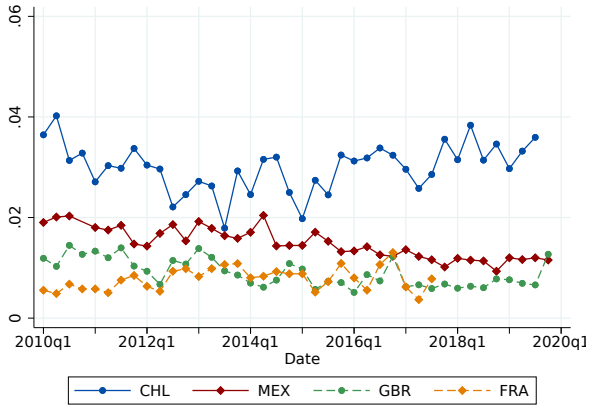
the relationship is statistically significant for the same four flows. The magnitudes are modestly smaller for three of the flows and larger for occupational switching rates (in absolute value). Panel C shows the same results if we normalize to the quarter with the highest flows for each country-flow. Again, all flows remain negatively correlated with

development and the relationship is statistically significant for the same four flows. In this case the magnitudes are modestly smaller for three of the flows and modestly larger for two. We conclude that overall our results do not reflect cross-country variation in the intensity of the seasonality of labor market flows.

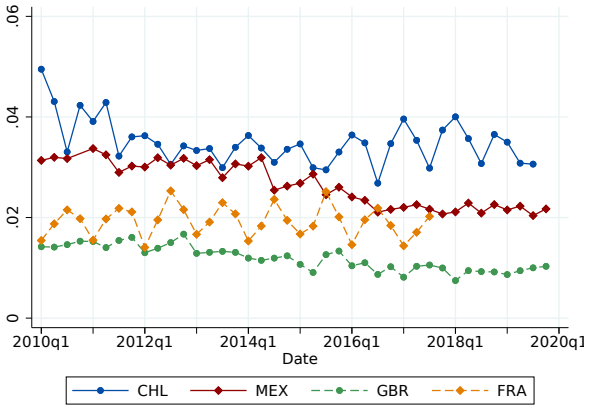
To be clear, these results do not suggest that seasonality is irrelevant for measuring flows in developing countries. They only show that the magnitude of these movements are small relative to the large cross-country differences we uncover. To see this point more clearly, we plot the unadjusted time series of quarterly exit rates in Figure A2 for Chile, France, Great Britain, and Mexico. Indeed, there are clear cycles in the time series. However, as predicted by our previous results, they are small relative to average cross-country gaps.

Figure A2: Time Series of Quarterly Exit Rates (Select Countries)

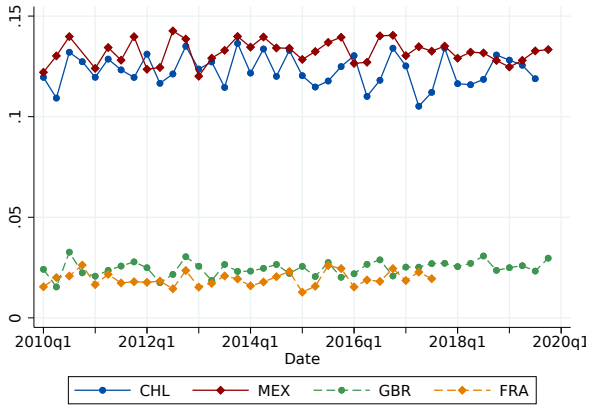
(a) Exit from Self-Employment to Unemployment



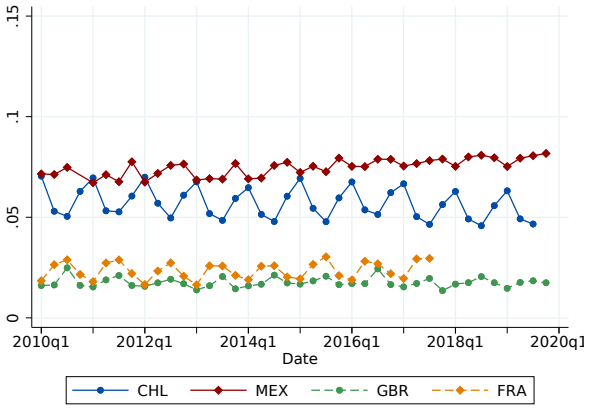
(b) Exit from Wage Work to Unemployment



(c) Exit from Self-Employment to Inactivity



(d) Exit from Wage Work to Inactivity



A.4 Variable Availability

Not all countries collect or share all of our variables of interest. For example, the European Union Labour Force Survey does not include earnings (only earnings deciles), thus eliminating its use in some parts of the paper. The table below specifies which variables are available for each country.

TABLE A6: Variable Availability by Sample

Country	Employment Status	Age	Education	Gender	JJ Flows	Marginally Attached	Sector	Occupation	Formality	Establishment Size	Tenure	Earnings	Hours	Rural
Albania	x	x	x	x	x		x	x	x	x	x	x	x	
Argentina	x	x	x	x	x	x	x	x	x	x	x	x	x	
Austria	x	x	x	x	x	x	x	x		x	x		x	x
Bolivia	x	x	x	x	x	x	x	x	x	x	x	x	x	
Botswana	x	x	x	x			x	x	x	x		x	x	x
Brazil	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bulgaria	x	x	x	x	x	x	x	x		x	x		x	x
Chile	x	x	x	x	x	x	x	x			x		x	x
Costa Rica	x	x	x	x	x				x	x	x	x	x	x
Croatia	x	x	x	x	x	x	x	x		x	x		x	x
Cyprus	x	x	x	x	x	x	x	x		x	x		x	x
Czech Republic	x	x	x	x	x	x	x	x		x	x		x	x
Denmark	x	x	x	x	x	x	x	x		x	x		x	x
Dominican Republic	x	x	x	x	x	x	x	x	x	x	x	x	x	
Ecuador	x	x	x	x		x	x	x	x	x	x	x	x	
Egypt, Arab Rep.	x	x	x	x			x	x	x	x	x	x	x	x
Estonia	x	x	x	x	x	x	x	x		x	x		x	x
France	x	x	x	x	x		x	x		x	x	x	x	x
Georgia	x	x	x	x	x		x	x	x			x	x	
Greece	x	x	x	x	x	x	x	x		x	x	x	x	x
Guyana	x	x	x	x		x	x	x	x	x	x	x	x	x
Hungary	x	x	x	x	x	x	x	x		x	x		x	x
Iceland	x	x	x	x	x	x	x	x		x	x		x	x
India	x	x	x	x		x	x	x				x	x	
Ireland	x	x	x	x	x	x	x	x		x	x		x	x
Italy	x	x	x	x	x	x	x	x		x	x		x	x
Latvia	x	x	x	x	x	x	x	x		x	x		x	x
Lithuania	x	x	x	x	x	x	x	x		x	x		x	x
Luxembourg	x	x	x	x	x	x	x	x			x	x		x
Malta	x	x	x	x	x	x	x	x		x	x		x	x
Mexico	x	x	x	x	x	x	x	x	x	x	x	x	x	
Mongolia	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Netherlands	x	x	x	x	x	x	x	x		x	x		x	x
Nicaragua	x	x	x	x		x	x	x		x			x	x
Palestine	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Paraguay	x	x	x	x	x	x		x	x	x	x	x	x	
Peru	x	x	x	x	x	x	x	x		x	x	x	x	

[a] x = variable included for at least one year.

TABLE A6: Variable Availability by Sample (cont'd)

Country	Employment Status	Age	Education	Gender	JJ Flows	Marginally Attached	Sector	Occupation	Formality	Establishment Size	Tenure	Earnings	Hours	Rural
Philippines	x	x	x	x		x	x	x				x	x	x
Poland	x	x	x	x	x	x	x	x		x	x		x	x
Portugal	x	x	x	x	x	x	x	x		x	x		x	x
Romania	x	x	x	x	x	x	x	x		x	x		x	x
Slovak Republic	x	x	x	x	x	x	x	x		x	x		x	x
Slovenia	x	x	x	x	x	x	x	x		x	x		x	x
South Africa	x	x	x	x	x	x	x	x	x	x	x		x	
Spain	x	x	x	x	x	x	x	x		x	x		x	x
Sweden	x	x	x	x	x	x	x	x		x	x		x	x
Switzerland	x	x	x	x	x	x	x	x		x	x	x	x	x
United Kingdom	x	x	x	x	x	x	x	x		x	x	x	x	
United States	x	x	x	x	x	x	x	x		x	x	x	x	x

[a] x = variable included for at least one year.

A.5 Distinguishing Unemployment and Inactivity

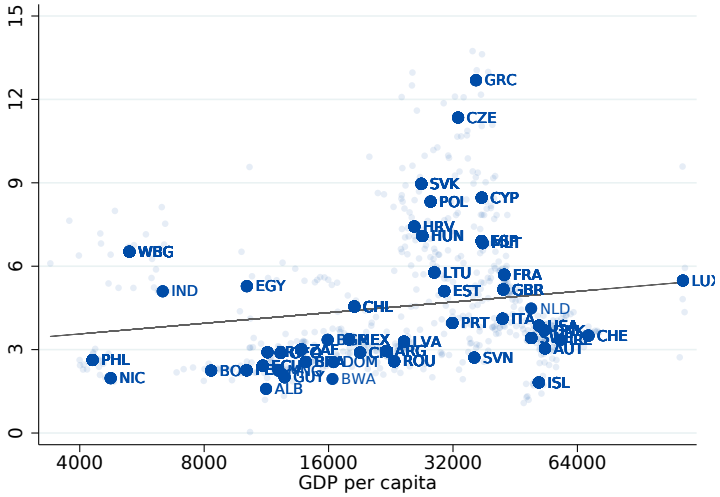
Labor economists have long worried about two closely related issues when dividing the non-employed into the unemployed versus the inactive. First, it is not clear that the three criteria used to classify workers as unemployed capture meaningful behavioral differences (Flinn and Heckman, 1983). Second, people with the same labor force status may not answer these questions consistently across panel waves. If they do not, this *classification error* generates artificial transitions that inflate estimated labor market flows. Abowd and Zellner (1985) and Poterba and Summers (1986) analyze the re-interview data from the Current Population Survey and show that the most common form of misclassification in the United States occurs between unemployment and inactivity. Hussmanns (2007) discusses why it may be difficult to distinguish unemployment and inactivity in developing countries.

