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Can a click buy a little happiness? The impact of business-to-consumer e-commerce on subjective well-being

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Can a click buy a little happiness?
The impact of business-to-consumer e-commerce on subjective well-being[*]

Fabio Sabatini [1 2 3]

Abstract
This paper presents the first empirical investigation into the effect of e-shopping on subjective well-being. The analysis relies on a nationally and regionally representative dataset from Italy (n = 4,130) drawn from the 2008 wave of the Survey of Household Income and Wealth (SHIW) carried out by the Bank of Italy. Probit, OLS regressions and instrumental variables estimates show that e-shopping is strongly and positively associated with subjective well-being.

Keywords: happiness, subjective well-being, Internet, business-to-consumer e-commerce, B2C, e-shopping, instrumental variables, Italy.

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1. Introduction

This paper presents the first empirical investigation into the effect of e-shopping on individual happiness. The role of different types of consumption in subjective well-being has been addressed in a number of previous studies (Dittmar & Drury, 2000; Meyer & Sullivan, 2003; Ahuvia, 2007; Dunn et al., 2008; Nicolao et al., 2009; Dunn et al., 2011). However, to the best of our knowledge, the impact of computer-mediated consumption has never been empirically assessed before.

Generally, the psychological literature has shown that materialistic aspirations, such as those that may lead to forms of luxury consumption, are negatively associated with happiness (Kasser & Ryan, 1993; 1996; Richins, 1995; Nickerson et al., 2003). According to Frank (1999), "Increases in our stocks of material goods produce virtually no measurable gains in our psychological or physical well-being. Bigger houses and faster cars, it seems, do not make us any happier" (p. 6). Previous survey-based research indicates that people who agree with statements such as "Some of the most important achievements in life include acquiring material possessions" are on average less satisfied with their lives (Richins & Dawson, 1992; Van Boven, 2005). Despite the convergence in the literature on the claim that materialistic consumption is irrelevant (or even harmful) to happiness, we believe that a test of the relationship between e-shopping and happiness is a worthwhile research objective, for a number of reasons. First, business-to-consumer e-commerce (e-commerce between firms and households, also called B2C)[4] is experiencing ever more rapid and inexorable growth and is literally revolutionizing several aspects of economic and social life. Thus, it is important to assess how it may affect well-being. Second, the impact of e-shopping on individual well-being may differ from that of other forms of materialistic consumption in many ways. E-consumers do not buy "bigger houses" and "faster cars" online. Survey data show that B2C e-commerce mainly focuses on certain types of goods and services which allow the purchaser to "have experiences" – such as, for example, travelling, going on holiday, or attending concerts – instead of "owning things". It is worth noting that these experiences may bring about relational contacts, in turn exerting an additional positive effect on happiness. Moreover, recent studies have found that some material goods which consumers can use to improve their creativity and connectivity – such as photo and video cameras, music players, mobile phones, and personal computers, all of which are another important part of online expenditure – are associated with significantly higher levels of subjective well-being (Kavetsos & Koutroumpis, 2011).

[4] Hereafter, the terms e-shopping, business-to-consumer (B2C) e-commerce, and computer-mediated consumption will be used as synonyms.

Third, e-shopping may have limited undesirable side effects: the most popular methods of payment for online purchases – i.e. prepaid debit cards and Paypal or similar systems – may favour better budgeting and control of expenses, because consumers' spending cannot exceed the amount of money previously loaded onto the card (or into the Paypal account).

The last two arguments lead us to hypothesize that e-shopping may have a positive effect on subjective well-being. To test this hypothesis, we rely on an nationally and regionally representative dataset from Italy (n = 4,130) drawn from the 2008 wave of the Survey of Household Income and Wealth (SHIW) carried out by the Bank of Italy.

Probit and ordinary least squares regressions show that – in addition to civil status, health conditions, age, citizenship, and not being in financial difficulties – B2C e-commerce is strongly and positively correlated with subjective well-being.

However, since shopping online is a behaviour that may be endogenously determined, caution is required in interpreting this correlation as the result of a causal mechanism. First, e-shopping is often aimed at buying specific services – such as holiday trips – which are likely to be associated with (or even determined by) other individual, household, and community characteristics which are likely to lead to happiness, such as the availability of leisure time and the company of others. These phenomena may be correlated with both subjective well-being and the individual propensity for e-shopping. Second, it seems reasonable to suspect the existence of reverse causality: happier people may be more inclined to spend time online in order to purchase services such as, for example, package tours.

To deal with these problems, we follow some promising previous studies (Yamamura 2011a; 2011b) and turn to instrumental variable estimates. Specifically, we instrument e-shopping with the individual propensity for risk and the ownership of a prepaid debit card.

Instrumental variables regressions show that the habit of shopping online is a relevant predictor of subjective well-being both with two stages probit and least squares estimators.

This paper contributes to the literature in two substantive ways. First, to the best of our knowledge, this is the first empirical assessment of the relationship between B2C e-commerce and reported happiness. Second, we add to the debate on the effects of the Internet on psychological health and subjective well-being by pointing out the possible advantages of e-shopping.

The remainder of the study is organized as follows. Section 2 presents our data and empirical strategy. Section 3 describes and discusses the main results. Section 4 closes the paper.

2. Data and empirical strategy

Our empirical model of subjective well-being can be represented through the following estimation equation:

$$H_{it}^{*} = \alpha + ES_{it}\beta + \lambda Y_{it} + Z_{it}^{'}\delta + \varepsilon_{it} \quad (1)$$

where *H* is happiness for individual *i* at time *t*; *ES* is e-shopping; *Y* is the annual household income; the *Z* vector consists of the other variables that are posisted to influence subjective well-being, and ε is a random-error term.

