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Research Paper

Saving behavior and the intergenerational allocation of leisure time☆

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ABSTRACT

We study how cross-country cultural differences in the intergenerational allocation of leisure time affect savings and working time. To do so, we consider a life-cycle model in which leisure and consumption are complementary and individuals decide on the intertemporal allocation of consumption, on leisure time and on its allocation among individuals of the same generation or of a different one. The latter decision margin determines the equilibrium utility services from leisure that individuals obtain in each life time period. We show that economies in which older individuals obtain higher leisure services have higher savings rates, higher stock of capital per worker and higher fraction of time worked. Using data from the World Value Survey, we provide empirical support to these findings. Our results suggest that cultural differences in leisure allocation play a structural role in shaping cross-country differences in savings and labor supply.

1. Introduction

Savings rates are remarkably and persistently heterogeneous across countries. The economic factors determining cross-country differences in savings rates have been extensively studied, but, even after controlling for differences in these factors, a relevant part of the differences in savings rates across countries remains unexplained (Stierle and Rocher, 2015). Some recent works have shown that savings may also respond to cultural norms. While Carroll et al. (1994) find no evidence of cultural effects on savings, Costa-Font et al. (2018) find that cultural preferences are an important explanation for cross-country differences in saving behavior, and their relevance persists up to three generations. More recently, Fuchs-Schündeln et al. (2020) show that attitudes towards future, reaction to uncertainty and desire for accumulation are cultural traits that explain savings. In this paper, we contribute to this literature by introducing a novel channel through which cultural differences across countries, reflected by differences in the lifetime value of leisure, might explain heterogeneity in saving behavior, capital accumulation, and working hours across countries.

The mechanism linking the value of leisure and savings stems from three main assumptions. First, savings are motivated by life-cycle reasons (Ando and Modigliani, 1963). Second, the leisure utility services in a life-time period result from the decision to allocate leisure time with individuals of the same generation or of a different generation. And, third, we assume that consumption and leisure services are complements in the utility function. We introduce these assumptions in a version of the Overlapping Generations

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(OLG) model by Diamond (1965), in which we add an endogenous labor supply and we allow individuals from both generations to allocate their leisure time within or across generations. The introduction of this leisure time allocation is the novelty of this paper. We show that when the leisure-time allocation decision of young individuals results in younger individuals receiving lower leisure services at the equilibrium, their marginal utility of consumption decreases due to the complementarity between consumption and leisure. This leads to lower consumption when young and higher savings rates. Similarly, when the leisure-time allocation decision of old individuals results in higher leisure services of these old individuals at the equilibrium, their marginal utility of consumption increases and leads to a larger savings rate aimed to achieve a larger consumption when old.

We define the *intergenerational leisure gap* as the ratio between leisure services per unit of leisure time obtained by the elderly and those obtained by the young. As follows from the previous arguments, a large value of this gap implies that individuals are willing to postpone consumption to the last period of life, which results into large savings rates and fast accumulation of capital. Moreover, the latter results into high wages and low consumption when young in equilibrium, which leads to a high amount of working time. The intergenerational leisure gap in equilibrium only depends on preference parameters. Therefore, according to the model, cross-country differences in this gap can only be explained as the consequence of cultural differences in preference parameters that end up affecting savings and employment patterns.

Our model has some clear testable implications: economies where older generations place more value to leisure activities relative to younger generations (i.e. where the intergenerational leisure gap is relatively larger) exhibit higher savings rates and longer working hours. The empirical analysis in this paper aims to explore whether evidence supporting these implications can be found in the data. To this end, we resort to the World Values Survey, a global survey exploring people's values and beliefs, how they change over time, and their impact on social and political life. The information collected in the data set allows us to construct a measure of the intergenerational leisure gap.

We first provide evidence that while the correlation between income levels and working hours is negative and significant, the correlation between our measure of the intergenerational leisure gap and income levels is virtually zero. Additionally, we find that most variability in the intergenerational leisure gap occurs across countries rather than within countries over time. This suggests that cultural attributes, rather than economic factors, predominantly drive differences in leisure time allocation. We interpret these cultural attributes as cross-country preference differences.

Next, we test the main prediction of our theory. We regress the savings rates against the intergenerational leisure gap and obtain that the estimated coefficient remains positive and significant across several specifications, displaying remarkable stability. The intergenerational leisure gap consistently emerges as a positive and significant predictor of the savings rate even after accounting for common time trends across countries. Lastly, when both time and country fixed effects are imposed, a relevant degree of explanatory power is preserved by our measure, which remains positive and significant in most specifications, albeit less so than when only time fixed effects are applied. This is noteworthy because controlling for time-invariant national characteristics is expected to reduce substantially the observed impact of the intergenerational leisure gap, a cultural trait likely correlated with these country-specific fixed effects. This implies that our theoretical prediction is supported not only across countries but also within countries over time. All in all, this evidence supports the prediction according to which societies where older generations place more value to leisure activities relative to younger generations exhibit a higher propensity to save.

Finally, albeit less strongly, the empirical evidence broadly supports the prediction that working hours are higher in countries where the preference for leisure is relatively shifted towards the older generation rather than the younger generation. In the pooled OLS regression, and when common time trends are controlled for, the coefficients of the regressions between working hours and the intergenerational leisure gap are positive and significant, but only when per-capita income is not controlled for. This outcome is consistent with our model, where the intergenerational leisure gap indirectly increases working hours through its effect on wages and consumption. Since these two variables are closely linked to per-capita income, controlling for the latter consistently makes the intergenerational leisure gap non-significant.

It is worth emphasizing that, while the empirical analysis supports our theory, it should not be considered conclusive due to the lack of causal identification. However, the robust evidence, stability of coefficients across various specifications and estimation methods, combined with the lack of evident alternative explanations, lend credibility to our mechanism as a significant driver of cross-country differences in saving behavior and working hours.

To keep the analysis of the model simple, we have assumed that individuals leisure services only depend on their leisure-time allocation decisions and not on the other's decisions. In the last part of the paper, we return to theory and extend our model by introducing both intra and intergenerational externalities in leisure activities in order to capture the idea that leisure activities are more enjoyable if they are done with others. We show that the main findings obtained in the benchmark model without externalities and discussed in the empirical section still hold when we consider a more sophisticated model in which individuals derive utility from the interaction between their leisure time and that of other individuals.

This paper contributes to two strands of the literature. First, it adds to the extensive literature on the determinants of saving behavior. The existing explanations include, among others, demographics (Cigno and Rosati, 1996, Tobing, 2012), differences in income and growth rates (Laitner, 2000), the characteristics of the social security and tax systems (Kotlikoff et al., 1989; Blau, 2016), financial liberalization (Bandiera et al., 2000) and genetics (Cronqvist and Siegel, 2015). Dobrescu et al. (2012) develop a large-scale overlapping generations model to explain declining saving rates in developed countries as a result of shifting social preferences that increasingly favor current over future generations. While our focus is different – emphasizing intergenerational leisure interactions as a distinct cultural channel – both approaches underline the importance of non-economic determinants in shaping household saving behavior. Our more stylized model is designed to provide analytical clarity on this alternative mechanism, which could be integrated in future work into richer quantitative settings. To the best of our knowledge, our paper is the first that considers the

interaction between consumption-leisure complementarity and the intergenerational allocation of leisure time as a determinant of savings.

Secondly, our research intersects with the literature that examines the effect of cultural differences. This literature has frequently relied on the World Value Survey to study how savings behavior is shaped by cultural traits such as thrift, trust, and religiosity (de Castro Campos et al., 2013), or by attitudes towards the future, uncertainty, and wealth accumulation (Fuchs-Schündeln et al., 2020). The same data has also been employed to analyze the influence of culture on labor market outcomes, including the effect of cross-sectional differences in leisure preferences on the labor-wedge (Ek, 2021), the impact of attitudes towards gender and leisure on the employment rates of women (Giavazzi et al., 2013), and the role of family ties in shaping labor market regulations (Alesina et al., 2015). In addition, the European Social Survey has been used to explore how cultural preferences for leisure affect employment decisions (Mocan and Pogorelova, 2015 and Moriconi and Peri, 2019). Using a different data source, Fernandez (2007) and Fernandez and Fogli (2009) draw on U.S. Census data to demonstrate that culture significantly influences female labor supply choices. Our study also employs survey data to examine how cross-country differences in the preference for leisure of old relative to that of young individuals affect savings and employment behavior.[1]

Finally, measuring the causal impact of culture on economic outcomes – such as saving behavior – poses well-known challenges. Cultural norms are often intertwined with institutional frameworks, shaped by historical trajectories, and correlated with structural variables such as demographics, education, and economic development. As emphasized by Guiso et al. (2006) and Tabellini (2010), isolating the independent effect of culture in cross-country settings is inherently difficult, and identification concerns are particularly acute when cultural proxies may reflect deeper or overlapping structural conditions. As noted by Guiso et al. (2006), identifying the causal effect of culture typically requires the use of time-invariant and exogenous traits – such as religious composition or ethnic origin – as instruments. Implementing such an identification strategy credibly would require historical or large scale micro-level panel data, which are not available in the World Values Survey.

To the aim of studying the determinants of savings, Loayza et al. (2000), on the other hand, employ a different empirical approach based on Generalized Method of Moments (GMM) estimators with internal instruments to address endogeneity concerns. However, this strategy relies on a sufficiently long time dimension to construct valid lagged instruments. In our case, the limited number of survey waves available in the World Values Survey (only six waves) makes the implementation of a GMM estimator á la Arellano and Bond (1991) unfeasible. Accordingly, our analysis does not claim to resolve these identification issues. Instead, it offers robust and theoretically grounded correlational evidence that complements more structural or quasi-experimental approaches. By combining a simple model with rich international data and a battery of robustness checks, we aim to uncover a novel channel: how cultural norms around intergenerational leisure shape saving behavior.

