The Commercial Effects of Civilization: Evidence from Costa Rica and Spain

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Abstract

Albert Hirschman (1992)[1] highlighted the tendency of classical economists- since Smith onward- to demonstrate that economic growth led to a 'better culture' and moderating institutions. Hence the phrase: "The Civilising Effects of Commerce" . However, recent economic research aims to uncover the effect of culture on growth. Our project adds to this research agenda by analysing factors like gender inclusion, trust and peace. We find a strong impact of such cultural factors on TFP and GDP growth. We conclude with policy implications for both countries: Costa Rica should continue its strong gender-inclusionary programs and Spain should focus on transparency in policymaking.

1 Data and Methodology

For estimating GDP trendline and Total Factor Productivity (TFP), we use Penn World Table version 10.00 [2] . We use the logarithm of *rgdpna* (Real GDP at constant 2017 national prices (in mil. 2017US$)) variable to represent the logarithm of GDP and plot the time series. 1.

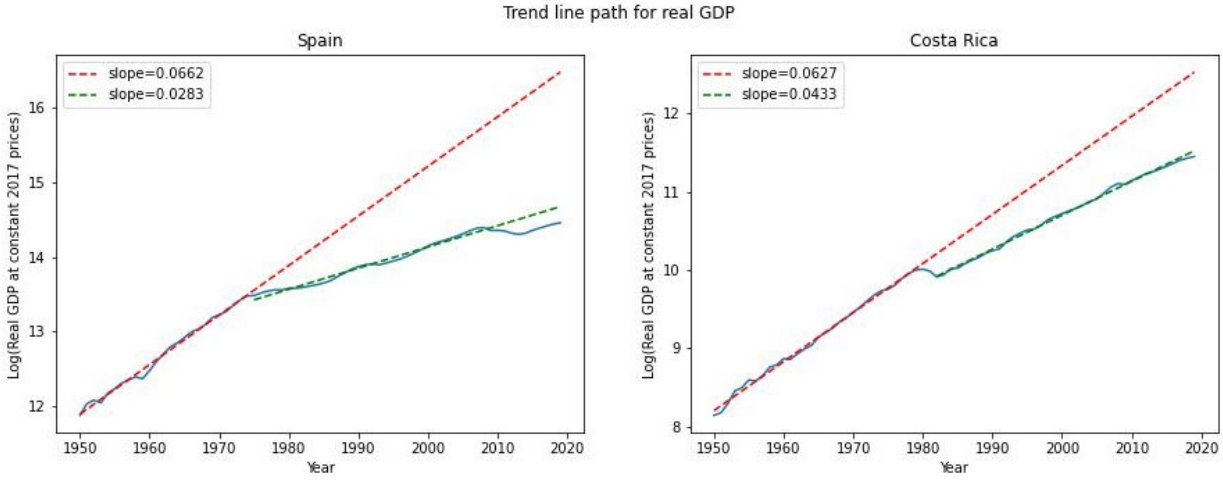

Figure 1: Trend line paths for real GDP of Spain and Costa Rica

Equation 1 represents the production function. The other variables that are used are in the appendixA.1.

$$Y_t = A_t(K_t)^{\alpha}(h_t L_t)^{1-\alpha} \tag{1}$$

Rearranging equation 1 yields the TFP residual in equation 2.

$$A_t = \frac{Y_t}{(K_t)^{\alpha}(h_t L_t)^{1-\alpha}} \tag{2}$$

The time series of TFP for both countries have been plotted below in figure 2.

