Global Working Hours

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   - Prime-age (20-59): Labor taxes, social transfers, hours regulations

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   - Hours regulations (World Bank)

Survey Data Sources

Source	Sample Size	Number of Countries	Number of Surveys	Time Period
I2D2	14,512,691	58	198	1977-2017
GMD	944,662	4	4	2011-2022
GLD	116,780,229	20	246	1981-2022
ILO	209,441,939	103	985	1976-2023
EU-LFS	114,141,576	29	908	1983-2022
Other	24,680,938	24	151	1960-2023

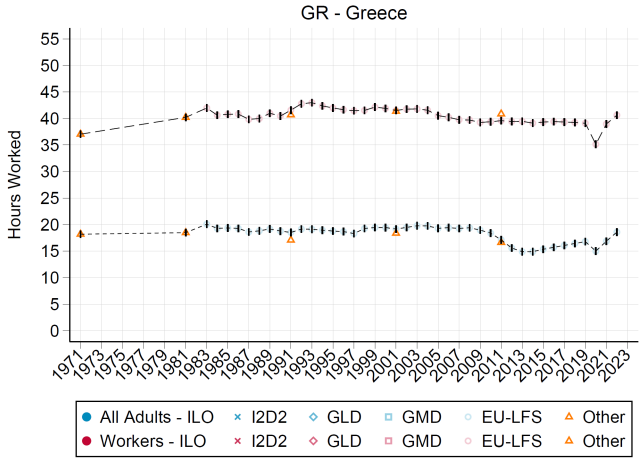
Notes. This table reports the number of individual respondents, the number of countries, the number of surveys, and the time period covered by data source in our final database. I2D2: World Bank I2D2 survey microdatabase. GMD: World Bank Global Monitoring Database. GLD: World Bank Global Labor Database. ILO: International Labor Organization labor force survey microdatabase. EU-LFS: European Union Labor Force Surveys. Other: Luxembourg Income Study survey microdata tabulations, IPUMS International census microdata, Life in Transition Survey, and other country-specific microdata sources.

Survey Data Coverage

	Number of Countries	Earliest Year	Number of Surveys	Sample Size	Population Covered (Last Year)
Western Europe and Anglosphere	24	1963	849	166,152,258	99.4%
Eastern Europe and ex-USSR	28	1991	492	49,823,353	100%
Latin America	24	1971	515	92,766,555	97.2%
East and Southeast Asia	20	1976	247	113,289,775	96.8%
South Asia	6	1973	64	11,507,960	100%
Middle East and North Africa	18	1991	165	36,673,178	85.3%
Sub-Saharan Africa	40	1987	158	10,217,215	98.5%
World	160	1963	2,490	480,430,294	97.3%

Notes. This table describes various features of the new database we have constructed by regions in rows (regions are defined on Figure A.2) and globally in the last row. Sample size sums over all individual micro-records. The last column reports the fraction of the population covered (when pooling across countries).

Data Harmonization Example: select one survey per country-year



Notes: This figure plots the evolution of hours per adult (blue) and hours per worker (red) by data source in Greece, Mexico, the Philippines, and Pakistan, together with the selected series that are used in the final database (black dashed lines). I2D2: World Bank I2D2 survey microdatabase. GMD: World Bank Global Monitoring Database. GLD: World Bank Global Labor Database. ILO: International Labor Organization labor force survey microdatabase. EU-LFS: European Union Labor Force Surveys. Other: other country-specific microdata sources (IPUMS International census microdata for Greece and Pakistan, country-specific household surveys harmonized by the authors for Mexico and the Philippines).

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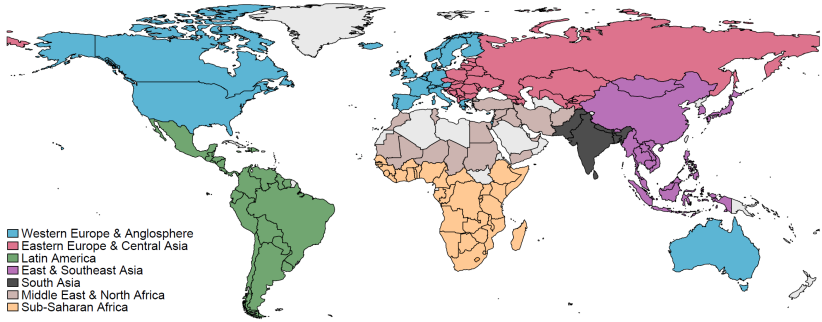
  - Age [5-year bins], gender, school attendance, labor force status, formality, industrial sector, occupation, work hours, rural/urban, wages and self-employment income

Data Coverage and World Regions



Notes: The figure depicts all the countries for which recent hours worked survey data are available for our analysis as well as the regions' breakdown that we will use. Relative to the usual partition of countries by regions, the region Middle East & North Africa is expanded to include Saharian/Sahel countries (Tchad, Niger, Mali, Mauritania) which are majority Muslim and similar to North African countries in their hours worked patterns. Our data cover 97% of the world population. Countries with no data are colored in light grey.

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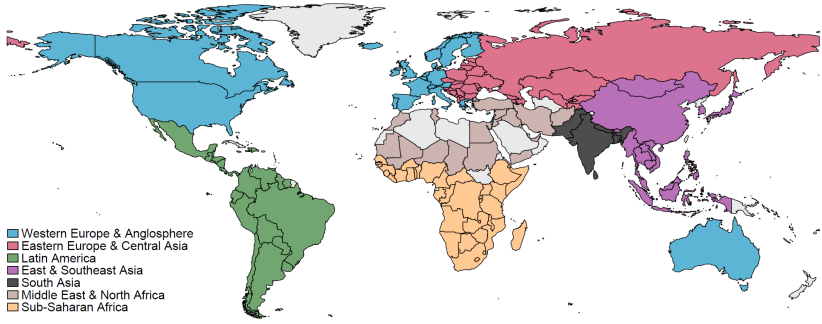

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- Largest missing: Algeria (32m), Saudi Arabia (27m), North Korea (22m), Taiwan (21m), Cuba (9m), Libya (7m), Hong Kong (7m) and Turkmenistan (7m)

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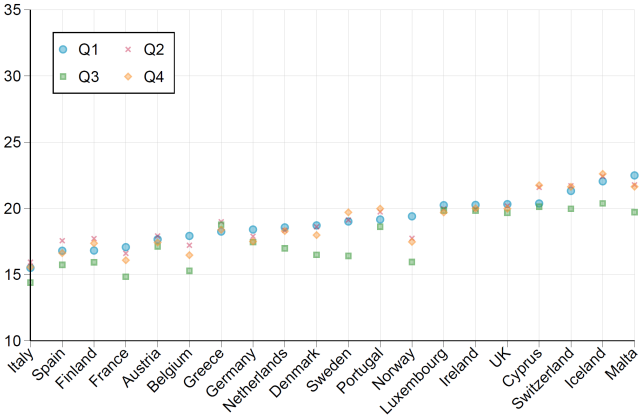
  - Study quarterly fluctuations in hours worked in 80 countries with full-year coverage and data on month of interview

Seasonality: Hours by Quarter, Western Europe



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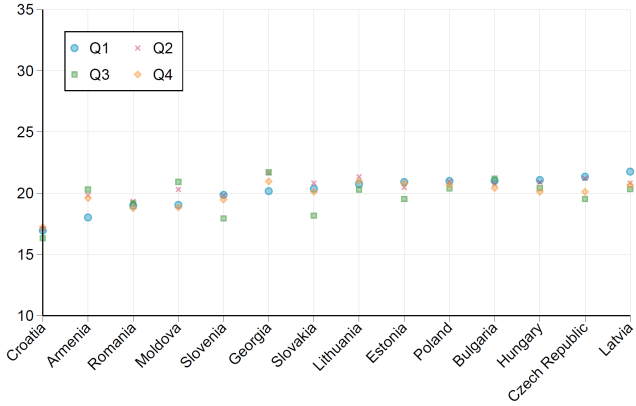

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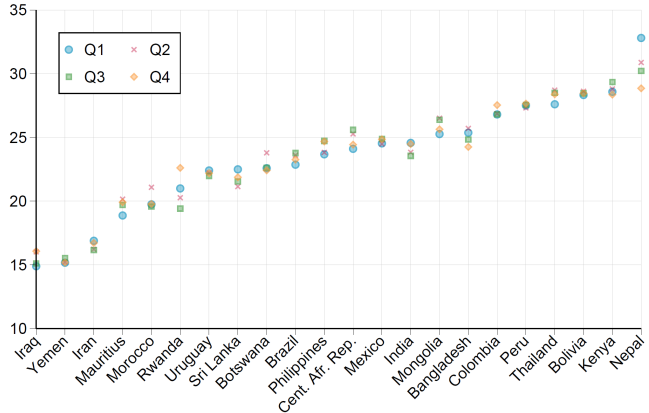

