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MILYEN SZEREPET TÖLTENEK BE AZ ORSZÁGSZINTŰ ESG INDIKÁTOROK, VALAMINT A GLOBÁLIS PÉNZÜGYI INKLÚZIÓS INDIKÁTOROK A SZOCIÁLIS ÉS PÉNZÜGYI JÓLÉT MEGHATÁROZÁSÁBAN?

DETERMINANTS OF SOCIAL AND FINANCIAL WELL-BEING: THE ROLE OF COUNTRY-LEVEL ESG INDICATORS AND GLOBAL FINANCIAL INCLUSION INDICATORS

A környezeti (Environmental), társadalmi (Social) és kormányzati (Governance) faktorkok, azaz az ESG szempontok egyre nagyobb szerepet kapnak a pénzügyekben és a pénzügyi döntéshozatalban. Emellett a pénzügyi jólét kutatása is a nemzetközi szakirodalom egyik fontos kérdése napjainkban. Ez a cikk az általános jólét becsléséhez és előrejelzéséhez tárja fel az országszintű ESG indikátorok és a Világbank globális pénzügyi inklúziós indikátorainak magyarázó erejét. A kutatásunk során főkomponens elemzést végeztünk el a Világbank két adatbázisán: az országszintű ESG indikátorok alapján egy ESG jóléti indexet határoztunk meg, illetve a globális pénzügyi inklúziós indikátorok alapján egy pénzügyi jólét indexet. Az empirikus vizsgálat eredményei igazolták az előzetes várakozásainkat, azaz a kutatás során létrehozott két új index szorosan korrelált az általános jóléti indexszel, azaz alkalmasak lehetnek az általános jólétet meghatározó tényezők azonosítására, valamint a szociális ellátórendszer értékelésére és fejlesztésére hosszú távon.

Environmental, social and governance aspects are collectively known as ESG factors, which have gained significant importance in finance recently. There is also special attention to the concept of financial well-being, the factors affecting it, and its defining. This paper focuses on uncovering the predictor power of country-level ESG indicators and Global Financial Inclusion indicators to estimate improved living standards. We applied Principal Component Analysis on the database of global ESG indicators and Global Financial Inclusion indicators provided by the World Bank, to establish an ESG well-being index and financial well-being index. The implications of the results are obvious: the established indices would help to assess the determinants of well-being and to reveal the areas of improvement of the social care and pension benefit system.

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INTRODUCTION

Sustainable development has been a political axiom for decades, however, a real transition towards sustainability has not yet begun. One of its aspects is human well-being, which could have an important role in this transition: it is necessary to broaden the understanding of wellbeing and understand its drivers. In this paper, we investigated if the country level ESG indicators are good predictors of well-being and we also tried to find evidence if the established financial well-being index affected the overall well-being.

Environmental, social and governance aspects are collectively known as ESG factors, which have gained significant importance in finance recently. According to MSCI ESG Research (MSCI, 2016), these are special performance indicators that measure the sustainability and societal impact of an investment. ESG factors and ratings are applied to both corporates as well as countries, similarly to credit ratings. These ESG factors provide investors with insight when assessing a country's long-term credit risk and evaluating sovereign bonds, sub-sovereign bonds, and government-related enterprises. With these new insights, investors and researchers can have a better understanding of inherent long-term risks both from a values-based and an economic perspective. (Comble et al., 2019) as opposed to dividend-based thinking (Kerti Keresztúri, 2017). In this paper, we focus on uncovering the predictive power of country-level ESG indicators in the field of social well-being. The literature introduces several definitions of well-being and various approaches to its measurement. Prescott-Allen (2001) differentiated ecological and human well-being as he established a complex well-being index. He argued that the usual well-being indices, such as the HDI index of the United Nations or WHO-5 index, do not account for both human and ecological characteristics at the same time.

The sustainable spending and saving habits of citizens have become a topic of increasing importance for companies, policymakers, and regulators nowadays. The people's lives are affected by many personal and macro-level economic events, such as marriage or retirement or an economic crisis, which causes substantial threats to their financial and economic well-being at their great majority. There are several definitions and level of measurement is the relevant literature, in this paper we use the framework of Brügggen et al. (2017) to create a country level financial well-being index. We tested if the established financial well-being index affected the overall well-being.

This is paper organized as the following. In this paper, we target establishing a social well-being index using ESG indicators and a financial well-being index using Global Financial Inclusion Indicators. ESG is a dominant aspect in economics today, so this could be a novel and comprehensive framework for interpreting well-being. Under this concept, we take into account both human and ecological characteristics. Then, we created a multidimensional financial well-being index, based on the Global Financial Inclusion data of the World Bank, based on the framework of Brügggen et al. (2017). Finally, we evaluate if the ESG well-being index has a strong correlation with economic performance indicators and whether the index is as suitable for elderly well-being evaluation, similar to the HDI index. We also tested the established financial well-being index, if it is as suitable for well-being evaluation, similar to the HDI index.

