Religion in Human Consumption

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Religious belief, as an informal social institution, has a significant impact on all aspects of human civilization. Specifically, in the western area of China, low income level, and low marketization degree, religious belief negatively affects human consumption the most. On the contrary, in the eastern area, high income level, and high marketization degree, religious belief negatively affects human consumption the least.

religious belief   human consumption   two-stage least squares   heterogeneous effect

1. Introduction

As a special social ideology and cultural phenomenon, religion affects most aspects of human society. The United Nations Statistics Division states that currently, about 90% of people still believe in various forms of religion. As a result, researchers may still observe religious belief playing a distinctive role in many fields of modern social life. The influence of religion on ideology, culture, customs, politics, military, and other fields is known (Arbuckle 2017; Røislien 2013; Kaneff 2018; Yagboyaju 2017). However, in the realm of human consumption, researchers notice that the issue of how much influence religion has and in what aspects this influence is felt has received little attention. Of course, this issue is the purpose of this paper. Consistent with the diversity of religious content and forms, the effect of religion on people's consumption behavior is also multi-level and multi-angle (Al-Hyari et al. 2012; Nassè 2020). This is not only related to the specific contents of religion itself, such as doctrines, rites, and prohibitions, but also directly related to the individual's cultural background, living environment, piety, belief emphasis, and their different understandings of religion (Aldashev and Platteau 2014). As a result, this influence will manifest itself in various ways and degrees among different religions and adherents.

Firstly, from the proportion of religious life and secular life in the total consumption, the consumption expenditure for religious life will account for a certain proportion of the total consumption among religious believers. Its degree increases or decreases with believers' piety and lifestyle (Coşgel and Minkler 2004). Secondly, from the perspective of the restrictive factors of consumption behavior and consumption structure, due to the life content and lifestyle that are contrary to or inconsistent with religious teachings or are not advocated, they are restricted or prohibited in various forms among religious believers, and their consumption expenditure in this regard will be restricted or prohibited accordingly (Bloom and Arikan 2012). Thirdly, from the perspective of consumption direction and its change, consumption behavior will also be indirectly affected by religious teachings (Choi et al. 2013). For example, devout religious believers often do not pay attention to glory and a comfortable life and do not pursue high-grade material enjoyment. On the contrary, they oppose the luxury lifestyle. Therefore, the proportion of human consumption expenditure for various material enjoyments or entertainment activities in the total

consumption expenditure is smaller than that of ordinary people. In addition, the share of such people's expenditure on religious life would rise, and their consumption expenditure on indirect religious life is also larger than that of the general public.

Fourthly, from the perspective of religious consumer goods and substitutes, in recent years, a large number of religious goods have broken through the traditional religious uses and entered thousands of households in the form of handicrafts, cultural goods, and even daily necessities, which can also be regarded as an indirect effect of religious belief on the consumption behavior of non-religious believers (Chiswick 2006). Fifthly, from the perspective of religious tourism, since many places of religious activity are themselves places of tourism, such famous mountain scenic spots, temples, and churches covered with religious mystery have not only been pilgrimages for religious believers since ancient times, but also destinations for a large number of non-religious believers. They also have unusual temptations for non-religious believers, especially in modern society with its developed economy and improving quality of life. Sixthly, from the perspective of the consumption concept and consumption mode, some religious doctrines or commandments do not advocate or even prohibit the accumulation of money. Therefore, for some religious believers, savings will be despised in varying degrees, which will inevitably affect the change of consumption mode (Wilson 1997).

2. Empirical Analysis

2.1. Basic Characteristic Description of Variables

This subsection describes the basic characteristics of variables used in this paper. These characteristics include mean, minimum, maximum, and standard deviation. The results of the basic characteristic description of the variables are presented in **Table 1**.

Table 1. Results of basic characteristic description of variables.