We do not observe the "latent" variable H_{it}^{*} in the data. Rather, we observe H_{it} as a binary indicator which takes value 1 if H_{it}^{*} is above the mean value observed in the sample and 0 otherwise. Thus, the structure of (1) makes it suitable for estimation as a probit model:

$$Pr(H_{it} = 1) = \Phi(\alpha - ES_{it}\beta - \lambda Y_{it}) \quad (2)$$

where $\Phi(\cdot)$ is the cumulative distribution function of a normal standard.

Happiness is measured through responses to the question: "Considering all aspects of your life, how happy would you say you are? Give a score from 1 to 10, where 1 means "very unhappy", 10 means "very happy" and the values in between represent intermediate states". We followed the approach to code 1 for responses above the mean value. Nevertheless, all results presented in this paper are robust to a different specification of the dependent variable in which responses above 5 are coded 1.

E-shopping is measured through a binary variable coded 1 in case of affirmative response to the question: "Did you buy any goods or services or make any bookings on the Internet in 2008?".

Our indicators of happiness and e-shopping are taken from the 2008 wave of the Survey on Household Income and Wealth (SHIW) carried out by the Bank of Italy. The SHIW covers 7,977 households composed of 19,907 individuals and 13,266 income-earners and collects data on individual income, wealth, human capital and a range of relevant socio-economic behaviours and perceptions. In 2008, a topical module on "Happiness, family of origin and family decisions" was administered to a nationally and regionally representative sub-sample comprising 4,130 individuals.

In order to account for other phenomena which might influence happiness and e-shopping, we include in the analysis a set of individual, household and community control variables which are in principle likely to exert some influence on happiness.

- Individual variables comprise: 1) socio-demographic characteristics such as gender, age, nationality, civil status, education, work status. 2) A binary indicator of perceived health, as measured through responses to the question "How has your health changed in the last three years?", where possible responses were "better", "the same", "worse". We coded 1 for responses that health has worsened. 3) An indicator of the field of educational qualification held by the interviewee. Specifically, we build a binary variable which is labelled "humanities" and coded 1 for respondents

who hold a classic, science, language, or art secondary school diploma (the so-called *liceo*), and/or an undergraduate degree in the fields of arts, philosophy, languages, teacher training, psychology, political science, or sociology.

- Household characteristics comprise: 1) the natural logarithm of the household income (sum of labour income, capital income and pensions). 2) An indicator of the economic well-being of the family, obtained through respondents' answers to the question: "Is your household's income sufficient to see you through to the end of the month?". Possible responses were: "with great difficulty", "with difficulty", "with some difficulty", "fairly easily", "easily" and "very easily". The indicator we included in the happiness equations is a binary variable labelled "poor" and coded 1 for the first two responses. 3) Ownership of the house of residence, i.e. whether it is owned by the household, rented or sublet, under redemption agreement, occupied in usufruct, or occupied free of charge (e.g. loaned by friends or relatives or given in exchange for services, such as caretaking, cleaning).

- Ecological variables comprise a number of indicators of phenomena potentially able to influence subjective well-being, measured at the regional level and drawn from various national data sources. Particularly, we include in the structural equation: 1) Co2 emissions per Km^2 (Istat, 2008a). 2) Public parks and gardens as a percentage of the regional surface (Istat, 2008a). 3) An index measuring the number of environmental crimes per 1,000 Km^2 (*Legambiente*, 2008)[5]. 4) An index of social assistance, measured through the number of public health and assistance centres per 1,000 residents (*Sbilanciamoci*, 2008). 5) An index of cultural supply measured by the number of cinemas per 1,000 residents (Istat, 2008b). 6) An index of micro-criminality, measured through the aggregation of individual responses to the question "Have you ever been pick-pocketed?" (Istat, 2008b). 7) An index of dirtiness of the local area, measured through the aggregation of individual declarations about the presence of filth in the area where the respondent lives (Istat, 2008b). 8) An indicator of noise in the local area, measured through the aggregation of individual declarations about the presence of excessive noise in the area where he lives (Istat, 2008b). 9) A measure of regional poverty, calculated as the share of the population that lives in households whose income is below the poverty threshold defined by the National Bureau of Statistics (Istat, 2008b).

Table 1 report weighted summary statistics.

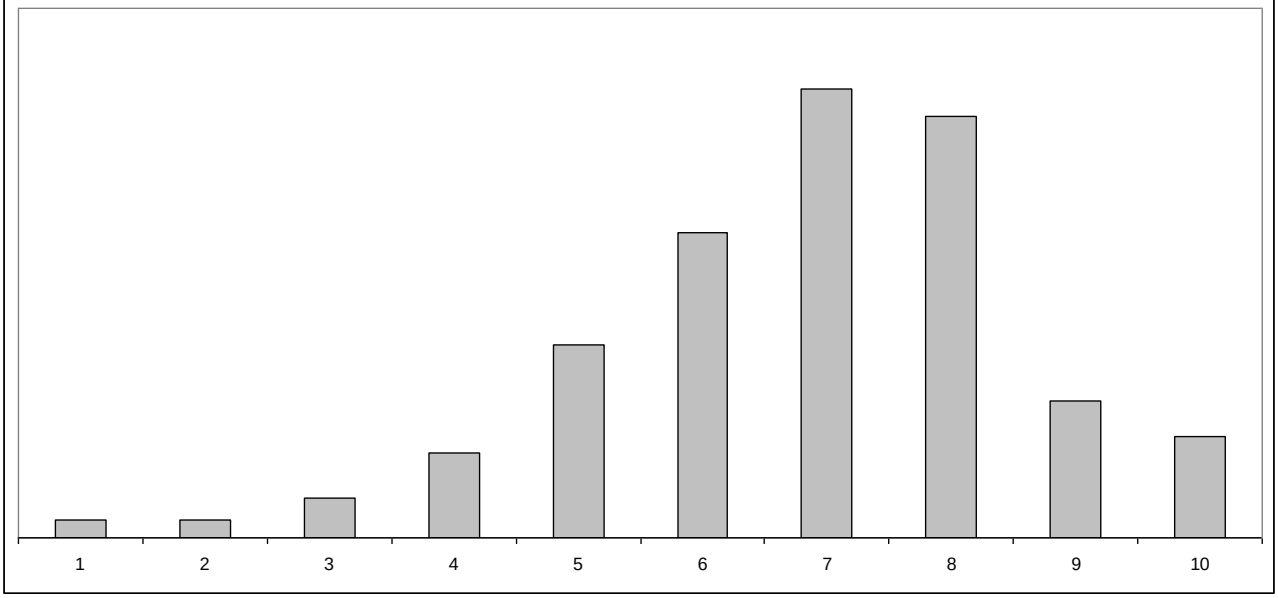
[5] The original index is labelled by *Legambiente* (2008) *Ecomafie*, which literally means "Environmental mafia".