LITERATURE REVIEW

Country-level ESG factors is a widely researched topic. In the researches of Crifo et al. (2017) econometric analysis of the relationship between ESG performance and government bond spreads was applied for 23 OECD countries over the 2007-2012 period. Their results showed that high ESG ratings are associated with low borrowing costs and the impact of ESG ratings on the cost of sovereign borrowing is more pronounced in bonds of shorter maturities. Capelle-Blancard et al. (2016) examined the extent to which ESG performance can affect sovereign bond spreads. They observed that countries with good ESG performance tend to have less default risk and thus lower bond spreads. Also, they found that the economic impact is stronger in the long run, suggesting that ESG performance is a long-lasting phenomenon. They also examined the financial impact of separate ESG dimensions: the results suggested that the environmental dimension appears to have no financial impact whereas governance weighs more than social factors. In their work, they used a standard panel model to create an ESG index using Principal Component Analysis. Tarmuji et al. (2016) examined the impact of ESG practices on economic performance. In their research, they examined non-financial data from two countries (Malaysia and Singapore) between 2010 and 2014. The results of their work showed, that social and governance practices significantly influence economic performance. In their study, they used descriptive statistics, correlation analysis, and linear regression to analyze data.

There are several approaches in the literature to the definition of financial well-being. According to Brügggen et al. (2017), many studies use subjective and objective approaches to defining and measuring financial well-being. Their approach is based on six factors, which determine financial well-being. These are the following: legal factors, economic factors, political factors, socio-cultural factors, technological factors, and market factors. In this paper, we used these factors to create a country level financial well-being index.

Many articles in the literature examine financial well-being on a personal level. Firstly, Campbell and Henretta (1980) examined the determinants of financial well-being between individuals. They tested, if home equity, savings, real estate assets, business assets, earnings, and pension coverage determine financial well-being. They interviewed more than 1290 middle-age people and the interviews were followed up by survey as well. As a result of the analysis, they found, that net of earnings, family formation measures have large effects on the different status measures consistent with different patterns of family needs. Shim et al. (2009) tested the financial well-being of young adults in their study. In their article, they established a conceptual model of the potential antecedents and consequences of financial well-being in young adulthood. They collected data via an online survey at a large state university in the southwestern United States. They found that self-actualizing personal values, financial education at home, and formal financial education at school may play important anticipatory socialization roles in the ways that young adults acquire knowledge about financial matters and form attitudes and behavioral intentions based on that knowledge. Bender (2012) investigated the subjective well-being in retirement. He identified economic wellbeing with financial well-being. He took into account not only the economic factors of well-being, but he calculated with the noneconomic determinants as well. He found that increased income positively affects well-being, but the effect was small. The strongest predictors are the voluntariness of entering retirement, pension characteristics, and health, while involuntary retirement has a very strong negative effect on well-being.

DATA AND METHODOLOGY

In our research, we used the database of global ESG indicators and the Global Financial Inclusion indicators provided by the World Bank. (World Bank, 2020 a; World Bank, 2020 c) In the case of ESG indicators, the original database of the World Bank consists of 68 ESG indicators for 239 countries and country groups. For analysis, we selected six variables from the ESG indicators, based on the pillars of the well-being of Prescott-Allen (2001) and relevant literature of country-level ESG factors (Cappelle-Blancard et al., 2016). These variables included the following:

- Environmental factors: PM2.5 air pollution measured as mean annual exposure (micrograms per cubic meter)
- Social factors: prevalence of overweight (% of adults), the proportion of seats held by women in national parliaments (%)
- Governance factors: GDP per capita, control of corruption, scientific and technical journal articles (pc)

Our research covers 174 countries for the single year of 2016. For hypothesis testing, we used further data from the World Bank database. (World Bank, 2020 b)

In the case of financial well-being index, the original database of the World Bank consists of 776 variables for 183 countries, for the single year of 2017. For analysis, we selected six variables from the ESG indicators, based on the framework of Brügggen et al. (2017). We chose the variables based on the factors they used in their work, which are the following:

- Economic factor: GNI per capita, PPP (current international \$)
- Technological factor: Individuals using the Internet (% of the population)
- Socio-cultural factors: Proportion of seats held by women in national parliaments (%)
- Market factors: Number of commercial bank branches per 100,000 adults, Number of ATMs per 100,000 adults, Financial institution account (% age 15+), Saved at a financial institution (% age 15+), Debit card ownership (% age 15+), Borrowed from a financial institution (% age 15+)
- Political factor: Control of Corruption: Estimate
- Legal factor: Rule of Law: Estimate

The applied methodology was Principal Component Analysis (PCA), based on the research of Nicoletti et al. (1999) and correlation analysis (Tarmuji et al., 2016).