We conduct a test of whether unemployment and inactivity are distinct in the spirit of Flinn and Heckman (1983). They propose that the two are distinct to the extent that they have different job-finding hazards. Conversely, if people who have been unemployed or inactive for the same length of time are equally likely to find work, then there is no meaningful behavioral difference between the two statuses. Although our data do not allow us to construct the entire job-finding hazard, we can construct the relative quarterly job-finding rates. In Figure A3 we plot the relative job-finding rate of the unemployed as compared to the inactive against GDP per capita.

There are two main results. First, the unemployed are more likely than the inactive to move to employment in all countries and years. Second, in many countries this gap is less than a factor of three, suggesting that in many countries inactivity is not as distinct from unemployment as it is in the United States (factor of five) or many European countries.

To investigate further, we decompose the inactive into two subgroups based on their self-reported reason for not seeking work. We code workers who report being unable to find suitable work (wrong skills, too young or old, no work currently available, etc.) as marginally attached, while those who are unable to work or uninterested in work (sick,

Figure A3: Relative Job-Finding Rate (Unemployed/Inactive)



disabled, in school, retired, caring for the household or family) are coded as "does not want a job."

Figure A4: Job-Finding and Marginally Attached Workers

(a) Flows to Employment

(b) Share of Inactive Who Are Marginally Attached

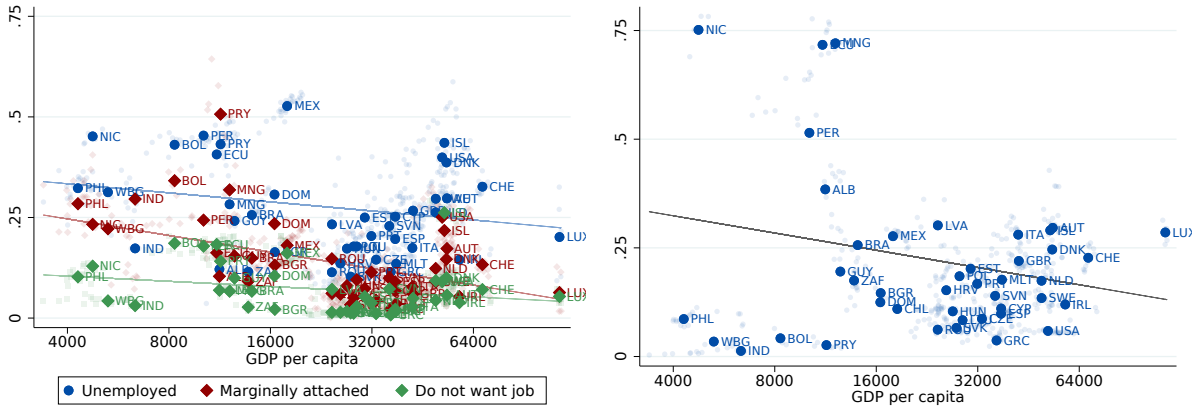


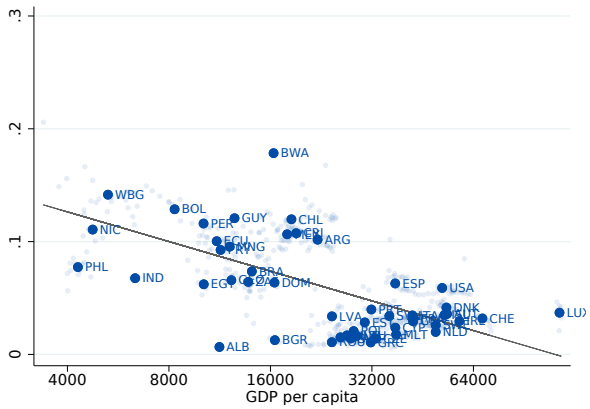
Figure A4 shows two important results about people who are marginally attached to the workforce. First, Figure A4a plots the job-finding rate for the inactive who do and do not want a job as well as for the unemployed. There is a clear ranking, with the unemployed finding jobs more than the marginally attached, who in turn find them more frequently than inactive people who do not want jobs. Second, Figure A4b shows that

there is substantial variation in the share of the inactive who are marginally attached to the labor force. These results suggest that the three-part test may not do an equally good job of separating job-seekers and non-job-seekers in countries around the world.

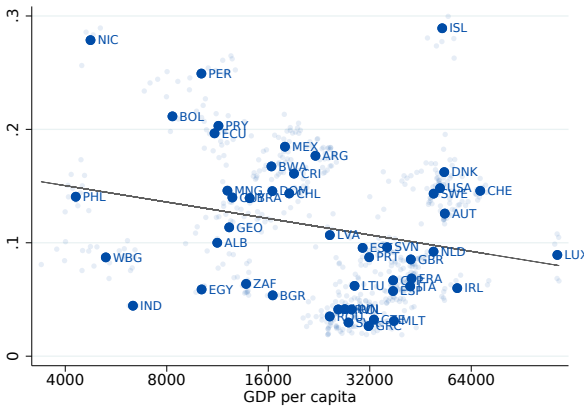
Our main result that labor market flows are negatively correlated with development also obtains if we aggregate labor force statuses to help deal with possible classification error. The simplest alternative is to aggregate unemployment and inactivity into a single state, non-employment. Figure A5 shows the measured employment-exit rates (from employment to non-employment) and job-finding rates (from non-employment) that we obtain in this case. There is still a negative relationship between labor market flows and development.

Figure A5: Labor Market Results: Pooling Inactivity and Unemployment

(a) Employment-Exit Rate



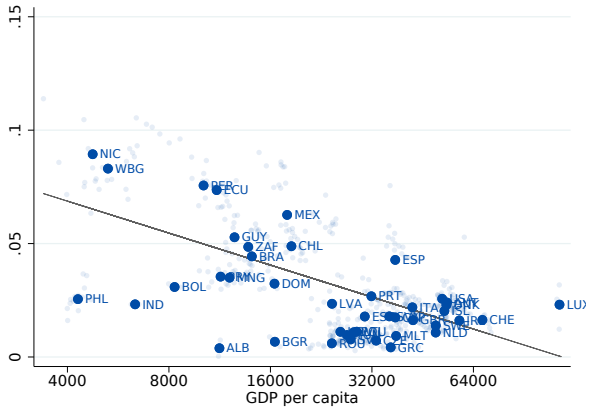
(b) Job-Finding Rate



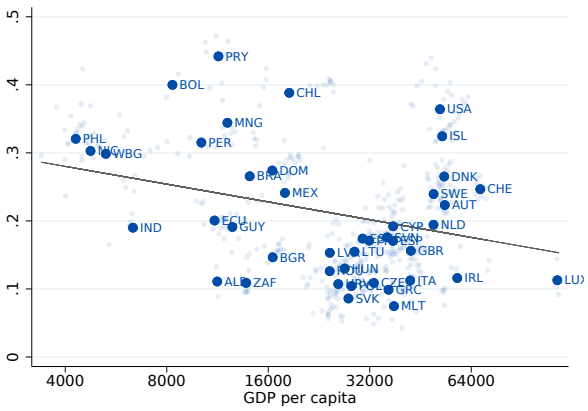
We also consider re-defining unemployment to include only the marginally attached inactive. We again study employment-exit rates (to broadly defined unemployment) and job-finding rate (from broadly defined unemployment). The results are shown in Figure A6. As with the other approaches, we find a negative relationship between labor market flows and development. That relationship is stronger for the employment-exit rate than for the job-finding rate, again consistent with the previous checks.

Figure A6: Labor Market Results: Unemployed plus Marginally Attached

(a) Employment-Exit Rate



(b) Job-Finding Rate

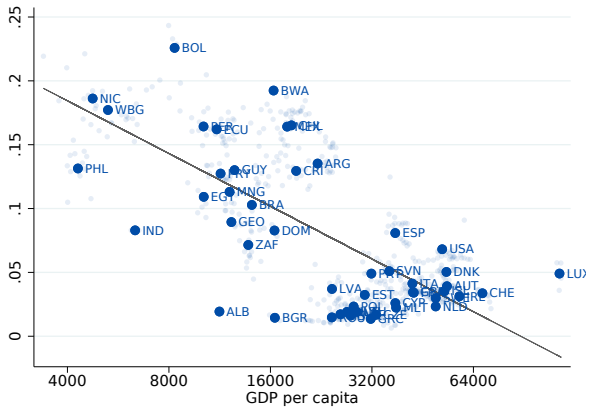


A.6 Combining Self-Employment, Unemployment, and Inactivity

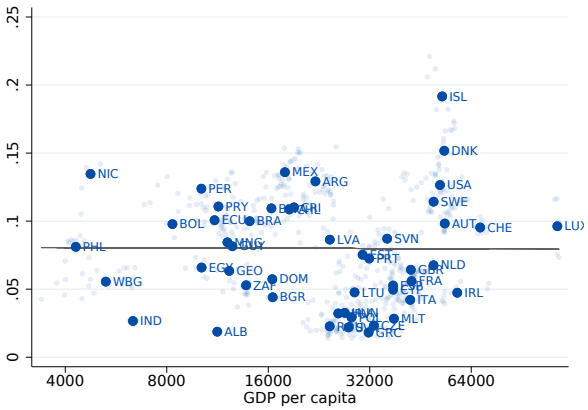
In the main text, we show that self-employment acts similar to non-employment in developing countries, both in terms of flows into wage work and earnings when they enter wage work. One possibility then would be to group self-employment and non-employment into a single employment state, as Guner and Ruggieri (2022) do. Figure A7 shows exit and entry from wage work to the combined state of self-employment, unemployment, and inactivity. Figure A7a shows that exit from wage work is negatively correlated with development, while Figure A7b shows that entry into wage work is flat across countries.

