# Social Interactions and Subjective Well-Being: Evidence from Latin America

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### Abstract

In this paper, we seek to examine the effect of *comparisons* and *social capital* on subjective well-being. We test if, through social influence and exposure, social capital is either an enhancer or appeaser of the comparison effect. Using the Latinobarómetro Survey (2007) we find that, the *comparison* effect appears, that is the better others perform, the happier the individual is. We also find that social capital is among the strongest correlates of individuals' subjective well-being. Our findings suggest that social contacts may enhance the *comparison* effect, which is more intense for those who perform worse in their reference group.

*Keywords:* Comparison effect, social capital, subjective well-being, intensity of social interactions.

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## Summary

The relevance of social influences in the modeling of individual behavior has become increasingly important in the economics research agenda. Unlike other social sciences, economics had mainly concentrated on individual determinants of behavior, while neglecting social dimensions. When considering how social forces influence not behavior but well-being, we may consider two main forces. On the one hand, people compare themselves to some reference group when making decisions and when evaluating the outcome of those decisions (*comparison* or *relative utility* effect). On the other hand, recent economic studies explore the effects of social interaction on economic performance, welfare and subjective well-being, than comes from the existence of *relational goods.* In this paper, we seek to examine the effect of *comparisons* and *social capital* on subjective well-being. Even though the two social influences mentioned above are recognized as important determinants of individuals' well-being, research has paid less attention to the interrelations between them. We hypothesize that individual's social capital has an additional influence on individual well-being as a mediator of the intensity of the *comparison* effect. Thus, through social influence and exposure, it is likely that social capital also acts as either an enhancer or appeaser of the comparison effect on individual's subjective well-being.

Our findings suggest that, for our Latin American sample, the *comparison* effect on well-being is positive; that is, the better others perform, the happier the individual is. This is in contrast with most of the previous literature for developed economies. We also find that social capital is among the strongest correlates of individuals' subjective well-being in Latin American countries. Furthermore, our findings suggest that social contacts may enhance a specific *comparison* effect on individual's happiness, namely the *asymmetric comparison* effect, which is more intense for those who perform worse in their reference group.

# I. INTRODUCTION

The relevance of social influences in the modeling of individual behavior has become increasingly important in the economics research agenda. Unlike other social sciences, economics had mainly concentrated on individual determinants of behavior, while neglecting social dimensions. When considering how social forces influence not behavior but well-being, we may consider two main forces. On the one hand, people compare themselves to some reference group when making decisions and when evaluating the outcome of those decisions. Thus, an individual's welfare depends on his/her own absolute situation or status and also on his/her relative (or positional) situation. This is often referred to as the *comparison* or *relative utility* effect (see, for example, Duesenberry, 1949; Frank, 1985a, 1985b). The relative situation matters more for some particular commodities labeled *positional goods* (Frank, 1985b; Alpizar et al, 2005). Due to the link between context and evaluation, these *positional goods* have a social component (Bruni and Stanca, 2008).

On the other hand, recent economic studies explore the effects of social interaction on economic performance, welfare and subjective well-being (Gui and Sugden, 2005; Meier and Sutzer, 2008). Empirical evidence has identified social interactions as an important source of happiness (among others, see Helliwell, 2001, 2003, 2006; Helliwell and Putnam, 2004). The influence of social interactions might come from the existence of *relational goods*. The concept of *relational goods* is directly related to the concept of *social capital* (in some sense, *relational goods* are both the outcome and the inputs when producing an individual's *social capital*). The value of social capital as a personal resource relies on its ability to produce economic benefits and, if neglected, economic disadvantages (Robinson et al., 2003).[1]

In this paper, we seek to examine the effect of *comparisons* and *social capital* on subjective well-being. Even though the two social influences mentioned above are recognized as important determinants of individuals' well-being, research has paid less attention to the interrelations between them. We hypothesize that individual's social capital has an additional influence on individual well-being as a mediator of the intensity of the *comparison* effect. Thus, through social influence and exposure, it is likely that social capital also acts as either an enhancer or appeaser of the comparison effect on individual's subjective well-being.

Moreover, most of the empirical evidence about subjective well-being and social influences (*comparison* and *social capital* effects) has focused on developed economies. There are few studies for Latin America (Graham and Felton, 2006; Rojas, 2006; Lora, 2008), and social influences are not their main focus. We perform the analysis using a large survey from Latin American and Caribbean countries. The interest in this particular set of countries lies in the fact that some studies from the United Nations Economic Commission for Latin America and the Caribbean have pointed out that social capital in Latin America is emulating its rapid progress elsewhere in the world (ECLAC, 2003). Molyneux (2002) notes that for many observers in the development field, Latin America seems to

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[1] As social capital increases, one may be more willing to invest in public goods, institutions are more widely accepted and the ability to trade and exchange is enhanced, within networks of transaction partners the disparity of benefits decreases and the average level of benefits increases, etc. (Robinson et al., 2003).

have a comparative resilient stock of social capital that is also identified as a fairly active civil society.[2]

Our findings suggest that, for our Latin American sample, the *comparison* effect on well-being is positive; that is, the better others perform, the happier the individual is. This is in contrast with most of the previous literature for developed economies, and even with some studies for Latin America (Graham and Felton, 2006).[3] We also find that social capital is among the strongest correlates of individuals' subjective well-being in Latin American countries. Furthermore, our findings suggest that social contacts may enhance a specific *comparison* effect on individual's happiness, namely the *asymmetric comparison* effect, which is more intense for those who perform worse in their reference group. The forces behind these findings will be described with the results.

The paper is structured as follows. The next section presents the background and previous literature about the relationship between social interactions and subjective well-being. Section 3 introduces important hypotheses with respect to the determinants of individual subjective well-being. The data and the variables used in the study are described in section 4. Section 5 explains the method of analysis. The results of the analysis are then presented and discussed in section 6, and the main conclusions are summarized in section 7.

## II. BACKGROUND

The economic behavior of individuals is socially influenced in many ways (for a review see Blume and Durlauf, 2005, and Blume et al., 2011; for social impact in objective outcomes such as poverty, see Durlauf 2006). We focus on research about how individuals' subjective well-being is influenced by social forces in two dimensions. In what follows, we describe and provide an overview of some contributions that explore these two effects: the *comparison* effect and the *social capital* effect.

For the *comparison* effect, researchers highlight that individuals' welfare is not only determined by their own consumption, income and other circumstances (as neoclassical economic models assume) since it heavily depends on their achievement in comparison to others' outcomes within a common group (Duesenberry, 1949; Easterlin, 1995, 2003; Inglehart, 1999; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Vera-Toscano et al. 2006; Hopkins, 2008; Powdthavee, 2009; Wolpert, 2010; and Blume et al., 2011). Note, however, that income could increase the level of utility or well-being up to a threshold level, beyond which utility remains largely invariant (Caporale et al., 2009). This idea is consistent with the assumption of diminishing marginal utility of consumption (or income) in neoclassical economic theory.

Under this *comparison* effect, the individual's current reported subjective well-being is based on norms of two types: (i) *internal benchmarks*, which involve aspirations and dynamic comparisons with one's own situation at different points of time, and (ii) *external benchmarks*, i.e. comparisons

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[2] This argument must be understood in relative terms because the social capital of bowling clubs and sewing groups in the United States is clearly not the social capital of the poor in Latin America. In these countries civil society is scattered, largely urban, and differs markedly among countries (Molyneux, 2002).

