



The Effect of Consumer Confidence and Subjective Well-being on Consumers' Spending Behavior

Lenka Mynaříková¹ · Vít Pošta²

Accepted: 13 November 2022 / Published online: 29 November 2022
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Abstract

The paper focuses on the role of consumer confidence and selected well-being measures in aggregate consumption and in subsets of aggregate consumption on a broad set of 22 OECD countries. Consumer confidence played a positive and statistically significant role in the development of expenditures especially on durable and semi-durable goods and services. The increase in cognitive, affective and eudaimonic measures of well-being, measured by the Cantril ladder, positive and negative affect and freedom to make life choices variables, had negative impact on total consumption and expenditures on semi-durable goods and services. Possible explanations for these estimates are provided in the paper. Based on the purpose of expenditure, consumer confidence was a significant determinant of all expenditures except for unavoidable spending such as food, health, housing, water, energy, and fuel. The subjective well-being indicators showed a negative impact on expenditures on clothing and footwear, recreation and culture, and restaurants and hotels. Possible explanations for the positive and negative effects of subjective well-being measures on consumption, benefits of including the freedom of choice variable, and directions for future research regarding the introduction of understudied variables are discussed.

Keywords Consumer behavior · Consumer confidence · Locus of control · Freedom of choice · Subjective well-being · Cognitive appraisal theory

1 Introduction

Psychology and economics can contribute to a better understanding of consumer behavior. While purchasing power (i.e., the ability) depends on real income and wealth, willingness stems from the consumers' confidence, i.e., subjective perceptions and expectations

✉ Lenka Mynaříková
lenka.mynarikova@vscht.cz

Vít Pošta
vit.posta@vse.cz

¹ Department of Economics and Management, University of Chemistry and Technology in Prague, Jankovcova 23, 170 00 Prague, Czech Republic

² Department of Managerial Economics, Prague University of Economics and Business, W. Churchill sq. 4, 130 67 Prague, Czech Republic

about national and personal economic conditions (Katona, 1968). Studies have shown that consumers deviate from the rationality assumption proposed by neo-classical economic theory, and do not always attempt to maximize utility, nor do they behave in a predictable way (Gintis, 2000). In reality, individuals make economic decisions under the influence of various psychological, political, social, environmental, and other factors. Since confidence indexes measure perception and expectation, focusing on psychological factors can improve understanding of consumer behavior. However, the research (Dragouni et al., 2016; Gabriele et al., 2009; Kemp et al., 2014; Larson & Shin, 2018; Malgarini & Margani, 2007) suggests that psychological motives may affect some groups of households and some particular categories of expenditure more than others. One of the factors that mediate the effects of consumer confidence in spending behavior can be subjective well-being (SWB) or its subsets such as happiness. SWB is defined as the experience of positive emotions such as happiness and contentment, the development of one's potential, having some control over one's life, having a sense of purpose, and experiencing positive relationships (Huppert, 2009). As Jaunky et al. (2020) describe, the impact of consumption on happiness, which may be considered as one aspect of the psychological construct of SWB, has been introduced as a new and imperative domain of concern for economists, psychologists, sociologists, and diverse policy makers all over the world. Although the effect of short-term emotions has been studied, e.g., regarding their effect on less crucial buying decisions (Wood & Rettman, 2007), long-term emotions, such as SWB, have been rather ignored by consumer researchers (Lyubomirsky et al., 2005). Most of the research so far has investigated the effect of consumption behavior on SWB (Carter & Gilovich, 2010; Dunn et al., 2011; Nicolao et al., 2009; Xiao & Kim, 2009; Zhong & Mitchell, 2010). With the exception of Zhong and Mitchell (2012), who showed that SWB influences spending on hedonic products, studies did not examine the impact of well-being on consumers' consumption.

The standard economic theory based on rational behaviour of households is unsatisfactory given the empirical results. What is needed is an extension of the factors that might affect consumption, and the present paper goes in this direction since it does not stem from the standard economic assumptions. Using psychological concepts described below, the paper looks at how the human psychology drives consumption expenditure as important aspects of economic behavior. The goal of this paper is to extend existing knowledge on consumption behavior in two ways. First, we directly evaluate the role of selected well-being measures in the dynamics of both aggregate consumption and its subsets defined by durability and purpose. Second, we assess the effects on a broad set of countries using dynamic panel techniques. The variables used in the analysis were a cognitive measure of SWB (Cantril ladder), affective measures of SWB (positive and negative emotions), and freedom of choice, which is considered a predictor of happiness, and an eudaimonic measure of SWB (see Inglehart et al., 2008; Veenhoven, 2000; Verme, 2009).

2 Consumer Confidence and its Measurement

Consumer confidence measures the perceptions of customers about their recent and future financial situation and economic climate (Ou et al., 2014). Views on the possibility of using the Consumer Confidence Index (CCI), a measure of the prevailing consumer sentiment, to analyze private consumption, vary, and the efficacy of the CCI in analyzing and forecasting economic phenomena is not universally accepted. Ludvigson (2004), Cotsomitis and Kwan (2006), or Karasoy Can and Yüncüler (2018) suggest that when the consumer

