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Clap along if you know what happiness is to you! :  
wealth, trust and subjective well-being

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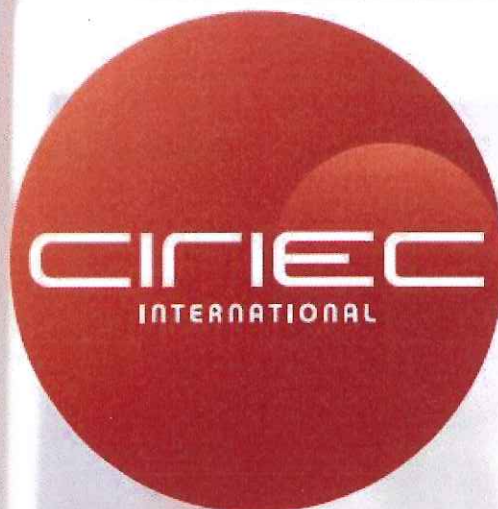
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# Working Paper

**Clap along if you know what happiness is to you!  
Wealth, Trust and Subjective Well-being**

Anne MUSSON & Damien ROUSSELIÈRE

CIRIEC N° 2017/02

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**Clap along if you know what happiness is to you!  
Wealth, Trust and Subjective Well-being\***

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## Abstract

Social capital and especially trust are the foundation of most personal relationships and it is considered a key factor of many economic and social outcomes since Banfield (1958), Coleman (1990) and Putnam (2000). The purpose of this study is twofold. First, we investigate the role of wealth of countries in explaining trust and another proxy of social capital, the voluntary association membership. Secondly, we analyze the link between wealth, social capital and subjective well-being. This paper answer the following questions: Does living in a richer country enhance the willingness of people to trust each other? Does living in a richer country (regarding total wealth, intangible and social capital) enhance the subjective well-being? Do trust and happiness equations differ across countries, following their wealth structures? Our original empirical approach address simultaneously these three questions, using a recursive mixed-process model, with bootstrapped standard errors accounting for the sampling design. We support the idea that social capital may turn wealth into subjective happiness and can build resilience in time of crisis.

Keywords: *Recursive Mixed-Process Model, Subjective Well-Being; Social Capital; Trust; Voluntary Association Membership; Wealth*

JEL: C35, I31, Z13

# 1 Introduction

Where does the wealth of nations lie? In 1776, Adam Smith put into question “The Wealth of Nations” and the creation of prosperity. This question remains vital to politicians, scientists as well as citizens and therefore, is in need of constant reevaluation, especially in a wake of crisis. The main policy question remains how to build prosperity in the country in order to ameliorate the wellbeing of inhabitants, or to maintain it in time of crisis. First of all, what is wealth? Following Arrow et al. (2012), wealth is the social worth of an economy’s entire productive base, the productive base consisting of the entire range of factors that determine intergenerational wellbeing. Since Kuznets said in 1934 “the welfare of a nation can scarcely be inferred from a measurement of national income”, more and more scientists rise up against the supremacy of production indicators as a measurement of wealth and human progress (Kuznets, 1934) and see, for example: Nordhaus and Tobin (1973); Kubiszewski et al. (2013); Costanza et al. (1997); Daly and Farley (2003). The irrelevance of GDP in measuring wealth has been demonstrated and alternative indicators considering sustainability, social, and environmental aspects of economic growth have been proposed (Costanza et al., 1997, 2009, 2014; Stiglitz-Commission, 2009; EESC, 2008). There are actually two phenomena: sustainable development consists of human development, measured in terms of welfare or well-being, and the sustainability of this development, measured in terms of capital stock (Nourry, 2008; Stiglitz-Commission, 2009). The World Bank project (World-Bank, 2006) aims to estimate the total wealth of nations including produced, natural, human and institutional capital. It suggests that wealth lies in **intangible** resources such as skills and human capital, which is in conformity with an intuition already put forward by Adam Smith more than two centuries ago (Stiglitz-Commission, 2009). These calculations are used by the Inclusive Wealth Index project (joint initiative of the United Nations University, International Human Dimensions Programme, the United Nations Environment Programme (UNEP) in collaboration with the United Nations Educational, Scientific and Cultural Organization), which aimed to measure wealth as the potential to create and sustain humanity’s well-being<sup>1</sup>.

Following this idea, we aim in this article to link the structure of countries’ wealth to the subjective well-being of people, emphasizing the role of social capital.

The preponderant form of wealth worldwide seems to be intangible capital, meaning human capital and the quality of formal and informal institutions (World-Bank, 2006) , or in other words, knowledge capital and social capital (Clark, 2014; Ingelhart, 2012). Intangible wealth is related to the social and human capital of a nation and includes skills and know-how of the labor force, trust and cooperation/collaboration,

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<sup>1</sup><http://inclusivewealthindex.org/inclusive-wealth>

efficient judicial systems, clear property rights, and effective government (Costanza et al., 2009). The World-Bank (2006, 2011) measures it as a residual, the difference between total wealth and produced and natural capital. Table 1 presents an overview of ways to understand and measure intangible capital. We can observe that trust is considered as a proxy for the important social capital, defined by as the "connections among individuals — social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 1995, p. 67).

Trust is the foundation of most personal relationships and it is considered a key factor of many economic and social outcomes since Banfield (1958), Coleman (1990) and Putnam (2000) -see Algan and Cahuc (2013) for a background-. Arrow states that "virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence"(Arrow, 1972, p. 357). Since then, the role of trust, referring to the confidence that people have in others that they will act as we might expect, for economic and social development has been investigated.

Table 1 – Catching Intangible Capital. Overview from Clark (2014); World Bank, 2006& 2011; Stiglitz Report, 2009& OECD (2001).

Type of Capital	Variables-Components	Proxy
<b>Human Capital</b>	<p>Individuals: number, distribution</p> <p>Health</p> <p>Education</p> <p>Networks</p> <p>skills and talents embodied in the population (Stiglitz Commission)</p>	<p>Current expenditures on education (Adjusted Net Savings, World Bank)</p> <p>Educational credentials</p> <p>Questionnaire tests: Programm for International Student Assessment (PISA); International Adult Literacy Survey (IALS)</p>
Knowledge Capital	<p>Scientific findings</p> <p>Technology</p> <p>Practical Skills and Expertise</p>	<p>Flows:</p> <p>TFP(Conference Board TED)</p> <p>"Investment in Knowledge"(OECD) = spending on higher education + gross domestic spending on R&amp; D + ICT investment</p> <p>Stocks:</p> <p>Residual in comprehensive wealth accounting (OECD)</p>
<b>Social Capital</b>	<p>Networks and the associated norms of reciprocity and trustworthiness (Putnam, Stiglitz Report)</p> <p>Institutions and Governance (World Bank, 2011)</p> <p>Relationships and Institutions (Ekins in UNU-IHDP and UNEP, 2012)</p>	<p>Composite index. For example, for Putnam (2000) it contains: intensity of involvement in community and organisational life; public engagement (i.e. voting); community and volunteering; informal sociability (e.g. visiting friends); reported levels of inter-personal trust</p> <p>Trust: questionnaire measures (World Values Survey; Narayan and Pritchett (1999); Fukuyama (1995)) or experimental economics (Knack and Keefer, 1997)</p> <p>Crime, Family Breakdown (Fukuyama, 1995)</p> <p>Questionnaire to address the strength of norms of civic co-operation and trustworthiness (Knack and Keefer, 1997)</p> <p>Social relationships: Voluntary Association Membership, number of close friends, political participation, religious involvement, doing favours, etc (Stiglitz Report, 2009)</p>



Bartolini et al. (2008); Helliwell (2001, 2003, 2006, 2011); Sarracino (2010); Vemuri and Costanza (2006); Cummins (1998) suggest that differences in social capital trends may explain differences in subjective well-being trends and they highlight the role of social interactions. Here there is a possible explanation to the Easterlin paradox stating that an increase of Growth Domestic Product (GDP) (Easterlin, 1974) does not necessarily lead to an increase of happiness. Our hypothesis is that the increase of national wealth, including produced capital, may lead to a better of subjective well-being if the growth of wealth is not detrimental to social capital.

This paper aims to investigate how wealth at the macro-level is related to trust, voluntary association membership and life satisfaction at the micro level. Our questions are the following:

1. What are the links between wealth and trust and voluntary association membership? Does living in a rich country make people more trustful?
2. What are the link between wealth and life satisfaction? Does the impact depend on the structure of the country wealth? Does a country which has a bigger intangible capital in his total wealth create more happiness?

