Economic vs. Environmental Priorities by Age Group and Country HDMI

Liliana Yearns

9/22/2021

With the increasingly urgent issue of climate change and environmental disaster, experts have called upon policy makers and private citizens to take action in prioritizing such matters. However, most consider a focus on environmental protection as a natural enemy of the economy. As such, individuals across the globe aim to strike the proper balance of economic and environmental endeavors.

With this trade-off in mind, the following study aims to identify some of the factors involved in determining whether a person will choose to prioritize the environment or the economy, namely the subject's age and country of residence.

Survey respondents were asked the following question: Which statement do you agree with more? A. "Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs" or B. "Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent".

If a person responded "A", they are placed into the "environment" category. If they answered "B", they fall into the "economy" category.

See figure 1 for results:

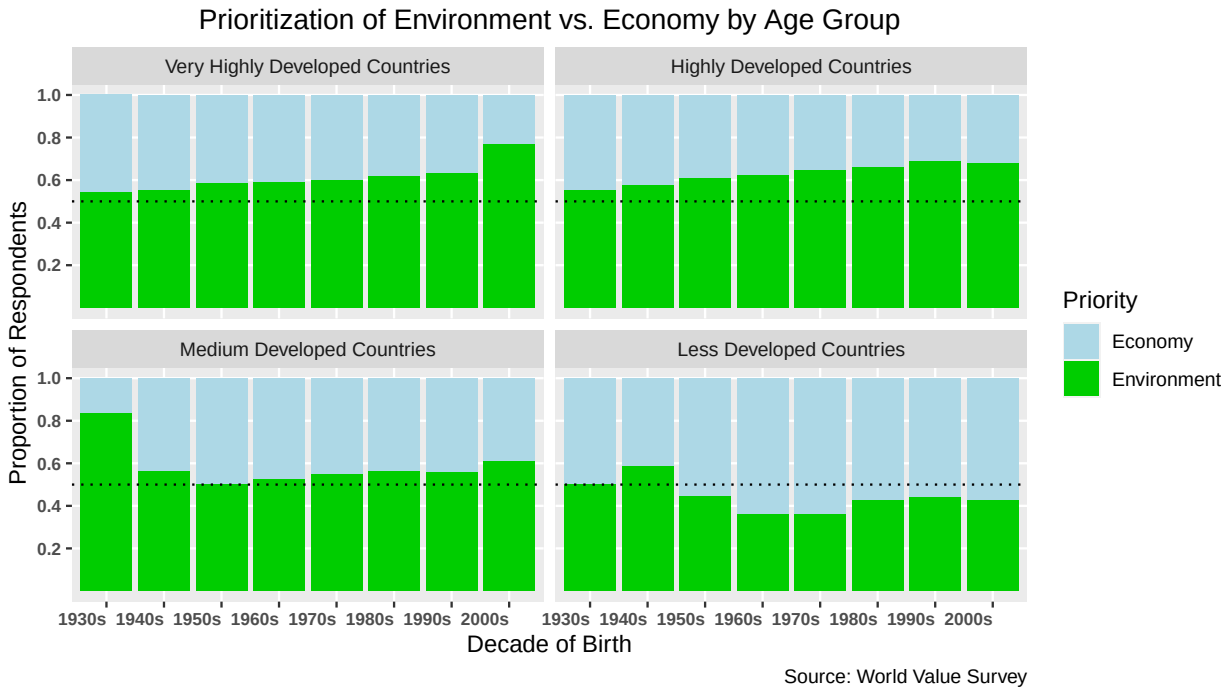
```
wvs_data<-`WVS_Cross-National_Wave_7_v2_0` %>%
  select(country= C_COW_ALPHA,hdi,
         confidence_envi_mov= Q79,
         econ_vs_envi=Q111, ideological_scale=Q240,
         org_member=Q99, birthyear=Q261) %>%
#get rid of values that are not useful (missing)
  filter(confidence_envi_mov>=1, hdi>0, econ_vs_envi>=1, econ_vs_envi<3, org_member>=0, ideological_scal
#group countries by HDI into developed or less
  mutate(hdi_group= case_when(hdi>=0.799~ 'Very Highly Developed Countries',
                         hdi>=0.700 ~ 'Highly Developed Countries',
                         hdi>=0.550 ~ 'Medium Developed Countries',
                         hdi<=0.549 ~ 'Less Developed Countries')) %>%
#make it so that, for all variables, low number means more environmental
  mutate(membership_true= 2-org_member) %>%
#make it decade of birth instead of age (age a categorical variable now)
  mutate(decade_of_birth=case_when(birthyear<1940 ~ '1930s',
                                   birthyear<1950~'1940s',
                                   birthyear<1960~'1950s',
                                   birthyear<1970~'1960s',
                                   birthyear<1980~'1970s',
                                   birthyear<1990~'1980s',
                                   birthyear<2000~'1990s',
                                   birthyear<2010~'2000s')) %>%
```

```
  #order level of development in an intuitive way
  mutate(hdi_group=factor(hdi_group,levels=c("Very Highly Developed Countries",
                                  "Highly Developed Countries",
                                  "Medium Developed Countries", "Less Developed Countries"))) %>%
  #make numeric values into words instead
  mutate(econ_vs_envi= recode(econ_vs_envi, `1`='Environment', `2`='Economy'))

#standardize variables
 ## wvs_data$confidence_envi_mov <- scale(wvs_data$confidence_envi_mov)
  #wvs_data$org_member <- scale(wvs_data$org_member)
  #wvs_data$econ_vs_envi<- scale(wvs_data$econ_vs_envi)



  #HDI Graph
    p<-ggplot(data=wvs_data, mapping=aes(x=decade_of_birth, fill=factor(econ_vs_envi))) +
    geom_bar(position="fill") +
      geom_hline(aes(yintercept=0.5), linetype='dotted') +
    facet_wrap(~hdi_group)  +
    theme_gray() +
    theme(panel.grid.minor=element_blank(), panel.border=element_blank(),
          axis.text=element_text(face="bold", hjust=1, size=8)) +
    theme(plot.title=element_text(hjust=0.5)) +
  scale_y_continuous(breaks=c(0.2,0.4,0.6,0.8,1)) +
    labs(x='Decade of Birth',
         y= 'Proportion of Respondents',
         title= 'Prioritization of Environment vs. Economy by Age Group',
         caption= 'Source: World Value Survey', fill="Priority") +
    scale_fill_manual(values = c("lightblue", "green3")); p
```