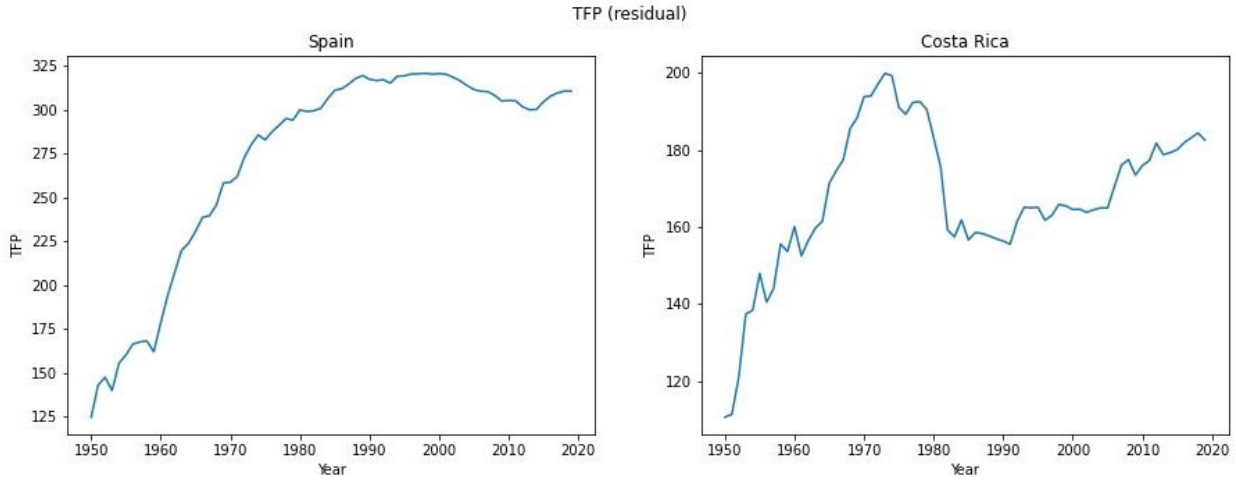

Figure 2: Time series of TFP (residual)

TFP growth is given by equation 3 where the growth rate of each variable is the difference in the values of two time periods divided by the value in initial time. All growth rates are calculated for five year time periods except 2015-19.

$$g_A = g_Y - \alpha g_K - (1-\alpha)(g_h + g_L) \tag{3}$$

Contributions of A, K and hL to GDP growth are given by $\frac{g_A}{g_Y}, \alpha\frac{g_K}{g_Y}$ and $(1-\alpha)\frac{(g_h+g_L)}{g_Y}$ respectively.

	Costa Rica				Spain			
Time period	TFP	Capital	Skilled Labor	GDP Growth	TFP	Capital	Skilled Labor	GDP Growth
1950-55	0.698	0.160	0.143	57.17	0.731	0.222	0.048	42.6
1955-60	0.336	0.345	0.319	31.26	0.461	0.392	0.146	27.49
1960-65	0.289	0.332	0.379	31.47	0.614	0.306	0.080	55.28
1965-70	0.422	0.302	0.275	37.73	0.374	0.500	0.126	35.55
1970-75	-0.014	0.395	0.619	34.07	0.347	0.495	0.158	29.55
1975-80	-0.143	0.535	0.608	29.11	0.515	0.807	-0.322	10.22
1980-85	-12.318	1.970	11.348	1.42	0.477	0.677	-0.153	7.17
1985-90	0.006	0.288	0.705	25.13	0.122	0.291	0.586	24.60
1990-95	0.248	0.312	0.439	30.10	0.050	0.749	0.201	7.76
1995-00	0.004	0.439	0.557	23.37	0.039	0.277	0.684	22.22
2000-05	0.039	0.395	0.567	20.78	-0.176	0.422	0.754	17.53
2005-10	0.311	0.383	0.306	26.16	-0.485	1.225	0.260	4.89
2010-15	0.164	0.444	0.392	19.92	3.224	-11.290	9.065	0.13
2015-19	0.134	0.411	0.455	13.47	0.209	0.153	0.639	10.79

Table 1: Growth accounting table (showing contribution of each variable to GDP growth and GDP growth (in %))

2 GDP Analysis

2.1 Costa Rica

As figure 1 shows, Costa Rica's growth story can be divided into two phases - 1950-1979 exhibiting average annual growth of 6.27% and 1985-2019 with a lower annual growth of 4.33%. The debt crisis of 1980-1984 was a transitionary phase when growth stagnated. This forced the introduction of structural changes in the economy.

