

literacy rate for the 15-year-olds-and-over rose from 12% to 86%. University enrolment for the 18-to-24-year-olds rose from less than 1% to 37%. The proportion of university graduates for the 25-year-olds-and-over rise from less than 1% to 17%. Sources and series: wid.world



Table 1. The World Human Capital Expenditure Database (WHCE): Geographical Coverage     (57 core territories = 48 main countries + 9 residual regions)						
East Asia (5)	China, Japan, South Korea, Taïwan Other EASA					
Europe (11)	Britain, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Other W.EUR, Other E.EUR					
Latin America (6)	Argentina, Brasil, Chile, Colombia Mexico, Other LATAM					
Middle East/	Algeria, Egypt, Iran, Morocco, Saudi					
North Africa (8)	Arabia, Turkey, UAE, Other MENA					
North America/	USA, Canana, Australia, New Zealand					
Oceania (5)	Other NAOC					
Russia/	Russia					
Central Asia (2)	Other RUCA					
South/South-East	Bengladesh, India, Indonesia, Myanmar, Pakistan,					
Asia (9)	Philipinnes, Thailand, Vietnam, Other SSEA					
Sub-Saharan	DR Congo, Ethiopa, Kenya, Ivory Coast, Mali, Niger,					
Africa (11)	Nigeria, Rwanda, Sudan, South Africa, Other SSAF					
Interpretation. The World Human Cap	ital Expenditure Database (WHCE) provides data series for 57 core territories					
(48 main countries + 9 residual regior	ns, which we define using fixed 2025 borders) covering the entire world over the					

(48 main countries + 9 residual regions, which we define using fixed 2025 borders) covering the entire world over the 1800-2025 period. The database includes series on public expenditure and revenue and their components, expressed as % of GDP. It also includes series on private education & health expenditure and age-adjusted education and health expenditure. Over the recent decades (1980-2025), we provide similar series for 216 core countries and jurisdictions (168 of which define the 9 residual regions), again with fixed 2025 borders, and with additional decompositions (e.g. for primary, secondary and tertiary education). All series are also available and will be regularly updated in the World Inequality Database (wid.world).





culture/recreation/religion, community services (water, light, etc.), environmental protection (waste, biodiversity, etc.), 8% for social protectio (old-age pensions, unemployment, family benefits, maternity, sick-leave, safety nets, etc.) and 2% for other expenditures (economic affairs excluding roads and basic infrastructures included in general public services). **Sources and series**: wid.world

## Fig. 4a. The rise of the social State: Europe



culture/recreation/religion, community services (water, light, etc.), environmental protection (waste, biodiversity, etc.), 17% for social protection (old-age pensions, unemployment, family benefits, maternity, sick-leave, safety nets, etc.) and 3% for other expenditures (economic affairs excluding roads and basic infrastructures included in general public services). **Sources and series**: wid.world



## Fig. 4b. The (limited) rise of the social State: Subsaharan Africa

for general public services (justice, police, general administration, roads, etc.), 4% for education, 2% for health, 2% for research, culture/recreation/religion, community services (water, light, etc.), environmental protection (waste, biodiversity, etc.), 2% for social protection (old-age pensions, unemployment, family benefits, maternity, sick-leave, safety nets, etc.) and 2% for other expenditures (economic affairs excluding roads and basic infrastructures included in general public services). **Sources and series**: wid.world









Sources and series: see wid.world









age individuals than for the rest of the population, we find that public health expenditure varies from about 2% of GDP in Subsaharan Africa and South & South-East Asia to about 8-9% of GDP in Europe and North America/Oceania. Sources and series: wid.world



regions, from 220€ in Subsaharan Africa to 9025€ in North America/Oceania (PPP € 2025), i.e. a gap of almost1 to 50. If we were using MERs (maket exchange rates) rather than PPPs (purchasing power parities), the gaps would be 2-3 times larger. Sources & series: wid world



40% of the world public education expenditure (measured in PPP € 2025). In contrast, Subsaharan Africa and South & South-East Asia host 60% of the global school-age population and benefit from 16% of the global education expenditure. **Sources & series**: wid world





**Interpretation**. In 2025, average public health expenditure per individual aged 0-to-64-year-old) (assuming that older individuals receive 3 times this amount) varies enormously across world regions, from 50€ in Subsaharan Africa to 3 198€ in North America/Oceania (PPP € 2025), i.e. a gap of about 1 to 60. If we were using MERs (maket exchange rates) rather than PPPs (purchasing power parities), the gaps would be 2-3 times larger. The gaps would also be also larger in the absence of an age correction. **Sources & series**: wid.world



