National Institute for Economic Research

ECONOMY AND SOCIOLOGY

THEORETICAL AND SCIENTIFICAL JOURNAL

founded in 1953

No. 2

December 2021

ISSN: 2587-4187
E-ISSN: 2587-4195
Category „B+”
https://es.ince.md/index.php/Economy_and_Sociology

Chisinau, 2021

*The journal **„Economy and Sociology"** is recognized as scientific publication in the field, accredited of **„B+" category**, Decision of the National Agency for Quality Assurance in Education and Research, No. 8 of June 26, 2020.*
The journal is indexed in the following international databases: DOAJ IDEAS, EconPapers, LogEc, SOCIONET, INDEX COPERNICUS, OAJI, RePEc, EZB, IBN, eLIBRARY.RU, CROSSREF – Digital Object Identifier (DOI)
Indexer and bibliographic editing: E. Migunova, S. Gorceag, A. Catana, N. Dalinitchi, O. Chirilov.

CONTENTS

CUPRINS

СОДЕРЖАНИЕ

SOCIOECONOMIC IMPACT OF THE COVID-19 PANDEMIC AND OF THE RESPONSE POLICY IN MOLDOVA: AN INTERGENERATIONAL PERSPECTIVE BASED ON THE COMPUTABLE GENERAL EQUILIBRIUM MODEL

Valeriu PROHNIȚCHI[1]
PhD Student
Academy of Economic Studies of Moldova

DOI: https://doi.org/10.36004/nier.es.2021.2-01
JEL Classification: E16, H21, H31, D58
UDC: 330.42(478)

ABSTRACT

The author employs a Computable General Equilibrium (CGE) model calibrated on a Social Accounting Matrix for the Moldovan economy and enhanced with demographic details to answer three questions: 1) what has been the short-term socioeconomic impact of COVID-19, including the distributional ones from the gender and age perspective? 2) how likely were the 2020 policy measures to provide an adequate immediate response to the crisis? and 3) would there exist an alternative, more optimal policy? According to the CGE-based simulation results, cumulative effect of the COVID-19 economic shocks represents around 11% of the Moldovan GDP. All economic sectors are predicted to decline, with transport, HORECA and services to population sectors suffering the heaviest contractions. Transport sector employs predominantly mid-aged men, while the latter two typically employ women. Age- and sex-structure of employment by sectors explain why men aged 25-34 and women aged 15-24 suffer the largest reduction of their wage income (around 10%). Reflecting the income contraction of the breadwinning age categories and reduction in intra-household transfers, children' consumption declines accordingly. The older generations relying on public pensions are relatively better sheltered against the COVID-19 socioeconomic effects, as pensions remain rather stable. The analysis suggests that the package of measures adopted by Moldovan government has had minor impact, with VAT reduction to HORECA sector having smaller compensatory effect compared to direct payments to infected doctors and labor-related subsidies. A combination of fiscal and structural measures would have provided a socially fairer and economically more efficient response to the crisis.

Autorul folosește un Model de Echilibru General Aplicat (MEGA) calibrat pe o Matrice de Contabilitate Socială pentru economia moldovenească și augmentată cu detalii demografice pentru a răspunde la trei întrebări: 1) care a fost impactul COVID-19 din perspectiva impactului economic și distribuțional pe vârste și genuri? 2) cât de adecvat a fost răspunsul de politici din 2020? și 3) ar fi existat oare o politică mai bună? Modelul sugerează că efectul cumulat al șocurilor provocate de COVID-19 reprezintă aproximativ 11% din PIB și anticipează că toate sectoarele suferă scăderi, cele mai afectate fiind transporturile, HORECA și serviciile prestate populației. Sectorul transporturilor angajează preponderent bărbați de vârstă mijlocie, în timp ce celelalte două - mai mult femei. Structura de vârstă și sex a ocupării pe sectoare explică de ce bărbații de 25-34 de ani și femeile de 15-24 de ani suferă cea mai mare reducere a veniturilor salariale (10%). Reflectând scăderea veniturilor categoriilor economic active și reducerea transferurilor intra-gospodărie, consumul de care beneficiază copii scade, în consecință. Generațiile mai în vârstă, care se bazează

[1] © ***Valeriu PROHNIȚCHI , ID ORCID: 0000-0003-1729-4650, e-mail: prohnitchi@gmail.com***

pe pensiile publice, sunt relativ mai bine protejate împotriva efectelor socioeconomice ale COVID-19, deoarece pensii rămân stabile. Analiza sugerează că măsurile adoptate de Guvern au avut un impact minor, reducerea TVA pentru sectorul HORECA având un efect compensator mai mic în comparație cu plățile directe către medicii infectați și subvenționarea ocupării. O combinație de măsuri fiscale și structurale ar fi oferit un răspuns mai echitabil social și economic mai eficient din punct de vedere economic la criză.

Автор использует прикладную модель общего равновесия (ПМОР), калиброванную на основе матрицы социального учета для экономики Молдовы и дополненную демографическими данными, чтобы ответить на три вопроса: 1) каково было краткосрочное социально-экономическое воздействие COVID-19 с точки зрения пола и возраста? 2) насколько вероятно, что меры политики 2020 года обеспечат адекватный ответ на кризис? и 3) существует ли лучшая альтернативная политика? Модель предсказывает, что совокупный эффект экономических потрясений, вызванных COVID-19, составляет около 11% ВВП и что спад будет во всех секторах, наиболее затронутыми из которых будут транспорт, HORECA (гостиницы, рестораны и кафе) и сектор услуг предоставляемые населению. В транспортном секторе в основном заняты мужчины среднего возраста, а в двух других - главным образом женщин. Возрастная и половая структура занятости по секторам объясняет, почему мужчины в возрасте 25-34 лет и женщины в возрасте 15-24 лет страдают от наибольшего снижения заработной платы (10%). Отражая снижение доходов экономически активных категорий и сокращение трансфертов внутри домохозяйств, потребление детей соответственно снижается. Старшие поколения, которые зависят от государственных пенсий, относительно лучше защищены от социально-экономических последствий COVID-19, поскольку пенсии остаются стабильными. Анализ показывает, что меры, принятые Правительством, оказали незначительное влияние, а снижение НДС для сектора HORECA имело меньший компенсирующий эффект по сравнению с прямыми выплатами инфицированным врачам и субсидированием занятости. Сочетание фискальных и структурных мер обеспечило бы более справедливый в социальном и экономическом отношении более эффективный ответ на кризис.

***Key words**: General Computable Equilibrium model, Social Accounting Matrix, macroeconomic policy, policy response, inter-generational transfers, National Transfer Accounts.*

***Cuvinte-cheie**: Model de Echilibru General Aplicat, matrice de contabilitate socială, politică macroeconomică, răspuns politic, transferuri intergeneraționale, conturi naționale de transfer.*

***Ключевые слова**: Прикладная модель общего равновесия, Матрица социального учета, макроэкономическая политика, ответные меры политики, межпоколенческие трансферты, национальные трансферные счета.*

INTRODUCTION

The COVID-19 pandemic engendered a systemic impact on the Moldovan economy. Domestic administrative restrictions and external shocks undermined the economic activities and boiled the economic system down. Due do the multifaceted and often opposing changes shocks involved, a net assessment of COVID-19 should account for general equilibrium effects. Computable General Equilibrium (CGE) models are particularly useful for undertaking such system-wide analyses. They consistently account for all changes in prices and quantities that shocks trigger in all markets. COVID-19 may have also involved significant distributional effects, as the crisis did not equally hit all economic sectors and, implicitly, all generations. It is thus of practical policy importance to understand which economic sectors and social groups may have been hit particularly hard by the crisis and to assess if the immediate policy measures offered a meaningful response to the crisis. If not, what combination of policy tools would have suited this purpose better? To address these

questions, we employ a CGE model calibrated on a Moldovan Social Accounting Matrix augmented with demographic details.

LITERATURE REVIEW

CGE models have been widely used to assess the direct impact of the COVID-19 pandemic and related restrictions. In UK, a CGE model was linked to a population-wide epidemiological and demographic model to assess the macroeconomic impact of COVID-19 and to study the impact of responses such as home quarantine, school closures, social distancing, and business closures (Keogh-Brown et al., 2020). It shows that the pandemics may impose unprecedented economic costs on the UK economy (7-10% of GDP). Whilst public actions are necessary to minimize the associated mortality, without alternative measures to reduce the scale and duration of school and business closures, the governmental economic support may be insufficient to compensate for longer term suppression of the pandemic which could generate an even greater health impact through major recession.

For the South-African economy, (Erero & Mangalani, 2020) combine a CGE model with time series models (Holt-Winter and SARIMA) to study the impact of COVID-19. Their results indicate significant impacts on the macroeconomic variables, employment, sector production and households' wellbeing. As suggested by their CGE model, South-African GDP, exports and private consumption would drop by about 7.10%, 13.19% and 7.10% against the baseline scenario.

In examining the impact of the pandemics on the US economy, (Walmsley, Rose, & Wei, 2021) consider three alternative scenarios of COVID-19 evolution: moderate and declining; moderate and increasing; and extensive and increasing. They find that net losses for the US economy will range from USD 3.2 trillion to USD 4.8 trillion in a 2-year period. The employment decline is estimated to range from 14.7% to 23.8%.

CGE models are excellent tools when it comes analysis of the whole-of-economy impact. However, they may be slightly agnostic in grasping distributional impacts. In order to overcome this limitation, CGE results are often used to conduct micro-simulations based on survey data, such as (Herault, 2005). This requires a structural compatibility of the CGE macro-model and the micro-simulation model.

In the case when long-term inter-generational effects are the main object of study, many economists prefer to use Overlapping Generation (OLG) models. For instance, (Gagnon, Johannsen, & Lopez-Salido, 2020) use an OLG model to explore the implications of mortality during COVID-19 pandemics for the US productive capacity. Their model suggests that the COVID-19 associated mortality will have small effects on output and factor prices for the reason that it is small in proportion to the population and skewed toward retired individuals. However, when combined with the broader economic impact, the COVID-19 effects on the productive capacity are economically significant and persisting for decades.

METHODOLOGY

Our analysis of the general equilibrium impact of COVID-19 in age- and gender-perspective stems from the National Transfer Accounts for Moldova (NTA)[1]. The most important result from the NTA Moldova is a constricted and short lifecycle surplus of Moldovans (Figure 1). With consumption age profiles almost identical for men and women, the striking differences in the lifecycles of men and women in Moldova being explained by the labor income differences (Gagauz, 2021). In turn, the labor income differential comes from significant gender gaps in employment rate (as shown in

[1] The first-ever NTA for Moldova were built in 2016 by the Moldovan think-tank EXPERT-GRUP with the UNFPA Moldova support. In 2020 the NTA was updated for the years 2018-2019 and improved.

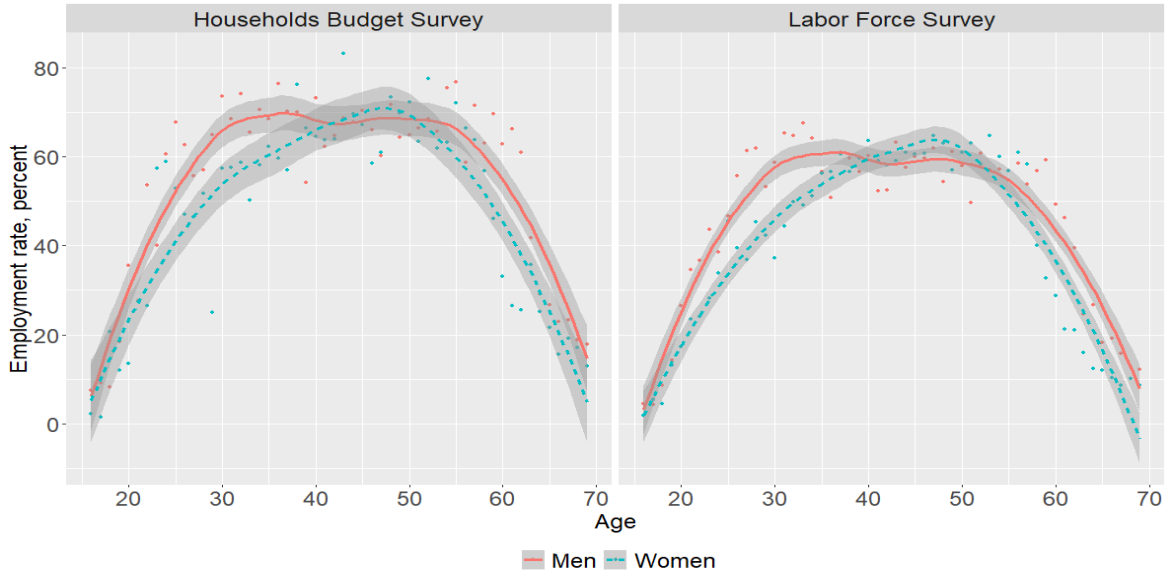

Figure 2) and in average wage (Figure 3). These gaps have been measured using two alternative sources (Households Budget Survey and Labor Force Survey), with broadly concurring results.

Figure 1. Annual consumption and labor income by ages and sexes in Moldova, 2019, thousand MDL/capita

Source: calculated by author as part of the NTA Moldova 2019 exercise.

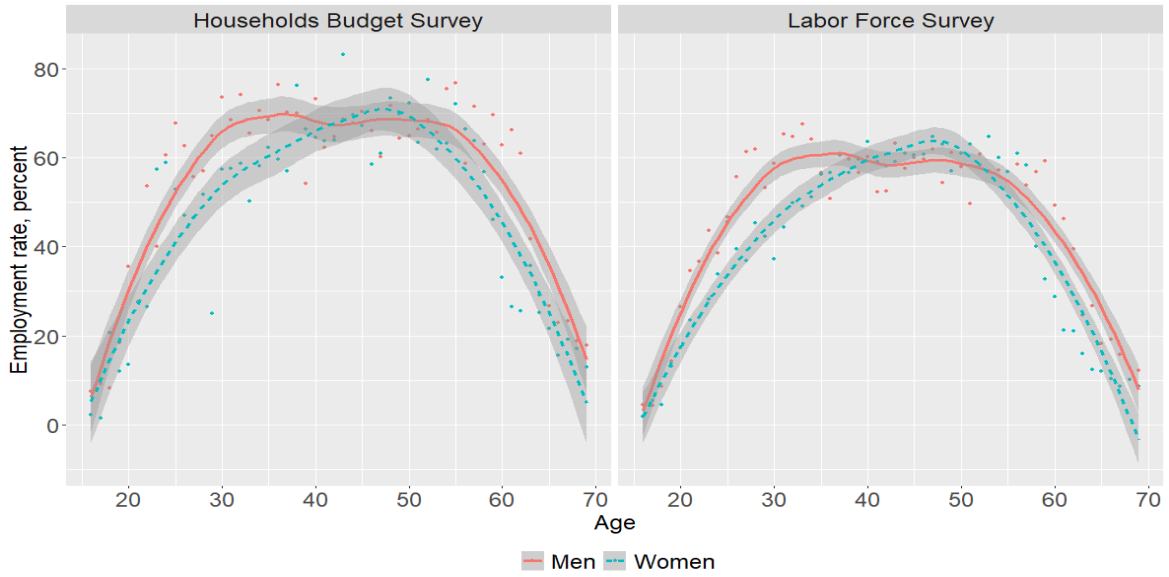

Figure 2. Raw (dots) and smoothed (lines) employment rate in the year 2019 by ages, sexes and sources of data, % of the group population

Source: calculated by author as part of the NTA Moldova 2019 exercise.

