AR&P sciendo Health Economics and Management Review, Issue 4, 2023
ISSN 2786-4634 (print) ISSN 2786-4626 (online)
Sumy State University

MODELLING STRUCTURAL RELATIONS BETWEEN FINANCIAL, SOCIAL-ECONOMIC AND HEALTHCARE FACTORS

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Type of manuscript: research paper

Abstract: *Relevance of the article topic consists in the fact that it is critical to analyse relations between financial, social-economic and healthcare determinants for the post-pandemic recovery of macroeconomic stability. Consideration of these relations can provide complex recovery strategies, which will contribute to economic, medical amd social resiliemce. The latter is extremely important when there are new global challenges to overcome. The manuscript aims at identifying structural and functional connections between social-economic determinants that influence the healthcare sector. To achieve this purpose, we used the following research methods: induction and deduction, analysis and synthesis, comparison and logical generalisation, table and diagram visualisation, observation and assessment, method of principal components, structural modelling. The research data are taken from the World Bank. Totally, the paper analyses statistical data from 15 European countries in 2000-2021. The modelling input data comprise 18 indexes (financial, social-economic, healthcare ones). The constructed structural model provided the following conclusion: if healthcare indexes increase by 1, social-economic development decreases by 0.014. One of the reasons for that is the negative mortality value. The most important aspect is an efficient reaction to epidemics and pandemics. Development of containment plans, including the healthcare scaling and inter-authority coordination is critical for effective crisis management. We should develop a stable economy and policies to provide an affordable and equal access to healthcare for all population groups. Only a complex approach in each separate country may drop mortality and minimise impacts on different aspects of society life. The obtained results can be applied to improve efficient recovery strategies, raise healthcare standards, make proper decisions for social-economic development.*

Keywords: macroeconomic stability; healthcare; economy; finance; method of principal components; panel data; multivariate regression model.

JEL Classification: G11, G32, O16

Received: 5 October 2023 **Accepted:** 8 December 2023 **Published:** 31 December 2023

Funding: This article was made as a part of the research projects granted by the Ministry of Education and Science of Ukraine: "Socio-Economic Recovery after COVID-19: Modeling the Implications for Macroeconomic Stability, National Security and Local Community Resilience" (registration number 0122U000778)

Publisher: AR&P

Cite as: Pozovna, I., Hałuszko, K., & Polishchuk, A. (2023). Modelling structural relations between financial, social-economic and healthcare factors. *Health Economics and Management Review*, *4*(4), 107-119. https://doi.org/10.61093/hem.2023.4-09.

Sumy State University
Health Economics and Management Review, Issue 4, 2023
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Literature review

Analysis of the latest publications shows that experts pay a great attention to the financial, economic and healthcare influence over macroeconomic stability.

According to Scopus (2023), the macrostability issue has been quite relevant for 40 years. That is represented on Figure 1.

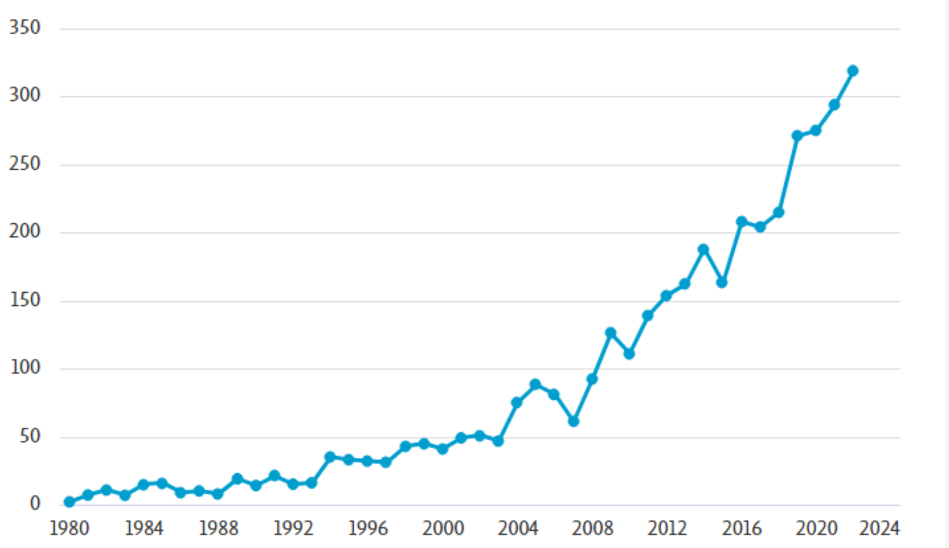


Figure 1: Publication dynamics on the macroeconomic stability topic for 40 years (Scopus)

Source: Based on Scopus (2023)

Among countries who led the macroeconomic stability research, Scopus provided the following data (Figure 2).