Table 1. Descriptive statistics			
	Observations	Mean	St. dev.
Dependent variable			
Happiness	4130	.4765272	.6515809
Main dependent variable			
E-shopping	20832	.1795918	3838563
Instrumental variables			
Prepaid debit card	20832	.0773329	.2671254
Risk propensity	20832	.155674	.2671254
Demographic and socio-economic characteristics			
Female	20832	.5178975	.4996916
Married	20832	.4972777	.5000046
Separated or divorced	20832	.0369188	.188567
Widowed	20832	.092847	.2902249
Age 19-34	20832	.1772003	.3818473
Age 35-49	20832	.2394068	.4267317
Age 50-64	20832	.1857662	.3889272
Age > 65	20832	.2201664	.4143687
Worsening of health conditions	20832	.042049	.2007057
Elementary school	20832	.1999251	.3999534
Junior high school	20832	.2795196	.448774
Professional diploma (*tecnico*)	20832	.0610718	.2394678
High school diploma (*liceo*)	20832	.2354574	.4242945
Undergraduate degree	20832	.0870218	.2818737
PhD	20832	.0047237	.0685682
Humanities	20832	.1228078	.3282244
Homeowner	20832	.7046712	.4562014
House rented or sublet	20832	.1987694	.3990837
House under redemption agreement	20832	.0062558	.0788479
House occupied in usufruct	20832	.0292892	.16862
House occupied free of charge	20832	.0516513	.2213274
Household income (ln)	20832	9.278884	6.723163
Poor	20832	.3066677	.4611213
Mortgage loan	20832	.1532894	.3602749
Blue-collar worker	20832	.1548417	.3617624
White-collar worker	20832	.1070145	.3091391
Teacher	20832	.0197247	.1390561
Manager, official	20832	.0231201	.1502886
Member of professions	20832	.0165507	.1275834
Entrepreneur	20832	.0094569	.0967879
Owner or member of family business	20832	.0083813	.0911673
Working shareholder, partnet	20832	.0068469	.0824641

For 65% of respondents, self-reported happiness is above the national mean score. The distribution of reported levels of happiness is described in Figure 1. On average, 18% of the sample bought some goods or services or made at least one booking on the Internet in 2008. Approximately 4% of respondents reported a worsening in their health conditions. Approximately 11% of respondents hold a classic, science, language, or art secondary school diploma, and approximately 2.7% have an undergraduate degree in the fields of arts, philosophy, languages, teacher training, psychology, political science, or sociology.

Approximately 5% of respondents do not have Italian citizenship. Interestingly, more than 70% of the sample is composed of homeowners, and more than 15% of respondents have outstanding loans from banks, financial companies or other institutions for the purchase or renovation of the principal residence.

Figure 1. Distribution of reported happiness



2.1 Instrumental variables

The reliability of probit estimates may suffer from the endogeneity problems described in the Introduction, which suggest caution is required in interpreting correlations as causal relationships. We attempt to circumvent endogeneity problems by instrumenting the e-shopping indicator. As pointed out by French & Popovici (2011), a reliable instrumental variable (IV) must meet two criteria. First, it must be theoretically justified and statistically correlated with e-shopping ("relevance" condition), after controlling for all other exogenous regressors. Second, it must be uncorrelated with the disturbance term of the happiness equation ("orthogonality" condition).

The wealth of our data source allowed us to select two theoretically convenient and econometrically valid individual-level instruments:

- The ownership of a prepaid credit card, as measured by a binary variable coded 1 for prepaid card-owners.
- Individual risk propensity. This indicator was obtained through responses to the question: "In managing your financial investments, would you say you have a preference for investments that offer: i) Very high returns, but with a high risk of losing part of the capital. ii) A good return, but also a fair degree of protection for the invested capital. iii) A fair return, with a good degree of protection for the invested capital. iv) Low returns, with no risk of losing the invested capital. We coded 1 for responses i) and ii) and 0 otherwise.

The relevance condition is directly testable by regressing structural social capital on the IVs and all other exogenous variables from the structural equation. The first stage of our IV regressions shows that both the instruments are strongly correlated with the endogenous variable[6].