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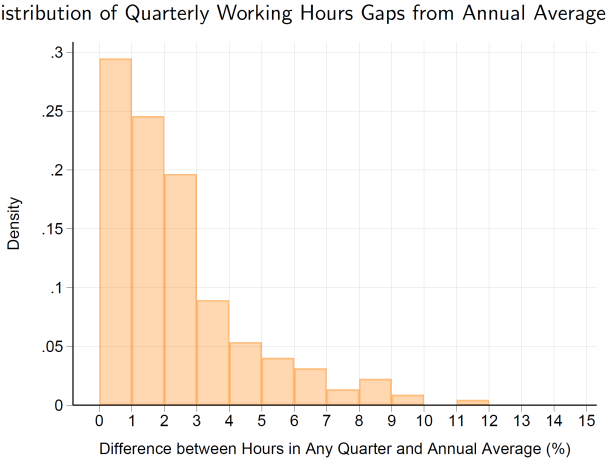
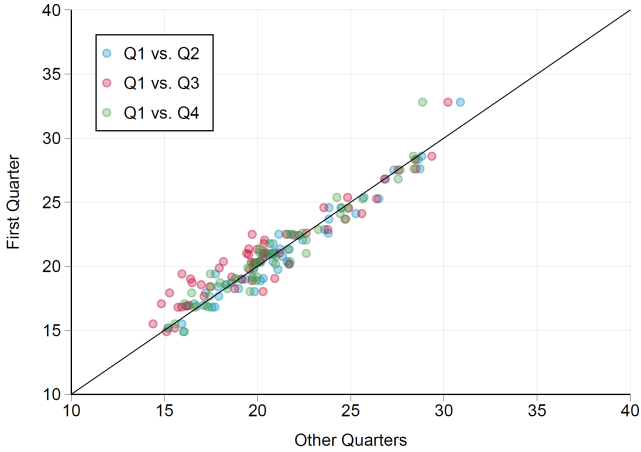
Seasonal Fluctuations in Hours are typically < 5 percent



Notes: Panels (a) and (b) compare hours per adult observed across quarters, based on 224 nationally representative surveys that were fielded in 56 countries throughout the year and provide information on the quarter of interview. Panel (a) compares hours per adult aged 15+ in the first quarter versus other quarters across surveys. Panel (b) plots the distribution of quarterly deviations from annual average hours per adult observed across surveys. Panel (c) compares estimates of hours worked by country before (as in our benchmark estimates of Figure 4(a)) and after making the share of workers with zero hours consistent with legal paid annual leave time in each country (see main text). The best quadratic fit (with countries weighted by population) is depicted in dashed lines.

Seasonality: Correlations across Quarters in Hours



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Worldwide Working Hours

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- Global Working Hours

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  - Worldwide distribution of weekly hours worked among all adults aged 15+

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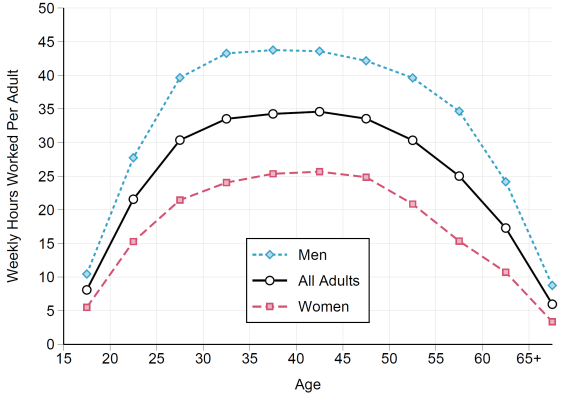
  2. Women (men) supply 35 (65) percent of global (GDP-producing) work hours
  3. Life-cycle (age) and gender patterns (gaps) primarily on the extensive margin

Global Hours Worked by Age and Gender

		By Gender		By Age		
	All	Men	Women	Young	Prime-Age	Elderly
Hours per Adult	24.5	31.7	17.2	7.4	30.6	11.0
Hours per Worker	42.8	45.2	38.2	37.5	43.5	37.9
Employment	58.7%	70.7%	47.0%	21.6%	71.7%	32.6%

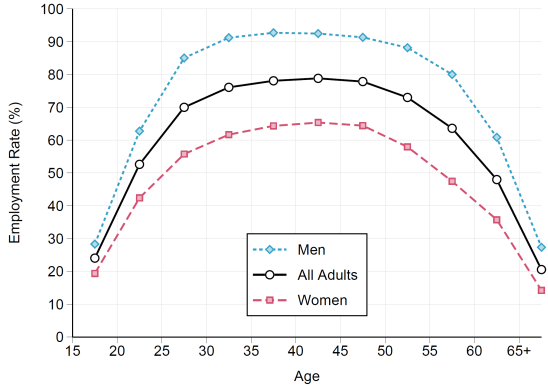
Notes. This table reports global weekly hours worked statistics by gender and broad age groups for all adults (aged 15+). For each country with data (see Figure A.2), we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Estimates are weighted by adult population size in each country to be representative. The sample includes 160 countries and covers 97% of the world adult population. Hours of work are defined in almost all countries as actual hours of work (rather than usual) in the reference week across all jobs including self-employment that contributes to GDP (non-market home produced services such as cleaning, cooking, and childcare are excluded). The employment rate is defined as the fraction of adults having a job (including those on vacation or sick leave). Hours per adult are decomposed into the product of hours per worker and the employment rate. Young: aged 15-19. Prime-age: aged 20-59. Elderly: aged 60+.

Global Weekly Hours per Adult by Age and Gender



Notes: The figure depicts global average weekly hours of work per adult (aged 15 and above) in panel (a), employment rates per adult in panel (b), and weekly hours of work per worker in panel (c) by gender and 5-year age groups 15-19, 20-24, ..., 60-64, and grouping together those aged 65+. For each country with data (see Figure A.2), we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Estimates are weighted by adult population size in each country to be representative. The sample covers 97% of the world adult population. Hours of work are defined in almost all countries as actual hours of work (rather than usual) in the reference week across all jobs including self-employment that contribute to GDP (non-market home produced services such as cleaning, cooking, and childcare are excluded). The employment rate is defined as the fraction of the population having a job (including those on vacation or sick leave). Therefore, unconditional hours in panel (a) decompose into the product of employment rates in panel (b) and hours per worker in panel (c). Hours of work are lower among the young, the elderly, and women and this is driven primarily by employment rates.

Global Employment by Age and Gender



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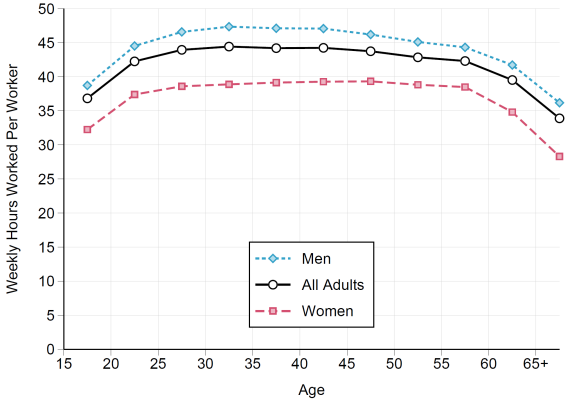
Global Weekly Hours per Worker by Age and Gender



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Aggregate Working Hours over the Course of Development

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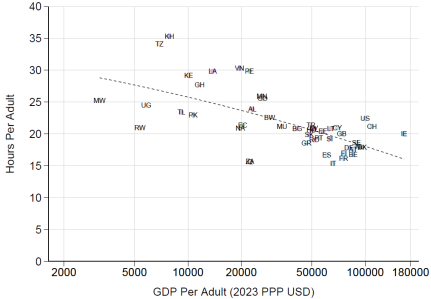
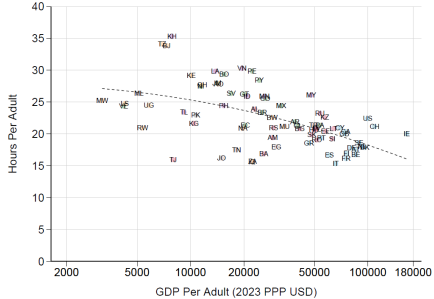
  3. Hours per worker bell-shaped due to shift from agriculture to industry and services

Comparison with Bick, Fuchs-Schündeln, and Lagakos (2018)

(a) Bick et al. (2018) Core Countries

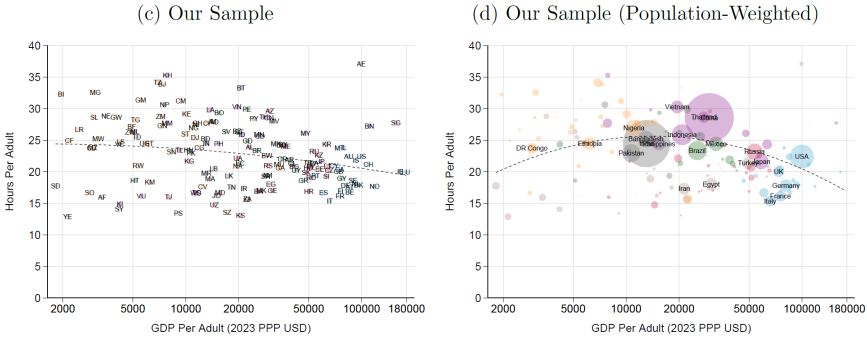


(b) Bick et al. (2018) Full Sample



Notes: The figure compares weekly hours per adult over the course of development in the sample of countries studied by Bick, Fuchs-Schündeln, and Lagakos (2018) with our database on global hours worked. Panel (a) plots hours per adult versus GDP per adult in our database when restricting the analysis to the 49 core countries studied in Bick, Fuchs-Schündeln, and Lagakos (2018). Panel (b) does the same for the 80 countries covered in the Bick, Fuchs-Schündeln, and Lagakos (2018) full database. Panel (c) extends the analysis to all 160 countries in our data. Panel (d) adds population weights as in our benchmark Figure 4(a). In each panel, we depict the best quadratic fit in dashed line.