Banfield (1958) first points out the importance of social capital in the development of territories. Studying the origin of the North-South gap in Italy, he claims that "the extreme poverty and backwardness of which is to be explained largely (but not entirely) by the inability of the villagers [in the South] to act together for their common good or, indeed, for any end transcending the immediate, material interest of the nuclear family" (p.10). Coleman (1988, 1990) presents social capital as a key element of the micro-macro transition. He describes it as the component of human capital that allows members of a given society to trust one another and to co-operate in the formation of new groups and associations (Coleman, 1988) and considers the degree of trustworthiness of social organizations to be the most important form of social capital (Morrone et al., 2009). According to Putnam (1993), trust is a habit formed during a centuries-long history of "horizontal networks of association" between people, covering both commercial and civic activities. Putnam argues that the independent city states of Northern Italy encouraged the formation of such horizontal networks, in contrast to the more authoritarian political regimes of the South (La Porta et al., 1997). Fukuyama (1995) also stressed the willingness of people to cooperate with each other, and underlined how trust among individuals is rooted in a shared culture. Fukuyama defined social capital as "an instantiated informal norm that promotes co-operation between two or more individuals" (Fukuyama, 2000). Fukuyama's thesis is that nations' prosperity and competitiveness lies in an omnipresent cultural characteristic: the degree of trust inherent in societies. He argues that higher-trust societies are better

able to implement efficient organizational innovations and trust can influence economic outcomes through macro-political channels as well (Grootaert and Van Bastelaer, 2002), because "sociability is also a vital support for self-governing political institutions" (p.325), as in Putnam (1993). Trust can be measured in two major ways: by using surveys and laboratory experiments. In the first case, the *World Value Surveys* (Inglehart, 1994) and the *European Social Survey* are the most used by academics. In this paper, we use survey data from the *World Values Survey* (WVS). Correlation between trust as measured with WVS and economic development has been demonstrated (Knack and Keefer, 1997; Tabellini, 2010), but the question of causality is still unresolved.

Knack and Keefer (1997) study the impact of social capital using three different proxies (trust, civism, the average number of groups people belong to in each country) derived from the WVS on the income growth per capita and investment rate. They demonstrated a positive impact of trust but they admitted the question is not understood in the same way by everyone. Glaeser et al. (2000) show that the answer to the famous question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful when dealing with others?" results from generational, educational, ethnic and religious differences (Ponthieux, 2006). Comparisons between academic studies appear difficult since samples and methodologies are not the same. Indeed, with a larger sample, Zak and Knack (2001) demonstrated a positive effect of trust on economic growth while Helliwell (1996) stated a negative one. La Porta et al. (1997) argue that trust should be particularly important for the governmental efficiency, the economic performance and the performance of a society more generally. To predict trust, most studies uses variables at the individual level (Paxton, 2007) such as education, age, income, social life, employment status. At the macro level, Democracy can promote trust (Rosenberg, 1995). Curtis et al. (2001) explain democratic institutions and political system, as well as high level of economic development, are important predictors of cross-national variation in voluntary association membership and in this way, it fosters trust. Social capital theory suggests that one of the most important explanations of trust is voluntary association membership (Paxton, 2007, p. 48). Nannestad (2008) classified four kinds of possible explanation of trust creation: civic participation, quality of institutions, cultural characteristics and finally the social and cultural diversities. Macro policies may enhance trust. Rothstein (2008) underlines that trust may be more the result that the explanation of social politics aiming for less inequalities. Studies looking at the effect of trust on subjective well-being demonstrated a positive effect (Helliwell, 2003, 2006; Helliwell and Putnam, 2004; Bjornskov, 2008). Regarding this literature, our value-added is to link the component of wealth at the macro level to interpersonal trust and subjective well-being at the micro level.

Here we do not study the links between life satisfaction and specific performance,

we choose to analyse the links between wealth and life satisfaction through the capital approach. In this way, we differ from the literature arguing that capital social is important because it leads to economic growth, which is leading to more happiness . We argue that economic growth does not automatically lead to welfare and subjective well-being improvement.

1. We look at the impact of wealth on the probability to generally trust people. We find that the relation between wealth and trust is not linear and depend on the structure of wealth. We observe a similar trend between wealth and voluntary association membership, another component of social capital.
2. We investigate how wealth at the macro-level impacts subjective well-being at the micro-level. The effect is significant and depends on the general level of wealth but also on how intangible capital is important regarding global wealth.

The paper is organized as follows: section 2 concerns the theoretical background of our empirical study, while section 3 presents our data and our original empirical strategy. In order to take into account the potential endogeneous relationship between social capital and life satisfaction on one hand and the sample design on the other hand, we estimate a recursive mixed-process model with bootstrapped clustered errors. We present our main results in section 4, highlighting the importance of the interaction between wealth and intangible capital. And finally we discuss the results and conclude in the section 5.

## 2 Theoretical Foundation

Wealth, according to Arrow et al. (2012) who called it "comprehensive wealth," is the dynamic counterpart of real income; and comprehensive wealth is the measure of an economy's productive base. In this paper, in accordance with the World Bank's calculations (2006, 2011), we consider wealth as the stocks of produced capital, natural capital, and human and social capital—all of which underpins the generation of national income. It follows the idea that current wealth should equal the present value of future consumption<sup>2</sup> (Samuelson, 1961). In speaking of wealth we are returning to the ideas of the Classical Economists, who viewed land, labor, and produced capital as the primary factors of production. A common representation of production comes from Solow (1956) and takes the following form:

$$Y = F(K; L; t) \tag{1}$$

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<sup>2</sup>Hamilton and Hartwick (2005) show that the sum of the values of a heterogeneous set of assets (total wealth) is equal to the present value of future consumption (World Bank, 2006)

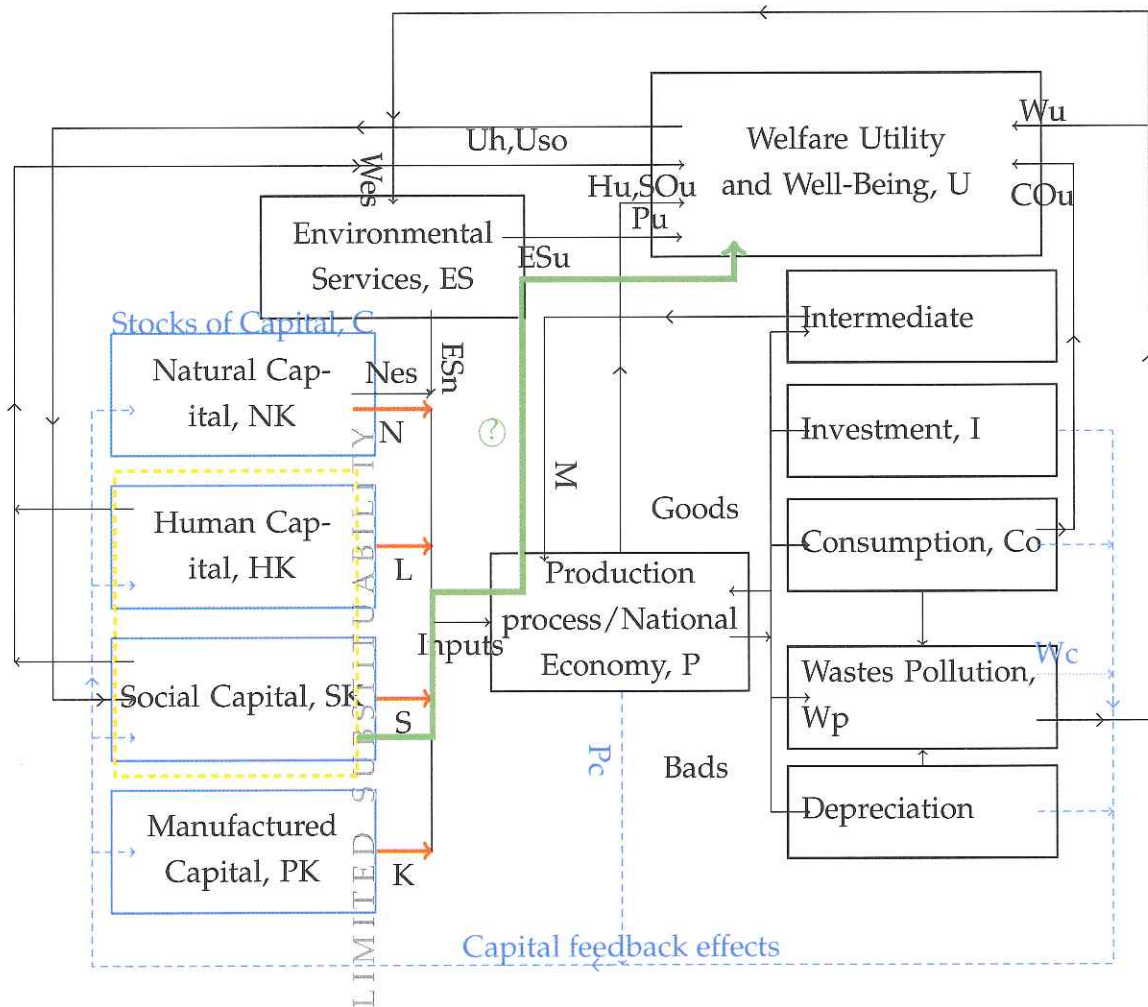
with  $Y$  the rate of production - output as a whole. Output is produced with the help of two factors of production:  $K$  is capital inputs,  $L$  in labor inputs,  $t$  reflects technical progress. Part of each output is consumed and the rest is saved and invested. The production of goods and services leads to consumer utility.