Statistic/Variable	hc1	hc2	rb	ag	ll	ge	el	hs	po	ms	ei
Mean	1.956	0.773	0.152	1.659	2.683	0.420	0.017	3.265	0.075	0.897	0.921
Minimum	0.278	0.569	0	1.255	0.352	0	0	1.000	0	0	0
Maximum	3.007	0.814	1	1.908	5.668	1	1	5.000	1	1	1
Standard deviation	1.514	0.247	0.413	0.184	0.145	0.112	0.134	1.167	0.068	0.329	0.126

As the results in **Table 1** indicate, human consumption 1 has a mean of 1.956 with a standard deviation of 1.514. Human consumption 2 has a mean of 0.773 with a standard deviation of 0.247. Characteristics of human consumption 1 and human consumption 2 show that most respondents have a trend of consuming goods such as daily toiletries, furniture, kitchenware, decorative supplies, cosmetics, bedding, and use of water for drinking, bathing or showering, hand washing, oral hygiene, or cooking, etc., in this sample. Religious belief has a mean of 0.152 with a standard deviation of 0.413. This result indicates that on average, 15.2% respondents in this sample

have religious beliefs. Meanwhile, the standard deviation (0.413) indicates that respondents' religious beliefs fluctuate easily; that is, their religious beliefs are not firm. Age has a mean of 1.659 with a standard deviation of 0.184. Income level has a mean of 2.683 with a standard deviation of 0.145. Gender has a mean of 0.420 with a standard deviation of 0.112. Education level has a mean of 0.017 with a standard deviation of 0.134. Healthy status has a mean of 3.265 with a standard deviation of 1.167. Political orientation has a mean of 0.075 with a standard deviation of 0.068. Marital status has a mean of 0.897 with a standard deviation of 0.329. Ethnic identity has a mean of 0.921 with a standard deviation of 0.126.

2.2. Regression Analysis

This subsection focuses on the analysis of the effect of religious belief on human consumption. The results are presented in **Table 2**.

Table 2. Results of analysis of the effect of religious belief on human consumption (hc1).

Variable/Model	Model (1): hc1	Model (2): hc1
rb	−0.048 *** (−6.466)	−0.043 *** (−6.023)
ag		−0.004 * (−1.887)
ll		0.587 *** (7.626)
ge		0.026 (1.063)
el		0.049 ** (2.301)
hs		0.078 *** (4.518)
po		0.070 (1.332)
ms		0.019 ** (2.226)
ei		0.137 *** (2.943)
c	1.548 *** (2.815)	2.017 ** (2.399)
R^2	0.079	0.052

Variable/Model	Model (1): hc1	Model (2): hc1
F-statistic	192.083 ***	150.164 ***
Observation	8025	8025

consumption. In model (2) with control variables, the results indicate that religious belief also has a detrimental impact on human consumption. This indicates that a 1% increase in religious belief leads to a 0.043% decrease in human consumption. When the coefficients of religious belief in model (1) and model (2) are examined, it is discovered that while the coefficient of religious belief in model (2) is somewhat less than that in model (1), both are significant at 1% level. As a result, it is possible to conclude that religious belief has a detrimental impact on human consumption. One such explanation is that religious belief might be viewed as an informal rule. It encourages individuals to be self-disciplined and thrifty in their daily lives. When an individual has religious beliefs, this produces a decrease in human consumption. Another explanation might be that there is a substitution effect between religion and human items (these human items are defined as Section 3 provided). When an individual collects more religious human capital than he or she consumes human items, religious items' consumption has a better value. Then, an individual's consumption of religious items will rise as a result. If an individual increases his or her consumption of religious items, such as purchasing religious items and donating money to religious organizations, their disposable income will be lowered due to economic resource restrictions. In this situation, the human consumption of non-religious items may have an impact of crowding out. This discovery is, of course, consistent with previous studies (Casidy and Arli 2018; Levitt 2013).

In addition, when control variables are taken into consideration, the results in **Table 2** also indicate that age negatively affects human consumption at 10% significant level. This means that as individuals become older, their human consumption patterns change. This result is consistent with Calvo et al. (2021). Income positively affects human consumption at 1% significant level. This means that an individual with a higher income prefers to have more human consumption. This result is consistent with Anghel et al. (2018). Gender positively affects human consumption, but it is not statistically significant. Human consumption is positively affected by education level at 5% significant level. This means that an individual with a higher education level is willing to have more human consumption. This result is consistent with Cheng (2021) and Cardoso et al. (2016). Healthy status positively affects human consumption at 1% significant level. This means that an individual in better health likes to have more human consumption. This result is consistent with Knez et al. (2017). Political orientation positively affects human consumption, but it is not statistically significant. Marital status positively affects human consumption at 5% significant level. This means that an individual who has married has a higher level of human consumption. This result is consistent with McGlone and Pudney (1986). Ethnic identity positively affects human consumption at 1% significant level. This means that an individual belonging to Han tends to have more human consumption. This result is consistent with Xu et al. (2004), Laroche et al. (1998), and Chattaraman and Lennon (2008).