Figure A7: Flows into an out of Wage Work

(a) Exit from W to any other state



(b) Entry into W from any other state



B Evidence on Rural Areas and Poorer Countries

The results in the main body of the paper pertain to urban areas of countries that have GDP per capita ranging from $3,400 to $116,500. In this appendix we consider rural areas as well as preliminary findings for poorer countries.

B.1 Evidence from Rwanda

Our analysis focuses on countries that collect (and make available) quarterly rotating panel labor force surveys. These panels are expensive to collect as compared to the more common periodic cross-sectional surveys. As a result, our data set covers few of the very poorest countries. Table A3 shows that we have no countries with GDP per capita below $3,000 per year; there are few surveys in particular for Sub-Saharan Africa. This limitation may be important for our findings. For example, Bick, Fuchs-Schundeln and Lagakos (2018) show that employment rate patterns diverge in these countries.

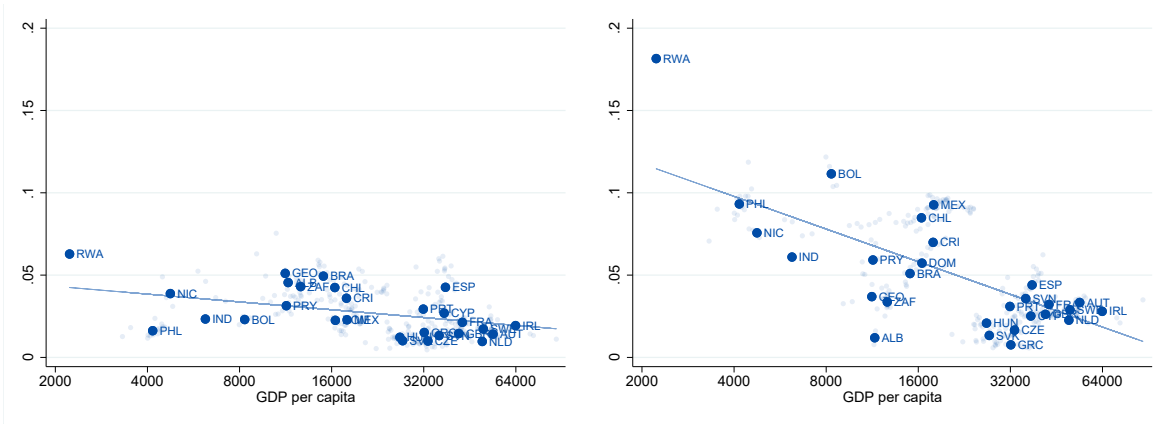
We contacted a number of government statistical agencies to inquire as to whether they had collected (and not publicized) or were planning to collect rotating panel surveys. We discovered that Rwanda began collecting quarterly rotating panel labor force survey data in 2019. Unfortunately, they use an unusual rotation scheme: they track each household across one six-month spell (meaning that one set of households was interviewed in the first and third quarters, while a different set was interviewed in the second and fourth quarters). While these results do not conform to our basic sample, we can construct similar six-month flows using our subsample of 28 countries where households are tracked for three consecutive quarters. We find the comparison of six-month flows between Rwanda and these countries valuable because it provides preliminary evidence for a country with lower GDP per capita, of about $2,000.

Figure B1 plots the results for job-finding rates and employment-exit rates (we cannot compute the job-to-job transition rate for Rwanda). The findings are in line with the

Figure B1: Six-Month Flows with Rwanda

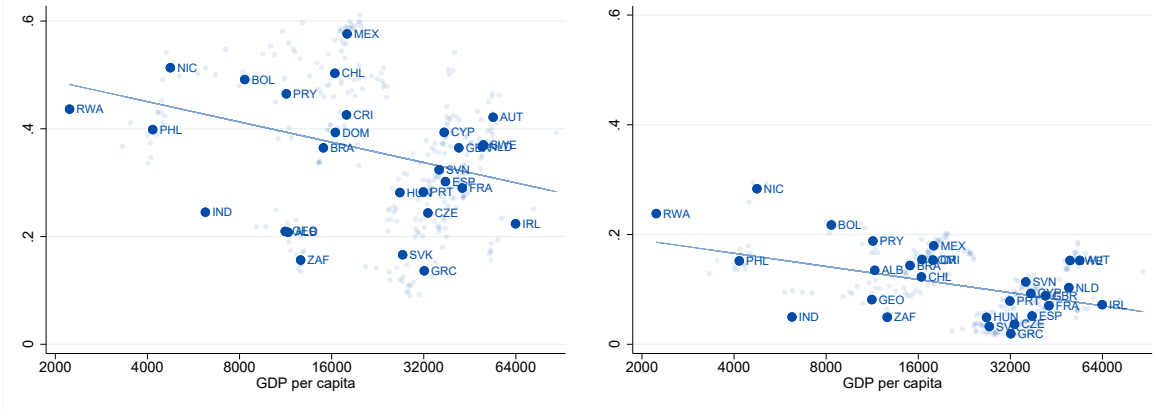
(a) Employment Exit to Unemployment

(b) Employment Exit to Inactivity



(c) Job Finding from Unemployment

(d) Job Finding from Inactivity



rest of the paper. Rwanda's GDP per capita is substantially lower than Nicaragua or the Philippines, and its job-finding rate and particularly employment-exit rate is much higher.

B.2 Alternative Data Sources for Poorer Countries

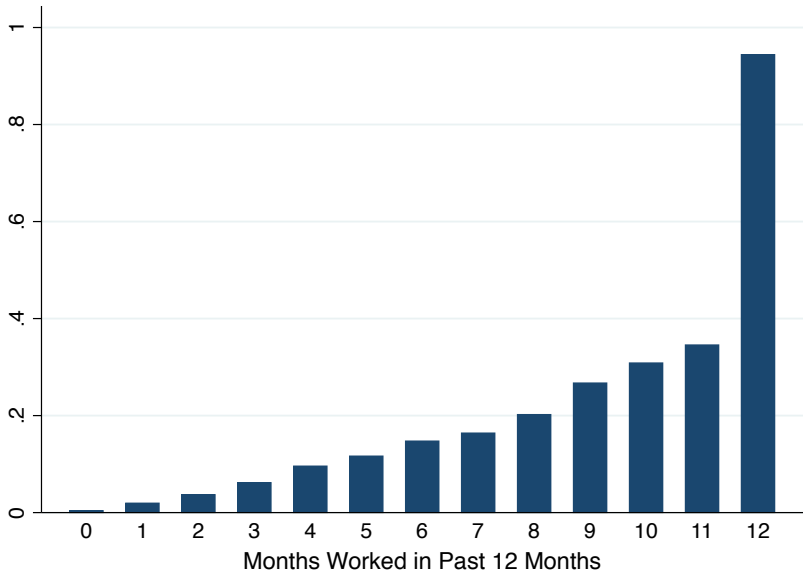
As an alternative attempt to add data from poorer countries, we went through the survey instruments for each of the 121 Living Standard Measurement Surveys (LSMS) provided by the World Bank. Some have a version of a retrospective labor market question, but few turn out to be useful for our purposes. There are two basic problems. First, most ask about the duration of the current status, but we also need to know what status workers transitioned from to categorize labor market flows. For example, the Ghanian surveys ask "How many years or months have you been doing this work, all together?", while the Ugandan survey asks "When did [name] start to work for this employer or start running the business?" Neither includes a question that asks respondents what they were doing previously.

A second problem for our purposes is that it is not clear how respondents answer these questions in an environment where temporary or revolving employment are common. For example, workers who work for an employer for a quarter, experience non-employment for two quarters, and then work for the same employer for a quarter could plausibly answer the question as either three or twelve months of employment duration. To show that this is an important concern we focus on workers who report more than twelve months of tenure in response to the above question in the Ugandan survey. That survey includes an additional question,"During the last 12 months, how many months did [name] work in this job?" Figure B2 plots the cumulative density of responses by wage workers (only wage workers are asked this question). While 60 percent report having worked for their employer throughout the year, 35 percent report working for their employer less than a full year, including 20 percent who work for less than 8 of the last 12 months.[2] Thus, this group likely include flows from non-employment to employment that would be missed with such retrospective questions.

Those surveys that do include proper retrospective questions are usually not at a

[2]Six percent are missing, so the cdf does not finish at one. The survey instrument also asks an additional question about weeks worked within those months, which would be useful given the use of a reference week in labor force surveys, but that variable is unreported in the data set.