We propose here a more complex model drawn in Figure 1 and largely based on Ekins (1992, 2000). Figure 1 portrays the creation of wealth with the following characteristics:

- Four kinds of capital stock: Natural Capital, Human Capital, Social Capital, Manufactured Capital. Each one constitutes an input to the productive process ( $N, L, S, K$ ), along with intermediate inputs ( $M$ ). Human and Social Capital constitute the Intangible Capital (yellow dotted box).
- Natural Capital has three economic roles: provision of resources to the economic process ( $E$ ), provision of direct environmental services –beauty, recreation– ( $Ees$ ) and the absorption of wastes.
- Human Capital comprises all individuals' capacities for work (Ekins, 2000), such as knowledge, skills, health and motivation.
- Environmental Services ( $Es$ ) provides the basic context and conditions within which production is possible at all (climate, ecosystem stability, amenity services).
- Outputs of the production process can be "Good" (desired outputs or positive externalities) or "Bad" (negative effects and externalities like pollution, health destruction and also capital depreciation).
- Utility is generated by many other aspects of life apart from consumption (Ekins, 2000):
  - Quality of the environment ( $ESu$ );
  - Nature and Level of Wastes ( $Wu$ );
  - Quality of Human Capital ( $Hu$ );
  - Consumption ( $COu$ );
  - The work process ( $Pu$ );
  - Social and Organizational structures ( $SOu$ ).
- Feedback effects:
  - between the stock of natural capital and the environmental services;

- between the production process and the human and social capital stocks ( $P_c$ ).
- Limited substitutability between the four basic forms of capital.

Figure 1 – Stocks, flows and welfare in the process of production - adapted from Ekins, 1992 and 2000.



Legend: In the flows descriptors, the upper-case letters denote the source of the flow, lower-case letters denote the destination.

With this background we are going beyond the conventional economic view of the production process. According to this view, production is divided into consumption, which is the sole contributor to individual utility, welfare, and investment (Costanza et al., 1997). According to our point of view, well-being and welfare is not about how much people consume, but how they consume.

Here, we question the role of wealth and especially its social capital component to (subjective) well-being in Figure 1 (follow the bold green arrow). Our investigation

follows these hypothesis:

- Since social capital is defined as the value of relationships that facilitate cooperation and collective action through trust (Ostrom and Ahn, 2003), trust must be involved. The literature exposed in the introduction seems to indicate that trust has its place in the Social Capital Box. We use this assumption to i)investigate how trust can be explained by wealth and intangible capital (made of human capital and social capital) ii)examine how trust has an impact on subjective well-being.
- An increase in the level of wealth may enhance trust but also the voluntary association membership. We test the relationship between the wealth and the country and the tendency to be involved in voluntary associations.
- Wealth should have an impact on subjective well-being, but it may depend on the wealth structure. If a country is wealthy thanks to an abundant social capital, the impact on life satisfaction may differ compared to a wealth carried by manufactured capital. We test this hypothesis underlying the impact of the intangible capital component on well-being.

## 3 Data and Methods

### 3.1 Survey Data

Our sample contains 106,622 respondents from 77 countries, surveyed between 2005 and 2014.

Trust can be measured by using surveys and laboratory experiments. Since we empirically investigate the link between wealth and trust in a global way, with macrodata regarding wealth, we use the World Value Survey (WVS) database. The WVS consists of nationally representative surveys conducted in almost 100 countries which contain almost 90 percent of the world's population, using a common questionnaire<sup>3</sup>. The survey, which started in 1981, is available and seeks to use the most rigorous, high-quality research designs in each country. Trust is measured with the "generalized trust question", first introduced by Almond and Verba (1963). The question is the following:

Generally speaking, would you say that most people can be trusted, or that you can't be too careful when dealing with others?

Answers can be "Most people can be trusted" or "Need to be very careful"

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<sup>3</sup><http://www.worldvaluessurvey.org/WVSContents.jsp>

For the initial analysis, we build an index of trust following the ASEP method (see ASEP website):

$$TRUST\ INDEX = 100 + (\%Most\ people\ can\ be\ trusted) - (\%Need\ to\ be\ very\ careful)$$

Indexes over 100 correspond to countries where a majority of people trust others, while an index under 100 corresponds to countries where a majority of people think one can never be too careful when dealing with others.

**Voluntary Association Membership** is also used as a proxy for Social Capital and its role to build trust has been demonstrated (Paxton, 2007; Adam, 2008). Membership is measured in the WVS with the following questions:

Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization?:

- Church or religious organization;
- Sport or recreational organization;
- Art, music or educational organization;
- Environmental organization;
- Humanitarian or charitable organization;
- Consumer organization;
- Self-help group, mutual aid group;
- Other organization except professional association, political party, Labor Union.

We follow the distinction made by Knack (2003) between "Olson" and "Putnam" groups. Therefore the association membership is measured as a dummy, which is equal to 1 if the individual declared to be a member at least for one of the following associations: "sport or recreation organization", "art, music or educational organization", "environmental organization", or "charitable or humanitarian organization", 0 elsewhere.

Finally, the **life satisfaction** question used in WVS is the following:

All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with life as a whole?

This question from the WVS is often used in the literature to identify "what makes us happy" (see Dolan et al. (2008), for a review of the literature).

As independent variables, we use the traditional socio-economic variables (age, income, sex, diploma and economic status) commons to most of the studies on social capital and well being. As an additional covariate, we also include the following question concerning the freedom of choice from the WVS:

Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to indicate how much freedom of choice and control you feel you have over the way your life turns out.

### **3.2 Wealth, Natural, Produced, Intangible (Human and Social) Capital Data**

Wealth data were obtained from the World Bank estimations. The World Bank (2011, p.4) details calculations as follows:

- The measure of total wealth is built upon the intuitive notion that current wealth must constrain future consumption;
- Produced capital comprises machinery, structures, and equipment;
- Natural capital comprises agricultural land, protected areas, forests, minerals, and energy.
- Intangible capital is measured as a residual, the difference between total wealth and produced and natural capital. It implicitly includes measures of human, social, and institutional capital, which includes factors such as the rule of law and governance.

This last asset makes up a large share of total wealth, as it can be seen in Appendix 1 regarding a sample of countries.

### **3.3 Initial Analysis**

In order to draw our hypothesis, we first made an initial analysis describing the relationship between countries' intangible capital, the trust index, life-satisfaction (on average) and metrics of development.

We use the following macroeconomic variables:



- To control for economic growth we use the average GDP Growth Per Capita for the 2004-2013 period. Data come from the World Bank.
- To assess health, we use the 2012 Life Expectancy at Birth from the 2012 Human Development Index database (United Nations Development Program).
- To control for inequalities, we use the Gini Index. We use the last year available for each country, data come from the World Bank and the CIA<sup>4</sup>.
- Finally, to control for environmental sustainability, we use the 2014 Environmental Performance Index, prepared by the Yale Center for Environmental Law and Policy and the Center for International Earth Science Information Network (Yale and Columbia Universities<sup>5</sup>).

Figures 6 to 12 in the Appendix 2 present relationships between intangible capital and the macroeconomics variables. Figure 6 shows a weak positive association between intangible capital and trust for the 61 countries considered (one dot=one country). Figure 12 underlines the fact that countries with higher average GDP growth are not those owning the most intangible capital. Countries with more intangible capital are also those:

- with a better environmental performance (figure 8);
- with more produced capital (figure 9);
- with less inequalities regarding the Gini Index (figure 10);
- with better life expectancy (figure 11).

Regarding these trends, we question the role of intangible capital in the process of transforming wealth in well-being.

Nevertheless, trends are far from being strong and linear. We observe exponential effects as in figure 11 and thresholds effects essentially appear. Below 20,000\$ per capita, the intangible capital has no steady relationship with Gini index, life expectancy, environmental performance index, produced capital and government efficiency. In the same way, the positive correlation between intangible capital and trust seems to appear when intangible capital go beyond 20000\$ per capita and trust index is more than 50. Regarding GDP growth, it is obvious than richer country regarding intangible capital present an average GDP growth these last 10 years less than 2%. In our empirical study, we need to consider the option of thresholds effects.