Hours and GDP per Adult



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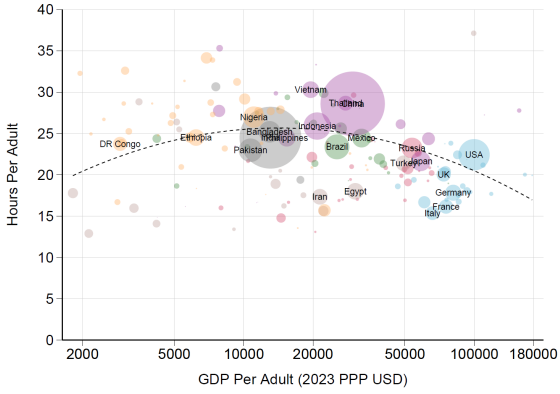
Hours and GDP per Adult

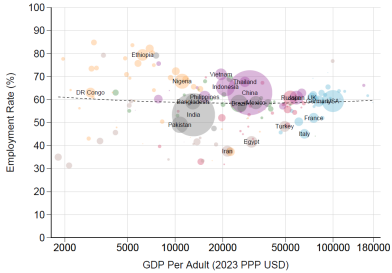
(a) Weekly Hours per Adult



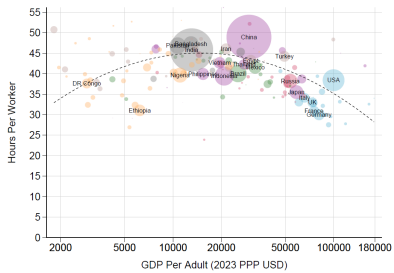
Notes: The figure depicts average weekly hours of work per adult (aged 15+) in panel (a), employment rates per adult in panel (b), and weekly hours of work per worker in panel (c) against log GDP per adult in 2023 PPP USD. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each circle's area is proportional to its adult population; the largest countries' names are depicted. Colors correspond to world regions as depicted in Figure A.2. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a bell shape of hours of work per adult with development. Panel (b) shows overall stability of the employment rate with development and panel (c) shows a bell shape of hours per worker, with a substantial decline for higher income countries.

Hours/Employment and GDP per Worker

(b) Employment Rate



(c) Weekly Hours per Worker



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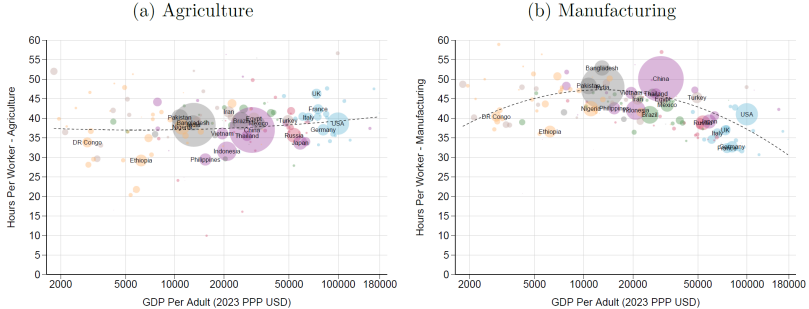
Hours of Work and log GDP per Adult

Panel A: Cross Section

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.875	0.631	-2.256**	3.189***	-1.849***	-4.137***
	(0.580)	(0.660)	(0.991)	(1.208)	(0.592)	(0.806)
Mean DepVar	22.7	28.4	35.0	22.2	7.2	12.4
Rich-Poor Gap	-3.5	2.5	-9.0	12.8	-7.4	-16.5
N	160	160	160	160	159	160
Adjusted R2	0.03	0.01	0.12	0.11	0.17	0.36

Notes. This table reports regression results linking hours of work per adult in level and log GDP per adult (semi-elasticities) across countries in panel A and within countries and over time in panel B. Each column focuses on a specific demographic group. All adults = all adults aged 15+. Prime-age = age 20-59. Panel A includes 97% of the world population from 160 countries using the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Regressions are weighted by adult population size in each country to be representative. Panel B includes a subset of 86 countries for which we have longer time series spanning more than 20 years. Regressions in Panel B include country fixed effects. Rich-poor gap: coefficient on log GDP multiplied by four, corresponding to the total effect of moving from the GDP per adult of Somalia to that of Singapore. In both the cross-section and the panel analysis, there is no strong link between log GDP and hours per adult or hours per prime-age adult. Hours of work of prime-age men are negatively related to GDP per adult while hours of work of prime-age women are positively related to GDP per adult. The two effects offset each other. Hours of work of the young decline with GDP per adult, particularly so in the panel. Hours of work of the elderly decline with GDP per adult in the cross section but not in the panel. Unweighted regressions are presented in Appendix Table A.3 and display similar results.

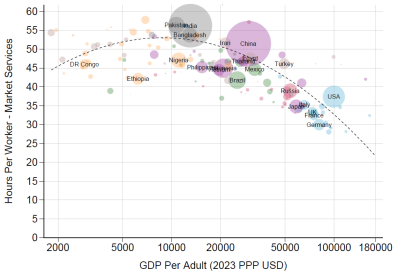
Hours of Work per Worker by Country and Industry



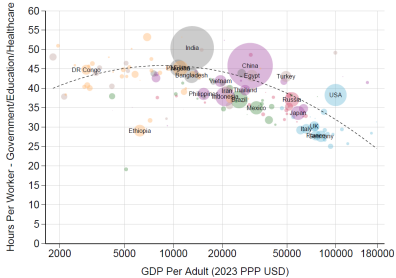
Notes: The figure depicts average weekly hours of work per worker by industry against GDP per adult in 2023 PPP USD. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. Colors correspond to world regions as depicted in Figure A.2. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows that hours per worker in agriculture are stable with GDP per adult at around 40. Panels (b)-(d) show that hours per worker in manufacturing, market services, and government/education/health services first increase slightly and then decrease sharply with GDP per adult. Hours per worker are highest for middle-income countries and in market services and manufacturing.

Hours of Work per Worker by Country and Industry

(c) Market Services



(d) Government/Education/Health Services



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Working Hours Over the Life Cycle

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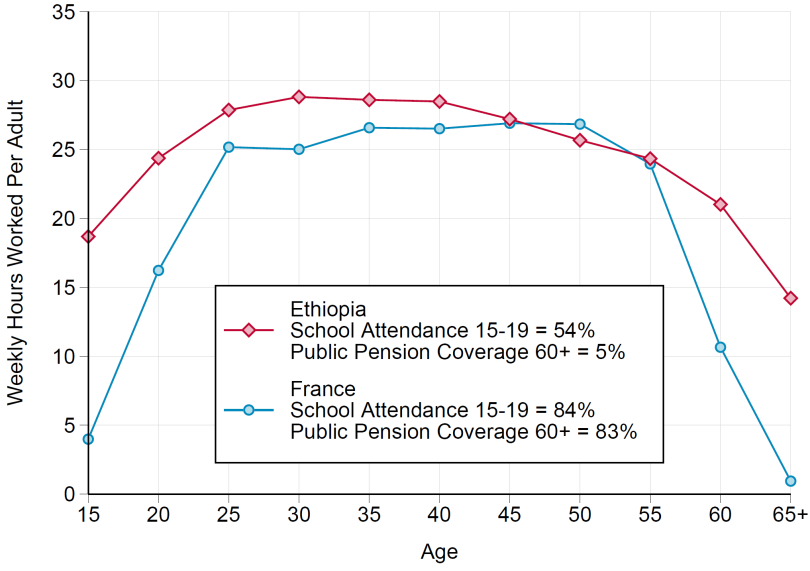
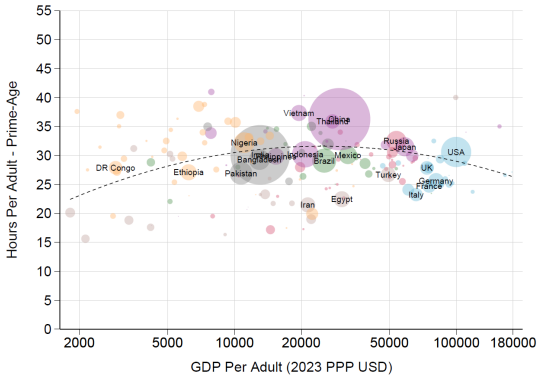
  3. Elderly (60+): declining with development [Pension system]

