Post-Material Values and Economic Transition

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Abstract

This paper aims at finding a possible explanation for middle income trap by connecting post material values with postindustrial society. I render post material values important and treat it as dependent variable because it not only provides additional demand to economy, but also affects people's well-being by higher involvement in political decision-making and reshaping people's lifestyle. The paper finds that there is a strong connection between post material values and level of wealth both at the country level, measured by GPD per capita, and at the individual level, measured by subjective report of income level. Furthermore, at the national level, the increasing share of service sector in the economy, which is a mark of postindustrial society, also correlates with the presence of various post material values. However, the share of tertiary sector is not as strong a factor as wealth level in determining the possession of post material values. At the individual level, besides personal income, education is another strong factor that influences post material values. The interaction between education and personal income in determining post material values is complex: even though the general trend is that more income means more post material values, this positive correlation is reversed when the person only receives moderate amount of education. Possible explanations for this finding are proposed.

Introduction

Sociologists like Ronald Inglehart documented a transition of public values in Europe in the latter half of the 20th century. As industrial revolution satisfied people's materialistic needs and brought economic security to Western countries, post-material values began to flourish. Post material values features an "increasing emphasis on needs for belonging, esteem, and self-realization" [1]. People's pursuit towards these higher needs led them to challenge industrial social hierarchy and brought with it more sophisticated political skills to shape decisions on a national level. The political sphere of a post-material societies, Inglehart concluded, were filled with life-style issues like environmental protection, gender parity, and more broadly, "the redefinition of morality" [2].

In the paper *From Materialist to Post-Materialist Happiness*, Delhey puts Inglehart's findings to test using data from wave 5 of the World Value Survey (WVS) [3]. Delhey finds that as countries move from rich to poor, their demands for post-material happiness increase while material concerns diminish. However, this paper confines the indicators for post material values to personal autonomy and job creativity, which are well-documented in the WVS. These two indices primarily concern workplace differences between material and post-material societies, but they fail to account for other national-scale post material values manifested in the political sphere, which is crucial in Inglehart's theory.

Nevertheless, Delhey finds empirical evidence that as countries satisfy their basic needs, they demand a new set of happiness guided by post material values.

Even though the study of value transition from material to post material is well-established in sociology, very few has connected it to economic transition. Bell foresees the coming of the post-industrial society in his book in 1973 [4]. He suggests that just like technology created an industrial society out of agrarian society, it will create a postindustrial society characterized by the rise of tertiary sector based on service, also known as the "knowledge industry" [5]. In addition, just like post material values, service sector will redefine quality of life, creating new social demands like better health and education. Thus, economists treat sectoral transition as having similar effect as changes of social values, while sociologists implicitly assume that both are the result of economic development brought by better technology. However, the central question remains unclear: what is the relationship between post material values and postindustrial society?

My answer to that question, which is also the central hypothesis of this paper, is the following:

Hypothesis 1: post material values correlate to the rise of tertiary sector, but not to the rise of the secondary sector.

The latter part of this hypothesis is easy to understand. Most western societies had fully undergone industrialization before WWI, but post-material values were only apparent after WWII. The first part suggests that service sector accompanies post material values. Indeed, if people don't cherish the rule of law, then lawyers should not be making so much money; if people don't want better education, then private schools and universities will no longer be profitable; if people don't participate more actively in politics, then medias like the New York Times or Economists will not exist. Every tertiary sector is tied specifically with certain post material demands.

Furthermore, assuming post material values and service sector come together has implications on economic development, that is: post material values foster economic performance through sectoral upgrading. The transition from agriculture to industrial sectors have been well studies and understood, but the transition from secondary to tertiary sector is not as well established, leaving a whole literature of theory-vacancy called the Middle-Income Trap.

The middle-income trap was coined by the World Bank in 2006 to describe the phenomenon that middle-income countries seem to experience slower economic development. However, Gill and Kharas argues that this concept is not so much of a description of inevitable developmental phenomenon, but a concept created because economists don't have a satisfying policy recommendation for middle income countries to enter the prestigious status of high-income [6]. Bulman et al's paper gives more insight into this debate. They argue that countries only stuck at the middle income because they still use developmental strategies crafted during the low- income level. They find that even though stagnation at a particular developmental stage hardly exist, factors that determine growth at low or middle-to-high income levels differ [7].

I believe that post-material values create new demands in the economy, which keeps economy vibrant at a middle-income level, enhancing further economic growth. On a micro level, a natural result following that argument is that within a society, rich people should have more demands towards services, which means they have more post material value.