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<sup>4</sup><https://www.cia.gov/library/publications/the-world-factbook/fields/2172.html>

<sup>5</sup>available at: <http://epi.yale.edu>

### 3.4 Empirical Strategy: A recursive mixed-process model

Generalized Trust Question and Voluntary Association Memberships are both used to measure social capital. While Generalized Trust Question aims to apprehend interpersonal trust, being a member of an association lies to networks, which are an important part of social capital following Putnam's definition (1995, 2000). Social connections as association membership are hypothesized to foster generalized trust since trust is inferred from ongoing social experiences (Glanville and Paxton, 2007; Glanville et al., 2013; Offe, 1999; Paxton, 2007). Nannestad (2008) propose the association membership as an important explanation of trust but empirical literature shows that trust and associative life may not increase together or even can perform in different ways (Delhey and Newton, 2003; Paxton, 1999; Costa and Kahn, 2001). Following Putnam, social connections and trust are independent but linked.

We study these two dimensions of social capital in interaction.

In order to control for the simultaneity of trust and voluntary association membership, and potential endogeneity with subjective well-being, we estimate an original recursive mixed-process model using the Conditional Mixed-Process (CMP) algorithm developed by Roodman (2011). To our knowledge it is the first attempt to take seriously into account these two different problems that may lead to severely biased estimates (Sonderskov, 2011).

We have therefore:

$$\begin{cases} y_1^* = \alpha_1 \cdot Z + \beta_1 \cdot X_1 + \gamma_1 \cdot C + \mu_1 \cdot K + \epsilon_1 \\ z_1^* = \beta_2 \cdot X_2 + \gamma_1 \cdot C + \mu_1 \cdot K + \epsilon_2 \\ z_2^* = \beta_3 \cdot X_3 + \gamma_1 \cdot C + \mu_1 \cdot K + \epsilon_3 \end{cases} \quad (2)$$

with  $X_i$  a vector of sociodemographic variables - that can be specific for each equation,  $C$  a vector of times and country dummies and  $K$  a vector of variables measuring wealth and intangible capital.  $\epsilon_i$  are three errors terms distributed according to a multivariate normal distributions with  $\rho_{ij}$  the correlation between  $\epsilon_i$  and  $\epsilon_j$ . The system includes an ordered probit and two binary probit, i.e.

$$\begin{cases} y_1 = p \text{ if } \tau_{p-1} < y_1^* < \tau_p \text{ with } p = 1, \dots, 10, \tau_0 = -\infty \text{ and } \tau_{10} = \infty \\ z_j = 1 \text{ if } z_j^* > 0 \text{ and } z_j = 0 \text{ if } z_j^* \leq 0 \text{ with } j = 1, 2 \end{cases} \quad (3)$$

This system of equations is estimated according to the method of simulation of maximum likelihood (as the estimation implies the calculation of a triple integral within the likelihood function). The Geweke-Hajivassiliou-Keane (GHK) smooth recursive simulator (Hajivassiliou, 2000) exploits the fact that a multivariate normal distribution

function can be expressed as the product of sequentially conditioned univariate normal distribution functions. Instead of an evaluation of multivariate integrals, the GHK simulator only requires draws from truncated normal distributions and the evaluation of univariate integrals. The use of the GHK simulator implies that results depend on a number of random draws used to calculate the simulated likelihood function. However, when the number of observations is high, convergence can be achieved, with some loss in precision, with remarkably few draws per observation, as few as five when the sample is 10 000 (Roodman, 2011). Furthermore, draws variables based on Halton sequences are shown to perform better than those based on a pseudo-random draw (Cappellari and Jenkins, 2008). Consequently the choice of 7 draws from Halton sequences allows us to be relatively confident in the estimated parameters.

Standard errors are obtained through bootstrapping at the cluster level following Field and Welsh (2007); Cameron et al. (2008) using 100 replications. This procedure respect the sampling design and address the problem of interdependence between observations in a same cluster (here a country). The sample drawn during each replication is a bootstrap sample of clusters. This method is a simplified version of the randomized cluster bootstrap in which clusters are selected by simple random sampling with replacement and there is no subsequent permutation (Field and Welsh, 2007). It has been shown to be a convenient way to address the structure of clustered data without relying on the assumptions of multilevel modeling (Field and Welsh, 2007; Cameron et al., 2008; Harden, 2011; Huang, 2016) <sup>6</sup>.

Using margins effects calculations, we aim to check if social capital has a key role in transforming wealth into subjective wellbeing as well as a resilience effect when wealth is not globally growing in crisis period.

## 4 What Makes People Happy?

### 4.1 Results

Results of the estimation are reported in Table 2. First of all, trust and association membership appear linked. The cross equation correlation ( $\rho_{12} = 0.0704$ ) is significant and show that the probability to answer Yes to the generalized trust question has common explanations with the probability to be a member of an association and *vice versa* even once controlled by a set of covariates. The unobserved variables influencing trust are positively correlated with the unobserved variables influencing association member-

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<sup>6</sup>Because of the sample size and the complexity of the likelihood function of a system of three multi-level non-linear equations, the attempt to estimate such an alternative system were unsuccessful. Furthermore as the time increases asymptotically with the number of parameters, this is largely - at the moment- an intractable problem (Bartus and Roodman, 2014). Note that the estimations reported in this paper took already three weeks on the Gauss server of the ESG-UQAM.

ship: Trust and association membership may be caused by a third variable. But one should also note that this correlation is moderate (even for non-continuous dependent variables). This result support the hypothesis that these two variables are a two complementary proxies of social capital (Nannestad, 2008). It is also a corroboration of our empirical strategy that address endogeneity. But it is worth noting that  $\rho_{13}$  and  $\rho_{23}$  are not significant. This result allow us to reject the hypothesis of a endogenous relationship between social capital and life satisfaction (Monfardini and Radice, 2008; Mullahy, 2011; Greene, 2010; Wooldridge, 2010). Finally Trust seems to have a positive impact on Life Satisfaction as the estimated parameter is significantly different from 0. On the contrary we can not reject the null hypothesis of a parameter for association membership not different from 0 in the Life Satisfaction equation.

Table 2 – Results of the recursive mixed-process model

VARIABLES	(1) Trust	(2) Asso	(3) Life Satisfaction
Trust			0.111*** (0.00824)
Asso			0.0639 (0.0787)
Control (ref. 1 : None at all)			
2			-0.252*** (0.0527)
3			-0.0776** (0.0376)
4			0.0192 (0.0379)
5			0.219*** (0.0343)
6			0.356*** (0.0348)
7			0.518*** (0.0328)
8			0.728*** (0.0363)
9			0.906*** (0.0349)
10: A great deal			1.170*** (0.0364)
Age (Ref: Less than 25)			
25-34	0.00128	-0.0596***	-0.111***

<i>continued from previous page</i>			
VARIABLES	(1)	(2)	(3)
	Trust	Asso	Life Satisfaction
	(0.0154)	(0.0143)	(0.0121)
35-44	0.0924***	-0.140***	-0.137***
	(0.0182)	(0.0147)	(0.0116)
45-54	0.102***	-0.172***	-0.171***
	(0.0153)	(0.0184)	(0.0134)
55-64	0.163***	-0.177***	-0.121***
	(0.0203)	(0.0226)	(0.0122)
65 and more	0.270***	-0.1000***	-0.00859
	(0.0247)	(0.0284)	(0.0155)
Sex (ref: Male)			
Female	-0.0232**	-0.127***	0.0205***
	(0.00923)	(0.00915)	(0.00715)
Diplom (ref: Inadequately completed elementary education)			
Completed (compulsory) elementary education	0.0919***	-0.0240	0.103***
	(0.0203)	(0.0217)	(0.0207)
Incomplete secondary school: technical/vocational type	0.0639**	0.117***	0.00583
	(0.0257)	(0.0240)	(0.0179)
Complete secondary school: technical/vocational type	0.0859***	0.130***	-0.0197
	(0.0220)	(0.0213)	(0.0189)
Incomplete secondary: university-preparatory type/Secondary	0.170***	0.234***	-0.0554***
	(0.0240)	(0.0214)	(0.0181)
Complete secondary: university-preparatory type/Secondary	0.206***	0.221***	-0.0166
	(0.0233)	(0.0224)	(0.0183)
Some university without degree/Higher education	0.266***	0.449***	-0.0722***
	(0.0254)	(0.0244)	(0.0231)
University with degree/Higher education	0.378***	0.420***	-0.0269
	(0.0229)	(0.0209)	(0.0216)
Status (ref. Full time)			
Part-time	0.0669***	0.179***	-0.00817
	(0.0183)	(0.0190)	(0.0108)
Self-employed	-0.0659***	0.145***	-0.0159
	(0.0161)	(0.0120)	(0.0109)
Retired	-0.114***	-0.202***	-0.139***
	(0.0184)	(0.0226)	(0.0161)
Housewife	-0.128***	-0.129***	0.119***
	(0.0181)	(0.0173)	(0.0108)
Students	0.0272	0.311***	-0.0398**
	(0.0167)	(0.0212)	(0.0173)
Unemployed	-0.169***	0.0200	-0.202***
	(0.0202)	(0.0143)	(0.0134)
Other	0.163***	-0.0599*	-0.0638**
	(0.0329)	(0.0339)	(0.0263)