Motivating Life-Cycle Comparison: France vs. Ethiopia



Hours of Work per Adult by Country and Age Groups

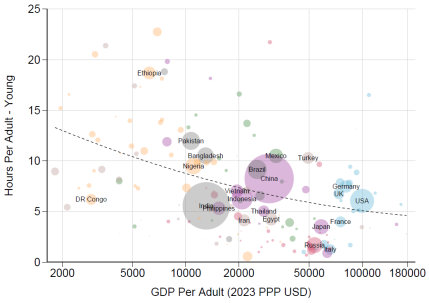
(a) Prime-Age Adults (Aged 20-59)



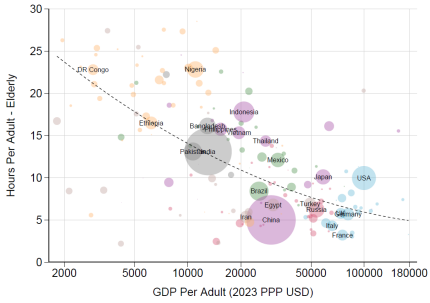
Notes: The figure depicts average weekly hours of work per adult for prime-age adults (aged 20-59) in panel (a), for the young (aged 15-19) in panel (b), and for the elderly (aged 60+) in panel (c) by country ranked by GDP per adult in 2023 PPP USD. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. Colors correspond to world regions as depicted in Figure A.2. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a weak inverted U-shape of prime-age hours of work with development. Panel (b) shows a moderate decline of hours of work of the young with development. Panel (c) shows a strong decline of hours of work of the elderly with development.

Hours of Work per Adult by Country and Age Groups

(b) Young (Aged 15-19)



(c) Elderly (Aged 60+)



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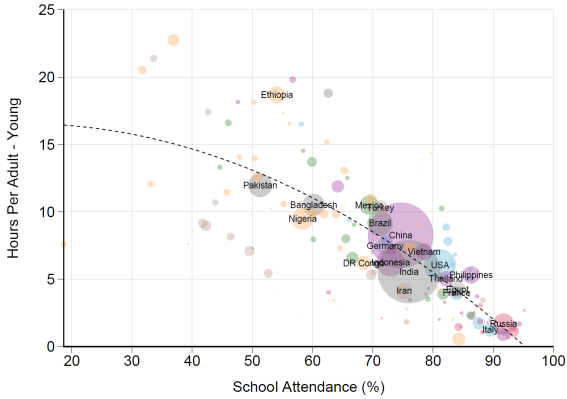
School Attendance and Hours of Work of the Young (15-19)



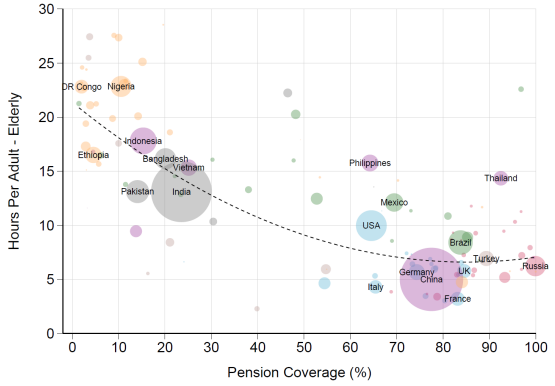
Notes: Panel (a) depicts the correlation between school attendance and hours of work among the young (age 15-19). Panel (b) depicts the correlation between pension coverage and hours of work among the elderly (age 60+). Pension coverage is defined as the fraction of the elderly living in a household where at least one person is receiving a pension. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. Colors correspond to world regions as depicted in Figure A.2. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a strong negative correlation between school attendance and hours of work of the young across countries (see Table 3 for regression results). Panel (b) shows a strong negative correlation between pension coverage and hours of work of the elderly across countries (see Table 4 for regression results).

School Attendance and Hours of Work of the Young (15-19)

	(1)	(2)	(3)	(4)
Log GDP Per Adult	-1.844***		0.835**	2.711***
	(0.615)		(0.343)	(0.607)
Young School Attendance		-25.673***	-29.634***	-30.137***
		(2.722)	(3.091)	(3.561)
Employment: Agriculture				9.721***
				(3.695)
Employment: Manufacturing				0.969
				(6.345)
Mean DepVar	7.1	7.1	7.1	7.1
N	150	150	150	150
Adjusted R2	0.17	0.63	0.65	0.71

Notes. This table reports results from cross-country regressions of average hours of work of the young (aged 15-19) in level on various determinants. Regressions are weighted by adult population size in each country to be representative. The sample includes 150 countries where all the determinants are available and covers 92% of the world adult population. Young school attendance is the fraction (between 0 and 1) of young adults aged 15-19 attending school. Employment: agriculture (resp. manufacturing) is the share of workers in agriculture (resp. manufacturing) countrywide (including all workers). Hours worked of the young is negatively correlated with log GDP per adult (column 1). School attendance among the young is the main determinant of their hours worked (cols. 2-4) and fully explains the negative relationship with GDP (cols. 3-4). Unweighted regressions are presented in Appendix Table A.4 and display similar results.

Pension Coverage and Hours of Work of the Elderly (60+)



Notes: Panel (a) depicts the correlation between school attendance and hours of work among the young (age 15-19). Panel (b) depicts the correlation between pension coverage and hours of work among the elderly (age 60+). Pension coverage is defined as the fraction of the elderly living in a household where at least one person is receiving a pension. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. Colors correspond to world regions as depicted in Figure A.2. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a strong negative correlation between school attendance and hours of work of the young across countries (see Table 3 for regression results). Panel (b) shows a strong negative correlation between pension coverage and hours of work of the elderly across countries (see Table 4 for regression results).

Pension Coverage and Hours of Work of the Elderly (60+)

	(1)	(2)	(3)	(4)	(5)
Log GDP Per Adult	-4.955***			1.446	0.509
	(1.220)			(1.688)	(1.199)
Pension Spending		-36.592		-18.079	-34.118*
		(22.385)		(27.441)	(20.254)
Elderly Population Share		-47.363***		-32.824	-15.083
		(17.135)		(19.805)	(13.886)
Pension Coverage			-14.873***	-10.684***	-7.006**
			(2.224)	(3.659)	(2.918)
Employment: Agriculture					0.979
					(6.281)
Employment: Manufacturing					-33.018***
					(7.139)
Mean DepVar	12.0	12.0	12.0	12.0	12.0
N	92	92	92	92	92
Adjusted R2	0.44	0.57	0.64	0.69	0.79

Notes. This table reports results from cross-country regressions of average hours of work of the elderly (aged 60+) in level on various determinants. Regressions are weighted by adult population size in each country to be representative. The sample covers 92 countries for which all the variables are available. It covers 80% of the world adult population. Pension coverage is defined as the fraction of adults aged 60+ living in a household where at least one person receives a pension. Pension spending is government pension spending relative to GDP. Elderly population share is the share of the population aged 60+. Employment: agriculture (resp. manufacturing) is the share of workers in agriculture (resp. manufacturing) countrywide. Pension coverage is the main determinant of hours worked among the elderly (cols. 3-5) and fully explains the negative relationship with GDP (col. 4). Unweighted regressions are presented in Appendix Table A.5 and display overall similar results.

