Case Study: Cultural Transmission & Economic Growth

A Data-Driven Analysis using OLG Models and Behavioral Economics Author: Irene Kontiza

1. Executive Summary & Methodology

This study investigates the intergenerational transmission of cultural values and their impact on sustainable economic growth. Utilizing the **Overlapping Generations (OLG) Model** framework, I analyze how specific traits—Independence, Religious Faith, and Obedience—shift over time and correlate with economic development.

1.1 Data Acquisition and Variable Selection

Data was sourced from the **World Values Survey (WVS Time Series 1981-2022)**. Based on Behavioral Economics theory regarding cultural transmission, three key binary variables were selected, representing qualities parents consider important to teach their children:

- **A029 - Independence:** Proxy for "Materialist" traits (innovation-oriented).
- **A040 - Religious Faith:** Proxy for "Direct Utility" (tradition-oriented).
- **A042 - Obedience:** Proxy for vertical transmission of conservative norms.

Data Processing & Cleaning: The raw WVS data consists of dummy variables (1 if selected, 0 if not). Using **Python (Pandas)**, the dataset was cleaned to remove negative values (representing "Don't Know/No Answer"). Subsequently, the data was aggregated by country (COUNTRY_ALPHA) to calculate the population mean for three distinct periods: 1981-2004, 2005-2022, and the total span (1981-2022).

2. Geospatial Analysis: Patterns of Cultural Transmission

Using the **Plotly** library, I generated interactive choropleth maps to visualize the global distribution of these traits. The comparative analysis reveals distinct patterns aligned with the OLG model of economic take-off.

2.1 Independence (The Rise of Materialism)

- **Geographic Distribution:** Western/Northern Europe, North America, and parts of East Asia consistently exhibit the highest density (darker hues).
- **Temporal Shift:** Comparing the 1981-2004 period with 2005-2022 reveals a significant rise in "Independence" within emerging economies.
- **Theoretical Interpretation:** This aligns with the expansion of the **Materialist trait ()**. As basic productivity () increases, parents realize that traditional obedience no longer guarantees success. The market begins to reward innovation and self-reliance. Consequently, parents strategically transmit "Independence," creating a generation of agents willing to sacrifice immediate utility for future productivity and knowledge accumulation.

2.2 Religious Faith (Direct Utility vs. Investment)

- **The Global Divide:** A sharp contrast is observed. Africa, the Middle East, and parts of Latin America show rates of 80-90%, whereas China, Russia, and Northern Europe show minimal percentages.

- **Economic Implication:** In the OLG framework, religion often represents a "Direct Utility" activity. The prevalence of high religious faith in developing regions suggests a dominance of "Non-Materialist" agents (), who allocate time to spiritual practices rather than technological investment, potentially delaying the economic take-off.

2.3 Obedience (The Decline of Hierarchy)

- **Trend Analysis:** There is a global recession in the value of "Obedience" when comparing the early (1981-2004) and late (2005-2022) periods.
- **Mechanism:** This confirms that productivity growth drives cultural change. Blind obedience—a mechanism for maintaining conservative values—must recede to allow for a "critical mass" of ambitious, independent agents capable of driving innovation.

3. Theoretical Framework: Hofstede's Cultural Dimensions

To contextualize the WVS data, I cross-referenced the findings with Geert Hofstede's Cultural Dimensions Theory, focusing on three case studies: **USA, Norway (NOR), and China (CHN)**.

3.1 Independence vs. Individualism

- **Dimension:** Individualism vs. Collectivism.
- **Analysis:** Norway (89%) exemplifies a high-individualism society.
- **Key Insight (China):** China presents a paradox with a 70% Independence score, despite being traditionally "Collectivist." In the context of rapid growth, this "Independence" is likely interpreted as **Self-Reliance**—a survival mechanism transmitted by parents in a hyper-competitive economy.

3.2 Religious Faith vs. Uncertainty Avoidance

- **Dimension:** Uncertainty Avoidance & Normative Orientation.
- **Analysis:** China (1%) and Norway (10%) exhibit secular, productivity-focused traits. In contrast, the USA (44%) retains a strong **Normative Orientation**, deriving direct utility from tradition despite its high economic status.

3.3 Obedience vs. Power Distance

- **Dimension:** Power Distance Index (PDI).
- **Analysis:** All three nations show low obedience rates. China's score (11%) effectively debunks the stereotype of rigid Asian hierarchy in the modern family unit. It suggests Chinese parents are prioritizing competitiveness (Independence) over traditional submissiveness (Obedience) to ensure their children's economic success.

4. Behavioral Micro-Foundations (Global Preference Survey)

To validate the macro-cultural findings, I integrated data from the **Global Preference Survey (Falk et al.)**, analyzing six micro-behavioral variables:

1. **Time Preference (Patience):** The willingness to delay gratification. Crucial for human capital accumulation (education/savings).

2. **Risk Taking:** Tolerance for uncertainty, strongly linked to entrepreneurship.
3. **Positive Reciprocity:** Rewarding kind actions; facilitates informal labor contracts and gift exchange.
4. **Negative Reciprocity:** Punishing unfairness; essential for enforcing social norms and cooperation.
5. **Altruism:** Unconditional benevolence (charity/volunteering).
6. **Trust:** The belief that others have good intentions. High trust reduces transaction costs and lubricates economic activity.

5. Empirical Validation: Correlation Matrix Analysis

An **inner merge** was performed between the WVS (Cultural) and GPS (Behavioral) datasets to test the consistency of the OLG model. The resulting Correlation Matrix confirms the theoretical predictions.

5.1 The Cost of Traditional Values (Patience)

The most significant finding is the strong **negative correlation** between **Patience** and both **Obedience (-0.498)** and **Religious Faith (-0.358)**.

- *Interpretation:* Traditional/Normative societies tend to prioritize immediate utility (Direct Utility) over future investment. Agents in these cultures lack the "Patience" required for long-term economic growth strategies.

5.2 Reciprocity and Market Function

- **Independence** correlates positively with **Negative Reciprocity (+0.336)**. Independent societies rely on the willingness to punish free-riders to maintain market order.
- **Obedience** correlates negatively with **Positive Reciprocity (-0.374)**. In high Power Distance cultures, productivity is often viewed as a duty to superiors rather than a reciprocal exchange.

5.3 Cultural Coherence

The data reveals a distinct cluster: **Obedience and Religious Faith** are positively correlated (+0.687), forming a "Traditional" block. Conversely, **Independence** acts as a competitive trait, showing strong negative correlations with both, confirming the dichotomy between Materialist and Non-Materialist value systems.