

CÁTEDRA

en Economía y Gestión de la Innovación



Working Paper #2023/45

SUSTAINABLE CONSUMPTION VS. GREEN CONSUMERISM. A STUDY ON LIFESTYLE DIVERSITY AND SUSTAINABILITY

Juan Carlos Salazar-Elena, José Vicente de Lucio Fernández & Darío Montes Santamaría¹

UAM-Asseco Working Papers

ISSN: 2172-8143

Edited by: UAM-Asseco Chair on Economics and Management of Innovation, Faculty of Economics and Business, Universidad Autónoma de Madrid

Editado por: Cátedra UAM-Asseco en Economía y Gestión de la Innovación, Facultad de Ciencias Económicas y Empresariales, Universidad Autónoma de Madrid

E-mail: catedra.uam-asseco@uam.es

URL: <https://www.catedrauam-asseco.com/uam-asseco-working-papers-2/>

¹ Correo de contacto: juancarlos.salazar@uam.es

Sustainable consumption vs. green consumerism. A study on lifestyle diversity and sustainability.

Juan Carlos Salazar-Elena¹, José Vicente de Lucio Fernández² & Darío Montes Santamaría³

Abstract

The aim of this research is to contribute to the scientific debate on the relationship between lifestyles and sustainability by studying differentiated profiles of sustainable consumption practices in households. To this end, the study uses the database on household consumption practices of the Ecological Footprint Calculator project of the Sustainable Life Foundation (FVS). The sample used in this study comes from almost half a million households in six Ibero-American countries (Argentina, Colombia, Ecuador, Spain, Mexico, and Peru) over the period 2018-2021. Our results show two different profiles emerging from the point of view of sustainable household consumption practices. On the one hand, we have the "sustainable consumer" whose sustainable habits extend to a wide range of practices. On the other hand, we have the "green consumerist" whose commitment is restricted to a set of practices that appear to present less of a sacrifice for him/her. Our results show that these consumption profiles have a complex relationship with patterns traditionally found in the scientific literature (such as, for example, educational level or income). For instance, we show that the usual inverse relationship between income and sustainability is characteristic of the sustainable consumer in socio-technical systems associated with less developed infrastructures in which a set of practices results in a significant differential in comfort or social status. Conversely, in the case of the green consumerist, it is individuals with a higher income who exhibit more sustainable practices. We believe that this line of research, in addition to contributing to the scientific debate on the relationship between lifestyles and sustainability, can generate important implications for the design of more informed policy instruments towards sustainability.

Keywords: sustainability; sustainable transition; consumption practices; socio-technical systems.

¹ Universidad Autónoma de Madrid.

² Universidad Alcalá de Henares.

³ Fundación Vida Sostenible.

1. Introduction

Although it is difficult to establish how much of our ecological footprint can be attributed to households, there is no doubt that household consumption is an important component of the impact of human activities on the environment. For example, in the period 1960-2010 meat consumption increased fourfold (Smith et al., 2013), while the world population increased by 2.3 times. The livestock sector is responsible for 14.5% of all greenhouse gas emissions, and we know that ruminant meats generate emissions per gram of protein 250 times higher than legumes (Tilman and Clark, 2014).

The purpose of this example is twofold. Firstly, to show the impact that our consumption practices can have on the environment. And secondly, to make more evident the complexity of the relationship between consumption practices and the environment. On the one hand, there is the "direct effect" of consumption activities on the environment, such as household air conditioning or transport. But on the other hand, there is also the "indirect effect" of our consumption practices, purchasing goods and services whose production is highly polluting. In fact, the study by Hirano, Ihara & Yoshida (2016) shows that the "indirect effect" of consumption on the environment could generate at least as many carbon emissions as its direct energy-using activities.

There is a significant body of scientific research aimed at identifying the determinants of household consumption decisions. However, there are still important gaps in this research agenda. Firstly, these studies show general patterns that hide the diversity and complexity of consumption habits. More specifically, the discussion seems to focus on the dichotomy between sustainable and non-sustainable consumption without considering that, even within the group of agents with sustainable consumption habits, there is a wide variety of lifestyles. Contributing to fill this gap is one of the objectives of this research. Second, it is not entirely clear whether the emergence of sustainable consumption habits is a result of the individual's own motivation or is a result of external factors such as legislation (Al-Marri, Al-Habaibeh & Watkins, 2018), infrastructure (Allen, et al., 2019) and access to technological innovations (Cai, Liu & Zhang, 2019). Advancing this research agenda is also part of our goal.