confidence is combined with other variables, it makes only a small improvement for forecasting purposes. Contrary to that, Caleiro (2021) considers the CCI relevant to solving a variety of economic problems. Acuña et al. (2020) conclude that the CCI provides a more accurate prediction of consumption even after controlling for macroeconomic variables. Singal (2012), Dees and Soares Brinca (2013), Dragouni et al. (2016), Lahiri et al. (2016) or Benhabib and Spiegel (2019) show that the CCI can successfully predict consumer spending. Mourougane and Roma (2003), Chua and Tsiaplias (2009), and Utaka (2014) consider the CCI a relevant predictor of the short-term growth in gross domestic product. Lemmon and Portniaguina (2006), Chen (2011), Hsu et al. (2011), and Rojo-Suárez and Alonso-Conde (2020) indicate that changes in the consumer confidence Granger-cause stock returns. Vuchelen (2004), Kwan and Cotsomitis (2006), Mandal and McCollum (2013), Kłopocka (2017), Pan (2018), Karasoy Can and Yüncüler (2018), Claveria (2019), and Acuña et al. (2020) found a negative causality between the consumer confidence and the unemployment rate both in the short run and long run. On the other hand, Demirel and Artan (2017) found no relation between economic confidence and unemployment in 13 EU countries. Mermod and Dudzevičiūtė (2011) detected causality from the consumer confidence to consumption expenditure for developed countries, and causality from economic growth to the consumer confidence for developing countries. Kłopocka and Gorska (2021) analyzed data for 14 EU countries and found that the combination of subjective and objective indicators offers a more reliable basis for predictions and policy assessments. Most studies cover one country (mostly the US or countries within the EU region) or a selected group of EU countries, while evidence for emerging economies remains scarce. Exceptions are represented, for instance, by Khumalo (2014) who found a positive effect of the consumer confidence on consumers' behavior in South Africa. Campelo et al. (2020) and Ghosh (2021) looked at consumer spending in Brazil and found that unemployment changes, stock market fluctuations, interest rate variation, and alterations in the CCI affect consumer spending, making the CCI a good predictor of spending in Brazil. Most studies confirm that the CCI has predictive power on consumption expenditures under certain circumstances (e.g. Çelik & Özerkek, 2009; Dées & Brinca, 2013; Gelper, Lemmens & Croux, 2007; Van Aarle & Kappler, 2012). As suggested by Ou et al. (2014) or Hampson et al. (2020), a distinction between the national consumer confidence (i.e., an individual's perception about the recent and future macroeconomic climate), and personal consumer confidence (an individual's perception about changes in their recent and future personal financial situation) improves understanding of the index. Vanlaer et al. (2020) and Malovaná et al. (2021) consider the personal consumer confidence more important than the national consumer confidence in determining household savings decisions.

The predictive power of the consumer confidence is more obvious during exceptional events such as political or economic shocks, environmental crisis, etc. (Batchelor & Dua, 1998; Fuhrer, 1993; Garner, 2002; Katona, 1968; Throop, 1992). Malgarini and Margani (2007) suggest the effect of the shocks is higher for inactive people and for dependent workers who may react less rationally. The uncertain economic situation may lower the personal consumer confidence, increase perceived financial vulnerability, and affect future consumer behavior (Brüggen et al., 2017; Hampson et al., 2020; Lowe, 2018), independent of how probable the loss of a job or household income is. Vanlaer et al. (2020) looked at the relationship between the decrease in the consumer confidence after the global financial crisis and the household spending behavior in 18 EU countries and found that the impact of the consumer confidence on saving had increased after the crisis. Teresiene et al. (2021) studied the impact of COVID-19 on the consumer confidence and found a rapid and robust effect of the pandemic in a short period. In the longer period, the spread of the pandemic

did not affect the CCI in the EU countries, while negatively affecting the CCI in the US or China (Teresiene et al., 2021). A negative tone of economic news and high media coverage of exceptional events have a strong mediating effect on the consumer confidence and subsequent consumption behavior (e.g. Boomgaarden et al., 2010; Garz, 2018; Hollanders & Vliegthart, 2011; Kleijnnijenhuis et al., 2015; Sorić et al., 2019; Soroka et al., 2015; Svensson et al., 2017; Vliegthart & Damstra, 2019). However, changes in consumer behavior can occur for other reasons than turbulent economic or political changes (El Alaoui et al., 2020; Mandal & McCollum, 2013).

3 Subjective Well-being, Emotions, and Consumers' Consumption Expenditure

Economic research has confirmed the importance of studying consumers' feelings and emotions when predicting consumer behavior (Ahmad & Rangaraju, 2017; Johnson & Naka, 2014; Nyman & Ormerod, 2014). Regarding the relationship between consumption and SWB or its components, studies (Bertram-Hümmer & Baliki, 2015; Dumludag, 2015; Gokdemir, 2015; Guillen-Royo, 2008; Noll & Weick, 2015; Zhang & Xiong, 2015) focus mainly on levels of consumption. Specific findings depend on what a given study actually measures—e.g., some studies consider happiness a synonym for SWB, others draw a difference between these two. For instance, Schmutte and Ryff (1997) describe psychological well-being as a general feeling of happiness. The Organisation for Economic Cooperation and Development (2013) describes three main types of SWB measures: cognitive measures related to the evaluation of life experiences or life as a whole (e.g., life satisfaction, Cantril ladder); affective measures related to “emotional well-being” (positive and negative affects or affect balance at or during a certain point or period in time); and measures related to the concept of “eudaimonia,” which capture individual happiness or welfare (Deci & Ryan, 2008; Heintzelman, 2018; Huta & Waterman, 2014). Most studies regard life satisfaction as a cognitive self-evaluation of happiness (Diener, 1984; Veenhoven, 1994) or SWB (Andrews & Withey, 1976; Campbell, 1976; Michalos, 1980). Tsurumi et al. (2021) found that total consumption contributes primarily to cognitive and eudaimonic measures of SWB. Duesenberry's (1949) theory of consumer behavior suggests that various types of consumption enhance happiness and therefore also SWB in at least three ways. Increased consumption of durable goods, food, or housing may enhance happiness by alleviating material hardship or making life easier, serving as a form of coping mechanism against increased stress (Cheng et al., 2016). Conspicuous consumption of visible goods such as expensive vehicles, holidays, clothes, cosmetics, or jewelry may enhance happiness by increasing social status (Chao & Shor, 1998; Dutt, 2006; Johanson-Stenman & Martinsson, 2006; Kaus, 2013; Perez-Truglia, 2013). Finally, spending on leisure or charitable activities may enhance happiness by positively affecting social relationships (Pugno, 2009).