The rest of the paper is organized as follows. Section 2 presents the model and the main theoretical predictions. Section 3 reports the empirical evidence. Section 4 shows that the main results remain when leisure externalities are introduced. Section 5 concludes and some technical details are relegated to an Appendix.

2. A life-cycle model of leisure decisions

2.1. Individuals

The economy is populated by finitely-lived individuals. In each period t, N_t individuals are born and they live for two periods. They are endowed with one unit of time in each period. In the first period of their life, individuals are young and supply a fraction $l_t \in (0,1)$ of his time endowment to work and the rest of time is devoted to leisure. Denoting by w_t the wage per unit of time, their labor income is then equal to $w_t l_t$. They allocate this income between current consumption c_t and savings s_t. In the second period, individuals are old, they retire and devote the entire time endowment to leisure. They use the return from savings, R_{t+1}, to consume d_{t+1}. Therefore, the intertemporal budget constraint is

$$w_t l_t = c_t + \frac{d_{t+1}}{R_{t+1}}. \tag{1}$$

An individual born at time t obtains utility from consumption when young and old, c_t and d_{t+1}, and also obtain utility from leisure services when young and old, x_t^y and x_{t+1}^o. More precisely, the utility function is

$$U_t = u\left(c_t, x_t^y\right) + \beta u\left(d_{t+1}, x_{t+1}^o\right). \tag{2}$$

We assume that the utility function (2) is strictly increasing in all its arguments, it is jointly concave and displays complementarity between consumption and leisure services when young and old; i.e. $u_{cx^y}, u_{dx^o} > 0$.[2] The assumption of complementarity plays a pivotal role in our analysis. It stipulates that the marginal utility derived from leisure increases with the level of consumption, which is a well established assumption on consumers behavior (see, for instance, King et al. 1988).

[1] The literature on the economic impact of culture is extensive and encompasses more than just its effects on savings and employment. For instance, Algan and Cahuc (2010) analyze the role of trust in driving economic growth and Anchorena and Anjos (2015) relate social ties with trade efficiency and economic development. Guiso et al. (2006) provide a comprehensive survey on the influence of culture on economic outcomes, while Alesina and Giuliano (2015) review how cultural factors shape institutional development.

[2] The subscript indicates the variable with respect to which the derivative is computed.

The novelty in the utility function is in the leisure services. We assume that the value of these services depends on the amount of time allocated to leisure activities and also on the allocation of this time between individuals of the same cohort and of different cohorts. In particular, we assume that

$$x_t^y\left(p_t^y, p_t^o\right) = \left(p_t^y\right)^{\sigma_y}\left(p_t^o\right)^{1-\sigma_y}, \tag{3}$$

and

$$x_{t+1}^o\left(q_{t+1}^o, q_{t+1}^y\right) = \left(q_{t+1}^o\right)^{\sigma_o}\left(q_{t+1}^y\right)^{1-\sigma_o}, \tag{4}$$

where $p_t^o \in [0,1]$ is the fraction of leisure time that a young individual devotes to perform activities with old individuals, $p_t^y \in [0,1]$ is the fraction of leisure time young individuals devote to perform leisure activities with other young individuals, $q_{t+1}^o \in [0,1]$ is the fraction of leisure time that an old individual devotes to perform leisure activities with other old individuals, $q_{t+1}^y \in [0,1]$ is the fraction of time that an old individual devotes to perform leisure activities with young individuals, $\sigma_i \in (0,1]$, $i = y, o$, measure the relative intensity of the preference towards spending time with individuals of the same generation.

The Cobb–Douglas specification of leisure services in (3) and (4) implies that these services increase as individuals increase the amount of time devoted to leisure and it also implies that if $\sigma_i < 1$ individuals will always choose to spend some leisure time with both individuals of the same generation and of a different generation; i.e. $p_t^i > 0$ and $q_t^i > 0$, $i = y, o$. In the limiting case with $\sigma_i = 1$, the model collapses to an economy with endogenous labor supply, but without a leisure time allocation decision.

We clarify that we do not impose that the amount of time young individuals spend in leisure activities with the previous cohort coincides with the amount of leisure time old individuals enjoy performing leisure activities with young individuals; i.e. $q_t^y \neq p_{t+1}^o$. As a result, leisure time devoted to someone else is not necessarily time spent *together* with someone else, as we also consider the time spent in organizing activities.[3]

We close the demand side of the model with the time constraints of young and old individuals. As young individuals split their leisure time between leisure activities and working, we obtain

$$p_t^y + p_t^o = 1 - l_t. \tag{5}$$

Similarly, old individuals split their leisure time only in leisure activities and, hence,

$$q_{t+1}^o + q_{t+1}^y = 1. \tag{6}$$

Individuals choose c_t, d_{t+1}, l_t, p_t^y, p_t^o, q_{t+1}^y and q_{t+1}^o in order to maximize utility (2) subject to leisure services, (3) and (4), time constraints, (5) and (6), and the budget constraint (1).[4] The solution to this problem determines the intergenerational allocation of leisure time as follows:

$$p_t^y = \sigma_y(1 - l_t), \tag{7}$$

$$p_t^o = (1 - \sigma_y)(1 - l_t), \tag{8}$$

$$q_{t+1}^o = \sigma_o, \tag{9}$$

$$q_{t+1}^y = 1 - \sigma_o. \tag{10}$$

Replacing the intergenerational allocation of leisure time in (3) and (4), we obtain that the equilibrium values of leisure services when young and old are, respectively,

$$x_t^y = \left(1 - l_t\right)\Sigma_y, \tag{11}$$

$$x_{t+1}^o = \Sigma_o, \tag{12}$$

where

$$\Sigma_y = \left(\sigma_y\right)^{\sigma_y}\left(1 - \sigma_y\right)^{1-\sigma_y}, \tag{13}$$

$$\Sigma_o = \left(\sigma_o\right)^{\sigma_o}\left(1 - \sigma_o\right)^{1-\sigma_o}. \tag{14}$$

Σ_y and Σ_o measure, respectively, the utility services generated by a unit of leisure time for young and old individuals. Notice that, since $\sigma_i \in (0,1)$, then $\Sigma_i \in (0.5, 1)$ for $i = y, o$.

The solution of the individual's problem also determines the intertemporal distribution of consumption along the life cycle and the labor supply from the following two equations:

$$\frac{u_{c_t}}{\beta u_{d_{t+1}}} = R_{t+1}, \tag{15}$$

$$\frac{\Sigma_y u_{x_t^y}}{u_{c_t}} = w_t. \tag{16}$$

[3] For instance, a parent may obtain utility from cooking for his/her children and this activity does not require the presence of the latters.

[4] The solution of the individual's problem is detailed in Appendix.

Eq. (15) equates the marginal rate of substitution between consumption when young and when old with the interest factor. It governs the intertemporal allocation of individual consumption across the life-cycle and, hence, it determines savings. In this model, the marginal rate of substitution between consumption levels over the life-cycle depends on leisure services. More precisely, because of the complementarity between leisure services and consumption, the marginal rate of substitution between consumption when young and old, u_c/u_d, increases when the young individuals obtain more leisure services than the old. As a result, consumption of the young increases and consumption of the old decreases, which leads to a reduction in savings and, hence, in the accumulation of capital.

The properties described above shape how the distribution of leisure services between young and old affects savings in this model. Leisure services depend on both the amount of leisure time ($(1-l)$ for the young and 1 for the old, a *level* effect) and on the choice between intra or inter-generational allocation of leisure time (Σ_y for the young and Σ_o for the old, a *composition* effect). Therefore, a small value of the ratio Σ_o/Σ_y implies that the distribution of leisure services shifts towards the young, which leads to a reduction in savings and in the accumulation of capital because of the complementarity between consumption and leisure. We denote this ratio as the *intergenerational leisure gap* and our analysis indicates that cross-country differences in this gap can explain part of the cross-country differences in the savings rates. Our empirical analysis aims to provide evidence of this mechanism.

Eq. (16) equates the marginal rate of substitution between leisure time and consumption with the wage and it determines the labor supply. A larger Σ_y increases the leisure services obtained by the young, thereby directly increasing the numerator of (16), and, due to the complementarity, also increases the marginal utility of consumption when young, thereby increasing the denominator. As a result, the effect on the marginal rate of substitution and therefore on the labor supply is ambiguous and depends on the functional form of the utility function. For instance, when the utility function is Cobb–Douglas, these two effects precisely counterbalance each other.

2.2. Firms

There is a continuum of firms whose mass is normalized to 1. The representative firm production function is $Y_t = F\left(K_t, L_t\right)$, where $L_t = N_t l_t$ is the total amount of labor time supplied by young individuals at time t and K_t is the stock of productive capital. For the sake of simplicity, we assume complete depreciation after one period. We also assume constant returns to scale so that, defining $y_t = {}^{Y_t}/_{N_t l_t}$ and $k_t = {}^{K_t}/_{N_t l_t}$, per unit of time output is given by $y_t = f\left(k_t\right)$.

Firms operate in a competitive market so that wages and interest rate are equal to

$$R_t = 1 + r_t = f'\left(k_t\right), \tag{17}$$

$$w_t = f\left(k_t\right) - k_t f'\left(k_t\right), \tag{18}$$

where $R_t = 1 + r_t$ is the gross interest rate.

2.3. Equilibrium

We assume that capital totally depreciates after one period so that, in equilibrium, aggregate capital at $t+1$ is equal to total savings by the young, i.e. $K_{t+1} = \left(w_t l_t - c_t\right) N_t$. Using (18), this equation can be rewritten as

$$k_{t+1} = \frac{\left[f\left(k_t\right) - k_t f'\left(k_t\right)\right] l_t - c_t}{l_{t+1}\left(1+n\right)}. \tag{19}$$

We define the dynamic equilibrium as a path of $\left\{x_t^y, x_{t+1}^o, c_t, d_{t+1}, k_t, l_t, w_t, R_t\right\}_{t=1}^{\infty}$ that solves (1), (11), (12), (15), (16), (17), (18), and (19).