<i>continued from previous page</i>			
	(1)	(2)	(3)
VARIABLES	Trust	Asso	Life Satisfaction
Income (ref. First step)			
2	0.0366* (0.0200)	-0.0960*** (0.0230)	0.0489** (0.0215)
3	0.122*** (0.0210)	-0.0636*** (0.0194)	0.0542*** (0.0184)
4	0.141*** (0.0208)	0.00234 (0.0197)	0.140*** (0.0182)
5	0.147*** (0.0194)	0.0783*** (0.0163)	0.253*** (0.0177)
6	0.198*** (0.0220)	0.152*** (0.0154)	0.335*** (0.0176)
7	0.235*** (0.0201)	0.200*** (0.0156)	0.433*** (0.0193)
8	0.208*** (0.0241)	0.264*** (0.0253)	0.512*** (0.0219)
9	0.328*** (0.0335)	0.320*** (0.0281)	0.529*** (0.0264)
10th step	0.405*** (0.0296)	0.384*** (0.0258)	0.601*** (0.0307)
TotalWealth	-5.33e-06*** (6.55e-07)	-8.93e-06*** (5.86e-07)	-4.80e-07 (4.60e-07)
perc_intangible	2.477*** (0.123)	2.486*** (0.0754)	-2.016*** (0.106)
TotalWealth#c.perc_intangible	1.86e-05*** (1.82e-06)	2.31e-05*** (1.54e-06)	5.94e-06*** (1.22e-06)
perc_intangible#perc_intangible	-3.269*** (0.122)	-3.125*** (0.0897)	2.326*** (0.115)
TotalWealth#perc_intangible#perc_intangible	-1.21e-05*** (1.26e-06)	-1.24e-05*** (1.03e-06)	-6.33e-06*** (7.88e-07)
Constant	-1.443*** (0.0459)	-0.952*** (0.0368)	
cut_3_1			-1.645*** (0.0480)
cut_3_2			-1.374*** (0.0480)
cut_3_3			-1.033*** (0.0481)
cut_3_4			-0.732*** (0.0482)
cut_3_5			-0.219*** (0.0480)
cut_3_6			0.156***

<i>continued from previous page</i>			
	(1)	(2)	(3)
VARIABLES	Trust	Asso	Life Satisfaction
			(0.0492)
cut_3_7			0.662*** (0.0506)
cut_3_8			1.339*** (0.0518)
cut_3_9			1.799*** (0.0527)
$\rho_{ij}$		0.0704*** (0.00592)	0.0053 (0.00412)
			0.0127 (0.0486)

Lecture:  $N = 106,622$ ; \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; bootstrapped standard errors (based on 100 replications) in parentheses; time and countries dummies not reported.

Concerning the socio-demographic variables, we can observe in the table 2 the following results, suggesting that the two proxies of social capital are determined by different covariates. The parameters have to be interpreted as direct effects of covariates (Greene, 2010) <sup>7</sup>. More the respondent is old, more the probability to trust each other is increasing, with respect to young people under 25. On the contrary, it is as there is an inverted U shaped relationship with association membership. The same principle seems to apply to life satisfaction (there is no statistical difference between young people under 25 and people aged 65 and more). Females have a lower level of social capital (both parameters estimates are significantly negative) but on average have a higher level of life satisfaction. Regarding education, being graduate increase the probability to trust each other but has a controversial effect on life satisfaction. Status has an impact on trust. Statuses fostering isolation (unemployed, housewife, retired, self-employed) have a negative one compared being a full time employee. Being unemployed and retired has also a negative impact on life satisfaction. Globally, the probability to trust each other, to be a volunteer and to be satisfied with his/her own life is increasing with the income's scale of the respondent.

Wealth and intangible capital are introduced in the model with interaction and squared terms. As shown by Ai and Norton (2003), we know that the magnitude of the interaction effects in nonlinear models does not equal the marginal effect of the interaction term. Therefore we report Average Marginal effects of Trust, Association Membership and Wealth and Intangible Capital in Table 3. As the estimated parameter for Trust in the Life satisfaction is significantly different from 0, we report in addition

<sup>7</sup>The indirect effects correspond to the fact that these covariates appear also as covariates in the other equations.

to the unconditional average marginal effects the conditional (on *Trust* = 1) average marginal effects. The latter are reported in appendix 3 (see table 4) as there is only slightly changes with the former.

Total Wealth has an average positive impact on the probability of Trust and association membership, whereas Intangible capital has an average negative impact. Both variables have an average positive impact on the highest level of Life satisfaction.



Table 3 – Unconditional average marginal effects

VARIABLES	Trust	Asso	Life S.(1)	Life S.(2)	Life S.(3)	Life S.(4)	Life S.(5)	Life S.(6)	Life S.(7)	Life S.(8)	Life S.(9)	Life S.(10)
Trust			-0.00576*** (0.000412)	-0.00320*** (0.000232)	-0.00543*** (0.000392)	-0.00587*** (0.000451)	-0.0106*** (0.000832)	-0.00598*** (0.000447)	-0.00243*** (0.000209)	0.00817*** (0.000593)	0.00962*** (0.000716)	0.0215*** (0.00163)
Asso			-0.00344 (0.00414)	-0.00189 (0.00230)	-0.00318 (0.00390)	-0.00341 (0.00421)	-0.00609 (0.00753)	-0.00337 (0.00421)	-0.00123 (0.00160)	0.00489 (0.00598)	0.00556 (0.00688)	0.0122 (0.0150)
TotalWealth	1.02e-07*** (1.87e-08)	3.42e-07*** (1.50e-08)	-2.93e-08*** (2.16e-09)	-1.53e-08*** (1.29e-09)	-2.49e-08*** (1.83e-09)	-2.58e-08*** (1.94e-09)	-4.32e-08*** (3.25e-09)	-2.12e-08*** (1.68e-09)	-2.61e-09*** (6.78e-10)	4.17e-08*** (3.19e-09)	4.08e-08*** (2.98e-09)	7.98e-08*** (6.21e-09)
perc_intangible	-0.230*** (0.0153)	-0.496*** (0.0130)	-0.0219*** (0.00152)	-0.0106*** (0.000938)	-0.0166*** (0.00155)	-0.0164*** (0.00185)	-0.0256*** (0.00346)	-0.0108*** (0.00217)	0.00227 (0.00145)	0.0291*** (0.00213)	0.0253*** (0.00304)	0.0452*** (0.00764)

Lecture:  $N = 106,622$ ; \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; bootstrapped standard errors (based on 100 replications) in parentheses; Life S.(i) correspond to the  $i$  level of Life Satisfaction (with  $i = 1, \dots, 10$ ).

But as one can reasonably think after a first look at the estimated parameters of the various interactions terms, the impact of intangible capital on trust, voluntary association membership and life satisfaction does not seem to be linear and may depend on the level of the countries' global wealth. Remembered our initial analysis and considering this point, one can suspect threshold effects linked to the level of countries' wealth.

## 4.2 Does the impact of intangible capital depend on the level of wealth of the country?

To check this hypothesis, we present the impact of the ratio  $\frac{\text{IntangibleCapital}}{\text{TotalWealth}}$  (= % Intangible Capital) following the level of wealth, divided in quartiles.

Figure 2 presents the interactions effects between wealth and intangible capital on interpersonal trust. For all countries, the marginal effect of intangible capital is increasing to a top and then it decreases. First, we observe the positive impact of total wealth. The higher the wealth quartile, the higher the top of the curve rises, and the more the probability of trust can be high. Then, we observe a different impact of the ratio following the quartiles of wealth. When the percentage of intangible capital is low, more the country is globally poor, more is the probability to trust each others. After the turning point, the impact of intangible capital is as much positive as the country is rich.

Figure 2 – Interactions effects Wealth-Intangible Capital on Trust

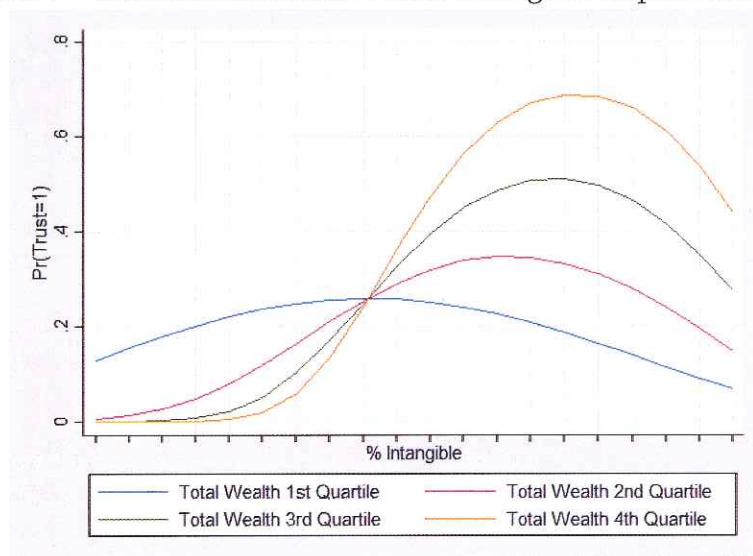


Figure 3 presents the interactions effects between wealth and intangible capital on association voluntary membership. We can observe a similar trend. Except for the first quartile, the percentage of intangible capital has a radical impact on the probability to be part of a voluntary association. Finally, when the ratio  $\frac{\text{IntangibleCapital}}{\text{TotalWealth}}$  becomes very

high, its positive impact decreases.