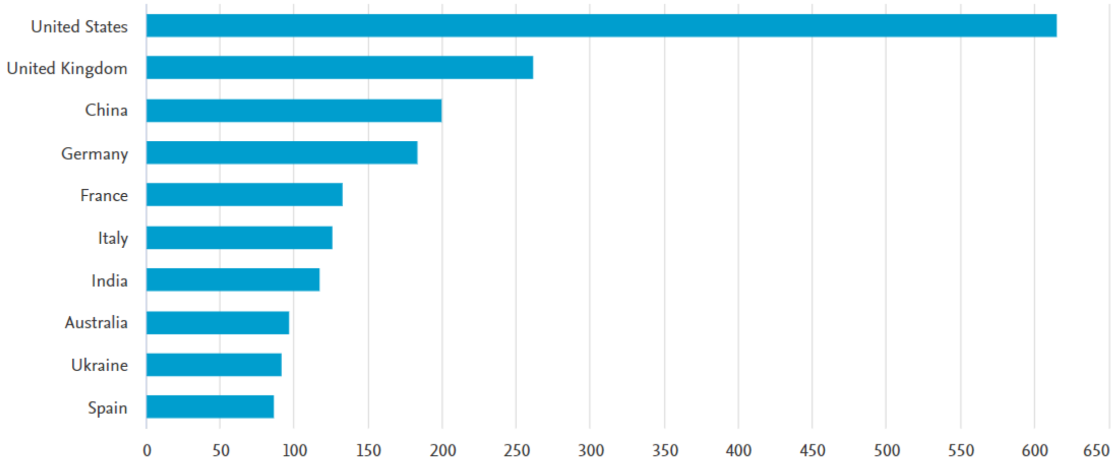


Figure 2: Top 10 countries in macroeconomic stability research

Source: Based on Scopus (2023)

Most articles on macrostability come from the USA (786), the United Kingdom (337), China (243), Germany (215), France (159), Ukraine (102).

Besides, we produced a Scopus diagram of branches where the macroeconomic stability topic was studied (Figure 3).

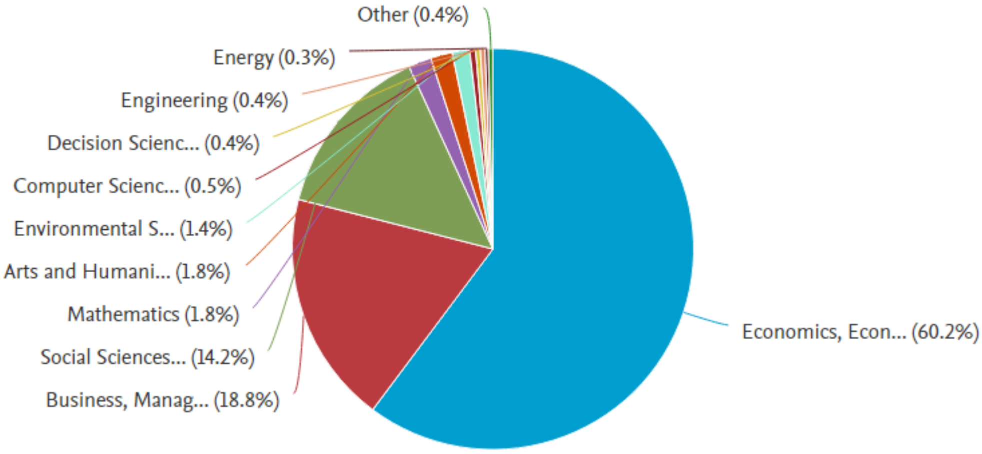


Figure 3: Diagram of branches with the researched macrostability topic

Source: Based on Scopus (2023)

Let us review some of home and foreign works on the given topic. Macroeconomic stability is regarded as an important aspect of the International Monetary Fund and European Union. In her conference speech in Montreal, Anne O. Krueger (2006) as the IMF first deputy managing director underlines macroeconomic stability is the main requirement to implement IMF reforms.

Fischer (1993) conducted research on macroeconomic analysis: inflation, foreign debt, budget deficit. He related the country's macroeconomic stability to its long-term growth.

Kantsir (2016) treats macroeconomic stability via financial one. The latter is a key factor to promote economic growth, price stability and population employment. These processes contribute to national macroeconomic stability.

In his paper on state influence over macroeconomic rise, Kostyk (2016) argues it is state authorities who are responsible for determining main factors of macroeconomic stability. Kuzior et al. (2023) prove that effective informatization of innovative technologies significantly increases macroeconomic indicators and socio-economic development processes.

Rozhko (2017) considers state finances within keeping the macroeconomic stability of the whole country. Inverstigation of financial stability and resilience, especially within the budget security, allowed defining main ways to achieve macroeconomic stability. That concerns a stronger impact of state finances on the social-economic development, more budget investments.

Studying the evolution of theoretical pluralism approaches to macroecenomic stability, Mutalymov (2014) singles out the most important directions the modern economy theory focuses on to probe into macroeconomic balance. These directions deal with balance and proportionality of economic processes within the whole national economy (including the aggregate demand and supply, production and consumption).

Nominal instability creates price indefiniteness because inflation does not impact on goods and services evenly. Simultaneously, real instability leads to indefinite and variable consumption: there are no perfect financial markets that provide unlimited use of savings to smooth consumption within income variations. Finally, foreign instability leads to country's solvency indefiniteness. That can create drawbacks on international financial markets, sudden delays of foreign financing with a subsequent crisis of external accounts. Within social welfare, macroeconomic instability will be efficient only in that case when it promotes a much higher GDP rise to compensate for indefiniteness. So, indefiniteness may raise the GDP significantly. That was confirmed by Chomicz-Grabowska & Orłowski (2020), Dufrénot (2023).

Telnova et al. (2023) discuss the notions of macroeconomic stability and stabilisation. The stabilisation policy influences behaviour of all economic entities and efficiency of national economy. Any market-economy country aspires to macroeconomic stability. It explains efficiency of all economy development factors and that of state economic policy as a whole. A great attention is paid to macroeconomic consequences: better foreign image, global index ranking, home manufacturing competitiveness, firm enterprise income, budget profits, higher salaries and social benefits, etc.

Lagoarde-Segot (2023), Miklaszewska & Wachtel (2023) review the index dynamic change and the country forecast of further economic stability. Today's macroeconomic system in Ukraine is characterised by instability. Therefore, we should urgently develop an effective national strategy to economic growth. The authors analyse the international experience and arrange main principles of macroeconomic stability that are suitable for use in Ukraine.