Hypothesis 2: within a country, post material value is determined by a person's income level; the higher the income, the more salient the values.

Thus, this paper goes a step further from previous papers on two fronts. It identifies the importance of post material values on economic growth through sectoral transition. It also studies individual level factors within a country, making clear that the dynamic shaping sectoral transitions is also relevant to individual level beliefs and personal economic performance.

2. Data and Methodology
This study uses the wave 7 of the World Value Survey (2017-2022) [8]. This is an international survey conducted in 80 countries all around the world, with questions focusing on people's values, cultures, and beliefs. The 7th wave is a panel data with 88,031 observations. Each row represents a person surveyed. The columns of the data are questions being asked during the survey. The respondents answer the question on a numeric scale, normally with smaller numbers being "more disagree" and larger numbers "more agree". The survey then records each person's attitude towards the answer as a number in the dataset. Besides the WVS, I also used country-level GDP per capita data and sectoral shares data of each country retrieved from the World Bank website [9,10]. I combined the country level economic indicators with WVS using the common variable Country code.

To prove the first hypothesis, I used the following regression:

$$Postmaterial\ Index = \beta_1 + \beta''(GDP\ per\ Capita) + \beta_\#(Share\ of\ Service) + \beta_\$(Share\ of\ Secondary) + \epsilon$$

On the right-hand side, I used the year 2020 for all three variables. In the original dataset for value-added by sector, the secondary sector was divided into industry and manufacturing. I combined them to give a final value added by the secondary sector.

These three variables are regressed against a dependent variable, which is the index of post material values of the respondent. I used three variables for this index: the first is a variable in the WVS called Y001, which is labeled as post-Material index 12 item. This Y001 variable is itself a classical index of post-material values. This index is constructed by giving the respondents 3 groups of 4 items, 12 items in total. Within each group, the respondents were asked to rank the most important thing and the second most important thing. For example, the first group includes: 1. Maintaining order in the nation. 2. Giving people more say in important government decisions. 3. Fighting rising prices 4. Protecting freedom of speech. If the person chose 2 or 4 as their first or second choice, then they get a score of 1, otherwise 0. The scores of the three groups then add up to give the final score for Y001 [11].

A critic I had towards Delhey's paper is that he only used personal autonomy and job creativity as indicators for post-material values. I believe post-material values represent multiple aspects of people's pursuits other than material demands; there is no fixed basket of what it could contain. Y001 no doubt has captured the most important and classical part of post material values. Additional, since I am using the 2020 data, I should stay up to date with post-material values, identifying what is most relevant nowadays and using it in the regression.

Thus, I chose two other dependent variables: attitude to wards technology and LGBTG groups. According to Solow model, technology is the primary drive of long-run economic growth. However, recently, it has negatively impacted people's life by turning human attention into marketable products and instigate social polarization. A 2020 documentary on Netflix called the Social Dilemma best captured this trend [12]. Consumer information and

even privacy are on the edge of leaking, characterized by the well-known Facebook privacy scandal. These downsides cultivate a skeptical attitude towards technology which is indeed a very recent post material thinking among rich countries. In the WVS survey, Q163 asks the question "the world is better off, or worse off, because of science and technology?" The answers are on the scale of 1-10, with 1 being "a lot worse off" and 10 being "a lot better off". This question is the indicator for attitude towards technology. I expect to find a negative correlation between this and the share of service sector. But since technology is what brings a country out of low-income level, attitude towards technology should not be negatively correlated with the share of secondary sector because the development of secondary sector is associated with poverty alleviation. Furthermore, attitude towards the LGBTG group has no doubt been brought to the spotlight as a human right issue after racial and gender equality. I used Q182 as the indicator for attitude towards LGBTQ. This question asks: "justifiable: homosexuality" with 1 being never justifiable and 10 being always justifiable. I expect this to be positively correlated with post material values.

For hypothesis 2, I run the following regression:

$$Postmaterial\ Index = \beta_! + \beta''Income + \beta_\% Control_\% + \alpha + \varepsilon$$

The post material index on the left-hand side is the same as before. On the right-hand side, income is Q288, which asks subjective income class of a person, with 1 being the lowest income group and 10 the highest. The regression also included a few control variables, including gender, age, education level, parents' education level, and perception of democratic level of the country.

α is the country fixed effect, which allows the comparison of individuals within countries.