[3] Our results are in line with the findings for Russia (Senik, 2004), South Africa (Kingdon and Knight, 2007; Bookwalter and Dalenberg, 2010) and Eastern European countries (Senik, 2008; Caporale et al., 2009).

with some peers or relevant others such as neighbors, co-workers, parents, etc. In this paper, we focus our analysis on *external benchmarks*.

In the empirical analysis of the *comparison* effect from the *external benchmark* perspective, there are two key issues: (i) how to identify the reference or comparison groups; and (ii) how to model those comparisons. Concerning the identification of relevant others, surveys usually contain no direct questions about the composition of the reference groups so, with few exceptions (Kingdon and Knight, 2007; Senik, 2009; Clark and Senik, 2010), there is no direct information to identify those to whom people really compare themselves. One option for researchers is to exogenously impose the reference groups, and delimit the subjects of comparison by themselves based on some observable characteristics of the respondents. We adopt that approach here. Concerning the way to model the *comparison* effect, we choose to include differences among individual's resources and the average level of resources of the individual's reference group.[4]

When assessing the influence of others on the valuation of one's own material circumstances, resources have been measured by income (Clark and Oswald, 1996; McBride, 2001; Blanchflower and Oswald, 2004; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Clark et al., 2008), expenditure (Bookwalter and Dalenberg, 2010), wages (Tao and Chiou, 2009), and less frequently by wealth (Graham and Pettinato, 2001; Graham and Felton, 2005, 2006). For those works, others' income exerts a negative effect on subjective well-being. However, there is some evidence of the opposite case (Senik, 2004, 2008; Kingdon and Knight, 2007; Caporale et al., 2009; Clark, et al., 2009; Clark and Senik, 2010). Therefore, there exists the possibility of two types of effects: the standard negative influence associated to feelings of *envy*, where others' good news are bad news for us; and *information* or *signal* effects,[5] whereby the outcomes of the reference group contain information about the individual's own future prospects, that is, the advances of others can produce a positive influence on an individual's subjective well-being.[6] In this latter case, the comparison of resources may increase the well-being even of those who are relatively poor (Clark and Senik, 2010).

Secondly, concerning the influence of social interaction on subjective well-being, many cross-sectional studies in the field of sociology and economics have shown that individuals with active social relationships tend to be happier with their lives. Social support or social networks (and the associated norms of reciprocity and trust) have powerful effects on the level of production efficiency and well-being (Inglehart, 1999; Helliwell and Putnam, 2004). Social scientists have used the term *social capital* to refer to these effects (Coleman, 1988; Portes, 1998; Narayan, 1999; Putnam, 2000; Woolcock and Narayan, 2000), while a branch of economic research relates these effects to the existence of *relational goods* (Gui and Sugden, 2005; Bechetti et al., 2008; Bruni and Stanca, 2008). In their definition of *relational goods* Bechetti et al. (2008) include companionship, emotional

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[4] We propose alternative reference groups and alternative ways of modeling the comparison effect to check the robustness of the results.

[5] Lora (2008) named this effect *solidarity*.

[6] Hirschman and Rothschild (1973) suggest that individuals can derive positive utility from observing other people's progression and comparing it with the positive signal. For instance, where in a lane of cars, the other lane of cars starts progressing towards the exit while our lane is still immobile during a traffic jam inside a tunnel, that progress is interpreted as a positive signal with respect to a likely future outcome. Individuals' gratification from the advances of others was identified early on by Hirschman and Rothschild (1973) as a tunnel effect.

support, social approval, solidarity, a sense of belonging and of experiencing one's history, the desire to be loved or recognized by others, etc. These goods are, on a smaller scale, produced by family relationships or friendships and, on a larger scale, in many kinds of social events (club or association meetings, live sport events, etc.).

The sociological empirical studies of social capital distinguish between different types of social capital. Particularly, Putnam (2000) makes a distinction between *bonding* and *bridging* social capital. *Bonding* relates to closed networks of people with the same background, whereas *bridging* entails cross-cutting ties (e.g. associations that bring citizens into contact with people from a cross-section of society). In this regard, *bridging* associations are identified as more likely to generate positive externalities than *bonding* associations (Woolcock and Narayan, 2000; Marshall and Stolle, 2004). Despite this, evidence also suggests that individuals receive social support mostly from *bonding* rather than *bridging* social ties (Helliwell, 2001; Putnam and Goss, 2002; Helliwell and Putnam, 2004).[7] Social interactions on cross-cutting networks lead to the collective good of citizens (Woolcock and Narayan, 2000) because they have greater effects, for example on trust, than relations only with individuals who are similar to oneself (Marshall and Stolle, 2004). Given that an adequate empirical modeling of *bridging* and *bonding* social ties is not straightforward, some authors such as Beugelsdijk and Smulders (2003) and Sabatini (2008) have identified *bonding* social relationships as those that consist of closed networks of family and friends, while *bridging* social relationships are associated with membership in religious, cultural, sports, women's or youth groups. For Sabatini (2008), a third type can be distinguished, *linking*, in the work of the weak personal ties that arise from joint belonging to social groups. However, none of these studies analyze the effect of social capital on the individual's subjective well-being.

Among the existing research about the effect of social capital on the individual's subjective well-being, we find studies that include different types of social capital as determinants of subjective well-being such as relationships with friends and relatives, and participation in organizations (e.g. Helliwell and Putnam, 2004; Powdthavee, 2008). The positive effect of social interactions – in terms of intensity and quality of contacts – has also been identified in other dimensions of quality of life such as self-reported individual health (Fiorillo and Sabatini, 2011). However, none of these studies have made an explicit distinction between the effect of *bonding* and *bridging* social relationships (even though a typology of social capital is proposed and analyzed in Sabatini, 2008 and Sabatini, 2009). Particularly, the scarce empirical evidence from Latin American countries on social interactions as a source of individual well-being (Rojas, 2006; Lora, 2008) does not make any distinction in this regard. We try to fill this gap by using the distinction between *bonding* and *bridging* social capital in Latin American countries.

The need for research that combines these two social influences becomes evident. While prior studies have shown the importance of social comparisons and interpersonal relationships on individuals' well-being, scientists have paid less attention to the interrelations between these two sociality factors, and the evidence has focused on developed countries. Using data from Switzerland, Stutzer (2004) found evidence that the average income in the community where an individual lives

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[7] People who have close friends, confidants, friendly neighbors and supportive co-workers are less likely to experience sadness, loneliness and low self-esteem (Helliwell and Putnam, 2004).

exerts a negative effect on the individual's level of well-being. This negative effect is twice as high for people who have contact with their neighbors. Luttmer (2005) used the American Survey of Families and Households and found that an increase in neighbors' earnings has the strongest negative effect on happiness for those who socialize more in their neighborhood. A recent study by Clark and Senik (2010) using the European Social Survey conducted in 2006/2007 reported that people compare to the groups with whom they interact more frequently and that colleagues are the most frequently cited reference group.

The psychological literature also provides relevant insight regarding this question (for a review see Schwarz and Strack, 1999). Social psychology research (e.g. Festinger, 1954; Schachter, 1959) has shown that evaluation against a less (more) fortunate other may be *ego-enhancing* (*ego-deflating*), but contact with such people may also be motivating and inspirational (depressing and frightening). However, they also highlight that affiliation may serve the function of *self-improvement* (Buunk et al., 1991). The *ego-deflating (ego-enhancing)* influence can be associated with the *envy* effect, where others' good (bad) news is bad (good) news for us. Likewise, the *self-improvement* influence can be interpreted as equivalent to the *signal* effect, which implies that when individuals evaluate themselves against others, they obtain information about their future perspectives and generate a positive effect associated with confidence, inspiration and motivation.