Figure 3. Raw (dots) and smoothed (lines) average annual wage in the year 2019 by ages, sexes and sources of data, MDL/capita

Source: calculated by author as part of the NTA Moldova 2019 exercise.

Large gender gaps in employment and wages persist across sectors. Transport, construction and ICT activities are dominated by men, while education, HORECA[1], health and financial sectors feature women as main employees. The ICT is quite young and men-dominated whereas the agricultural sector relies on relatively older employees of both sexes (Figure 4). Public administration, trade, industry and services to business feature more even distributions of employees. Wages of men are significantly higher than wages of women for all ages in agriculture, constructions, ICT, trade and

[1] Hotels, restaurants and cafeteria.

transport (Figure 5). Women wages are typically higher in the education and financial sectors. Among all sectors, industry and public administration are the most egalitarian in terms of the gender pay gap.

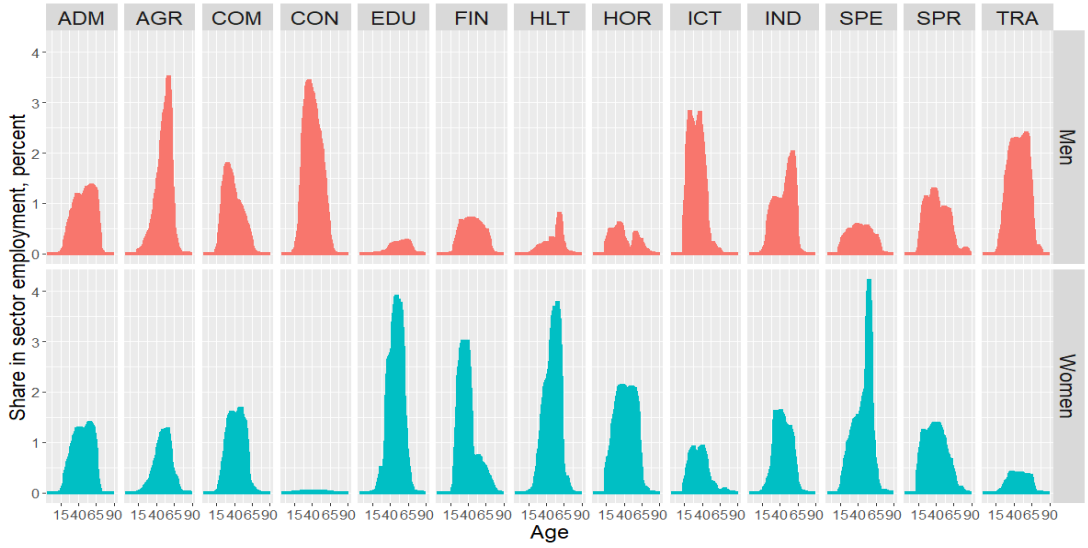

Figure 4. Estimated shares in the total persons employed in 2019, by age, sex and economic activities*, % of total persons employed**

*Note: * - ADM – public administration, AGR – agriculture, COM – trade, CON – constructions, EDU – education, FIN – financial sector, HLT – health protection, HOR – hotels, restaurants and cafeteria, ICT – ICT sector, IND – industry, SPE – services provided to persons, SPR – services provided to businesses, TRA – transport. ** - for each economic activity, shares by sex and age sum up to 100%.*

Source: calculated by author based on the Households Budget Survey 2019.

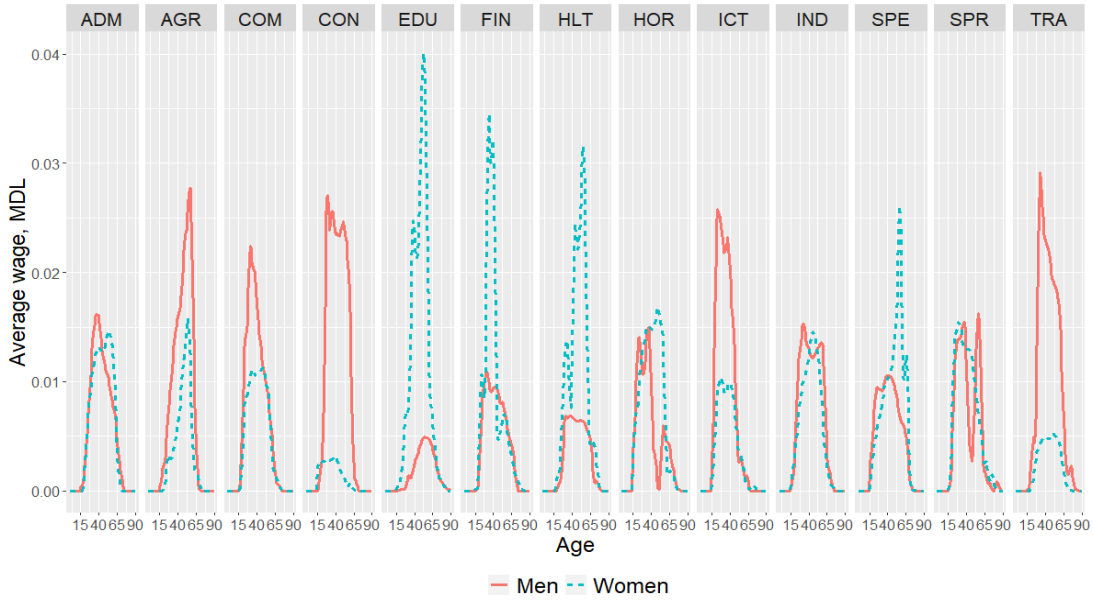

Figure 5. Average net annual wage in 2019 by age, sex and economic activity*, MDL

*Note: * - see note in Figure 4.*

Source: calculated by author based on the Households Budget Survey 2019.

The different age and sex profiles of employment and pay by economic sectors is the key reason why the hypothesis of COVID-19 having differentiated age and sex impact is worthwhile being assessed within a CGE-based economic analysis.

In line with tradition, to get the age and gender-disaggregated distributional effects of COVID-19, either the CGE results need to be used for micro-simulations or the CGE should be of an OLG model. However, both options involve conceptual and computational complexities, therefore we preferred a simpler solution. Our approach has been to integrate microeconomic and demographic data in the CGE macroeconomic framework. Instead of using one "representative household" for the entire economy in CGE model (as is most often the case in the economic literature), we replaced it with a more refined structure of households. We used the NTA results and introduced in the Moldovan CGE model 91 female and 91 male "households" representing the Moldovan population from age 0 to 90 years. These are still "representative" households, but they represent distinct age and sex cohorts, rather than one amalgamated household.

We have also disaggregated the labor factor, by introducing 76 age subcategories for male labor and 76 age categories for female labor (from 15 to 90 years in both cases) for each of the 13 economic sectors included in the model.

In addition, we have the interhousehold private transfers introduced in the CGE/SAM (United Nations, 2013). To do this, we have computed a 182x182 submatrix reflecting transfers from every age category to every age category disaggregated by sexes.

We have employed the IFPRI standard CGE model, which is fully documented in (Lofgren, Lee Harris, & Robinson, 2002). This is a static CGE and results should be interpreted as giving the long-run magnitude of impact of the initial shock against the baseline. While omitting the details related to transitional path to the new equilibrium and not incorporating firms' responses, the advantage of this approach is a better understanding of the socioeconomic exposure and vulnerability to crisis. In the context of the static CGE model we used, the only optimization decision that households take is related to the inter-temporal optimization of the consumption, i.e., allocating their income for goods and services to maximize their utility. Any age cohort, including children, are assumed able to realize and maximize the utility. This approach is not less realistic than the textbook assumption that any aggregate category of households, in general, is able to optimize anything deliberately, be it intra- or inter-temporally.

The model has been calibrated to the Moldovan economic data based on a 307 rows x 307 columns Social Accounting Matrix (SAM) for 2018. The core of the SAM is an input-output (IO) table for the year 2014, the latest for which official data are available. We have mathematically augmented and adjusted the 2014 IO table to fit the 2018 key macroeconomic data using a cross-entropy minimization method (Sherman, Moataz, & Andrea, 2001).

The CGE model used for this research includes 13 economic activities presented in the note under the Figure 4. This selection represents the trade-off between the need to model the sector-level impact of the COVID-19 restrictions and the limitations imposed by data and by the computational complexity.

Scenarios

Shock- and policy-related scenarios simulated based on the CGE model are presented below.

COVID-19 economic shocks

Domestic administrative restrictions (DOM)

On 17 of March 2020, Moldova adopted administrative measures restricting the level of economic activities in a number of economic sectors for 60 days. On May 15 some of the measures have been extended until June 30 and some until mid-September. As economic consequence, the efficiency of using the available production factors by various activities declined proportionally to the length and depth of restrictions. We use the efficiency parameter α_a^{va} of the CES production function in the CGE model to simulate the restrictions. In each of the 13 economic activities, the efficiency parameter has been "shocked" by rates corresponding to changes in efficiency. The general

loss in efficiency is assumed 16.7% (= 60 days of inactivity / 365 days). The more-disaggregated sectors have been affected at different rates and duration, resulting in different rates of loss for the 13 modelled activities. In addition, some sectors (such as agriculture) have not been direct subject to administrative restrictions (Table 1).

Decline of domestic exports (EXPO)

The COVID-related decline in external economic activity resulted in lower demand for Moldovan exports. The level of exports is endogenous in the CGE model, so we do not model the reduction of exports *per se*, but instead use the same efficiency parameter. Reduction in foreign demand can be viewed as occurring due to external 'administrative' restrictions. We use the data on exports for 2020 to calibrate the losses in efficiency by economic activities due to contraction in external demand. This method accounts for the fact that different economic activities depend differently on foreign markets. The losses in efficiency are presented in corresponding column of Table 1.

Table 1

Activities' losses in efficiency associated to scenarios DOM, EXPO and ALL, %

Activity	DOM	EXPO	ALL
AGR	0.0	1.1	1.1
IND	0.0	4.6	4.6
CON	5.0	0.1	5.1
COM	7.4	0.0	7.4
TRA	10.0	10.1	19.5
HOR	16.7	0.9	17.4
ITC	-5.0	1.2	-3.8
FIN	5.0	0.0	5.0
SPR	5.0	0.9	5.0
SPE	16.7	2.0	18.4
ADM	5.0	0.2	5.1
EDU	19.5	0.0	19.5
HLT	2.0	0.0	2.0

Source: author's estimates.

Decline of processed reexports (REXP)

Some activities in Moldova (such as production of electric equipment) function in a dual regime, by producing goods and by providing processing services of raw materials provided by foreigners. In their case, the COVID impact also translated through reduction of foreign orders for processing works. As data suggest, their losses represent around 3 months of the normal activity. We model the impact through activity-level parameter $\theta_{a,c}$ - the yield of the output of the product *c* per unit of activity *a*. The product *c* in this case refers to the service of processing raw material provided by foreign owners.

Changes in terms of trade (TOT)

COVID-induced realignment of prices on the global markets improved the Moldovan terms of trade. According to official data, in 2020 the price of the Moldovan agricultural exports gained around 10%, while industrial goods – around 3%. In case of imports, agricultural goods lost around 1%, while industrial goods – around 3%. These developments compensated the negative shocks to some extent.

Reduction in remittances (REMIT)

According to the Balance of Payments, the remittances declined 3%. For lack of other details, we apply a uniform adjustment rate to the income from remittances in all modelled households. The differentiated response is thus expected to come from different shares of remittances in their income.

All economic shocks (acronym ALL)

This scenario includes all domestic and foreign shocks as defined above. In this scenario the efficiency losses from restrictive measures domestically interact with losses from external slump in demand. For simplicity, we assumed that losses interact in a multiplicative manner. The values of the combined losses are presented in the last column in Table 1.

Policy responses

We simulated the impact of four key policy responses that Moldovan government adopted in 2020 and of one alternative policy package:

- **VAT**: Reduction of the statutory VAT rate by 5% points for the HORECA companies.
- **MED**: One-time personal indemnity for the medical personnel infected by COVID-19. This response is likely to have differentiated impact by both age and sex, considering the structure of employment by age and sexes in the health protection sector (Figure 6).
- **SUBS**: Subsidies to mandatory fringe benefits of the personnel sent in technical unemployment in the economic activities that have been subject to restrictive administrative measures.
- **POL**: This policy scenario includes each of the three policy responses above + ALL.
- **POL1**: This scenario models an alternative policy, which encompasses the MED and the SUBS responses above, and a 1 percent point VAT reduction applied uniformly to all economic sectors (not only to HORECA). In addition, this scenario simulates structural reforms and firms-level responses associated with a 5% reduction in trade and transport margin + ALL.

Macroeconomic and factor market closure rules

The following additional hypotheses have been adopted:

1. There is unemployment in the Moldova economy, and wages adjust to equilibrate the labor supply with demand. This is plausible especially as many Moldovan migrants returned home.
2. The exchange rate is freely floating. This hypothesis is pertinent considering the inflation targeting strategy of the National Bank of Moldova.
3. Budgetary deficit is flexible, adjusting to the level of governmental revenues and expenditures. This is a plausible hypothesis considering the exceptional circumstances affecting the economy.
4. Investments are driven by savings which are computed as fixed share of the disposable income, based on marginal propensity to save (SAM-based calculation).

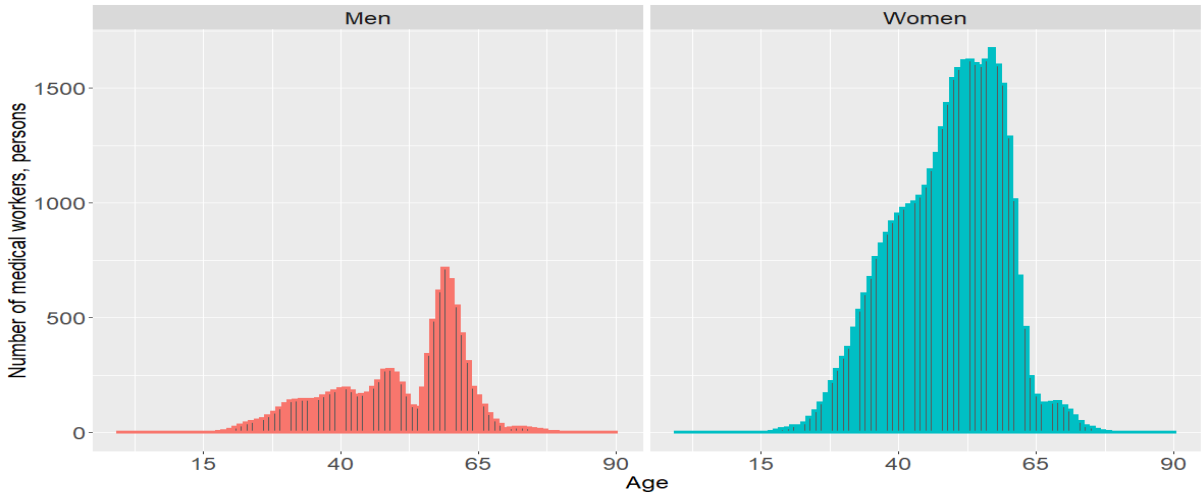

Figure 6. Distribution of medical workers by ages and sexes, persons

Source: calculated by author based on Households Budget Survey 2019.