One strand that is recently attracting increased interest is the role of socio-technical systems in the transition to sustainability (Markard, Geels, & Raven, 2020). The socio-technical systems approach recognises the importance of the interaction between technology and people. Socio-technical systems are composed of actors (consumers, businesses, public administrations, researchers, non-profit organisations, etc.), institutions (laws, norms, standards, values, habits, etc.) and infrastructures (roads, railways, electricity grids, gas grids, Internet, etc.). The evolution of each of these components becomes a driver of change for the other two (Van Rijnsoever & Leendertse, 2020). For example, the current state of technology drives the course of actions of individuals in society. On the other hand, the evolution of society's knowledge, goals and values drives the process of technological transformation. Thus, current technology related to production, energy generation or transport, to a certain extent, conditions our consumption practices, but the impact of these practices on our environment can in turn become the seed of change for this technological base.

Despite advances in research on the role of socio-technical systems in the transition towards sustainability, and the consideration of consumers as relevant agents of these systems, there are no systematic efforts to explicitly relate the differences between socio-technical systems to the shaping of consumption habits or patterns. However, as we will show in this paper, this exercise

can be very useful to break with preconceptions about sustainable consumption patterns, thus contributing to a more informed basis for the design of policies and recommendations towards sustainability.

Using statistical techniques on a sample of almost half a million data from six Latin American countries (Argentina, Colombia, Ecuador, Spain, Mexico, and Peru), we show the diversity of profiles in sustainable consumption habits (going beyond the dichotomy between sustainable or non-sustainable), as well as their relationship with characteristics of individuals such as income level, education level, size of dwelling, among others. From the results, two different profiles emerge from the point of view of sustainable household consumption practices. On the one hand, we have the "sustainable consumer" whose sustainable habits extend to a wide range of practices. On the other hand, we have the "green consumerist" whose commitment is restricted to a set of practices that appear to present less of a sacrifice for him/her. This dilemma of sustainable consumption vs. green consumerism has been analysed in other works studying how information about the effects of our habits on the environment can generate tension and paralysis in some agents for whom the renunciation of their usual practices implies a significant sacrifice (Longo, Shankar & Nuttall, 2019).

Our results show that these consumption profiles have a complex relationship with patterns traditionally found in the literature (such as educational level or income), and that this complexity can be at least partially explained by differences in the prevailing socio-technical systems in each country. This evidence allows us to refine the findings of the scientific literature in several respects. For example, our results show that the effect of income level is greater in the case of the green consumer, while the effect of education level is greater in the case of the sustainable consumer. On the other hand, we also show that the emergence of these profiles depends on the context of the individual (based on cross-country comparisons) and thus possibly on the institutional framework and infrastructure available. We believe that this line of research, in addition to contributing to the scientific debate on the relationship between lifestyles and sustainability, can generate important implications for the design of more informed policy instruments towards sustainability.

2. Analysis framework

The aim of this paper is to show the complex coexistence of different patterns of consumption practices from the point of view of environmental sustainability. Of course, behind the enormous potential for change in consumption practices lie individual choices. And, unsurprisingly, there are different approaches to the urgency of this change, and how to go about it. In a recent editorial article in *Nature* (2022), an interesting taxonomy of approaches to this issue was raised, albeit in the research domain. The authors suggest that while there is now a broad consensus that human activity has irreversible environmental effects, two approaches to tackling the problem clearly emerge. On the one hand, there is the group that argues that economies can grow without making the planet uninhabitable. This will be possible by adopting new technologies and, in general, by consuming more environmentally friendly products. This is what some authors have called green consumerism (Sharma & Joshi, 2017). On the other hand, there is the group that considers that we must renounce growth. Under this approach, only by decreasing our consumption can we tackle the environmental problem. From this group, which has been called the degrowth movement (Demaria et al., 2013), comes the idea of a sustainable consumer.

Of course, while we are using these ideas to extrapolate to the realm of household consumption, the world of researchers is not the same as the world of ordinary citizens. While there is a consensus among researchers on the irreversible effects of human activity on the environment (as *Nature's* editorial points out), there are still those among the public who question the relevance of climate change. In this sense, when we talk about households, it is pertinent to think that there will also be a group whose approach is to ignore warnings about the impact of their practices on the environment.

Based on the above considerations, a taxonomy of household consumption behaviour can be assumed:

1. Sustainable consumers, who act by self-limiting their consumption capacity with criteria of seeking alternatives (often counter-systemic), choosing new lifestyles and behaviours such as renouncing certain technologies and products.
2. Green consumers, who act according to the sustainability options and recommendations available on the market, but self-limit their consumption capacity.
3. Non-sustainable consumers, oblivious to environmental or sustainability considerations.