Moreover, Guo & Zhang (2023) study banking stability and its relation to economic development. They assess key risks, macroeconomic shifts, regulations and innovations. Such results will be useful for scientists, economists and other stakeholders.

Ho et al. (2023) and Kuzior et al. (2023) research connections between pandemic and financial stability. Crises turn out to increase risks of no carrying out obligations among enterprises. Governments are offered to found reliable institutions to soften such risks.

Hirose et al. (2020) note that poverty is a complex problem. It goes beyond economy and includes social, political and cultural aspects. Thus, poverty overcoming may not be based on economic policies only. On the contrary, it requires a set of properly coordinated measures. In such a way, all-purpose strategies of poverty overcoming can be introduced. Consequently, we should focus on macroeconomic stability because it is important to reach high and permanent growth. So, macroeconomic stability must be a key component of any strategy to reduce poverty.

Methodology and research methods

Macroeconomic stability of any country concerns that state when economy functions without any serious challenges. It is important to ensure a stable economic growth and welfare. Impacts on macroeconomic stability are critical to understand economic situations and make effective political decisions (Fischer, 1993).

Our paper analyses statistical data of 15 countries: Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Serbia, Slovakia, Slovenia and Ukraine. The time range is 2000-2021.

The input data for the model generation include 18 indexes. They are divided into three groups:

1) Financial indexes;
2) Social-economic indexes;
3) Healthcare indexes.

The input data table is shown below (Table 1).

Let us analyse the input data change among countries by their means and line diagrams.

We will construct diagrams and assess index means in 15 countries.

Table 1: Input data

№	Index	Index full name	Unit
1.	GDPg	Growth pace of gross domestic product	%
2.	FDI	Foreign direct investment	% of GDP
3.	GCF	Gross capital formation	% of GDP
4.	CAB	Current account balance	% of GDP
5.	CPI	Consumer price index	%
6.	Tax_rev	Tax revenues	% of GDP
7.	Trade	Country's trade activity	% of GDP
8.	Unempl	Unemployment	%
9.	School	Secondary education scope	%
10.	El_cons	Electricity consumption	Kilowatt-hour per capita
11	GGFCE	General government final consumption expenditure	%
12.	Bus	New registered enterprises	Enterprises per 1,000 people
13.	GE	Government efficiency	One
14.	RQ	Regulatory quality	One
15.	Health_exp	Healthcare expenditure	% of GDP
16.	Birth_rate	Birth rate	Per 1,000 people
17.	Age_dep	Age employment dependency	% of population
18.	Death_rate	Moratlity rate	Per 1,000 people

Source: Based on the World Bank data (2023)

In economics, structural modelling is a method to research relations between economic system elements and impact of different factors on them. It consists in generating formal models that reproduce structure and interaction of key economic components.

Main principles of structural modelling are:

– Module division: System is split into separate independent modules. It can simplify developing, testing and supporting: you may work with separate system parts.

– Hierarchic order: Modules are arranged. Upper levels are general abstractions or big system segments. Lower levels reflect interface and realisation details.

– Module independence: Modules must be maximally independent, that is change of one module must minimise impacts on the others. In such a way, the system management is more flexible.

– Interface setting: Each module should have a clear interface with certain relations to other modules. Via this principle, we can support the system with stable interface functions.

– Composition and decomposition: Modules are combined and divided in case of necessity.

– Data flow control: Structural modelling focuses on data flow ways via the system. It determines how data are processed and sent between modules.

Structural modelling allows understanding, analysing and projecting the system. That ensures a proper management of its functions. The approach is applied to improve development processes, which makes the system structure easier and more efficient.

Main stages of structural modelling are:

1. Identification of components: Those factors and relations are defined which influence economy.

2. Formalisation of relations: Mathematical and statistical models are created which reflect interactions between different variables and factors.

3. Calibration and testing: Model parameters are set via real data. Their accuracy is tested.

4. Scenario analysis: The model is used to assess different scenarios and forecast possible variants of economy developments.

To find a single decision for the structural model, we should assume that some model coefficients are equal to zero because of weak relation to endogenic variable on the system left. In such a way, we have less structural model coefficients. Also, we can reduce them via equating some coefficients with one another and regarding their influence on the formed endogenic variable as the same. Limitations, such as structural coefficient overlay, may be used too Calvo (2003).

In terms of identification, there are three types of structural models:

– Identifiable: Each structural coefficient is unambiguously determined via coefficients of the given model form. Number of model parameters is equal to parameters of the given model form.

– Non-identifiable: Number of given parameters is less than that of structural coefficients. Structural coefficients cannot be determined via coefficients of the given model form.

– Super-identifiable: Number of given parameters is more than that of structural coefficients. Via the given coefficients, we can get two or more values of the same structural coefficient.

Structural model is always represented as combined equations. Each of them should be checked. If at least one equation is non-idenifiable, the whole model is regarded as non-identifiable. A super-identifiable model has at least one super-identifiable equation. Identification conditions are checked for each equation. An equation is identifiable if amount of conditioned variables (absent in the given equation but present in the equation set) must be equal to endogenic variables in the qiven equation Fu & Riche (2021).

Since structural modelling can detect functional relations between latent variables, we should include latent variables in our study. We will define connections between them and establish a set of explicit indicators. The general model visualisation is shown on Figure 4.