Empirical evidence from social psychology shows that there is a strong preference for evaluating the self against less fortunate others (downward evaluations) but a desire for information about and contact with more fortunate others (a pattern they label *upward contacts*).[8] Taylor and Lobel (1989) use the upward-downward distinction applied to explicit self-evaluations. They identified upward contacts as a preference for interacting with or gaining information about individuals who are slightly or much better off, and downward contacts as a preference for interacting with or gaining information about others who are worse off. Under these definitions, if people choose to affiliate with worse-off others in order to obtain *self-enhancing* information, in the presence of downward comparisons, the negative influence from an improvement in others' resources on subjective well-being should be even more negative for those with more social contacts. Alternatively, affiliations with better-off others and *self-improvement* motivations would drive to a positive correlation between others' resources and individual well-being, but larger for those with more interpersonal relationships.

## III. HYPOTHESES

Therefore, due to the possible mixed nature of relative income comparisons, the effect of personal position in the income distribution over quality of life can either be positive or negative, and social capital increases subjective well-being. At the same time, however, there is some evidence that negative peer-effects could be more intense for people that socialize more. As pointed out in the

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[8] Using the findings from a previous study, Taylor and Lobel (1989) argue that individuals under threat are faced with the two major coping tasks of regulating emotions and obtaining relevant problem-solving information and inspiration. To meet these goals, individuals will make use of cognitive comparisons to worse-off others, but seek information about and contact with persons better off than themselves (Buunk et al. 1991).

introduction, our aim is to analyze the joint influence of comparisons and social capital on individual subjective well-being.

In line with the related literature, we assume that a standard well-being function can be written as follows:

$$SWB_i = SWB\left(y_i, f\left(y_i\right), SC_i; X_i\right) \tag{1}$$

where $y_i$ represents individual $i$'s resources; $f(y_{ir})$ represents comparisons between individual's own $(y_i)$ and the reference group's $(y_{ir})$ resources, which can be interpreted as the individual's relative resources; $SC_i$ represents the social capital of individual $i$, which can be seen in some sense as the results of the *relational goods* that come from the existence of social interactions; and $X_i$ describes individual's socio-economic characteristics that have been previously identified in the literature as usual correlates of individual self-assessed well-being.

As described previously, although the importance of individuals' relative resources and social ties on subjective well-being has been analyzed in previous literature, few studies have focused on the interaction between these two kinds of social influences. We analyze these two factors and their interaction as determinants of individuals' well-being. Our main interest is to investigate whether social capital serves as enhancer or mitigator of the effect of resource comparisons. In order to test the interaction effects, we opt for using a similar approach to that used by Luttmer (2005), where the joint influence of others' resources and social capital on well-being is integrated in a subjective well-being function that brings these two factors together:

$$SWB_i = SWB\left(y_i, II_i; X_i\right) \tag{2}$$

where $II_i$ characterizes the effect of the intensity of individuals' social interactions on comparison effects, describing the join effect of $f(y_{ir})$ and $SC_i$ as social aspects that influence well-being. Note that we could also consider including an interaction term in Equation 1 between $f(y_{ir})$ and $SC_i$, which by construction would be highly correlated with the two covariates involved. Therefore, in order to avoid multicollinearity problems and to make our results comparable to those of Luttmer's (2005) study, we choose to work separately with Equations 1 and 2.

We present a set of commonly held hypotheses.

- *Resources Hypothesis:* This hypothesis assumes that individuals' subjective well-being is influenced positively by their own economic material circumstances. In relation with income, this hypothesis has also been studied as the *absolute income hypothesis*.

- *Relative Standing Hypothesis:* This hypothesis relies on the individual's relative resources. It suggests that how individuals feel about their material conditions depends on their own resources as well as on the resources of others in their reference group, which is represented by $f(y_{ir})$ in Equation 1. Thus, the well-being of the person $i$ depends on the gap between her own and others' material circumstances. As mentioned in the previous section, this hypothesis refers to the *comparison* effect. Recall that behind the influence of comparisons on subjective well-being,

there exists *envy* and *signal* effects.[9] Feelings of *envy* imply that exposure to someone who is worse off (better off) will result in more positive (negative) self-assessed well-being. Alternatively, information about the situation of others may enter the representation of one's own future and produce an *information* or *signal* effect that influences the individual's well-being positively. Relying on this previous evidence, an increase in the individual's relative standing in her reference group might lead to an ambiguous effect on subjective well-being depending on the net effect between the *envy* and *signal* effects. We consider a version of this hypothesis known as the *asymmetric comparison* effect, which assumes that individuals below or above others' material circumstances can be affected differently by changes in their relative position (Ferrer-i-Carbonell, 2005). Specifically, the magnitude of the effect of others' resources on individual subjective well-being is hypothesized to be stronger for relatively poor individuals (those below the average) than for relatively rich ones (those above the average) as found by Ferrer-i-Carbonell (2005).

- *Social Capital Hypothesis:* Evidence from the cross-sectional sociological and economic studies presented above shows that individuals with active interpersonal relationships tend to be happier with their lives. This hypothesis assumes that social interactions generate *relational goods* and produce powerful positive influences on individuals' subjective well-being. These *relational goods* are related to the individual's *social capital* ($SC_i$ in Equation 1). Empirical studies on social capital make a distinction between *bonding* (closed networks) and *bridging* (cross-cutting ties) social capital. In this work, we distinguish between the influence of *bonding* and *bridging* social capital on subjective well-being. We expect a positive effect from both, with the influence of *bridging* social capital being larger.

- *Intensity of Interactions Hypothesis*: This hypothesis combines the two previous hypotheses ($II_i$ in Equation 2) based on the idea that changes in others' material conditions can influence an individual's subjective well-being to a different extent depending on exposure to social interaction, i.e. the frequency and/or the intensity of her social relationships. From a theoretical viewpoint, since both comparisons and social capital ambiguously influence the individual's subjective well-being, we cannot unequivocally say whether social interactions act as an enhancer or mitigator of the effect of resources comparisons on an individual's well-being. The two different types of social capital (*bonding* and *bridging* types) could allow us to disentangle the effect of intensity of the relationships on the comparisons effect.

- *Socio-economic Hypotheses:* These hypotheses are based on the empirical regularities from previous studies. We consider gender, age, marital status, education, labor market status, ethnicity, and city size effects on individuals' subjective well-being.

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[9] As described above, the psychology literature classifies these effects as ego-enhancing or ego deflating with additional depressing or motivation effects.

# IV. DATA AND VARIABLES

## 1. Data

The empirical analysis is based on a representative survey conducted in eighteen Latin American and Caribbean countries, which was designed and collected by the Latinobarómetro Organization 2007 (Latinobarómetro, 2007a; 2007b; 2009). In addition to the standard demographic and socio-economic variables already presented in the Latinobarómetro dataset, the survey from the year 2007 includes information about individuals' self-evaluation of their satisfaction with diverse aspects of their life.

The survey consists of 20,212 observations, with approximately 1000-1200 interviews for each country. We exclude from our analysis individuals for whom we lack some information about their demographic or socio-economic characteristics. Thus, our final sample covers information for 17,670 individuals from the eighteen countries included in the dataset. These countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The entire survey is treated as a large region-wide sample with the weights[10] assigned in the whole dataset for each individual and country.