Similar to the consumer confidence, the impact of SWB on consumer behavior may be more profound during exceptional situations that lead to more dramatic behavioral reactions and changes, as we see in cases of panic buying and other herd behavior phenomena during disease outbreaks, national disasters, wars, or terrorist attacks (Leach, 1994; Lins & Aquino, 2020). Terror management theory (Arndt et al., 2004; Kennett-Hensel et al., 2012) explains how exceptional events motivate compensatory behavior to alleviate negative emotions. The compensatory behavior can take the form of purchasing unnecessary products or products of daily need in extensive quantity to regain the sense of control, security,

or comfort. The threatening situation can make these purchases look necessary for survival (Arafat et al., 2020; Chua et al., 2021; Dodgson, 2020; Fairfield et al., 2015; Hendrix & Brinkman, 2013). Studies (Bentall et al., 2021; Burroughs & Rindfleisch, 2002) show that fear, anxiety, depressive mood, or elevated stress levels can lead to an active response such as over-purchasing or impulse spending behavior. These responses serve as a self-protective mechanism to manage negative emotions and restore a positive sense of self (Sneath et al., 2009). However, Landau et al. (2011) point out that some individuals may react passively and decrease their spending.

According to cognitive behavioral theories, cognitive evaluations (i.e., appraisals) influence emotions, while, at the same time, emotions influence the cognitive evaluation, and this interaction leads to a behavioral response (Ellsworth, 2013; Moors et al., 2013). The consumer confidence may function as an appraisal tied to specific emotions. Studies (Hampson et al., 2020; Kursan Milaković, 2021; Ng & Russell-Bennett, 2015) show that psychological mechanisms through which the consumer confidence leads to changes in spending behavior have a cognitive and affective dimension, but the affective component has not been sufficiently explored, with few exceptions (e.g., Sekizawa et al., 2021; Van Giesen & Pieters, 2019). Sekizawa et al. (2021) found that the level of the CCI and its fluctuation in Japan are associated with anxiety and positive affects; therefore, when the consumer confidence is higher, people tend to be happier and less anxious. The affect-as-information model suggests that emotions provide information related to one's current available tendencies and cognitions (Schwarz & Bohner, 1996); therefore, people use emotional information to make judgments that influence their attitudes and behavior (e.g., Gino & Shea, 2012; Gino et al., 2012; Higgins, 2006). Two types of current emotions affect our decisions. We experience integral emotions when we make decisions, but we happen to have incidental emotions, unrelated to the appraisal (Brooks & Schweitzer, 2011; Olekalns & Smith, 2009; Tsay & Bazerman, 2009). Anxiety aroused prior to a decision may lead to perceiving certain behavior as worse, while positive emotions may lead to overvaluing benefits, undervaluing losses, and being more open to risk-taking (e.g., Barry et al., 2004; Friedman et al., 2004; Steinel et al., 2008; Van Kleef et al., 2004). Our decisions are also affected by anticipated emotions that we expect to have post-decision and that influence our risk estimation, intentions, and expectations (see e.g., Bagozzi et al., 2016; Carrera et al., 2011; Kotabe et al., 2019; Riquelme & Alqallaf, 2020; Zampetakis et al., 2016). Dread (i.e., extent of perceived lack of control, feelings of dread, and perceived catastrophic potential) is one of the anticipated emotions with a significant effect on our decisions and behavior (Senik, 2008). Together with the uncertainty of the situation, they create two psychological dimensions of the "risk" (Peters & Slovic, 1996) that influence the cognitive evaluation of risk and determine behavior, as explained by the risk-as-feelings hypothesis (Loewenstein et al., 2001). Perceived risk and uncertainty can strengthen fear and anxiety (Mi et al., 2019; Zheng et al., 2019), which can result in higher pessimism, more pessimistic risk estimates, and make consumers more risk-averse (Kuhnen & Knutson, 2011; Miu et al., 2008; Patt & Weber, 2014; Peng et al., 2014; Smithson, 2008; Stanton et al., 2014). Therefore, uncertainty and perceived risk can increase saving behavior (Bande & Riveiro, 2013; Carroll et al., 2012; Ceritoglu, 2013; Chamon et al., 2013; Mastrogiacomo & Alessie, 2014; Mody et al., 2012). However, this precautionary motive to build up a financial reserve is not universally supported (Fossen & Rostam-Afschar, 2013).

Both the consumer confidence and SWB are closely related to expectations, which can be defined as the assumptions individuals uphold about their future (Augusto-Landa et al., 2011; Conversano et al., 2010; Diener et al., 2003; Eid & Diener, 2004; Mäkikangas & Kinnunen, 2003; Pleeging & Burger, 2020). Optimistic people are generally happier, more

resilient to negative economic or political shocks, and have a greater SWB (Arampatzi et al., 2015, 2020; Ekici & Koydemir 2016; Frijter et al., 2012). Optimism represents a psychological capital that serves as a buffer against misfortune (Youssef & Luthans, 2007). This corresponds to the economical view of confidence related to predictability (Malovaná et al., 2021). As explained by Akerlof and Shiller (2010), high confidence can lead to increased optimism about the future, while low confidence leads to higher pessimism. Similarly, a high trait of optimism can lead to higher confidence and thus spending more/saving less, while a high trait of pessimism leads to lower confidence and thus spending less/saving more. A distinction between optimism and pessimism as stable personality traits and as states that are more changeable may be necessary. The self-regulatory model talks about “dispositional optimism” as a global expectation that good things will be plentiful in the future and bad things sparse and is associated with less distress, more active coping, and lower engagement in avoidance or denial (Scheier et al., 2001). Buchanan and Seligman (1995) describe that pessimists explain away bad events with internal, stable, and global causes, while optimists focus on external, unstable, and specific causes. Both theories suggest that optimism and pessimism involve cognitive, emotional, and motivational components, and thus influence our judgments, decisions, and behaviors. Since optimists can be pessimistic under certain conditions and vice versa, optimism and pessimism probably have both a trait and a state component (Luthans & Youssef, 2007). Although traits are more related to overall well-being, states relate more to specific outcomes such as educational or work-related goals and success (Kluemper et al., 2009; Peterson, 2000). While the trait may be important in explaining consumers’ habits, the state may help explain changes in the consumer confidence. Katona (1968) hypothesized that spending would increase when people became optimistic, and precautionary savings would rise when they became pessimistic. Kahneman and Tversky (1982) describe the forecast error as a tendency to overestimate the likelihood of positive events, and underestimate the likelihood of negative events, which can be explained by psychological biases such as the law of small numbers (Rabin, 2002) or the hindsight bias (Shiller, 2003), which make situations seem more predictable and more probable. Shiller (2003) explains that people make forecasts in uncertain situations by looking for familiar patterns and assuming that future favorable patterns will resemble past ones. Finally, due to the illusion of control, people optimistically distort the reality, believing that their own situation will be consistently better than the general one, which makes them expect a personal success with a probability inappropriately higher than the objective probability warrants (DeBondt & Thaler, 1995). The biases affect both the subjective probability of future economic events and their retrospective interpretation and may create the illusion that we can control the external factors to create an optimistic future. Especially during critical events, people amplify the forecast error and perceive their personal and future conditions better than the aggregate and past ones (Bovi, 2009), so that they can be individual optimists and social pessimists at the same time (Rosner & Nagdy, 2014). In line with Buchanan and Seligman (1995), if we feel we are in control of our lives, we feel more optimistic about our situation (regardless of the objective factors) than about the national situation, which we cannot control directly.