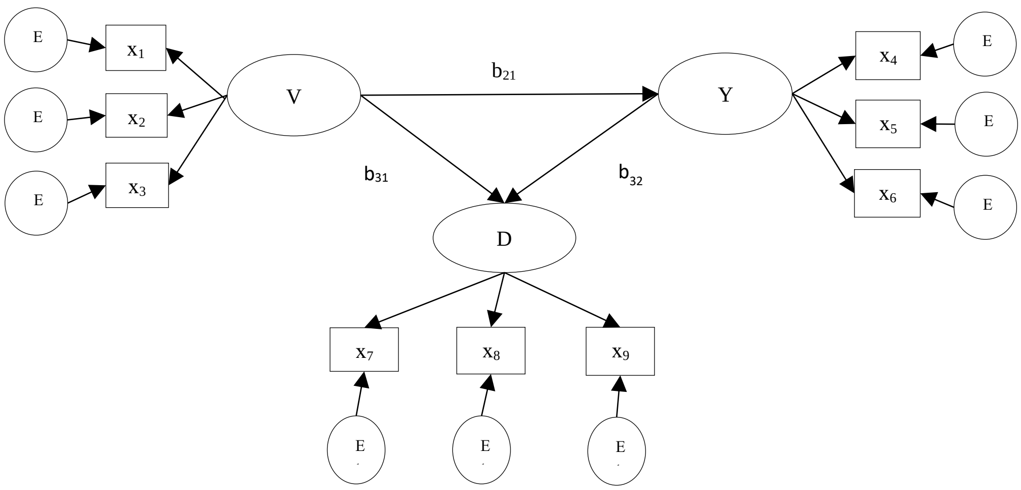


Figure 4: The general model visualisation (ellipses – latent variables; rectangles – explicit variables; circles – residuals)

Source: Generated by the authors

Apart from the diagram, we can produce a set of structural equations:

$$\begin{cases} A = a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n + \varepsilon_1 \\ B = b_{21}A + a_{21}x_1 + a_{22}x_2 + \cdots + a_{2n}x_n + \varepsilon_2 \\ C = b_{31}A + b_{32}B + a_{21}x_1 + a_{22}x_2 + \ldots + a_{2n}x_n + \varepsilon_2 \end{cases} \quad (1)$$

A, B, C – endogenic variables; x_n – exogenic variables; a_{mn} and b_{mn} – regression parameters, ε – residuals.

Intepretation of the combined equations is conducted via the following scheme:

$$\begin{gathered} b_{21}: A => B(\text{direct connection}) \\ b_{32}: B => C(\text{direct connection}) \\ b_{31}: A => C(\text{direct connection}) \\ b_{21} * b_{32}: A => C \ (\text{reverse connection}) \\ b_{31} + b_{21} * b_{32}: A => C \ (\text{general effect}) \end{gathered} \quad (2)$$

Before generating the structural model, we should identify latent and explicit variables. The model has three latent variables: FIN (financial indexes), SEC (social-economic indexes) and HEC (healthcare indexes). Let us discuss them in detail.

The financial indexes are GDPg (growth pace of gross domestic product), FDI (foreign direct investment), GCF (gross capital formation), CAB (current account balance), CPI (consumer price index), Tax_rev (tax revenues), Trade (country's trade activity). They are visualised on Figure 5.

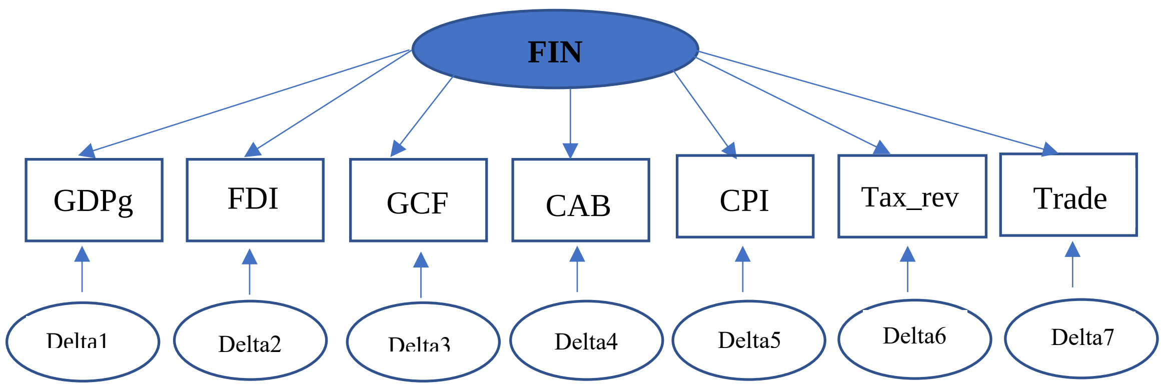


Figure 5: The financial indexes

Source: Generated by the authors

The social-economic indexes are Unempl (unemployment), School (secondary education scope), El_cons (electricity consumption), GGFCE (general government final consumption expenditure), Bus (new registered enterprises), GE (government efficiency), RQ (regulatory quality). They are visualised on Figure 6.