Figure B2: Ugandan Employment Intensity Among Those "Employed" for $\geq$ 12 months

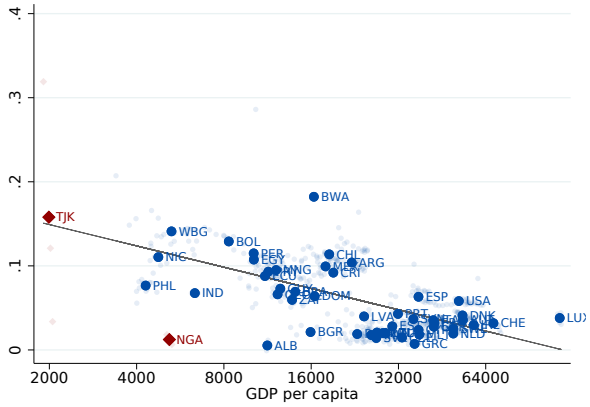


relevant frequency. For example, Indonesia asks "Did [name] quit or move to another job during the last year?" Finally, a small number of other countries, like Malawi, survey households twice to study seasonality. Thus, *ex ante* there is some hope to infer flows from this "panel." Unfortunately, the labor module is asked only once per household, rendering this infeasible. We have conducted the same search through cross-sectional labor force surveys that we have accumulated, including Bangladesh, Kenya, Namibia, and Tunisia, among others. None ask useful retrospective questions on labor market status.

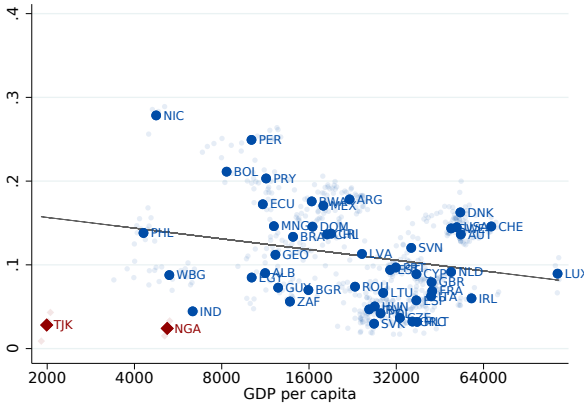
Ultimately we were able to identify only three LSMS surveys that had useful information for our purposes, in the form of retrospective panels (i.e., the survey instrument directly asks for previous labor market status month by month), which allows for a closer comparison. They are Nigeria-2010, Nigeria-2012, and Tajikistan-2009. We include them below, though job-job flows are unavailable as they do not distinguish new employment from continued employment. Figure B3a plots exit from any employment to any non-employment, while Figure B3b plots the reverse. None of these LSMS data distinguish non-employment statuses.

Figure B3: Aggregate Flows with LSMS Additions

(a) Employment Exit



(b) Job Finding Rate



An additional way to generate additional income variation is by looking across regions within countries. For example, the richest and poorest states differ in real GDP per capita by a factor of 10 in India and 7 in Mexico. The results in Section C.3 support the cross-country results. However, we have not identified any subnational regions that are substantially below, say, $3,000 and that offer a large sample size such that we can estimate flows at the regional level.

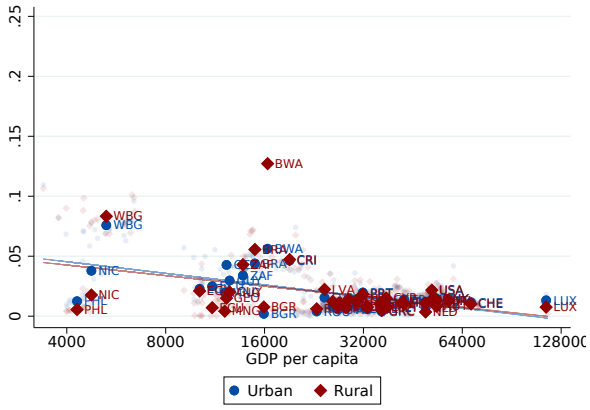
Net of these attempts, the most promising approach is probably to convince governments to collect this data (and possibly to fund such efforts). Alternatively, researchers may be able to create new data that complement these measures. For example, Fried and Lagakos (forthcoming) use online surveys to collect information (on electricity use and blackouts) in developing countries, while Bick and Blandin (forthcoming) show that it is feasible to collect labor force data online in the United States. Combining the two approaches may offer an alternative path for collecting labor force data in developing countries.

B.3 Coverage of Rural Areas

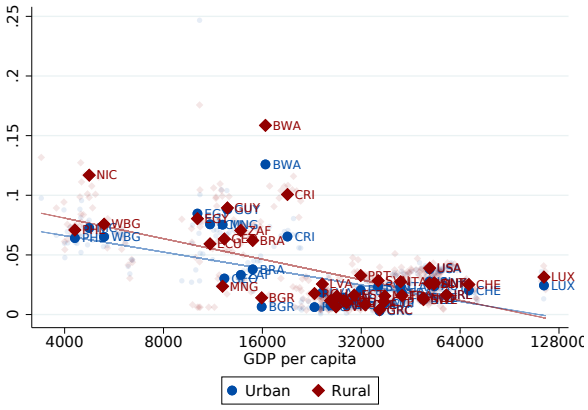
Our analysis focuses on urban areas because a subset of our countries only administer labor force surveys in those areas. However, we can compute similar findings for rural and urban areas for the majority of countries. Figure B4 plots employment-exit rates and job-finding rates separately for rural and urban workers against GDP per capita. Transition rates are similar for the two types of workers in the richest countries, but elsewhere rural workers have higher transition rates, which is consistent with the work of Jeong (2019) on frictions in rural labor markets. Developing countries also have higher rural population shares. Put together, these findings imply that the relationship between labor market flows and development is stronger than what we estimate using only urban workers.

Figure B4: Quarterly Transition Rates: Rural versus Urban Workers

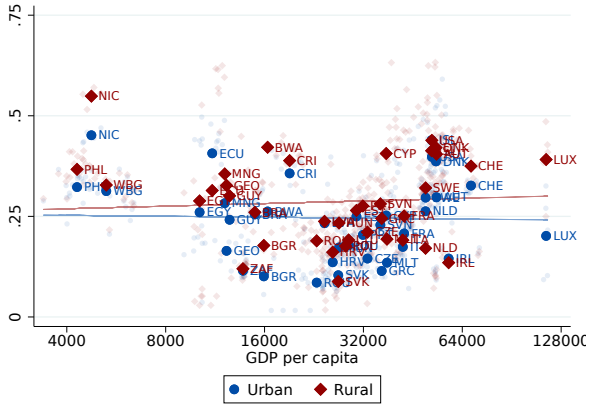
(a) Employment-Exit Rate to Unemployment



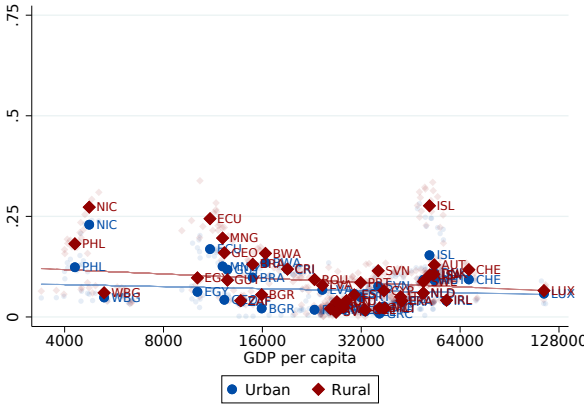
(b) Employment-Exit Rate to Inactivity



(c) Job-Finding Rate from Unemployment



(d) Job-Finding Rate from Inactivity



C Additional Findings for Aggregate Stocks and Flows

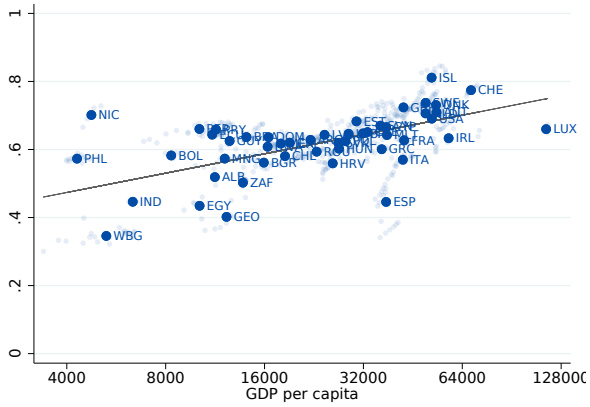
This section provides additional results and robustness related to the aggregate data and aggregate results.

C.1 Cross-Sectional Moments

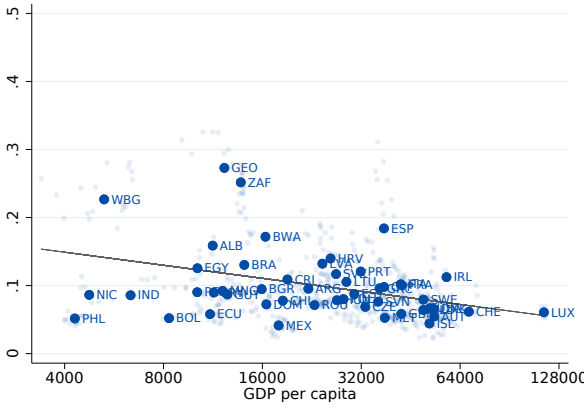
This appendix shows the standard cross-sectional facts about the composition of the working-age population in our data set. Figure C1 plots the employment-to-population ratio, unemployment rate, and self-employment rate against GDP per capita. We find an upward trend for the employment-to-population ratio. This finding is in line with Bick, Fuchs-Schundeln and Lagakos (2018) after conditioning on similar countries (we are missing the very poorest countries, for which they find have higher ratios). We find a downward trend for the unemployment rate but more importantly substantial variation around the trend. Finally, we find a pronounced negative trend for self-employment as a share of total employment, in line with Gollin (2008).