Figure 3 – Interactions effects Wealth-Intangible Capital on Voluntary Association Membership

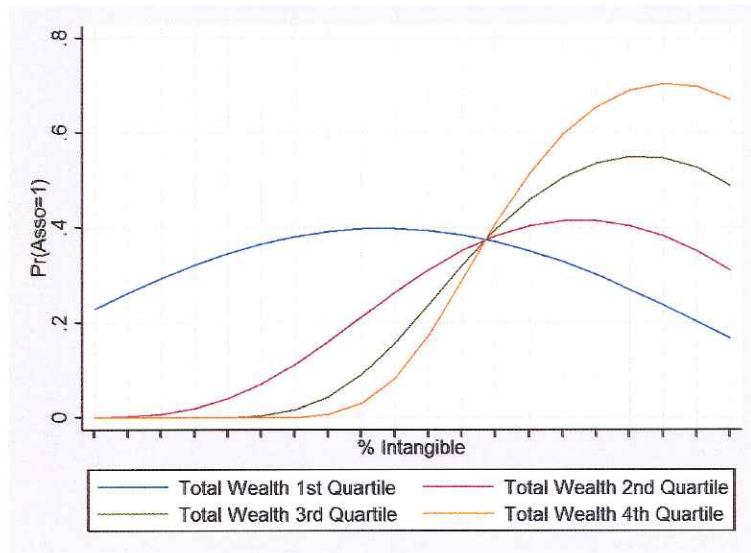
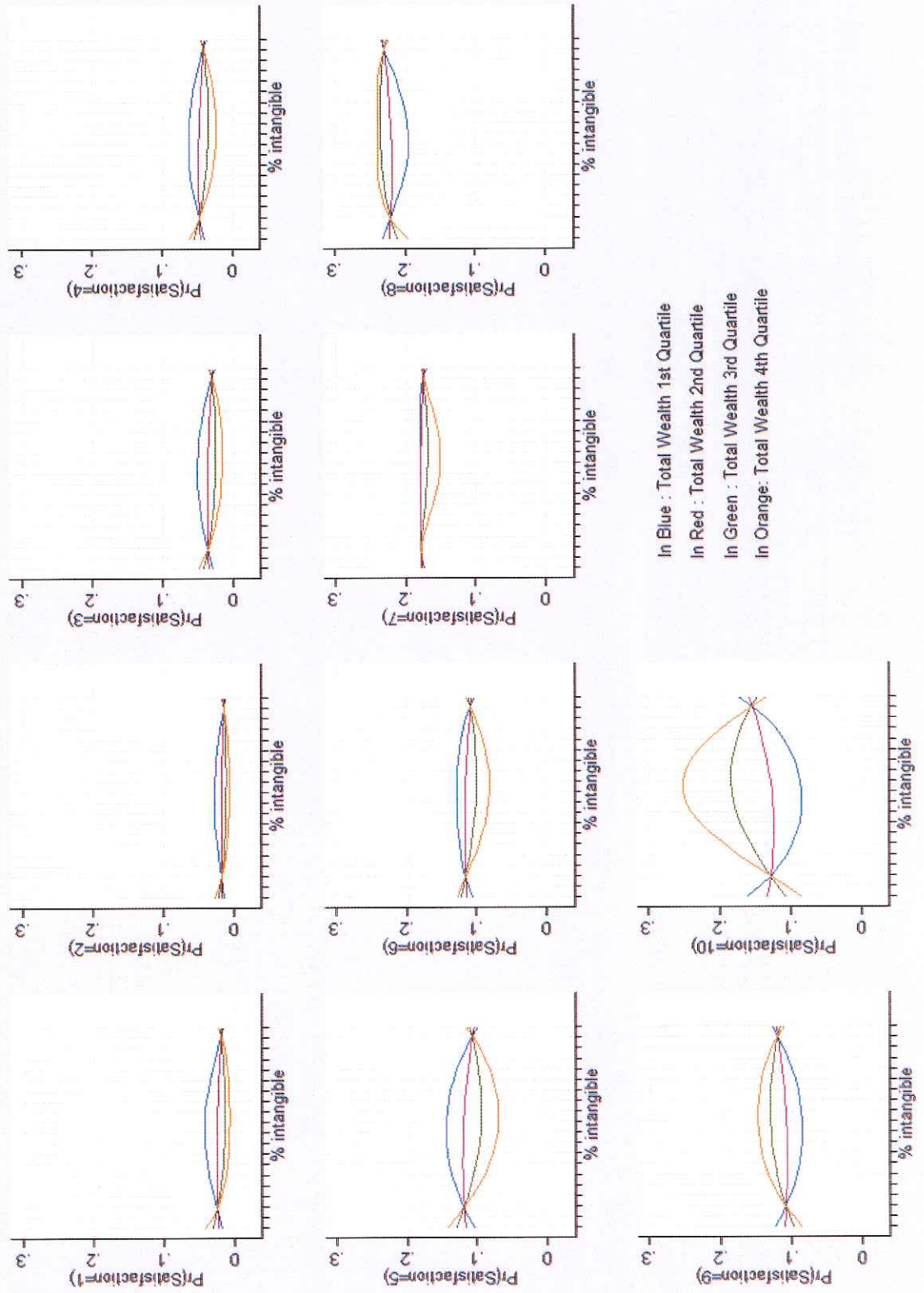


Figure 4 presents the interactions effects between wealth and intangible capital on the subjective well-being. Globally, being in a richer quartile increases the probability to evaluate positively one's own life (see the three last figures matching with the marks 8, 9 and 10) and living in a poor country increases the probability of giving a lower score (figures 1 to 7). The percentage of intangible capital tends to soften these trends. The last figure that regards the probability to be perfectly satisfied with one's own life is especially interesting. If you live in a rich country (3rd and 4th quartiles), the impact of intangible capital abundance in total wealth follows a bell-shaped curve while it follows a U-curve regarding poorer countries (1st and 2nd quartiles). Finally, to be happy in a rich country, it appears necessary that the wealth contains an important part of intangible capital but not too much while in a poor country, you will be happier with a wealth full of intangible capital.

Figure 4 – Interactions effects Wealth-Intangible Capital on Life Satisfaction



## 5 Discussion and Conclusion

Keeping in mind Figure 1 and following Ekins' propositions (1992, 2000), the wealth creation is a combination of stocks applied with flows. Together, four kinds of capital create global wealth for the people through the process of production. Natural, human, social and manufactured capital constitute the productive base that will determine intergenerational well-being. However, the process of production may reduce wealth in two major ways:

- Production process can destroy the stock of capital. Atmospheric pollution can be responsible for reducing natural capital, and at the same time, there is a negative effect on environmental services. Production process can also cut human capital. When inequalities increase with production, human and/or social capital can decrease. That is why we can observe a negative correlation between GDP growth and intangible capital (Figure 12, Appendix 2).
- Production process can reduce well-being, since well-being does not depend only on consumption. For example, pollution from certain agricultural or industrial productions may damage residents' or workers' health.

This means that the same level of capital stocks may lead to different levels of wealth. Trust can foster the dynamic of wealth creation. Indeed, the literature underlines the following points:

- Trust enhances institutions' performance (Algan, 2011; Aghion et al., 2010; La Porta et al., 1997; Bjornskov, 2010; Bjornskov and Meon, 2013);
- Trust is necessary for business and trade (Arrow, 1972<sup>8</sup>; Knack and Keefer (1997); La Porta et al. (1997); Bornschieer (2005); Kwon and Arenius (2010); Ikeda (2008); Bjornskov and Meon (2015));
- Trust enhances human capital (Dearmon and Grier, 2011);
- Trust enables successful management of a commons (Ostrom, 1998, 2010; Henry and Dietz, 2011; Brondizio et al., 2009; Folke, 2006; Dasgupta, 2005; Adger, 2003).

Trust is difficult to apprehend, following Levien (2015) argument that "networks, norms, and trust should be treated not as composite stocks, but as independent variables that, especially during processes of economic development, often stand in considerable tension with each other" (p.77) but **trust would act as a lubricant**, in Arrow's terms (1972) in the production process leading to well-being.

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<sup>8</sup>According to (Arrow, 1972, p. 357), "Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence."

The importance of trust being demonstrated, we aimed to apprehend what yields the "yes" answer to the generalized trust question, focusing on the impact of macroeconomics variables.