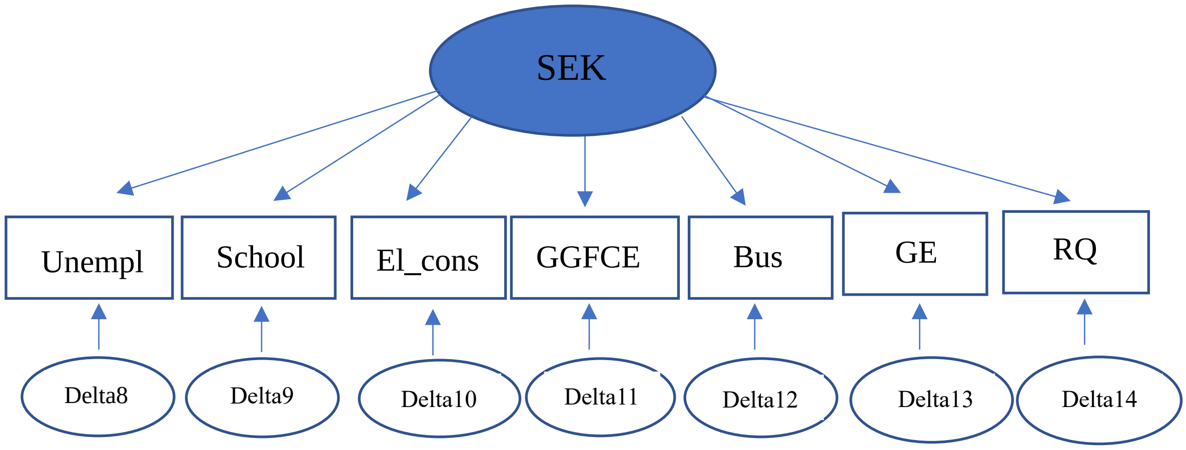


Figure 6: The social-economic indexes

Source: Generated by the authors

The healthcare indexes are Health_exp (healthcare expenditure), Birth_rate (birth rate), Age_dep (age employment dependency), Death_rate (moratlity rate). They are visualised on Figure 7.

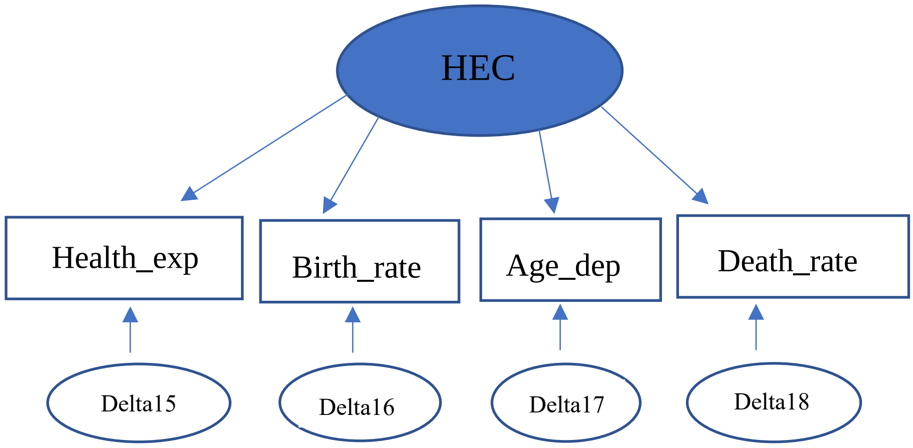


Figure 7: The healthcare indexes

Source: Generated by the authors

Figure 8 represents a graphical relation between FIN, SEC and HEC.

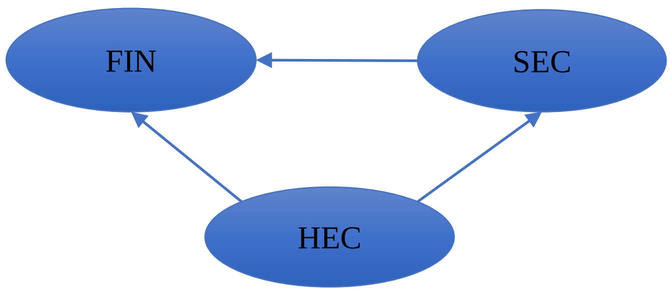


Figure 8: Regression relations between latent variables

Source: Generated by the authors

Results

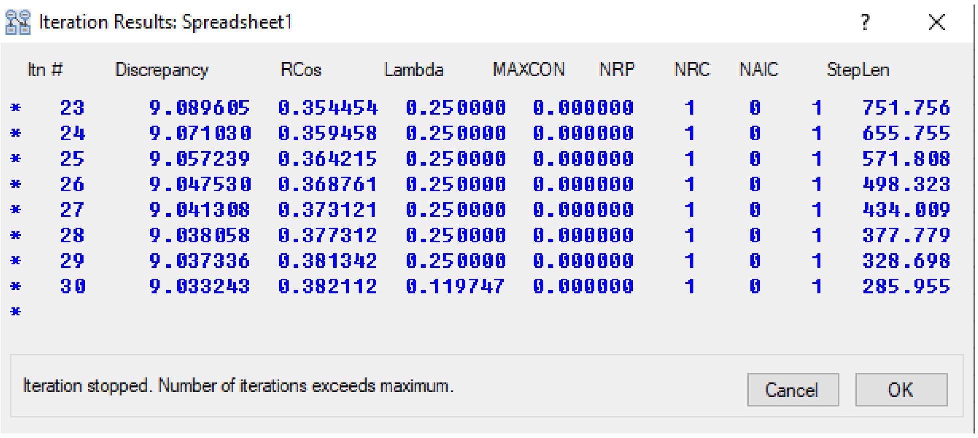
Mathematically, the regression relation between latent variables is represented as:

$$\begin{gathered} \mathrm{FIN} = \mathrm{a1} * \mathrm{SEC} + \mathrm{a2HEC} \\ \mathrm{FIN} = \mathrm{a3} * \mathrm{HEC} \end{gathered} \tag{3}$$

Formula 5 shows a practical realisation of structural relations between variables. It is implemented via the Statistica software (2023). Below, there is a corresponding program code.