We are interested in analyzing the effects of differences in the intergenerational leisure gap on the steady state equilibrium, which is defined as an equilibrium path along which variables remain constant. We eliminate time subindexes in the variable to refer to the steady state value of the variable. As a first step, we characterize the steady state. To this end, we combine (1) and (19) to obtain

$$\frac{d}{1+n} = k l f'(k), \tag{20}$$

$$c = \left[f(k) - k f'(k) - k(1+n)\right] l. \tag{21}$$

Notice that summing (20) and (21) we obtain the resource constraint. Using the resource constraint at the steady state and Eqs. (11), (12), (15), (16), (17), (18), and (21), we obtain that the steady state of the market equilibrium is a tuple $\{x^y, x^o, c, d, k, l\}$ that solves:

$$\frac{u_c}{u_d} = \beta f'(k) \tag{22}$$

$$\frac{u_{x^y}}{u_c} = \frac{f(k) - k f'(k)}{\Sigma_y} \tag{23}$$

$$f(k) l - k(1+n) l = c + \frac{d}{1+n} \tag{24}$$

$$c = f(k) l - k f'(k) l - k l (1+n) \tag{25}$$

$$x^y = (1-l)\,\Sigma_y \tag{26}$$

$$x^o = \Sigma_o \tag{27}$$

To obtain clear-cut results, we consider the following production function in intensive form:

$$y_t = Ak_t^{\alpha},\ \alpha \in (0,1) \tag{28}$$

and the following utility function:

$$U_t = u\left(c_t, x_t^y\right) + \beta u\left(d_{t+1}, x_{t+1}^o\right) = c_t^{1-\mu}\left(x_t^y\right)^{\mu} + \beta d_{t+1}^{1-\mu}\left(x_{t+1}^o\right)^{\mu},\ \mu \in (0,1). \tag{29}$$

In the Appendix, we use Eqs. (22)–(25) to prove the following result:

Proposition 1. *If the production function satisfies (28) and the utility function satisfies (29), there exists a unique saddle path stable steady state equilibrium with $l \in (0,1)$ when*

$$\frac{\Sigma_o}{\Sigma_y} < \frac{\mu}{1-\mu}\frac{\alpha(1+n)}{1-\alpha}\left(\frac{(1-\alpha)}{\alpha\beta(1+n)}\right)^{\frac{1}{\mu}}. \tag{30}$$

Proof. See the Appendix. □

Proposition 1 shows that a steady state exists and is unique if the intergenerational leisure gap between the old and the young, measured by Σ_o/Σ_y, is not too large. The next proposition states how capital, working time and the savings rate are affected by this gap.

Proposition 2. *If the production function satisfies (28) and the utility function satisfies (29), the steady-state capital stock, working time and savings rate increase with the intergenerational leisure gap, Σ_0/Σ_y.*

Proof. See the Appendix. □

Proposition 2 implies that economies where Σ_o/Σ_y is larger accumulate more capital, work more and save a larger fraction of their income. The intuition relies on Eqs. (15) and (16) and on the complementarity between leisure services and consumption, introduced by the utility function (29). First, we recall that when Σ_o/Σ_y is large, the old individuals obtain more utility from an additional unit of leisure time than the young individuals. Due to the complementarity, the marginal rate of substitution between consumption when young and when old is smaller when Σ_o/Σ_y is large. As follows from (15), the reduction in this marginal rate of substitution reduces consumption when young and increases consumption when old. Consequently, savings rate increases, which causes an increase in the stock of capital.

As for the effects of the intergenerational leisure gap on working time, this can be explained by looking at Eq. (16) which tells us that the labor supply is increasing in wages and, due to the complementarity, decreasing in consumption when young. According to the previous argument, a rise in Σ_o/Σ_y increases the savings rate (thereby reducing consumption when young) and increases capital (thereby increasing wages). By (16), both channels result in a larger fraction of time devoted to work.

3. Empirical evidence

The purpose of this section is to provide empirical support for the macroeconomic effects of leisure allocation decisions obtained in the previous section. To this end, we first construct a panel data set at the country level that includes a measure of the leisure gap. We after use this data set to analyze the effect of this leisure gap on savings and labor.

3.1. Data and methodology

In order to find a proxy for our main explanatory variable, Σ_o/Σ_y, we resort to the World Value Survey (WVS). The WVS collects representative national samples covering almost 100 countries and 6 waves spanning from 1990 to 2022 and, therefore, it is ideal for cross-cultural analysis. As for the savings rate, we collect data from two different sources: the World Bank indicators and the Penn World Table (PWT) 10.1. The latter is also the main data source for per capita income, working hours, labor income share, human capital index and TFP at the country level. In order to construct a proxy for the leisure gap between old and young individuals, Σ_o/Σ_y, we proceed as follows:

1. We split the individuals in each country between young (25–60 years) and old (> 60 years).
2. We focus on the responses to the question "Very important in life: Leisure“, which has four main possible answers: ”Very important”, “Rather important”, “Not very important”, “Not at all important”.

Table 1
Summary statistics.

Variable	Mean	Standard Deviation			Obs	N. Countries
		Overall	Between	Within		
Intergenerational leisure gap	0.9711	0.0303	0.0312	0.0160	301	88
Savings rate	0.2051	0.1304	0.1408	0.0489	302	88
Fraction of time worked	0.3253	0.0433	0.0449	0.0098	189	47
Per-capita Income (log)	9.5223	0.9595	1.0419	0.2382	302	88
Interest rate	0.1142	0.6621	0.6388	0.0217	273	74
Human Capital Index	2.7060	0.6215	0.6327	0.1741	282	81
Labor Share	0.5163	0.1083	0.1115	0.0325	273	74
Age Dependency Ratio	0.5562	0.1378	0.1551	0.0468	302	88
Year Population Growth %	1.1212	1.2343	1.3332	0.5080	302	88

3. We compute a synthetic index for leisure services of the young and old individuals in each country using weights provided by the data set and we interpret these indexes as proxies for respectively Σ_y and Σ_o. Importantly, we guarantee that, as in the model, these indexes range between 0.5 and 1, by assigning the following values to the above 4 categories: 1, 0.83, 0.66, 0.5, where a larger value is associated to a larger importance of leisure. A possible concern with this step is that the assigned numerical values are somewhat arbitrary. Using different values would result in a different scale and location for the variable, potentially affecting the estimated regression parameters. Additionally, the ordinal nature of the scale might not be interpersonally comparable across generations or countries. To address these concerns, we replicate our analysis using an alternative and potentially less arbitrary synthetic index for leisure services: the share of responses indicating "Very important" or "Rather important" over the total, for both young and old individuals. While this alternative measure may sacrifice some granularity, it provides a robustness check for our main findings. All results, reported in the Appendix, remain qualitatively unchanged, with only minor differences in some specifications that do not alter the overall conclusions of our study.
4. We obtain the intergenerational leisure gap as the ratio between the synthetic index for leisure services of the old and that of the young.

We also consider a number of other dependent variables at the country level extracted from the PWT 10.1 and from the World Bank Indicators.[5] They are mainly used as controls in the regressions and are the following: per-capita income (computed as the ratio between GDP in PPP at constant US dollars 2017, and population); labor share; human capital index (essentially average years of schooling); a measure of rule of law; and the total age dependency ratio (ratio of young (0–14 years) and old (above 65 years) individuals over the working age population). Since the index for the intergenerational leisure gap is observed for a maximum of 6 periods for each country (associated with the 6 waves of the survey: 1990–94; 1995–98;1999–2004; 2005–2009; 2010–2014; 2017–2020), in the regressions we consider for each of the above variables the mean in each of these time periods.

In the following analysis, the primary dependent variables are the savings rate and the fraction of hours worked. We have chosen not to consider the level of capital stock, as it is influenced by a variety of factors not accounted for in our model. These include elements like foreign direct investments and technological advancements. The former element is particularly relevant for the numerous small open economies featured in the WVS data set.

The savings rate for each country is computed as one minus the share in GDP of household and government consumption at current PPPs and are taken from the PWT 10.01.[6] As for the fraction of hours worked, we follow Aguiar and Hurst (2007) and compute it as the ratio between the average annual hours worked by persons engaged (source: PWT 10.01) and $16 * 365$, which measures the average number of hours an individual devotes to extra-sleeping activities.

Summary statistics of the variables involved in the analysis are reported in Table 1.[7] We observe that the mean of the leisure gap is less than 1, meaning that – on average – leisure is relatively more important for young than for old. However, there are a relevant number of observations (country-year pair) where the value of this leisure gap is larger than 1. Additionally, the between-country standard deviation is twice as large as the within-country standard deviation. This suggests greater variability in the intergenerational leisure gap across countries compared to within countries over time. This aligns with our primary hypothesis that the gap reflects a cultural trait, thus varying more significantly across countries while changing more gradually over time.

[5] Importantly, we are unable to take advantage of the individual dimension of data because, being the WVS a repeated cross-section rather than a panel, we are unable to observe the same individual when old and when young and, accordingly, we cannot obtain a measure of the intergenerational leisure gap at the individual level. Also, the questions related to savings do not allow to construct a precise measure of individual savings rates.

[6] We also conduct the empirical analysis using an alternative measure of savings rates: the "Gross savings (% of GDP)" from the World Bank national accounts and OECD National Accounts data. Gross savings are defined as "gross national income less total consumption, plus net transfers". The results align with those in the main text and are available upon request.

[7] The last column's values – reflecting the number of countries with available data – result from the overlap between the World Values Survey's country coverage (from which only the 'Intergenerational Gap for Leisure' variable is sourced) and the Penn World Table (PWT) 10.1. The apparent variation in missing data across variables is attributable to the PWT 10.1's inconsistent country data availability. This inconsistency is particularly pronounced for the 'Fraction of Time Worked,' which is documented for only 47 countries within the World Values Survey's scope. In contrast, the 'savings rate' is reported for 88 countries included in the World Values Survey.