3. Country Level Results

Table 1 shows the result of the first regression model. For the first specification, log(Y001) was only regressed on log (GDP per capita of 2020). I used log transformation because GDP per capita is very large compared to Y001, which is from 0 to 5. If there is no log, the coefficient will be too small to be useful. Log transformation puts the change into proportional terms. The first equation shows that one percent increase in GDP per capita in 2020 increase the post material index by 0.05%. The coefficient is small but significant.

	(1) logY001	(2) logY001	(3) logY001	(4) Technology	(5) Homosexuality
logGDPpercap ita2020	0.0518*** (0.00147)		0.0489*** (0.00240)		
logseondary		0.00867	-0.0335***	0.0498	0.621***
		(0.00531)	(0.00569)	(0.0255)	(0.0323)
logservice		0.284***	-0.0115	-0.146*	7.625***
		(0.0122)	(0.0189)	(0.0588)	(0.0785)
_cons	0.241*** (0.0134)	-0.471*** (0.0638)	0.436*** (0.0776)	7.475*** (0.306)	-29.44*** (0.406)
N	72292	71210	71210	82838	78518
Standard errors in parentheses					
* p < 0.05, ** p < 0.01, *** p < 0.001					

Table 1

For equation 2, log(Y001) was regressed on the log transformation of what is at interest: the share of secondary and tertiary sector in the total GDP. The coefficient on secondary sector is insignificant, while the one on tertiary sector is both significant and large: one percent increase in the share of service sector in the economy increases Y001 by 0.2%. This specification clearly shows evidence that the post-material values positively correlate with the development of service sector but not that of secondary sector.

Equation 3 complexes the result. First, when all three variables are included into the regression, the coefficient of secondary share is negative and significant. It shows that with a given level of wealth in the country, the more it decides to develop secondary sector, the less post material it gets. This fact reconciles with the story of industrialization in many countries, including the West, which experienced environmental pollution, child labor, and sweat factory, as they became the first countries to industrialize.

More surprisingly, the sign of service sector turns negative, and it becomes insignificant. It indicates that after GDP per capita is controlled for, both secondary and tertiary sector has negative impact on post material values, and the impact of share of service sector is not even relevant.

Equation 4 and 5 are robustness test that is urgently in need. Attitudes towards technology and homosexuality are both more recent and not a part of Y001 index. The results show that for equation 4, the more a person think technology is good, the less the country's share of service sector, as the coefficient on log(service) is negative and significant at 5% level. For equation 5, both secondary and tertiary sectors have a significant impact on acceptance of homosexuality, but the magnitude of the impact of service sector is larger, with one percent increase in share of service sector contributes to 0.076 unit increase of acceptance towards homosexuality, on scale of 10.
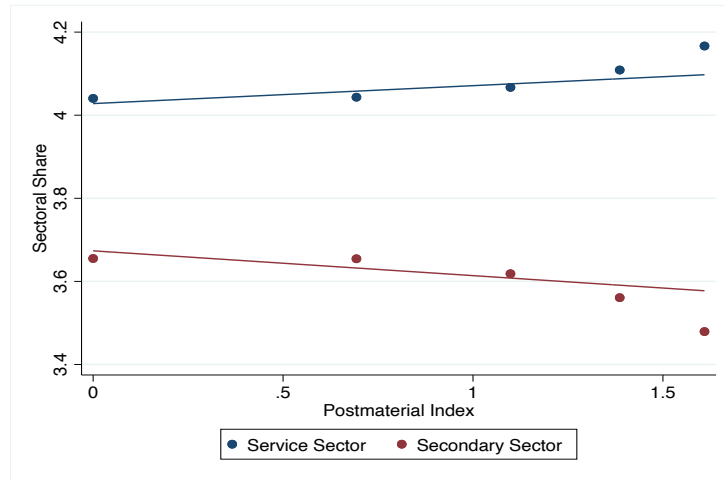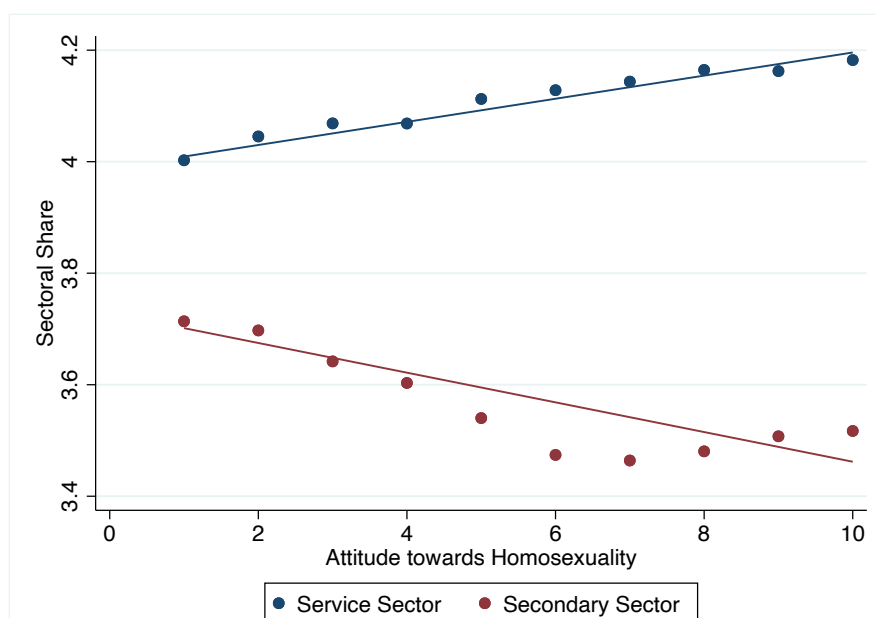
Figure 1