One of the important variables explaining differences in dealing with uncertain situations, making decisions, and coping with emotions is therefore the perceived control we have over our life. The locus of control (Rotter, 1954) reflects individual differences in beliefs about the degree to which we can control the outcomes of events in our life (Galvin et al., 2018). It moderates the effects of external stressors on affective and behavioral responses (Debus et al., 2014; Jiang et al., 2020; Reknes et al., 2019). Similar to optimism, it can serve as a buffer against economic, psychological, political, and other shocks

by giving the individual a sense of control and freedom to decide what to do. Individuals with an internal locus of control believe that they have control over the outcomes in their life (Twenge et al., 2004). They have a greater appreciation of freedom of choice, represented by the size of an opportunity set with mutually exclusive alternatives (Verme, 2009). People with an external locus of control believe that things happening in their lives are beyond their control and have no power in affecting them, since they happen due to chance, fate, luck, or are the result of the control by powerful others (Fong et al., 2017). They have a lower appreciation of freedom of choice, since it is regulated by the degree of perceived control, which shapes the expectations we have about the outcome of our choices (Verme, 2009). The external locus of control leads to more problems in dealing with stress and uncertainty (Debus et al., 2014; Reknes et al., 2019). Externals often blame others for their problems and adopt the victim mentality to protect their self against shame, guilt, or regret we may feel when we accept that things went wrong because of our actions (Ng et al., 2006; Twenge et al., 2004). This mentality may lead the externals to be more passive because they do not believe they can actively cope with the situation (Ng et al., 2006). Veenhoven (2000), Inglehart et al. (2008), and Verme (2009) in their analyses of relationship between happiness and other psychological variables used a “perceived fate control” variable represented by a question: “Please use this scale where 1 means ‘none at all’ and 10 means ‘a great deal’ to indicate how much freedom of choice and control you feel you have over the way your life turns out.” The question combines information on both the freedom of choice and the locus of control. Based on their studies, we may consider these variables interrelated. Since the locus of control is not measured internationally, but data on the freedom of choice are available, it may improve our understanding of the psychological variables behind consumer behavior. Hampson et al. (2020) show that the effects of the consumer confidence depend on the locus of control, with the influence of national consumer confidence significantly stronger for consumers with an external locus of control, who are more susceptible to lowered well-being in response to external stressors (Debus et al., 2014). As suggested by Sekizawa et al. (2021), cognitive evaluations of the national economy lead to behavioral changes based on whether an individual feels personally financially affected by the situation and whether the level of affectedness is strong enough to evoke emotional feelings of financial vulnerability. In Hampson et al. (2020), the locus of control served as a moderator of the relationship between the national consumer confidence and perceived financial vulnerability, defined as the probability that an individual will experience financial hardship, i.e., will not be able to maintain the current standard of living (O’Connor et al., 2019). When individuals experience higher perceived financial vulnerability, they become more price-conscious when making new purchases, as this helps to conserve financial resources (Hampson & McGoldrick, 2017). As the financial vulnerability is psychologically very taxing, it can lead to reduced well-being, physical and mental problems, or material deprivation (O’Loughlin et al., 2017). Understanding its role in consumers’ behavior and its relation to the national and personal consumer confidence and psychological variables of overall well-being, locus of control, negative or positive affect is of both theoretical and practical interest (O’Loughlin et al., 2017; Treanor, 2016).

Studies (Demirel & Artan, 2017; Kłopotcka, 2017; Matošec & Obuljen Zoričić, 2019; Taylor & McNabb, 2007) agree that macroeconomic variables alone explain only a small proportion of consumer behavior. Therefore, we expect that other factors play an important role, though they may affect different consumers differently, and probably influence especially discretionary, infrequent, and planned purchases, not strictly necessary for life. Their effect may be more visible during exceptional circumstances (Desroches & Gosselin, 2002), as these result in a strong emotional reaction and affect the perception of

uncertainty. The psychological concepts described above can be understood through the lenses of the cognitive appraisal theory, which shows how the cognitive evaluation of stressors (for instance, economic recession) interacts with emotions, potentially resulting in a behavioral change (Moschis, 2007). The reaction to a stressor follows an appraisal-emotion-behavior sequence (Folkman & Lazarus, 1984), where individuals evaluate to what extent a stressor potentially affects them. The cognitive appraisal leads to a positive or negative emotional response that affects our expectations about behavioral outcomes, while the locus of control or freedom of choice gives the individual a sense of how the stressor is controllable. This results in a behavioral response, which may include active or passive coping strategies and behavioral adaptations to deal with the stressor and accompanying emotions, such as hedonic shopping, over-purchasing, or saving (Hampson et al., 2020; O’Loughlin et al., 2017; Sekizawa et al., 2021; Treanor, 2016).