## 2. Variables

### 2.1. Definition of Subjective Well-being

The Latinobarómetro dataset for the year 2007 provides different measures of subjective well-being. Respondents in the Latinobarómetro Survey are asked about their satisfaction with their life, job, free time, housing, household income and neighborhood, among other individual and social aspects.[11] We use the information about the individuals' self-assessed life satisfaction (*LS*) that derives from the following question: "*Could you please tell me on a scale from 0 to 10, where "0" means you are "very dissatisfied" and "10" means you are "very satisfied", how satisfied you are with the way your life has turned out so far?"*. The nonresponse rate to this question is less than 2%. There is a fair amount of variation in the answers, with a mean reported life satisfaction of 5.91 and a standard deviation of 2.20. Table 1 in Appendix A reports the main descriptive statistics of our dependent variable.

------- Insert Table 1 about here -------

### 2.2. Definition of Explanatory Variables

To test the *Resources Hypothesis*, the literature commonly uses the reported periodical income or the expenses that individuals must assume to support their standard of living as a proxy of material

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[10] In the Dominican Republic, El Salvador, Guatemala, Honduras and Nicaragua, the sample is weighted with respect to stratum; in Chile it is weighted with respect to age, sex, educational level and geographical area; in Argentina with respect to sex and age; in Colombia with respect to age, sex, educational level and size of habitat; in Paraguay with respect to type of area, and in Venezuela it is weighted with respect to sex and educational level. In Bolivia, Brazil, Costa Rica, Ecuador, Mexico, Panama, Peru and Uruguay the sample is not weighted. More details are also provided by the Methodological Report (Latinobarómetro, 2009).
[11] For instance, the way the economy operates in their country, public safety, democracy, healthcare, education and the public spaces to which they have access, among other things.

conditions or individuals' economic status (Blanchflower and Oswald, 2004; Kingdon and Knight, 2006; Bookwalter and Dalenberg, 2010). In our case, neither income nor consumption data are collected in the Latinobarómetro Survey. Notwithstanding, the survey provides information on certain goods and assets possessed by households. To approximate the level of the household's material well-being, we consider two different variables that provide us with complementary information. On the one hand, we employ information about the ownership of different assets to construct a weighted, linear index of household wealth using principal components analysis[12] to derive those weights. Ten assets and services were considered: television, refrigerator, own house, computer, washing machine, cell phone, car, a second or holiday house, running water and bathroom with shower. A similar index is used by the Latin American Public Opinion Project (LAPOP), with the difference that the LAPOP index includes information about the ownership of conventional telephone and microwave (Córdova, 2009), but they do not consider owning either a house or a second home. The linear index constructed from our analysis is used as a proxy of the material welfare[13] and household wealth of each individual. The index is rescaled from 0 to 10 and will be referred to in our analysis as *Wealth*. The average value of our index in the sample is 5.80. Table 2 in Appendix A presents the main descriptive statistics of the variables used.

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Although our wealth index contains most of the information regarding individuals' material circumstances, the high poverty rate (approximately 33% of the population, ECLAC, 2010) makes it necessary to consider another question in the dataset that provides complementary information about individuals' resources. Specifically, we use the question *"Has your household run out of money to buy food at any time during the past 12 months?"* We then include a dummy variable labeled *Food*. This dummy variable is equal to one if the individual reports that her household had difficulties buying food in the last 12 months and functions as a proxy of deprivation.[14] In our sample, 30% of the individuals reported having difficulties buying food and were therefore assigned to the deprivation category.

To model the idea behind the *Relative Standing Hypothesis*, most of the existing evidence considers the *mean dependence* framework (or cell average approach), which relies on a subtle exclusion restriction that individuals compare themselves only to the average income within each cell. Under this *mean reference* framework, the *comparison* effect can be considered *symmetric*, that is, the extent to which a change in the group's average level of resources influences an individual's well-being is similar for everybody (Clark and Oswald, 1996; McBride, 2001; Blanchflower and Oswald,

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[12] Principal components analysis is a statistical procedure to extract from a set of variables the few orthogonal linear combinations of the variables that capture the common information in the most satisfactory way. Consistently, the first principal component of a set of variables is the linear index of all the variables that capture the largest amount of information that is common to all the variables.

[13] Filmer and Pritchett (2001) proposed and used this procedure to estimate the relation between household wealth and children's school enrollment in India. The authors compared this method with the use of consumer expenditures, finding that this simple index of assets has a high correlation with the information of household consumer expenditures and it works as well or better than the information of expenses to make predictions of children's enrollment. Additionally, they showed the internal and external validity of this type of index, as well as its robustness to the inclusion of different assets.

2004; Ferrer-i-Carbonell, 2005; Luttmer, 2005; and Helliwell and Huang, 2005). Clark et al. (2008) present a survey summarizing the empirical literature that follows this procedure. Alternatively, the *asymmetric comparison* effect highlights the extent to which a change in others' resources influences different individuals' well-being in a different manner (McBride, 2001; Ferrer-i-Carbonell, 2005, and Cortés and Moro-Egido, 2011). In this paper, we consider the last option. Moreover and as before, we make comparisons on the basis of the index of wealth we have built. To consider this *asymmetric comparison* effect, we define the variables $I_1$ and $I_2$

$$I_1 = \begin{cases} y_i - \bar{y}_{ir} & \text{if} \quad y_i \geq \bar{y}_{ir} \\ 0 & \text{if} \quad y_i < \bar{y}_{ir} \end{cases} \qquad I_2 = \begin{cases} \bar{y}_{ir} - y_i & \text{if} \quad y_i \leq \bar{y}_{ir} \\ 0 & \text{if} \quad y_i > \bar{y}_{ir} \end{cases}$$

where $I_1$ and $I_2$ measure how wealthier ($I_1$) or how poorer ($I_2$) the individual is with respect to her reference group's wealth. The reference wealth of an individual is defined as the average wealth of the reference group, which is

$$\bar{y}_{ir} = \left(\frac{1}{N_r}\right)\sum_{i' \neq i} y_{i'}$$

where *i'* are the individuals who belong to the same group as *i,* and $N_r$ is the number of individuals considered.

The present study follows the previous literature and characterizes reference groups according to certain geographical and socio-economic characteristics that are described below. The procedure generates between 50 and 65 different reference groups by country given that there are particular characteristics that do not overlap in some countries. Note that, as is standard in most empirical work, the reference group is assumed to be exogenous. To model the hypothesis, we consider that the well-being of an individual *i* depends on the gap between her own and others' wealth. Then, among the options for modeling the *comparison* effect, we consider a version of the *asymmetric comparison* effect within the *mean reference* framework. Variable $I_1$ varies between 0 and 10 with a mean of 0.87, while variable $I_2$ ranges from 0 to 6.49 with a mean of 0.59.