For analytical purposes this taxonomy is convenient to visualise different groups of consumers. However, we should bear in mind that the idea of a green consumerist is not without controversy. In this research this concept is used to exemplify different degrees of transformation of consumer behaviour, with the green consumerist occupying an intermediate level of transformation.

3. Data and methods

The aim of this research is to contribute to the scientific debate on the relationship between lifestyles and sustainability by studying differentiated profiles of sustainable consumption. To this end, we will use the database on household consumption practices of the Ecological Footprint Calculator project of the Sustainable Life Foundation. The data included in this analysis were captured in the period from January 2018 to December 2021, for six Ibero-American countries: Argentina, Colombia, Ecuador, Spain, Mexico and Peru. The selection of these countries has the dual objective of having representative samples from a wide variety of contexts. The final sample included in the study has 472,403 individual responses. Of course, the sample is not free from problems of selection bias, as it is completed on a voluntary basis by visitors to the Sustainable Living Foundation website. Thus, the results can only be extrapolated to a population relatively interested (and therefore relatively aware) of environmental sustainability issues. As this is ongoing research, possible methods of correcting for this bias are being explored.

The study comprises two phases. In the first phase, a principal components analysis is carried out with a set of variables capturing respondents' consumption habits. These variables are described in Table 1.

Table 1. Variables of consumption habits

| Variable | Description | Mean |
|---|---|-------|
| Does not use air-conditioning intensively | Binary variable indicating whether the respondent reports intermediate or moderate use of air-conditioning in his/her household | 0.334 |
| Has appliances with energy efficiency label | Binary variable indicating whether the respondent declares that he/she has appliances with energy efficiency label "A" | 0.686 |
| Does not have a car | Binary variable indicating whether the respondent states that he/she does not have a car | 0.505 |
| Has water saving devices installed at home | Binary variable indicating whether the respondent declares that he/she has water saving devices installed at home | 0.349 |
| Does not buy toxic or hazardous products | Binary variable indicating whether the respondent reports checking product labels for potentially hazardous or toxic substances | 0.494 |
| Low meat consumption | Binary variable indicating whether the respondent states that he/she has an intermediate, low or no meat consumption | 0.434 |
| Recycle | Binary variable indicating whether the respondent reports having more than two bins to separate waste at home | 0.782 |
| Low consumption of processed food | Binary variable indicating whether the respondent reports intermediate, low or no consumption of processed food | 0.065 |

Principal component analysis allows us to find unobserved "latent" variables within a set of observed variables. In our work, we will use these latent variables to detect profiles of consumption habits. These profiles will be defined by the degree of correlation between the observed variables (see Table 1) and the components found by the analysis. In this way, those individuals with high scores on a certain component will be categorised into a certain consumption profile. To represent the characteristics of each group, we will show the average of the variables in Table 1 for those individuals who are in the highest quartile in each of the components. Although the analysis allows us to detect many consumption profiles (in our case specifically eight), to facilitate the description of our preliminary findings we will concentrate on the two profiles with the greatest explanatory power (i.e. we will focus on the description of the first two components).

Once we have obtained the components that define each consumption profile, we will run a set of econometric regressions to explain the predominant characteristics within these profiles. The characteristics analysed in this second phase of the analysis are described in Table 2.

Table 2. Characteristics of individuals

| Variable | Description | Mean |
|------------------------------------|---|-------------|
| Income level | Categorical variable: 1=Up to 5 thousand euros; 2=Between 5 thousand and 10 thousand euros; 3=Between 10 thousand and 20 thousand euros; 4=Between 20 thousand and 40 thousand euros; 5=More than 40 thousand euros | 3.221 |
| Educational level | Categorical variable: 1=No education; 2=Primary education; 3=Secondary/Baccalaureate; 4=University education | 3.217 |
| Age | Categorical variable: 1=Below 16; 2=Between 17 and 36; 3=Between 37 and 56; 4=From 57 to 76 | 1.883 |
| Number of persons in the household | Categorical variable: 1=One; 2=Two; 3=Three; 4=More than three | 3.553 |
| Household size | Categorical variable: 1=Less than 60 m ² ; 2=Between 61 and 120 m ² ; 3=More than 121 m ² | 2.013 |
| Argentina | Binary variable indicating that the individual lives in the country | 0.037 |
| Colombia | Binary variable indicating that the individual lives in the country | 0.082 |
| Ecuador | Binary variable indicating that the individual lives in the country | 0.031 |
| España | Binary variable indicating that the individual lives in the country | 0.175 |
| México | Binary variable indicating that the individual lives in the country | 0.630 |
| Perú | Binary variable indicating that the individual lives in the country | 0.045 |

4. Results

A first issue to consider in the results of the principal component analysis is that there is no clear dominance of a few components in the explanatory power of the analysed data. Proof of this is that the first two components only explain one third of the variance of the database. Taking this result to our research objective, we can assume that this implies a great diversity of consumption profiles. As mentioned above, to simplify the description of these preliminary findings we concentrate on the consumption profile associated with the first two components of the analysis.