Simulation results

Macroeconomic and sector level impact. As shown in Table 2, COVID-19 is likely to have inflicted large losses to Moldovan economy. In the ALL scenario, the GDP declines 11% against the baseline scenario. Administrative restrictions (DOM) cost the GDP around 7.5%, while the external shocks on the domestic exports (EXPO) – around 4%. Losses caused by reduction in processed reexports (REXP) represent around 1%, while expected reduction in remittances (REMIT) – 0.1%. Compensatory development in the Moldova's terms of trade is significant (+1.1% to GDP), however, not enough to compensate losses. Except the terms of trade scenario (TOT), the private consumption and fixed capital investment decline in all scenarios, with domestic administrative restrictions causing the heaviest hit to the capital investment. Under the REMIT scenario, the exports grow, while imports recede, due to depreciation of the Moldovan currency following smaller inflows of hard currency from Moldovan migrants (Table 3).

The transport sector is the most affected by COVID-19, even though the administrative restrictions it faced have not been the most severe. The transport sector output declines by 23% (Table 4), reflecting the net effect of both reduced domestic and foreign supplies of goods. The level of activity in the HORECA sector declines by 23%, while the sector of services rendered to population – by 14%. The output declines at significant rates even in sectors which have been not directly subjects of administrative restrictions: agricultural output declines by 8%, while industrial output and the volume of construction works – by 13%. This is the combined result of the reduction in external demand and of domestic intermediate demand from sectors directly affected by administrative restrictions.

The impact of the policy response is remarkably shallow. The VAT response has negligible impact, which is of no surprise considering the dramatic fall in demand of HORECA services. The impacts of the indemnities paid by the government to health workers affected by COVID-19 and of the subsidies to companies sending the staff in technical unemployment are more visible, however, the resources allocated to them are very small. Combined, the three policy measures have a very modest compensatory effect: the GDP under the POL scenario deviates from the ALL scenario by only 0.1% points.

The compensatory impact of the alternative policy scenario, which combines the indemnities, the subsidies, a more modest but more egalitarian reduction in the VAT rate and structural policy is by far more significant in macroeconomic terms. The POL1 scenario costs the budget even less than POL scenario and it has a positive impact on the overall economic situation

Table 2

Impact on real GDP and main components, % deviations from the baseline

	Economic shocks						Policy responses				
	DOM	EXPO	REXP	TOT	REMIT	ALL	VAT	MED	SUBS	POL	POL1
Absorption	-6.0	-3.3	-1.1	1.6	-0.4	-8.8	-8.8	-8.3	-8.4	-8.3	-6.0
Private consumption	-4.5	-3.4	-1.1	1.7	-0.9	-7.9	-7.9	-6.8	-7.0	-6.7	-4.3
Fixed capital investment	-11.8	-4.4	-1.4	2.1	0.6	-14.7	-14.7	-15.3	-15.3	-15.3	-12.3
Exports	-10.2	-6.8	-2.3	0.4	0.3	-17.7	-17.7	-18.1	-17.9	-18.0	-15.0
Imports	-5.1	-3.4	-1.2	2.1	-0.6	-7.8	-7.8	-7.0	-7.1	-6.9	-5.4
GDP	-7.5	-4.0	-0.9	1.1	-0.1	-11.0	-11.0	-10.9	-10.9	-10.9	-9.1

Source: CGE model results.

Table 3

Impact on key macroeconomic indicators, % deviations from the baseline

	Economic shocks						Policy responses				
	DOM	EXPO	REXP	TOT	REMIT	ALL	VAT	MED	SUBS	POL	POL1
REXR	-2.6	1.5	0.8	-1.4	0.3	-1.6	-1.6	-2.1	-1.9	-2.1	-1.2
Investment / GDP ratio	-3.3	-1	-0.3	0.6	0.4	-3.7	-3.7	-4.2	-4.2	-4.2	-3.4
Private savings / GDP ratio	-0.8	-0.4	-0.1	0.2	0.0	-1.0	-1.0	-1.0	-1.0	-1.0	-0.6
Trade deficit	1.7	1.5	0.6	-0.2	-0.3	3.1	3.1	3.5	3.4	3.5	2.5
Budget deficit	-3	-1.2	-0.3	0.4	0.3	-3.8	-3.8	-4.2	-4.2	-4.2	-3.7

Source: CGE model results.

Table 4

Impact on the level of production of the key economic activities, % deviations from the baseline

	Economic shocks						Policy responses				
	DOM	EXPO	REXP	TOT	REMIT	ALL	VAT	MED	SUBS	POL	POL1
AGR	-5.2	-3.4	-0.5	1.0	-0.2	-8.0	-8.0	-7.8	-7.8	-7.8	-5.1
IND	-7.2	-5.1	-1.3	-0.2	0.0	-13.2	-13.2	-13.2	-13.2	-13.2	-9.2
CON	-11.0	-4.1	-1.3	2.0	0.4	-13.7	-13.7	-14.2	-14.2	-14.2	-11.4
COM	-6.8	-4.3	-1.1	0.8	-0.2	-11.1	-11.1	-10.8	-10.9	-10.8	-11.8
TRA	-14.5	-12.2	-0.1	2.0	0.1	-23.3	-23.3	-23.3	-23.2	-23.2	-21.9
HOR	-21.6	-3.2	-0.4	2.7	-0.2	-22.9	-22.7	-22.5	-22.5	-22.3	-20.3
ICT	-0.8	-3.1	-0.6	1.4	-0.4	-3.4	-3.4	-2.9	-2.9	-2.8	-0.8
FIN	-6.4	-3.0	-0.9	1.3	-0.5	-9.2	-9.2	-8.5	-8.6	-8.5	-6.9
SPR	-7.1	-3.4	-0.8	1.5	-0.3	-9.9	-9.8	-9.5	-9.5	-9.4	-8.1
ADM	-2.8	-1.4	-0.4	0.7	-0.3	-4.1	-4.1	-3.8	-3.8	-3.7	-3.1
EDU	-3.9	-0.7	-0.2	0.5	-0.1	-4.3	-4.3	-4.2	-4.2	-4.2	-3.7
HLT	-2.0	-0.9	-0.3	0.6	-0.2	-2.8	-2.8	-2.5	-2.6	-2.5	-1.8
SPE	-13.0	-2.8	-0.4	1.7	-0.3	-14.4	-14.4	-14.2	-14.2	-14.1	-12.6

Source: CGE model results.

Distributional impact. Due to reduction in economic output, the COVID-19 results in reduction of income and consumption expenditures of the Moldovan households. As shown in the Table 5, the men of working age are hit harder by the COVID-19 socioeconomic fallout than women in the same category. The male population aged 25-34 years are likely to experience the strongest decline in their total income – around 11%. In case of women population, the younger cohorts suffer bigger losses in income. Total income includes not only labor income, but also social payments, transfers from other households, remittances, income from agricultural and non-agricultural entrepreneurship and so on. The labor income is the main source of income for the working age generations, the pensions – for pensioners, while public and private transfers (i.e., transfers from "parents' households") are for households with children.

The sex-differentiated impact on the labor income can be explained two factors. First, for all ages, the men face higher exposure to potential labor market shocks due to higher enrollment rates. As seen in Table 6, the labor income of men, especially those in their mid-ages, suffer contractions of around 10-11%, whereas the decline of the labor income of women in the same categories is a bit smaller. Secondly, the sectors which experienced the hardest consequences of COVID-19 – including transport and constructions – are dominated by middle-aged men. Nonetheless, it should be mentioned that many women working in the HORECA and services to population sectors also have

suffered heavy losses in their labor income. The aggregate losses per every age category came mostly from reduction of labor demand and release of personnel.

It is worthwhile mentioning that the income gender gap is not present in case of children. The population of girls and boys aged 0-14 are set to experience more or less equal reductions in their income (around 9%). The missing gap is explained by the fact that their income is completely determined by private interhousehold transfers. At the sending end, private transfers feature more or less balanced mixes of adult female and male households with resulting transfers not having any significant gender pattern.

Compared to younger generations, the older generations in the category of 65+ are likely to experience the smallest reduction in their incomes – around 5%. Their expenditures rely more on public pensions as main source of income and, to a lower extent, on private transfers from younger cohorts. COVID-19 is not expected to have significant implications on public pensions and other social transfers. This is why, in the case of pensioners, as in case of children, the COVID-19 socioeconomic impact does not have any significant gender pattern.

The evolution of the consumption expenditures reflects the total income pattern. With a linear dependency between the level of total income and level of consumption expenditures, the consumption adjusted proportionately to the losses in total income of every age group.

Again, we find little evidence that the policy package designed by the government in the year 2020 has had any meaningful impact compensating the welfare losses. At the same time, the proposed alternative policy, provides a more tangible relief to all ages and to both men and women. The reduction in transaction costs throughout the economy significantly increases the level of activity, enhances the demand for labor factor across all sectors (except trade) and results in increase labor income for all ages, men and women alike.

Table 5

Impact on total income by population groups and scenarios, % deviations from the baseline

Group	Economic shocks						Policy responses				
	DOM	EXPO	REXP	TOT	REMIT	ALL	VAT	MED	SUBS	POL	POL1
male 0-14	-5.1	-4.0	-1.3	2.1	-0.7	-8.7	-8.7	-7.7	-7.9	-7.6	-4.7
male 15-24	-5.4	-4.1	-1.4	2.2	-0.6	-9.0	-9.0	-8.1	-8.3	-8.1	-5.0
male 25-34	-6.8	-5.0	-1.7	2.5	-0.4	-10.9	-10.9	-10.3	-10.4	-10.2	-6.8
male 35-44	-6.6	-4.8	-1.6	2.4	-0.5	-10.5	-10.5	-9.8	-9.9	-9.8	-6.4
male 45-54	-6.5	-4.7	-1.6	2.4	-0.4	-10.4	-10.4	-9.7	-9.8	-9.6	-6.2
male 55-64	-5.1	-3.6	-1.2	1.9	-0.9	-8.5	-8.5	-7.4	-7.6	-7.4	-4.4
male 65+	-1.9	-1.5	-0.5	1.0	-2.0	-4.9	-4.9	-2.8	-2.8	-2.8	-1.5
female 0-14	-5.1	-4.0	-1.3	2.1	-0.7	-8.7	-8.7	-7.7	-7.9	-7.7	-4.8
female 15-24	-4.7	-3.7	-1.2	2.0	-0.8	-8.1	-8.1	-7.0	-7.2	-7.0	-4.2
female 25-34	-4.0	-3.2	-1.1	1.8	-1.1	-7.3	-7.3	-6.0	-6.1	-6.0	-3.5
female 35-44	-3.3	-3.4	-1.1	1.8	-0.8	-6.6	-6.6	-5.3	-5.7	-5.2	-2.6
female 45-54	-2.8	-3.2	-1.1	1.7	-0.7	-5.9	-5.9	-4.6	-5.1	-4.6	-1.9
female 55-64	-2.1	-2.3	-0.8	1.3	-1.3	-5.1	-5.1	-3.5	-3.7	-3.4	-1.5
female 65+	-1.9	-1.6	-0.5	1.0	-2.0	-4.9	-4.9	-2.8	-2.9	-2.8	-1.5

Source: CGE model results.

Table 6.

Impact on income from labor by population groups and scenarios, % deviations from the baseline

Group	Economic shocks						Policy responses				
	DOM	EXPO	REXP	TOT	REMIT	ALL	VAT	MED	SUBS	POL	POL1
male 15-24	-5.5	-4.5	-1.5	2.2	-0.2	-9.1	-9.1	-8.8	-8.9	-8.7	-5.8
male 25-34	-6.7	-5.4	-1.8	2.4	0.0	-11.1	-11.1	-11.0	-11.0	-10.9	-7.7
male 35-44	-6.6	-5.3	-1.7	2.4	0.0	-10.8	-10.8	-10.7	-10.7	-10.6	-7.3
male 45-54	-7.1	-5.2	-1.8	2.4	0.0	-11.1	-11.1	-11.1	-11.1	-11.0	-7.3
male 55-64	-6.7	-4.7	-1.6	2.2	0.0	-10.3	-10.3	-10.2	-10.2	-10.1	-6.3
male 65+	-2.0	-3.4	-1.1	1.9	-0.2	-4.5	-4.5	-4.2	-4.2	-4.1	-1.4
female 15-24	-5.4	-4.7	-1.7	2.3	-0.1	-9.2	-9.2	-9.0	-9.1	-8.9	-5.6
female 25-34	-3.1	-4.1	-1.4	1.7	-0.3	-6.8	-6.8	-6.4	-6.5	-6.3	-3.8
female 35-44	-1.7	-3.7	-1.4	1.6	-0.3	-5.2	-5.2	-4.8	-4.8	-4.7	-2.1
female 45-54	-0.5	-3.1	-1.2	1.3	-0.2	-3.3	-3.3	-3.0	-3.1	-3.0	-0.5
female 55-64	-0.6	-3.0	-1.1	1.5	-0.2	-3.2	-3.2	-2.9	-2.9	-2.8	-0.3
female 65+	-0.2	-3.1	-1.0	1.7	-0.3	-2.8	-2.7	-2.3	-2.4	-2.2	-0.1

Source: CGE model results.

CONCLUSIONS

As suggested by CGE model, the cumulative effect of the COVID-19 economic shocks represents around 10-11% of the GDP. This is largely in line with the real GDP reduction that Moldova went through in 2020: -7.5 percent, against the 4.5% growth expected before COVID-19 (and drought) hit the Moldovan economy. Sectors dominated by SMEs suffer the heaviest economic blows. The transport sector is expected to suffer the most significant reduction in output level (more than 23% against the baseline). It employs men of all age categories, with mid-age adults dominating. HORECA sector also suffered comparable losses, while the services provided to population is set to decline 14%. Opposite to transport sector, these two typically employ women. The public economy sectors (including public administration, health and education) are less vulnerable to COVID-19. Again, these results are fully consistent with the effective figures seen in the 2020 statistics.

Reduction in output results in reduction of labor demand and, in some cases, in downward adjustments of the wages. This is the key cause of significant welfare losses due to COVID-19. When all domestic and external shocks combine, men of working age suffer the heaviest loss (around 11%) in their labor income. Among other age categories of women, those in the 15-24 age category suffer the largest reduction of wage income (around 10%), which is explained by the relatively high share of employment of women in this age group in HORECA and population services sectors. Real data show no significant reduction in the level of employment in general, however, there is a dramatic two-fold increase in the underemployment rate, which is consistent with our findings.

Reflecting the income contraction of the breadwinning age categories, the consumption expenditures for other ages adjust accordingly. Children' consumption declines because of reduced level of private transfers from adult generations, for whom wages and remittances are the main sources of income and financing transfers to younger generations. The older generations relying on public pensions are relatively better sheltered against the COVID-19 socioeconomic effects. Indeed, according to budgetary reports for 2020, pensions and other social payments did not suffer reductions.

The policy response has had relatively low compensatory effect. The VAT reduction for the HORECA sector does not have a sizable economic effect, even on the sector itself. Indeed, the reduction in fiscal burden is of little relevance when the demand itself has been absent. The indemnities paid for medical workers and subsidies on the mandatory social and medical contributions related to staff in technical unemployment have more prominent impacts than the

reduced VAT for HORECA, but, still, are negligible considering the small amounts of public resources behind them.