Respondents in the Latinobarómetro Survey also are asked about how often they meet with friends and relatives (beside normal activities) and about their active membership in a political party; a professional association[15]; a church or other religious organization; and/or a sports, leisure or cultural group. Then, to test the *Social Capital Hypothesis*, we include two different types of social capital: *bonding* and *bridging* social capital. As suggested by Beugelsdijk and Smulders (2003) and Sabatini (2006)*,* we use the information about the frequency of contacts with friends and relatives to construct the dummy variable *SC-Bonding*. This variable takes the value of 1 if the respondent meets with friends and relatives at least once a month,[16] and 0 otherwise. On average, 70% of the respondents in our sample meet with friends and relatives at least once a month. The empirical approximation to *bridging* social capital is done in two distinct ways. In the first approach,

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[14] The low Spearman correlation between our wealth index and the measure of food deprivation avoids problems of multicollinearity in the subsequent statistical analysis.
[15] The corresponding question asks whether the individual belongs to a trade union or professional association.
[16] The options to the question are: never, less than once a month, once a month, several times a month, once a week, several times a week, and every day.

membership and active participation[17] in political, labor, religious, sports or leisure organizations are considered separately in order to test the positive influence of each on the individual's well-being. We then define the dummy variables *Political*, *Labor/professional*, *Religious*, and *Sport/leisure,* which are coded 1 if the individual belongs to and actively participates in each kind of association. In our sample, 8% of the individuals participate in a political organization, 4% in a professional organization, 19% in a religious one and 10% take part in a sports association. In the second approach, we define the variable *SC-Bridging*, which is a linear index constructed using individuals' answers about their membership in the association mentioned in the first option. Principal components analysis is used to derive the weights. The index ranges from 0 to 10 and the average value in our sample is 0.85. This alternative measure is useful when considering interaction effects between bridging social capital and other variables because it summarizes the information about bridging relationships in a single item.

The *Intensity of Interactions Hypothesis* (our contribution) is modeled through the interaction terms for the variables that represent the *Relative Standing* and *Social Capital* hypotheses, which is denoted by $II_i$ in Equation 2. The incorporation of these interaction terms allows us to test the influence of *bonding* and *bridging* social capital as enhancers or mitigators of wealth comparisons. In particular, to test the *Intensity of Interactions Hypothesis*, and by considering that the frequency of contacts could have different influences for wealthier and poorer people, we define:

- $(I_1)$*Bonding* and $(I_2)$*Bonding*: These variables value, respectively, if the individual visits friends and relatives at least once a month.

- $(I_1)$*NBonding* and $(I_2)$*NBonding*: These variables value, respectively, if the individual visits friends and relatives less than once a month.

- $(I_1)$*Bridging* and $(I_2)$*Bridging*: These variables cover the interaction between the variables $I_1$ and $I_2$ and the index *SC-Bridging* that measures *bridging* social capital.

Significant differences[18] can be observed between individuals' life satisfaction with and without *bonding* social relationships for individuals with wealth below the average of the reference group wealth, and also for those with wealth above the reference group average. As pointed out in the description of the hypotheses, these differences might reflect a multitude of characteristics and depend on the influence of social capital and relative standing on individual subjective well-being.

Finally, a set of socio-demographic variables are included to cover the regularities of the *Socio-Economic Hypotheses*. We define the variable *Male*, which is coded 1 if the individual is male, and 0 otherwise. In our sample, 49% of the individuals are male. The age of the respondent is included with the variable *Age* measured in years. In order to test nonlinearity in the relationship between subjective well-being and age we also include age squared in the statistical analysis below (*Age squared*). The average age in the sample is 39.54 years. To cover marital status, we define a dummy *Single* that takes the value of 1 if the individual has never married, a dummy *Married* that is coded 1 if the individual is married or cohabiting, and a dummy *Other* that is equal to 1 if the individual is

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[17] Individuals are classified as holding membership in each of these associations if they choose one of the following 4-point scale verbal categories: (1) Belong and actively participate; (2) Belong but do not actively participate: (3) Used to belong but do not anymore; (4) Have never belonged.

separated, divorced or widowed. In our sample, 30% of the individuals have not been married and 58% have a partner.

Five dummy variables cover all the education categories in the dataset. The variable *Illiterate* takes the value of 1 if the individual is illiterate. The dummy *Primary-Incomplete* is coded 1 when the individual has not completed primary education. We differentiate between illiterate and primary incomplete education levels because being able to read and write can make a difference in low income countries in terms of capabilities. If the individual has completed primary, secondary or university education, we construct the dummies *Primary*, *Secondary* and *University*, respectively. In our sample, 10% of individuals are illiterate, 21% have not completed primary education, 34% have completed primary education, 27% have a secondary level of education, and finally 8% have a university degree.

We define four dummy variables to control for individuals' labor market status. The variable *Employed* takes the value of 1 if the individual is employed in a paid job, and 0 otherwise. The dummy *Self-employed* is coded 1 when individuals state that they are self-employed. The variable *Unemployed* takes the value of 1 if the individual is unemployed. Finally, the variable *Inactive* is equal to 1 when the individual reports being a student, retired or housekeeper, and 0 otherwise. In our sample, 26% of the individuals are employed, 32% are self-employed, 5% are unemployed, and 37% are inactive in the labor force.

While research for European countries and the US have found differences between blacks and whites' satisfaction with life (Blanchflower and Oswald, 2004), we are interested in identifying these ethnic differences in Latin America between indigenous people and people from other ethnic groups. In this case we define four dummy variables guided by the self-reported ethnic group: *Indigenous*, *White*, *Mestizo*[19] and *Other* (Asian, black, mulatto[20] and others). In our sample, 9% of individuals are indigenous, 43% are mestizos, 28% are white and 20% belong to other ethnic groups.

Finally, to capture the effect of city size, we construct a set of dummy variables. Specifically, *MediumCity* is coded 1 if the individual's town has more than 10,000 inhabitants and is not a capital city. The variable *SmallCity* takes the value of 1 if the individual's town has less than 10,000 inhabitants, and the variable *CapitalCity* is equal to 1 if the individual lives in a capital city. In our sample, 70% of the individuals live in a medium-sized city, while 14% reside in a small city.

*2.3. Constructing the Reference Group*

As mentioned above, the present study follows the previous literature and characterizes reference groups according to geographical and socio-economic characteristics. We build the groups of relevant others based on age bracket, educational level and the size of the city where the respondents live within a country. In addition to the categories for educational level and city size, we also use age groups (16-25, 26-35, 36-45, 46-65 and 66 or older).[21]

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[18] The test of equality of means was rejected in all cases with a p value lower than 0.01.

[19] The individual classified herself as a person of mixed race, particularly of indigenous and white parentage.

[20] This category includes individuals of mixed black and white parentage.

[21] The variables used to construct the reference groups are also included in the econometric analysis that incorporates reference wealth. As Ferrer-i-Carbonell (2005) argues, it is assumed that these characteristics have two effects, namely a pure effect, and through creating the individual reference group.

Based on the availability of information, other group-formation criteria shall be also explored. First, it groups individuals in the same country by similar educational levels and age. Second, it considers city size and occupational status as a criterion to build the comparison group. Finally, given their country and size of the city of residence, individuals with the same educational attainment are considered a comparison group. The results of the analysis considering these reference groups are presented in Appendix B.

# V. EMPIRICAL MODEL

The response of individual $i$ to the subjective well-being question $LS_i$ is modeled as a manifestation of the latent and continuous variable $LS_i^*$. In line with the previous literature, we assume that each individual evaluates her satisfaction with life $LS_i^*$, and classifies satisfaction according to one of the available categories. The nature of this variable induces an ordered probit model.[22]

However, given that the aim of the present study is to analyze interactions between certain variables, this question poses an empirical problem. As Norton et al. (2004) have shown, the interpretation of interaction terms in linear regression models does not extend to non-linear regression models and the computation of the marginal effects and the statistical significance of the parameters in the latter case involve an additional difficulty.