Prepaid debit cards, also called reloadable cards, are linked to a prepaid account rather than a bank account. They were originally conceived for unbanked people, who do not have enough credit history to qualify for a regular credit card. With the advent of B2C e-commerce, prepaid cards have rapidly become one of the most convenient methods for making secure payments for online purchases. In respect to regular credit cards, prepaid cards present two major advantages in Internet transactions:

1) Better budgeting and control of expenses. The user's spending is limited to the amount of money he loads onto the card. This makes it possible to easily separate out and keep track of online spending. For example, if the card holder is a regular shopper on iTunes or eBay, he can use a separate prepaid debit card with a balance equal to his budget for iTunes or eBay.

2) Security. Since the card is not tied to the user's main bank account (where the majority of his finances presumably reside), any theft of information can have only limited financial consequences. Prepaid cards allow users to generate "virtual" credit cards online, which expire after a limited number of transactions. In case the card is illegally compromised, it can be cancelled and replaced very quickly, and the holder does not need to cancel (and replace) his primary credit or debit cards as well.

According to the Italian Banking Association (ABI, *Associazione Bancaria Italiana*), prepaid cards are mainly used for B2C e-commerce. The number of e-commerce specific prepaid cards has doubled each year from 2007 (ABI, 2010).

[6] Estimates are available upon request to the author.

Studies on consumer behaviour commonly agree that risk perception has a significant and negative influence on the attitude towards online shopping (Javenpaa & Tractinsky, 1999; Van den Poel & Leunis, 1999; Parasuraman, 2000; Choi & Geistfeld, 2004; Chang et al., 2005). The literature has identified two main risk-related factors that deter people from shopping online: 1) the risk of unauthorized third-party access to credit card information. 2) The risk of fraudulent behaviour of online retailers. Interestingly, privacy concerns seem not to be a significant deterrent against e-shopping (Miyazaki & Fernandez, 2001; Chang et al., 2005).

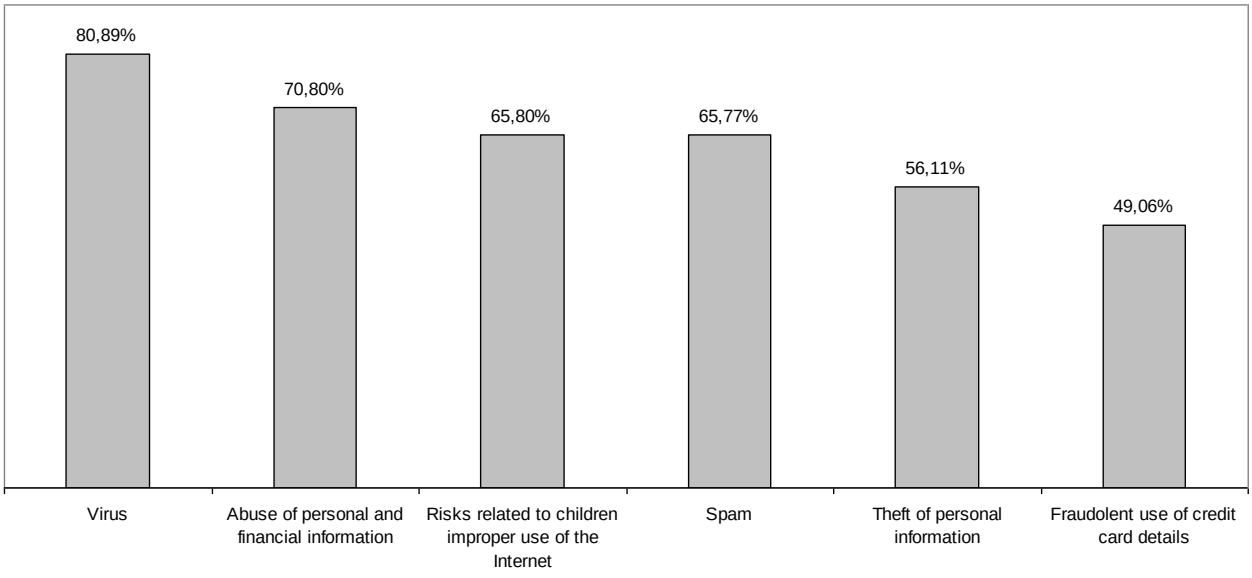
In lights of these arguments, it seems reasonable to argue that risk-averse people may be more reluctant to do shopping online.

For both instruments, the holding of the relevance condition is further testified by the strong and positive correlation with the endogenous variable found in the first stage of IV regressions.

Descriptive evidence drawn from the Multipurpose Household Survey (MHS) carried out by the Italian National Bureau of Statistics provides further support to the relevance of our instruments.

This survey investigates a wide range of social behaviours and perceptions by means of face-to-face interviews on a nationally and regionally representative sample of 24,000 households, roughly corresponding to 50,000 individuals. In the 2010 wave of the MHS, respondents were asked a number of questions about their use of the internet in the context of a topical module on the use of information and communication technologies (Istat, 2010). 49.1% of the sample had used the Internet in the 12 months before the interview. Among Internet users, 75.6% of respondents had not bought any goods or services or made any bookings online in the 12 months before the interview. Interviewees were asked to give a score from 1 to 3 for their level of concern about the use of the Internet for private purposes, 1 meaning “very concerned”, 2 “fairly concerned”, and 3 “not at all concerned”. 70.79% of people who do not shop online declared that they were afraid of possible abuse of any personal information provided within transactions, 56.11% feared theft of personal information , and approximately 50% were afraid of the fraudulent use of their credit card details. The concerns of those who do not shop online are illustrated in Figure 2, reporting binary variables coded 1 in case of positive worry (i.e. responses 1 or 2). Overall, this descriptive evidence suggests that security concerns actually exert an influence on the decision not to purchase online, and that risk propensity may counterbalance these concerns.