Figure C1: Cross-Sectional Labor Force Facts

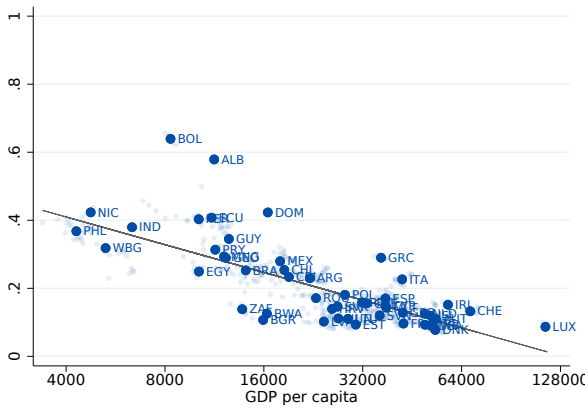
(a) Employment-to-Population Ratio



(b) Unemployment Rate



(c) Self-Employment as a Share of Total Employment

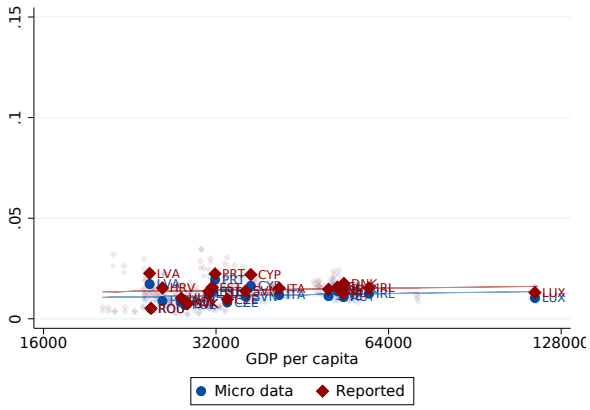


C.2 Comparison of EU Microdata versus Reported Flows

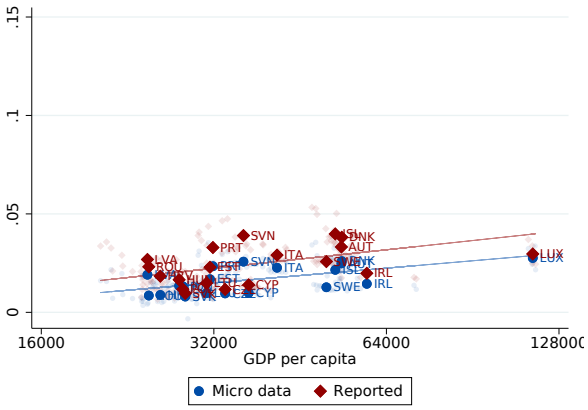
The EU directly computes and reports data on labor market flows. Their reported flows differ from ours in two main ways. First, they report flows among the population aged 15–74, while we cut off at age 65 to mitigate the effect of variation in retirement policies. Second, while the EU uses a similar raking procedure to adjust weights, it differs in that they use only age group, sex, and labor force status.[3] We additionally include education. The figures below show that our estimates of labor market flows are nonetheless very similar to theirs.

Figure C2: Flows for EU Countries, Micro Data and Reported

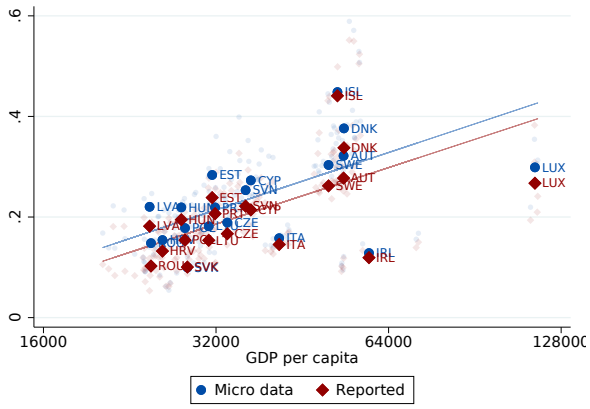
(a) Employment Exit Rate to Unemployment



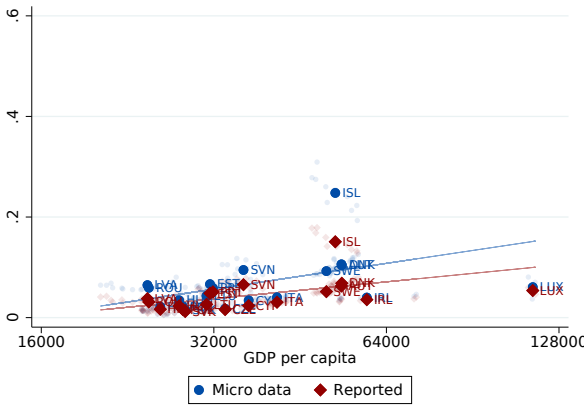
(b) Employment Exit Rate to Inactivity



(c) Job Finding Rate from Unemployment



(d) Job Finding Rate from Inactivity



[3]More details of the EU procedure are available online at https://ec.europa.eu/eurostat/statistics-explained/index.php/Labour_market_flow_statistics_in_the_EU.

C.3 Alternative Measures of Labor Market Institutions

In Section III.A. we show that standard, specific measures of labor market regulations correlate with labor market flows in the expected way among developed countries, but not among our broader sample. Here, we provide similar results for broader measures of labor market regulations. Specifically, we follow Bilal et al. (2022) and use the World Bank's summary Doing Business Index. The Doing Business Index is a broad measure that captures factors that affect firm creation and firm regulation as well as labor market conditions; these additional factors are also plausibly related to labor market dynamics. We regress transition rates at the country-year level on (standard normalized) Doing Business Index scores, just as we did in the text. Note that higher Doing Business Index scores correspond to more flexible labor market institutions, broadly defined.

TABLE C1: Labor Market Flows and Institutions

Panel A:	Exit Rate		Job-Finding Rate			
All Countries	to U	to N	from U	from N	Job-Job Rate	Occupational Switching
	(1)	(2)	(3)	(4)	(5)	
Doing Business Index	-0.007**	-0.013***	-0.010	-0.008	-0.015***	-0.053***
	(0.003)	(0.003)	(0.016)	(0.009)	(0.005)	(0.012)
Observations	334	332	333	331	294	314
R-squared	0.194	0.222	0.006	0.014	0.114	0.254
Sample Average	0.021	0.033	0.264	0.080	0.054	0.106
Panel B:	Exit Rate		Job-Finding Rate			
Rich Countries	to U	to N	from U	from N	Job-Job Rate	Occupational Switching
	(1)	(2)	(3)	(4)	(5)	
Doing Business Index	0.001	0.005***	0.073***	0.030***	0.012***	0.019***
	(0.001)	(0.001)	(0.012)	(0.008)	(0.002)	(0.006)
Observations	207	207	207	207	207	198
R-squared	0.027	0.289	0.474	0.297	0.500	0.234
Sample Average	0.012	0.016	0.219	0.056	0.030	0.037

Table notes: Sample size is smaller for job finding rates because variable is only available for 2014-2018. Standard errors clustered by country. *p<.05, **p<.01, ***p<.001.

Table C1 shows the results, which are even more divergent than those considered in the text. Panel B shows that more flexible labor market institutions are strongly correlated with higher labor market flows among developed countries, just as we found when we used specific measures of labor market institutions. However, Panel A shows that in the full sample, more flexible labor market institutions are statistically significantly *negatively* correlated with development. This is an even bigger difference than when we

use specific measures of labor market institutions in the main text – in that case, we find no statistically significant correlation. Overall, these findings add to the conclusion that while labor market institutions can help explain labor market dynamics among developed countries, they are not a promising candidate for understanding the differences between developing and developed countries.

As an alternative way to study the same point, we examine the cross-regional correlation between labor market flows and development within countries. Our underlying idea is that most important labor market institutions are the same or at least more similar within a country. Thus, cross-regional variation provides additional evidence on the relationship between labor market flows and development while controlling for institutions.

We focus on three countries with consistently defined regions, large regional income variation, and a large number of observations per region: India, Mexico, and the United States. For each, we re-compute transition rates by region (state, including administrative regions in India) and year. We merge this data with annual regional real GDP per capita.[4] In each case GDP is adjusted for inflation but not for cross-regional price disparities; we are not aware of systematic regional price deflators that include such a correction.

For each country we pool regions and years and regress transition rates on log GDP per capita. Table C2 shows the results. The estimates are broadly consistent with our cross-country results. Most of the correlations are negative; half are negative and statistically significant.

[4]United States: per capita real GDP from the regional accounts, available at https://apps.bea.gov/iTable/index_regional.cfm. Mexico: 2013 fixed price GDP from https://www.inegi.org.mx/programas/pibent/2013/default.html#Tabulados divided by population from https://datos.gob.mx/busca/dataset/proyecciones-de-la-poblacion-de-mexico-y-de-las-entidades-federativas-2016-2050/resource/c3a55508-2678-4018-bf5b-bf1f45745ae7. India: per capita net state domestic product from http://mospi.nic.in/data.

TABLE C2: Labor Market Flows and Development Across Regions

Panel A:	Exit Rate		Job-Finding Rate	
USA	to U	to N	from U	from N
Log GDP p.c.	-0.008***	-0.002***	-0.018**	-0.005**
	(0.001)	(0.001)	(0.009)	(0.003)
Observations	2,000	2,000	2,000	2,000
R-squared	0.104	0.005	0.002	0.002
Sample Average	0.019	0.035	0.428	0.113
Panel B:	Exit Rate		Job-Finding Rate	
Mexico	to U	to N	from U	from N
Log GDP p.c.	0.001	-0.008***	-0.022***	-0.016***
	(0.000)	(0.001)	(0.004)	(0.002)
Observations	768	768	768	768
R-squared	0.003	0.135	0.034	0.119
Sample Average	0.019	0.084	0.552	0.159
Panel C:	Exit Rate		Job-Finding Rate	
India	to U	to N	from U	from N
Log GDP p.c.	-0.006***	-0.006	0.028	0.000
	(0.002)	(0.005)	(0.018)	(0.004)
Observations	66	66	66	66
R-squared	0.109	0.031	0.034	0.000
Sample Average	0.014	0.039	0.140	0.029

Table Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at the state level.