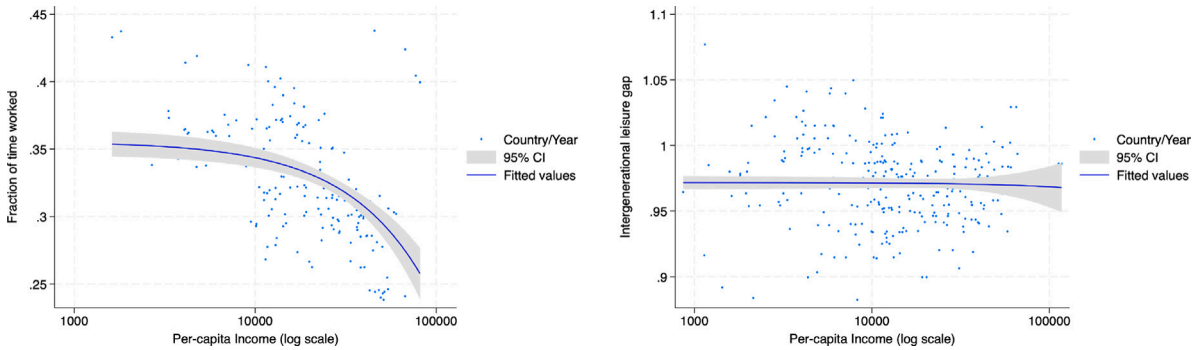

Fig. 1. Left panel: Fraction of time devoted to work plotted against the per-capita income (log scale) by country-year. Right panel: intergenerational leisure gap plotted against the per-capita income (log scale) by country-year.

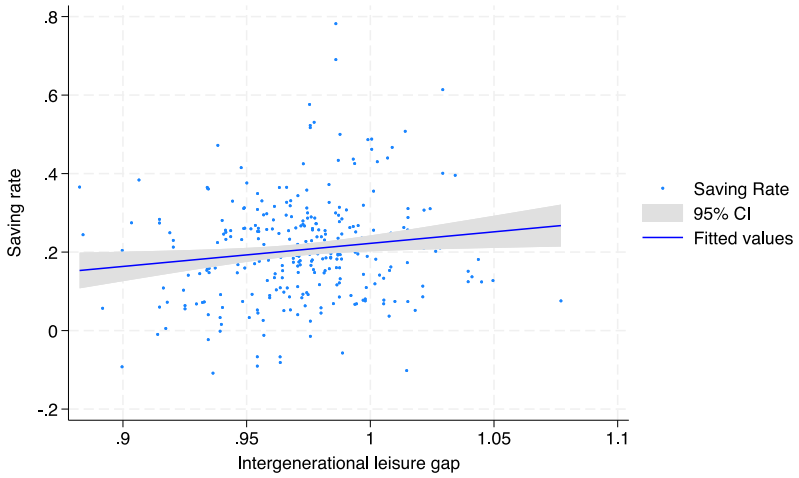

Fig. 2. Intergenerational leisure gap and savings rates. Each dot represents a pair country/year.

3.2. Results

Our initial evidence points at strengthening a core implication of the model, specifically that the intergenerational preference gap for leisure is independent of income and can thereby be viewed as reflecting a cultural trait, rather than an economically influenced variable. In Fig. 1, for each country and each year, we plot the fraction of time worked (left panel) and the intergenerational leisure gap, our proxy for Σ_o/Σ_y, against the per-capita income.

A striking pattern emerging from the simple plots of Fig. 1 is the negative correlation between the labor supply and per-capita income joint with the virtually absent correlation between the intergenerational leisure gap and per-capita income. Thus, while per-capita income reliably predicts the average fraction of time worked, it fails to serve as an effective predictor for the intergenerational leisure gap. This lends credibility to our hypothesis that the latter is a cultural attribute, largely unaffected by income levels and relatively constant over time, as emerging from Table 1.

We next show some empirical evidence that we interpret as supportive of the theoretical predictions of the model according to which countries where young individuals enjoy leisure relatively less than old individuals tend to save a larger fraction of their income and work longer hours. We first focus on the savings rate, which, in Fig. 4, is plotted against the intergenerational leisure gap. The figure reveals a positive and significant correlation between the two variables, aligning with Proposition 2.

To address and mitigate potential endogeneity concerns, we conduct regression analysis, using the savings rate as the dependent variable and regressing it against the intergenerational leisure gap, along with additional control variables and with three different estimation methods.

Results are shown in Table 2, which presents the outcome of nine distinct specifications. In columns (1), (2) and (3) we perform a simple OLS regression, pooling data from all countries, with each observation representing a country/period pair. Time fixed effects are added in columns (4), (5) and (6) while both time and country fixed effects are included in columns (7), (8) and (9).

Notably, the coefficient for the intergenerational leisure gap remains positive and significant (between the 1 or 10% levels) across most specifications, displaying remarkable stability. Specifically, in the pooled OLS regression, the coefficient of the Intergenerational

Table 2
Predictors of the savings rates — Columns (1), (2) and (3) report the results of a simple pooled OLS regression. Columns (4), (5), (6) report the results of a panel regression with time fixed effects. Columns (7), (8) and (9) report the results of a panel regression with time and country fixed effects.

Dependent Variable: Saving Rate									
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1	2	3	4	5	6	7	8	9
Int. Leisure Gap	0.585**	0.855***	0.661***	0.718**	0.985***	0.837***	0.163	0.318*	0.578**
	(0.266)	(0.251)	(0.247)	(0.311)	(0.289)	(0.288)	(0.193)	(0.164)	(0.262)
Log p.c. Income		0.0727***	0.0613***		0.0669***	0.0587***		0.163***	0.107***
		(0.00837)	(0.0142)		(0.00878)	(0.0153)		(0.0303)	(0.0398)
Interest Rate			−0.476***			−0.528***			−0.508
			(0.123)			(0.139)			(0.325)
Human Capital			−0.0924***			−0.0748***			−0.0351
			(0.0176)			(0.0213)			(0.0392)
Rule of Law			0.0343***			0.0265**			0.0109
			(0.00894)			(0.0102)			(0.0303)
Labor share			−0.380***			−0.413***			−0.212
			(0.0877)			(0.0913)			(0.189)
Age Dep.Ratio			−0.00252***			−0.00273***			−0.00232**
			(0.000772)			(0.000874)			(0.00104)
Year Pop.Gr. %			0.0150**			0.0202**			−0.00562
			(0.00739)			(0.00983)			(0.0116)
Constant	−0.363	−1.317***	−0.395	−0.490	−1.384***	−0.555*	0.0511	−1.658***	−0.981*
	(0.257)	(0.278)	(0.291)	(0.301)	(0.313)	(0.329)	(0.188)	(0.334)	(0.550)
Observations	301	301	238	247	247	194	224	224	179
R-squared	0.018	0.300	0.517	0.066	0.304	0.519	0.849	0.882	0.889
Time FE	NO	NO	NO	YES	YES	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Leisure Gap remains is positive and significant in every specification, both alone and together with a bunch of other usual determinants of savings rates. This aligns with Proposition 2, indicating that economies where leisure is more valued by the older generation than the younger tend to exhibit higher savings rates.

When controlling for time-specific unobserved factors such as global economic trends and technological advancements, the coefficient of our index remains positive and significant in all three specifications. In this context, our regression coefficients are interpreted in terms of between-country variations and are strongly supportive of our model's predictions, aligning with our view that the intergenerational leisure gap is likely a cultural trait that varies mostly between countries rather than within them over time.

Importantly, even when both time and country fixed effects are included, a substantial part of the explanatory power of our index is preserved. The coefficient of the intergenerational leisure gap is not significant (though still positive) only when controls are not included. This is noteworthy because controlling for time-invariant national characteristics is expected to substantially reduce the observed impact of the intergenerational leisure gap, which is highly correlated with country-specific fixed effects. These results suggest that our theoretical prediction is supported not only across countries but also within countries over time, despite the limited within-country variation of our index.

The inclusion of country fixed effects (columns 7–9) also absorbs country-specific characteristics such as demographic structure. However, to further test whether our findings are confounded by demographic factors, we also control for the total age dependency ratio – a standard proxy for the relative burden of non-working to working-age population – and for population growth. As shown in Table 2 (columns 3, 6, and 9), the inclusion of these demographic controls do not attenuate the effect of the Intergenerational Leisure Gap, whose coefficient remains positive and significant across all specifications. This suggests that our cultural mechanism captures independent variation in saving behavior that is not driven by differences the demographic structure, either across or within countries. While our analysis does not establish causal identification, the consistency of our results across specifications and estimation strategies, combined with the absence of compelling alternative explanations, lends credibility to the cultural channel we propose.

The latter part of this section focuses on the relation between the leisure gap and the fraction of hours worked. According to Proposition 2, in economies where this ratio is higher, we should also see a higher fraction of hours worked. The data presented below generally corroborates this view. Similar to our analysis of the savings rate, Fig. 3 displays the relationship between the intergenerational leisure gap and the fraction of time worked. The figure demonstrates a marked positive correlation, aligning with our model's predictions.

To address clearly existing endogeneity issues, we replicate the analytical approach used for the savings rate, but limiting controls to only the (log of) per-capita income. In Table 3, the coefficient associated with the intergenerational leisure gap is positive and highly significant in specifications that do not incorporate per-capita income or country fixed effects. However, in specifications

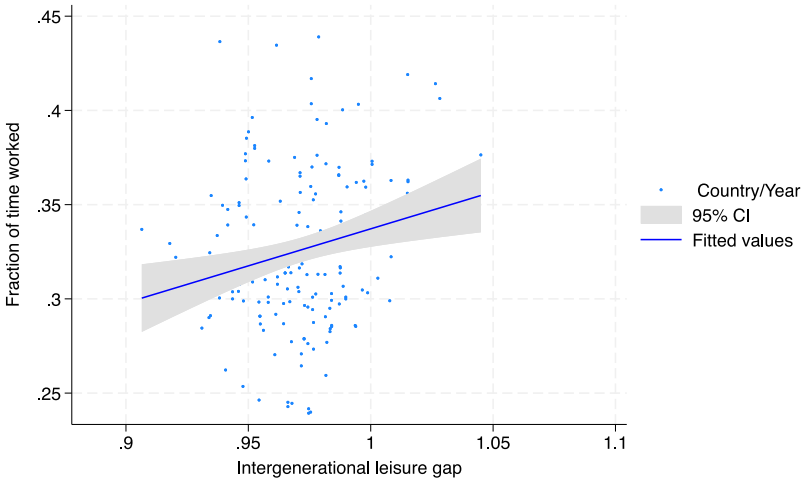

Fig. 3. Intergenerational leisure gap and fraction of time worked.