We simulated a package of alternative policy measures. This package includes the indemnities for medical workers and job subsidies but treat VAT reduction in a different manner – a more modest 1 percent reduction in the statutory VAT rate is applied but all activities are allowed to benefit of it. In addition, this package mimics a structural policy resulting in a 5% reduction of trade margin and transport margin for all sectors and all types of supplies (domestic, import, export). This reduction can be achieved, for instance, by improving the competitive and anti-trust policies across all sectors and does not require significant public expenses.

The trade sector has been found to be the only sector losing from this alternative policy package, while others benefit greatly. This alternative package halves the loss in GDP, yet it is not sufficient to fully compensate the loss, considering the depth, magnitude and time extent of COVID-19.

This result is quite significant and suggests that distributional impact of COVID-19 would be economically more efficient and socially more just to be addressed by a more balanced mix of fiscal and structural policies. The results of this research suggest that the Government should consider how its policy targets the SMEs in the most exposed sectors (transport, services, HORECA). By their very nature, many of these measures adopted so far have been designed to address the relatively large companies, rather than the smallest ones, which suffer particularly severe forms of liquidity crisis.

REFERENCES

1. Biroul Național de Statistică al Republicii Moldova. (2015). *Conturi Naționale 2014.* Chișinău.
2. Biroul Național de Statistică al Republicii Moldova. (2015). *Conturile Naționale ale Republicii Moldova 2014.* Chișinău.
3. Erero, J., & Makananisa, M. P. (2020). Impact of Covid-19 on the South African economy: A CGE, Holt-Winter and SARIMA model's analysis. *Turkish Economy Review, 7*(4).
4. Gagauz, O. (2021). *De ce femeile au venituri mai mici decat barbatii pe tot parcursul vietii?* Chisinau: Centrul Analitic Independent Expert-Grup.
5. Gagnon, E., Johannsen, B., & Lopez-Salido, D. (2020). *Supply-Side Effects of Pandemic Mortality: Insights from an Overlapping-Generations Model.* Washington, D.C.: Federal Reserve Board.
6. Herault, N. (2005). *Building and linking a microsimulation model to a CGE model: the South African microsimulation model.* Centre d'Economie du Development.
7. Keogh-Brown, M. R., Jensen, H. T., Edmunds, W., & Smith, R. D. (2020). The impact of the COVID-19, associated behaviours and policies on the UK economy: a computable general equilibrium model. *SSM - Population Health, 12*, p. 100667.
8. Lofgren, H., Lee Harris, R., & Robinson, S. (2002). *A Standard Computable General Equilibrium (CGE) Model in GAMS.* Washington: International Food Policy Research Institute.
9. Sherman, R., Moataz, E.-S., & Andrea, C. (2001). *Updating and Estimating a Social Account Matrix Using Cross Entropy Methods.* IFRPI.
10. United Nations. (2013). *National Transfers Account. Manual. "Measuring and analysing the Generational Economy"* . New York: UN.
11. Walmsley, T., Rose, A., & Wei, D. (2021, 5). The Impacts of the Coronavirus on the Economy of the United States. *Economics of Disaster and Climate Change*, pp. 1-52.

Received 02 November 2021
Accepted 10 December 2021

THE RESILIENCE OF CENTRAL AND EASTERN EUROPEAN BANKING SYSTEMS DURING THE COVID-19 CRISIS

Dorina CLICHICI[1], Senior Researcher, PhD
Institute for World Economy, Romanian Academy
Cristina-Georgiana ZELDEA[2], Researcher, PhD Student
Institute for World Economy, Romanian Academy
Bucharest University of Economic Studies

DOI: https://doi.org/10.36004/nier.es.2021.2-02
JEL Classification: G21, G28, H62
UDC: 336.71

ABSTRACT

The Covid-19 crisis has severely affected Central and Eastern European (CEE) states, causing major economic activities to be blocked during the pandemic, shrinking domestic demand and investment. The aim of the research is to analyse the impact of the pandemic event on CEE banking systems, in the light of the most relevant indicators of banking stability. Both qualitative and quantitative research methods were used to achieve the goal. The results of the analysis revealed that the pandemic crisis did not affect the quality of banking assets in the CEE, the rate of non-performing loans remained at a fairly low level in the most of the states. At the same time, due to major reforms that followed the international financial crisis of 2008, banks have a sufficiently high level of capitalization and a reasonable level of indebtedness, reflecting a high resilience to shock of CEE banking systems. However, extremely low level of interest rates in the pandemic have determined a deterioration in asset performance in most banking systems in the CEE. Moreover, the outlook regarding the CEE banking systems remains quite uncertain. Considering the large-scale measures to reschedule credit rates, through moratoriums on bank loans, but also the financial support schemes initiated by central banks and governments, the CEE region is facing high risk costs, which manifest mainly through the migration over time of credit risk exposure. In this context, non-performing loan ratios are expected to increase in the near future. Moreover, the widespread shift to lower interest rates will exert pressure on lending margins.

Keywords: *Covid-19 crisis, CEE banking systems, return on assets, return on bank capital, bank capitalization, leverage ratio*

Criza Covid-19 a afectat grav statele din Centrul și Estul Europei (CEE), provocând blocarea activităților economice majore în perioada pandemiei, diminuând cererea și investițiile interne. Scopul cercetării este de a analiza impactul evenimentului pandemic asupra sistemelor bancare din CEE, în contextul celor mai relevanți indicatori ai stabilității bancare. Pentru atingerea scopului au fost utilizate metode de cercetare atât calitative, cât și cantitative. Rezultatele analizei au relevat că evenimentul pandemic nu a afectat calitatea activelor bancare în ECE, rata creditelor neperformante s-a menținut în majoritatea statelor la un nivel destul de scăzut. În același timp, datorită reformelor majore care au urmat crizei financiare internaționale din 2008, băncile au un nivel suficient de ridicat de capitalizare și un nivel rezonabil de îndatorare, manifestând o rezistență ridicată la șoc a sistemelor bancare din CEE. Cu toate acestea, nivelul extrem de scăzut al ratelor dobânzilor în pandemie a determinat o deteriorare a performanței activelor bancare în CEE. Totuși, perspectivele privind sistemele bancare din CEE rămâne destul de incertă. Având în vedere măsurile de amploare

[1] © ***Dorina CLICHICI ID ORCID: https://orcid.org/0000-0002-8337-6489***
[2] © ***Cristina-Georgiana ZELDEA ID ORCID https://orcid.org/0000-0001-9441-5968***

de reeșalonare a ratelor creditelor, prin moratoriile la creditele bancare, dar și schemele de sprijin financiar inițiate de băncile centrale și guverne, regiunea CEE se confruntă cu costuri ridicate ale riscurilor, care se manifestă în principal prin migrarea în timp a expunerii la riscul de credit. În acest context, se preconizează că ratele creditelor neperformante vor crește în viitorul apropiat. Mai mult, trecerea pe scară largă către rate mai reduse ale dobânzilor va exercita presiuni asupra marjelor de creditare.

Cuvinte-cheie: *criza de Covid-19, sistemele bancare din CEE, rentabilitatea activelor, rentabilitatea capitalului bancar, capitalizarea bancară, gradul de îndatorare*

Кризис Covid-19 серьезно затронул страны Центральной и Восточной Европы (ЦВЕ), в результате чего во время пандемии была заблокирована основная экономическая деятельность, что привело к сокращению внутреннего спроса и инвестиций. Цель исследования - проанализировать влияние пандемии на банковские системы в ЦВЕ в свете наиболее актуальных показателей банковской стабильности. Для достижения цели использовались как качественные, так и количественные методы исследования. Результаты анализа показали, что пандемический кризис не повлиял на качество банковских активов, процент неработающих кредитов в большинстве стран сохранился на достаточно низком уровне. В то же время, благодаря крупным реформам, последовавшим за международным финансовым кризисом 2008 года, банки имеют достаточно высокий уровень капитализации и разумный уровень задолженности, что отражает высокую степень устойчивости банковских систем ЦВЕ к шокам. Однако крайне низкий уровень процентных ставок привел к ухудшению показателей банковских активов в ЦВЕ. В то же время перспективы банковских систем в ЦВЕ остаются довольно неопределенными. Принимая во внимание масштабные меры по изменению графика выплат по кредитам посредством моратория на банковские ссуды, а также схемы финансовой поддержки, инициированные центральными банками и правительствами, регион ЦВЕ сталкивается с высокими издержками по рискам, которые проявляются в основном в переносе кредитного риска в будущее. В этом контексте ожидается, что в ближайшем будущем показатели проблемных кредитов вырастут. Более того, повсеместный переход к более низким процентным ставкам окажет давление на кредитную маржу.

Ключевые слова: *Кризис Covid-19, банковские системы ЦВЕ, рентабельность активов, рентабельность банковского капитала, капитализация банков, степень задолженности*

INTRODUCTION

The Covid-19 pandemic caused an unprecedented economic and health crisis. Despite the financial turmoil that took place in 2020, banks have been a significant source of resilience. Due to major reforms that followed the international financial crisis of 2008, banks were much better capitalized and more liquid this time. According to Giese and Haldane (2020), banks were actually part of the solution to the crisis, rather than part of the problem. Moreover, considerable fund injection from central banks, along with strong preshock bank capital, explain why banks were able to accommodate increased liquidity demands (Li et al., 2020). However, given the close link between the economic situation and the banks' health, the economic consequences of the Covid-19 crisis will be felt in a short time by banking systems as well. The extent and impact of this erosion on the stability of banks is yet to be known, mostly because many of the granted loans have been deferred through moratoriums or restructured for a longer period of time. In addition, unprecedented fiscal and monetary support offered by governments and central banks has helped maintain the flow of credit to businesses and population, thus alleviating the economic and financial shock. However, experts believe that banks could face a substantial increase in non-performing loans (NPL) when fiscal and monetary support programs will be abruptly withdrawn, but also due to an increased insolvency of the population and businesses (OECID, 2021). In addition to the adverse effects induced by the

Covid-19 crisis, there are a number of important challenges that affect the traditional business model of banks, i. e. persistent low interest rates, changes in the regulatory framework, but also increased competition from shadow banks and new digital market participants (Carletti et al., 2020).

However, the impact of the current crisis on banking systems will be different from that of the international financial crisis, as the financial resilience of banks has significantly improved since then, with revised capital requirements for commercial banks and new shock-absorbing buffers (BIS, 2017). Since 2015, international banking regulations have improved the quality of the banking capital, by changing the definition of equity and increasing the requirements for the minimum level of the Tier 1 and Common Equity Tier 1 capital ratios. Moreover, several novel countercyclical macroprudential tools have been introduced, i.e. the capital buffer, the countercyclical capital buffer and the buffer for systemically important institutions. In addition to these three buffers, EU Member States have also applied the systemic risk capital buffer at their discretion. Furthermore, in order to prevent the excessive accumulation of debt, which was one of the weaknesses of the pre-crisis financial system, a minimum level of leverage has been introduced (that must at least equal 3%). In addition, the new macroprudential framework has set minimum liquidity standards for credit institutions, through the liquidity coverage ratio and net stable funding indicator. Under these conditions, banks significantly increased their capital and liquidity reserves.

To overcome the challenges posed by the pandemic crisis, banks will have to increase their loan-loss provisions that will affect bank capital. Therefore, financial authorities need to consider additional measures to improve credit quality oversight and resolution and recovery regimes, in order to provide means to address the challenges of a potential deterioration in the quality of banking assets.

LITERATURE REVIEW

The Covid-19 crisis has spurred financial research related to the impact of the pandemic event on bank performance and business models, but also to different scenarios regarding the resilience of banking systems in the post-Covid-19 period. Moreover, considering the unprecedented monetary and fiscal support in stabilising the economy and the financial system in 2020, many studies have approached the impact of this support on banks (Demirguc-Kunt et al., f.a.). Found that liquidity support, borrower assistance programs and monetary easing lessened the negative impact from the pandemic crisis, but it varied across banks and countries. According to OECD scenarios (2021), extending the deadline for monetary and fiscal support measures would reduce the severity of the impact of the Covid-19 crisis on the NPL ratios, keeping them below the levels reached during the 2008 financial crisis in most countries. On the other hand, the premature withdrawal of this support would cause a substantial increase in NPL, exceeding the levels recorded during the previous crisis in a number of economies. At the same time, the same study reveals that banks could face Tier 1 equity cuts in both developed and emerging economies, despite broad monetary and fiscal support measures.(Kasinger et al., 2021) emphasizes the importance of an early and realistic assessment of credit losses in the context of the Covid-19 crisis, in order to mitigate the negative effects on European banks. According to the authors, with the cancellation of moratoriums and other support measures in the context of the crisis, European banks will face a wave of NPL. The empirical analysis of Kasinger et al. (2021), on a sample of 15 European countries, notes the existence of a sufficiently high level of aggregate bank capital to absorb the potential losses generated by NPL, even in the possibility of an adverse scenario. However, the results of the study show a substantial heterogeneity between countries, both in terms of the potential amount of NPL and the ratio between NPL to bank capital. In this context, in order to avoid a potential banking crisis, regulators need to ensure that banks realistically assess current lending volumes, through effective asset quality review, stress tests and appropriate accounting rules. Another study, which looked at the performance of US banks, suggests that the effect of the Covid-19 crisis is less obvious from the analysis of bank balance sheets, considering the impact of easing regulatory requirements on credit classification and provisions creation (Beck and Keil, 2021). The authors identified an increase in the volume of loans meant to

support the US economy, driven mainly by government support programs, as well as a tightening of credit conditions.

As for banking systems in CEE, according to a report by Raiffeisen (2020), they will experience a significant deterioration in the quality of assets in 2021, generated by additional risks from retail loans and those granted to SMEs. In general, the non-performing loan ratio is expected to increase to 4-8% in Central Europe and to 7-10% in South-Eastern Europe according to this report. Moreover, the significant presence of foreign banks in CEE and their pro-cyclical credit behaviour (Niţoi et al., 2021) could exacerbate the situation in CEE.

Data sources and methods

The article aims to analyse the impact of the Covid-19 crisis on the stability of the CEE banking system. [1] First, the authors evaluate the economic environment in CEE, using three main macroeconomic indicators, i.e. GDP growth, budget balance and change in exports of goods and services. Second, the paper investigates CEE banking systems from the perspective of the most relevant indicators of banking stability, i.e. the non-performing loans ratio, return on assets, return on equity, Tier 1 equity ratio, Common Equity Tier 1 ratio, and the leverage ratio.

In order to achieve the goal, both qualitative and quantitative research methods were used. The data for performing the analysis were extracted from two databases, i.e. the IMF World Economic Outlook database, for the analysis of macroeconomic indicators, but also the European Banking Authority database, for the analysis of performance and banking stability indicators in CEE countries.

The macroeconomic environment in the context of the Covid-19 crisis

The banking systems in CEE experienced a remarkable stability in the period 2017-2019, which was characterized by high levels of capitalization and profitability, determined mainly by the favourable macroeconomic environment in the region. The quality of bank assets in this group of states has significantly improved over these three years, as a result of the decrease in the non-performing loans rate, but also as a result of increases in the rate of return and adequacy of bank capital. The growth of lending activity, fuelled by the intensification of economic and investment activities, has generated high levels of bank profits in almost every country in the region (Raiffeisen, 2020).