D Additional Results for Disaggregated Flows

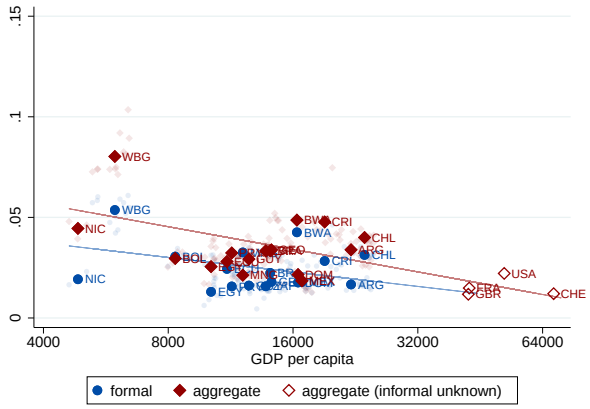
This section contains additional results related to our findings on the role of marginal employment in developing countries (Section IV.).

D.1 Decomposing Components of Formal Flows

In the main text, we report employment-exit rates for formal workers. Here, we decompose into flows to unemployment and inactivity. Similar patterns hold for each.

Figure D1: Employment-Exit Rate for Wage Workers by Formal Status

(a) to Unemployment



(b) to Inactivity

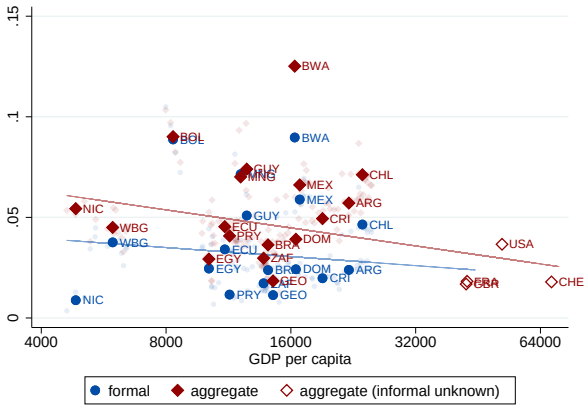


Figure notes: Figure plots employment-exit rate for all wage workers employed in formal jobs or all wage workers.

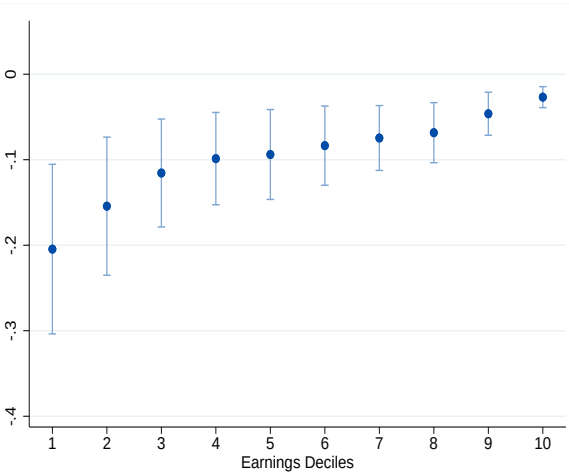
D.2 Further Details on Flows by Earnings

In Section IV. we show that the semi-elasticity of the exit rate with respect to GDP per capita is larger for lower earnings deciles. In Figure D2 we show a number of related results. Figure D2a shows the overall separation rate, which adds employment-exit rates and job-job transition rates. Figure D2b shows the employment-exit rates while distinguishing between exit to unemployment and inactivity. Finally, Figure D2c shows job-job transition rates while distinguishing between transition to a new wage job or to self-employment. Across all possible flows, it is consistently true that the semi-elasticity

of flows with respect to GDP per capita is more strongly negative for workers at lower earnings deciles.

Figure D2: Components of Wage Job Separation Rate

(a) Employment Separation



(b) Employment Exit

(c) Components of Job-Job Flows

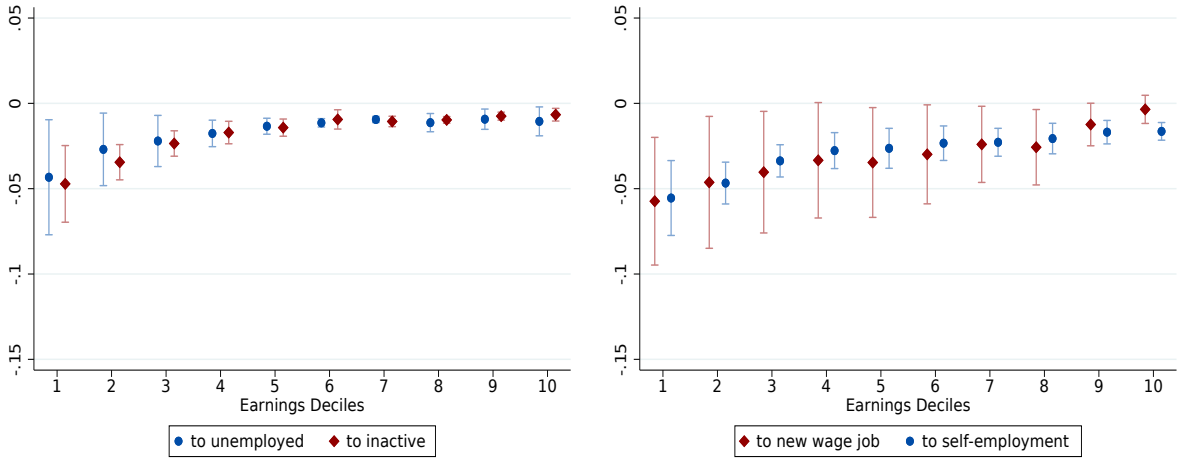


Figure notes: Fgures plot the semi-elasticity of the given flow with respect to GDP per capita by earnings decile. The bars represent the 95 percent confidence interval of that slope, derived from standard errors clustered at the country level.

D.2.1 Using Hourly Wages instead of Earnings

Our primary results for wage workers focus on low-earnings jobs (rather than low-wage jobs) for two reasons. First, earnings are the more useful concept to the extent that poverty can also be associated with limits on hours of work. Second, the E.U.

Labour Force Survey includes data on each worker's earnings decile, but not information on hourly wages. Nonetheless, the main findings of interest apply as well to separation rates by wage decile for the subset of countries for which we can construct such moments, as we show in Figure D3.

Figure D3: Components of Wage Job Separation Rate by Hourly Wage Deciles

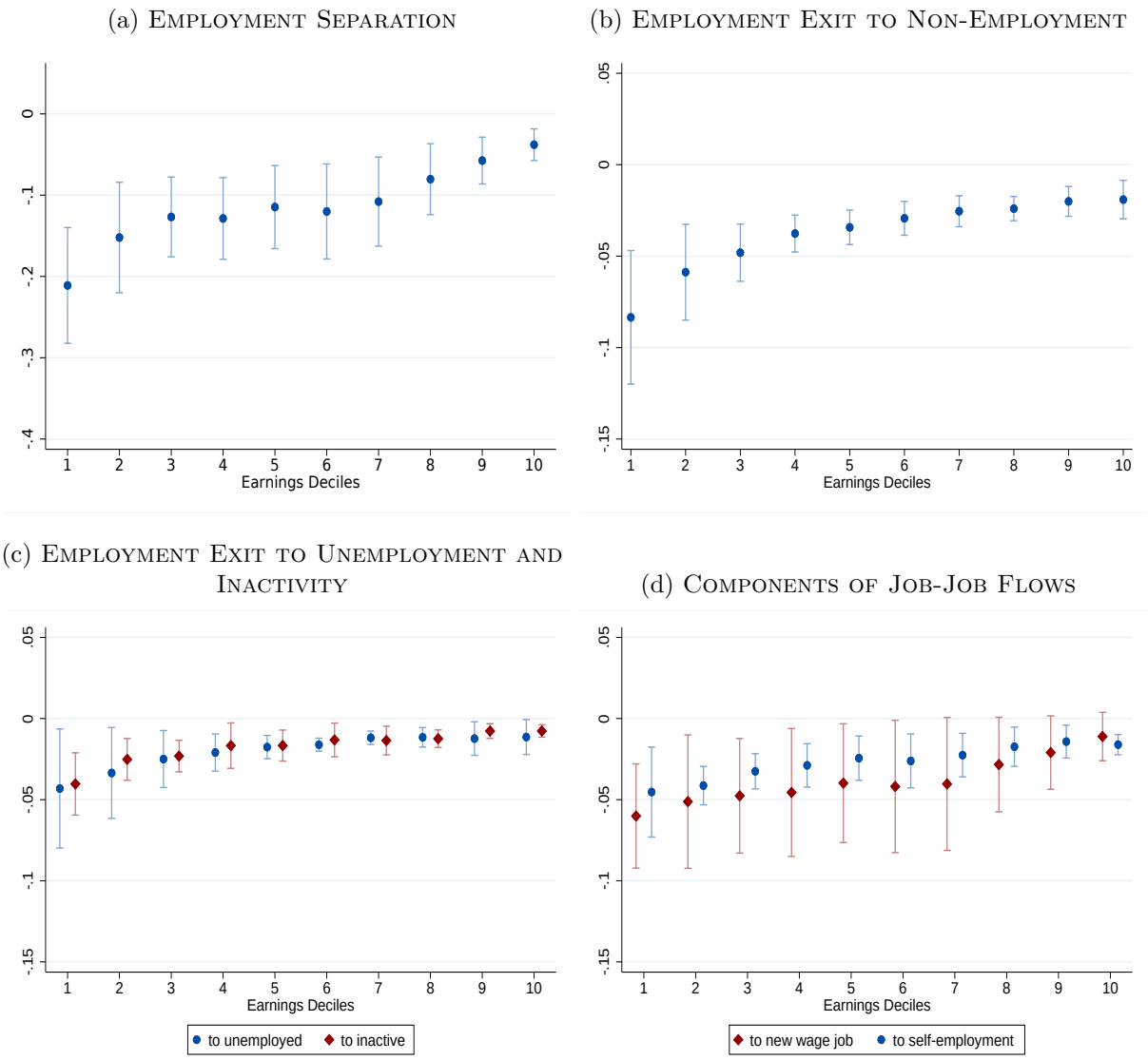


Figure notes: Each plots the semi-elasticity of the flow with respect to GDP per capita by hourly wage decile. The bars represent the 95 percent confidence interval of that slope, derived from standard errors clustered at the country level.