Nevertheless, Ferrer-i-Carbonell and Frijters (2004) and van Praag and Ferrer-i-Carbonell (2004) have shown that the results using ordered logit or probit models are surprisingly close to the result of a simple OLS when the dependent variable ranges in a large scale. That is, the sign of the coefficients are the same; the significance is the same; and the trade-offs between variables are roughly the same, which means that indifference curves are similar. Ferrer-i-Carbonell (2005) suggests that the larger the scale, the more precise the measure of individual well-being. Fortunately, as we described before, the Latinobarómetro 2007 offers individuals' responses to the life satisfaction question that range in a sufficiently large scale (from 0 to 10), thus allowing us to use OLS estimations to test our hypotheses.

Given that our main interest focuses on the influence of social interactions on individuals' well-being, we start from the benchmark model which includes *Relative Standing* variables, then move to a model that also considers *Social Capital* influences, and finally proceed to a model that considers all the identified *Intensity of Interaction* terms. In Model A (equation 3), individuals' life satisfaction is described by:

$$LS_i^* = \alpha + \varphi' y_i + \lambda_1 I_1 + \lambda_2 I_2 + \gamma' X_i + \tau' C + \varepsilon_i \qquad (3)$$

where $y_i$ represents the individual's resources, variables $I_1$ and $I_2$ measure the *comparison resources* effect, $X_i$ includes the individual's characteristics, $C$ counts for country fixed effects, and $\varepsilon_i$ is an error term. Notice that the *Resources Hypothesis* will imply that the first coefficient (associated to the variable *Wealth*) in the vector $\varphi$ should be positive, while the second one (*Food*) should be negative. Regarding the *Relative Standing Hypothesis*, there is an ambiguous expected sign for $\lambda_1$ and $\lambda_2$

depending on which of the two underlying effects (*envy* or *signal* effect) dominates. According to the related literature, the effect of variable $I_1$ on individual's subjective well-being (in absolute terms) is expected to be smaller than the effect of variable $I_2$, i.e., $|\lambda_1| < |\lambda_2|$. Even from some prior literature it is assumed that wealthier people are not influenced by others' resources, which would mean that $\lambda_1 = 0$.

We also proposed Model B and C (equation 4 and 5 respectively) which incorporate the variables associated to the *Social Capital Hypothesis* (corresponding to equation 1) into Model A. In Model B we include the variables *SC-Bonding* and the information about the individual's participation in political, labor, religious, sports or leisure organizations. This information is considered separately in order to test the positive influence of each on individual's well-being. In Model C, we include the variable *SC-Bridging*, which groups the information about the individual's membership in these organizations in a linear index.

$$LS_i^* = \alpha + \varphi' y_i + \lambda_1 I_1 + \lambda_2 I_2 + \beta_1 SC\text{-}Bonding + \beta_2 Political + \beta_3 Labor/professional$$
$$+ \beta_4 Religious + \beta_5 Sport/Leisure + \gamma' X_i + \tau' C + \varepsilon_i \tag{4}$$

$$LS_i^* = \alpha + \varphi' y_i + \lambda_1 I_1 + \lambda_2 I_2 + \beta_1 SC\text{-}Bonding + \beta_6 SC\text{-}Bridging + \gamma' X_i + \tau' C + \varepsilon_i \tag{5}$$

As in the related literature, we expect that individuals with active interpersonal relationships tend to be happier with their lives, that is, $\beta_i > 0$ for $i = 1, \ldots, 6$. To test whether *social capital* is an enhancer or mitigator of wealth comparisons (the *Intensity of Interactions Hypothesis*), we propose Model D (equation 6 that corresponds to Equation 2), where we explore the difference in the effect of relative standing on subjective well-being between those with and without active social relationships.

$$LS_i^* = \alpha + \varphi' y_i + \lambda_1 I_1 + \lambda_2 I_2 + \beta_7 (I_1) Bonding + \beta_8 (I_2) Bonding + \beta_9 (I_1) NBonding$$
$$+ \beta_{10} (I_2) NBonding + \beta_{11} (I_1) Bridging + \beta_{12} (I_2) Bridging + \gamma' X_i + \tau' C + \varepsilon_i \tag{6}$$

In this case, we test the statistical differences between $\beta_7$ and $\beta_9$ to study whether social capital could modify the influence of $I_1$ on subjective well-being and between $\beta_8$ and $\beta_{10}$ for the case of $I_2$. The influence of bridging social relationships as mediator of the relative standing effect on individual's well-being is tested by including the variables *(I_1)Bridging* and *(I_2)Bridging* through parameters $\beta_{11}$ and $\beta_{12}$.

## VI. RESULTS

We present the estimation results for our life satisfaction regressions models in Table 3. For the sake of simplicity, we have omitted the estimated parameters corresponding to the *Resources* and *Socio-economic* hypotheses and country effects from the tables.[23] The sign and significance of the estimated coefficients of the variables corresponding to the *Resources* and *Socio-economic* hypotheses are similar to the evidence from previous studies. In particular, individuals' material conditions, as gathered by *Wealth*, have a positive effect on their life satisfaction, while *Food*, which accounts for

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[22] In order to use the Ordered Probit Model, we should test all the assumptions behind that choice. See Mora and Moro-Egido (2008) for a detailed summary on goodness of fit tests.
[23] The full set of results is available from the authors upon request.

individual material deprivation, obviously has a negative influence. We found no gender effect, but life satisfaction diminishes with age, until it reaches a minimum and then increases. While being married does not have an effect on life satisfaction, separated, divorced or widowed individuals are less satisfied with their lives than single individuals. Although previous studies for Latin American countries have found that education variables have a highly significant effect over life satisfaction (Graham and Felton, 2006), only the highest educational level has a positive effect on life satisfaction in our sample. One of the possible reasons for this difference between previous results and ours is that in the last case the analysis is limited to workers' subjective well-being. Nevertheless, when individual's material wealth is not controlled for, these education variables are positive and highly significant given the high correlation that exists between education and wealth. Being unemployed has a significant and negative influence on life satisfaction. We also find that whites are more satisfied with their life than indigenous individuals. Finally, living in a capital city has a negative effect on life and job satisfaction, while people who live in small cities are more satisfied with their job than people in large urban areas. The analysis hereafter focuses on the coefficients associated to the *Relative Standing*, *Social Capital* and *Intensity of Interactions* hypotheses.

------- Insert Table 3 about here -------

In terms of the *Relative Standing Hypothesis*, our results show that for the countries in our sample, the effect of the individual's relative wealth is only relevant for those individuals who are below the average reference wealth. That is, the *comparison* effect is asymmetric. Notice that only the estimated parameter corresponding to $I_2$ is statistically significantly different from zero. This result is in line with Ferrer-i-Carbonell (2005). We also find that for those individuals there is a *signal* effect associated with the value of the information about others' good news; information which dominates the possible feelings of *envy* produced by comparisons (estimated parameters are positive and significant). As mentioned before, a rise in the wealth of a colleague (Clark et al., 2009), for example, is likely to create positive expectations about our own future, rather than an evaluation of our own economic standing. Given the information that we use to construct our wealth index, the positive effect of variable $I_2$ on individuals' subjective well-being can also be interpreted as a positive externality since higher cohort wealth may be correlated with higher quality public goods and higher levels of public health and safety, as suggested by Bookwalter and Dalenberg (2010).