However, this positive trend was disrupted by the Covid-19 pandemic, which had major negative repercussions on the CEE economies, blocking important economic sectors. To avoid an economic collapse, the governments and central banks of these states have taken a number of fiscal, monetary and regulatory measures, which have mitigated the negative effects of the pandemic crisis. Despite these measures, the pandemic caused GDP fall offs in all CEE countries, declines in domestic demand and investment, rises of budget deficits and significant declines in exports.

The most severe GDP contractions in 2020 were recorded in Croatia (-9%), the Czech Republic (-5.6%), Slovenia (-5.5%), the Slovak Republic (-5.2%) and Hungary (-4.9%) (IMF, 2021). At the same time, the economies of Romania, Bulgaria and Latvia fell by an average rate of only -3.7% in 2020. The most resilient states in the face of the crisis caused by the pandemic were Estonia, Poland and Lithuania, which experienced an economic decrease of -2.9%, -2.7% and -0.8%, respectively, in 2020 compared to the previous year (Figure 1).

[1] According to the OECD classification, the group of Central and Eastern European states includes: Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, Estonia, Latvia and Lithuania. As Albania is not a Member State of the European Union it was excluded from the research sample.

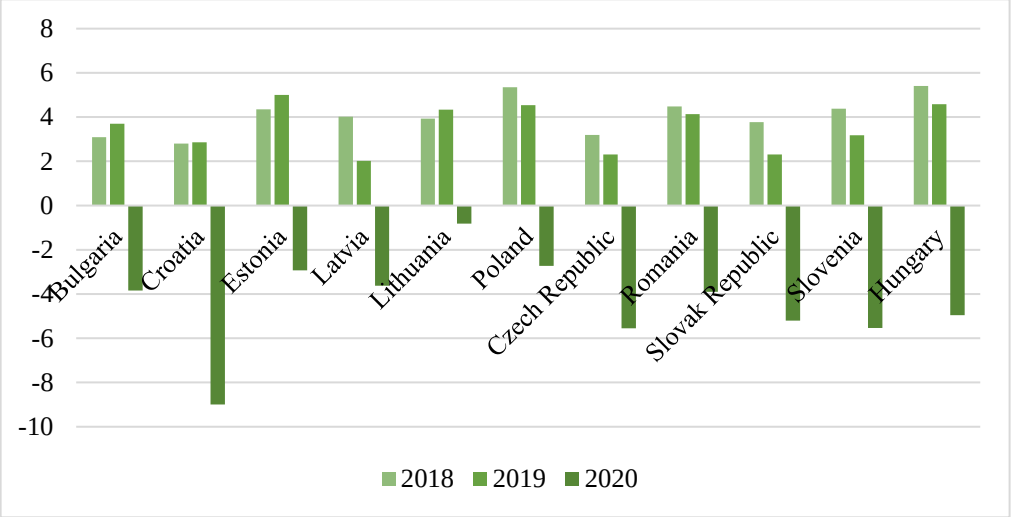

Figure 1. GDP growth rate in CEE countries, 2017-2020 (%)

Source: authors, based on IMF (2021a)

In this context, fiscal measures have become widespread in all CEE countries in 2020. These have taken the form of temporary tax exemptions for the most affected categories of people and businesses, the reduction of value added tax on certain products and services affected by pandemic, increases in unemployment benefits and other social benefits, granting subsidies to companies in the sectors affected by the pandemic, increased spending in the health and public administration sector, etc. (IMF, 2021). As a result, budget deficits have risen significantly in all CEE countries, in most cases exceeding the levels reached during the global financial crisis. The most severe fiscal imbalances were registered in Romania, Hungary, Slovenia, Poland and Lithuania, all exceeding the -8% of GDP in 2020 (Figure 2). Croatia and Slovakia reached -7.8% and -7.3%, respectively, while the rest of the sample countries experienced fiscal deficits below -6%. Bulgaria performed best in this regard, with a budget deficit of only -3%.

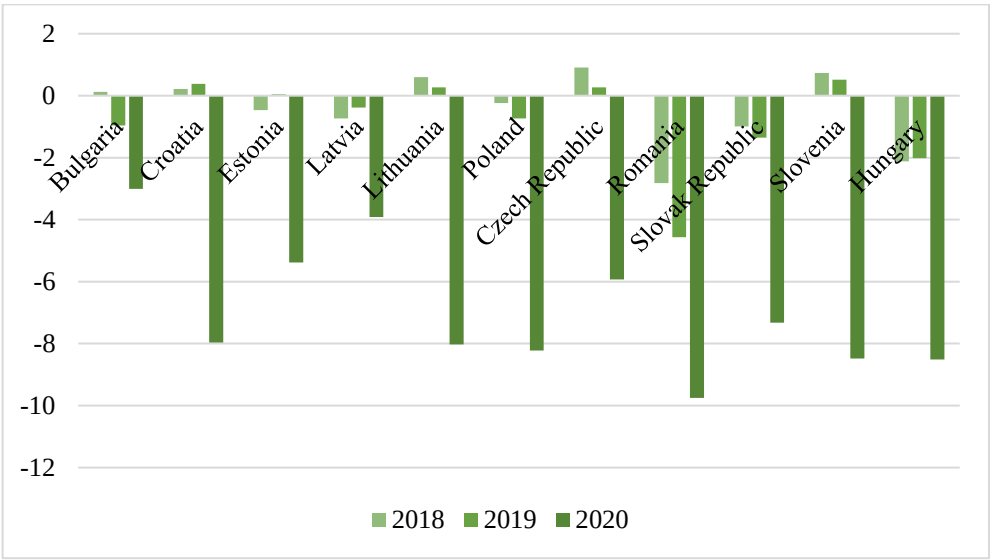

Figure 2. Budget balance in CEE countries, 2017-2020 (% of GDP)

Source: authors, based on IMF (2021a)

Moreover, in the context of the disruption of global value chains and the decline in global external demand in 2020, exports of goods and services have plummeted in CEE countries (Figure 3).

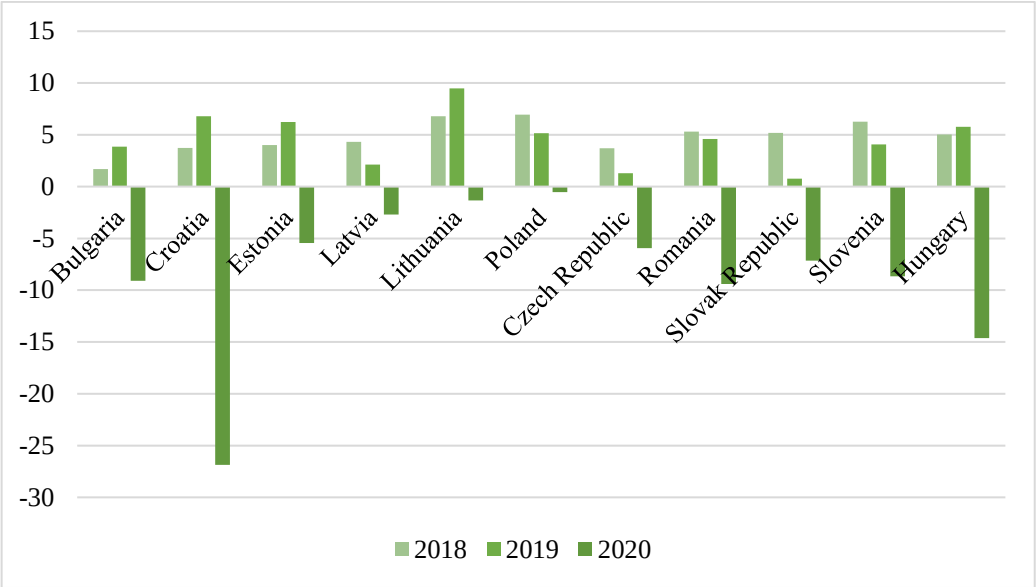

Figure 3. Change in exports of goods and services of CEE countries, during 2017-2020 (in %)

Source: authors, based on IMF (2021a)

All the states in the sample, without exception, experienced a major decrease in the volume of goods and services exported. The most affected by the pandemic were Croatia and Hungary, which recorded decreases of -26.8% and -14.6%, respectively, in 2020 compared to the previous year. Romania, Bulgaria, Slovenia and Slovakia experienced contractions between -9% and -7%, while Latvia, Lithuania and Poland suffered less compared to other states, reaching rates below -3% compared to 2019.

CEE banking systems during the pandemic event

Following the severe deterioration of the macroeconomic environment, CEE banks have faced a declining demand for loans for the first time in five years, especially in investment lending (EIB, 2020). In the light of this development, the CEE central banks have initiated monetary policy rate cuts, significant liquidity injections, but also regulatory measures, to mitigate the economic and financial shock. For example, the Czech National Bank reduced the base rate from 2.25% in February 2020 to only 0.25% in December 2020, Poland facilitated lending by lowering the base rate from 1,5% in February 2020 to 0.1% at the end of the year, while Romania experienced a decrease in the monetary policy rate from 2.5% to 1.5% in the same period. Moreover, central banks injected unprecedented volumes of liquidity through repo operations and purchased government bonds on the secondary market, thus expanding their assets several times. The largest increase in assets in the pandemic year was registered by the National Bank of Hungary, with 64% compared to the previous year, followed by the National Bank of Poland, with 40%, and the National Bank of Romania, with 20% (Clichici et al., 2020). In addition, central banks have implemented new instruments of unlimited lending to banks, eased minimum reserves requirements, relaxed the prudential requirements for mortgages, introduced the moratorium on loans in pandemic conditions, etc.

In addition, to reduce the growing exposure to credit risk caused by the increasing default of debtors, and to avoid rising non-performing loan ratios, CEE banking systems have tightened lending standards in 2020 for both companies and households (European Investment Bank, 2020). These actions have contributed to maintaining a rather low level of non-performing loan ratio, similar to that of 2019 in most countries. The non-performing loans ratio increased moderately only in the case of the Czech Republic, from 1.3% in 2019 to 1.5% in 2020, and in the case of Poland, from 4.8% in 2019 to 5.1% in 2020. Generally, we notice an improvement tendency of this indicator in most CEE banking systems, starting with December 2018 (Figure 4).

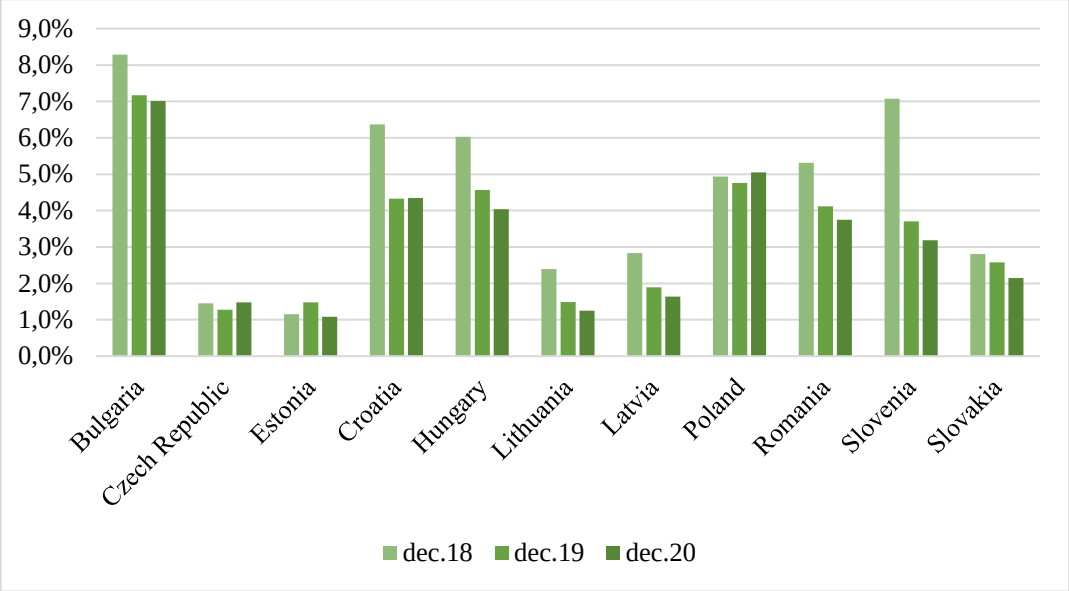

Figure 4. Non-performing loans ratio in CEE countries, 2018-2020 (%)

Source: authors, based on EBA (2021)

Despite the maintenance of credit risk at a relatively similar level to that of the pre-pandemic period, and the increase in domestic credit to the private sector, most banking systems in CEE have experienced a deterioration in asset performance (Figure 5). This evolution was determined by the extremely low level of interest rates in the pandemic, which further decreased bank revenues collected from the lending activity.

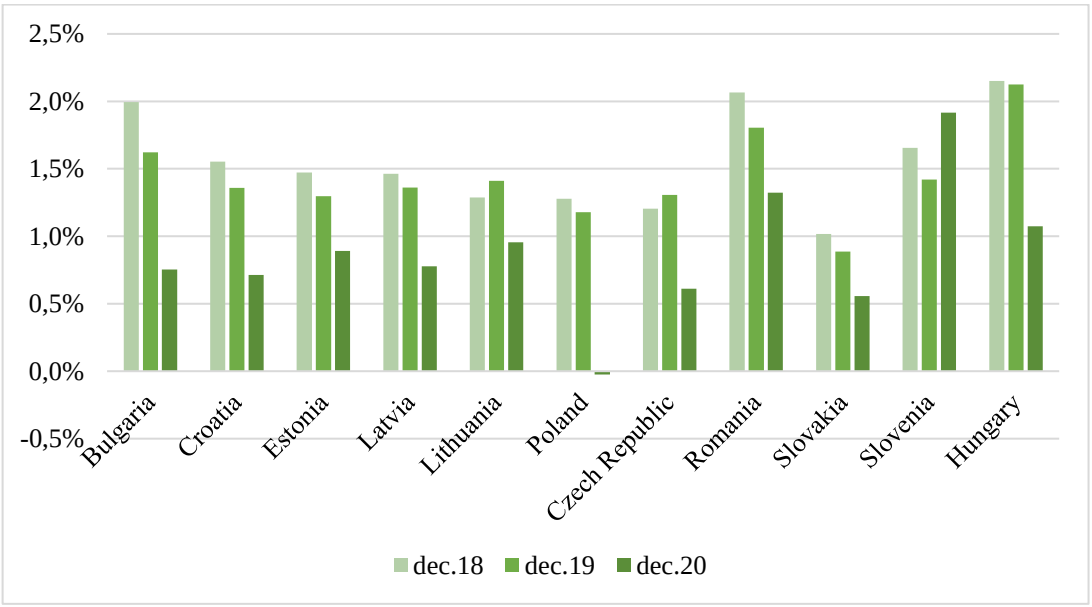

Figure 5. Return on assets of the banking systems in CEE countries, 2018-2020 (%)

Source: authors, based on EBA (2021)

Also, the return on equity decreased in all states during the pandemic, with the exception of the Slovenian banking system, which saw an increase in this indicator from 10.6% in 2019 to 16.6% in 2020 (Figure 6).