4 Data and Statistical Approach

We used yearly data for a panel of 22 OECD countries. The sample starts in 2008 and ends in 2020. The countries were chosen so that the final number of observations was maximized. The reason for limiting the number of countries was missing data on the confidence indicators. The estimates are therefore based on a total of 286 observations. The selected countries are Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Mexico, Netherlands, Poland, Portugal, South Korea, Spain, Sweden, United Kingdom, and the United States.

To capture the development of consumption, we make use of the real total consumption of households. We also employ consumption in two disaggregated ways. The first approach disaggregates total consumption (CONSUMPTION) into four types of expenditures according to durability: expenditures on durable goods (DURABLE), semi-durable goods (SEMIDURABLE), non-durable goods (NONDURABLE), and expenditures on services (SERVICES). The second approach differentiates total consumption according to purpose, which is embodied in the COICOP methodology (The Classification of Individual Consumption according to Purpose), into 12 divisions: food and non-alcoholic beverages (COICOP1), alcoholic beverages, tobacco (COICOP2), Clothing, and footwear (COICOP3), Housing, water, energy, fuel (COICOP4), Furnishings, household equipment and maintenance (COICOP5), Health (COICOP6), Transport (COICOP7), Post and telecommunication (COICOP8), Recreation and culture (COICOP9), Education (COICOP10), Restaurants and hotels (COICOP11) and Miscellaneous goods and services (COICOP12). For the purposes explained below, we also employ the gross domestic product (GDP) in the analysis. The notation in brackets is the designation of the series, which will be used further below, especially in the tables.

The sentiments of consumers are captured by four indicators: consumer confidence indicator published by the OECD (CONFIDENCE), and Life ladder (LADDER), Freedom to make life choices (FREEDOM), positive affect (POSITIVE), and negative affect (NEGATIVE) indicators derived from the World Happiness Report (Helliwell et al., 2021). The Life ladder score, which represents the cognitive measure of SWB, is measured by answering a question: “Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?” Freedom to make life choices, as a eudaimonic

measure of SWB, is the national average of responses to the question “Are you satisfied or dissatisfied with your freedom to choose what you do with your life?” Affective measures of SWB are measured by positive and negative affect. The positive affect represents the average of three positive affects (happiness, laughter, and enjoyment) measured through a question: “Did you experience the following feelings during A LOT OF THE DAY yesterday? The negative affect is defined as the average of three negative affects (worry, sadness, and anger) measured by responses to the question: “Did you experience the following feelings during A LOT OF THE DAY yesterday?” Although the last two variables are called “affects”, they correspond to what we generally consider “emotions”. For a full explanation of the methodology of the specific measurements, see the Statistical Appendix 1 of the World Happiness Report (Helliwell et al., 2021).

All consumption variables and the gross domestic product series are measured using constant prices of the national base year. The national base year differs slightly among the countries; usually, it is 2015. The CCI published by the OECD is expressed as an index with a long-term average set to 100. The published series are first transformed by natural logarithm and then detrended. The SWB of consumers captured by the variables of freedom to make life choices, positive affect, and negative affect are measured as the average response for each person, with values ranging from 0 to 1, while the life ladder is measured on a scale from 0 to 10.

The initial inspections of the data showed that consumption data was all nonstationary, which is to be expected, while the sentiment indicators were all stationary, which in the case of the CCI is by definition since it is published as detrended.

To express all the variables in a common measure, the consumption series were transformed into growth rates expressed as decimal numbers. The CCI was divided by 100 and the life ladder indicator was divided by 10. This means that all the SWB indicators assume values from the interval 0 to 1. Table 1 summarizes some statistical properties of the adjusted data.

Normality is tested by the Jarque–Bera test under the null hypothesis of normal distribution, the unit root is tested by Levin–Lin–Chu, and Fisher-ADF tests under the null hypothesis of unit root *, **, *** signifies rejection of the null hypothesis at 10%, 5%, 1% level of significance, respectively.

We test for the presence of unit roots by utilizing two tests: the Levin–Lin–Chu unit root test and the Fisher-ADF test. Suppose the following representation of the panel:

$$\Delta y_{i,t} = \alpha y_{i,t-1} + \sum_{j=1}^{n_i} \beta_{i,j} \Delta y_{i,t-j} + \delta x_{i,t} + \varepsilon_{i,t} \quad (1)$$

where y represents the endogenous variable, x stands for exogenous variables, ε represents errors, i denotes cross-sections, $j = 1 \dots n_i$ signifies possible different lag orders for the cross-sections. The null hypothesis is related to the coefficient α . More specifically, the null hypothesis is that α is equal to zero. If the null hypothesis is rejected, then the series is considered stationary. The Levin–Lin–Chu test assumes a common unit root process across the cross-sections. On the other hand, the Fisher-ADF unit root test allows for individual unit root processes across cross-sections. The number of lags in Eq. (1) was selected by the Schwarz information criterion, which in most cases meant one lag. The vector x includes only the intercept, no trends were assumed. Since the property of stationarity is crucial for the subsequent analysis, we employ these two different tests to check for the presence of unit roots. As the results in Table 1 show, all the series may be considered stationary after the adjustments mentioned above.

Table 1 Statistical properties of the data

Series/Statistics	Mean	Standard deviation	Normality	Levin, Lin & Chu t-statistic	Fisher-ADF Chi-square
CONSUMPTION	0.00	0.04	509.51***	-7.06***	100.43***
DURABLE	0.03	0.10	197.57***	-12.49***	150.50***
SEMIDURABLE	0.01	0.06	233.96***	-2.99***	80.56***
NONDURABLE	0.00	0.03	611.31***	-12.57***	136.91***
SERVICES	0.00	0.05	884.46***	-7.45***	100.79***
COICOP1	0.01	0.03	713.49***	-7.92***	104.80***
COICOP2	-0.01	0.04	77.18***	-7.94***	122.60***
COICOP3	0.00	0.07	286.48***	-6.02***	102.78***
COICOP4	0.01	0.02	94.55***	-15.52***	190.05***
COICOP5	0.01	0.06	229.52***	-8.43***	108.97***
COICOP6	0.02	0.06	285.12***	-7.04***	110.87***
COICOP7	-0.00	0.08	223.28***	-8.68***	135.96***
COICOP8	0.03	0.06	219.25***	-12.60***	159.23***
COICOP9	0.01	0.07	528.88***	-7.43***	114.21***
COICOP10	0.00	0.06	442.84***	-6.99***	118.68***
COICOP11	-0.01	0.11	755.24***	-7.29***	101.18***
COICOP12	0.01	0.05	867.69***	-8.83***	116.70***
CONFIDENCE	0.99	0.02	311.65***	-5.09***	82.92***
LADDER	0.65	0.08	15.61***	-2.93***	71.06***
FREEDOM	0.79	0.14	39.97***	-6.33***	111.51***
POSITIVE	0.74	0.08	20.15***	-1.92**	58.04*
NEGATIVE	0.24	0.06	57.42***	-5.36***	77.44***
GDP	0.01	0.04	639.60***	-12.86***	124.65***
COMPONENT	0.00	1.58	23.12***	-3.31***	83.14***