During the early 1950s, Costa Rican exports were predominantly agricultural. By the late 1950s, it adopted an import substitution policy which also included heavy investment into state-owned enterprises by the early 1970s. State-led industrialisation created growth (see table 1), but the inefficiencies of SOEs added to the debt burden. Capital's contribution to GDP growth was around 30% during 1955-70 and increased to 40% (1970-75), then 54% (1975-80). Unfortunately, ballooning debt made the government to declare a moratorium in 1982. The consequent choice to print money for deficit-financing caused high inflation and the currency devaluation increased poverty.

These shocks to the economy made the government initiate stabilisation policies which included Structural Adjustment Program in coordination with the World Bank.[3] During the 1990s, free trade zones were established where companies were given export subsidies. These policies induced production of semiconductors, computer parts, pharmaceutical and medical devices.[4] Reductions in the mean tariff rate from 55% (1985) to 5.4% (2000) alongside the free trade zones contributed significantly to economic freedom. Forest conservation efforts by the government combined with huge footfall of tourists helped Costa Rica become a centre of eco-tourism. Recently, the tourism industry has significantly contributed to the GDP.[5] To conclude, the 1980s reforms and export driven growth led to Costa Rica's success.

2.2 Spain

The Spanish growth story has three phases: (a) 7% p.a. growth during the "Golden Age of Capitalism" (1950-74). (b) Weaker growth (2.9% p.a.) after the 1973 oil shock (1974-2007) (c) Financial crisis and after (2008-19) (0.6% p.a.).

Strong growth in the first period is attributed to rising labour productivity. Quitana (1988)[6] highlights "social desire to develop" that acted as a cultural impetus for Spanish citizens to meet the requirements of high growth. Escosura et al. (2011)[7] demonstrate that the 1959 Stabilization and Liberalisation Plan contributed to the structural transformation of Spain. Acena and Ruiz (2007) attribute the Golden Age growth to Spain's successful Kuznetian[8] structural transformation.[9]

In the second phase, Escosura[10] argues that labour productivity gains partially offset the negative effect of unemployment, but growth fell. Bentolila et al. (1992)[11] attribute the stagflation to an inflexible labour market (that led to a wage push) and non-accommodative monetary policy (that led to unemployment). Also, the opening-up of Spain led to employment-reduction in trade-intensive sectors. As a result of these large structural fluctuations, growth was unable to recover to previous level.

The effects of the 2008 crisis were particularly acute in Spain. Mian and Sufi (2014)[12] point to rigid mortgage contracts as the reason why aggregate demand shrank. As predicted by the "Performance Theory" of citizen-state relations, poor Spanish growth led to falling trust in the government amongst citizens. Lee (2017)[13] found this relation to hold for the eight European economies that she studied. An interesting puzzle emerges for Spanish data: how did they sustain any growth if TFP was practically flat after 1985? We address this concern in section3.2.3.

3 TFP Analysis

3.1 Costa Rica

Costa Rica majestically transitioned from an agriculture-reliant economy to a more diverse one after the collapse of coffee market (1930s). They did so by heavily investing in technology and human capital. TFP grew at a rate of 16-40% in subperiods between 1950 and 1970. Alwyn Young(1992)[14] claims growth to be inevitable when productivity of new technologies meets a significant level of society's learning maturity. The fair balance between "invention" (acquisition of technologies) and "learning" how to use them efficiently', as Alwyn Young[14] suggests, is observed firmly in Costa Rica throughout the period of 1950 to 2019.