Along the x-axis lies the decade of birth for each survey respondent. Along the y-axis, one can find the proportion of participants that respond to either answer choice.

This data was further split into four separate graphs, each containing data only from respondents that reside within countries of a certain Human Development Index score (HDI). Countries in the "Very Highly Developed" category had an HDI of 0.799 or higher. "Highly Developed" countries had a socre higher than 0.700 and lower than 0.799. "Medium Developed" countries had an HDI between 0.550 and 0.699. "Less Developed" countries had a score of 0.549 or lower.

When first visualizing the given data, it seems as though the relative difference between an age group's prioritization of the economy vs. environment is minimal. The respondents, across almost all groups were just about as likely to answer "A" than they were to answer "B".

This lack in attitude variation, especially among older generations, is rather surprising. On average, older populations are significantly more conservative than their younger counterparts and thus might be expected to more often answer in favor of the economy. However, across all age groups, the environment was favored over economic endeavors. This lack of change perhaps is because older generations have witnessed climate change just as have younger ones. In fact, those born from the 1930's-1960's might note the changes in weather over time more so than those who were not alive to experience the earth before environmental issues became so urgent. Another factor that might influence the data is the lack of respondents who were born in the 1930s-1950s. This small sample size could account for data irregularities like in the 1950s category of 'medium developed countries'.

Another interesting facet within the data is the relatively little difference between priorities among individuals in countries with differing levels of development. The first three graphs show a similar pattern of an environmentally concerned majority with a slight increase among those born in more recent decades.

The only HDI group that varies significantly from the other data is the category of "less developed countries". In this group, individuals more often claim that the economy should grow even if the environment suffers to some extent.This is somewhat surprising because less developed countries tend to be most affected by climate change and environmental disaster given that their economies are more based on agriculture than countries that have higher HDI scores. However, because their economies are generally less prosperous, it is logical that financial issues are perceived as more urgent than they would be in other countries.

It is possible that a lack of variance across different HDI groups can be attributed to the countries that fall right at the edge of an HDI categorization (ex: a country that has an HDI of 0.547 and so almost becomes a 'medium developed country'). Looking at countries with more 'extreme' HDIs might help illustrate how a nation's development impacts political attitudes and priorities.

As such, figure 2 shows three countries with very different levels of development: Ethiopia, Bangladesh, and the United States.