The variables that capture the SWB of consumers should be suspected to exhibit significant correlations among them. Table 2 presents the correlation matrix between the five variables.

The correlation matrix in Table 2 shows that the correlations between the CCI (CONFIDENCE) and the SWB indicators are statistically significant, but they are relatively small with respect to their magnitude. Therefore, the CCI should be considered as a separate

Table 2 Correlation matrix

	CONFIDENCE	LADDER	FREEDOM	POSITIVE	NEGATIVE
CONFIDENCE	1.00				
LADDER	0.26**	1.00			
FREEDOM	0.30*	0.78***	1.00		
POSITIVE	0.15***	0.73***	0.74***	1.00	
NEGATIVE	-0.30**	-0.49**	-0.48**	-0.38***	1.00

*, **, *** means rejection of the null of no correlation at 10%, 5%, and 1% level of significance, respectively

variable. On the other hand, the correlations between the variables of life ladder (LADDER), freedom to make life choices (FREEDOM), and positive affect (POSITIVE) are quite considerable. The correlations between any of these three variables and the negative affect variable (NEGATIVE) are then again significantly smaller. Therefore, we consider the CCI and the variable of negative effect separately and use principal components analysis for the other three variables to extract a principal component that would capture most of their original variability.

The principal components analysis starts with the variance matrix of the original variables, here life ladder, freedom to make life choices, and positive affect. The principal components are obtained by eigenvalue decomposition of the original variance matrix. The principal components analysis was performed using the Pearson correlation matrix. Table 3 shows the eigenvalues associated with the decomposition of the original correlation matrix.

Since there are three variables, there are three eigenvalues. The sum of the three eigenvalues must be three because the analysis is based on a correlation matrix. The last column shows that the first principal component accounts for 83% of the total variance. There are no strict rules as to what the threshold should be. In practice, threshold of 80% or 85% are common. We conclude that it is sufficient to use the first component only to capture the vast majority of the variance produced by the three variables. This variable is named COMPONENT and its properties are shown in Table 1.

The objective of the empirical analysis is to verify the impacts of the three SWB indicators on consumption. The empirical analysis faces the wide-spread problem of endogeneity. Endogeneity arises from dependence of the variable assumed as independent on the variable designated as dependent, omitted variables and measurement errors. In a vast majority of economic modelling all these problems should be expected to be present. The problem of omitted variables stems from the fact that the true economic model is never known in practice. Mutual relationships between the confidence and SWB indicators on one hand and consumption on the other hand cannot be ruled. The frequent approach employed to tackle this issue is to make use of instrumental variables, which means variables correlated with independent variables but uncorrelated with the error term. We apply the estimation based on instrumental variables in the form of the generalized method of moments.

The general structure of the empirical model we estimate is:

$$y_{i,t} = c_i + \delta x_{i,t} + \varepsilon_{i,t} \tag{2}$$

where c represents constants, y contains a measure of consumption, x contains the three SWB measures. In Table 1, we showed that the variables are already stationary; therefore, we do not apply the typical transformation in the form of differencing Eq. (2) as it would lead to over-differencing.

The possible cross-section fixed effects are accounted for by using orthogonal deviations. Arellano-Bond 2-step estimation is used. To compute coefficient covariances, White period method is used to account for within cross-section heteroskedasticity and serial

Table 3 Principal components analysis based on the following three variables: life ladder, freedom to make life choices and positive affect

Eigenvalue	Value	Cumulative value	Cumulative proportion
1	2.50	2.50	0.83
2	0.28	2.78	0.93
3	0.22	3.00	1.00

correlation. This means that the computed coefficient covariances are robust to within cross-section heteroskedasticity and serial correlation.

Since three coefficients are estimated, it is necessary to employ at least three instruments. Lagged regressors by one period are used as instruments, and contemporary real GDP growth is used as the fourth instrument. Real GDP growths are correlated with the regressors while the correlation with the error of (2) is small. The validity of instruments is tested by Sargan-Hansen J-test, which tests the null hypothesis that the over-identifying restrictions are valid.

5 Results and Discussion

The results presented in Table 4 indicate that the CCI always plays a positive and statistically significant role in the development of consumption. This means that an increase in the CCI increases the growth of total consumption and expenditures on durable and semidurable goods and services, which is similar to findings by Gelper et al. (2007) and Adrangi and Macri (2011) for durable goods or Malgarini and Margani (2007) for services. However, both Garner (2002) and Malgarini and Margani (2007) show that the CCI is not statistically significant in the case of durable goods. The positive estimated coefficient associated with CCI is the lowest in the case of expenditures on nondurable goods, which can be explained by the fact that a relatively high proportion of these expenditures is directed on goods whose consumption is necessary. Nondurable goods mainly consist of food and non-alcoholic beverages and alcoholic beverages and tobacco. We may expect that the consumer confidence influences spending on nondurable goods especially during exceptional events, when consumer priorities are centered on basic needs (Di Crosta et al., 2021). The uncertainty of the external situation may lead to panic buying and over purchasing of nondurables to restore the sense of security by creating a supply of food and beverages to be prepared for the possible bad times. The effect of CCI on consumption spending is estimated to be the strongest in the case of consumption of durable goods. We plot this relationship in Fig. 1.