Costa Rica has historically placed a high priority on strategically increasing the productivity of the workforce through education and technical training. The public universities generated the supply of scientists and engineers quintessential for the industrial sectors that grew in the 1960s and 1970s under the import substitution model, and also for the state-owned companies and institutions in telecommunications, electricity, agriculture, industry, and infrastructure.[15] Figures 3 and 4 demonstrate how education stock accumulates. Between 1987 and 1992, the 1920–1924 cohort (11.9%) exits, and the 1965–1969 cohort (52.7%) enters and labour market composition improves to employed 59% educated workforce as against 11% in 1960s. Our analysis of annual TFP growth in Costa Rica shows that, after averaging out the economic downturn in late 70s, the average annual contribution of TFP to output growth is approximately 0.180 between 1950 and 2019. Overall, the TFP's share of contribution is found to mimic TFP growth trends; lower TFP growth figures in a period had a smaller share of TFP contribution.

3.1.1 Why did TFP sharply fall in late 1970s?

Prebisch (1950)[16] suggests that economic growth is likely when industrialisation is induced through 'import substitution' and suggests the importance of economic diversification. However, the import substitution model was rendered obsolete by debt-crisis and oil prices soaring in late 1970s. We think that Costa Rican TFP took a negative dive from 1970 till 1980 due to the adverse effect of the oil shock as per the RBC model. Thereafter, TFP stabilised and grew modestly.

The oil price shock exacerbated productivity slowdown and induced obsolescence in the capital stock. Robles(2021)[17] used a GARCH model to estimate the relationship between the macroeconomic instability and TFP growth in Costa Rica. He demonstrated that "productivity failed to grow in Costa Rica due to repeated financial downturns starting from the debt crisis of the 1980s, through the crisis of "dot com" bubble, until the Financial Crisis of 2008 and 2009. Disproportionately large fiscal deficits in 2018 and 2019 added downward pressure on TFP. But Costa Rican investment in education, health and a high coverage of basic infrastructure, TFP recovered to grow again at an average rate of 15-30% in each sub-period between 2005 to 2019.

3.1.2 Gender and Inclusion

Costa Rica's strong education programmes led to an increase in the female labour force participation rate (FLFPR). 50% of FDI-induced new employement is attributed to women-owned companies. The rising FLFPR is not new; coffee was a historical mainstay of Costa Rican agriculture.[18] Recent research suggests that 70% of coffee cultivators worldwide are women.[19] It could be that the Costa Rican coffee cultivation led to a culture of gender equality. Alesina et al. (2013)[20] suggested that agricultural societies where women engaged in farm work tended to have a persistent, positive effect on gender equality in the future. We hypothesise that a significant chunk of the TFP increase in Costa Rica from 1950-75 was a result of an active public effort to increase the FLFPR.

3.1.3 Culture and Governance

Costa Rica has also successfully maintained peace and democracy for the last 70 years. Democratic discourse enjoyed widespread legitimacy; governance was good enough to ensure that major policy initiatives were successfully negotiated between the government and the opposition.[21]. After independence, the country developed good institutions which helped boost its productivity. Professor Mariano Rojas, a Costa Rican economist, attributes the country's high well-being to strong social relationships and a sense of community. "People are warm; the pace of life is slower. It's not a competitive society where everyone is trying to climb the career ladder."[22]. At present, the country is witnessing factional divisions within political parties, which is pushing its productivity down.[23] Political cohesion should be restored for coherent implementation of public policies as before.

3.2 Spain

The Spanish TFP time series can also be divided into three regimes- 1950-73 (good growth), 1973-85 (slower growth) and 1985-2019 (stagnation).

Collins and Bosworth (2007)[24] find that GDP growth stories are initiated by capital accumulation, while TFP's contribution rises later. Our analysis starts from 1950, when TFP's contribution was already dominating. Capital accumulation was the chief contributor to GDP growth before 1950.

We observe that TFP grew more than 30% during 1950-55, and became the main driver of GDP growth from 1950-75. Thus, we infer that the Spanish growth story was in its middle ages by the 1950s. The 1959 Stabilisation and Liberalisation Plan led to inflation-reduction and opened the economy (Jiménez 2019)[25]. 5-year TFP growth was in double digits due to Spanish openness from 1950-70.