To find further evidence in support of hypothesis one, I used the code "binscatter" to draw post material values against shares of secondary and tertiary sectors. "Binscatter" divides the data into equal-sized bins and calculates the mean for each bin to use as scatter plot. It avoids the problems that too many points makings it difficult to recognize the pattern of the data.

Figure 1 shows the relationship between Y001 and service and secondary sector shares. It is clear from the graph that service sector is positively correlated with post material index while the correlation between secondary sector and post material sindex is negative.
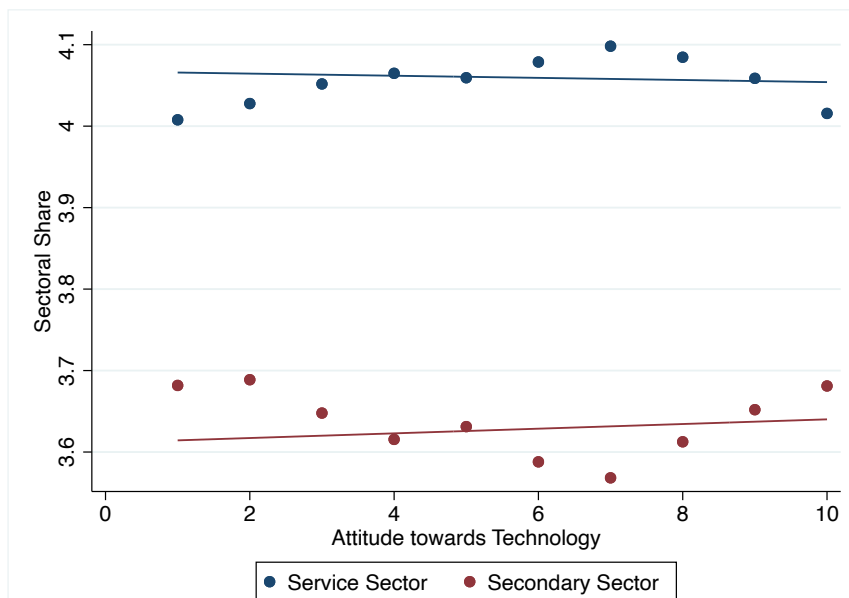
Figure 2

Figure 3

Similarly, for robustness check, figure 2 finds that the correlation between service sector and the attitude towards technology is negative: the larger the share of service sector, the less people favor technology. For the share of secondary sector, the trend is reversed. This is consistent with the belief that technology is bringing problems along with progress. For countries that are experiencing fast pace economic growth due to industrialization, technology is treasured, and its downside overlooked. The more developed the service sector is, the more those who possess post material values are willing to face the dark side of technology.

However, even though the best fitted line is negative, judging from visual observation, it does not explain the pattern of the data perfectly. Figure 3 gives a clearer picture. The increase in the share of service sector is strongly correlated with increase in acceptance towards homosexuality, while for the secondary sector one can observe an opposite correlation. This gives further strong proof to hypothesis one.