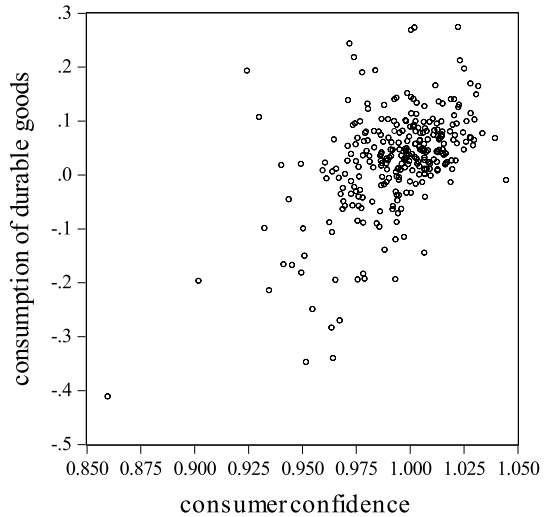
The SWB indicators have statistically significant effects in the case of total consumption and expenditures on semidurable goods and services. The component variable represents the joint impact of the variables of the life ladder, the freedom to make life choices, and the positive affect. The impacts of the component variable as well as that of negative affect are negative. While the positive impact of the CCI on the total consumption was expected,

Table 4 Estimates for total consumption, consumption according to durability, and services

	CONSUMPTION	DURABLE	SEMIDURABLE	NONDURABLE	SERVICES
CONFIDENCE	1.60***	3.50***	2.02***	0.84***	1.51***
COMPONENT	-0.04***	-0.05	-0.07***	-0.00	-0.006***
NEGATIVE	-0.76**	0.05	-1.34**	-0.06	-0.120**
J-statistic	1.02	1.11	0.94	1.50	1.51

Instruments consist of lagged regressors and contemporary real GDP growth. J-statistic refers to the test of the validity of over-identifying restrictions with the null of the restrictions being valid. *, **, *** means rejection of the null at 10%, 5%, and 1% level of significance, respectively

Fig. 1 Relationship between consumption of durable goods and consumer confidence



the previous theoretical discussion showed that the impacts of the other variables might be positive or negative. Our results show that within the total consumption they tend to have an impact on those expenditures, which are more easily postponed. Expenditures on semi-durable goods include especially expenditures on clothing and footwear.

It is difficult to compare the magnitudes of the impact in our study with other studies since there are no comparable studies. When interpreting the results only from the point of view of this study it should be noted that the median values of consumer confidence, component, and negative affect are 0.998, 0.483, and 0.229, respectively. Given the values of the estimated coefficients it may be, therefore, concluded that given these three variables the impact of consumer confidence is on average the highest. Although the estimated coefficients of the component and negative affect are lower than that of consumer confidence, given the median values mentioned above, the effects of both the component and the negative affect on consumption dynamics are non-negligible.

We may interpret the results in line with Larson and Shin (2018) or Zwanka and Buff (2020) who suggest that buying non-necessities may also include pursuing freedom or with Kemp et al. (2014) who suggest that buying non-necessities serves as a coping mechanism to deal with negative emotions. Therefore, in the case of the component variable, a higher sense of freedom, higher cognitive well-being, and positive affect (therefore, higher overall SWB) may prevent consumers from spending. As stated by Guven (2009), happy people tend to save more and spend less with respect to their future decisions and expectations. Ozari (2007) and Zhong and Mitchell (2012) suggest that high well-being consumers prefer lower-cost, everyday pleasures, such as going swimming or engaging in their favorite hobby, to expensive indulgences. Other studies (Carter & Gilovich, 2010; Dunn et al., 2011; Nicolao et al., 2009; Xiao & Kim, 2009; Zhong & Mitchell, 2010) also suggest the opposite direction, i.e., that consumption of certain goods leads to increased happiness or SWB. We may expect that respondents who evaluate their SWB positively (in this case, all three aspects of the SWB) do not feel the need to use consumption as a mechanism to enhance their happiness through any of the described channels such as coping with distress, improving social status, or social relationships. In case of the negative emotions, they can make consumers more passive, negatively affect the decision-making and lead to more

pessimistic estimates of the outcomes of their choices, which may be important in purchasing semidurable goods or services, as suggested by Miu et al. (2008) or Peng et al. (2014). Landau et al. (2011) and Degli Esposti et al. (2021) point out that individuals may react passively and decrease spending on non-necessities such as nonbasic clothes when feeling negative emotions.

Table 5 presents the estimated impacts of the SWB indicators on consumption classified according to purpose. The CCI is not a statistically significant determinant of consumption in the case of expenditures on housing, water, energy and fuel, which is an expected result since these expenditures are practically unavoidable. Its impact on expenditures on health is also rather limited for the very same reason.

The statistically significant and negative estimated coefficients associated with SWB indicators are found in the cases of expenditures on clothing and footwear, recreation and culture, and restaurants and hotels. These results confirm the estimates presented in Table 4 where it was shown that these indicators have a negative impact on expenditures on semi-durable goods and services. Furthermore, the variables of life ladder, the freedom to make life choices, and the positive affect (COMPONENT) jointly negatively influence the expenditures on transport, which may be just a reflection of their negative impact on the previously mentioned expenditures since the use of various means of transport often accompanies the consumption of services in the divisions of restaurants and hotels, and recreation and culture. These three variables also have a slight negative impact on the growth of expenditures on education. Individuals who are currently feeling high level of well-being, experiencing happiness and control over their life may not be feeling the pressure to invest in their education to improve their future. In line with the forecasting error (Bovi, 2009; Kahneman & Tversky, 1982), but also due to the current satisfactory state, they may expect their future to be similarly satisfying as their current life.