Working Hours by Gender

Working Hours by Gender

- In all countries, women work less than men

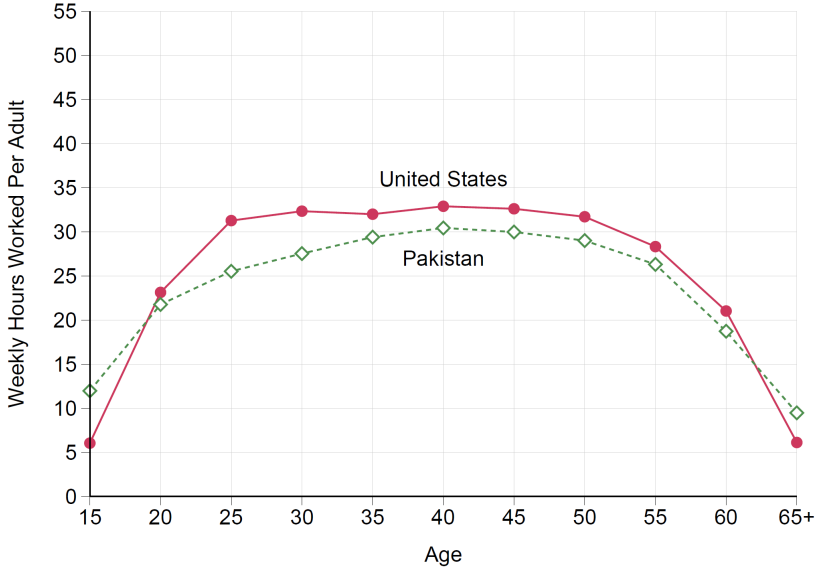
Working Hours by Gender

- In all countries, women work less than men
  1. Men: strongly bell-shaped with development [Structural change: sectoral evolution]

Working Hours by Gender

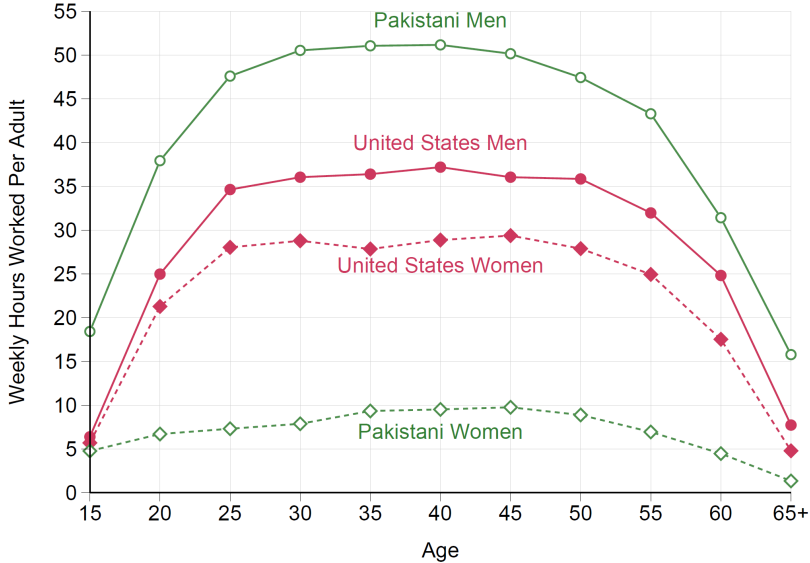
- In all countries, women work less than men
  1. Men: strongly bell-shaped with development [Structural change: sectoral evolution]
  2. Women: weakly increasing with development [Cultural norms and institutions]

Motivating Comparison: Pakistan vs. United States
Hour per Adult by Age Group: All Adults

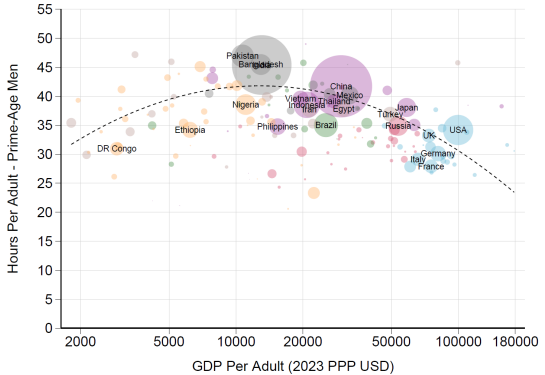


Motivating Comparison: Pakistan vs. United States

Hour per Adult by Age Group: Men vs. Women

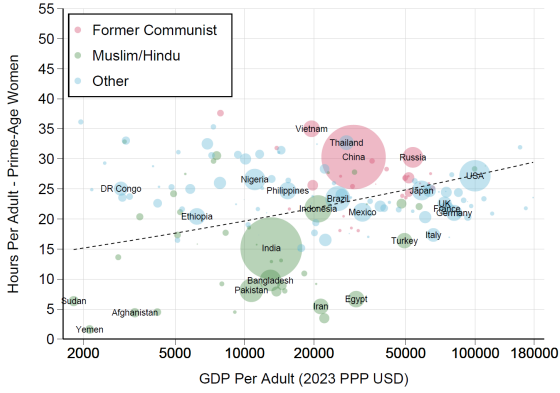


Hours of Work per Adult by Country: Prime-Age Men (20-59)



Notes: The figure depicts average weekly hours of work per adult for prime-age men in panel (a), and prime-age women in panel (b), against GDP per adult in 2023 PPP USD. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. In panel (a), colors correspond to world regions as depicted in Figure A.2. In panel (b), colors group countries in three groups most relevant for female hours worked: former communist countries in red, Muslim/Hindu countries in green, and other countries in blue. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a pronounced inverted U-shape of male prime-age hours of work with development. Panel (b) shows a strong increase of female hours of work with development with particularly low hours among Muslim/Hindu countries (in green) and high hours among former communist countries (in red). If we exclude Muslim/Hindu countries, there is no relationship between GDP per adult and female prime-age hours worked (see Appendix Figure A.14(a)).

Hours of Work per Adult by Country: Prime-Age Women (20-59)



Notes: The figure depicts average weekly hours of work per adult for prime-age men in panel (a), and prime-age women in panel (b), against GDP per adult in 2023 PPP USD. For each country, we use the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. In panel (a), colors correspond to world regions as depicted in Figure A.2. In panel (b), colors group countries in three groups most relevant for female hours worked: former communist countries in red, Muslim/Hindu countries in green, and other countries in blue. The best quadratic fit of the weighted circles is represented by the dashed curve. Panel (a) shows a pronounced inverted U-shape of male prime-age hours of work with development. Panel (b) shows a strong increase of female hours of work with development with particularly low hours among Muslim/Hindu countries (in green) and high hours among former communist countries (in red). If we exclude Muslim/Hindu countries, there is no relationship between GDP per adult and female prime-age hours worked (see Appendix Figure A.14(a)).

Working Hours among Prime-Aged Women 20-59

	(1)	(2)	(3)	(4)
Log GDP Per Adult	3.565***		-1.203	3.063***
	(1.334)		(0.819)	(0.861)
Muslim/Hindu Share		-12.396***	-13.047***	-12.825***
		(1.605)	(1.511)	(1.680)
Former Communist Country		5.503***	5.304***	7.508***
		(0.868)	(0.922)	(1.448)
% Women Living with Young Children		-0.339	-4.634	-6.725**
		(4.008)	(4.945)	(3.378)
Employment: Agriculture				22.256***
				(4.334)
Employment: Manufacturing				-17.977
				(13.433)
Mean DepVar	21.8	21.8	21.8	21.8
N	135	135	135	135
Adjusted R2	0.13	0.76	0.76	0.85

Notes. This table reports results from cross-country regressions of average hours of work of prime-age women in level on various determinants. Regressions are weighted by adult population size in each country to be representative. The sample covers 135 countries for which all the variables are available. It covers 87% of the world adult population. Fraction living with young children is the fraction of prime-age women living in households with one or more children of age 0-5. A higher Muslim/Hindu population share reduces hours of work while being a former communist country increases hours of work. GDP per adult does not have a consistent effect on hours of work of prime-age women. The relation is positive without controls (column 1). It becomes negative with the three sociodemographic controls (column 3), and positive again when controlling for the share of total (male+female) employment in agriculture and manufacturing (column 4). Unweighted regressions are presented in Appendix Table A.6 and display overall similar results.

Long-run Trends in Hours Worked

Long-run Trends in Hours Worked

- Exploit panel dimension

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum

Long-run Trends in Hours Worked

- Exploit panel dimension
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  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

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1. Western Europe since 1980s (14 countries)

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1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)

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- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)
4. Sub-Saharan Africa since 1990s (7 countries)

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)
4. Sub-Saharan Africa since 1990s (7 countries)
5. Indonesia since 1970s

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)
4. Sub-Saharan Africa since 1990s (7 countries)
5. Indonesia since 1970s
6. Pakistan since 1970s

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)
4. Sub-Saharan Africa since 1990s (7 countries)
5. Indonesia since 1970s
6. Pakistan since 1970s
7. Bangladesh since 1990s

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

1. Western Europe since 1980s (14 countries)
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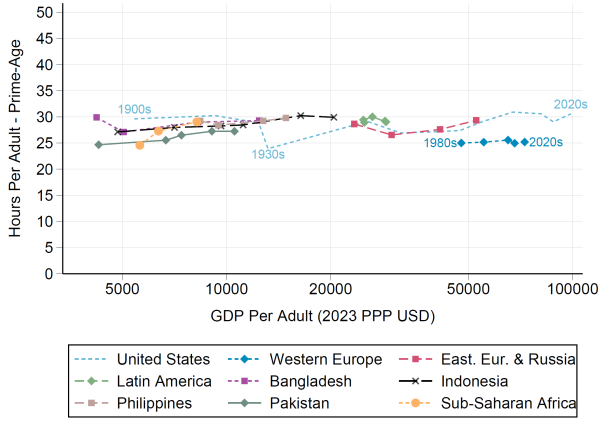
5. Indonesia since 1970s
6. Pakistan since 1970s
7. Bangladesh since 1990s
8. Philippines since 1990s