TFP growth declined after 1973 (Fig. 2). The oil shock and the democratic transition adversly affected Spain's TFP growth. Their heavy dependence on oil imports increased the government's deficit, while the labour outflow from agrarian sectors added to the unemployment rate. Output growth revived as Spain entered the EU in 1986. However, TFP's growth effectively stagnated post-1985 (see section3.2.2). Joining the EU helped Spain offset the slowdown in TFP because the EU acted as an external anchor by facilitating technology and capital transfers.

Garćıa-Santana regards misallocation of capital resources to unproductive sectors as a major reason for decline in TFP. From 2005-10, employment fell as unproductive sectors fired workers while the job gains in productive sectors could not offset the losses. Thus, capital to labour ratios rose; deepening the capital across firms in Spain. As the (negative) effect of capital deepening dominated the (positive) effect of increased labour productivity, TFP declined during this period (Jiménez, 2019)[25]. $\Delta logTFP = \Delta log\frac{Y}{L} - \alpha\Delta log\frac{K}{L}$ Note that they use a different production function than our own paper but we expect similar results.

3.2.1 Gender and Inclusion

Ostry et al. (2018)[26] suggest that male and female labour are complementary in production. Hence, gender diversity raises productivity. Thus, another potential stimulus for high-TFP growth from 1950-70 was that Spain's FLFPR roughly doubled from 15 to 30% in this period.[27] In the following period, FLFP growth slowed, rising from 30% in 1970 to 40% in 1990. This is associated with the period of slower TFP growth for Spain. A potential policy implication is that TFP growth can be pushed by raising Spanish FLFP in the future (see section4).

3.2.2 Why did TFP stagnate post-1985?

Spanish TFP had average annual growth rate of -0.005%. Escosura and Roses (2020)[28] suggest that capital misallocation was behind the TFP stagnation i.e. bad policies led to lower competition in product and factor markets, inefficient subsidies, and cronyism á la Krueger's (1985) rent-seeking government official.[29]

We suggest that bureaucrats had high social capital: i.e. they were not afraid of being held accountable. Therefore, they were more likely to implement crony-ist policies that killed TFP growth post-1985. Evidence of this hypothesis can be found below; interpersonal trust in Spain declined from 30% to 19% from 1993-2014 (see figure7). A divided citizenry will not be able to hold the government accountable.

Since the citizens were less likely to hold the government accountable, the bureaucrats started rent-seeking. The outcome of this behaviour was a decline in the citizens' trust in the government. We find evidence for this narrative in OECD data. The trust in the government in Spain fell from 52% (1993) to 21% (2014) (see figure8). Thus, the first trend made it easier for bureaucrats to be corrupt and pursue policies that killed TFP growth. The second trend evidences bureaucratic rent-seeking. Thus, we add Escosura and Roses' argument by giving the essential cultural reason that allowed the bureaucratic rent-seeking that caused TFP stagnation.

3.2.3 Finance: The Double-Edged Sword?

Contrary to the Solow model's implication, how did Spain manage to sustain any growth from 1985-2019 when TFP was stagnant? Diaz and Franjo (2016)[30] suggest that investment in the housing market was "inefficiently high" i.e. the housing bubble that preceded the crash was also necessary to sustain Spanish growth for the decades preceding the crisis. Combining the work of Diaz and Franjo (2016) and Mian and Sufi (2014) on the housing bubble, one can make the following hypothesis: TFP stagnated, growing at an annual rate of -0.005%. This would have meant an end to growth á la Solow. However, an investment bubble in the housing market buttressed growth until 2008. The bursting of the bubble returned the economy to its fundamentals. This could mean that, counterfactually, even if Spain had regulated its housing and financial markets and prevented the bubble, the final level of output in 2019 would not have been much higher than the actual scenario that unfolded, due to stagnant TFP.

4 Concluding Remarks and Future Prospects

During 1950-2019, the GDP growth rate for Spain and Costa Rica was 3.03% and 2.36% per annum respectively. Thus, the data supports conditional convergence (Ray 1998)[31]: both countries are converging to a steady state of those countries that started with similar characteristics as them.