	(1) Y001	(2) Technology	(3) Homosexuality
Personal Income	0.00350*** (0.000982)	0.0575*** (0.00457)	0.0386*** (0.00493)
Gender	0.00309	-0.131***	0.257***
Age	-0.00120*** (0.000135)	0.00209*** (0.000627)	-0.0202*** (0.000679)
Education	0.0125*** (0.00119)	0.0539*** (0.00556)	0.0825*** (0.00605)
Mother's education	0.00590*** (0.00170)	0.0163* (0.00795)	0.0553*** (0.00867)
Father's education	0.00609*** (0.00158)	0.0110 (0.00737)	0.0253** (0.00805)
Democratic governance	-0.0109*** (0.000781)	0.126*** (0.00365)	0.0203*** (0.00394)
20.B_COUNT RY	0 (.)	0 (.)	0 (.)
N	63746	71788	69227
Standard errors in parentheses * p < 0.05, ** p < 0.01, *** p < 0.001			

Table 2

Next, table 2 presents the result for the regression to test hypothesis two. For the fixed effect variables, only the base country is shown. After controlling for all these other variables, personal income still has significant correlation with all three indices of post material values. For Y001 and homosexuality, the sign of personal income is positive, which means that within a random country, rich people are expected to have more post material values than poor people. This is in line with hypothesis one. However, the coefficient of personal income when technology is a dependent variable is still positive, which means that rich people favor technology more. One cannot dismiss the possibility that even though attitude towards technology is a good indicator of post material values on social level, it is not on an individual level.

Among the control variables, many are also significant and consistent if we dismiss technology. For example, education related variables have a consistent interpretation. The variable education indicates the respondent's own education, ranging from 0 to 8, the larger the number, the higher the educational level. It has a positive and significant relationship with Y001 and homosexuality. Father's and mother's education, by and large, also have a positive impact on post material values. However, there is no way to exhaust all

variables that need to be controlled at the personal level. There is always the possibility that an additional control variable will make the coefficient on income and education insignificant.

Also, the magnitude of the impact of personal income on post material index is small, while the magnitude of the impact of education on post material index is as large, if not larger. Both high- income and highly educated people are more likely to possess post material values. To further explore how education and personal income are interconnected to influence post material values, I plot a couple more binscatter graphs with Y001 on the y axis and personal income on the x axis, stratified by different educational levels. As show in figure 4, each graph represents the relationship between Y001 and personal income for a fixed educational level. In the WVS dataset, the variable Q275 asks about the respondents' highest educational level. The responses are classified into 8 levels according to International Standard Classification of Education (ISCED). The lowest level, ISCED 0, corresponds to early childhood education or no education, while the highest level ISCED 8 represents doctoral equivalence. All levels in the middle are captured with a number between 1 and 8.
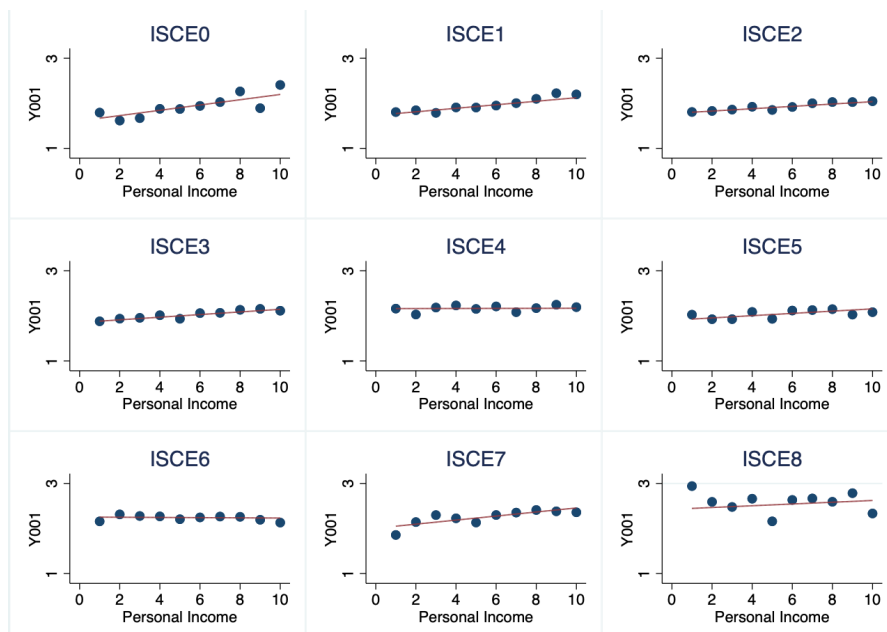

Figure 4

From figure 4, one can perceive certain obvious trends. First, regardless of personal income, people who have higher education al so have higher post material values. This is shown by the fact that dots of lower right graphs are higher than dots of higher left graphs. In particular, people who have a doctoral education (ISCED 8) have a salient rise of post material values than people who only receive master's degree (ISCED 7). The explanation for this is that at each level of education, those who want material returns stop their education to enter

the labor market. In other words, there is a post-material-value threshold to the entrance of next level education. This threshold is not posed by institutions, but by personal preferences and incentive mechanisms.