**Result 1** *Living in a rich country make people more trustful, but the link is not linear and depend of the level and the structure of wealth.*

If the total wealth has a negative impact on interpersonal trust, the percentage of intangible capital appear positive (table 2). But the relationship between the importance of the intangible capital in the country and the level of trust of the respondent appear different following the level of wealth in the country (figure 2). If the country is poor, to develop intangible capital is good for trust in a first step but rapidly becomes detrimental (up to 45% of intangible capital). Regarding richer countries, the negative effect appears much later, between 70% and 80% of intangible capital. For all, in a first step, more the intangible capital is an important part of the global wealth, more the probability to answer yes to the generalized trust question increases. Networks and cooperation are growing as well as the education system may get better, all of these phenomenons involve more trust. In a second step, when the intangible capital is more and more important in the global wealth, the positive impact of intangible capital on trust decreases. Regarding richer countries, institutions may be so developed and strong that social capital increases but interpersonal trust decreases. Trust in government institutions may increases at the cost of families or local networks and interpersonal trust. Regarding less developed countries, another explanation appears. The intangible capital, being more important in the global wealth, may involve closed networks as families but also neighborhood, mafia or gangs (Woolcock, 1998).

**Result 2** *The interpersonal trust and the voluntary association membership seems to share the same driving forces (table 2) but do not have the same effect of life satisfaction.*

This results was obtained thanks to our original empirical approach that address the problem of the potential endogeneity of social capital and life satisfaction. It supports the idea that interpersonal trust and voluntary association membership can be both used as proxies of social capital (table 1). As the correlation is moderate, theses proxies measure two different aspects of social capital (Nannestad, 2008). Nevertheless, to implement politics that will develop one or the other component of social capital do not have the same impact of subjective well-being. Even if we have only considered association membership for "Putnam associations", we didn't completely address the problem of "bonding" (that may reinforce social isolation) and "bridging" (that may have positive effects on the wider society) associations (Coffe and Geys, 2008; Paxton, 1999, 2002; Putnam, 2000). One implication of the fact that different types of social capital exist is that government policies designed to affect social capital in society may not generate the desired economic, political and social outcomes (Coffe and Geys, 2008).

**Result 3** *The subjective well-being of an individual is affected by the level and the structure of the wealth of the country where he belongs to.*

Our study clearly demonstrates that the more the wealth of the country is, the more the probability to be satisfied with the one's life increases (figure 4). But the more important result is that the structure of the wealth is worthwhile: to get richer because of an increase of produced capital or an increase of intangible capital will not have the same consequences on the subjective well-being. Even the kind of social capital (volunteering or trust) fostered will not have the same impact on well-being. Furthermore, the increase part of intangible capital in the global wealth do not have the same relationship with subjective well-being in poor and in rich countries (figure 4). First, following classical theories of social capital (Banfield, 1958; Putnam, 1993; Fukuyama, 1995) a basic level of social capital is necessary to develop the country and any other kind of wealth (human capital, economic development, health,...). This explains that in poorer countries, even with a large part of intangible capital, individuals have a great probability to be not much satisfied with one's life. When the country becomes richer, the impact of the part of intangible capital in the total wealth becomes more and more positive. Indeed, with social and human capital come democracy and strong and fair institutions. But finally, why when the part of intangible capital becomes preponderant (up to 70-80%), can we observe a decrease in life satisfaction? Ahlerup et al. (2009) demonstrate that social capital and formal institutions are each others substitutes for development. In this way, the growing intangible capital may consist in more institutional trust but less interpersonal trust and weaker relationships between people. This change can be partially disturbing for individuals...and detrimental for subjective well-being.

**Result 4** *The role of social capital is preponderant, for the wealth of a country, for the well-being of individuals, but the mechanisms at work are not the same for all countries.*

Going back to figure 1, our added-value is twofold:

- We underline a link between the structure of wealth and subjective well-being, emphasizing the role of social capital. Trust is a component of social capital that directly and positively impacts the subjective well-being.
- We underline threshold effects. This is an important result because it highlights that the dynamics linking wealth and well-being are not the same following the level of development of the countries. Our result is the following: the process of well-being improvement corresponds to varying models that depend on the country's initial stocks of capital. Furthermore, an increase in the stock of capitals is not enough to generate well-being since a kind of capital a kind of capital

may have no impact or a negative one on welfare, keeping in mind that the production process may damage the stock of capital (figure 1).

We need further investigations to understand how the production process leads to sustainable well-being. First one should note that the generalized trust question does not provide perfect data due to translation difficulties, sampling error, and response bias (Knack and Keefer, 1997). Glaeser et al. (2000) explain the trust question does not appear to measure trust but to measure trustworthiness (which is an ingredient of social capital). They also state that answers depend on individual characteristics such as family status, social skill, suggesting that some people have "individual social capital" (Glaeser et al., 2000, p. 841).

More fundamentally we should analyze the role of trust in institutions. Indeed, the World Value Surveys has recently developed additional questions in order to better apprehend the global concept of trust. Dasgupta (1999) among others describes social capital as "fiendishly difficult to measure, [...] not because of a recognized paucity of data, but because we do not quite know what we should be measuring" (p.326). Dasgupta argues Putnam's definition "appears beguiling, but it suffers from a weakness: it encourages us to amalgamate incommensurable objects, namely (and in that order), beliefs, behavioral rules and such forms of capital assets as interpersonal networks—without offering a hint as to how they are to be amalgamated" (p.327). Social capital appears multidimensional (Woolcock, 1998), it has different forms and different effects. A second way to go further is the study of territories' dynamics by analyzing case studies, such as those conducted by Ostrom (2010, especially pp.21-25)<sup>9</sup>, Levien (2015); Paul et al. (2016); Sessin-Dilascio et al. (2015). It appears essential due to the sheer variety of effects that social capital and trust can produce; the multidimensional aspects of both concepts; and the difficulty to apprehend the micro-macro transition.

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<sup>9</sup>"to explain the world of interactions and outcomes occurring at multiple levels, we also have to be willing to deal with complexity instead of rejecting it."(Ostrom, 2010, p. 25)



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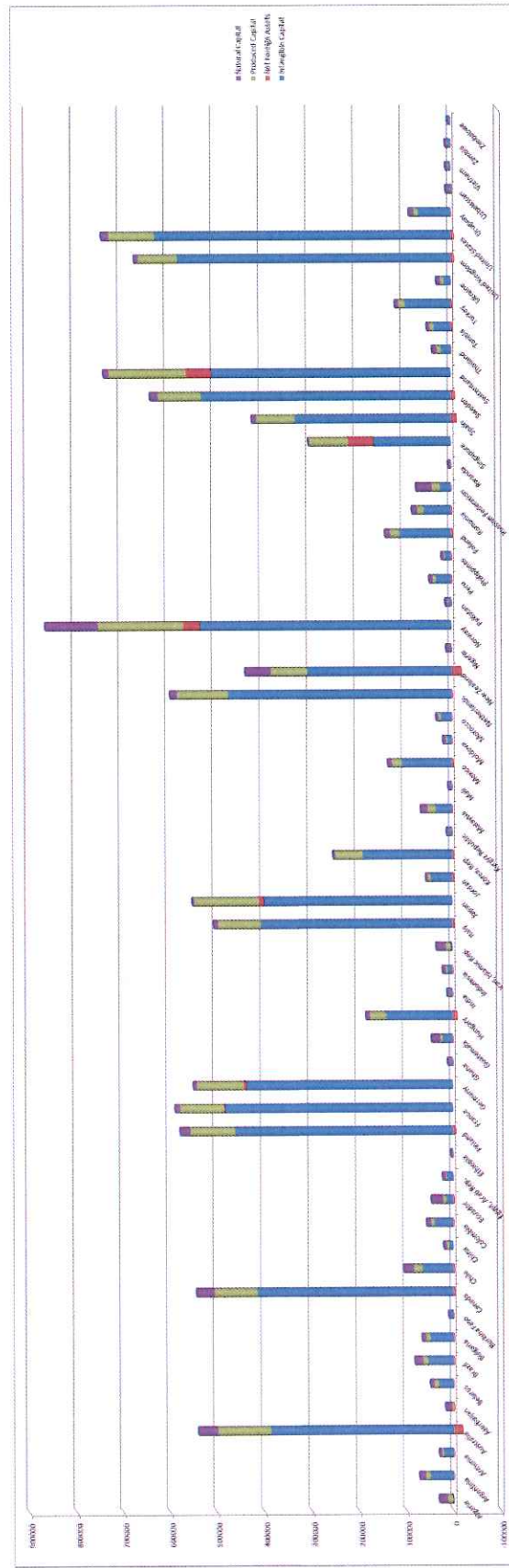
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## 6 Appendices

## 6.1 Appendix 1 : The Wealth of nations, 2005

Figure 5 – The Wealth of nations, 2005  
*All measures of capital are Per Capita, in 2005 US dollar. Data come from World Bank estimations. 61 countries (our sample)*



