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Does the market make us happy? The stock market and well-being

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Abstract

The present paper studies the relationship between well-being and the stock market in the USA. We find that there is a relationship between well-being and the capital market. Empirical tests, using the Gallup Healthways Well-being Index, Standard&Poor's S&P 500 and the VIX volatility index show a strong and statistically significant impact of the stock market on well-being

Keywords: well-being, stock market, happiness, uncertainty

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I. Introduction

The pursuit of happiness is, according to the US Declaration of Independence, one of the three unalienable rights of man. This was not self-evident at the time. Individual happiness has never been considered an intrinsically important human goal in Christian culture. Nevertheless, the importance of happiness can be traced back to philosophers such as Richard Cumberland, John Locke and Jeremy Bentham. Happiness is often considered as the final goal for every individual. National happiness can, as such, be viewed as the target for any economic and social policy: 'it is the greatest happiness of the greatest number that is the measure of right and wrong' (Bentham, 1776; Burns and Hart, 2008).

Debates on the nature of happiness started in ancient times. There are two alternative views on what happiness might be that have prevailed over the years: a *hedonic* idea of happiness and a *eudemonic* one.

The hedonic school can be traced back to the Socratic doctrine: happiness is the highest good and has an empirical, bottom-up approach stressing subjective well-being. In the *hedonic* approach, as proposed by Bentham in 1789 (Myers, 1999; Kahneman *et al.* 1999; Ryan and Deci, 2001), happiness is the result of avoiding pain and seeking pleasure, the key concept in the Utilitarian school. In this sense, happiness is seen as an outcome, empirically related to different conditions and circumstances. The relationship between happiness and

utility has also been defined by Bentham in both its individual and aggregated forms (Bentham, 1776; Burns and Hart, 2008).

On the other hand, the eudemonic¹² view (more theoretical or top-down), starting from Aristotle, considers happiness as a more complex concept, not strictly limited to attaining pleasure: “happiness is something like flourishing human living, a kind of living that is active, inclusive of all that has intrinsic value, and complete, meaning lacking in nothing that would make it richer or better” (Nussbaum, 2005). Happiness is seen here as the self-sufficient, ultimate goal of life and an indirect result of the practice of virtue. This connection might also be considered paradoxical because a virtuous life is a way to attain happiness, but virtues can bring happiness only as long as they are not purely means to achieve this (Bruni, 2010). This paradox is often referred in the literature as Aristotle’s happiness paradox.

The two approaches described above are present in the work of several economists who have tried during the years to identify a connection between income and happiness. Sen (1979) and Konow and Earley (2008), for example, have an approach close to the Aristotelian eudemonia. Konow and Earley support the “hedonistic paradox” which states that Homo Economicus will not find happiness, but unselfish people, helping others, will. On the other hand, the approaches of mainstream economists of happiness are much closer to the hedonic idea of happiness (Easterlin, 1974, 2001, 2004, 2006; Clark *et al.*, 2008; Di Tella and MacCulloch, 2006, 2008; Ng, 2003). The popularity of this approach is not surprising, utilitarianism being the major philosophical influence on economic thought. Utilitarian happiness can be measured through surveys and be empirically tested while Aristotelian eudemonia is harder to be empirically tested.

¹ Eudaimonia can also be defined as the highest of all goods achievable by action, according to Aristotle.

There is, however, no universally agreed definition of happiness in economics. For instance, Easterlin (2001) uses happiness, subjective well-being, satisfaction, utility, well-being and welfare, interchangeably. Ng (1997, 2003) defines happiness as welfare; Frey and Stutzer (2002) consider reported well-being as a proxy for measuring utility. Clark et al. (2008) consider happiness as well-being, while Layard (2005) uses the category of subjective well-being as a synonym of happiness.