Our estimation results confirm the *Social Capital Hypothesis* as well. Visiting friends and relatives at least once a month and engaging in social organizations[24] increase individuals' life satisfaction. In line with previous studies, the results from Latin American countries suggest that *bonding* and *bridging* social connections are among the strongest correlates of subjective well-being in terms of the magnitude and significance of the estimated coefficients (Helliwell and Putnam, 2004).

There are three main results regarding the *Intensity of Interactions Hypothesis* tested in Model D. First, for individuals above the average wealth in the reference group $I_1$, relative standing matters for those who visit friends and relatives less than once a month. Individuals' relative standing does not influence subjective well-being if the intensity of *bonding* relationships is larger (variable $(I_1)Bonding$ is not significant). It is possible that for wealthy people who socialize more, the negative

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[24] The correlation between the variables associated to social relationships is not higher than 0.30 in any case, thus dropping the risk of multicollinearity in the estimation.

feelings of *envy* due to a decrease in their relative standing compensate the *information* and *signal* effects because socialization makes the reference wealth more salient. The same interpretation can be applied in the case of the non-significant estimated coefficient of the interaction variable $(I_1)Bridging$.

Secondly, the results show that for people below the average reference wealth $(I_2)$, interaction between *bonding* social relationships and relative wealth positively influences individual's subjective well-being. The statistical difference between $\beta_8$ and $\beta_{10}$ shows that the influence of relative wealth is larger for individuals who frequently visit friends and relatives than for those who do not. As expected, the intensity of the *bonding* social capital enhances the *comparison* effect. For poor members of the group, there is a dominant *signal* effect, i.e. reference wealth plays an informational role about their own perspectives and they derive positive welfare from a rise in others' wealth. This evidence is also consistent with the well-known tunnel effect proposed early on by Hirshmann and Rothschild (1973) to refer to individuals' gratification from the advances of others.

Thirdly, the intensity of *bridging* social relationships also positively influences the *comparison* effect for individuals below the average reference wealth (variable $(I_2)Bridging$ is positive and significant), meaning that participation and affiliation with people in cross-cutting networks serve the function of *self-improvement* for poor individuals. In line with social psychology research, the prevalence of the *signal* effect suggests that others undergoing a similar experience may provide one with information about how to improve one's status, as well as serving as a model for the coping process.[25] Similar findings in Senik (2004) using Russian data have been justified by arguing that in the Russian economy, individuals take the reference income not as a comparison but as an information measure to create future expectations. Individuals who see richer people around them take this as a sign that their own material welfare may soon increase, which contributes to their happiness. This positive influence of others' wealth for poor individuals with active social relationships is robust to the consideration of different reference groups. Additional estimations where we consider alternative reference groups based on age and education, city size and labor status, and city size and educational level are shown in Table B1 of Appendix B.

To sum up, the evidence from Latin American countries shows that an improvement in others' material conditions generates positive externalities on subjective well-being. In the case of the poor, the positive effect of *bonding* and *bridging* social contacts on subjective well-being is twofold. First, there is a direct effect produced by belonging and participating in networks of this kind. Second, it seems to have an indirect effect as an enhancer of the signal effect of comparisons.

## VII. CONCLUSIONS

We have examined the determinants of satisfaction in Latin American countries using data from the Latinobarómetro Survey 2007 to understand how social influences affect subjective well-being measured as financial satisfaction. Social relationships and social comparisons turn out to be important determinants in a number of ways. On the one hand, we find that *bonding* and *bridging* social relationships are positively correlated with individuals' life satisfaction; a finding that is very much in line with previous unambiguous results. On the other hand, the positive result regarding the

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[25] For poor individuals, information about others in better conditions may give them the confidence and inspiration necessary to undertake an improvement plan.

mediating role of social relations in determining exposure to social comparisons of the financial situation seems to support the dominance of the *signal* effect over the *envy* effect. We further discuss the implications of that second finding.

One dimension of social effects relies on *comparison* influences, that is, on the fact that one's relative performance in a given life domain has an influence on the individual evaluation of one's own personal situation. Starting from the initial hypothesis that comparison effects impose negative externalities, empirical research has not found universal evidence to support or reject the hypothesis, nor has it found conclusive evidence for the hypothesis that disadvantaged relative positions perceive that there is an actual possibility for improvement. It seems that results from empirical works that have studied conditions in developed countries are in line with the first hypothesis (in favor of the envy effect). In contrast, empirical works for developing economies have identified a positive effect of these relative comparisons (thus, in favor or the signal effect). The evidence from the Latin American countries included in our sample points to the dominance of the *signal* effect over the *envy* effect; a finding that is closely in line with the results of studies for Russia (Senik, 2004), South Africa (Kingdon and Knight, 2007) and some Eastern European countries (Senik, 2008; Caporale et al., 2009).

This result, however, varies depending on the relative standing of the individual in the distribution of material conditions within her reference group, since we have found evidence of *asymmetric* wealth comparisons. Relative wealth has a larger influence on the well-being of individuals whose wealth is below the average in their reference group than for those with wealth above the reference group average. This is consistent with the findings of other pieces of research. In particular, Ferrer-i-Carbonell (2005) and Vera-Toscano et. al (2006) report that the richer impose an externality (in their case it is negative, thus supporting the envy effect), whereas there is no evidence of the poorer imposing any externality on their richer counterparts.

Studies that have tested for the modulator role of social contacts on comparisons have benefitted from data available for developed countries. We have tested if the mediator role of social capital also operates in developing countries in such a way that better connected people are also more exposed to social comparison effects. We have found that this is indeed the case: the types of social capital considered in this study (*bridging* and *bonding* social capital) enhance the wealth *comparison* effect on individuals' happiness. In particular, for poor individuals interacting frequently with friends and relatives or belonging to an organization, an improvement in others' wealth is perceived as a positive externality.

Membership in associations and cross-cutting networks, which is frequently referred to as *bridging* social capital, is seen as a positive determinant of economic growth, while *bonding* is found to be negatively correlated with measures of human development and social quality (Sabatini, 2008). We find evidence that both types of social capital have a positive and direct effect over financial satisfaction and a positive and indirect effect in terms of the increased effect of modulating exposure to social comparisons.

Until now, the principal argument for interpreting the positive role of social capital has been that bridging social networks promote trust and diminish the transaction cost, thereby facilitating economic activities (the same result applies to the *linking* social capital category). Following social

psychology theory and the evidence found in our research for this sample of Latin American countries, it is possible to propose a complementary explanation. Taking into account our evidence, if *bridging* social networks are considered a source of information and motivation for less fortunate people, this behavior can also be understood as a potential force to enhance economic growth. The potential negative role of bonding social capital is not found in our sample; in fact, it appears to be positive in its direct and in its indirect effect on financial satisfaction. It could be the case that the social effects analyzed here have a different magnitude or effect in domains other than the valuation of material resources. Indeed, we have pointed out that social comparisons and exposure to social interaction, through the positional degree of the good or domain being evaluated, are an important determinant of satisfaction. Although the positive dimensions of social capital have been assessed in many fields from a macro perspective, we have contributed to the analysis by exploring the positive dimension of social capital at an individual level. Further empirical research on diverse societies will contribute to a better understanding of these social influences.