Table 3
Predictors of working time. Columns (1) and (2) report the results of a simple pooled OLS regression. Columns (3) and (4) report the results of a panel regression with time fixed effects. Columns (5) and (6) report the results of a panel regression with time and country fixed effects.

Dependent Variable: Working Time						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Int. Leisure Gap	0.414***	0.0404	0.399***	0.0256	0.0627	0.0676
	(0.0980)	(0.0999)	(0.110)	(0.105)	(0.0748)	(0.0750)
Log p.c. Income		−0.0289***		−0.0294***		0.0242***
		(0.00401)		(0.00413)		(0.00813)
Constant	−0.0781	0.571***	−0.0622	0.590***	0.265***	0.0224
	(0.0957)	(0.122)	(0.108)	(0.123)	(0.0728)	(0.0977)
Observations	188	188	158	158	151	151
R-squared	0.059	0.318	0.106	0.368	0.966	0.970
Time FE	NO	NO	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

that include these additional controls, the coefficient becomes non-significant. We interpret these empirical results as supporting our theoretical predictions. On the one hand, our model suggests that the intergenerational leisure gap indirectly increases working hours through its effect on wages and consumption. Since these two variables are closely linked to income per capita, the inclusion of the latter as an explanatory variable consistently renders the intergenerational leisure gap non-significant. On the other hand, almost all of the variation in the intergenerational leisure gap occurs between countries and is attributed to variations in preferences. This explains why the leisure gap becomes non-significant when we include country fixed effects.

4. Leisure externalities

When dealing with leisure, it is natural to introduce some form of externalities. As argued by Pintea (2010) among others, there is a lot of anecdotal evidence that many of the leisure activities are more enjoyable if they are done with others (sports, trips, shopping and even watching TV).[8] This is particularly evident in working hour's synchronization between spouses (Hamermesh, 2002; Hunt and Katz, 1998). The concentration of working hours between 9am and 5pm, Monday to Friday, and the tradition of European August vacation, despite the disadvantages due to crowded infrastructure, also show that people have a preference to rest when others rest and work when others work. Given that leisure externalities appear inherent, it is worth asking whether the effect of a larger intergenerational leisure gap obtained without externalities remain when externalities are taken into account. The aim of this section is to explore this question.

[8] Although Pintea (2010) and Gómez Suarez (2008) also consider the case of negative externalities, the case of positive externalities seems the more compelling and empirical relevant one.

In this section, we extend our model by introducing both intra and intergenerational externalities in leisure activities. More precisely, in this section, leisure services are now described by the following expressions:

$$x_t^y\left(p_t^y,\overline{p}_t^y,l_t,q_t^y\right)=\left(\left(p_t^y\right)^{1-\theta_y}\left(\overline{p}_t^y\right)^{\theta_y}\right)^{\sigma_y}\left(\left(p_t^o\right)^{1-\eta_y}\left(\overline{q}_t^y\right)^{\eta_y}\right)^{1-\sigma_y} \tag{31}$$

$$x_{t+1}^o\left(q_{t+1}^o,\overline{q}_{t+1}^o,p_{t+1}^o\right)=\left(\left(q_{t+1}^o\right)^{1-\theta_o}\left(\overline{q}_{t+1}^o\right)^{\theta_o}\right)^{\sigma_o}\left(\left(q_{t+1}^y\right)^{1-\eta_o}\left(\overline{p}_{t+1}^o\right)^{\eta_o}\right)^{1-\sigma_o} \tag{32}$$

where $\overline{p}_t^y$ and $\overline{q}_{t+1}^o$ measure the average fraction of time devoted, respectively, by young and old individuals at time t and $t+1$ to *intra*generational leisure activities, i.e. with individuals of the same generation. Similarly, $\overline{p}_{t+1}^o$ and $\overline{q}_t^y$ measure the average fraction of time devoted, respectively, by young and old individuals at time $t+1$ and t to *inter*generational activities, i.e. with individuals of a different generation. For both young and old individuals, leisure services at time t are now affected by two kinds of externalities: an intragenerational one and an intergenerational one. The economic intuition behind both kinds of externalities is that time devoted to leisure does not create utility if spent alone. Leisure time creates utility as long as other individuals, either belonging to the same generation (friends) or to a different generation (parents or children), decide to allocate leisure time to intragenerational and intergenerational leisure activities. The parameter $\sigma_i\in[0,1]$, $i=y,o$ measures the intensity of intragenerational versus intergenerational activities in utility services from leisure, $\theta_i\in[0,1]$, $i=y,o$, measures the strength of the intragenerational externality, whereas the parameter $\eta_i\in[0,1]$, $i=y,o$, measures the strength of the intergenerational externality.

This extended model is identical to the benchmark one for any other aspect. Therefore, individuals maximize the utility function (29) subject to the budget constraint and Eqs. (31) and (32), taking as given the externalities.[9] The solution of the individual problem determines the allocation of leisure time

$$p_t^{ye}=\frac{\left(1-l_t^e\right)}{1+\Psi_y}, \tag{33}$$

$$p_t^{oe}=\frac{\left(1-l_t^e\right)\Psi_y}{1+\Psi_y}, \tag{34}$$

$$q_{t+1}^{oe}=\frac{1}{1+\Psi_o}, \tag{35}$$

$$q_{t+1}^{ye}=\frac{\Psi_o}{1+\Psi_o}, \tag{36}$$

where

$$\Psi_y=\frac{\left(1-\sigma_y\right)\left(1-\eta_y\right)}{\sigma_y\left(1-\theta_y\right)},\Psi_o=\frac{\left(1-\sigma_o\right)\left(1-\eta_o\right)}{\sigma_o\left(1-\theta_o\right)}.$$

Notice that, as in the model without externalities, leisure activities for the old are still constant and leisure activities for the young are linear functions of equilibrium working time. The term Ψ_i increases with the ratio between the preference elasticity for intergenerational allocation of leisure and the preference elasticity for the intragenerational allocation of leisure of individual $i=y,o$. A society where Ψ_y is high is one where the representative young individual prefers to perform leisure activities with old individuals rather than with young individuals . On the other hand, a society where Ψ_o is high is a society where the representative old individual prefers to perform leisure activities with young individuals rather than with other old individuals.

Replacing the equilibrium values for the four kinds of leisure activities in (31) and (32), we obtain that the leisure services in a symmetric equilibrium where $p_t^i=\overline{p}_t^i$ and $q_{t+1}^o=\overline{q}_{t+1}^o$ are

$$x_t^y\left(l_t^e\right)=\Omega_y\left(1-l_t^e\right)^{\sigma_y+\left(1-\eta_y\right)\left(1-\sigma_y\right)} \tag{37}$$

$$x_{t+1}^o\left(l_{t+1}^e\right)=\Omega_o\left(1-l_{t+1}^e\right)^{\eta_o\left(1-\sigma_o\right)} \tag{38}$$

where

$$\Omega_y=\left(\frac{\Psi_o^{\eta_y}\left(\Psi_y\right)^{\left(1-\eta_y\right)}}{\left(1+\Psi_o\right)^{\eta_y}\left(1+\Psi_y\right)^{\frac{\sigma_y}{1-\sigma_y}+\left(1-\eta_y\right)}}\right)^{\left(1-\sigma_y\right)},$$

$$\Omega_o=\left(\Psi_o\right)^{\left(1-\eta_o\right)\left(1-\sigma_o\right)}\left(\frac{1}{1+\Psi_o}\right)^{\left(1-\eta_o\right)\left(1-\sigma_o\right)+\sigma_o}\left(\frac{\Psi_y}{1+\Psi_y}\right)^{\eta_o\left(1-\sigma_o\right)}.$$

We note several relevant differences with respect to the model without externalities. First, leisure services of the old individuals depend (negatively) on the amount of time that young individuals devote to work. This effect clearly depends on the emergence of the intergenerational externality η_o. Second, leisure services when young are a concave function of their leisure time, as the exponent $\sigma_y+\left(1-\eta_y\right)\left(1-\sigma_y\right)$ is smaller than 1. Finally, the parameters Ω_y and Ω_o determine the leisure services obtained by young and old

[9] The solution to the problem of individuals is similar to the solution for the benchmark model without externalities that is solved in the Appendix.

individuals and, therefore, have the same interpretation than Σ_y and Σ_o in the benchmark case without externalities. Accordingly, we define the intergenerational leisure gap with externalities as Ω_o/Ω_y.