See figure 2:

```
#data for country specific graph

 country_data<-`WVS_Cross-National_Wave_7_v2_0` %>%
   #rename variables and select those that are relevant
   select(country= C_COW_ALPHA,hdi,
          confidence_envi_mov= Q79,
          econ_vs_envi=Q111,
          org_member=Q99, birthyear=Q261) %>%
   #isolate U.S.
   filter(country %in% c("USA", "BNG", "ETH")) %>%
   #get rid of values that are not useful (missing)
   filter(confidence_envi_mov>=1, econ_vs_envi>=1, econ_vs_envi<3, org_member>=0, birthyear>=1930)%>%
   #make it so that, for all variables, low number means more environmental
   mutate(membership_true= 2-org_member) %>%
```

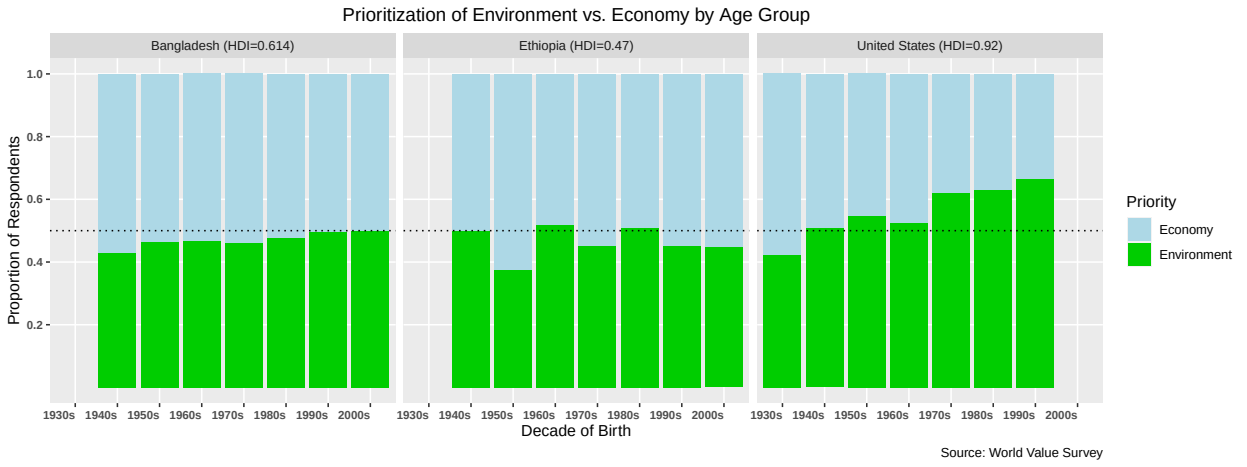
```
  #make it decade of birth instead of age (age a categorical variable now)
  mutate(decade_of_birth=case_when(birthyear<1940 ~ '1930s',
                                   birthyear<1950~'1940s',
                                   birthyear<1960~'1950s',
                                   birthyear<1970~'1960s',
                                   birthyear<1980~'1970s',
                                   birthyear<1990~'1980s',
                                   birthyear<2000~'1990s',
                                   birthyear<2010~'2000s')) %>%

  #make numeric values into words instead
  mutate(econ_vs_envi= recode(econ_vs_envi, `1`='Environment', `2`='Economy')) %>%
  mutate(country=recode(country, BNG= "Bangladesh (HDI=0.614)", USA="United States (HDI=0.92)", ETH="
                        factor(country,levels=c("Ethiopia (HDI=0.47)", "Bangladesh (HDI=0.614)", "Uni



#code for country specific graph

t<-ggplot(data=country_data, mapping=aes(x=decade_of_birth, fill=factor(econ_vs_envi))) +
  geom_bar(position="fill") +
  geom_hline(aes(yintercept=0.5), linetype='dotted') +
  theme_gray() +
  facet_wrap(~ country) +
  theme(panel.grid.minor=element_blank(), panel.border=element_blank(),
        axis.text=element_text(face="bold", hjust=1, size=8)) +
  theme(plot.title=element_text(hjust=0.5)) +
  scale_y_continuous(breaks=c(0.2,0.4,0.6,0.8,1)) +
  labs(x='Decade of Birth',
       y= 'Proportion of Respondents',
       title= 'Prioritization of Environment vs. Economy by Age Group',
       caption= 'Source: World Value Survey', fill="Priority") +
  scale_fill_manual(values = c("lightblue", "green3")); t
```



While the values of Ethiopia, Bangladesh, and the United States are different than the sums of those within their groups, a similar trend can be seen. The U.S., the most developed of the three countries, prioritizes the environment more than Ethiopia, the least developed country. These results fall, at least roughly, in line with the broader HDI groups displayed in the previous graph.