Since happiness can be defined differently by each individual, the more frequently used ways to measure it is by large surveys that collect self-reported values, like answers to questions such as: “On the whole, are you very satisfied, fairly satisfied, or not very satisfied with the life you lead?” (Euro-Barometer Survey), “In conclusion, we would like to ask you about your satisfaction with your life in general, please answer according to the following scale, 0 means completely dissatisfied and 10 means completely satisfied. How satisfied are you with your life, all things considered?” (German Socio-Economic Panel –GSOEP), “Taken all together, how would you say things are these days –would you say that you are very happy, pretty happy or not too happy” (United States General Social Survey -GSS). A highly useful survey, the World Values Survey (2009) puts two questions related to happiness. The first is: “All things considered you would say that you are : i) very happy; ii) pretty happy, iii) not too happy; iv) not at all happy”. The second question asks respondents: “All things considered are you satisfied or unsatisfied with your current life?”

The surveys used in the economics of happiness differ in the number of respondents, time horizon or amplitude of scale.³ Some authors use a 10 point scale, such as Leu et al (1997) or World Value Survey(2009) others use a smaller scale, such as the Russian Longitudinal Monitoring Survey.⁴

³ A large selection of surveys can be found in Veenhoven (2011)

⁴ Russia Longitudinal Monitoring survey, RLMS-HSE”, conducted by The Higher School of Economics and

Using self-reported happiness has raised controversies. Nevertheless, the multiple correlation between self-reported happiness and variables such as unemployment (Winkelmann and Winkelmann, 1998), exterior valuation realised by spouses, friends or other family members (Costa and McCrae, 1988; Sandvik *et al.*, 1993), physical measures such as prefrontal brain activity (Sutton and Davidson, 1997; Davidson *et al.*, 2000) or heart rate (Shedler *et al.*, 1993) represent a solid argument to consider reported subjective well-being as a good approximation of happiness.

We start our argument by analysing the connection between economic growth and happiness (Section II) and between capital markets and happiness (Section III). Section IV presents the empirical results and Section V draws the conclusions.

II. Income and happiness

In 1974 Richard Easterlin posed, for the first time, the question of whether or not there is “evidence that economic growth is positively associated with social welfare, i.e., human happiness”. He has tried to determine if there is a connection between the respondents’ income and happiness and if there could be a correlation between the average happiness of a group and its average income. His results have shown a strong connection between income and happiness at the individual level. When he compared happiness across nations the connection was much weaker. Happiness is not necessarily higher in countries where income is higher (Easterlin paradox). Despite the recent evidence that happiness is related with macroeconomic variables such inflation, GDP, GDP growth (DiTella and MacCulloch, 2004)

ZAO “Demoscope” together with The Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology RAS. The question asked is “to what extent are you satisfied with your life in general at the present time; i) fully satisfied, ii) rather satisfied, iii) not very satisfied, iv) not at all satisfied”.

or that happiness rises with the rise of income, comparing nations (Sacks *et.al.*, 2010) still fits Easterlin's findings about the differences across nations. The table below shows that Venezuela and Israel are in the top 10 happiest countries, ranking above the United State of America even if their gross national income is much lower.

Table 1. Top 20 happiest countries in the world

Condition	Thriving	Struggling	Suffering
Country			
Denmark	72%	27%	1%
Sweden	69%	30%	1%
Canada	69%	30%	2%
Australia	66%	33%	1%
Finland	64%	34%	3%
Venezuela	64%	32%	4%
Israel	63%	34%	3%
New Zealand	63%	35%	2%
Netherlands	62%	36%	2%
Ireland	62%	36%	3%
Panama	61%	37%	2%
United Stated	59%	38%	3%
Austria	58%	39%	3%
Costa Rica	58%	41%	2%
Brazil	57%	40%	3%
United Arab Emirates	55%	44%	1%
United Kingdom	54%	42%	4%
Qatar	53%	46%	1%
Mexico	52%	44%	4%

Columbia 48% 46% 5%

Source: 2010 Gallup Survey in Ray (2011).⁵

The main explanation Easterlin offered relates to Robert Merton's classical reference group theory (Merton, 1957). According to Merton, people tend to compare themselves to groups of people that hold social positions to which they aspire. In Easterlin's terms, people are sensitive to the variation in their income, only when comparing it to the group they belong to or aspire to belong to (country, local community, etc.).

Several recent studies have provided evidence for the influence of absolute or relative income on happiness. Di Tella and MacCulloch (2008) have shown, for instance, that "both the personal income position and the level of absolute income seem to matter". They found no evidence that relative income matters more than the concern with income.