Table 3 shows the characteristics of the sustainable consumption profiles defined by the first two components found in the principal components analysis. The figures in the table are the average of each variable within the group of individuals located in the first quartile of the first component (sustainable consumer) and the second component (green consumerist) of the principal components analysis. It can be seen that "sustainable individuals" have a higher or similar propensity to engage in sustainable consumption practices compared to the "green consumerist". The main differences between these two sustainable consumption profiles centre on the fact that the so-called green consumerist has a lower propensity to avoid cars, avoid potentially hazardous products, recycle, and consume meat on a regular basis.

Table 3. Two sustainable consumption profiles

| Sustainable consumption practices | <i>Sustainable consumer</i> | <i>Green consumerist</i> |
|---|-----------------------------|--------------------------|
| Does not make intensive use of air conditioning | 0.85 | 0.81 |
| Owens energy efficient appliances | 0.62 | 0.65 |
| Do not own a car | 0.65 | 0.16 |
| Have water economisers installed at home | 0.87 | 0.83 |
| Check the hazardous or toxic content of the products she consumes | 0.82 | 0.32 |
| Is not particularly carnivorous | 0.88 | 0.35 |
| Recycles | 0.59 | 0.39 |
| Usually does not eat processed food | 1.00 | 0.81 |

Note: The figures in the table are the average of each variable within the group of individuals located in the first quartile of the first (sustainable consumer) and second (green consumerist) of the first two components of the principal components analysis.

The results of the econometric analysis are presented in Table 4. It can be seen that the sustainable consumer is characterised by a slightly below average income, a significantly above average level of education and age, and a small number of people living in a relatively small house. The green consumer is a relatively young, high-income individual living in a large house with a small number of people, and has a slightly below average level of education. In terms of geographical distribution, both profiles tend to be more concentrated in Spain, indicating more sustainable behaviour in Spain in general terms. Spain, followed by Peru and Ecuador, show the highest concentration of "sustainable individuals". While Spain and Argentina (which is the reference value for the calculation of the coefficients associated with the countries) show the lowest concentration of "green consumers".

Table 4. Characteristics of sustainable consumer profiles

| Explanatory variables | Sustainable consumer | | Green consumerist | |
|------------------------------------|----------------------|-------|-------------------|-------|
| | Coef. | Pr>t | Coef. | Pr>t |
| Income level | -0.021 | 0.000 | 0.088 | 0.000 |
| Educational level | 0.118 | 0.000 | 0.012 | 0.000 |
| Age | 0.119 | 0.000 | -0.012 | 0.000 |
| Number of persons in the household | -0.066 | 0.000 | -0.009 | 0.000 |
| Household size | -0.073 | 0.000 | 0.240 | 0.000 |
| Colombia | 0.001 | 0.947 | -0.427 | 0.000 |
| Ecuador | 0.069 | 0.000 | -0.224 | 0.000 |
| Spain | 0.618 | 0.000 | 0.461 | 0.000 |
| Mexico | -0.032 | 0.001 | -0.396 | 0.000 |
| Peru | 0.143 | 0.000 | -0.692 | 0.000 |
| Constant | -0.251 | 0.000 | -0.507 | 0.000 |
| No. of observations | 472403 | | 472403 | |
| R-squared | 0.0562 | | 0.1558 | |

Tables 5 and 6 analyse these patterns by country. Table 5 gives the results for the sustainable consumer case, and Table 6 for the green consumerist.

The differences between countries offer interesting results for discussion on the impact of different socio-technical systems on consumption practices. When it comes to the sustainable consumer, some common patterns are observed. In all the countries analysed, the sustainable consumer is characterised by an above-average level of education and age. These characteristics are particularly relevant in the case of Spain and Argentina. On the other hand, sustainable consumers tend to be characterised by living with few people (except in the case of Ecuador) in a relatively small dwelling (except in the case of Peru).

A result that points in a different direction to previous research is the fact that the sustainable consumer in Spain is characterised by a higher-than-average income, contrary to what happens in Latin American countries.

Table 5. Characteristics of the sustainable consumer, by country.