Long-run Trends in Hours Worked

- Exploit panel dimension
  - Spanning at least 20 years for 86 countries distributed across world regions and along the development spectrum
  - Allowing to analyze long-run trends in hours worked and whether they match cross-country comparisons

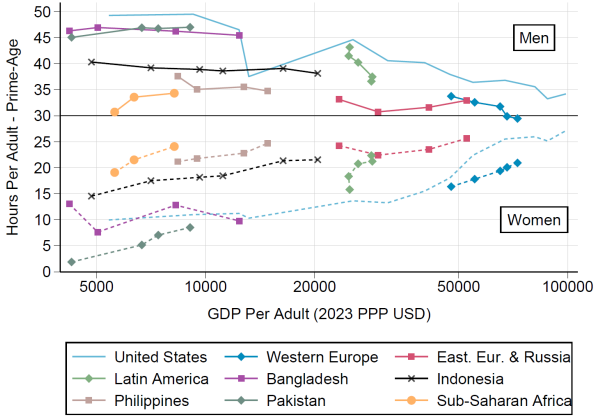
1. Western Europe since 1980s (14 countries)
2. Eastern Europe and Russia since 1990s (11 countries)
3. Latin America since 1980s (6 countries)
4. Sub-Saharan Africa since 1990s (7 countries)
5. Indonesia since 1970s
6. Pakistan since 1970s
7. Bangladesh since 1990s
8. Philippines since 1990s
9. United States since 1900 (Francis and Ramey (2009) + CPS)

Evolution of Hours of Work: Prime-Age Adults [All] (20-59)



Notes: The figure depicts the evolution by decade of average weekly hours of work per person for prime-age adults (age 20-59) in panel (a), and separately for prime-age men and prime-age women in panel (b) for regions and countries for which we have long time series available. Hours are plotted against country or region GDP per adult in the corresponding decade (expressed in 2023 PPP USD). In the series the last dot is the 2020s (excluding COVID years 2020-21), the next to last dot is the 2010s, etc. The long times series for the United States combines Current Population Survey data since 1962 along with Francis and Ramey (2009) data for 1900-1959. Panel (a) shows striking stability of prime-age hours of work overtime in each region/country. Panel (b) shows that hours of work generally increase for women while they symmetrically decrease for men explaining the stability in panel (a).

Evolution of Hours of Work: Prime-Age Adults [Men vs. Women] (20-59)



Notes: The figure depicts the evolution by decade of average weekly hours of work per person for prime-age adults (age 20-59) in panel (a), and separately for prime-age men and prime-age women in panel (b) for regions and countries for which we have long time series available. Hours are plotted against country or region GDP per adult in the corresponding decade (expressed in 2023 PPP USD). In the series the last dot is the 2020s (excluding COVID years 2020-21), the next to last dot is the 2010s, etc. The long times series for the United States combines Current Population Survey data since 1962 along with Francis and Ramey (2009) data for 1900-1959. Panel (a) shows striking stability of prime-age hours of work overtime in each region/country. Panel (b) shows that hours of work generally increase for women while they symmetrically decrease for men explaining the stability in panel (a).

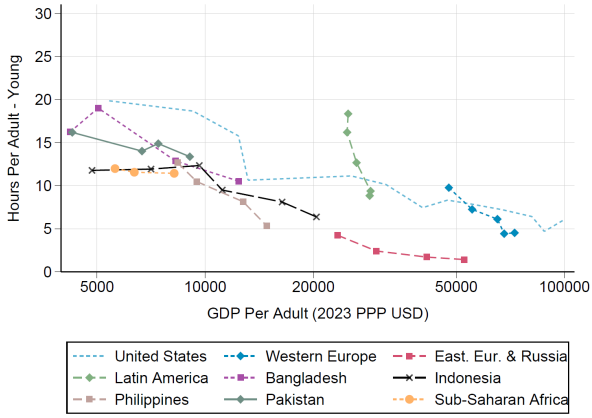
Hours of Work and GDP per Adult

Panel B: Panel Data

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.740**	0.816**	-5.315***	6.259***	-7.843***	-0.145
	(0.313)	(0.317)	(0.381)	(0.506)	(0.529)	(0.336)
Mean DepVar	21.4	27.6	34.8	20.6	7.3	8.4
Rich-Poor Gap	-3.0	3.3	-21.3	25.0	-31.4	-0.6
N	2,138	2,138	2,138	2,138	2,115	2,138
Within R2	0.01	0.01	0.23	0.36	0.33	0.00

Notes. This table reports regression results linking hours of work per adult in level and log GDP per adult (semi-elasticities) across countries in panel A and within countries and over time in panel B. Each column focuses on a specific demographic group. All adults = all adults aged 15+. Prime-age = age 20-59. Panel A includes 97% of the world population from 160 countries using the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Regressions are weighted by adult population size in each country to be representative. Panel B includes a subset of 86 countries for which we have longer time series spanning more than 20 years. Regressions in Panel B include country fixed effects. Rich-poor gap: coefficient on log GDP multiplied by four, corresponding to the total effect of moving from the GDP per adult of Somalia to that of Singapore. In both the cross-section and the panel analysis, there is no strong link between log GDP and hours per adult or hours per prime-age adult. Hours of work of prime-age men are negatively related to GDP per adult while hours of work of prime-age women are positively related to GDP per adult. The two effects offset each other. Hours of work of the young decline with GDP per adult, particularly so in the panel. Hours of work of the elderly decline with GDP per adult in the cross section but not in the panel. Unweighted regressions are presented in Appendix Table A.3 and display similar results.

Evolution of Hours of Work: Young (15-19)



Notes: The figure depicts the evolution by decade of average weekly hours of work per adult for the young (age 15-19) in panel (a), and for the elderly (age 60+) in panel (b) for regions and countries for which we have long time series available. Hours are plotted against country or region GDP per adult in the corresponding period (expressed in 2023 PPP USD). In the series the last dot is the 2020s (excluding COVID years 2020-21), the next to last dot is the 2010s, etc. The long times series for the United States combines Current Population Survey data since 1962 along with Francis and Ramey (2009) data for 1900-1959. Panel (a) shows almost universal and often large declines in hours of work of the young over time within regions/countries. In contrast, panel (b) shows general stability in hours of work of the elderly over time within regions/countries (except for the U.S. long time series and steep decline in 1900-1960s).

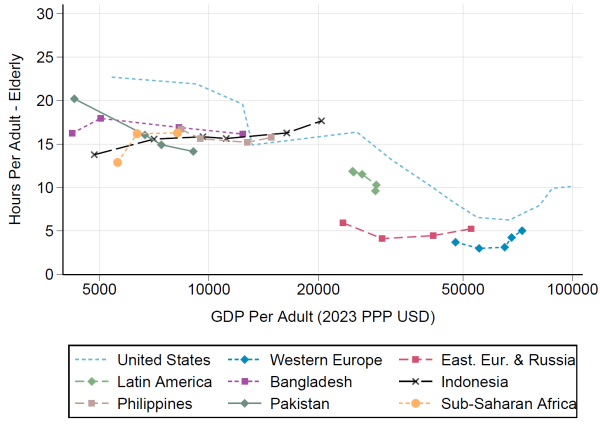
Hours of Work and GDP per Adult

Panel B: Panel Data

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.740**	0.816**	-5.315***	6.259***	-7.843***	-0.145
	(0.313)	(0.317)	(0.381)	(0.506)	(0.529)	(0.336)
Mean DepVar	21.4	27.6	34.8	20.6	7.3	8.4
Rich-Poor Gap	-3.0	3.3	-21.3	25.0	-31.4	-0.6
N	2,138	2,138	2,138	2,138	2,115	2,138
Within R2	0.01	0.01	0.23	0.36	0.33	0.00

Notes. This table reports regression results linking hours of work per adult in level and log GDP per adult (semi-elasticities) across countries in panel A and within countries and over time in panel B. Each column focuses on a specific demographic group. All adults = all adults aged 15+. Prime-age = age 20-59. Panel A includes 97% of the world population from 160 countries using the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Regressions are weighted by adult population size in each country to be representative. Panel B includes a subset of 86 countries for which we have longer time series spanning more than 20 years. Regressions in Panel B include country fixed effects. Rich-poor gap: coefficient on log GDP multiplied by four, corresponding to the total effect of moving from the GDP per adult of Somalia to that of Singapore. In both the cross-section and the panel analysis, there is no strong link between log GDP and hours per adult or hours per prime-age adult. Hours of work of prime-age men are negatively related to GDP per adult while hours of work of prime-age women are positively related to GDP per adult. The two effects offset each other. Hours of work of the young decline with GDP per adult, particularly so in the panel. Hours of work of the elderly decline with GDP per adult in the cross section but not in the panel. Unweighted regressions are presented in Appendix Table A.3 and display similar results.