RESULTS

As a first step, we created an ESG well-being index and the financial well-being index with PCA, then we tested, if these new indices correlate with economic performance indicators and if the ESG well-being index is as suitable for elderly well-being evaluation, similar to the widely-used HDI index. HDI index is weighted by social variables and takes into account only social and governance factors, while ESG well-being index is weighted by governance variables and counts with environmental factors as well. The financial well-being index is mostly market-weighted.

ESG WELL-BEING INDEX

For PCA, firstly we evaluated the model conditions. The KMO value was 0,683, which was above the 0,5 limit, Bartlett's test was rejected and the diagonals of the anti-image correlation matrix were above 0,5, so the selected database was optimal for Principal Component Analysis. After completing the analysis, based on the results we created the ESG well-being index.

FINANCIAL WELL-BEING INDEX

In this case, we also started with the evaluation of the model criteria: The KMO value was 0,804, which was above the 0,5 limit, Bartlett's test was rejected and the diagonals of the anti-image correlation matrix were above 0,5 in most case, only in case of the Proportion of seats held by women in national parliaments was lower (0,451), but we kept in the calculations because it was a proxy for the socio-cultural factor.

In general, the selected database was optimal for Principal Component Analysis. After completing the analysis, based on the results we created the financial well-being index.

HYPOTHESIS

We tested three hypotheses using correlation analysis. In the case of Hypothesis 1, we examined the correlation between the well-being indices (our ESG-based well-being index and the HDI index) and the main economic indicators (annual inflation, GNI per capita, unemployment). The results of the correlation analysis show, that neither the ESG well-being index nor the HDI index had a strong correlation with economic performance, so we rejected the hypothesis, that the ESG well-being index had a strong correlation with economic performance indicators. (Table 1)

Table 1. Testing Hypothesis 1

	Inflation	Unemployment	GNI per capita	ESG well-being index	GDP growth	HDI index
Inflation	1					
Unemployment	-0,04810	1				
GNI per capita	0,04710	-0,00308	1			
ESG well-being index	-0,26711	0,039140	-0,07063	1		
GDP growth	-0,23730	-0,15689	0,29106	-0,13229	1	
HDI index	-0,25362	0,076839	0,02216	0,818612	-0,1898	1

Source: World Bank (2020 a, 2020 b)

In the case of Hypothesis 2, we examined the correlation between the well-being indices (ESG well-being index and the HDI index) and the population ages 65 and above (percentage of the

total population). HDI index is the well-being index of the United Nations, and its components are the GDP per capita, life expectancy, and literacy rate/school enrollment. The results of the correlation analysis suggested, that there was a strong positive correlation between ESG well-being index and HDI index. (Table 2) Furthermore, both indices, the HDI index, and the ESG well-being index had a strong positive correlation between the population ages 65 and above, so we did not reject Hypothesis 2.

Table 2. Testing Hypothesis 2

	Population ages 65 and above	ESG well-being index	HDI index
Population ages 65 and above	1		
ESG well-being index	0,726458038	1	
HDI index	0,743716968	0,821587964	1

Source: World Bank (2020 a, 2020 b)

In the case of Hypothesis 3, we tested if the created financial well-being index correlates with the HDI index. The results of the correlation analysis showed us, that there was a strong positive correlation between the financial well-being index and HDI index. (Table 3) These results suggested also, that the created financial well-being index may respond in the same way to tests on macro variables, and the proportion of the elderly as the HDI index.

Table 3. Testing Hypothesis 3

	HDI index	Financial well-being index
HDI index	1	
Financial well-being index	0,91580826	1

Source: World Bank (2020 b, 2020 c)

SUMMARY

In our research, we used country-level ESG indicators to determine social well-being and Global Financial Inclusion indicators to define financial well-being. We applied Principal Component Analysis in both cases on the databases provided by the World Bank and based on the results, we created an ESG well-being index and a financial well-being index. We tested these indices, if the ESG well-being index correlated with economic performance indicators and if it is suitable for well-being analysis similarly to the HDI index. Resultantly, the ESG well-being index did not correlate strongly with economic performance indicators, so the application of this index in investment decision making is not obvious, for identifying possible implication, the investment strategies should be analyzed as well. Then, in the case of testing Hypothesis 2, it appeared that the ESG well-being index could be optimal for well-being analysis. Finally, we tested Hypothesis 3, and we tested if the created financial well-being index correlates with the HDI index. The

results showed us, that there is a positive strong correlation between the two indices, so it may indicate that the created index could be feasible in practice. These results may indicate that these indices could reveal the determinants of retiree well-being and identify the development areas of the social care system.

This research has limitations. Firstly, robustness checks are required to further enhance the reliability of results. Moreover, results are valid for only data for 2016, and for 2017, no general conclusion can be drawn from this analysis.

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