## Acknowledgements

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**Appendix A**

**Table1. Dependent Variable - Descriptive Statistics**

| Dependent Variable | Mean/Proportion | SD | Min | Max |
|---|---|---|---|---|
| *Life Satisfaction* | 5.91 | 2.20 | 0 | 10 |
| Very Dissatisfied (0-1) | 0.03 | | | |
| 2 | 0.03 | | | |
| 3 | 0.07 | | | |
| 4 | 0.10 | | | |
| 5 | 0.22 | | | |
| 6 | 0.17 | | | |
| 7 | 0.13 | | | |
| 8 | 0.12 | | | |
| 9 | 0.04 | | | |
| Very Satisfied | 0.08 | | | |

The sample comprises information from 17,670 individuals with valid life satisfaction.

**Table 2. Explanatory Variables - Descriptive Statistics**

| | Mean/Proportion | SD | Min | Max |
|---|---|---|---|---|
| ***Resources*** | | | | |
| Wealth | 5.76 | 2.33 | 0 | 10 |
| Food | 0.31 | 0.46 | 0 | 1 |
| ***Relative Standing*** | | | | |
| $I_1$ | 0.87 | 1.15 | 0 | 10 |
| $I_2$ | 0.59 | 0.99 | 0 | 6.49 |
| ***Social Capital*** | | | | |
| SC-Bonding | 0.70 | 0.46 | 0 | 1 |
| SC-Bridging | 0.85 | 1.64 | 0 | 10 |
| Political | 0.08 | 0.27 | 0 | 1 |
| Labor/professional | 0.04 | 0.20 | 0 | 1 |
| Religious | 0.19 | 0.39 | 0 | 1 |
| Sport/leisure | 0.10 | 0.30 | 0 | 1 |
| ***Social Interactions*** | | | | |
| $(I_1)$Bonding | 0.64 | 1.05 | 0 | 10 |
| $(I_1)$NBonding | 0.23 | 0.71 | 0 | 7.57 |
| $(I_2)$Bonding | 0.38 | 0.84 | 0 | 6.49 |
| $(I_2)$NBonding | 0.20 | 0.65 | 0 | 5.89 |
| $(I_1)$Bridging | 0.86 | 2.97 | 0 | 55.13 |
| $(I_2)$Bridging | 0.46 | 1.97 | 0 | 47.41 |
| ***Socio-demographic Characteristics*** | | | | |
| Male | 0.49 | 0.50 | 0 | 1 |
| Age | 39.54 | 16.20 | 16 | 94 |
| *Marital Status* | | | | |
|     Single | 0.30 | 0.46 | 0 | 1 |
|     Married | 0.58 | 0.49 | 0 | 1 |
|     Other | 0.12 | 0.32 | 0 | 1 |
| *Education* | | | | |
|     Illiterate | 0.10 | 0.30 | 0 | 1 |
|     Primary-Incomplete | 0.21 | 0.41 | 0 | 1 |
|     Primary | 0.34 | 0.47 | 0 | 1 |
|     Secondary | 0.27 | 0.45 | 0 | 1 |
|     University | 0.08 | 0.28 | 0 | 1 |
| *Labor Market Status* | | | | |
|     Employed | 0.26 | 0.44 | 0 | 1 |
|     Self-employed | 0.32 | 0.47 | 0 | 1 |
|     Unemployed | 0.05 | 0.21 | 0 | 1 |
|     Inactive | 0.37 | 0.48 | 0 | 1 |
| *Self-reported Ethnicity* | | | | |
|     Indigenous | 0.09 | 0.28 | 0 | 1 |
|     White | 0.28 | 0.45 | 0 | 1 |
|     Mestizo | 0.43 | 0.49 | 0 | 1 |
|     Other | 0.20 | 0.40 | 0 | 1 |
| *City size* | | | | |
|     MediumCity | 0.70 | 0.46 | 0 | 1 |
|     SmallCity | 0.14 | 0.35 | 0 | 1 |
|     CapitalCity | 0.16 | 0.36 | 0 | 1 |
| Sample size | | | | 17670 |

**Table 3. Life Satisfaction Estimation Results for the Latinobarómetro Survey 2007**

| | Model A | Model B | Model C | Model D |
|---|---|---|---|---|
| ***Relative Standing*** | | | | |
| $I_1$ | -0.032 | -0.033 | -0.034 | |
| | (0.030) | (0.030) | (0.030) | |
| $I_2$ | 0.123*** | 0.118*** | 0.119*** | |
| | (0.034) | (0.034) | (0.034) | |
| ***Social Capital*** | | | | |
| SC-Bonding | | 0.135*** | 0.138*** | |
| | | (0.037) | (0.037) | |
| SC-Bridging | | | 0.102*** | 0.075*** |
| | | | (0.010) | (0.017) |
| Political | | 0.218*** | | |
| | | (0.069) | | |
| Labor/professional | | 0.284*** | | |
| | | (0.083) | | |
| Religious | | 0.222*** | | |
| | | (0.046) | | |
| Sport/leisure | | 0.263*** | | |
| | | (0.057) | | |
| ***Intensity of Interactions*** | | | | |
| $(I_1)$Bonding | | | | -0.046 |
| | | | | (0.033) |
| $(I_1)$NBonding | | | | -0.091** |
| | | | | (0.037) |
| $(I_2)$Bonding | | | | 0.151*** |
| | | | | (0.038) |
| $(I_2)$NBonding | | | | 0.073* |
| | | | | (0.043) |
| $(I_1)$Bridging | | | | 0.012 |
| | | | | (0.008) |
| $(I_2)$Bridging | | | | 0.027** |
| | | | | (0.013) |
| p-value for H$_0$: $|\lambda_1|<|\lambda_2|$ | 0.003 | 0.006 | 0.005 | |
| p-value for H$_0$: $\beta_7=\beta_9$ | | | | 0.075 |
| p-value for H$_0$: $\beta_8=\beta_{10}$ | | | | 0.021 |
| Resources variables | Yes | Yes | Yes | Yes |
| Socio-economic variables | Yes | Yes | Yes | Yes |
| Country dummies | Yes | Yes | Yes | Yes |
| N. Observations | 17670 | 17670 | 17670 | 17670 |

**Appendix B**

**Table B1. Life Satisfaction and Social Interaction by Different Reference Groups**

| | Age and Education | City and Labor Status | City and Age |
|---|---|---|---|
| $(I_1)$Bonding | 0.002 | -0.086[*] | -0.084[*]* |
| | (0.042) | (0.047) | (0.045) |
| $(I_1)$NBonding | -0.044 | -0.133[***] | -0.133[***] |
| | (0.046) | (0.051) | (0.049) |
| $(I_2)$Bonding | 0.081[*] | 0.176[***] | 0.199[***] |
| | (0.046) | (0.051) | (0.050) |
| $(I_2)$NBonding | -0.009 | 0.081 | 0.115[**] |
| | (0.049) | (0.052) | (0.053) |
| $(I_1)$Bridging | 0.012 | 0.006 | 0.012 |
| | (0.009) | (0.008) | (0.009) |
| $(I_2)$Bridging | 0.030[**] | 0.017 | 0.033[**] |
| | (0.012) | (0.013) | (0.013) |
| p-value for $H_0$: $\beta_7=\beta_9$ | 0.068 | 0.053 | 0.057 |
| p-value for $H_0$: $\beta_8=\beta_{10}$ | 0.006 | 0.002 | 0.013 |
| Resources variables | Yes | Yes | Yes |
| Socio-economic variables | Yes | Yes | Yes |
| Country dummies | Yes | Yes | Yes |
| N. Observations | 17670 | 17670 | 17670 |