On the other hand, Zizoo and Oswald (2001), McBride (2006), Graham and Felton (2006), Ferrer and Carbonell (2005), Clark *et al.* (2008) pointed out that people are much more influenced by their income, relative to other people in their country or group than by the absolute level of income. This idea of relative income is part of the more general aspiration theory used first by Easterlin in 1974 but also in more recent papers (Easterlin, 2001).

Adding to this, Luttmer (2004) noticed in a study on 9000 respondents from the USA that their happiness level seemed to drop in the same proportion as the decrease in individual income as with the increase of the average income in the place they live. All in all there is ample evidence that relative income has some important effects.

Blanchflower and Oswald (2004) found that both absolute and relative income are

⁵ Gallup classifies the respondent's well-being from 19 countries as "thriving", "struggling" or "suffering" according to how they rate their current and future lives based on the Cantril Self-Anchoring Striving Scale. The values of the scale are numbered from zero to ten and people are considered as thriving if they rate their current lives at seven or higher and their lives in five years at eight or higher. The suffering respondents rate their current and future lives at four or lower and the struggling respondents fall in between the two groups. The surveys presented here were conducted between February and December 2010

positively correlated with happiness but their effects on happiness are small compared to the effects of other non-pecuniary factors. All the studies we have encountered find that there is a clear connection between income, in absolute or relative sense, and happiness. Nevertheless, correlations are relatively low and changes in happiness can be explained by income change only in a small proportion.

The fact that economic development can also take place without an increase in happiness can be explained also by the so-called adaptation theory. Individuals adapt to income changes and modify their expectations without a correspondent increase in happiness (Easterlin, 2004; Oswald and Powdthavee, 2005). In the same line of thinking, DiTella and Haishen (2007) show that after four years the effect of an income increase on happiness is just 42% of the initial effect after one year.

Adaptation theory can also be connected with Veenhoven's (1993) assumption. He stated that an increase in income could generate an increase in happiness only if income is under the so-called "subsistence level". Once this level is reached, any supplementary increase would not generate an effect on happiness. When subsistence needs are satisfied, an increase in happiness is determined by the relationship with friends and family or other non-pecuniary factors (Lane, 2000).

III. Capital markets and national happiness

The link between the capital market and national happiness has not been studied before.

The direction and strength of the relationship depend on the performances of the market. The impact of the bull market could be different depending on its main determinants. If the bull market is a result of economic growth, investments and increase in public goods supply could contribute to a higher level of the overall happiness. This result is determined both by

the increase in the individual incomes and by the reduction of financial insecurity (also due to better health care conditions and increase in leisure activities). Nevertheless, there are studies which find that higher income is not necessarily associated with an increase of spare time even if the extra income could make the extra spare time affordable. Individuals tend to have ties with their income class peers who share with them a high opportunity cost for free time. Since “....a coordination failure may reduce the joint investment in relational goods, local public goods which need to be co-produced in order to be enjoyed together and through this effect, individuals in highest income quartiles may end up with poorer relational goods. The impact of personal income on happiness through this channel is therefore expected to be negative” (Becchetti *et al.*, 2009). In addition to that, economic growth can have associated environmental disruption effects such as over-spending on private consumption and under-provision of public good (Ng, 2003). These factors could all be exerting either a positive or a negative effect on welfare.

If, on the other hand, the bull market is just a result of a speculative bubble, the capital market evolution would not determine an increase in the happiness level since it is not based on economic growth. The only influence is on the income of market players and less on society as a whole. When the bubble bursts the increase in financial insecurity reduces happiness.

The negative influence of a bear market is less questionable. In a severe bear market, firms have difficulties in financing their activities and there will be a reduction of purchasing power. Even if the influence of these factors is not questionable, one of the most important connections between a bear market and happiness is of a psychological nature. The turmoil that a bear market generates leads to an increase in uncertainty that could heavily impact on happiness. Uncertainty about future incomes is proven to be an even more important factor of happiness than absolute income.