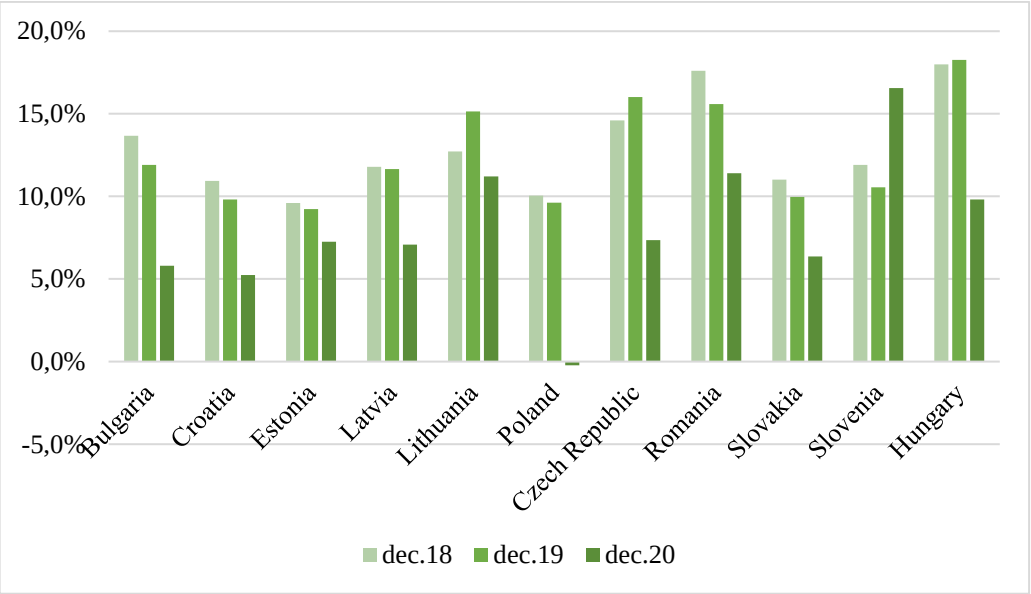

Figure 6. Return on equity of the banking systems in CEE countries, 2018-2020 (%)
Source: authors, based on EBA (2021)

We will further analyse the Tier 1 equity ratio, the Common Equity Tier (CET1) ratio and the leverage ratio in the EU Member States. The Tier 1 equity ratio[1] has increased in most CEE banking systems. This indicator is above the minimum level set by the new Basel III regulatory framework (6%), reflecting a high level of shock resilience of CEE banking systems. Moreover, most states have values above 20%, except for Hungary, Poland, Slovenia and Slovakia (Figure 7).

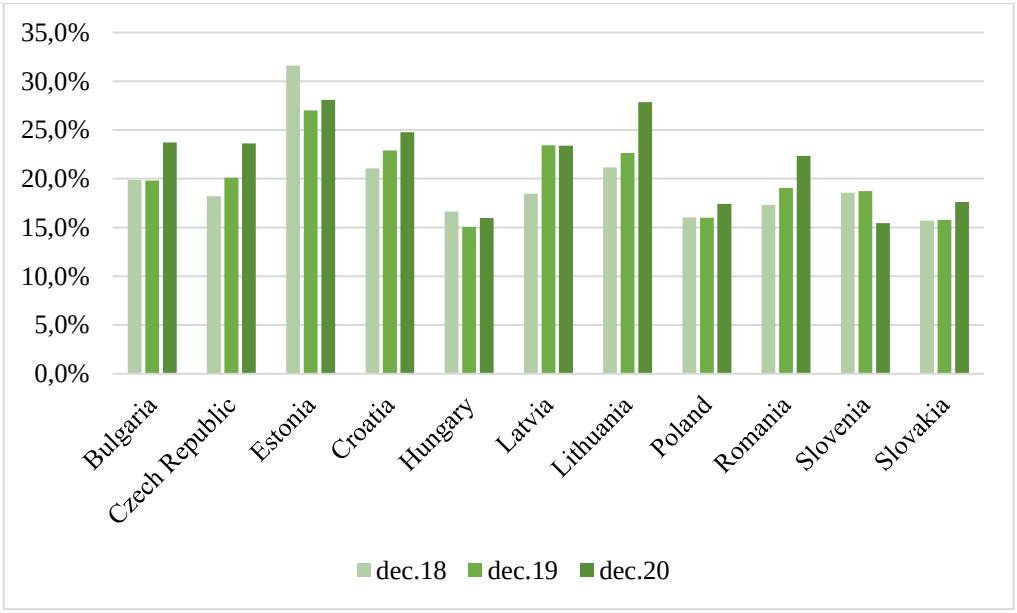

Figure 7. Tier 1 equity ratio of the banking systems in CEE countries, 2018-2020 (%)
Source: authors, based on EBA (2021)

[1] The Tier 1 ratio is the share of the institution's basic Tier 1 own funds and additional Tier 1 capital in risk-weighted assets (Source: http://eur-lex.europa.eu/ legal-content / RO / TXT / PDF /? uri = CELEX: 32013R0575 & from = en).

Apart from Poland, the CET1[1] ratio is above the minimum requirements set by the Basel III framework (at least 4.5% since 2014). The most capitalized banking systems are found in Slovakia (16.6%), Romania (11.4%) and Lithuania (11.2%) (Figure 8).

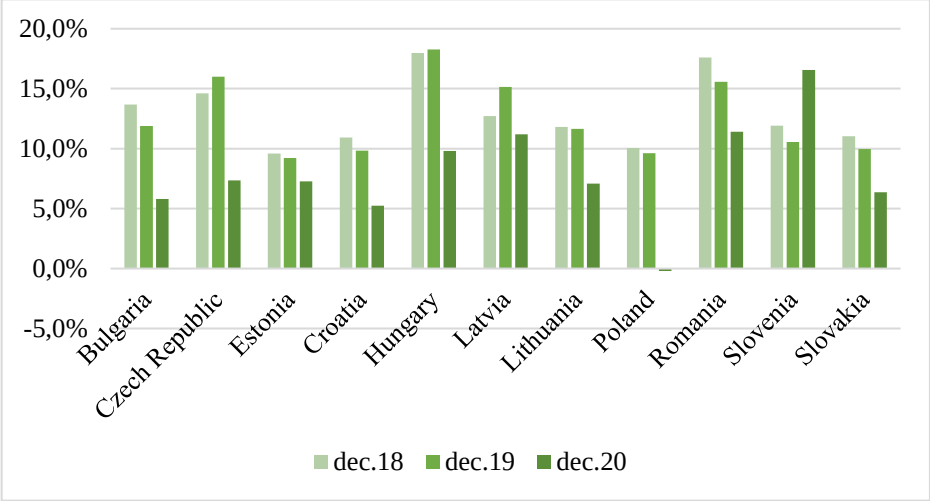

Figure 8. Common Equity Tier 1 ratio in CEE countries, 2018-2020 (%)

Source: authors, based on EBA (2021)

Currently, leverage ratio of banking systems in the CEE countries, measured by the banks' equity to assets ratio, varies between 12.5% in Croatia and 6.8% in the Czech Republic. In all CEE states the minimum leverage ratio requirement of 3% is met (Figure 9).

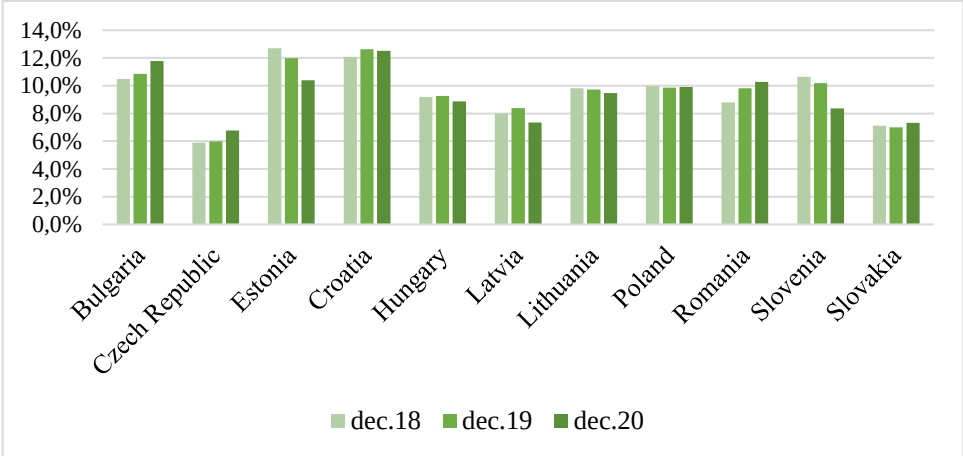

Figure 9. Leverage ratio of the banking systems in CEE countries, 2018-2020 (%)

Source: authors, based on EBA (2021)

The equity to assets ratio has increased mainly due to the decrease of total assets and the consolidation of the capital base. These data suggest the existence of a sufficiently high level of aggregate bank capital to absorb potential losses from non-performing loans in CEE countries.

CONCLUSIONS

CEE banking systems have been clearly affected by the pandemic event in 2020. Despite maintaining credit risk at an approximately similar level to that of the pre-pandemic period, CEE banking systems experienced a deterioration in profitability indicators. This evolution was

[1] The Common Equity Tier 1 ratio (CET1) is the share of CET1 equity in risk-weighted assets (Source: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=en).

determined by the extremely low level of interest rates in the pandemic, which further decreased bank revenues collected from the lending activity. At the same time, banks have a sufficiently high level of capitalization and a reasonable level of indebtedness, reflecting a high degree of CEE banking system shock resilience.

However, considering the large-scale measures to reschedule credit rates, through moratoriums on bank loans, but also the financial support schemes initiated by central banks and governments, the CEE region is facing high risk costs, which manifest mainly through the migration over time of credit risk exposure. On the one hand, the support policies offered by states have played a crucial role in stabilizing the quality of banks' assets, on the other hand, a premature withdrawal of monetary and fiscal support could cause a sharp rise in default rates in the coming period. Based on these arguments, non-performing loan ratios are expected to increase in the coming months. Moreover, the post-Covid environment has revealed a widespread shift to lower interest rates, which will exert pressure on lending margins. Given the pressure on banks' revenues, smaller banking institutions will face challenges related to low levels of profitability and capital, which requires for the initiation of consolidation actions within the CEE banking sector in the coming years.

Acknowledgement: This work was supported by a grant of the Romanian Ministry of Education and Research, CNCS - UEFISCDI, project number PN-III-P1-1.1-TE-2019-0415, within the PNCDI III.

REFERENCES:

1. BIS. (2017). *Basel III: International regulatory framework for banks*. https://www.bis.org/bcbs/basel3.htm
2. Carletti, E., Claessens, S., Fatas, A., & Vives, X. (2020). *The bank business model in the Post-Covid-19 world*. https://voxeu.org/system/files/epublication/The_Future_of_Banking_2.pdf
3. Demirguc-Kunt, A., Pedraza, A., & Ruiz-Ortega, C. (f.a.). *Banking Sector Performance During the COVID-19 Crisis*. 55.
4. European Investment Bank. (2020). *CESEE bank lending survey: Autumn 2020.* Publications Office. https://data.europa.eu/doi/10.2867/465576
5. IMF. (2021). *World Economic Outlook, April 2021: Managing Divergent Recoveries*. IMF. https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021
6. Kasinger, J., Krahnen, J. P., Ongena, S., Pelizon, L., Schmeling, M., & Wahrenburg, M. (2021, aprilie 1). Pregătirea pentru un val de împrumuturi neperformante: Perspective empirice și lecții importante. *VoxEU.org*. https://voxeu.org/article/preparing-wave-non-performing-loans
7. Li, L., Strahan, P. E., & Zhang, S. (2020). Banks as Lenders of First Resort: Evidence from the COVID-19 Crisis. *The Review of Corporate Finance Studies*, *9*(3), 472–500. https://doi.org/10.1093/rcfs/cfaa009
8. Niţoi, M., Clichici, D., & Moagăr-Poladian, S. (2021). Foreign Banks in Central and Eastern Europe: The Good, the Bad and the Ugly. *Prague Economic Papers*, *30*(5), 596–612. https://doi.org/10.18267/j.pep.782
9. OECID. (2021). *The COVID-19 crisis and banking system resilience: Simulation of losses on non-performing loans and policy implications",* 52.
10. Raiffeisen. (2020). *Raiffeisen Research CEE Banking Report 2020: Criză și modul de recuperare în același timp*. https://www.rbinternational.com/en/media/2020/raiffeisen-research-cee-banking-report-2020-crisis-and-recovery-mode-at-the-same-time.html

Received 28 September 2021
Accepted 17 November 2021

PROFITABILITY AND LIQUIDITY OF ITALIAN GAMBLING COMPANIES: QUANTITATIVE PROFILES BEFORE AND DURING THE PANDEMIC FOR COVID-19*

Guido MIGLIACCIO[1] (Phd), Associate Professor of Business Administration and Accounting, University of Sannio, Department of Law, Economics, Management and Quantitative Methods, Benevento, Italy.

Monica Di STAZIO[2] – Master's degree in Business Administration, Independent researcher, University of Sannio, Department of Law, Economics, Management and Quantitative Methods, Benevento, Italy.

DOI: https://doi.org/10.36004/nier.es.2021.2-03
JEL Classification: M10, M19, M40.
UDC: 658.155(450)

ABSTRACT

One might think that the pandemic had a devastating effect on gambling businesses, due to the long-time closures of arcades. This could have also damaged public finances, considering the revenue from taxes and duties, the fact that the serious social risks due to possible deviance.

This research analyses the economic and financial dynamics of Italian gambling companies between the two major international crises, while also trying to verify possible relations with the general economic cycle.

Research methods. The financial statement data of about 1200 firms with a turnover of more than €800,000, for the 2009-2020 decade, were analysed, illustrating the average trends of Roa and Quick Ratio, for Italy and each of its macro-areas (North, Centre, and South). The data have been subjected to statistical processing. The Anova and Tukey-Kramer methods were used for comparison between macro-regions.

The results show that the companies in the sample have an irregular but always positive and increasing ROA, with some exceptions. There are no significant differences between the varioust geographical areas. An excellent short-term financial situation is evident everywhere, with increasing and sometimes excessive cash balances.

This study complements the economic literature on gambling companies, which is lacking. It confirms some of the findings of other scholars who have already highlighted the reduction in profitability during crises, when other authors have highlighted similar profitability trends in other sectors. This quantitative research highlights the high earnings that justify proliferation of gambling companies. Public policies should be attentive to the sector that complements national GDP, but can generate serious social pathologies. In the theoretical profile, the aggregation of balance sheets used, however, organised, can prospectively become a useful model for interpreting complex phenomena.

***Keywords**: gambling companies, Italy, performance, Roa, Quick ratio, Anova.*

S-ar putea crede că pandemia Covid-19 a avut un efect devastator asupra afacerilor cu jocuri de noroc, din cauza închiderii îndelungate a localurilor cu aparate jocuri de noroc. Acest lucru ar fi

---

* ***This paper is the result of collaboration between the two authors. It is however possible to attribute to Monica Di Stazio the paragraph "Main results", with relative sub-paragraphs. The other paragraphs are by Guido Migliaccio..***

[1] ***© Guido Migliaccio ID ORCID: https://orcid.org/0000-0002-8882-7648 , email: guido.migliaccio@unisannio.it***

[2] ***© Monica Di Stazio ID ORCID: https://orcid.org/0000-0003-2332-975X , email: monicadist97@gmail.com***

putut, de asemenea, să afecteze finanțele publice, având în vedere veniturile din taxe și impozite, astfel creând unele riscuri sociale din cauza posibilelor abateri.

În această lucrare se analizează dinamica economică și financiară a companiilor italiene de jocuri de noroc între cele două crize internaționale majore, pentru a verifica, de asemenea, posibilele relații cu ciclul economic general.