The model is written via the Path1 language. We can process the model in the Statistica software. It will assess unknown parameters. Figure 9 shows iteration results.

$$\begin{gathered}
(\mathrm{HEC}) - 1 -> [\mathrm{Health_e}] \\
(\mathrm{HEC}) - 2 -> [\mathrm{Birth_ra}] \\
(\mathrm{HEC}) - 3 -> [\mathrm{Age_dep}] \\
(\mathrm{HEC}) - 4 -> [\mathrm{Death_ra}] \\
(\mathrm{DELTA1}) - -> [\mathrm{Health_e}] \\
(\mathrm{DELTA2}) - -> [\mathrm{Birth_ra}] \\
(\mathrm{DELTA3}) - -> [\mathrm{Age_dep}] \\
(\mathrm{DELTA4}) - -> [\mathrm{Death_ra}] \\
(\mathrm{DELTA1}) - 5 - (\mathrm{DELTA1}) \\
(\mathrm{DELTA2}) - 6 - (\mathrm{DELTA2}) \\
(\mathrm{DELTA3}) - 7 - (\mathrm{DELTA3}) \\
(\mathrm{DELTA4}) - 8 - (\mathrm{DELTA4}) \\
(\mathrm{FIN}) - -> [\mathrm{GDPg}] \\
(\mathrm{FIN}) - 9 -> [\mathrm{FDI}] \\
(\mathrm{FIN}) - 10 -> [\mathrm{GCF}] \\
(\mathrm{FIN}) - 11 -> [\mathrm{CAB}] \\
(\mathrm{FIN}) - 12 -> [\mathrm{CPI}] \\
(\mathrm{FIN}) - 13 -> [\mathrm{Tax_rev}] \\
(\mathrm{FIN}) - 14 -> [\mathrm{Trade}] \\
(\mathrm{SEC}) - -> [\mathrm{Unempl}] \\
(\mathrm{SEC}) - 15 -> [\mathrm{School}] \\
(\mathrm{SEC}) - 16 -> [\mathrm{GGFCE}] \\
(\mathrm{SEC}) - 17 -> [\mathrm{Bus}] \\
(\mathrm{SEC}) - 18 -> [\mathrm{GE}] \\
(\mathrm{SEC}) - 19 -> [\mathrm{RQ}] \\
(\mathrm{SEC}) - 20 -> [\mathrm{El_cons}] \\
(\mathrm{EPSILON1}) - -> [\mathrm{GDPg}] \\
(\mathrm{EPSILON2}) - -> [\mathrm{FDI}] \\
(\mathrm{EPSILON3}) - -> [\mathrm{GCF}] \\
(\mathrm{EPSILON4}) - -> [\mathrm{CAB}] \\
(\mathrm{EPSILON5}) - -> [\mathrm{CPI}] \\
(\mathrm{EPSILON6}) - -> [\mathrm{Tax_rev}] \\
(\mathrm{EPSILON7}) - -> [\mathrm{Trade}]
\end{gathered} \tag{4}$$



Iteration Results: Spreadsheet1

	Itn #	Discrepancy	RCos	Lambda	MAXCON	NRP	NRC	NAIC	StepLen
*	23	9.089605	0.354454	0.250000	0.000000	1	0	1	751.756
*	24	9.071030	0.359458	0.250000	0.000000	1	0	1	655.755
*	25	9.057239	0.364215	0.250000	0.000000	1	0	1	571.808
*	26	9.047530	0.368761	0.250000	0.000000	1	0	1	498.323
*	27	9.041308	0.373121	0.250000	0.000000	1	0	1	434.009
*	28	9.038058	0.377312	0.250000	0.000000	1	0	1	377.779
*	29	9.037336	0.381342	0.250000	0.000000	1	0	1	328.698
*	30	9.033243	0.382112	0.119747	0.000000	1	0	1	285.955
*									

Iteration stopped. Number of iterations exceeds maximum.

Cancel OK

Figure 9: Iteration results

Source: Generated via the Statistica software (2023)

The Figure 9 legend:
Itn # – iteration;
Discrepancy – minimised value of discrepancy function;
RCos – maximised residual cosine;
Lambda – increase factor (1.0: the first full step dropped the discrepancy function value to initiate the next iteration; under 1.0: linear search was used to select a point decreasing the discrepancy function value);
MAXCON – maximal non-zero value of limitation functions;
NRP – number of redundant parameters;
NRC – number of redundant constraints;
NAIC – number of active inequalities or conditions;
StepLen – length of full step during the current iteration;
Asterisk – maximal step size has been achieved.

The row "Solution appears to have converged normally" stands for iteration finish. After clicking OK, we obtain the structural modelling results (Figure 10).