Uncertainty aversion has been extensively analysed in the literature (Ellsberg, 1961; Epstein, 1999; Fox and Weber, 2002; Halevy and Feltkamp, 2005; Maccheroni *et al.*, 2006). An established result is that uncertainty produces psychological and physical stress and increases during times of economic depression.

We can also find theoretical reasons according to which it is happiness that has positive effects on the capital market rather than the other way around. A happier investor could be willing to accept more risks due to his more positive assessment of the future, thereby increasing the demand for capital, leading to an increase of prices in the capital market.

We test for the direction of causality and we try to determine what elements of well-being are more sensitive to capital market conditions.

IV. Empirical analysis

Description of the data

In order to analyse the relation between the equity market and happiness we use the Gallup-Healthways well-being index, the Standard & Poor 500 index (S&P500) and the Chicago Board Options Exchange (CBOE) Volatility Index (VIX), which arguably are the most popular and reliable indicators of return and volatility in the USA capital market⁶.

The sample period starts in January 2008 and ends in March 2011, covering the months with the most severe capital markets turmoil of the last decades. For well-being we have used monthly values, for the stock market indexes we have used their value in the first trading day of the month.

⁶ Due to the fact that USA has by far the largest proportion of individual investors out of the total population and the highest stock markets capitalisation, the results provided by the empirical analysis could be highly conclusive.

The main target of Gallup-Healthways well-being survey (Gallup-Healthways, 2009) is to provide real-time measurement of happiness by interviewing at least 1,000 U.S. adults every day. The number of items ranges from two to thirteen for the different well-being domains: life evaluations, emotional health, physical health, healthy behaviour, work environment and basic access.⁷ The final value of the Gallup-Healthways well-being index is a composite of the six domains. We share the concern of the main stream literature about the validity of self reported data (Kahneman *et al.*, 1999; Frey and Stutzer, 2002; Borooah, 2005)

Generally, well-being surveys report happiness assessment, realised at a specific moment, when the survey wave is conducted. Due to the lack of time series many of the studies we encountered in the literature are based on panel data from different countries. The results of such an analysis could be vitiated both by cultural, institutional differences among countries and by different moments of data collection. The survey we use has the novelty of a series of valuation which fits better the analysis objective.

The S&P 500 is a stock index created by Standard & Poor's, a McGraw-Hill division to reflect the capitalisation of 500 large-cap common stocks actively traded in USA.⁸ Starting from 2005, S&P 500 is calculated by weighting the share prices with each companies' free

⁷ **The Life Evaluation Index** includes self-evaluation of the present life situation and anticipated life situation five years from now using the Cantril's self-anchoring striving test (Cantril, 1965) in which respondents are asked to rate their life on a scale from the worst possible (0) to the best possible life (10).

The Emotional Health Index includes: smiling and laughter, being treated with respect, enjoyment, happiness, worry, sadness, anger, stress, learning or doing something interesting, depression

The Physical Health Index includes: sick days in the past month, disease burden, health problems that get in the way of normal activities, obesity, feeling well-rested, energy, colds, flu, headaches

The Healthy Behaviour Index measures lifestyle habits that affect the health and includes: smoking, eating healthily, weekly consumption of fruits and vegetables, weekly exercise frequency

The Work Environment Index measures the respondents' perceptions of their work environment and includes four items: job satisfaction, ability to use one's strength at work, supervisor's treatment, supervisor creates an open and trusting work environment

The Basic Access Index measures respondents' access to necessities crucial to high well-being and includes : satisfaction with community or area, area getting better as a place to live, clean water, medicine, safe place to exercise, affordable fruits and vegetables, feel safe walking alone at night, enough money for food, enough money for shelter, enough money for healthcare, visit a dentist recently, access to a doctor, access to health insurance

⁸ In order to be included in the index basket, minimum half of the shares have to be outstanding to the general public (minimum 50% free float), at least four consecutive quarters have to have profit and there has to be a high liquidity (the ratio between the annual trades value and capitalization has to be at least 0.3).

float (until then, the weighting factor was capitalisation). A large number of index funds or exchanged trade funds aim to reproduce S&P 500 performances by investing in the same shares as the index, in exactly the same proportions, due to the fact that S&P 500 is considered a bellwether for the American economy. The S&P 500 is also used for evaluating the investments funds manager's performances.