Au fost analizate datele privind situația financiară a aproximativ 1200 de firme cu o cifră de afaceri mai mare de 800.000 de euro, pentru perioada de zece ani 2009-2020, ilustrând tendințele medii ale Roa și Quick Ratio, pentru Italia și pentru fiecare dintre macrozonele sale (Nord, Centru și Sud). Datele au fost supuse unei prelucrări statistice. Pentru comparația între macroregiuni, au fost utilizate metodele Anova și Tukey-Kramer.

Rezultatele au demonstrat că companiile din eșantion au un ROA neregulat, dar întotdeauna pozitiv și în creștere, cu câteva excepții. Nu există diferențe semnificative între zonele geografice. O situație financiară foarte bună pe termen scurt este evidentă peste tot, cu solduri de numerar în creștere și uneori excesive.

Acest studiu completează literatura economică privind companiile de jocuri de noroc, care este foarte deficitară. Se confirmă unele dintre concluziile altor cercetători care au evidențiat reducerea profitabilității în timpul crizelor, pe când alți autori au evidențiat tendințe similare de rentabilitate în alte sectoare. Această cercetare cantitativă evidențiază profiturile ridicate care justifică proliferarea companiilor jocuri de noroc. Politicile publice ar trebui să fie atente la acest sector care contribuie la formarea PIB-lui național, dar care poate genera patologii sociale grave. În profil teoretic, agregarea bilanțurilor utilizate, oricât de organizată, poate deveni, în perspectivă, un model util pentru interpretarea unor fenomene complexe.

***Cuvinte-cheie**: companii jocuri de noroc, Italia, performanță, Roa, Quick ratio, Anova, testul Tukey Kramer.*

Можно предположить, что пандемия Covid-19 оказала разрушительное воздействие на игорный бизнес, в связи с длительным закрытием залов игровых автоматов. Это также могло нанести ущерб государственным финансам, учитывая доходы от налогов и сборов, представляя серьезные социальных риски из-за возможных отклонений.

В данном исследовании анализируется экономическая и финансовая динамика итальянских игровых компаний в период между двумя крупными международными кризисами, а также проверяются возможные связи с общим экономическим циклом.

Были проанализированы данные финансовой отчетности около 1200 компаний в области игорного бизнеса с оборотом более 800 000 евро за десятилетний период 2009-2020 гг, показывающие средние тенденции коэффициентов Roa и Quick Ratio для Италии и каждого из ее макрорегионов (Север, Центр и Юг). Данные были подвергнуты статистической обработке. Для сравнения между макрорегионами использовались методы Anova и Tukey-Kramer.

Результаты исследований показали, что компании в выборке имеют неравномерную, но всегда положительную и растущую рентабельность активов, за некоторыми исключениями. Между географическими регионами нет существенных различий. Повсеместно наблюдается очень хорошая краткосрочная финансовая ситуация, с растущими и иногда чрезмерными остатками денежных средств.

Данное исследование пополняет экономическую литературу, касающуюся игровых компаний, которой очень не хватает. Оно подтверждает некоторые выводы других ученых, которые уже отмечали снижение прибыльности во время кризисов, тогда как другие авторы отмечали подобные тенденции рентабельности в других секторах. Данное количественное исследование подчеркивает высокие доходы, которые оправдывают распространение игорных компаний. Государственная политика должна быть внимательна к сектору, который способствует формированию национального ВВП, но может порождать серьезные

социальные патологии. В теоретическом плане используемая агрегация балансовых отчетов, как бы она ни была организована, в перспективе может стать полезной моделью для интерпретации сложных явлений.

***Ключевые слова**: игорный бизнес, Италия, производительность, Roa, коэффициент быстродействия, Anova.*

INTRODUCTION

Gaming meets the need for entertainment. The outcome may depend on the skill or luck of the players (Caillois et al., 2007). Randomness characterises gambling (Altavilla, 1963). Occasional gambling is not a pathology. It becomes so when it compromises psychophysical balance (Galimberti, 2019).

Few specialised suppliers of equipment, gaming software, if not self-produced, and financial transactions characterise the industry supply chain (Vaughan-Williams & Siegel, 2013).

High international competition characterises the market. People of different social classes and education play.

Business operational risks are modest, mainly related to the development of the regulatory framework. Problems related to the security of financial transactions and computer fraud are less likely to occur in addition to sports fraud.

The profit margin also depends on taxation.

Growth and business development possibilities depend on the physical or virtual market or the differentiation and diversification of games.

In Italy, the Customs and Monopolies Agency supervises legal gaming (Sbordoni, 2010). Studies and debates have followed one another in a necessary interweaving of psychological, sociological, legal, and economic aspects (La Rosa, 2016a), while the reflection on the managerial and economic-financial characteristics of the companies of the sector to which this contribution is dedicated became relatively marginal, answering some questions:

RQ1: what was the trend of profitability in the decade considered?

RQ2: How did the financial dynamics evolve?

RQ3: has the location of companies affected profitability and financial balances?

RQ4: What have been the effects on the sector of national policies to deal with the pandemic?

Everything refers to the Italian context, which may be a useful reference for other countries. After the main bibliographic references, the methodology used to elaborate the values of the financial statement is outlined. Then, the main results, implications, limitations of the research, and possible developments of the study with critical considerations and conclusions.

LITERATURE REVIEW

The bibliographic sources are numerous (Teucci, 2019). More recently, an extensive literature search on the subject has been proposed using four emerging keys: adolescent gambling, health conditions, and problem gambling, and dark nudging (Buchanan & Shen, 2021).

It is first necessary to refer to the themes of addiction (Gambling Disorder), which is, unfortunately, more frequent among fragile people: adolescents (Zenarolla, 2017) and the elderly (Croce et al., 2017). On these aspects, it is necessary to refer to contributions from psychology and sociology (Galimberti, 2019; Zappolini & Scigliano, 2019). There are frequent public health scares (Capitanucci, 2004) and possible criminal deviance (Berrittella & Provenzano, 2016).

Recently, probably also due to the effect of the pandemic, there has been an increase in studies on market dynamics more or less related to typical gambling methodologies. This is the case, for example, of the research by Chen et al. (2021) who studied the relationships between gambling sentiment and stock market outcomes, to the extent of measuring how gambling captures market bubble events and how it predicts stock and option returns (Chen & Gan, 2021). These are important assumptions that correlate classic gambling patterns with market trends in other assets and with the

choices of stock market investors who are motivated by the expectation of capital gains over rising stock price assumptions (Zhu et al., 2021). Indeed, stock market speculators are also gamblers...

There has also been a proliferation of studies on gambling promotions, especially on their advertising (Micangeli, 2021). This is in the context of more articulated marketing analyses that sometimes distinguish between different types of players, their perceived values, the satisfaction they have for gambling, and their propensity to reach specific destinations where gambling is widespread and technologically advanced (Li et al., 2020). Indeed, technology has given a considerable boost to gambling, especially online (Liu et al., 2021).

Closer to the intentions of this research is the study by Lim and To (In press) who analysed the economic impact of a pandemic on the tourism economy. However, the authors focused their studies only on Macao's destination, which had already been the subject of some previous valuable analyses (Liu et al., 2020), concluding that the local situation is characterised by a gambling-dependent economy. This conclusion is justified because the revenues of the local gambling industry are mainly dependent on tourists. The local industry is experiencing an unprecedented decline in revenue due to the collapse of tourism because of the pandemic. However, this is a different context from Italy where gamblers are predominantly residents. In the last decade, profound changes have taken place in the regulation of the gambling market in Italy, making it the largest in Europe. This has had intuitable social effects only partially offset by the rise in tax revenues that have generated justified concerns about the distributional effects of related tax revenues, given that it is widely recognised that poorer individuals are more attracted to gambling (Gandullia & Leporatti, 2019).

It is precisely this significant opportunity for Italian tax revenues that leads to the presumption that the local gambling industries are highly profitable. From this justified presumption, the first research hypothesis derives:

(H1) companies have positive and sometimes high profitability, measurable through the classical balance sheet ratios.

This is considering the characteristics of the betting market in Italy.

Scientific contributions of a typically economic-business matrix are more scarce.

The study by Ligonie (2018) impregnated on strategies is useful. The studies by Mazza (2012) and Calvosa (2013) focus on the Italian situation. More numerous are the writings that focus on the communication methods for gambling companies to promote their product (Ciofalo et al., 2016; La Rosa, 2016a), through links with other goods (Maher et al., 2006).

Studies on personnel are also reported to prevent pathologies (Kalke et al., 2011; La Rosa, 2016a) (Kalke et al., 2011; Ramaci, 2016).

The accounting and reporting aspects have not given the development they deserve. This quantitative analysis wants to remedy this shortcoming, also to verify whether the collection normally in cash favours financial management. That is, it is necessary to verify whether the following:

(H2) companies have a good financial situation, measurable through the classical balance sheet ratios.

Additionally, it should be verified whether

(H3) there is a relationship between the economic-financial balance of the companies and the territory.

This is especially true in Italy, considering the socio-economic imbalances that characterise the three macro-areas of the country. The propensity to gamble could be related to the degree of diffusion of culture and economic well-being.

It is also possible to check whether, in times of crisis, there is a greater inclination to gamble to try to compensate for lost earnings (La Rosa, 2016a; La Rosa & Bernini, 2018). In other words, it is necessary to study whether the following:

(H4) there is a relationship between financial statements performance and cyclical economic trends.

Other research, from other sectors, has shown, albeit utilizing financial statement analysis, that there is an obvious relationship with general economic trends (Migliaccio & Tucci, 2020).

The purpose of the research

The purpose of this study is therefore to outline an initial analysis of the economic and financial situation of Italian companies with Ateco code 92.00 (Activities concerning lotteries, betting, casinos), also distinguishing them by geographical area, in the period 2009-2020, using the study of the temporal evolution of two indices (Roa and Quick ratio) obtained from the analysis of their financial statements.

RESEARCH METHODOLOGY

From the "Aida" database, the financial statements of about 1,200 companies (1,212 for the decade 2009-2018; 1,197 for 2011-2020), with a turnover of more than € 800,000, were taken, although the amount of information available was always lower.

The national data were then broken down into the three national macro-areas and subjected to statistical processing and represented graphically.

The main descriptive statistical processes were average, standard error, median, mode, standard deviation, sample variance, kurtosis, asymmetry, interval, minimum, maximum, range of variation.

The graphical representation of the trend of the average annual data for each index also required the determination of the interpolating curve, using, as a rule, the polynomial equation of degree 6 that maximised the value of R^2.

ANOVA methods (with 0.05 level of significance) and, if necessary, Tukey–Kramer were used for comparison between macro-regions. Each outcome is illustrated and commented on.

MAIN RESULTS

ROA assesses the profitability of invested capital. It is calculated using the following formula: operating profit/total assets %. It considers characteristic management, non-characteristic management, and equity and debt investments. It is therefore considered a 'global' profitability index. The evaluation of its average values improves through temporal and, where possible, spatial comparisons.

Table 1 shows the number of data available for Italy and its macro-areas (1a) and the average value of the index for each year (1b).

Table 1

Determination of the ROA trend

Table 1a: Available data

	Italy	North	Center	South
2009	289	107	83	99
2010	320	120	88	112
2011	338	131	96	111
2012	348	141	92	115
2013	373	156	91	126
2014	400	165	97	138
2015	406	165	96	145
2016	404	161	94	149
2017	376	153	86	137
2018	227	111	56	60
2019	365	149	87	129
2020	69	34	22	13

Table 1b: ROA - annual average values

	Italy	North	Center	South
2009	4,29	-1,10	5,18	9,37
2010	8,04	7,24	6,13	10,40
2011	12,28	13,02	8,81	14,40
2012	6,26	9,22	2,33	5,77
2013	4,00	5,47	-0,75	5,61
2014	9,77	14,96	2,28	8,82
2015	8,20	16,44	1,03	3,57
2016	14,06	14,51	19,72	9,99
2017	12,95	14,83	6,57	14,86
2018	15,80	16,37	13,03	17,33
2019	10,85	11,13	9,68	11,32
2020	0,11	-5,91	-6,54	27,11

Source: elaboration on AIDA data

To plot the trend graph of annual average values, we first determine the interpolating equation that maximises the R^2 value (Table 2).

Table 2

Equations of ROA interpolating curves

Area	Equation	R^2
Italy	$y = -0{,}0002x^6 + 0{,}0116x^5 - 0{,}2428x^4 + 2{,}5853x^3 - 13{,}625x^2 + 31{,}981x - 16{,}785$	0,8568
North	$y = -0{,}0018x^6 + 0{,}073x^5 - 1{,}1569x^4 + 9{,}1979x^3 - 37{,}88x^2 + 75{,}684x - 47{,}528$	0,9081
Centre	$y = -0{,}0002x^6 + 0{,}0117x^5 - 0{,}2652x^4 + 2{,}9311x^3 - 15{,}269x^2 + 32{,}878x - 15{,}69$	0,6455
South	$y = 0{,}0028x^6 - 0{,}1004x^5 + 1{,}3725x^4 - 8{,}773x^3 + 26{,}428x^2 - 34{,}113x + 24{,}583$	0,857

Source: elaboration on AIDA data

This results in Figure 1, which shows an irregular index trend.

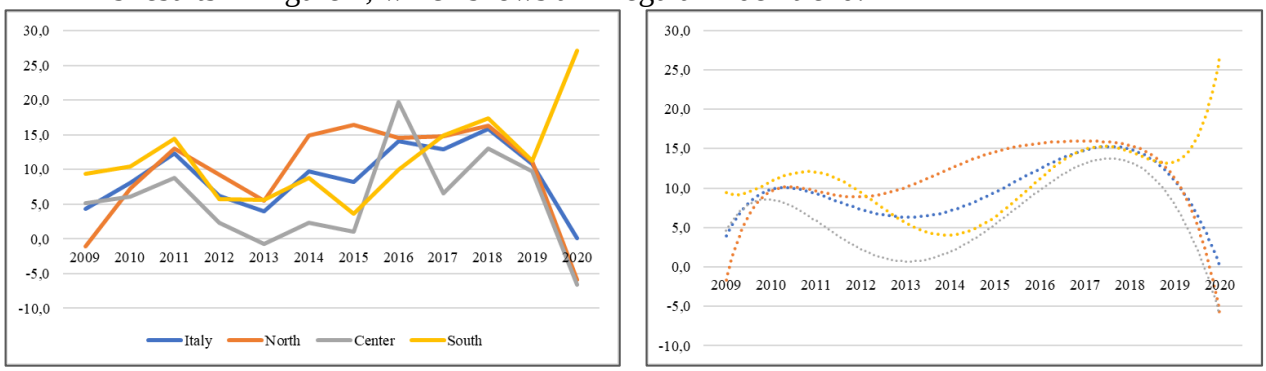

Figure 1: ROA trend 2009-2020

Source: elaboration on AIDA data

The lowest values characterise the Center (often below 6%), except in 2016 when it reached 19.72%. In the North and South, on the other hand, ROA has higher values. Moreover, in 2009 in the North, in 2013 in the Center, and 2020 in the South, ROA takes on negative values, due to operating losses. In the South, on the other hand, there is a significant increase in ROA to 27% in 2020.

The decline in profitability due to the pandemic-related closures in the last year seems evident. The higher profitability due to the increase in online games has therefore uncompensated for the losses certainly resulting from the prolonged closure of gaming rooms. The only exception is for businesses in southern Italy. This last evidence, however, is affected by the more modest number of financial statements currently available: the anomalous data need further study to be justified.