Dependent variable: Sustainable consumer

| Variable | España | | Argentina | | Colombia | | Ecuador | | México | | Perú | |
|------------------------------------|--------|------|-----------|------|----------|------|---------|------|--------|------|-------|------|
| | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t |
| Income level | 0.04 | 0.00 | -0.02 | 0.00 | -0.03 | 0.00 | -0.04 | 0.00 | -0.04 | 0.00 | 0.00 | 0.93 |
| Educational level | 0.27 | 0.00 | 0.16 | 0.00 | 0.06 | 0.00 | 0.03 | 0.05 | 0.06 | 0.00 | 0.03 | 0.01 |
| Age | 0.18 | 0.00 | 0.10 | 0.00 | 0.06 | 0.00 | 0.07 | 0.00 | 0.06 | 0.00 | 0.03 | 0.06 |
| Number of persons in the household | -0.09 | 0.00 | -0.08 | 0.00 | -0.06 | 0.00 | -0.01 | 0.29 | -0.04 | 0.00 | -0.06 | 0.00 |
| Size of dwelling | -0.25 | 0.00 | -0.05 | 0.00 | -0.06 | 0.00 | -0.04 | 0.00 | -0.04 | 0.00 | -0.02 | 0.11 |
| Cons. | 0.02 | 0.61 | -0.39 | 0.00 | 0.06 | 0.16 | -0.03 | 0.67 | -0.08 | 0.00 | 0.18 | 0.01 |
| No. of observations | 82630 | | 17274 | | 38639 | | 14750 | | 297792 | | 21318 | |
| R-squared | 0.07 | | 0.03 | | 0.01 | | 0.00 | | 0.01 | | 0.00 | |

In the case of the green consumerist, the relationship between income and sustainability is direct, contrary to results obtained in previous research that do not distinguish between types of sustainable consumption practices. Regarding the rest of the variables, in general, it can be seen that the results are less robust across countries in the case of the green consumerist.

Table 6. Characteristics of the green consumer by country.

| Variable | España | | Argentina | | Colombia | | Ecuador | | México | | Perú | |
|------------------------------------|--------|------|-----------|------|----------|------|---------|------|--------|------|-------|------|
| | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t | Coef. | Pr>t |
| Income level | 0.13 | 0.00 | 0.02 | 0.00 | 0.03 | 0.00 | 0.20 | 0.00 | 0.09 | 0.00 | 0.12 | 0.00 |
| Educational level | 0.03 | 0.00 | 0.00 | 0.71 | 0.07 | 0.00 | 0.01 | 0.68 | -0.01 | 0.00 | 0.00 | 0.68 |
| Age | 0.06 | 0.00 | -0.03 | 0.00 | -0.06 | 0.00 | 0.01 | 0.50 | -0.06 | 0.00 | -0.06 | 0.00 |
| Number of persons in the household | 0.02 | 0.00 | 0.08 | 0.00 | -0.03 | 0.00 | 0.02 | 0.07 | -0.02 | 0.00 | -0.02 | 0.02 |
| Size of dwelling | 0.20 | 0.00 | 0.23 | 0.00 | 0.30 | 0.00 | 0.22 | 0.00 | 0.24 | 0.00 | 0.16 | 0.00 |
| Cons. | -0.40 | 0.00 | -0.43 | 0.00 | -0.91 | 0.00 | -1.03 | 0.00 | -0.69 | 0.00 | -0.94 | 0.00 |
| No. of observations | 82630 | | 17274 | | 38639 | | 14750 | | 297792 | | 21318 | |
| R-squared | 0.06 | | 0.04 | | 0.04 | | 0.08 | | 0.05 | | 0.04 | |

5. Conclusions

Our results show the diversity of sustainable lifestyles, and the effects generated by the dilemma faced by consumers in aligning their consumption habits with environmental sustainability objectives. This dilemma has been analysed in other works that study how information about the effects of our habits on the environment can generate tension and paralysis in some agents for whom the renunciation of their usual practices implies a significant sacrifice (Longo, Shankar & Nuttall, 2019).

On the other hand, our analysis allows us to refine and extend the findings of the scientific literature on the relationship between consumption patterns and sustainability. Our results show that the positive relationship between income and less sustainable consumption habits is specific to a consumer profile, and not a generalisable pattern. In this sense, the introduction of socio-technical systems that explain opportunity costs in the transition towards more sustainable practices is fundamental to understand the various facets of sustainable consumption.

Finally, our results also show that the most developed economies (as is the case of Spain in the sample) tend to concentrate a higher proportion of agents with sustainable consumption practices, but at the same time they tend to suffer the most from this consumption dilemma. In this sense, they are at the same time an important bottleneck in the goal of environmental sustainability.

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