The last indicator we have used is the Chicago Board Options Exchange (CBOE) Volatility Index, also known as VIX.⁹ The VIX reflects the expected volatility of the S&P 500 Index over the next 30 days, by averaging the weighted price of the S&P 500 Index options over a wide range of strike prices. The price of each option reflects the market's expectation of future volatility. If the volatility of the underlying security is higher the option will be more valuable since there is a greater probability that the option will expire with a market value above zero.

Stock market and well-being

In Section III we proposed several possible explanation regarding the direction and strength of the correlation between stock market and well-being. Our main assumption is that the evolutions of the capital market, especially the severe negative ones, have an important impact on well-being. The determinants of this relation are not simply monetary but also psychological. The downturn of the economy caused by capital markets collapses affects both investors (who have to face portfolio losses) and non-investors (due to several transmission channels such as inflation, unemployment etc). More than that, the increase in uncertainty associated with financial instability determines a decrease in self reported well-being, despite

⁹ VIX is often referred to as the "*fear index*" or "*fear gauge*" and was first introduced in 1993 by the Chicago Board Options Exchange, starting from Robert Whaley's work (1993)

the potential individual inactivity as an investor in the stock market.

To avoid spurious results, firstly we tested all the time series for unit root processes (using the augmented Dickey - Fuller test) and trend stationarity (using KPSS test), following the work of Engelhardt (2004), Thome (1992) and others. Our results show non stationarity (for zero and one lag) for composite well-being index and for the indexes of Life Evaluation, Emotional Health and Basic Access.¹⁰ On the other hand for the indexes for Physical Health, Healthy Behaviour and Work Environment, stationarity cannot be rejected. S&P 500 is not trend-stationary during the period of investigation for zero or one lag.¹¹ The VIX is negatively correlated with the S&P 500 and not stationary.¹²

The relationship between the stock market and the general well-being of the USA residents was tested by using cointegration and seasonality analysis. VAR regressions and Granger causality tests are performed to establish which one of the directions discussed in Section III could be considered prevalent (stock market influence on well-being or well-being influence on stock markets's evolutions).

Cointegration and seasonality analysis. The cointegration of each of the stock market indexes with each of the well-being indexes have been tested, using the Johansen-Juselius test (Johansen, 1988; Johansen and Juselius, 1990). Our results show that none of the relationships have cointegrations vectors of a lower order, hence the time series could not be considered cointegrated.

A possible flaw of the above findings could be due to common seasonality. We have thus

¹⁰ p-values are better than 0.01

¹¹ Augmented Dickey-Fuller unit root tests and KPSS trend-stationarity tests were used, all statistically significant at the p-value of 0.01.

¹² Again, for zero or one lag, significant with a p-value of 0.01

investigated seasonal effects, both in well-being and in its relation with the stock market.¹³

From the six well-being domains only Healthy Behaviours time series show important annual seasonality, while Life Evaluation and the composite index have weaker seasonal effects. The seasonal effects in the Healthy Behaviours Index are unsurprising, since it contains items such as weekly consumption of fruits and vegetables and weekly exercise frequency.

Since we are interested to investigate the seasonality characteristics present in the relationship between well-being and the capital market, we check for two types of seasonality effects: the January effect¹⁴ and the Seasonal affective disorder (SAD) effect¹⁵.

As demonstrated by the results of the dummy variable regressions, we found no support for any influence of the January effect on the relationship between the stock market indexes and the well-being indexes.

SAD effect was analysed using two alternative variables: a simple dummy flagging for the spring-summer and autumn-winter months and the number of hours of daylight on the first day of the month. Using the first method, the impact of the S&P 500 index on the Gallup Healthways well-being index doubled, while the VIX effect increased somewhat less

¹³ Here, we assume the conclusion from the literature that discusses the seasonality in stock markets. Since the observation of Wachtel (1942) evidence of stock market seasonality has been documented both for developed and emerging countries (French, 1980; Brown, 1983; Chang et al., 1993; Chan et al. 1996; Tong, 2000; Hillier and Marsh, 2002; Pettengill, 2003)