Interpretation. In 2025, Europe and North America/Oceania host 23% of the world old-age population (65-year-old +) and benefit from 55% of the world public health expenditure (measured in PPP € 2025). In contrast, Subsaharan Africa and South & South-East Asia host 27% of the global old-age population and benefit from 7% of the global health expenditure. Sources & series: wid.world



improved in East Asia in recent decades (and the gap has always been smaller in Latin America and MENA), but the gap remains enormous for Subsaharan Africa (2% of Europe-NAOC average in 2025) and South/South-East Asia (5%). Sources and series: wid world





expenditure was relatively lower at the time) and might have allowed for faster productivity convergence. Sources and series: wid.world

















2025 at the global level. I.e. it was multiplied by about 18, which corresponds to average annual real growth rate of 1,3% per year, with large variations over time and across regions. In 2025, per capita GDP varies between about 3 000€ on average in Subsaharan Africa and about 40 000-50 000€ in Europe and North America/Oceania (i.e. a gap from 1 to 15). Sources and series: see wid.world









Table 2. Productivity Growth by World Regions (1800-2025)								
Annual real growth rate of productivity (hourly NDP)	1800-2025	1800-1910 1910-1950		1950-1990	1990-2025			
East Asia	1.6%	0.2%	0.7%	3.6%	4.6%			
Europe	1.7%	1.0%	1.7%	3.7%	1.4%			
Latin America	1.3%	1.2%	1.7%	2.0%	0.6%			
Middle East/ North Africa	1.5%	1.1%	1.4%	3.0%	1.4%			
North America/ Oceania	1.7%	1.6%	2.1%	1.8%	1.6%			
Russia/ Central Asia	1.7%	0.4%	3.9%	3.1%	1.4%			
South/South-East Asia	1.1%	0.5%	0.4%	1.8%	3.2%			
Sub Saharan Africa	0.9%	0.4%	2.4%	0.6%	1.1%			
World	1.4%	0.9%	1.7%	2.2%	1.8%			
<b>nterpretation</b> . Productivity (as defined by net domestic product per hour of economic labour) has been multiplied by about 24 at the global level between 1800 and 2025 (from about 0.7€/h in 1800 to about 16€/h in 2025) (PPP 2025 €). This corresponds to an average annual real growth rate of 1.4%. Productivity growth has increased from 0.9% over the 1800-1910 period to 1.6% over 1910-1950 and								

2.3% and 1.8% over 1950-1990 and 1990-2025. Sources and series: wid.world

Table 3. State Capacity and the Early Productivity Gap, 1800-1840								
Hourly Produc (net domestic pro (20-year-ar	tivity 1800-1820 duct per work hour) verages) (log)	Annual Growth Rate of Hourly Productivity 1800-1840 (computed over previous 20 years)						
13.328*** (0.751)	17.303*** (0.936) -4.020	0.032*** (0.011)	0.039*** (0.014) -0.014					
0.24	(3.298)	0.01	(0.038)					
627	627	627	627					
	Hourly Product (net domestic pro (20-year-ar 13.328*** (0.751) 0.34 627	Hourly Productivity 1800-1820 (net domestic product per work hour) (20-year-averages) (log)   13.328*** (0.751)   17.303*** (0.936)   -4.020   (3.298)   0.34 0.37   627 627	Hourly Productivity 1800-1820 (net domestic product per work hour) (20-year-averages) (log)   Annual Growth Productivity (computed over p     13.328***   0.032***     (0.751)   (0.011)     17.303***   (0.011)     (0.936)   -4.020     (3.298)   0.01     0.34   0.37     0.34   0.37     627   627					

Interpretation. In 1800-1820, countries with higher state capacity (as proxied by total public expenditure) also have higher productivity. A rise in public expenditure by 1% of GDP is associated with a 13.3% rise in GDP. Given that public expenditure varies at the time from 1-2% of GDP in the poorest world regions to about 7% in Europe, this implies that the state capacity gap can explain as much as 60-80% of the productivity gap (about 1 to 2 at the time). Higher state capacity is also associated to higher growth rates over the 1800-1840 period. Both effects seem to be driven by basic public services rather than by military expenditure.