E Additional Results on Employment Hazards and Wage-Tenure Profiles

This appendix contains additional results for the estimation of employment hazards and wage-tenure profiles.

E.1 Testing Cross-Country Differences

In this section we provide formal results on the statistical significance of the tests about the steepness of employment hazard and wage-tenure profiles. We summarize our two empirical tests with the following regression

$$y_{ct\tau} = \xi_\tau + (\xi_\tau \times \log(y_{ct})) + \varepsilon_{ct\tau}.$$

The outcome y for country c at year t and tenure bin τ measures either wage growth (as in Figure VIII) or the employment-exit rate from wage employment (Figure IX), where ξ_τ are tenure bins and $\xi_\tau \times \log(y_{ct})$ is the interaction of tenure bins with log GDP per capita. The results are shown in Table E1. The top panel shows that the point estimates move in the directions described in the text. That is, the average growth in wages across countries widens as tenure increases while the likelihood of exit to non-employment declines. The second panel shows that these slopes are statistically distinguishable from each other.

E.2 Additional Results for Wage-Tenure Profiles

In the main text, we provide results using four tenure bins. For a somewhat smaller number of countries we can use instead five tenure bins, decomposing 1–5 years into 1–2 years and 2–5 years. As Figure E1 shows, the results are largely the same.

Our baseline results control for education. We also explore controlling for occupation fixed effects. Figure E2 shows that the results are broadly the same.

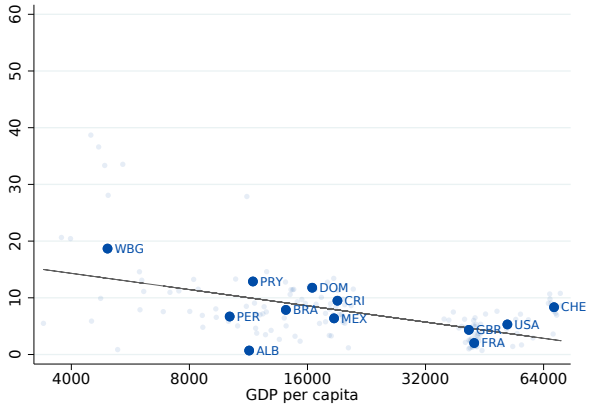
TABLE E1: Slopes of Employment Hazards and Wage-Tenure Profiles

	Tenure Wage Growth	Employment Exit
0-6 months × Log GDP per capita		-0.064***
		(0.013)
6-12 months × Log GDP per capita	-0.044**	-0.03***
	(0.155)	(0.008)
1-5 years × Log GDP per capita	-0.075***	-0.024***
	(0.014)	(0.005)
5+ years × Log GDP per capita	-0.118***	-0.014***
	(0.015)	(0.004)
p-value, H_0 : slope equal for ...		
0-6 months and 6-12 months		0.000
0-6 months and 1-5 years months		0.000
0-6 months and 5+ months		0.000
6-12 months and 1-5 years	0.000	0.000
6-12 months and 5+ years	0.013	0.000
1-5 years and 5+ years	0.089	0.000
Tenure bin FE?	Y	Y
Observations	495	1928
R-squared	0.801	0.587

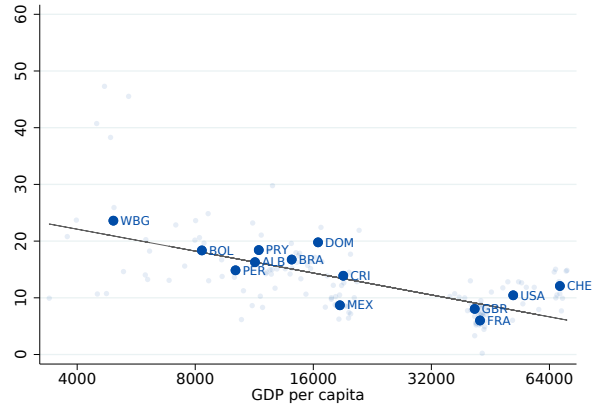
Table Notes: These results are the statistical counterpart to Figures VIII and IX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered by country.

Figure E1: Wage-Tenure Profiles with Alternative Bins

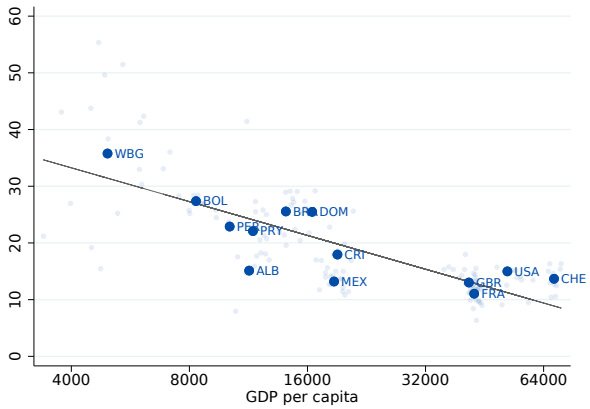
(a) Wage Difference, 6-12 Months of Tenure



(b) Wage Difference, 1-2 Years of Tenure



(c) Wage Difference, 2-5 Years of Tenure



(d) Wage Difference, 5+ Years of Tenure

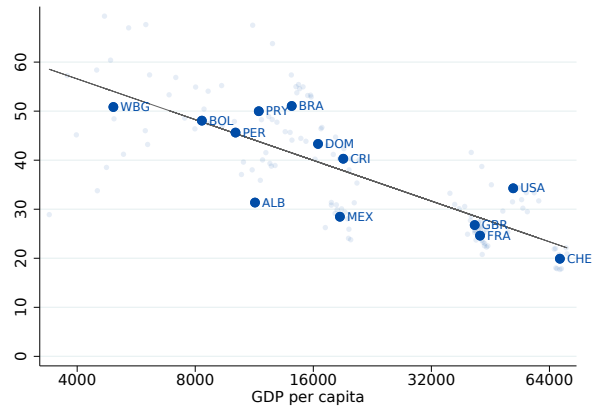
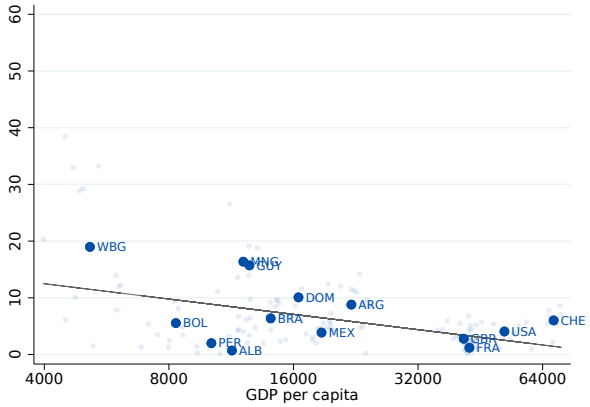
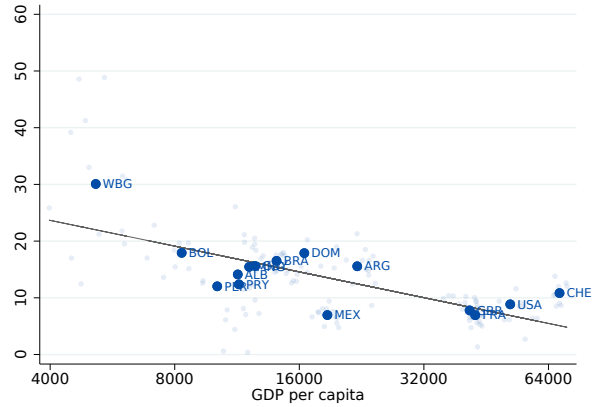


Figure E2: Wage-Tenure Profiles with Occupational Controls

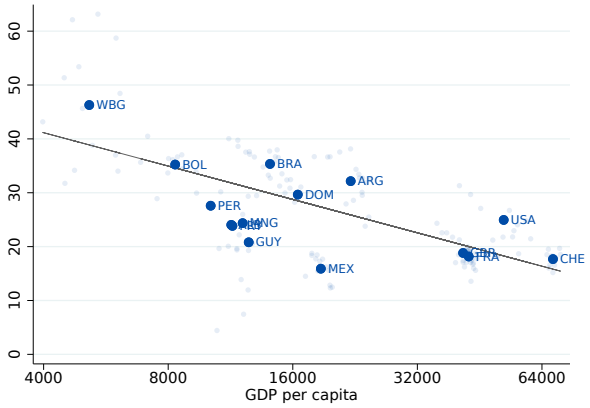
(a) Wage Difference, 6–12 Months of Tenure



(b) Wage Difference, 1–5 Years of Tenure



(c) Wage Difference, 5+ Years of Tenure



Yale School of Management

Central Bank of Chile

Federal Reserve Bank of Minneapolis

References

Abowd, John M., and Arnold Zellner. 1985. "Estimating Gross Labor-Force Flows." *Journal of Business and Economic Statistics*, 3(3): 254–283.