¹⁴ Equity returns and especially small-capitalisation stock returns are usually abnormally high in the first month of the year, a calendar-related anomaly called the January effect (Haug and Hirschey, 2006). A potential explanation could be the “selling hypothesis”, a strategy intended to limit the impact of taxation. At the end of the year investors are selling their losing shares to lower the taxable incomes. The resulting amounts are reinvested at the beginning of the year which increases demand and puts pressure on prices (Starks *et al.*, 2006)

¹⁵ SAD is a mood disorder that affects many people during the seasons with relatively fewer hours of daylight (in USA more than 10 millions Americans were diagnosed as suffering from SAD) Many researchers in psychology have documented a strong link between seasonal depression and lowered risk taking behaviour. Because of this effect, a seasonal variation in number of hours of sun can be related to a seasonal variation in equity returns. These returns are usually lower during fall and winter, but this effect is not necessarily a symmetrical one (Kamstra *et al.*, 2003; Kelly, 2010)

but still significantly.¹⁶ The simple conclusion is that the seasonal effect that we identified in the composite index is largely independent from the effect of the stock market on well-being and can as such add up in the multiple regressions. Considering the number of hours of daylight on the first day of the month instead of a simple seasonal dummy variable, we have obtained the following results from the linear regression analysis¹⁷.

Table 2. Target variable: Gallup-Healthways Well-being Index (GWI), monthly values

Independent variables ¹⁸	Model 1	Model 2	Model 3	Model 4	Model 5
	β	β	β	β	β
S & P 500	0.505** (0.140)	0.728*** (0.119)			0.867 (0.254)
VIX			-0.616*** (0.128)	-0.575*** (0.128)	0.149 (0.240)
H		0.590*** (0.118)		0.194 (0.128)	0.674** (0.180)
R ²	0.256	0.554	0.380	0.416	0.559

Causality direction. Once the presence of a relation between stock market and well-being has been tested; we have employed an analysis of a lagged time series to determine the

¹⁶ In the relation between well-being and S&P500, including SAD effect leads to a $R^2 = 0.524$, as compared to the an initial $R^2 = 0.256$, while using VIX the $R^2 = 0.483$ as compared to $R^2 = 0.380$

¹⁷ We have estimated the following regression models:

Model 1: $GWI = b_0 + b_1 \text{ S\&P500} + e$

Model 2: $GWI = b_0 + b_1 \text{ S\&P500} + b_2 \text{ H} + e$

Model 3: $GWI = b_0 + b_1 \text{ VIX} + e$

Model 4: $GWI = b_0 + b_1 \text{ VIX} + b_2 \text{ H} + e$

Model 5: $GWI = b_0 + b_1 \text{ S\&P500} + b_2 \text{ VIX} + b_3 \text{ H} + e$

¹⁸ S&P500: S & P 500 Index, closing value on the first trading day of the month

VIX: VIX Index, adjusted closing value on the first trading day of the month

H: Hours of daylight on the first day of the month

Standard errors in brackets.

* coefficient significant at 5%; ** coefficient significant at 1%; *** coefficient significant at 0.1%.

direction of causality. The stock market index's effect on well-being (for one lag) is over 0,500 and statistically significant at the 0,001 level. Conversely, the effect of well-being on S&P500 is 0,279 but statistically not significant.¹⁹ A p-value close to zero in the first case shows that stock market evolution has a greater impact on well-being than the other way round.

A possible explanation of the causal relationship between well-being and the stock market involves household income. In periods of economic growth, positive developments on the market are indicated by higher values of the S&P 500. The bull market improves well-being while the converse would happen in a bear market. If the stock market would have a simple causal effect this is the way it would work. But, as not all people trade in the stock market the effect may not be simply of a monetary nature.

In order to further investigate the transmission channels of positive or negative effects we analyse what components of well-being are more affected by the stock market's evolutions.

