How time preferences differ: Evidence from 53 countries

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ABSTRACT

We present results from the first large-scale international survey on time preference, conducted in 53 countries. All countries exhibit hyperbolic discounting patterns, i.e., the immediate future is discounted more than far future. We also observe higher heterogeneity for shorter time horizons, consistent with the pattern reviewed by Frederick, Loewenstein, and O'Donoghue (2002). Cultural factors as captured by the Hofstede cultural dimensions (Hofstede, 1991) contribute significantly to the variation of time discounting, even after controlling for economic factors, such as GDP, inflation rate and growth rate. In particular, higher levels of Uncertainty Avoidance are associated with stronger hyperbolic discounting, whereas higher degrees of Individualism and Long Term Orientation predict stronger tendency to wait for larger payoffs. We also find the waiting tendency is correlated with innovation, environmental protection, crediting rating, and body mass index at country level after controlling for county wealth. These results help us to enhance the understanding of differences across financial markets and economic behavior worldwide.

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1. Introduction

Time preference is one of the most fundamental concepts in economics. It has been widely applied in asset pricing, project evaluation, and decisions on investment and saving, among many others. Our survey is a first attempt to collect large-scale empirical data on country-level variations of time preferences for monetary payoffs. It is to our knowledge the largest international survey of this kind.

Many factors have been proposed in the literature that could influence subjective time discounting, such as income, development, culture, and so forth (Becker & Mulligan, 1997). Given that many of these economic and cultural factors naturally vary among different countries, it would be very interesting to test some of the influencing factors in a cross-country sample. In this article, we elicit time preferences in a large sample across 53 countries and examine the impacts of culture on time preference.

Studies on cross-cultural differences in temporal discounting are rare. Most of them involved only two or three countries, e.g., Canadian undergraduates and foreign undergraduates of Chinese descents (Tan & Johnson, 1996), American, Chinese and Japanese graduate students living in the U.S. (Du, Green, & Myerson, 2002), and Israeli Arabs and Israeli Jews (Mahajna, Benzion, Bogaire, & Shavit, 2008).

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One problem associated with small samples are confounding factors. Studies on a limited number of cultural groups have inherent difficulties in distinguishing the impacts of socio-economic and cultural factors. For example, the United States and China are different in many dimensions, including economic situation, political system, and cultural roots. It is hard to deduce what causes the observed differences in time preference. To study more systematically the impacts of country-level factors, it is helpful to include other countries. For example, including countries like Japan or South Korea, which have similar cultural roots as China, but a similar economic development and political system as the U.S., helps to disentangle these factors. Including countries in Eastern Europe with different cultural roots, but similar modern political experiences as China, is another example how a larger international sample can provide deeper insights.

The large number of countries included in our survey allows us to link the measured time preference with the economic and cultural backgrounds of these countries. We elicit time preferences and time discounting for different time horizons (one month, one year, and ten years). Our main findings are:

- The discount rate for one year is much higher than the discount rate for ten years: hyperbolic discounting is a global phenomenon.
- Time discounting for relatively short time horizons exhibits much higher heterogeneity than for longer time horizons, consistent with the pattern noticed by Frederick, Loewenstein, and O'Donoghue (2002).
- Cultural factors as captured by the Hofstede cultural dimensions (Hofstede, 1991) contribute significantly to the variation of time discounting. In particular, high levels of Uncertainty Avoidance are associated with stronger hyperbolic discounting, whereas higher degree of Individualism and Long Term Orientation predict a stronger tendency to wait for larger payoffs.
- We also find that countries with a higher pace of time measured from field studies (e.g., more punctuality and higher walking speed, as defined by Levine (1997)) are more likely to wait for higher returns, which provides an external validity for the measurements in our survey.

The collected data on time preferences and time discounting has already led to many interesting applications, particularly in behavioral finance, such as applications to the equity risk premium puzzle (Rieger, Wang, & Hens, 2013), dividend payoff policies (Breuer, Hens, Salzmann, & Wang, 2015), and household debt maturity (Breuer, Rieger, & Soypak, 2014). Institutions dealing with economic policy issues also find our survey highly valuable. For example, Marcheggiano and Miles (2013) from the Bank of England used our data to explain international differences in the effectiveness of fiscal policy.

The rest of this article is organized as follows: In the second section, we review the literature on culture and time preferences. In the third section, we present the survey methodology. In the fourth section, we summarize the key results. In the final section, we discuss possible future research directions for which this survey data could be used.

2. Relationship between culture and time preferences

Economists traditionally assume preferences are given and there is no role of culture. As Fehr and Hoff (2011) noted, such views become obsolete with the growing literature showing that preferences can be endogenous and can be shaped by societal and cultural influence (Bowles, 1998; Eugster, Lalive, Steinhauer, & Zweimüller, 2011; Henrich, 2000; Hoff, Kshetramade, & Fehr, 2011; Stern, Dethier, & Rogers, 2005).

Perception of time is a part of culture. Culture is typically defined as something stable over time that distinguishes different groups. Although an abstract and vague concept to most economists, sociologists and psychologists have studied in depth the impacts of culture on various aspects, such as personality, cognition, social and economic development. One of the most influential measurements for culture has been developed by the Dutch sociologist Geert Hofstede during his long-term research on cross-national organizational culture. Five persistent cultural dimensions have been found across different nations and different time periods (Hofstede, 1991, 2001). Here we discuss three important cultural dimensions related to time preferences, namely Individualism, Uncertainty avoidance and Long Term Orientation. Section 3.2 provides more details on the measurement.

Individualism/collectivism is one of the most crucial cultural dimensions and has been extensively studied. A high score of Individualism implies that individuals are loosely connected to the society, and are expected to take care of themselves. In comparison, in a society with collectivistic culture, people can be protected by some strong cohesive groups throughout lifetime as a reward to their unshakeable loyalty. The relationship between individualism and time preference, however, is not clear. On the one hand, the social connection in a collectivistic culture may provide its citizens a "cushion" or safety net for potential losses (Hsee & Weber, 1999; Li & Fang, 2004; Weber & Hsee, 1998), with which people can afford to wait longer and to be more patient. On the other hand, in an individualistic society, people are expected to be more independent and to plan their lives by themselves. Triandis (1971) notes that the "modern man" in a more individualistic culture is more "concerned with time, planning, willing to defer gratification," whereas the "traditional man" in a more collectivistic culture "considers planning a waste of time, and does not defer gratification." (p. 8) Therefore, it is also possible that people in an individualistic culture learn to plan for the future and hence are more patient. To test the impacts of a collectivistic culture, Mahajna et al. (2008) compared the subjective discount rates and risk preferences for Israeli Jews and Arabs with bank customers as participants. Their findings show that Israeli Arabs, who are supposedly from a more collectivistic society, have higher