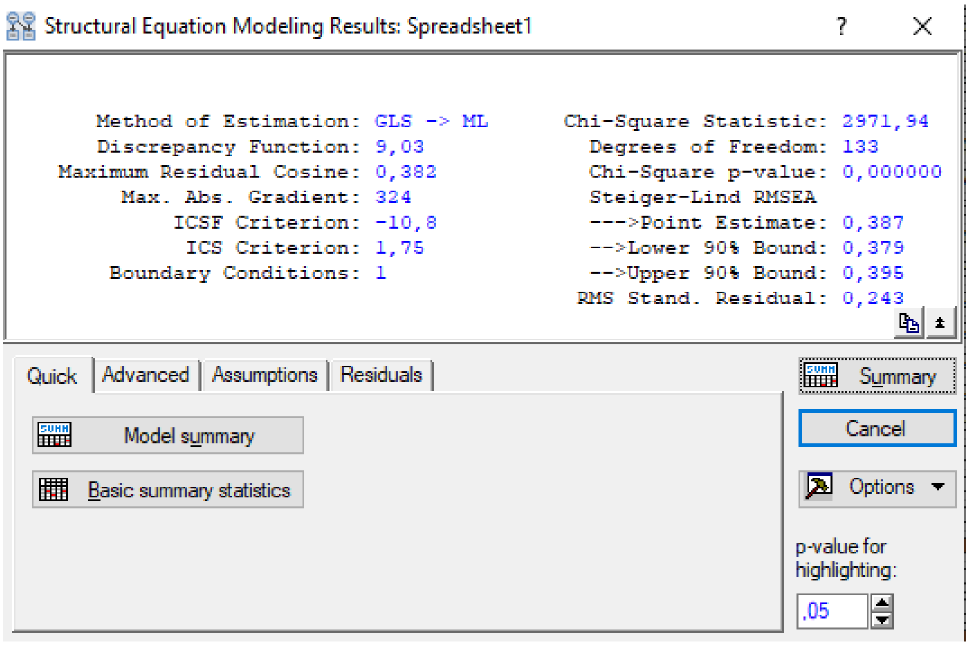


Figure 10: The structural modelling results

Source: Generated via the Statistica software (2023)

The Figure 10 legend:

Method of Estimation – the used discrepancy function type;

Discrepancy Function – the final discrepancy function value;

Maximum Residual Cosine – the zero value in case of iteration convergence;

Maximum Absolute Gradient – the highest absolute gradient value;

ICSF Criterion – the near-zero value in case of model resilience to multiplication by a constant scale factor;

ICS Criterion – the near-zero value in case of model resilience to scale change (for correlation analysis, there is a near-zero index);

Boundary Conditions – the number of limitation inequalities to ensure convergence (the non-zero value can provide unreliable results);

Chi-Square Statistic – the zero-hypothesis is true (except for the LS (MHK) discrepancy function), that is the generated model corresponds to initial data;

Degrees of Freedom – the freedom degree number for calculation statistics;

Chi-Square p-level – the probabilistic statistic level (the low p value) shows that the zero hypothesis is true;

Steiger-Lind RMSEA – the point estimate and the 90% confidence interval;

RMS Stand. Residual (Root Mean Square Standardised Residual) – the model adjustment quality (under 0.05: adequate adjustment; 1: inadequate adjustment).

Let us consider the Advanced Button functions.

Model Summary (Figures 11-13) represents the structural modelling results. Rows – Path1 steps. Columns – parameter estimates, standard errors, T statistic and p values. Significant T statistic values ($p < 0.05$) are marked red. The latter signifies truth of the non-zero parameter hypothesis.

Model Estimates (Spreadsheet1)

	Parameter Estimate	Standard Error	T Statistic	Prob. Level
(HEC)-1->[Health_e]	0,240	0,056	4,265	0,000
(HEC)-2->[Birth_ra]	1,110	0,043	25,652	0,000
(HEC)-3->[Age_dep]	-0,006	0,205	-0,031	0,976
(HEC)-4->[Death_ra]	-0,322	0,103	-3,131	0,002
(DELTA1)-->[Health_e]				
(DELTA2)-->[Birth_ra]				
(DELTA3)-->[Age_dep]				
(DELTA4)-->[Death_ra]				
(DELTA1)-5-(DELTA1)	1,011	0,079	12,826	0,000
(DELTA2)-6-(DELTA2)	-0,000	0,000		
(DELTA3)-7-(DELTA3)	13,851	1,080	12,826	0,000
(DELTA4)-8-(DELTA4)	3,435	0,268	12,826	0,000
(FIN)-->[GDPg]				
(FIN)-9->[FDI]	19,089	416,915	0,046	0,963
(FIN)-10->[GCF]	-7,437	162,887	-0,046	0,964
(FIN)-11->[CAB]	27,889	605,256	0,046	0,963
(FIN)-12->[CPI]	-37,148	806,538	-0,046	0,963
(FIN)-13->[Tax_rev]	9,454	205,331	0,046	0,963
(FIN)-14->[Trade]	279,215	6058,377	0,046	0,963
(SEC)-->[Unempl]				
(SEC)-15->[School]	64,744	12,700	5,098	0,000
(SEC)-16->[GGFCE]	17,386	0,000		
(SEC)-17->[Bus]	30,617	5,730	5,343	0,000
(SEC)-18->[GE]	8,009	1,279	6,263	0,000
(SEC)-19->[RQ]	7,224	1,188	6,081	0,000
(SEC)-20->[EI_cons]	15226,137	2568,532	5,928	0,000

Figure 11: The structural modelling results

Source: Generated via the Statistica software (2023)

	Model Estimates (Spreadsheet1)			
	Parameter Estimate	Standard Error	T Statistic	Prob. Level
(EPSILON1)-->[GDPg]				
(EPSILON2)-->[FDI]				
(EPSILON3)-->[GCF]				
(EPSILON4)-->[CAB]				
(EPSILON5)-->[CPI]				
(EPSILON6)-->[Tax_rev]				
(EPSILON7)-->[Trade]				
(EPSILON8)-->[Unempl]				
(EPSILON9)-->[School]				
(EPSILON10)-->[GGFCE]				
(EPSILON11)-->[Bus]				
(EPSILON12)-->[GE]				
(EPSILON13)-->[RQ]				
(EPSILON14)-->[El_cons]				
(EPSILON1)-21-(EPSILON1)	12,563	0,980	12,824	0,000
(EPSILON2)-22-(EPSILON2)	66,770	5,268	12,675	0,000
(EPSILON3)-23-(EPSILON3)	14,110	1,109	12,718	0,000
(EPSILON4)-24-(EPSILON4)	15,985	1,400	11,414	0,000
(EPSILON5)-25-(EPSILON5)	44,114	3,696	11,936	0,000
(EPSILON6)-26-(EPSILON6)	3,734	0,307	12,151	0,000
(EPSILON7)-27-(EPSILON7)	339,929	56,155	6,053	0,000
(EPSILON8)-28-(EPSILON8)	13,524	1,054	12,825	0,000
(EPSILON9)-29-(EPSILON9)	36,601	3,020	12,118	0,000
(EPSILON10)-30-(EPSILON10)	3,729	0,302	12,328	0,000
(EPSILON11)-31-(EPSILON11)	6,378	0,535	11,912	0,000
(EPSILON12)-32-(EPSILON12)	0,067	0,010	6,755	0,000
(EPSILON13)-33-(EPSILON13)	0,118	0,012	9,901	0,000