Figure 2. Concerns of non e-buyer Inernet users about P2C e-commerce



The orthogonality condition cannot be tested directly as it involves a relationship between the instruments and the error term of the structural equation. Hence, we rely on the following theoretical considerations and intuitions.

Unlike other countries, where ownership was initially connected to situations of relative poverty and unbankability, prepaid debit cards grew in Italy mainly as a suitable method of payment for e-commerce. It must be stated that several studies find an association between "positive" financial behaviours – such as prudent use of credit cards – financial satisfaction, and subjective well-being (Xiao et al., 2009). High levels of debt cause feelings of stress and anxiety which may, in turn, lead to a decrease in life satisfaction (Ross et al., 2006; Antonides, 2007).

The arguments sustained in these studies are informative and convincing but, in our opinion, they can be only partially applied to our data. Prepaid cards are different from the other types of credit or debit cards that are accounted for within the above-mentioned literature. According to surveys carried out by private poll agencies, prepaid cards are used principally by young people for the purpose of making micro-payments for online purchases or buying travel services online, such as a airline tickets or hotels (see for example Eurisko, 2008). Since the card is not connected to a bank account and spending cannot exceed the amount of money that the user loads onto the card, savings management problems are much more limited. It thus seems reasonable to assume the absence of any direct linkage between the ownership of a prepaid card and reported happiness. In principle, it is possible to argue that, since prepaid card usage is principally spread among households in medium and high income brackets, ownership of this type of card may be correlated with happiness. However, the happiness literature has widely proven that, over a certain threshold, absolute income

is only modestly connected to subjective well-being (Easterlin, 1974; 2001). What matters in a person's life satisfaction is in fact the level of her income relative to the average income in her social reference group (Easterlin, 1974; Kahneman and Tversky, 1979; Ferrer-i-Carbonell, 2005; Vendrik and Woltjer, 2007).

Overall, it seems fair to make the assumption that the ownership of a prepaid debit card may influence happiness in our dataset only indirectly, by reason of its possible correlation with the possibility of shopping online.

As for the other instrument, to the best of our knowledge there are no studies that theoretically or empirically address the effect of risk aversion or propensity on life satisfaction.

Economists have claimed risk aversion to be the result of the decreasing marginal utility of wealth Rabin 2000a). This may suggest that life satisfaction, as measured by a utility function also depending on wealth, can influence risk aversion. For example, wealthier people, if happier, may exhibit a lower risk propensity. However, as shown before, above a certain threshold – which varies depending on the social and relational environment of the individual – the marginal effect of income and wealth on life satisfaction dramatically decreases, thereby suggesting a lessening of any possible relationship between wealth, life satisfaction and risk aversion. Moreover, as explained by Rabin (2000b), diminishing marginal utility of wealth may be viewed as an "implausible explanation for appreciable risk aversion, except when the stakes are very large. Any utility-of wealth function that doesn't predict absurdly severe risk aversion over very large stakes predicts negligible risk aversion over modest stakes." (p. 202).

More generally, the happiness literature commonly agrees that people are sensitive to gains and losses, which may in principle be both correlated to risk propensity or aversion. For example, it could be argued that a high risk propensity may in the long run lead to considerable financial losses, with a negative effect on life satisfaction. However, Kanheman and Tversky (1979) have shown that people have a diminishing marginal sensitivity to increasing gains and losses. This suggests that the overall effect of risk propensity on our dependent variable may be modest or irrelevant. Moreover, we are not able to determine whether a high risk propensity may effectively lead to higher losses or gains. Overall, it seems more reasonable to argue that the indicator of risk propensity picked in our dataset is neutral in respect to individuals' likelihood to experience losses or gains, and thereby exerts no direct effect on individual happiness.

The hypothesis of excludability of the two instruments is further supported by the absence of a significant correlation with the dependent variable in our dataset – tested through a simple regression of happiness on all the exogenous variables in the structural equation, the endogenous

variable, and the instrumental variables – and by a number of over-identification tests we present in section 3.

3. Empirical results

Table 2 presents estimates of equation (2). To compare relative magnitudes of the effects of the independent variables, we report their marginal effects. In model 1 (columns 1 and 2 of Table 2), we principally focus on individual and household characteristics. In model 2 (columns 3 and 4) we add the set of ecological variables. Columns 5 and 6 present the linear estimation. As the estimates resulting from probit and linear specifications are fairly similar, we only base the discussion below on the results displayed in column 2 of Table 2.

Before discussing the impact of e-shopping, we briefly present the effect of individual and household variables on happiness. As the estimates resulting from probit and linear specifications are almost identical, we base the discussion below only on the results displayed in column 1 of Table 2.

Regarding individual characteristics, happiness is significantly and negatively correlated with older ages. The size of the marginal effect increases at the start, but moderates slightly later. Non-Italian citizens have an approximately 17% lower likelihood of reporting a less than average level of life satisfaction. This result is consistent with previous studies which have shown that immigrants and ethnic minorities generally report significantly lower life satisfaction. In addition to lower income, lower education and poorer health – which are all controlled for in this study – this gap in subjective well-being may be due to difficulties in adaptation, social anxiety, and loneliness (Neto, 1995; Verkuyten, 2008; Lai, 2010; Bartran, 2011). Moreover, immigrants' life satisfaction may be negatively affected by false expectations about their future conditions after immigration (Knight & Gunatilaka, 2010).

As expected, happiness increases with education: people with a high school degree have an approximately 13% higher likelihood of being happy, and this percentage rises to approximately 22% in case of people with undergraduate degrees and to about 24% for those with PhDs.

Work status is another important explanatory variable. Self-employed workers – particularly members of professions and entrepreneurs – are significantly more likely to report a higher level of life satisfaction.