	Annual Growth Rate of Hourly Productivity (net domestic product per work hour) (computed over previous 20 years)					
Total Public Expenditure (% GDP) (averages over previous 20 years) (s.e.) Incl. Human & Social Expenditure (s.e.) Incl. Military Expenditure (s.e.) Incl. Social Protection Expenditure (s.e.) Incl. Other Expenditure (s.e.)	0.054*** (0.001)	0.048*** (0.001)	0.113*** (0.006) 0.029** (0.012) -0.037*** (0.006) -0.001 (0.015)	0.053*** (0.006) -0.047*** (0.011) 0.006 (0.006) 0.009 (0.016)	0.046*** (0.006) 0.006 (0.011) -0.021** (0.008) -0.014 (0.014)	
Country Fixed Effects	NO	YES	YES	YES	YES	
Capital-Output Ratio	NO	YES	YES	YES	YES	
Period Fixed Effects	NO	NO	NO	YES	YES	
Region x Period Fixed Effects	NO	NO	NO	NO	YES	
Countries Covered	ALL	ALL	ALL	ALL	ALL	
R2	0.14	0.21	0.23	0.33	0.53	
N.obs	10602	10602	10602	10602	10602	
Interpretation. Over the 1800-2025 period, countries of GDP (e.g. from 10% to 11% of GDP), annual produ social capital expenditure, including basic public serv other human & social capital expenditure (research, c ratio and region x period fixed effects (8 world region: sategories of public expenditure have no robust signi	s with higher public ex activity growth increas ices (justice, police, a culture, community, er s interact 6 periods: 1 ficant impact on produ	penditure also have l ses by about 0.05% (e dministration, roads, nvironment, etc.). It al 800-1840, 1840-1880 uctivity growth.	nigher productivity grov g. from 1% to 1.05% p etc.), public human cap so holds after the inclus , 1880-1910, 1910-195	vth. When public expe per year). The effect is bital expenditure (educ sion of country fixed e 50, 1950-1990, 1990-2	enditure rises by 1% s driven by human & cation, health), and iffects, capital-output 2025). Other	

Table 5. The Impact of Human Capital Expenditure on Productivity Growth, 1800-2025: Education vs Health Expenditure, Public vs Private Expenditure									
	Annual Growth Rate of Hourly Productivity (net domestic product per work hour) (computed over previous 20 years)								
Total Human Capital Expenditure (% GDP)	0.099***	0.086***	0.166***						
Incl. Education (s.e.) Incl. Health (s.e.) Incl. Public Expenditure (s.e.) Incl. Private Expenditure (s.e.) Incl. Public Education	(0.004)	(0.004)	(0.005)	0.244*** (0.019) 0.040*** (0.008)	0.159*** (0.006) 0.017* (0.010)	0.420***	0.336***	0.850***	0.155***
Country Fixed Effects	NO	YES	YES	NO	NO	NO	YES	YES	YES
Capital-Output Ratio	NO	YES	YES	NO	NO	NO	YES	YES	YES
Region x Period Fixed Effects	NO	NO	NO	NO	NO	NO	NO	NO	YES
Countries Covered	ALL	ALL	POOR	ALL	ALL	ALL	ALL	POOR	POOR
R2	0.07	0.17	0.22	0.08	0.08	0.09	0.16	0.22	0.49
N.obs	10602	10602	8743	10602	10602	10602	10602	8743	8743
nterpretation. When (age-adjusted) human capital expenditure (public and private education and health expenditure) expressed as % of GDP increases by 1% (e.g. from 10% to 11% of GDP), annual productivity growth increases by about 0.1% (e.g. from 1% to 1.1% per year). I.e. the annual rate of return to human capital investment is about 10% (consistent with micro studies). The return is higher for education than for health and for public expenditure than for private expenditure. It is even larger for poor countries									

(productivity < 10€ PPP 2025/hour) and for public education. This effect also holds after the inclusion of country fixed effects, capital-output ratio and region x period fixed effects (8 world regions interact 6 periods: 1800-1840, 1840-1880, 1880-1910, 1910-1950, 1950-1990, 1990-2025).









	Productivity	Business Scer	-as-Usual nario	Global Convergence Scenario		
	2025 (hourly NDP) (PPP € 2025)	Productivity growth rate 2025-2100	Productivity 2100 (PPP € 2025)	Productivity growth rate 2025-2100	Productivity 2100 (PPP € 2025)	
East Asia	18.1	1.5%	56.6	2.6%	121.8	
Europe	50.6	0.6%	81.9	1.2%	124.9	
Latin America	14.8	1.2%	36.2	2.5%	95.8	
Middle East/ North Africa	22.9	1.1%	50.5	2.1%	112.6	
North America/ Oceania	55.1	0.5%	79.6	1.1%	123.5	
Russia/ Central Asia	24.7	1.0%	53.7	2.0%	109.5	
South/South-East Asia	8.3	1.0%	17.9	3.4%	104.9	
Sub Saharan Africa	4.0	1.1%	9.4	4.4%	98.1	
World	16.5	1.1%	37.1	2.6%	109.6	
Interpretation. In the "bu growth in 2025-2100 is pr level). In the "global conv growth rates accelerate a Sources and series: wid	isiness-as-usual rojected to declii ergence" scena and all regions co I.world	" scenario (froz ne as compared rio (rising huma onverge to abou	en human capita l to 1900-2025 ( n capital expend It 100-120€ in h	al expenditure), 1.1% vs 1.8% a diture), simulate ourly productivit	productivity t the world d productivity y by 2100.	