Albanian Institute of Statistics. 2012–2013. "Labour Force Survey." Accessed April 29, 2015. https://www.instat.gov.al/en/figures/micro-data/.

Banco Central República Dominicana. 2016–2017. "Encuesta Nacional Continua de Fuerza de Trabajo (ENCFT)." Data received October 3, 2018. https://www.bancentral.gov.do/a/d/2541-encuesta-continua-encft.

Beuermann, Diether, Ramiro Flores Cruz, and Guyana Bureau of Statistics. 2017. "Labor Force Survey." Accessed March 28, 2018. http://dx.doi.org/10.18235/0001210.

Bick, Alexander, and Adam Blandin. forthcoming. "Employer Reallocation During the COVID-19 Pandemic: Validation and Application of a Do-It-Yourself CPS." *Review of Economic Dynamics*.

Bick, Alex, Nicola Fuchs-Schundeln, and David Lagakos. 2018. "How Do Hours Worked Vary with Income? Cross Country Evidence and Implications." *American Economic Review*, 108(1): 170–199.

Bilal, Adrien, Niklas Engbom, Simon Monge, and Giovanni L. Violante. 2022. "Firm and Worker Dynamics in a Frictional Labor Market." *Econometrica*, 90(4): 1425–1462.

Bleakley, C. Hoyt, Ann E. Ferris, and Jeffrey C. Fuhrer. 1999. "New Data on Worker Flows during Business Cycles." *New England Economic Review*, 49–76.

Bureau of Labor Statistics creator, National Bureau of Economic Research - distributor. 1976–2021. "Current Population Survey." Accessed De-

cember 18 2010 – December 13, 2021. https://www.nber.org/research/data/current-population-survey-cps-data-nber.

Donovan, Kevin, Will Jianyu Lu, and Todd Schoellman. forthcoming. "Labor Market Dynamics and Development." *Quarterly Journal of Economics*.

Eurostat. 2005–2020. "EU Labour Force Survey." Version 1.0., https://doi.org/10.2907/LFS1983-2020V.1.

Flinn, Christopher J., and James J. Heckman. 1983. "Are Unemployment and Out of the Labor Force Behaviorally Distinct Labor Force States?" *Journal of Labor Economics*, 1(1): 28–42.

Fried, Stephie, and David Lagakos. forthcoming. "Electricity and Firm Productivity: A General-Equilibrium Approach." *American Economic Journal: Macroeconomics*.

Fujita, Shigeru, and Garey Ramey. 2009. "The Cyclicality of Separation and Job Finding Rates." *International Economic Review*, 50(2): 415–430.

Gollin, Douglas. 2008. "Nobody's Business but My Own: Self-Employment and Small Enterprise in Economic Development." *Journal of Monetary Economics*, 55(2): 219–233.

Guner, Nezih, and Alessandro Ruggieri. 2022. "Misallocation and Inequality." mimeo, UAB.

Guyana Bureau of Statistics. 2018–2021. "Labor Force Survey." Accessed May 23, 2019 – August 24, 2021. https://statisticsguyana.gov.gy/data/databases/.

Hellenic Statistical Authority. 2005–2018. "Labour Force Survey." Received May 15, 2019. https://www.statistics.gr/en/scientific_provision_data.

Hussmanns, Ralf. 2007. "Measurement of Employment, Unemployment and Underemployment – Current International Standards and Issues in Their Application." International Labour Organization.

INSEE - producers; ADISP - distributor. 2003–2017. "Enquête Emploi en Continu (version FPR)." Version 4, except 2011 (Version 3) and 2014 (Version 5). https://data.progedo.fr/studies.

Instituto Brasileiro de Geografia e Estatística. 2002–2011. "Pesquisa Mensal de Emprego (PME)." Accessed May 24, 2016. https://www.ibge.gov.br/en/statistics/downloads-statistics.html.

Instituto Brasileiro de Geografia e Estatística. 2012–2021. "Pesquisa Nacional por Amostra de Domicílios (PNAD)." Accessed May 1, 2019 – September 15, 2021. https://www.ibge.gov.br/en/statistics/downloads-statistics.html.

Instituto Nacional de Estadística de Chile. 1986–2021. "Encuesta Nacional de Empleo (ENE)." Accessed November 29, 2017 – October 19, 2021. https://www.ine.gob.cl/estadisticas/sociales/mercado-laboral/ocupacion-y-desocupacion.

Instituto Nacional de Estadística e Informática, Peru. 2003–2018. "Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO)." Version 1.0. http://iinei.inei.gob.pe/microdatos/Consulta_por_Encuesta.asp.

Instituto Nacional de Estadística, Estado Plurinacional de Bolivia. 2015–2018. "Encuesta Continua de Empleo (ECE)." Accessed August 31, 2018 – March 31, 2021. https://www.ine.gob.bo/index.php/censos-y-banco-de-datos/censos/bases-de-datos-encuestas-sociales/.

Instituto Nacional de Estadística, Paraguay. 2010–2017. "Encuesta Continua de Empleo (ECE)." Accessed August 8, 2016 – July 13, 2019. https://www.ine.gov.py/datos/encuestas/ece/.

Instituto Nacional de Estadística, Spain. 2000–2020. "Encuesta de Población Activa." Received September 25, 2019 - December 1, 2020. https://www.ine.es/uc/Rs237nns.

Instituto Nacional de Estadística y Censos de Costa Rica. 2010–2021. "Encuesta Continua de Empleo (ECE)." Version 1. http://sistemas.inec.cr/pad5/index.php/catalog.

Instituto Nacional de Estadística y Censos, Ecuador. 2007–2021. "Encuesta Nacional de Empleo, Desempleo y Subempleo." Accessed May 21, 2016 – October 25, 2021. https://aplicaciones3.ecuadorencifras.gob.ec/BIINEC-war/index.xhtml.

Instituto Nacional de Estadística y Censos, República Argentina. 2003–2020. "Encuesta Permanente de Hogares (EPH)." Accessed November 24, 2009 – October 18, 2021. https://www.indec.gob.ar/indec/web/Institucional-Indec-BasesDeDatos.

Instituto Nacional de Estadística y Geografia, Mexico. 1995–2021. "Encuesta Nacional de Ocupación y Empleo (ENOE)." Accessed December 1, 2014 – August 25, 2021. https://www.inegi.org.mx/programas/enoe/15ymas/default.html#Microdatos.

Instituto Nacional de Información de Desarrollo de Nicaragua. 2009–2012. "Encuesta Continua de Hogares (ECH)." Received December 16, 2014. https://www.inide.gob.ni/Home/ech.

Jeong, Dahyeon. 2019. "Creating (Digital) Labor Markets in Rural Tanzania." Mimeo, UC Santa Cruz.

Ministry of Statistics & Programme Implementation. 2017–2018. "Periodic Labour Force Survey (PLFS)." Accessed November 1, 2019. http://microdata.gov.in/nada43/index.php/catalog/146/related_materials.

National Statistical Office of Mongolia. 2019–2020. "Labour Force Survey." Version 1.0. http://web.nso.mn/nada/index.php/catalog/LFS/dataset.

National Statistics Office of Georgia. 2009–2016. "Integrated Household Survey." Accessed June 14, 2018. https://www.geostat.ge/en/modules/categories/127/databases.

National Statistics Office of Georgia. 2017–2020. "Labour Force Survey." Accessed October 12, 2021. https://www.geostat.ge/en/modules/categories/130/labour-force-survey-databases.

OAMDI. 2000–2020. "Harmonized Labor Force Surveys (HLFS)." Palestinian Central Bureau of Statistics (PCBS), Egypt: Economic Research Forum (ERF) Version 1.0 of Licensed Data Files. http://erf.org.eg/data-portal/.

OAMDI. 2008–2012. "Harmonized Labor Force Surveys (HLFS)." Central Agency for Public Mobilization and Statistics (CAPMAS), Egypt: Economic Research Forum (ERF) Version 1.0 of Licensed Data Files. http://erf.org.eg/data-portal/.

Office for National Statistics. 1997–2021. "Quarterly Labour Force Survey." UK Data Service 7th Release, https://doi.org/http://doi.org/10.5255/UKDA-Series-2000026.

Philippine Statistics Authority. 1988–2003. "Labor Force Survey." Accessed August 5, 2019. http://psada.psa.gov.ph/index.php/home.

Poterba, James M., and Lawrence H. Summers. 1986. "Reporting Errors and Labor Market Dynamics." *Econometrica*, 54(6): 1319–1338.

Statistics Botswana. 2019. "Quarterly Multi-Topic Survey (QMTS)." Data received November 23, 2020. https://www.statsbots.org.bw/labour.

Statistics South Africa - producer; DataFirst - distributor. 2008–2021. "Quarterly Labour Force Survey (QLFS)." Version 1 (2010q4–2021); Version 2 (2008–2009, 2010q2–q3); Version 3 (2010q1)., https://doi.org/https://doi.org/10.25828/vkhb-2j69.

Swiss Federal Statistical Office. 2010–2019. "Swiss Labour Force Survey." Received November 8, 2019. https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/slfs.html.

World Bank. 2021. *World Development Indicators.* Washington, D.C.:World Bank.