Table 2. Probit and least squares estimates

	Model 1 (probit)		Model 2 (probit)		Model 3 (OLS)	
	Mg. eff.	t-stat	Mg. eff.	t-stat	Mg. eff.	t-stat
E-shopping	.1459605	4.97	.1317541	4.41	.0965031	4.26
Female	-.003914	-0.18	-.012377	0.56	-.008985	-0.46
Married	.2149643	7.02	.2215116	7.42	.1900075	6.76
Separated or divorced	-.042251	-0.84	-.047805	-0.97	-.058248	-1.27
Widowed	-.024365	-0.57	-.023248	-0.55	-.056116	-1.40
Age 19-34	-.105669	-1.88	-.124466	-2.13	-.112701	-2.34
Age 35-49	-.258431	-4.38	-.284268	-4.76	-.228295	-4.55
Age 50-64	-.262537	-4.56	-.294933	-4.98	-.227752	-4.63
Age > 65	-.213526	-3.95	-.271622	-4.73	-.205348	-4.18
Worsening of health conditions	-.166664	-3.86	-.162765	-3.80	-.149857	-4.06
Elementary school	.0686849	1.85	.0245908	0.62	.0341507	0.90
Junior high school	.1045872	.03684	.0506898	1.24	.0675944	1.70
Professional diploma (*tecnico*)	.134832	2.80	.0825639	1.52	.1072051	1.91
High school diploma (*liceo*)	.1718382	4.26	.1256866	2.87	.1369196	3.05
Undergraduate degree	.2515786	6.69	.2165664	5.00	.2210914	3.98
PhD	.273022	4.86	.2438217	3.23	.2775976	2.71
Humanities	-.091987	-1.80	-.080168	-1.59	-.054928	-1.53
Homeowner	.1384861	3.58	.068872	1.46	.0829489	2.01
House rented or sublet	.0633479	1.64	-.007872	-0.16	.0069947	0.16
House under redemption agreement	-.020482	-0.13	-.086944	-0.52	-.068005	-0.43
House occupied in usufruct	.1529105	3.47	.0896192	1.58	.1051955	1.84
Household income (ln)	.005619	3.00	.0034148	1.71	.0043901	2.81
Poor	-.130011	-5.30	-.131723	-5.12	-.116508	-4.78
Mortgage loan	.0235686	0.62	.0101157	0.26	.0120136	0.40
Blue-collar worker	-.012297	-0.31	-.009123	-0.24	-.016755	-0.47
White-collar worker	.0672175	1.62	.0625816	1.53	.0447886	1.33
Teacher	.1390597	2.49	.1510825	2.83	.0624404	1.36
Manager, official	.0488306	0.66	.0410441	0.54	.0147734	0.29
Member of professions	.1673515	2.32	.1739693	2.51	.0858082	1.95
Entrepreneur	.2264381	3.60	.2383634	4.30	.2233788	2.94
Owner or member of family business	.0727134	0.74	.0548121	0.54	.0368274	0.46
Working shareholder, partner	-.223201	-1.38	-.194651	-1.20	-.154939	-1.25
Co2 emissions			.0071316	0.29	.0565211	2.48
Public parks and gardens			.0000833	0.18	.0008905	2.20
Environmental crimes			-.000544	-1.11	-.000384	-0.88
Social assistance			.0014095	1.12	.0024385	2.21
Cultural supply			.0029831	1.04	.0084737	3.30
Micro-criminality			.0004717	0.19	.0004328	0.19
Dirtiness of the local area			.0005891	0.30	-.001142	-0.65
Noise in the local area			0029406	0.89	.0115199	3.86
Regional poverty			-.003635	-1.17	-.007831	-2.77

Note: omitted categories are: age 0-18, No education, House occupied free of charge

The household characteristics are important predictors of health. Civil status is strongly and positively correlated with happiness. Married people have a 22% higher probability of reporting higher life satisfaction. Consistent with findings in the previous literature, the log value of household income is only slightly significant and its effect seems to be negligible in size (Easterlin, 1995; Diener & Biswa-Diener, 2002; Diener & Seligman, 2004; Ahuvia, 2008; Powdthavee, 2010). Interestingly, being in debt and living in a rented home are not significant predictors of happiness. However, financial difficulties are strongly and negatively associated with life satisfaction. People who report difficulties in getting through the month have an approximately 13% lower probability of being happy. These results are robust to the inclusion of ecological variables in the model.

We now turn to the analysis of the coefficients of e-shopping. In line with our hypothesis, business-to-consumer e-commerce is found to be strongly and positively associated with subjective well-being. Individuals who shop online are approximately 13% more likely to report being happy. However, because of the statistical problems we discussed in the Introduction, caution is needed in interpreting this correlation as causal. In order to shed more light on the causal relationship connecting B2C e-commerce to subjective well-being, we now turn to instrumental variables estimates. Results are reported in Table 3. The upper part of the table presents the marginal effect of e-shopping on happiness. The lower part of the table reports diagnostic tests of the validity of our instrumental variable estimators.

Table 3. IV estimates

	Probit		OLS		GMM	
	Marginal effect	t stat.	Marginal effect	t stat.	Marginal effect.	t stat.
E-shopping						
Instrumental variables diagnostics						
Test of over-identifying restrictions: Statistic (*p*-value)	Amemiya-Lee-Newey test chi-sq (1) = 0.722 (0.3954)		Sargan test chi-sq (1) = 1.047 (0.3061) Basmann test chi-sq (1) = 1.036 (0.3086)		Hansen test chi-sq (1) = 1.219 (0.26951)	
Joint significance coefficient	chi-sq (1) = 911.42 (0.000)		F = 909.62 (0.000)		Anderson –Rubin test F = 134.07 (0.000)	

Column 1 refers to IV probit estimates. The Amemiya-Lee-Newey test of over-identifying restrictions does not lead us to reject the orthogonality of our instruments with respect to the disturbance term of the happiness equation with a *p*-value greater than 0.39.