6 Conclusions

As Veenhoven et al. (2021) state, there is a growing demand for information about how our choices will affect our happiness. However, equally important is understanding how our level of happiness or overall well-being affects our choices in various aspects of our life, consumers' behavior included. Our study contributes to the area of research on the relationship between various aspects of well-being and consumption by adding the variable of consumer confidence, which is considered an important psychological factor affecting consumers' spending. Indeed, our results suggest that the consumer confidence is a useful concept in predicting the consumer behavior for durable and semidurable goods and services in selected OECD countries, i.e., not only for countries within the EU or for the US. Since the consumer confidence is based on our expectations about the national and personal future economic situation, it plays a more important role in deciding whether to buy durable goods or spend money on clothes or services, i.e., on goods that require more planning or that may be associated with hedonic shopping, than on other types of goods. Individuals may purchase them more when evaluating their economic situation as good and expecting it will stay the same (or get better), so that they can either afford or deserve the purchase. On the other hand, the nondurables are bought frequently and spending on them may be a result of a habit more than of the level of the consumer confidence. The effect of the consumer confidence on purchasing nondurables may increase during exceptional events such as political, economical, or environmental crisis, when individuals may prepare for worse

Table 5 Estimates for consumption according to purpose

	COICOP1 (food, beverages)	COICOP2 (alcohol, tobacco)	COICOP3 (clothing)	COICOP4 (housing)	COICOP5 (furnishings)	COICOP6 (health)
CONFIDENCE	0.67***	0.80***	2.30***	0.06	1.67***	0.78*
COMPONENT	0.01	-0.02	-0.10***	0.01	-0.01	-0.02
NEGATIVE	0.20	-0.23	-1.87**	-0.07	-0.08	-0.67
J-statistic	1.27	0.00	0.96	0.37	1.44	1.00
	COICOP7 (transport)	COICOP8 (telecommunication)	COICOP9 (recreation)	COICOP10 (education)	COICOP11 (restaurants)	COICOP12 (other)
CONFIDENCE	3.34***	0.89***	2.49***	1.52***	3.50***	1.50***
COMPONENT	-0.08**	0.01	-0.10***	-0.03*	-0.16***	-0.04
NEGATIVE	-0.52	0.27	-2.14***	-0.52	-2.37**	-0.73
J-statistic	1.07	0.07	0.98	2.54	1.02	0.99

Food and non-alcoholic beverages (COICOP1), alcoholic beverages, tobacco (COICOP2), Clothing, and footwear (COICOP3), Housing, water, energy, fuel (COICOP4), Furnishings, households equipment and maintenance (COICOP5), Health (COICOP6), Transport (COICOP7), Post and telecommunication (COICOP8), Recreation and culture (COICOP9), Education (COICOP10), Restaurants and hotels (COICOP11) and Miscellaneous goods and services (COICOP12). Instruments consist of lagged regressors and contemporary real GDP growth. J-statistic refers to the test of the validity of over-identifying restrictions with the null of the restrictions being valid. *, **, *** means rejection of the null at 10%, 5%, and 1% level of significance, respectively

times by making stocks of food, and may be affected by the negative picture created by media resulting in panic buying and overpurchasing. The results in several countries suggest that the consumer confidence correlates positively with happiness and negatively with worry or anxiety (Barazzetta, 2015; Ekici & Koydemir, 2016; Frijters et al., 2012).

To analyze the effect of SWB on consumption, we looked at three aspects of SWB as suggested by the OECD (2013). The cognitive measure represented by the Cantril ladder, the affective measure represented by the positive and negative affect, and the eudaimonic measure represented by the freedom of choice show a negative effect on total consumption and expenditures on clothing and footwear, recreation and culture, and restaurants and hotels. Our results suggest that the freedom of choice may have a moderating effect on spending behavior similarly to the locus of control concept, helping consumers cope with positive or negative affect in ways that do not result in an increase in spending behavior. Since the locus of control is not measured repeatedly and on an international basis, the use of freedom of choice as an alternative eudaimonic measure of SWB, as suggested also by Verme (2009), may be a helpful addition for studies on consumer behavior. Finally, our study can contribute to the understanding of how SWB influences consumption, contrary to most of research that studied the opposite direction of relationship, i.e. how consumption affects SWB.

In Sekizawa et al.'s (2021) study, the variables we analyzed, except for the freedom of choice that was not included, were associated with higher levels of the consumer confidence. These results were not replicated in our study. One possible explanation, for instance, may be that the negative affect variable retrieved from the World Happiness Report includes both inhibiting and disinhibiting negative emotions, which may have opposing effects on consumer behavior. Also, we combined two data sets, one from the World Happiness Report and one from the OECD, however, the combination allowed us to compare larger data sets and variables that would be difficult to measure to such an extent for one specific study. For future research, including more types of emotions and dividing them based on their impact on behavior may provide additional information, as well as adding understudied variables such as hope or a combination of the optimism and pessimism trait and state measurement.

Our study used data from countries based on the availability of complete data sets. As research in countries outside the EU region or the US is sparse, future research should also focus more on developing countries and countries outside the mentioned geographical areas. In our study, we did not focus on the effect of possible exceptional events on changes in consumer confidence, although, as explained in the theoretical part of the paper, consumer confidence may serve as an important predictor of consumer behavior especially during exceptional and turbulent situations. Therefore, another possible direction of future research, together with the focus on the understudied variables, may include a more extensive analysis of the impact of national and international exceptional events.

Author Contributions Both authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Vít Pošta. The first draft of the manuscript was prepared and written by Lenka Mynaříková. Both authors commented on previous versions of the manuscript and read and approved the final manuscript.

Funding This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declarations

Conflict of interest The authors have no competing interests to declare that are relevant to the content of this article.

Informed consent This paper does not contain any studies involving human participants performed by any of the authors.

Data and Materials Data for the analysis were retrieved from public databases. Data on the consumer confidence and consumption can be found in the OECD database here: <https://stats.oecd.org/>, data on the tested psychological variables (named Data for Fig. 2.1) can be found in the World Happiness Report 2021 available here: <https://worldhappiness.report/ed/2021/#appendices-and-data>. We used data on four variables from the World Happiness Report 2021. The transcript of the relevant survey questions is here <https://happiness-report.s3.amazonaws.com/2021/Appendix1WHR2021C2.pdf>.

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