The solution of the individual problem also implies

$$\frac{u_{c_t}}{u_{d_{t+1}}} = \beta R_{t+1}, \tag{39}$$

$$\frac{u_{x_t^y}}{u_{c_t}} \frac{\partial x_t^y}{\partial p_t^o} = w_t. \tag{40}$$

If we apply the equilibrium conditions, $p_t^y = \overline{p}_t^y$, and $q_{t+1}^o = \overline{q}_{t+1}^o$ and use (33), (34), (35) and (36) then (40) rewrites as

$$\frac{u_{x_t^y}}{u_{c_t}} = \Delta w_t \left(1 - l_t^e\right)^{\eta_y(1-\sigma_y)} \tag{41}$$

where

$$\Delta = \frac{1}{\left(\Psi_o^{\eta_y} \left(\Psi_y\right)^{(1-\eta_y)} \left(\frac{1+\Psi_y}{1+\Psi_o}\right)^{\eta_y}\right)^{(1-\sigma_y)} \sigma_y \left(1-\theta_y\right)}.$$

Since the firms problem and Eq. (19) are not modified by the introduction of externalities, we can proceed to define the equilibrium of this economy. This equilibrium is a path of $\left\{x_t^y, x_{t+1}^o, c_t, d_{t+1}, k_t, l_t, w_t, R_t\right\}_{t=1}^{\infty}$ that solves (1), (17), (18), (19), (37), (38), (39) and (41). In the Appendix, we use these equations characterizing the equilibrium to obtain the steady state and prove the following result:

Proposition 3. *If the production function satisfies (28), the utility function satisfies (29), and $\eta_y\left(1-\sigma_y\right)+\eta_o\left(1-\sigma_o\right) \in (0,1)$, there exists a unique steady state. This steady state is saddle path stable when intergenerational externalities, measured by η_y and η_o, are sufficiently small. At this steady state, the stock of capital, working time and savings rate increase with the intergenerational leisure gap, measured by the ratio Ω_o/Ω_y.*

Proof. See the Appendix. □

The existence of a steady state depends on the introduction of intergenerational externalities. When these externalities are introduced and are not too large, a unique steady state exists. In contrast, when intergenerational externalities are not introduced, $\eta_y = \eta_o = 0$, the existence of a steady state depends on a condition that simplifies to condition (30) when $\theta_y = \theta_o = 0$.

The main takeaway from Proposition 3 is that a larger intergenerational leisure gap increases the steady state value of the savings rate, stock of capital and working time. Therefore, the main findings obtained in the benchmark model without externalities and discussed in the empirical section remain unchanged when we consider a more sophisticated model in which individuals derive utility from the interaction between their and others' leisure time.

More generally, including inter- and intragenerational leisure externalities provides new insights that are worth to be explored especially on the policy perspective. When including intergenerational leisure externalities, an increase in the labor supply of the young individuals reduces the leisure services of the young, but also that of the old individuals. As a result, any policy affecting labor supply would a-priori have ambiguous effects on savings. Finally, and under a more general perspective, any design of the optimal policy in this setting would not only face the typical inefficiency associated to over-accumulation, but also those inefficiencies associated to leisure externalities. We leave these interesting topics to future research.

5. Conclusions

This paper introduces a novel mechanism to explain how cross-country variations in the value placed on leisure by younger relative to older generations cause differences in savings rates, working hours, and capital accumulation. We extend an Overlapping Generations model to incorporate endogenous labor supply and allow individuals from both generations to allocate their leisure time either within their own cohort or across generations. Our model, hinging on the complementarity between consumption and leisure activities, posits that economies where the value placed on leisure by younger relative to older generations is lower exhibit higher savings rates, longer working hours and higher level of capital stock in the steady-state.

Using data from the World Value Survey, we test the main implications of the model. We first provide evidence suggesting that cultural attributes, rather than economic factors, predominantly drive differences in intergenerational allocation of leisure time. We interpret these cultural attributes as differences in cross-country preferences. Secondly, we provide evidence supporting the predictions of the model.

While the empirical analysis only provides correlations and lacks causal identification, its robust evidence and consistency across different specifications and estimation methods, combined with the absence of evident alternative explanations, lend credibility to our mechanism as a significant driver of cross-country differences in saving behavior and working hours. Our results indicate that cultural differences in leisure allocation play a structural role in shaping cross-country differences in savings and labor supply, with potential implications for policy design.

Savings rates vary over the life cycle and across the income distribution, and they are shaped by taxation. To assess the impact of the leisure gap on savings, future research should embed the mechanism proposed here within a richer overlapping-generations

framework that incorporates heterogeneous agents, detailed demographic structures, and country-specific tax systems. A central challenge in developing such a model is calibrating how the value of leisure evolves with age and income. Meeting this challenge would require large-scale data on leisure services, data that goes beyond the scope of existing sources such as the World Values Survey.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used OpenAI's ChatGPT in order to improve the clarity and style of the manuscript, and to obtain assistance in writing and debugging Stata code. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Appendix

A.1. Mathematical derivations and proofs

A.1.1. Solution of the individuals' problem

The individuals' problem is to choose c_t, d_{t+1}, l_t, p_t^y and q_{t+1}^y in order to maximize utility (2) subject to leisure services, (3) and (4), time constraints, (5) and (6), and the budget constraint

$$w_t l_t = c_t + \frac{d_{t+1}}{R_{t+1}}. \tag{A.1}$$

Let λ_t be the Lagrangian multiplier associated to the intertemporal budget constraint. Then, from the first order conditions, we obtain

$$u_{c_t} = \lambda_t \tag{A.2}$$

$$\beta u_{d_{t+1}} = \frac{\lambda_t}{R_{t+1}} \tag{A.3}$$

$$u_{x^y}\left(1-\sigma_y\right)\left(p_t^y\right)^{\sigma_y}\left(p_t^o\right)^{-\sigma_y} = \lambda_t w_t \tag{A.4}$$

$$u_{x^y}\left[\sigma_y\left(p_t^y\right)^{\sigma_y-1}\left(p_t^o\right)^{(1-\sigma_y)} - \left(1-\sigma_y\right)\left(p_t^y\right)^{\sigma_y}\left(p_t^o\right)^{-\sigma_y}\right] = 0 \tag{A.5}$$

$$\beta u_{x^o}\left[-\sigma_o\left(q_{t+1}^o\right)^{\sigma_o-1}\left(q_{t+1}^y\right)^{(1-\sigma_o)} + \left(1-\sigma_o\right)\left(q_{t+1}^o\right)^{\sigma_o}\left(q_{t+1}^y\right)^{-\sigma_o}\right] = 0 \tag{A.6}$$

Using (5), (6), (A.5) and (A.6) we obtain (7), (8), (9) and (10). Using (11) and (12), and the first order conditions (A.2), (A.3) and (A.4), we obtain (15) and (16).

A.1.2. Proof of Proposition 1

In this appendix, we first prove the existence of a unique steady state and after we analyze local stability. As a first step, we combine Eqs. (22)–(24), (28) and (29) to obtain labor and the two consumption levels as the following functions of the capital stock:

$$l(k) = \frac{1+\frac{\Sigma_o}{\Sigma_y}\frac{\left(\alpha\beta A k^{\alpha-1}\right)^{\frac{1}{\mu}}}{1+n}}{(1-\mu)(1-\alpha)A+\mu\left(A-(1+n)k^{1-\alpha}\right)}(1-\alpha)(1-\mu)A, \tag{A.7}$$

$$c(k) = \frac{(1-\alpha)(1-\mu)}{\mu}\left[1-l(k)\right]Ak^{\alpha}, \tag{A.8}$$

$$d(k) = \frac{\Sigma_o}{\Sigma_y}\frac{(1-\alpha)(1-\mu)}{\mu}\left(\alpha A\beta k^{\alpha-1}\right)^{\frac{1}{\mu}}Ak^{\alpha}. \tag{A.9}$$

The equilibrium steady state is characterized by Eqs. (A.7), (A.8), (21) and (A.9). Using the Cobb–Douglas production function, Eq. (21) can be rewritten as

$$c^e(k) = k^{\alpha} l\left[A(1-\alpha) - k^{1-\alpha}(1+n)\right]. \tag{A.10}$$

Since $c(k) > 0$, this equation implies that $k < k^1 \equiv \left(\frac{(1-\alpha)A}{1+n}\right)^{\frac{1}{1-\alpha}}$. Eqs. (A.8) and (A.10) provide two expressions for the consumption when young that must be equal at the steady state. By equating them and solving for l, we obtain

$$l^e(k) = \frac{(1-\alpha)(1-\mu)A}{(1-\alpha)A-(1+n)\mu k^{1-\alpha}}. \tag{A.11}$$

Since $l^e(k) \in (0,1)$, we must introduce constraints on the value of capital. First, note that $k < k^1$ implies that $l^e(k) < 1$. Second, $l^e(k) > 0$ when $k < k^2 \equiv \left(\frac{(1-\alpha)A}{(1+n)\mu}\right)^{\frac{1}{1-\alpha}}$. Thus, $l^e(k) \in (0,1)$ when $k < \min\left\{k^1, k^2\right\} = k^1$.

The steady state market equilibrium must satisfy $l^e(k) = l(k)$, where $l(k)$ is given by (A.7). We now define the function $H(k) = l(k) - l^e(k) = G(k)F(k)$, with

$$G(k) = \frac{(1-\alpha)(1-\mu)A}{\left[(1-\alpha)A - (1+n)\mu k^{1-\alpha}\right]\left[(1-\mu)(1-\alpha)A + \mu\left(A - (1+n)k^{1-\alpha}\right)\right]},$$
$$F(k) = \frac{\Sigma_o}{\Sigma_y}\left(\alpha\beta A k^{\alpha-1}\right)^{\frac{1}{\mu}}\left[\frac{(1-\alpha)A}{(1+n)} - \mu k^{1-\alpha}\right] - \mu\alpha A. \tag{A.12}$$

The steady value of capital in the market equilibrium is a value k such that $H(k) = 0$. Since $k < k^1$ implies that $G(k) > 0$, k is such that $F(k) = 0$. It is quite immediate to see that $F'(k) < 0$ for $k < k^1$ and $F(0) = \infty$. It follows that a unique steady state exists when $F\left(k^1\right) < 0$, which requires that

$$F\left(k^1\right) = A\left(\frac{\Sigma_o}{\Sigma_y}\left(\frac{\alpha\beta(1+n)}{(1-\alpha)}\right)^{\frac{1}{\mu}}\frac{(1-\alpha)(1-\mu)}{(1+n)} - \mu\alpha\right) < 0.$$

This inequality holds when Condition (30) is satisfied.