Evolution of Hours of Work: Eldery (60+)



Notes: The figure depicts the evolution by decade of average weekly hours of work per adult for the young (age 15-19) in panel (a), and for the elderly (age 60+) in panel (b) for regions and countries for which we have long time series available. Hours are plotted against country or region GDP per adult in the corresponding period (expressed in 2023 PPP USD). In the series the last dot is the 2020s (excluding COVID years 2020-21), the next to last dot is the 2010s, etc. The long times series for the United States combines Current Population Survey data since 1962 along with Francis and Ramey (2009) data for 1900-1959. Panel (a) shows almost universal and often large declines in hours of work of the young over time within regions/countries. In contrast, panel (b) shows general stability in hours of work of the elderly over time within regions/countries (except for the U.S. long time series and steep decline in 1900-1960s).

Hours of Work and GDP per Adult

Panel B: Panel Data

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.740**	0.816**	-5.315***	6.259***	-7.843***	-0.145
	(0.313)	(0.317)	(0.381)	(0.506)	(0.529)	(0.336)
Mean DepVar	21.4	27.6	34.8	20.6	7.3	8.4
Rich-Poor Gap	-3.0	3.3	-21.3	25.0	-31.4	-0.6
N	2,138	2,138	2,138	2,138	2,115	2,138
Within R2	0.01	0.01	0.23	0.36	0.33	0.00

Notes. This table reports regression results linking hours of work per adult in level and log GDP per adult (semi-elasticities) across countries in panel A and within countries and over time in panel B. Each column focuses on a specific demographic group. All adults = all adults aged 15+. Prime-age = age 20-59. Panel A includes 97% of the world population from 160 countries using the most recent labor force survey available (generally 2022-2023 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Regressions are weighted by adult population size in each country to be representative. Panel B includes a subset of 86 countries for which we have longer time series spanning more than 20 years. Regressions in Panel B include country fixed effects. Rich-poor gap: coefficient on log GDP multiplied by four, corresponding to the total effect of moving from the GDP per adult of Somalia to that of Singapore. In both the cross-section and the panel analysis, there is no strong link between log GDP and hours per adult or hours per prime-age adult. Hours of work of prime-age men are negatively related to GDP per adult while hours of work of prime-age women are positively related to GDP per adult. The two effects offset each other. Hours of work of the young decline with GDP per adult, particularly so in the panel. Hours of work of the elderly decline with GDP per adult in the cross section but not in the panel. Unweighted regressions are presented in Appendix Table A.3 and display similar results.

Hours of Work and GDP per Adult: Cross-Section vs. Panel Data

Panel A: Cross Section

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.875	0.631	-2.256**	3.189***	-1.849***	-4.137***
	(0.580)	(0.660)	(0.991)	(1.208)	(0.592)	(0.806)
Mean DepVar	22.7	28.4	35.0	22.2	7.2	12.4
Rich-Poor Gap	-3.5	2.5	-9.0	12.8	-7.4	-16.5
N	160	160	160	160	159	160
Adjusted R2	0.03	0.01	0.12	0.11	0.17	0.36

Panel B: Panel Data

	(1) All Adults	(2) Prime-Age Adults	(3) Prime-Age Men	(4) Prime-Age Women	(5) Young 15-19	(6) Elderly 60+
Log GDP Per Adult	-0.740**	0.816**	-5.315***	6.259***	-7.843***	-0.145
	(0.313)	(0.317)	(0.381)	(0.506)	(0.529)	(0.336)
Mean DepVar	21.4	27.6	34.8	20.6	7.3	8.4
Rich-Poor Gap	-3.0	3.3	-21.3	25.0	-31.4	-0.6
N	2,138	2,138	2,138	2,138	2,115	2,138
Within R2	0.01	0.01	0.23	0.36	0.33	0.00

Cross-Sectional vs. Panel Working Hours and GDP

Cross-Sectional vs. Panel Working Hours and GDP

- Young (15-19) hours of work: Fall faster in panel than in cross-section

Cross-Sectional vs. Panel Working Hours and GDP

- Young (15-19) hours of work: Fall faster in panel than in cross-section
  - Developing countries are increasing school attendance faster than richer countries did earlier [correlations on the next slide]

Cross-Sectional vs. Panel Working Hours and GDP

- Young (15-19) hours of work: Fall faster in panel than in cross-section
  - Developing countries are increasing school attendance faster than richer countries did earlier [correlations on the next slide]
- Elderly (60+) hours of work: Fall sharply in cross-section but stable in panel (since 1970s)

Cross-Sectional vs. Panel Working Hours and GDP

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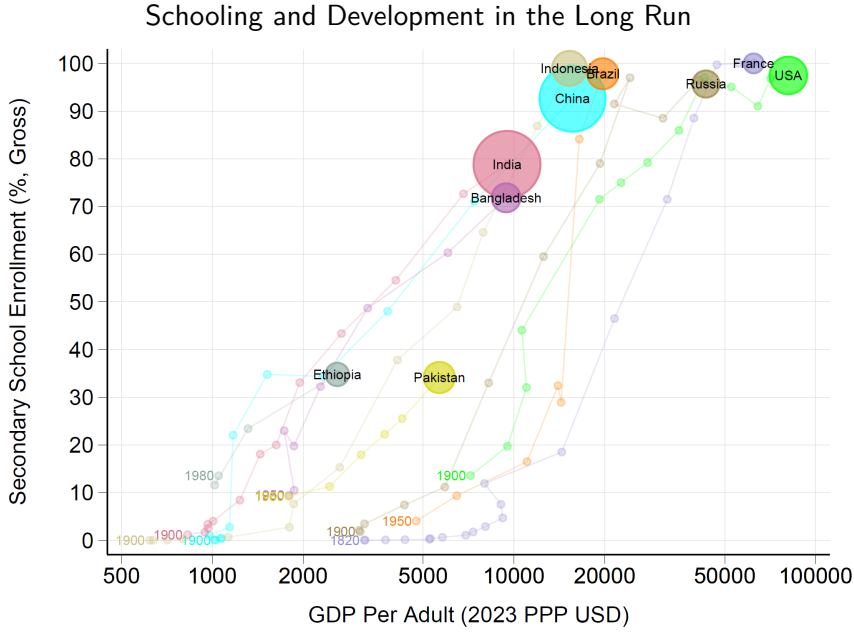
- Prime-Age Men and Women: Gender convergence is faster in panel than in cross-section
  - Gender equality moves faster in developing world than it did in richer countries
- Probably reflects lessons from richer countries and consensus of advisory international organizations (World Bank, IMF)


Schooling and Development in the Long Run
Secondary School Enrollment (%, Gross)
GDP Per Adult (2023 PPP USD)
100
90
80
70
60
50
40
30
20
10
0
500
1000
2000
5000
10000
20000
50000
100000
Indonesia
Brazil
China
France
USA
Russia
India
Bangladesh
Ethiopia
Pakistan
1980
1950
1900
1900
1900
1900
1950
1900
1820

Prime-Age Hours: Labor Taxes, Transfers, and Regulations

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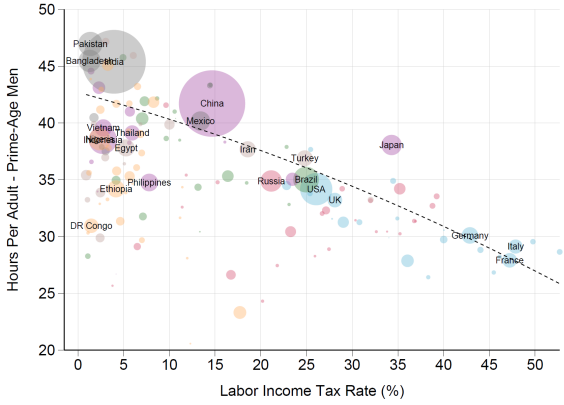
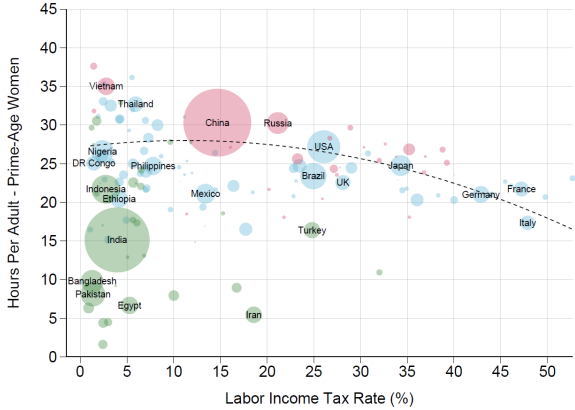
- Working Hours Regulations
  - Overtime premium pay, maximum hours, mandated vacations, etc
  - World Bank has database of working hours regulations (12 variables): Saez and Gethin (2025) create a single index

Labor Taxes and Hours of Work of Prime-Age Adults: Men



Notes: The figure depicts the correlation between average labor tax rates and hours of work per adult for prime-age men in panel (a) and prime-age women in panel (b). In each panel, we use the most recent labor force survey available (generally 2022 or 2019 as we exclude COVID years whenever possible, see Appendix Table A.9). Each country's circle's area is proportional to its adult population; the largest countries' names are depicted. In panel (a), colors correspond to world regions as depicted in Figure A.2. In panel (b), colors group countries in three groups most relevant for female hours worked: former communist countries in red, Muslim/Hindu countries in green, and other countries in blue. The best quadratic fit of the weighted circles is represented by the dashed curve. For women, the best quadratic fit excludes Muslim/Hindu countries. Average labor tax rates are from Bachas et al. (2022). Panel (a) shows a strong negative correlation between labor tax rates and hours of work of prime-age men across countries. Panel (b) shows that this negative correlation also holds for women if we exclude Muslim/Hindu countries.