## 6.2 Appendix 2 : Preliminary Analysis

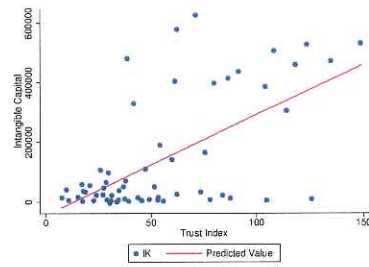


Figure 6 – Intangible Capital and Trust Index

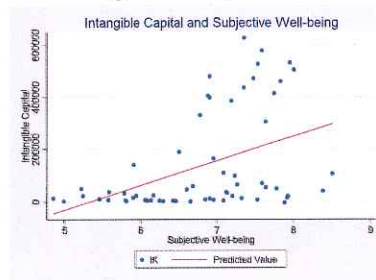


Figure 7 – Intangible Capital and Life Satisfaction

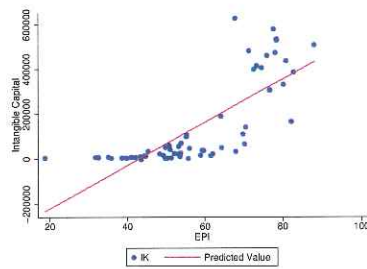


Figure 8 – Intangible Capital and EPI

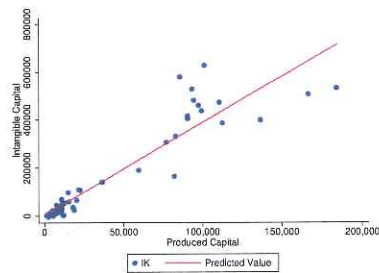


Figure 9 – Intangible Capital and Produced Capital

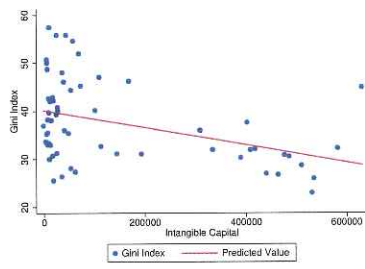


Figure 10 – Gini Index and Intangible Capital

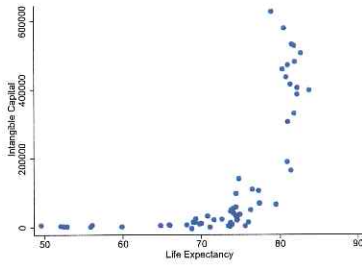


Figure 11 – Life Expectancy and Intangible Capital

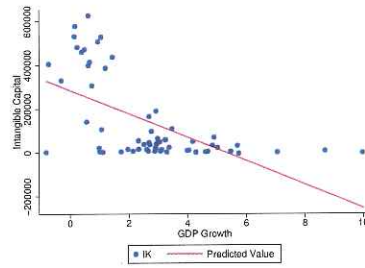


Figure 12 – Intangible Capital and GDP Growth

### 6.3 Appendix 3 : Conditional Average Marginal Effects

Table 4 -- Conditional average marginal effects

VARIABLES	Life S.(1)	Life S.(2)	Life S.(3)	Life S.(4)	Life S.(5)	Life S.(6)	Life S.(7)	Life S.(8)	Life S.(9)	Life S.(10)
Trust	-0.00568*** (0.000407)	-0.00317*** (0.000229)	-0.00540*** (0.000390)	-0.00585*** (0.000449)	-0.0106*** (0.000833)	-0.00604*** (0.000452)	-0.00254*** (0.000217)	0.00805*** (0.000584)	0.00960*** (0.000715)	0.0216*** (0.00165)
Asso	-0.00339 (0.00408)	-0.00187 (0.00228)	-0.00317 (0.00388)	-0.00340 (0.00420)	-0.00610 (0.00754)	-0.00340 (0.00425)	-0.00130 (0.00169)	0.00482 (0.00589)	0.00556 (0.00687)	0.0123 (0.0152)
TotalWealth	-2.87e-08*** (2.13e-09)	-1.50e-08*** (1.27e-09)	-2.46e-08*** (1.82e-09)	-2.54e-08*** (1.94e-09)	-4.29e-08*** (3.26e-09)	-2.12e-08*** (1.70e-09)	-3.00e-09*** (6.86e-10)	4.09e-08*** (3.16e-09)	4.04e-08*** (2.98e-09)	7.95e-08*** (6.26e-09)
perc_intangible	-0.0219*** (0.00150)	-0.0107*** (0.000931)	-0.0168*** (0.00154)	-0.0167*** (0.00185)	-0.0264*** (0.00347)	-0.0114*** (0.00218)	0.00163 (0.00148)	0.0291*** (0.00209)	0.0259*** (0.00303)	0.0473*** (0.00770)

Lecture: N = 106, 622; \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; bootstrapped standard errors (based on 100 replications) in parentheses; Life S.(i) correspond to the i level of Life Satisfaction (with  $i = 1, \dots, 10$ ).

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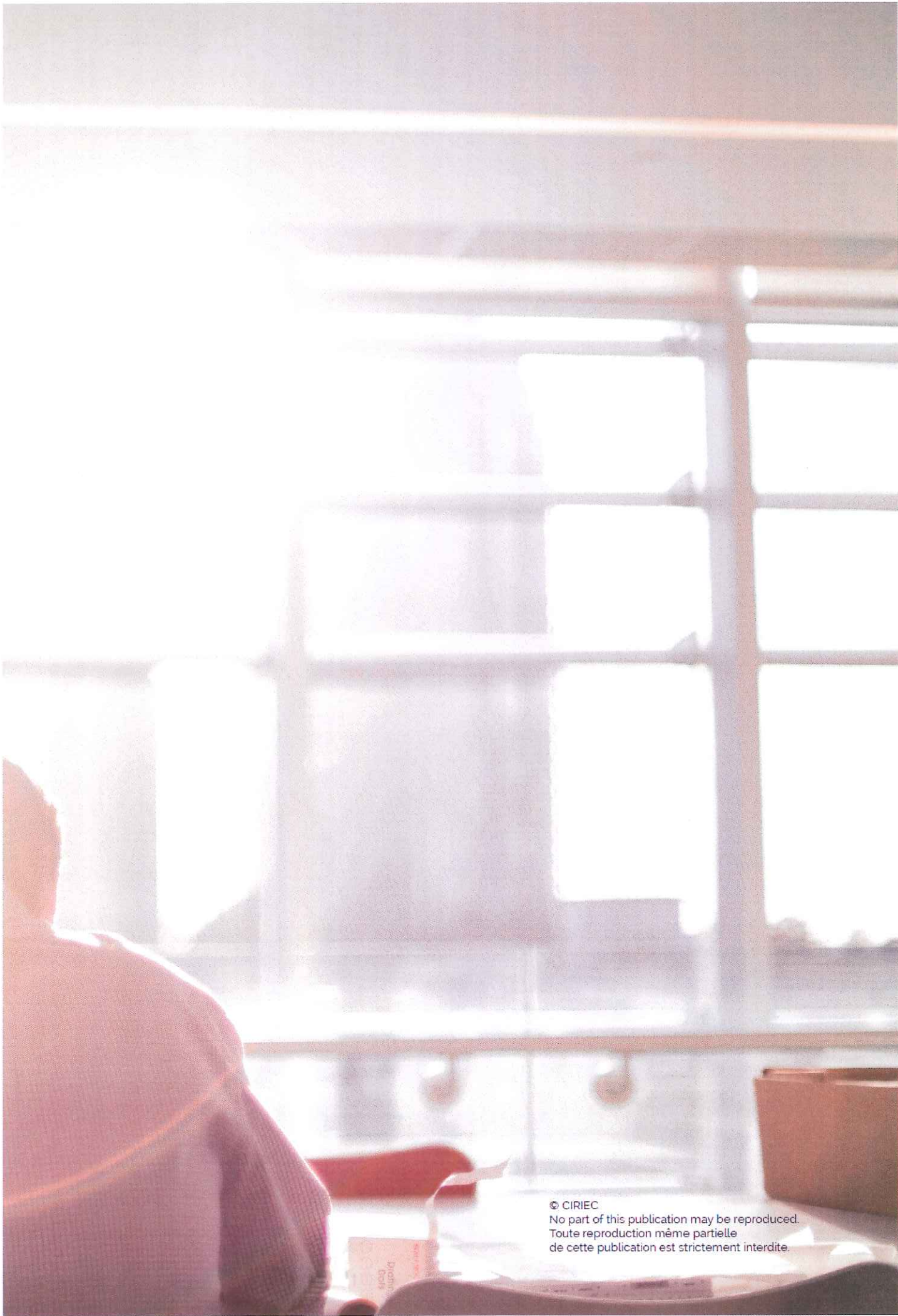
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