Costa Rica followed the policy implications of the Romer model by consistently investing into technology and human capital. Young's theory that TFP growth is sustained by consistently high investment resonates with the Costa Rican experience. Hence, we believe in the Costa Rican growth story and are optimistic about their future. On the other hand, Spain can overcome its TFP stagnation by implementing gender-employment schemes that increase female labour force participation. Increased transparency and reduced bureaucratic rent-seeking will increase interpersonal trust and trust in the Spanish government. Spanish citizens will then reciprocally reward good governance by displaying a higher willingness to be taxed, initiating a virtuous cycle (Besley 2020)[32].

Variable	**Costa Rica**	**Spain**
GDP annual growth	4.91%	3.80%
GDP per capita annual growth	2.36%	3.04%
TFP annual growth	0.73%	1.33%
TFP's contribution to GDP over 70 years	0.514	0.481
Capital's contribution to GDP over 70 years	0.305	0.453
Skilled Labour's contribution to GDP over 70 years	0.181	0.060

Table 2: Average annual statistics for both countries

A Tables and Figures

Table 1
Education stocks in household surveys, 1976–1992: population 20–65

Year	Years of education					
	0 Years (1)	1–5 Years (2)	6 Years (3)	7–10 Years (4)	11 Years (5)	12+ Years (6)
1976	113,355	331,129	210,572	87,924	51,780	57,979
	(0.133)	(0.388)	(0.247)	(0.103)	(0.061)	(0.068)
1980	77,467	324,900	284,563	132,625	91,306	95,902
	(0.077)	(0.323)	(0.283)	(0.132)	(0.091)	(0.095)
1983	83,377	309,711	334,564	161,593	131,146	125,222
	(0.073)	(0.270)	(0.292)	(0.141)	(0.114)	(0.109)
1987	90,693	326,948	410,599	190,400	168,019	157,435
	(0.067)	(0.243)	(0.305)	(0.142)	(0.125)	(0.117)
1992	82,061	320,580	503,349	236,616	193,743	221,544
	(0.053)	(0.206)	(0.323)	(0.152)	(0.124)	(0.142)

Technical Secondary graduates with 12 years of schooling are included in the category for 11 years. Numbers in parentheses are proportion of total.

Figure 3: Education stocks in household surveys (1976-1992)[33]

Table 10. *Changes in labor market conditions and income distribution in Costa Rica*, 1963 *to mid*-1980s

		Then	Now
(1)	Unemployment rate	6.9%	6.2%
(2)	Composition of employment		
	(a) Activity status		
	% wage-earners	66	75
	% non-remunerated family workers	10	5
	(b) Occupational distribution		
	% professional, technical, managerial and office workers	11	35
	(c) Industrial distribution		
	% employed in manufacturing	12	16
	% employed in agriculture	50	28
	(d) Public/private		
	% public employment	13	19
	(e) Educational composition		
	% without education	15	3*
	% with secondary or higher education	11	59*
(3)	Real wage (index)	100	160 (approx)
(4)	Income inequality (Gini coefficient among families)	0.52†	0.47
(5)	Absolute poverty		
	% poor, poverty line = 250 (constant [1971] colones)	20†	See text
	% poor, poverty line = 500 (constant [1971] colones)	65	See text

Sources: Calculated by the author from data from the 1963 Census of Population and Housing and National Household Surveys, Céspedes (1973), and Altimir (1984).
*Percent of employed population.
†Data pertain to 1961.