Labor Taxes and Hours of Work of Prime-Age Adults: Women



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Elasticities of Prime-Age Hours Worked with Respect to Net-of-Labor Tax Rates

A. Cross Section

	Hours Per Adult	Hours Per Worker	Employment Rate	Prime-Age Men	Prime-Age Women
$\log 1-\tau(L)$	0.89***	0.62***	0.27**	0.76***	1.22***
	(0.16)	(0.12)	(0.13)	(0.16)	(0.31)
Log GDP Per Adult	0.08***	0.05**	0.03	0.05*	0.14**
	(0.03)	(0.02)	(0.03)	(0.03)	(0.07)
N	138	138	138	138	138
Adjusted R2	0.43	0.50	0.49	0.44	0.62

Notes. This table reports results of regressions linking measures of log-hours worked for prime-age adults (across columns) on log net-of-labor tax rate and log GDP per adult across countries in panel A and in panel analysis with country fixed effects in panel B. Estimates can all be interpreted as elasticities of hours worked with respect to net-of-tax rates or GDP per adult. Regressions are weighted by adult population size in each country to be representative. The sample in panel A covers 138 countries and 95% of the world adult population. In Panel A, we include the Muslim/Hindu population share as control (coefficients not displayed) as it strongly affects female hours of work. In Panel B, we add a time trend to each regression (coefficients not displayed) to absorb the secular increase in female hours—and corresponding decrease for men. Labor tax rates depress hours of work, especially in the cross section. The elasticity of hours with respect to net-of-tax rates on labor income is generally much higher than the elasticity of hours with respect to GDP per adult. Unweighted regressions are presented in Appendix Table A.7 and display overall similar results.

Elasticities of Prime-Age Hours Worked with Respect to Net-of-Labor Tax Rates

B. Panel Data

	Hours Per Adult	Hours Per Worker	Employment Rate	Prime-Age Men	Prime-Age Women
$\log 1-\tau(L)$	0.27***	0.42***	-0.16***	0.37***	0.17
	(0.08)	(0.05)	(0.05)	(0.07)	(0.13)
Log GDP Per Adult	0.11***	0.05***	0.06***	0.16***	0.02
	(0.02)	(0.01)	(0.02)	(0.02)	(0.04)
N	1963	1963	1963	1963	1963
Adjusted R2	0.83	0.89	0.89	0.90	0.91

Notes. This table reports results of regressions linking measures of log-hours worked for prime-age adults (across columns) on log net-of-labor tax rate and log GDP per adult across countries in panel A and in panel analysis with country fixed effects in panel B. Estimates can all be interpreted as elasticities of hours worked with respect to net-of-tax rates or GDP per adult. Regressions are weighted by adult population size in each country to be representative. The sample in panel A covers 138 countries and 95% of the world adult population. In Panel A, we include the Muslim/Hindu population share as control (coefficients not displayed) as it strongly affects female hours of work. In Panel B, we add a time trend to each regression (coefficients not displayed) to absorb the secular increase in female hours—and corresponding decrease for men. Labor tax rates depress hours of work, especially in the cross section. The elasticity of hours with respect to net-of-tax rates on labor income is generally much higher than the elasticity of hours with respect to GDP per adult. Unweighted regressions are presented in Appendix Table A.7 and display overall similar results.

Elasticities of Prime-Age Hours Worked: Controlling for Regulations

	Hours Per Adult	Hours Per Worker	Employment Rate	Prime-Age Men	Prime-Age Women
Before Controls					
$\log 1-\tau(L)$	0.836***	0.763***	0.116	0.736***	1.045***
	(0.146)	(0.183)	(0.124)	(0.146)	(0.300)
Controlling for Regulations					
$\log 1-\tau(L)$	0.125	0.262*	-0.136	0.091	-0.259
	(0.211)	(0.135)	(0.225)	(0.156)	(0.557)
Formal Employment	-0.425***	-0.122	-0.291*	-0.373***	-0.970**
	(0.147)	(0.132)	(0.153)	(0.134)	(0.412)
Labor Regulations Index	-0.180**	-0.236**	0.021	-0.171**	-0.214
	(0.090)	(0.105)	(0.078)	(0.079)	(0.205)
N	126	126	126	126	126

Notes. This table reports elasticities of prime-age hours worked with respect to the net-of-tax rate on labor income across countries as in Table 6A and how those elasticities are affected when adding controls for social protection spending (excluding pensions) relative to GDP in Panel B, controls for labor regulations and the share of formal workers in Panel C, and both sets of controls in Panel D. Social spending is measured in GDP points so that the coefficient captures the effect of 1 extra GDP point on log-hours. In all these regressions, we also include log GDP per adult and Muslim/Hindu population share as in Table 6, Panel A. The sample in all panels covers 126 countries (92% of the world adult population) for which all the tax, social spending, regulations, and formality variables are available. This is why coefficients in panel A are slightly different than in Table 6, Panel A (which included 138 countries). Social protection spending includes all cash and quasi-cash transfers to individuals but excludes public pensions as we focus on prime-age adults (age 20-59). The labor regulations index is constructed by combining 12 variables on working hours regulations from the World Bank Employing Workers database. All regressions are weighted by adult population size in each country to be representative. Adding government spending reduces the elasticity of hours with respect to the net-of-labor-tax rate showing that traditional income effects from government spending partly explain the large elasticities in Panel A. Adding working time regulations and the formal share of employment reduces even more sharply the elasticity. Working time regulations and formality both reduce hours of work. Combining both sets of controls, the elasticity of hours with respect to the net-of-labor-tax rate become small and insignificant. Unweighted regressions are presented in Appendix Table A.8 and display overall similar results.

Elasticities of Prime-Age Hours Worked: Controlling for Both

	Hours Per Adult	Hours Per Worker	Employment Rate	Prime-Age Men	Prime-Age Women
Before Controls					
$\log 1-\tau(L)$	0.836***	0.763***	0.116	0.736***	1.045***
	(0.146)	(0.183)	(0.124)	(0.146)	(0.300)
Controlling for Social Spending and Regulations					
$\log 1-\tau(L)$	0.044	0.135	-0.109	0.015	-0.264
	(0.208)	(0.142)	(0.220)	(0.153)	(0.520)
Social Protection/GDP	-0.016**	-0.025**	0.005	-0.015*	-0.001
	(0.008)	(0.012)	(0.006)	(0.009)	(0.017)
Formal Employment	-0.336**	0.016	-0.320**	-0.290**	-0.964**
	(0.154)	(0.104)	(0.161)	(0.137)	(0.466)
Labor Regulations Index	-0.127	-0.152**	0.004	-0.122*	-0.210
	(0.086)	(0.070)	(0.083)	(0.069)	(0.234)
N	126	126	126	126	126

Notes. This table reports elasticities of prime-age hours worked with respect to the net-of-tax rate on labor income across countries as in Table 6A and how those elasticities are affected when adding controls for social protection spending (excluding pensions) relative to GDP in Panel B, controls for labor regulations and the share of formal workers in Panel C, and both sets of controls in Panel D. Social spending is measured in GDP points so that the coefficient captures the effect of 1 extra GDP point on log-hours. In all these regressions, we also include log GDP per adult and Muslim/Hindu population share as in Table 6, Panel A. The sample in all panels covers 126 countries (92% of the world adult population) for which all the tax, social spending, regulations, and formality variables are available. This is why coefficients in panel A are slightly different than in Table 6, Panel A (which included 138 countries). Social protection spending includes all cash and quasi-cash transfers to individuals but excludes public pensions as we focus on prime-age adults (age 20-59). The labor regulations index is constructed by combining 12 variables on working hours regulations from the World Bank Employing Workers database. All regressions are weighted by adult population size in each country to be representative. Adding government spending reduces the elasticity of hours with respect to the net-of-labor-tax rate showing that traditional income effects from government spending partly explain the large elasticities in Panel A. Adding working time regulations and the formal share of employment reduces even more sharply the elasticity. Working time regulations and formality both reduce hours of work. Combining both sets of controls, the elasticity of hours with respect to the net-of-labor-tax rate become small and insignificant. Unweighted regressions are presented in Appendix Table A.8 and display overall similar results.

Conclusion

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  1. Education (young) and pension systems (elderly)

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  2. Cultural norms (gender)

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  5. Little independent effect of economic development
- Collective choices shape working hours over and above pure economic factors