2.3. Robustness Test

Human consumption, as a type of consumption decision-making, may be endogenous to individual socioeconomic variables. Simultaneously, there are several unobservable factors affecting people's religious beliefs, and these factors may also affect human consumption. As a result, the endogenous issue may conflict with current findings.

Consequently, two approaches will be used to address endogenous issues. One approach is that human consumption 2 (proportion of human consumption expenditure in total expenditure) is replaced with human consumption 1 (human consumption expenditure) to re-estimate the effect of religious belief on human consumption. Another approach is that the two-stage least squares method is employed to overcome the endogenous problem. In the next section, both approaches will be thoroughly examined. For the first approach, human consumption 2 is replaced by human consumption 1 as a dependent variable to perform the empirical analysis again. The results are presented in **Table 3**.

Table 3. Results of robustness test (hc2).

Variable/Model	Model (3): hc2	Model (4): hc2
rb	−0.026 *** (6.393)	−0.017 *** (−5.559)
cv		Yes
c	1.623 *** (2.988)	1.902 * (1.841)
R^2	0.066	0.051
F-statistic	188.214 ***	143.573 ***
Observation	8025	8025

The results in **Table 3** indicate that religious belief has a negative impact on human consumption, and the coefficient of religious belief is also significant at 1% level. When compared with the results in **Table 2** and **Table 3**, it can be found that the coefficient of religious belief varies somewhat in magnitude and passes the significance test at 1% level. This proves that the results in **Table 2** are robust and reliable.

In addition, the approach of two-stage least squares is used to re-estimate the effect of religious belief on human consumption. Following Wang and Lin (2014), the religious institutes in each province were viewed as an instrumental variable in overcoming the endogenous issues. According to religious market theory, as the supply of religion rises, so will the number of religious believers and their religiosity. As a result, religious institutes play a vital role in influencing the religious belief of those who fit the required criteria. Because religious institutes are provincial level data (this data is sourced from the "China Religion and Social Space Research Network", jointly developed by the China Religion and Social Research Center of Purdue University and the China Information Research Center of the University of Michigan), they are exogenous for human consumption. Then, the results of the analysis of two-stage least squares are presented in **Table 4**.

Table 4. Results of robustness test (two-stage least squares).

Variable/Model	Model (5): rb	Model (6): hc1
rb		−0.069 ***

Variable/Model	Model (5): rb	Model (6): hc1
		(−3.919)
ri	0.146 *** (4.918)	
cv	Yes	Yes
c	0.943 *** (4.107)	1.606 *** (3.259)
Wald F-statistic		316.024 ***
Observation	8025	8025

sitive and statistically significant. This suggests that an individual is more likely to hold religious beliefs in a location with more religious institutes. Moreover, this demonstrates that the instrumental variable (religious institute) has significant explanatory power over endogenous factors. Meanwhile, the value of the Wald F-statistic (significant at 1% level) suggests the validity of the instrumental variable used in this paper. Furthermore, the coefficient of religious belief is still positive and statistically significant. Namely, the results of **Table 2** are reliable and robust.

2.4. Heterogeneous Effect

It is apparent that the geographical location in which an individual resides, the income level to which an individual belongs, and the degree of marketization to which an individual belongs may all contribute to heterogeneous results of the effect of religious belief on human consumption. As a result, the heterogeneous effect is considered in this paper in terms of geographical location, income level, and marketization degree. The purpose of this subsection is to retest and supplement the results reported in **Table 3**. These three types of heterogeneous effects will be examined in depth in the following subsections, respectively.

2.4.1. Geographical Location

Because of China's enormous geography, religious sites and religious adherents are widely dispersed throughout China's provinces and towns. Therefore, in order to better understand the effect of religious beliefs in different geographical locations on human consumption, the whole sample is separated into three sub-samples (China is divided into three areas: the eastern area, the central area, and the western area). The results are presented in **Table 5**.

Table 5. Results of heterogeneous effect (geographical location).