Figure 4: Changes in labor market conditions and income distribution in Costa Rica[18]

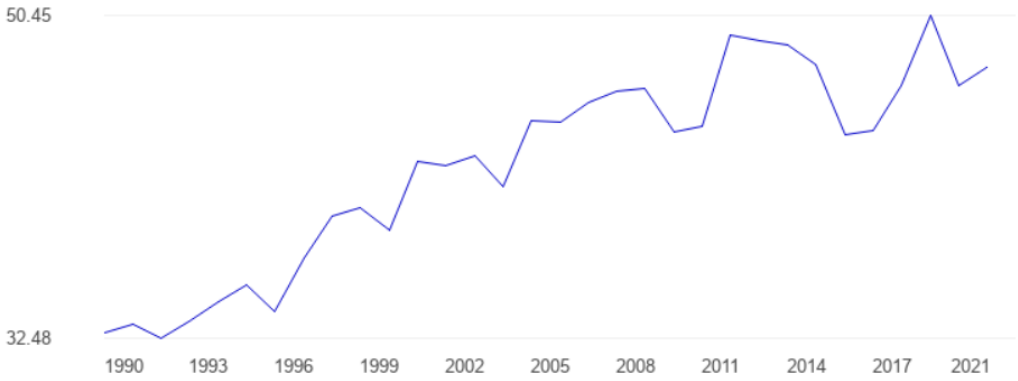

Figure 5: Historical series of female labour force participation in Costa Rica[34]

As seen in figure5, we provide data on FLFPR for Costa Rica from 1990 to 2021. The average value for Costa Rica during that period was 42.08% with a minimum of 32.48% in 1992 and a maximum of 50.45% in 2019. The latest value from 2021 is 47.53%. For comparison, the world average in 2021 based on 180 countries is 50.13%.

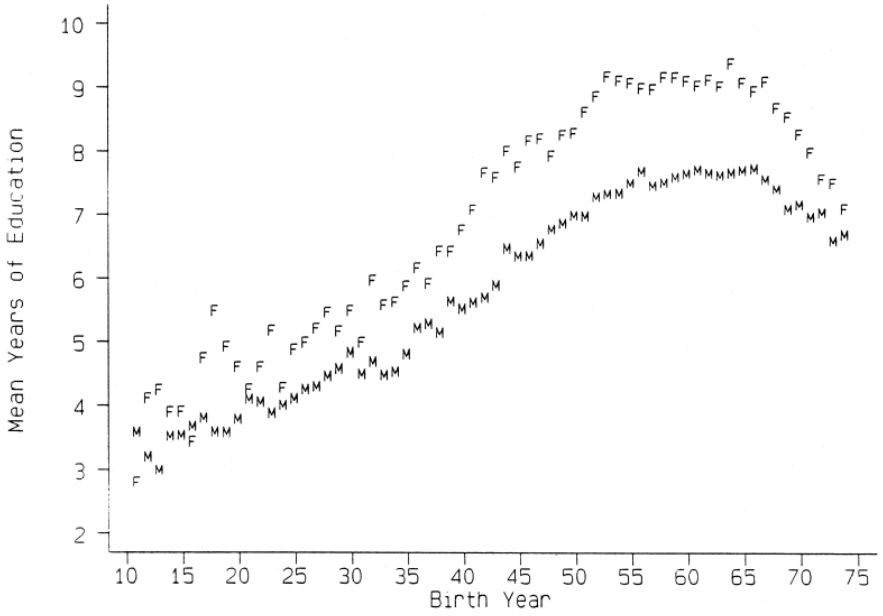

Figure 6: Mean years of education by birth year males(M) and females(F)[33]

Figure 6 presents the mean levels of education for each of the birth years that satisfy the sample restrictions for both males and females. These mean values were applied to the actual distribution of persons in the labor force in each birth cohort for each year between 1976 to 1992. Two factors have led to an increase in supply over this period. First, there has been a shift in relative size of the labor force from older birth cohorts with lower mean years of education to younger birth cohorts with higher mean years of education. Second, the overall size of the labor force has increased