We proceed to study local stability of the dynamic equilibrium when the production function satisfies (28) and the utility function satisfies (29). To this end, we combine the equations characterizing the dynamic equilibrium, (1), (11), (12), (15), (16), and (19), to obtain the following dynamic system:

$$k_{t+1} = \delta\left[l_t - (1-\mu)\right]^{\gamma},$$
$$l_{t+1} = \pi\left[l_t - (1-\mu)\right]^{1-\gamma}k_t^{\alpha},$$

where $\gamma = [(\alpha-1)(1-\mu)/\mu]^{-1} < 0$, $\delta = \kappa/(1-\mu)^{\gamma}$, $\pi = (1-\mu)^{\gamma}(1-\alpha)A/[\kappa\mu(1+n)]$ and

$$\kappa = \left(\frac{\alpha A}{(\beta\alpha A)^{\frac{1}{\mu}}}\frac{\Sigma_y}{\Sigma_o}\right)^{\gamma}.$$

The elements of the Jacobian matrix evaluated at the steady state are:

$$\frac{\partial k_{t+1}}{\partial l_t} = \frac{\gamma k}{l-(1-\mu)}, \quad \frac{\partial l_{t+1}}{\partial k_t} = \frac{\alpha l}{k}, \quad \frac{\partial l_{t+1}}{\partial l_t} = \frac{(1-\gamma)l}{l-(1-\mu)}.$$

Let λ_1 and $\lambda_2$be the two characteristic roots that are obtained from the following characteristic polynomial:

$$P(\lambda) = \lambda^2 - \frac{(1-\gamma)l}{l-(1-\mu)}\lambda - \frac{\gamma\alpha l}{l-(1-\mu)}.$$

Note that $P(0) > 0$,

$$P(1) = \frac{\gamma(1-\alpha)l - (1-\mu)}{l-(1-\mu)} < 0$$

and

$$P(-1) = \frac{[2-\gamma(1+\alpha)]l - (1-\mu)}{l-(1-\mu)} > 0.$$

We deduce that the two characteristic roots satisfy: $\lambda_1 > 1$ and $\lambda_2 \in (0,1)$. This proves that the steady state is saddle path stable.

A.1.3. Proof of Proposition 2

To show that k is increasing in the ratio Σ_o/Σ_y, note that $F(k)$ defined in (A.12) is decreasing in k and increasing in the ratio Σ_o/Σ_y. As a consequence, the unique value of k, satisfying $F(k) = 0$, increases with Σ_o/Σ_y.

As for l, first we manipulate (A.11) to find

$$k^{1-\alpha} = \frac{[l-(1-\mu)](1-\alpha)A}{l\mu(1+n)},$$

which reveals that l must be larger than $1-\mu$ in order for k to be positive in the steady state. Now, we replace this value in (A.7) to find the implicit function $G(l)$ whose zeros define the steady state market equilibrium of l

$$G(l) \equiv l^{1-\frac{1}{\mu}}(l-(1-\mu))^{\frac{1}{\mu}} - (1-\mu)\frac{\Sigma_o}{\Sigma_y}\beta^{\frac{1}{\mu}}\left(\frac{\alpha\mu(1+n)}{1-\alpha}\right)^{\frac{1}{\mu}-1} = 0$$

Since $G'(l) > 0$, and $G(l)$ decreases with Σ_o/Σ_y, the unique value of l satisfying $G(l) = 0$ increases when Σ_o/Σ_y increases.

Finally, the savings rate at the steady state is given by $k(1+n)/f(k) = k^{1-\alpha}(1+n)/A$. The savings rate is increasing in k and, therefore, it also increases with Σ_o/Σ_y.

A.1.4. Proof of Proposition 3

The steady state is obtained from substituting Eqs. (17) and (18) into (39) and (41), and using the resource constraint and (19). We obtain the following system of equations:

$$\frac{u_c}{u_d} = \beta f'(k) \tag{A.13}$$

$$\frac{u_{x^y}}{u_c} = \left[f(k) - k f'(k)\right] \Delta (1-l)^{\eta_y(1-\sigma_y)} \tag{A.14}$$

$$c + \frac{d}{1+n} = [f(k) - k(1+n)]\, l \tag{A.15}$$

$$c = \left[f(k) - k f'(k) - k(1+n)\right] l \tag{A.16}$$

$$x^y = \Omega_y (1-l)^{\sigma_y + (1-\eta_y)(1-\sigma_y)} \tag{A.17}$$

$$x^o = \Omega_o (1-l)^{\eta_o(1-\sigma_o)} \tag{A.18}$$

Using (28), (29), (37), (38), $p^y = \overline{p}^y$ and $q^o = \overline{q}^o$, we can characterize the steady state with the following system of 4 equations:

$$(1-l)^{1-b} \frac{\Omega_y}{\Omega_o} \frac{d}{c} = (\alpha A \beta)^{\frac{1}{\mu}} k^{\frac{\alpha-1}{\mu}} \tag{A.19}$$

$$\frac{\mu}{1-\mu} \frac{1}{\Delta \Omega_y} \frac{c}{1-l} = (1-\alpha) A k^{\alpha} \tag{A.20}$$

$$c + \frac{d}{1+n} = \left[A k^{\alpha} - k(1+n)\right] l \tag{A.21}$$

$$c = \left[(1-\alpha) A k^{\alpha} - k(1+n)\right] l \tag{A.22}$$

where

$$b \equiv \eta_y \left(1-\sigma_y\right) + \eta_o \left(1-\sigma_o\right) > 0.$$

We next use these equations to study the existence and uniqueness of the steady state equilibrium and analyze the effects of a large intergenerational leisure gap.

First notice that the condition $c = [(1-\alpha) A k^{\alpha} - k(1+n)]\, l \geq 0$ sets an upper-bound for k since

$$c \geq 0 \Rightarrow k < k_{\max} \equiv \left(\frac{(1-\alpha) A}{1+n}\right)^{\frac{1}{1-\alpha}}$$

Let $z = \frac{k^{1-\alpha}(1+n)}{(1-\alpha)A}$. Note that $k < k_{\max}$ implies that $z < 1$. Using (A.19)–(A.22), we obtain

$$l_1(z) = 1 - \left[\beta \frac{\Omega_o}{\Omega_y} \left(\frac{\beta \alpha (1+n)}{1-\alpha}\right)^{\frac{1-\mu}{\mu}} (1-z) z^{-\frac{1}{\mu}}\right]^{\frac{1}{1-b}}$$

$$l_2(z) = \frac{(1-\mu)\Delta \Omega_y}{\mu(1-z) + (1-\mu)\Delta \Omega_y}$$

A steady state is defined as a value of z such that $l_1(z) \equiv l_2(z)$. After some manipulation, we deduce that

$$\left(\frac{\mu}{\mu(1-z) + (1-\mu)\Delta \Omega_y}\right)^{1-b} (1-z)^{-b} = \beta \frac{\Omega_o}{\Omega_y} \left(\frac{\beta \alpha (1+n)}{1-\alpha}\right)^{\frac{1-\mu}{\mu}} (z)^{-\frac{1}{\mu}}. \tag{A.23}$$

Note that the left hand side of (A.23) is increasing in z when $b < 1$, it takes a finite positive value when $z = 0$ and it diverges to infinite when $z = 1$. The right hand side is decreasing in z, it takes an infinite value when $z = 0$ and a finite positive value when $z = 1$. Therefore, there exists a unique steady state for which $l \in (0,1)$, and $c > 0$.[10]

Using (A.23), we can also show the effect of an increase in the intergenerational leisure gap, defined by the ratio Ω_o/Ω_y. When this ratio increases, the right hand side of Eq. (A.23) shifts upwards which implies an increase in the steady state value of both z and l, since the left hand side is increasing. The increase in z implies that k increases, which in turn implies that the savings rate increases.[11]

[10] When intergenerational externalities are not introduced, $b = 0$, and the existence of a steady state depends on a condition similar to Condition (30).

[11] The stability analysis follows the same steps as the no-externalities analysis in Appendix A.2. For the sake of brevity, we do not include it. It is available upon request.

Table 4
Summary statistics.

Variable	Mean	Standard Deviation			Obs	N. Countries
		Overall	Between	Within		
Intergenerational leisure gap	0.9232	0.1031	0.1038	0.0572	301	88

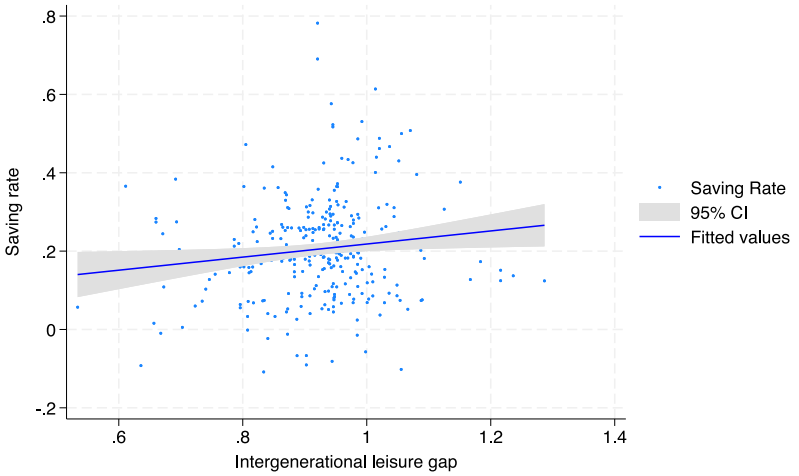

Fig. 4. Intergenerational leisure gap and savings rates. Each dot represents a pair country/year.

A.2. Additional evidence

In this section we present the main results of the empirical analysis obtained using an alternative measure of Intergenerational Leisure Gap. Specifically, to the aim of overcoming the potential concern associated to the arbitrariness of the numerical values assigned to construct our benchmark measure, we proceed as follows: first we compute the proportion of respondents who consider leisure "Very important" or "Rather important" over the total, for both old and young individuals; second, we compute the ratio of these two indexes to obtain our alternative measure of Intergenerational Leisure Gap. While this alternative sacrifices some granularity, it involves a lower degree of arbitrariness and serves as a robustness check.