As robustness checks, in columns 2 and 3 we report results of OLS and GMM estimates. The Sargan test and the Basmann test of over-identifying restrictions reported in column 2 do not lead us to reject the null hypothesis that the excluded instruments are valid instruments, i.e., uncorrelated with the error term, and that they are correctly excluded from the estimated equation, with a *p*-value $\cong$ 0.31. In column 3, we report the Hansen-Sargan test[7]. Once again, the test does not lead us to reject the null with a *p*-value $\cong$ 0.27.

In columns 2 and 3, the F-statistics, testing the hypothesis that the coefficient of the excluded instruments are all zero in each first-stage estimate, are well above the threshold of 10 suggested by the literature as the rule of thumb criterion of instrument weakness (Staiger & Stock, 1997).

Taken together with the non-rejection of the tests of over-identification and the theoretical considerations mentioned in the previous section, this suggests that our set of instruments is reasonable.

IV estimates in column 1 show a slight increase in the marginal effect of B2C e-commerce. Individuals who shop online have an approximately 28% higher likelihood of being happy (21 and 20% for OLS and GMM estimates). Since the estimates now account for the endogeneity problems described in section 2, we are more confident that this positive association can be interpreted as the result of the impact of e-shopping on subjective well-being.

Unfortunately, available data do not allow us to further investigate the characteristics of B2C e-commerce in our sample. Here we will propose some possible reasons for which e-shopping may be able to improve subjective well-being, with the aim of suggesting new ways to expand research on the impact of computer-mediated communication and consumption for the near future.

Survey data show that B2C e-commerce mainly focuses on certain types of goods and services which allow the purchaser to "have experiences" instead of "owning things". As stated by Van Boven (2005), the distinction between purchasing a life experience and purchasing a material possession is not clear cut. Nearly everyone would agree that a Bali vacation is an experience and that a peace of jewellery is a possession. However, there are material goods that may be difficult to classify: for example, a camera is a material good which may act as a vehicle for artistic photographic experiences. Despite such ambiguities, these distinctions are reliable, are readily recognized by respondents in survey interviews and have proved useful to researchers (Van Boven, 2005).

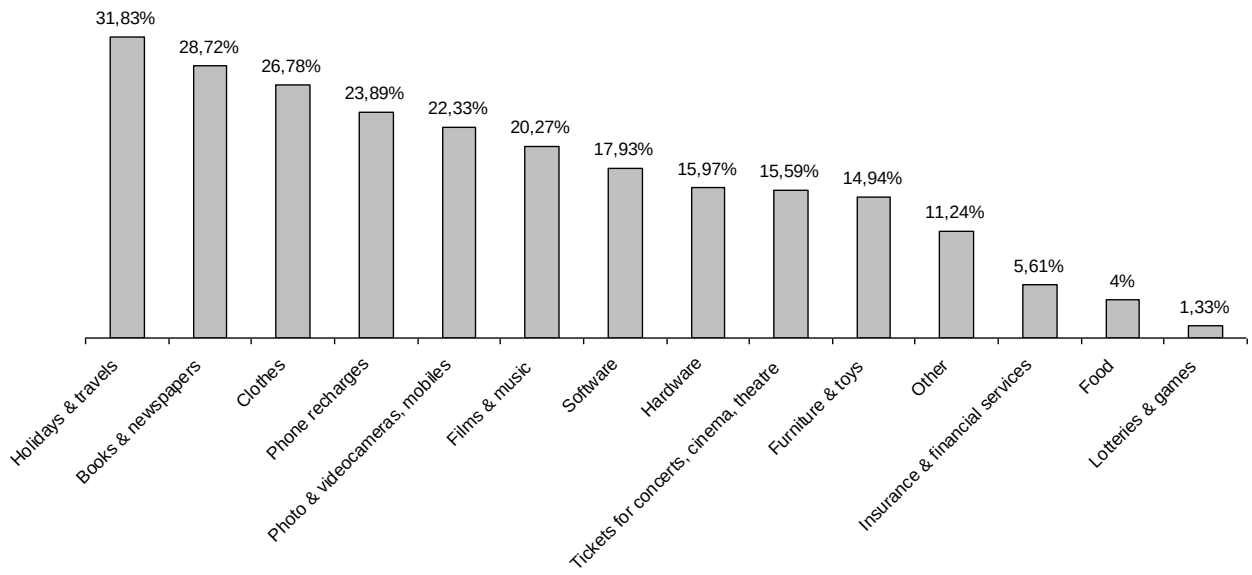
[7] For the 2SLS estimator, the test statistic is Sargan's statistic. Under the assumption of conditional homoskedasticity, Hansen's J statistic becomes Sargan's statistic. The J statistic is consistent in the presence of heteroskedasticity; Sargan's statistic is not (Baum et al. 2007; Wooldridge 2002). GMM estimates were calculated using Stata module by Baum et al. (2007).