In general, the trend of figure 4 shows that the correlation between Y001 and personal income is positive at either end of educational level spectrum. But for people who receives moderate education, Y001 and personal income show an opposite

relationship. This switching of relationship first happens from ISCE 3 to ISCE 4, and it switched back from ISCE6 to ISCE7. For the negative correlation in the middle, the explanation might be that the educational system, with its constant meritocratic selection, endows people with the idea that the more capable I am, the more I should pursue. This incentive system makes people associate more meaning to material superiority and horizontal comparison, as a result, people with moderate education fail to upgrade their needs to post material ones. For people at the two ends, I need another explanation to explain why they are not influenced by education in the way I just explained. I suspect that the relationships between Y001 and personal income is both positive for people who receive low and high education for completely different reasons. People with the lower educational level manifest "factory setting", and for those with the highest level of education, their post material nature has resisted the infiltration of competitive thinking education made happen. Or, may be for people with the highest education, they are so secure with their economic well-being that they do not feel the urge of the endless pursuit of monetary returns.

5. Discussion

This study finds convincing evidence that the acquisition of post material values is dependent on economic well-being. In the national level, a higher GDP per capita is strongly correlated with post material values. On an individual level, people's self-reported incomes serve a similar effect. There are some clues that various post material values are present along with a highly developed tertiary sector, and both are strong sign of high-level economic wellbeing. However, equation 3, which includes shares of sectors and GDP per capita, turns the coefficient of tertiary sector both insignificant and, more importantly, negative. This finding seems to invalidate hypothesis one.

As striking as the result of equation 3 is, there is still possible ways to make sense of it. It shows that how wealthy people are in a country is the primary determinant of how much post material value they have. When the service sector is developed as a natural consequence of wealth accumulation, then the share of service sector contributes to post material values. However, if the service sector is developed without a wealthy population, then people will be constantly constrained by a lack of economic security, reflecting that negative and insignificant coefficient of log(service) in specification 3, with logGDP explicitly controlled, which prevents them from developing post material values.

This analysis resembles the transition from agriculture to manufacturing sector. The common characteristic of the two is that the economy must set firm foundation by developing the lower tier of the economy before it can upgrade to a higher one. However, this should not dismiss the possibility of using post-material values to explain the middle-income trap. When the economy is primarily based on agriculture, it is still important to foster a sense of entrepreneurship in the educational system

and government institutions so that when the economy is ready to upgrade, the country has the proper human capital and governance to do so. Likewise, in an industrialized society, post-material values should not be discarded. These values not only maintain fairness, idealism, and political participation, but also guarantee that the economy is equipped with the right human capital and political structure for the next phase of development.

The individual level analysis shows that people can acquire post material values through education, and getting more education have an effect similar in magnitude on post material values as getting more income. This is a new justification for policies that encourage graduate education in pursuit of higher economic growth. Traditional, one explains this policy by the fact that better education builds up better human capital, which is good for the economy.

This paper contends that education endows people post material values. These values create further demands within the society once economic security is widely established. These demands foster new industries and job opportunities in the tertiary sector.

However, a further analysis of the interplay between the effects of personal income and education on post material values shows that the positive relationships don't work in simple ways. Even though higher education in general means the person has higher post material values, people who receive moderate education fail to upgrade their needs from material to post material after they have earned considerable income, while people from lower educational level experience smoother transition. This finding reconciles the finding in the regression, which states that people with good income should care less about money, with the comparing-with-thy-neighbor mentality that most middle-class families have across the world. It shows that the current educational system is important in shaping people's needs, but whether it fosters material or post material needs is undecided.

This study recognizes the fact that there is no direction of causation in regression analysis. The regression only shows the strong correlation between service sector and post material values. The story of economic transition from secondary to tertiary sectors is only a well-thought-out theory based on that correlation. To validate this theory, further research needs to conduct within-country longitudinal studies, revealing whether post material values increase as service sector gains more share in the society. More in-depth case study is also encouraged to see whether the values appear prior to the surge of service sector or after it.

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