The summary statistics of this alternative index is reported in Table 4:

Consistent with our benchmark measure, the mean remains below 1, confirming that in our sample, leisure is relatively more important for young individuals than for old ones. Additionally, the between-country standard deviation is twice as large as the within-country standard deviation, reinforcing the idea that the intergenerational leisure gap varies more across countries than within them over time, supporting our interpretation of the gap as a cultural trait. However, this alternative index exhibits significantly greater variation compared to the benchmark measure, with a coefficient of variation four times larger. Despite this increased variability, the main results of our analysis remain largely unaffected, as reported below.

To start with, following Fig. 2 in the main text, we plot the saving rate against this new measure of Intergenerational Leisure Gap.

The figure reveals a positive and significant correlation between the two variables, consistent with Fig. 2 and with Proposition 2.

We next replicate the results contained in Table 2 in the main text but replacing the dependent variable with the above described alternative measure of Intergenerational Leisure Gap (see Table 5). As we can see, the qualitative results remain largely unaffected. The coefficient for the alternative index of the Intergenerational Leisure Gap remains positive and highly significant in most specifications. The only exceptions are in columns (7), (8), and (9), where both time and country fixed effects are included, resulting in positive but statistically insignificant coefficients. This outcome is expected, as controlling for time-invariant national characteristics substantially reduces the observed impact of the intergenerational leisure gap, which is highly correlated with country-specific fixed effects.

Finally, we replicate the results of Table 3 from the main text to examine the relationship between the fraction of hours worked and the alternative measure of the Intergenerational Leisure Gap. As in the benchmark case, the coefficient remains positive and highly significant in specifications that do not control for per-capita income or country fixed effects, while becoming non-significant when these controls are included. These findings further support our theoretical predictions (see Table 6).

Data availability

Data will be made available on request.

Table 5
Predictors of the savings rates — Columns (1), (2) and (3) report the results of a simple pooled OLS regression. Columns (4), (5), (6) report the results of a panel regression with time fixed effects. Columns (7), (8) and (9) report the results of a panel regression with time and country fixed effects.

Dependent Variable: Saving Rate									
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Int. Leisure Gap	0.167**	0.194***	0.166**	0.219***	0.243***	0.200**	0.00733	0.0379	0.103
	(0.0741)	(0.0705)	(0.0693)	(0.0817)	(0.0765)	(0.0771)	(0.0611)	(0.0481)	(0.0820)
Log p.c. Income		0.0704***	0.0625***		0.0641***	0.0602***		0.160***	0.103**
		(0.00829)	(0.0143)		(0.00861)	(0.0155)		(0.0310)	(0.0425)
Interest Rate			−0.458***			−0.497***			−0.468
			(0.126)			(0.144)			(0.331)
Human Capital			−0.0962***			−0.0780***			−0.0471
			(0.0181)			(0.0218)			(0.0428)
Rule of Law			0.0327***			0.0242**			0.0166
			(0.00917)			(0.0106)			(0.0302)
Labor share			−0.371***			−0.397***			−0.181
			(0.0874)			(0.0927)			(0.186)
Age Dep. Ratio			−0.00260***			−0.00280***			−0.00256**
			(0.000779)			(0.000875)			(0.00107)
Year Pop.Gr. %			0.0164**			0.0226**			−0.00708
			(0.00729)			(0.00962)			(0.0118)
Constant	0.0512	−0.644***	0.0888	0.00564	−0.625***	0.0563	0.202***	−1.353***	−0.451
	(0.0681)	(0.107)	(0.169)	(0.0753)	(0.111)	(0.188)	(0.0574)	(0.307)	(0.534)
Observations	301	301	238	247	247	194	224	224	179
R-squared	0.017	0.285	0.513	0.069	0.291	0.512	0.849	0.880	0.886
Time FE	NO	NO	NO	YES	YES	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6
Predictors of working time. Columns (1) and (2) report the results of a simple pooled OLS regression. Columns (3) and (4) report the results of a panel regression with time fixed effects. Columns (5) and (6) report the results of a panel regression with time and country fixed effects.

Dependent Variable: Working Time						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Int. Leisure Gap	0.0934***	0.0231	0.0922***	0.0183	0.00689	0.00882
	(0.0297)	(0.0285)	(0.0315)	(0.0305)	(0.0163)	(0.0144)
Log p.c. Income		−0.0287***		−0.0291***		0.0241***
		(0.00378)		(0.00402)		(0.00824)
Constant	0.238***	0.587***	0.240***	0.595***	0.319***	0.0802
	(0.0285)	(0.0528)	(0.0301)	(0.0545)	(0.0153)	(0.0810)
Observations	188	188	158	158	151	151
R-squared	0.036	0.320	0.089	0.369	0.965	0.969
Time FE	NO	NO	YES	YES	YES	YES
Country FE	NO	NO	NO	NO	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

References

Aguiar, M., Hurst, E., 2007. Measuring trends in leisure: The allocation of time over five decades. Q. J. Econ. 122 (3), 969–1006.
Alesina, A., Algan, Y., Cahuc, P., Giuliano, P., 2015. Family values and the regulation of labor. J. Eur. Econ. Assoc. 13 (4), 599–630.
Alesina, A., Giuliano, P., 2015. Culture and institutions. J. Econ. Lit. 53 (4), 898–944.
Algan, Y., Cahuc, P., 2010. Inherited trust and growth. Am. Econ. Rev. 100 (5), 2060–2092.
Anchorena, J., Anjos, F., 2015. Social ties and economic development. J. Macroecon. 45, 63–84.
Ando, A., Modigliani, F., 1963. The "life cycle" hypothesis of saving: Aggregate implications and tests. Am. Econ. Rev. 53 (1), 55–84.
Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev. Econ. Stud. 58 (2), 277–297.
Bandiera, O., Caprio, G., Honohan, P., Schiantarelli, F., 2000. Does financial reform raise or reduce saving? Rev. Econ. Stat. 82 (2), 239–263.
Blau, D., 2016. Pensions, household saving, and welfare: A dynamic analysis of crowd out. Quant. Econ. 7 (1), 193–224.
Carroll, C.D., Rhee, B.-K., Rhee, C., 1994. Are there cultural effects on saving? Some cross-sectional evidence. Q. J. Econ. 109 (3), 685–699.
Cigno, A., Rosati, F.C., 1996. Jointly determined saving and fertility behaviour: Theory, and estimates for Germany, Italy, UK and USA. Eur. Econ. Rev. 40 (8), 1561–1589.
Costa-Font, J., Giuliano, P., Ozcan, B., 2018. The cultural origin of saving behavior. PloS One 13 (9), e0202290.
Cronqvist, H., Siegel, S., 2015. The origins of savings behavior. J. Politi. Econ. 123 (1), 123–169.

de Castro Campos, M., Kool, C., Muysken, J., 2013. Cross-country private saving heterogeneity and culture. De Econ. 161, 101–120.
Diamond, P.A., 1965. National debt in a neoclassical growth model. Am. Econ. Rev. 55 (5), 1126–1150.
Dobrescu, L.I., Kotlikoff, L.J., Motta, A., 2012. Why aren?t developed countries saving? Eur. Econ. Rev. 56 (6), 1261–1275.
Ek, A., 2021. Cross-country differences in preferences for leisure. Labour Econ. 72, 102054.
Fernandez, R., 2007. Alfred marshall lecture: Women, work, and culture. J. Eur. Econ. Assoc. 5 (2–3), 305–332.
Fernandez, R., Fogli, A., 2009. Culture: An empirical investigation of beliefs, work, and fertility. Am. Econ. J.: Macroecon. 1 (1), 146–177.
Fuchs-Schündeln, N., Masella, P., Paule-Paludkiewicz, H., 2020. Cultural determinants of household saving behavior. J. Money Credit. Bank. 52 (5), 1035–1070.
Giavazzi, F., Serafinelli, M., Schiantarelli, F., 2013. Attitudes, policies and work. J. Eur. Econ. Assoc. 11 (6), 1256–1289.
Gómez Suarez, M.A., 2008. Utility and production externalities, equilibrium efficiency and leisure specification. J. Macroecon. 30, 1496–1519.
Guiso, L., Sapienza, P., Zingales, L., 2006. Does culture affect economic outcomes? J. Econ. Perspect. 20 (2), 23–48.
Hamermesh, D., 2002. Timing, togetherness and time windfalls. J. Popul. Econ. 15 (4), 601–623.
Hunt, J., Katz, L.F., 1998. Hours reductions as work-sharing. Brookings Pap. Econ. Act. 1998 (1), 339–381.
King, R.G., Plosser, C.I., Rebelo, S.T., 1988. Production, growth and business cycles: I. The basic neoclassical model. J. Monet. Econ. 21 (2), 195–232.
Kotlikoff, L.J., et al., 1989. What Determines Savings? vol. 1, MIT Press Books.
Laitner, J., 2000. Structural change and economic growth. Rev. Econ. Stud. 67 (3), 545–561.
Loayza, N., Schmidt-Hebbel, K., Servén, L., 2000. What drives private saving across the world? Rev. Econ. Stat. 82 (2), 165–181.
Mocan, N., Pogorelova, L., 2015. Why work more? The impact of taxes, and culture of leisure on labor supply in Europe. NBER Working Paper 21297, National Bureau of Economic Research.
Moriconi, S., Peri, G., 2019. Country-specific preferences and employment rates in Europe. Eur. Econ. Rev. 116, 1–27.
Pintea, M., 2010. Leisure externalities: Implications for growth and welfare. J. Macroecon. 32 (4), 1025–1040.
Stierle, M.H., Rocher, S., 2015. Household saving rates in the EU: Why do they differ so much? Technical Report, Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.
Tabellini, G., 2010. Culture and institutions: Economic development in the regions of Europe. J. Eur. Econ. Assoc. 8 (4), 677–716.
Tobing, E., 2012. Demography and cross-country differences in savings rates: a new approach and evidence. J. Popul. Econ. 25, 963–987.