According to the Istat Multipurpose Survey on Household (MHS), holidays and travel were the most purchased service by e-buyers. 31.8% of people who bought goods and services on the Internet in 2008 made at least one booking for a travel ticket, a hotel stay or a holiday vacation. A summary of the most purchased goods and services within B2C e-commerce is presented in Figure 3. 28.7% bought books, e-books, newspapers and magazines. Narrowly speaking, these are material goods. However, it is also the case that books and other sources of information are valuable to the extent they provide information and/or the experience of reading, which in turn may enrich the reader in a number of (non-materialistic) ways. Their material possession cannot be considered a value per se (in fact, many people dispose of books and newspapers after reading). The third most popular type of product that people buy online are clothes, which were purchased by 26.7% of e-buyers. Immediately after, there are phone recharges (23.8%) and photo and video cameras and mobile phones (22.3%). Drawing on Eurobarometer cross-national data for the period 2005-2008, Kavetsos & Koutroumpis (2011) find that "fixed and mobile phones, music players and personal computers, including those with an internet connection, are associated with significantly higher levels of well-being measured by individual self-reported life satisfaction". Among the possible explanations, the authors suggest that these devices are able improve people's connectivity, thereby fostering their relational activities which may in turn be a source of life satisfaction. On the other hand, photo and video cameras are certainly material possessions. However, they can stimulate their owners' creativity thereby providing rewarding experiences.

20.3% of e-buyers in the MHS sample purchased online films and music, while 15.6% used the Internet to buy tickets for concerts, movies, theatre and other forms of entertainment, which are typically identified as "relational goods" by the literature (Gui, 1987; Uhlaner, 1989; Gui and Sugden, 2005)[8].

[8] Relational goods are a distinctive type of good that can only be enjoyed if shared with others. They are different from private goods, which are enjoyed alone (Uhlaner 1989). A peculiarity of relational goods is that it is virtually impossible to separate their production from consumption, since they coincide (Gui, 1987; Gui and Sugden 2005). For example, a football match with friends is enjoyed (consumed) in the very moment of its production (i.e. the 90 minutes spent on the sports field).

Figure 3. Typologies of online shopping



Van Boven (2005) proposes three main reasons why experiences are more gratifying than material purchases. First, they "are more prone to positive reinterpretations; they often give us pleasure in retrospect — in the memories we revisit and in the stories we tell — even when they were unpleasant at the time" (p. 137)[9]. Second, experiences suffer less from disadvantageous comparisons. Third, they are more likely to promote successful social relationships. Experiences such as a vacation or the participation in a soccer tournament provide a context for the production and consumption of relational goods, which foster the accumulation of social capital (Sabatini, 2008; Degli Antoni, 2009; Antoci, Sabatini & Sodini, 2011), and improve health (d'Hombres et al., 2010; Fiorillo & Sabatini, 2011) and subjective well-being (Becchetti et al., 2008; Becchetti & Degli Antoni, 2009).

Another distinctive feature of B2C e-commerce is the opportunity to better control expenses. In Italy, online purchases are usually paid through prepaid debit cards or Paypal. These methods of payment pose a limitation on the undesirable side effects of shopping and allow better budgeting, because consumers' spending cannot exceed the amount of money previously loaded onto the card (or into the Paypal account). As stated in Section 2.1, this makes it possible to easily separate out and keep track of online spending. If the card holder is a regular shopper on iTunes, he can use a separate debit card with a balance equal to his budget for iTunes.

[9] The author gives the effective example of academic conferences: attending them is in general viewed as a positive experience in the distant future, since "it is about advancing science and gaining knowledge" (p. 138), even if the effort of packing bags and the stress and anxiety related to the preparation of talks may be unpleasant at the moment.

A further advantage of e-shopping is that it indefinitely extends the boundary of markets for certain goods. Products which are available only in certain countries are now easily purchasable online with just a few clicks, and this allows consumers to satisfy a higher number of needs more easily. Moreover, B2C e-commerce allows people to save time or, in other words, to shop even if they do not have the time to physically visit shops in search of what they need.

4. Conclusions

Using a nationally and regionally representative sample from Italy, this paper has investigated the implications of business-to-consumer e-commerce on individual subjective well-being.

Probit and OLS regressions show that e-shopping is strongly and positively correlated with reported happiness. To deal with suspected endogeneity problems, we proceeded to instrument e-shopping with the individual propensity for risk and the ownership of a prepaid debit card. IV estimates show that B2C e-commerce is a relevant predictor of subjective well-being both with two stages probit and least squares estimators.

As for the other variables accounted for within the study, happiness is found to decrease with age, foreign citizenship, poorer health, and financial difficulties, and to increase with education and marriage. Certain types of workers – i.e. entrepreneurs, members of the professions, and teachers – are happier than others. Consistent with findings in the previous literature, the log value of household income is significant but its effect seems to be negligible in size. The ecological variables we included in the analysis to control for local effects potentially influencing well-being seem to be irrelevant.

Even if these results pass robustness checks and hold in IV estimates, it must be remarked that the cross-sectional design of the research dictates extreme caution in the interpretation of correlations as causal relationships. Some endogeneity problems remain open to question and the suspect of common bias cannot be dispelled. For example, both the dependent and the endogenous variable may be positively influenced by the lack of materialism, which improves happiness and may stimulate people to search for new experiences online.

Nonetheless, the paper contributes to the literature by carrying out the first empirical assessment of the relationship between e-shopping and reported happiness. Future contributions in this field are desirable to better understand how the constant growth of e-commerce may affect the evolution of life satisfaction. More generally, further research is needed on the impact of the Internet on subjective well-being, with particular regard to psychological health and the relational sphere of individual lives, i.e. the production and consumption of relational goods and the accumulation of social capital. The findings in this paper seem to underpin some previous claims about the possibly positive role of the Internet in improving life satisfaction and fostering the preservation of social

capital in modern economies (Hampton & Wellman, 2003; Ellison et al., 2007; Steinfield et al., 2008; Antoci et al., 2011b).

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