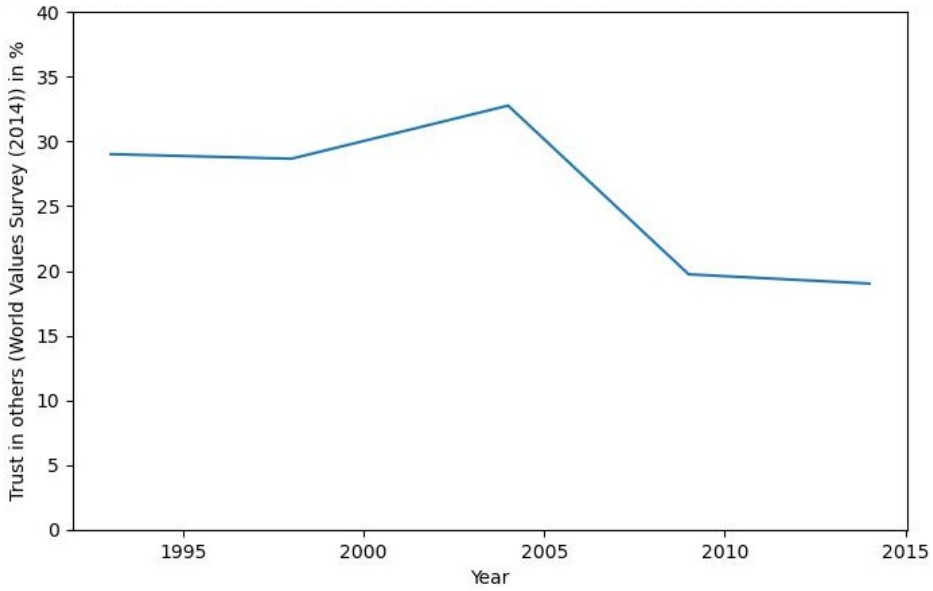

Figure 7: Share of people agreeing with the statement "most people can be trusted", 1993 to 2014[35]

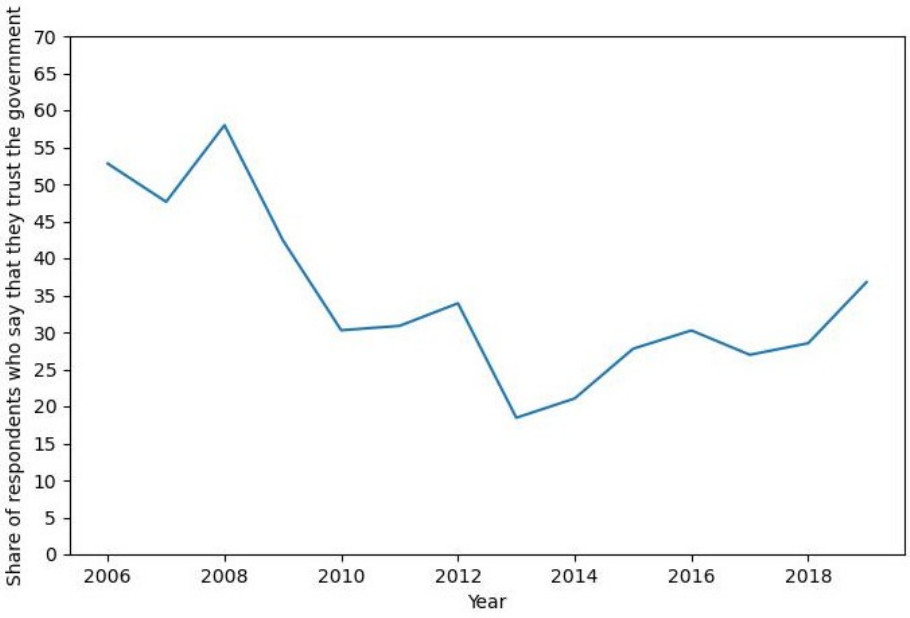

Figure 8: Trust in government[36]

A.1 Variables taken from Penn World Tables

We also use the following variables from the PWT -

- *rnna* (Capital stock at constant 2017 national prices (in mil. 2017US$)) - K_t
- *hc* (Human capital index, based on years of schooling and returns to education) - h_t
- *emp* (Number of persons engaged (in millions)) - L_t
- Mean of *labsh* (Share of labour compensation in GDP at current national prices) over 70 years has been taken as the value of $1 - \alpha$

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