Figure 12: The structural modelling results (continuation)

Source: Generated via the Statistica software (2023)

(EPSILON14)-34-(EPSILON14)	717139,540	66744,257	10,745	0,000
(ZETA1)-->(FIN)				
(ZETA2)-->(SEC)				
(ZETA1)-35-(ZETA1)	0,000	0,019	0,023	0,982
(ZETA2)-36-(ZETA2)	0,002	0,001	3,226	0,001
(HEC)-37->(FIN)	-0,002	0,041	-0,046	0,963
(HEC)-38->(SEC)	-0,014	0,003	-4,017	0,000
(SEC)-39->(FIN)	0,097	2,116	0,046	0,963

Figure 13: The structural modelling results (continuation)

Source: Generated via the Statistica software (2023)

The obtained results may be written in an equation form:

$$FIN = -0.002HEC + 0.097SEC + 0.019$$

$$SEC = -0.014HEC + 0.001 \qquad (5)$$

Therefore, the healthcare index increase by 1 leads to the social-economic development decrease by 0.014. That is explained by the negative mortality value.

Figure 14 demonstrates a normal probabilistic diagram. It can assess the model adequacy.

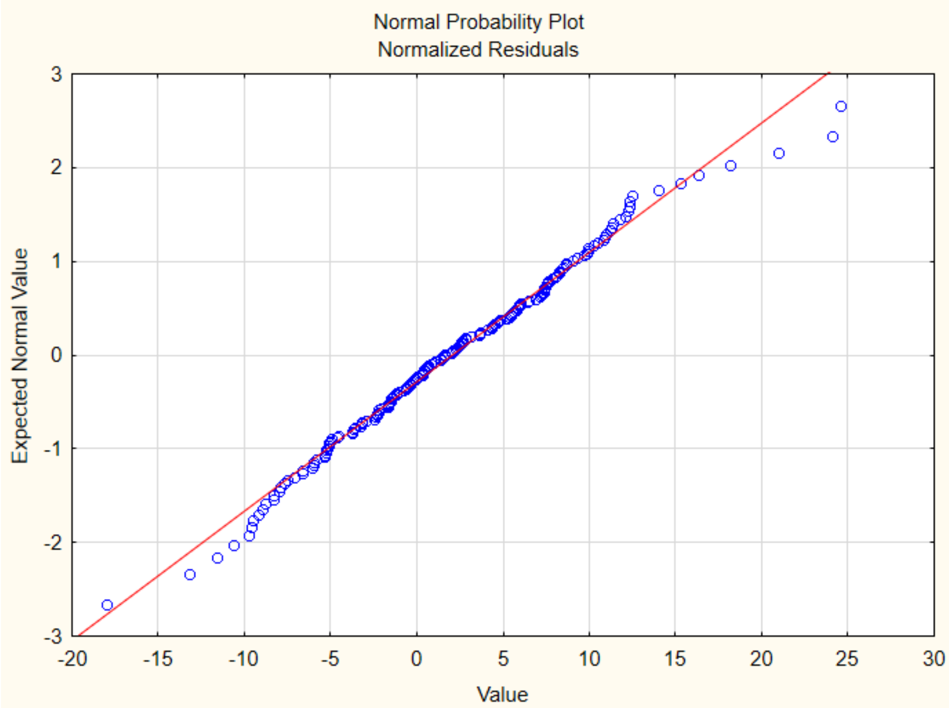


Figure 14: The normal probabilistic diagram

Source: Generated via the Statistica software (2023)

Conclusions

We analysed the notion of macroeconomic stability and its determinants. Modern approaches to macroeconomic modelling were discussed within financial, social-economic and healthcare factors. The paper aimed at modelling structural relations between them. We selected input data of 18 indexes for 15 countries in 2000-2021. The healthcare increase by 1 leads to the social-economic development decrease by 0.014. That is explained by the negative mortality value. Thus, to minimise the mortality impact on population, countries should take measures to raise the healthcare system.

Firstly, access to the high-quality medical aid is an important aspect. Secondly, disease prevention (proper nutrition, physical activity, vaccination) is a an efficient tool for mortality fall. Thirdly, better infrastructure and sanitation contribute to healthcare improvement. Investing in clean water, sewage and waste recycling prevents disease spread and raises sanitary conditions.

Author contributions: conceptualisation, I.P.; methodology, D.K., A.P., I.P.; software, A.P.; validation, D.K., A.P., I.P.; formal analysis, A.P.; investigation, D.K., A.P., I.P.; resources, I.P.; data curation, I.P.; original draft preparation, A.P.; review and editing, I.P.; visualisation, D.K., A.P., I.P.; supervision, I.P.; project administration, I.P.; funding acquisition, I.P.

Conflicts of interest: Authors declare no conflict of interest.
Data availability statement: Not applicable.
Informed consent statement: Informed consent was obtained from all subjects involved in the study.

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