Variable/Model	Model (7) Eastern Area	Model (8) Central Area	Model (9) Western Area
rb	−0.023 *** (−4.837)	−0.039 *** (−4.312)	−0.057 *** (−3.709)
cv	Yes	Yes	Yes

Variable/Model	Model (7) Eastern Area	Model (8) Central Area	Model (9) Western Area
c	3.626 *** (3.842)	3.914 *** (2.880)	2.531 ** (2.231)
R^2	0.054	0.048	0.041
F-statistic	216.038 ***	167.819 ***	101.923 ***
Observation	3526	2655	1544

consistent with those reported in **Table 2**. Moreover, a surprising discovery is that the effect of religious belief on human consumption is highest in the western area and lowest in the eastern area. A 1% rise in religious belief results in a 0.023% drop in eastern human consumption, a 0.039% decrease in central human consumption, and a 0.057% decrease in western human consumption. One probable explanation is because the western area is populated by ethnic minorities. It is also a multi-cultural area with many religions coexisting, a large number of religious adherents, and a strong ethnic and religious milieu.

2.4.2. Income Level

Previous studies (Lam and Hung 2005; De La O and Rodden 2008; [1] 2011) have found that an individual's income level has a significant impact on his or her religious belief. Therefore, the purpose of this subsection is to examine the effect of religious belief on human consumption at various income levels. Based on income level, the entire sample is separated into three sub-samples. They are the high income, the middle income, and the low income levels. The results are presented in **Table 6**.

Table 6. Results of heterogeneous effect (income level).

Variable/Model	Model (10) High Income	Model (11) Middle Income	Model (12) Low Income
rb	−0.019 *** (−5.288)	−0.031 *** (−5.778)	−0.062 *** (−5.029)
cv	Yes	Yes	Yes
c	1.143 *** (3.426)	1.854 *** (4.020)	1.309 *** (3.715)
R^2	0.063	0.056	0.069
F-statistic	176.921 ***	167.224 ***	132.178 ***
Observation	1826	4255	1944

Table 6 shows the results of the effect of religious belief on human consumption at various income levels. The coefficients of religious belief are shown to be negative and statistically significant. Meanwhile, these coefficients differ. To put it another way, the effect of religious belief on human consumption is heterogeneous across three income levels. Furthermore, the results also indicate that the coefficient of religious belief at the low income level is

highest, while the coefficient at the high income level is lowest. In concrete terms, a 1% increase in religious belief results in a 0.062% decrease in low income human consumption, a 0.031% decrease in middle income human consumption, and a 0.019% decrease in high income human consumption. One possible explanation for these findings is that an individual with a higher income level has, on average, more social capital. He or she may be more motivated to devote a particular level of human resources in order to maintain a high quality of life. As a result, religious belief has a comparatively smaller influence on his or her human consumption. Another possible explanation is that religious items place less economic pressure on an individual with a high income. Therefore, the crowding out effect on other sorts of consumption may be weaker. To summarize, the results of **Table 6** are consistent with those in **Table 2**.

2.4.3. Marketization Degree

According to Moberg (2020), the effect of religious belief on consumption varies depending on the degree of marketization. As a result, the full sample is separated into three sub-samples in this paper in accordance with their thoughts. There are three sub-samples: high degree of marketization, middle degree of marketization, and low degree marketization. The results are reported in **Table 7**.

Table 7. Results of heterogeneous effect (marketization degree).

Variable/Model	Model (13) High Degree	Model (14) Middle Degree	Model (15) Low Degree
rb	−0.012 *** (−3.377)	−0.033 *** (−3.333)	−0.065 *** (−3.064)
cv	Yes	Yes	Yes
c	1.933 *** (2.005)	1.068 *** (2.363)	1.542 *** (2.524)
R^2	0.058	0.061	0.050
F-statistic	161.764 ***	123.365 ***	142.609 ***
Observation	2249	3587	2189

Table 7 reports the results of the effect of religious belief on human consumption across three degrees of marketization. These results suggest that the coefficients of religious belief are negative and statistically significant. In addition, the coefficients of religious belief differ. That is, the effect of religious belief on human consumption is heterogeneous among the three degrees of marketization. Religious belief, in particular contributes the most to human consumption at a low marketization degree and the least to human consumption at a high marketization degree. In further detail, a 1% increase in religious belief leads to a 0.012% decrease in human consumption at a high marketization degree, a 0.033% decrease in human consumption at a middle marketization degree, and a 0.065% decrease in human consumption at a low marketization degree. Taking these results into consideration, a possible reason is that for an individual with a low marketization degree, human consumption factors have a higher

effect on his or her social and economic behaviors. Therefore, religious belief will have a bigger marginal effect on individual's human consumption. Meanwhile, the results of **Table 7** are consistent with those in **Table 2**.

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