The well-being index's domains are not affected in the same way by S&P 500 evolutions. Thus, we have modelled the relationship for the 6 domains of the Gallup-Healthways well-being index, using VAR regressions and Granger causality tests. Stock markets returns affect more the Composite well-being index, Life Evaluation, Emotional Health and Basic Access²⁰ and less Physical Health, Healthy Behaviour and Work Environment. Considering the main items of each domain, our results show that a serious decrease in returns has a greater impact on the present and anticipated life quality than to the monetary items included in Basic Access Index. The uncertainty regarding the future,

¹⁹ The p-value is 0.081. Calculating further lags leads us to similar results

²⁰ The main Chi2 Wald test p-value results for the influence of S&P500 are listed below:

Composite well-being index: 0.0001
Life Evaluation: 0.0000
Emotional Health: 0.0227
Basic Access: 0.0140

determined by the financial instability, makes individuals feel less positive regarding their current and prospective lives. In other words individuals self reported well-being could be more sensitive to the uncertainty regarding a future potential loss than to a current loss.

Similarly, we analysed the relationship between stock market volatility indicator, the VIX, and the Gallup Healthways well-being index. An analysis of lagged values demonstrated that the effect of market volatility in decreasing the happiness level becomes stronger after a period of time; the effect of well-being on VIX is lower than conversely.²¹

The VAR regressions and Granger causality tests performed for well-beings domains and VIX have shown a strongly significant influence on Life Evaluation and Emotional Health, a less significant effect on Physical Health and Healthy Behaviour, while in the case of Work Environment and Basic Access non-causality cannot be rejected.²² The strong effect on Life Evaluation and Emotional Health, together with the absence of any relation with the Basic Access Index, unambiguously suggest that the stock market influences well-being through uncertainty rather than through monetary factors. On the other hand well-being does not Granger-cause VIX.

V. Conclusions

We have found strong evidences of a relationship between the capital market and well-being. The significant negative relationship between capital market volatility and well-being, compared with the impact of personal income on well-being, allows us to infer that the effect

²¹ the 1-lag effect of the VIX on the well-being index is even higher than the direct correlation and highly significant: $r = -0.754$ (p-value = 0.000), while the opposite 1-lag correlation coefficient is lower, $r = -0.535$ (p-value = 0.000)

²² The main Chi2 Wald test p-value results for the influence of VIX are listed below:

Composite well-being index: 0.0002

Life Evaluation: 0.0061

Emotional Health: 0.0070

Physical Health :0.0424

Healthy Behaviour: 0.0106

of the capital market on well-being should not be of a simple monetary nature. The increase of uncertainty is proved to have a higher impact on happiness than an income reduction.

Our results suggest that policy makers should be concerned with increasing financial stability. The relation between uncertainty and happiness could bring additional support to the idea of creating a system of stability incentives, capable to enhance both economic development and individual well-being. Regardless of the measures chosen (introducing a simple or two-tier rate structure of a Tobin or Keynes tax on currency transactions or general financial transactions,²³ imposing differential progressive income taxes for revenues obtained from speculative trades, creating more regulated and transparent OTC derivatives markets²⁴ or others) the need for a decrease in speculative trades as a premise for uncertainty reduction appears to be necessary in order to increase the happiness of the nations.

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²³ Recently there has been an increasing interest among heterodox economists in the use of transaction taxes to reduce the volatility and speculation in financial markets. The idea of Keynes (1936) to introduce a securities transactions tax and the well-know extensions of Tobin (1974) for foreign exchange markets received a great deal support both from researchers and politicians, in the aftermath of several financial crisis that have shaken the world stability. The introduction of simple or two – tier rate structure transaction taxes (Spahn proposed in 1996 as a possible alternative to the Tobin’s pure transaction tax the two-tier rate structure consisting of a low-rate transaction tax, plus an exchange surcharge) had not reach a consensus among scientist or politicians because there are voices who state that these taxes would not be able to reduce the fragility risk that stems from widespread participation in speculative activities and will just reduce the trade volumes as in Sweden case.

²⁴ The emergence of the derivative market, the associated structural move from a regulated to more unregulated market has determined an expansion of risk spreading abilities, the increase in risk bearing and the appearance of new intermediaries with a higher risk tolerance. All this determined a higher sensitivity of the financial sector and finally of the economy to shocks and to a financial crisis. To reduce the risk spread, in September 2009, G-20 Leaders agreed in Pittsburgh that: “all standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non centrally cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse” (Financial Stability Board, 2010)

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