The trend of the average Roa data can be further elaborated by calculating some statistics (Tables 3 and 4).

Table 3

ROA descriptive statistics – Italy

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	4,29	4,45	36,80	1354,16	-349,24	307,26	656,50
2010	8,04	5,81	30,40	924,43	-241,96	322,94	564,90
2011	12,28	8,94	30,28	916,87	-177,58	283,68	461,26
2012	6,26	3,96	24,67	608,51	-73,16	260,53	333,69
2013	4,00	3,57	24,10	580,90	-173,71	84,33	258,04
2014	9,77	8,02	36,43	1327,39	-140,02	529,23	669,25
2015	8,20	6,05	62,53	3909,62	-764,32	679,87	1444,19
2016	14,06	6,23	58,33	3402,27	-86,15	780,56	866,71
2017	12,95	7,75	43,67	1906,67	-141,31	731,39	872,70
2018	15,80	11,63	22,90	524,29	-94,40	97,09	191,49
2019	10,85	8,05	33,87	1146,89	-465,39	273,51	738,90
2020	0,11	-0,12	36,75	1350,53	-209,75	99,79	309,54

Source: elaboration on AIDA data

Table 4

ROA descriptive statistics - Macro areas Italy

NORTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	-1,10	5	46,84	2193,94	-349,24	48,36	397,6
2010	7,24	9,24	32,16	1034,37	-241,96	68,41	310,37
2011	13,02	13,39	30,96	958,52	-177,58	88,03	265,61
2012	9,22	6,82	21,29	453,35	-73,16	75,90	149,06
2013	5,47	4,34	28,80	829,42	-173,71	84,33	258,04
2014	14,96	8,98	48,45	2347,07	-119,95	529,23	649,18
2015	16,44	7,59	69,66	4852,41	-303,93	679,87	983,80
2016	14,51	5,71	66,06	4363,93	-86,15	780,56	866,71
2017	14,83	7,09	62,69	3930,38	-94,86	731,39	826,25
2018	16,37	11,60	25,02	626,07	-94,40	97,09	191,49
2019	11,13	7,27	18,69	349,29	-43,95	81,93	125,88
2020	-5,91	-3,06	41,06	1686,27	-209,75	65,19	274,94

CENTRE

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	5,18	2,27	37,69	1420,28	-41,85	307,26	349,11
2010	6,13	3,15	38,80	1505,39	-65,66	322,94	388,6
2011	8,81	2,64	36,35	1321,35	-78,41	283,68	362,09
2012	2,33	0,70	33,31	1109,53	-61,49	260,53	322,02
2013	-0,75	0,63	18,46	340,82	-72,07	39,58	111,65
2014	2,28	3,29	21,64	468,09	-81,64	50,51	132,15
2015	1,03	3,45	32,94	1084,91	-191,84	66,66	258,50
2016	19,72	5,05	80,41	6465,60	-62,68	644,59	707,27
2017	6,57	5,85	26,00	675,89	-141,31	63,09	204,40
2018	13,03	11,83	17,15	294,16	-27,92	77,54	105,46
2019	9,68	7,57	18,25	333,23	-56,55	80,92	137,47
2020	-6,54	-5,10	23,21	538,66	-55,44	51,88	107,32

SOUTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	9,37	5,12	18,96	359,66	-48,2	75,52	123,72
2010	10,40	6,3	18,94	358,67	-37,59	65,9	103,49
2011	14,40	13,56	22,79	519,29	-109,71	73,40	183,11
2012	5,77	4,73	19,65	386,23	-55,81	52,54	108,35
2013	5,61	5,33	20,81	433,19	-79,37	81,95	161,32
2014	8,82	9,42	25,60	655,29	-140,02	105,48	245,50
2015	3,57	5,58	67,97	4620,07	-764,32	85,65	849,97
2016	9,99	6,62	21,13	446,39	-86,03	87,76	173,79
2017	14,86	11,40	20,22	408,71	-70,08	95,84	165,92
2018	17,33	13,04	23,59	556,60	-38,27	91,37	129,64
2019	11,32	10,47	51,31	2632,46	-465,39	273,51	738,90
2020	27,11	19,18	33,16	1099,84	-7,40	99,79	107,19

Source: elaboration on AIDA data.

The national figure shows a median that is a little different from the average. The distribution of the data is therefore asymmetrical: most of them have values below the average. The standard deviation and the variance have high values: it is, therefore, possible to say that the Return on Assets has considerable variability.

ROA has negative minimum values (in 2015 in the South the minimum value was -764.32%) and positive maximum values (in the North in 2016 it reached 780.56%) that characterise much variation. However, these particularly high or low values are, rare, even though they influence the average.

Initial observation of the graphs and careful evaluation of the descriptive statistics does not show significant differences between the three macroareas. To better measure and evaluate the differences, the annual average data of the ROA were subjected to the ANOVA test (Table 5).

Table 5

ANOVA tests on ROA

SUMMARY						
Groups	*Counting*	*Sum*	*Average*	*Variance*		
North	12	116,17708	9,6814237	51,333558		
Center	12	67,473088	5,6227573	46,655005		
South	12	138,55027	11,545856	40,258297		
VARIANCE ANALYSIS						
Origin of the variation	*SQ*	*gdl*	*MQ*	*F*	*Significance value*	*F crit*
Between groups	220,1279	2	110,06395	2,388422	0,107462366	3,2849177
In groups	1520,7155	33	46,082286			
Total	1740,8433	35				

Source: elaboration on AIDA data

ROA shows greater differences within groups than between groups. The analysis of variance revealed no statistically significant differences between the groups considered (F < of F crit). Since the null hypothesis is accepted, the post-Anova test is not necessary.

Quick ratio

The immediate liquidity ratio assesses the ability to meet upcoming financial commitments with liquid or easily liquidated resources. Its formula is current assets - inventories/short-term receivables.

When the Quick ratio:

- is greater than 1.5, there is a situation of imbalance due to excess liquidity;
- is slightly greater than one 1, there is a consolidated liquidity situation characterised by cash more than short-term debt, without excess;
- is less than 1, there is an unbalanced situation, with the risk of default.

The informative value of this index should be enhanced with a detailed analysis of the forecast of future cash flows (Ferrero et al., 2006, p.135).

The data obtained from the AIDA database on the liquidity index are shown in Table 6.

Table 6

Determination of the Quick ratio trend

Table 6a: Available data

	Italy	North	Center	South
2009	282	104	81	97
2010	311	118	86	107
2011	333	131	92	110
2012	340	137	90	113
2013	365	152	90	123
2014	392	162	95	135
2015	397	163	94	140
2016	396	159	93	144
2017	371	152	86	133
2018	222	109	56	57
2019	356	146	84	126
2020	62	30	21	11

Table 6b: Quick ratio - annual average values

	Italy	North	Center	South
2009	1,14	1,05	1,12	1,24
2010	1,19	1,18	1,09	1,28
2011	1,33	1,3	1,32	1,39
2012	1,3	1,23	1,26	1,43
2013	1,27	1,33	1,12	1,29
2014	1,4	1,49	1,22	1,42
2015	1,51	1,57	1,34	1,56
2016	1,59	1,75	1,36	1,57
2017	1,72	1,89	1,42	1,73
2018	1,95	2,15	1,62	1,89
2019	1,91	1,90	1,84	1,97
2020	2,12	1,95	1,91	3,02

Source: elaboration on AIDA data

The Quick ratio is always between 1 and 2 in all macro-areas, except for 2018 in the North, where it is 2.15, and 2020 in the South, where it is 3.02, and for Italy as a whole (2.12) in 2020. Therefore, it can be said that the gambling sector is in a good financial situation, with resources that are sometimes surplus in the short term: it can easily cope with debts coming due soon and should find appropriate uses for excess liquidity.

For the elaboration of the trend graph, we first determine the interpolating equation that maximises the value of R^2 (Table 7).

Table 7

Equations of Quick-ratio interpolating curves

Area	Equation	R^2
Italy	$y = 3E\text{-}05x^6 - 0{,}0011x^5 + 0{,}0158x^4 - 0{,}1013x^3 + 0{,}3015x^2 - 0{,}3198x + 1{,}2402$	0,9845
North	$y = 3E\text{-}05x^6 - 0{,}0011x^5 + 0{,}0144x^4 - 0{,}0833x^3 + 0{,}2037x^2 - 0{,}0821x + 1{,}0003$	0,9731
Centre	$y = 4E\text{-}06x^6 - 0{,}0002x^5 + 0{,}0035x^4 - 0{,}0256x^3 + 0{,}0715x^2 - 0{,}0117x + 1{,}0635$	0,9504
South	$y = 9E\text{-}05x^6 - 0{,}0031x^5 + 0{,}0423x^4 - 0{,}2751x^3 + 0{,}873x^2 - 1{,}189x + 1{,}7907$	0,9901

Source: elaboration on AIDA data

The equations show a high level of interpolating reliability with a range of R^2 from 0.9504 to 0.9901. This results in Figure 2, which shows a regular trend in the index.

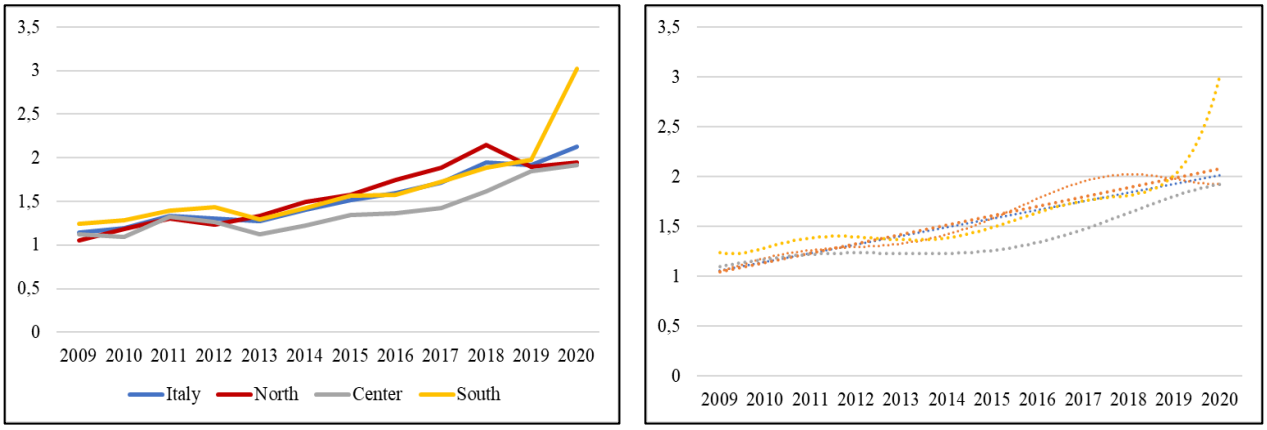

Figure 2: Quick-ratio trend 2009-2020
Source: elaboration on AIDA data.

The trend is similar in all macro-areas: in the early years, it is particularly close to 1, while recently, it is closer to 2. Companies in the sector are therefore experiencing increasing and sometimes excessive liquidity. This is the case even in years when profitability was lower.

The main descriptive statistics (Tables 8 and 9) allow for a more detailed analysis.

Table 8

Quick-ratio descriptive statistics – Italy

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,14	0,83	1,19	1,41	0,01	8,64	8,63
2010	1,19	0,97	1,03	1,05	0,00	6,67	6,67
2011	1,33	1,00	1,27	1,60	0,04	9,83	9,79
2012	1,30	0,99	1,08	1,16	0,00	6,33	6,33
2013	1,27	0,97	1,05	1,10	0,01	8,02	8,01
2014	1,40	1,04	1,19	1,42	0,06	8,27	8,21
2015	1,51	1,14	1,31	1,72	0,09	8,53	8,44
2016	1,59	1,23	1,34	1,80	0,01	9,43	9,42
2017	1,72	1,29	1,47	2,15	0,02	9,69	9,67
2018	1,95	1,44	1,62	2,62	0,06	9,46	9,40
2019	1,91	1,41	1,61	2,60	0,01	9,86	9,85
2020	2,12	1,47	1,88	3,53	0,14	8,62	8,48

Source: elaboration on AIDA data

Table 9

Quick-ratio descriptive statistics - Macro areas Italy

NORTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,05	0,84	1,05	1,11	0,03	8,64	8,61
2010	1,18	0,99	0,97	0,94	0,11	6,67	6,56
2011	1,30	0,97	1,24	1,54	0,10	8,53	8,43
2012	1,23	0,98	1,01	1,01	0,13	6,33	6,20
2013	1,33	1,01	1,17	1,36	0,12	8,02	7,90
2014	1,49	1,13	1,28	1,64	0,07	8,27	8,20
2015	1,57	1,23	1,31	1,70	0,09	8,22	8,13
2016	1,75	1,27	1,60	2,54	0,12	9,43	9,31
2017	1,89	1,40	1,68	2,83	0,14	9,49	9,35
2018	2,15	1,62	1,88	3,54	0,06	9,46	9,40
2019	1,90	1,34	1,77	3,13	0,16	9,86	9,70
2020	1,95	1,27	1,76	3,10	0,22	6,30	6,08

CENTRE

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,12	0,88	1,19	1,43	0,01	8,45	8,44
2010	1,09	0,86	1,03	1,06	0,00	6,24	6,24
2011	1,32	0,93	1,34	1,80	0,09	8,38	8,29
2012	1,26	0,90	1,15	1,33	0,00	5,55	5,55
2013	1,12	0,84	0,90	0,82	0,09	5,67	5,58
2014	1,22	0,99	0,95	0,90	0,06	5,54	5,48
2015	1,34	1,06	1,20	1,43	0,10	8,53	8,43
2016	1,36	1,07	0,92	0,85	0,01	5,92	5,91
2017	1,42	1,16	0,91	0,83	0,30	5,24	4,94
2018	1,62	1,28	0,99	0,99	0,30	4,94	4,64
2019	1,84	1,41	1,39	1,94	0,06	9,64	9,58
2020	1,91	1,20	1,72	2,96	0,40	8,24	7,84

SOUTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,24	0,81	1,31	1,72	0,04	8,19	8,15
2010	1,28	1,02	1,08	1,17	0,06	5,47	5,41
2011	1,39	1,15	1,24	1,54	0,04	9,83	9,79
2012	1,43	1,13	1,10	1,20	0,02	4,53	4,51
2013	1,29	1,04	1,00	0,99	0,01	6,30	6,29
2014	1,42	1,10	1,23	1,52	0,11	7,80	7,69
2015	1,56	1,15	1,39	1,93	0,13	8,45	8,32
2016	1,57	1,26	1,25	1,56	0,03	8,41	8,38
2017	1,73	1,28	1,47	2,16	0,02	9,69	9,67
2018	1,89	1,38	1,54	2,36	0,24	7,38	7,14
2019	1,97	1,51	1,57	2,47	0,01	8,54	8,53
2020	3,02	1,83	2,36	5,56	0,14	8,62	8,48

Source: elaboration on AIDA data

The median is very often slightly lower than the average. The largest number of data is therefore characterised by smaller values than the mean. The standard deviation and variance have minute values: there is little variability in the sample and mean is therefore significantly representative.

The minimum values are close to zero. Thus, there are companies with an unbalanced financial situation in the short term. The maximum values, on the other hand, exceed 2, often approaching 7, 8, and 9, due to companies with excess liquidity. This results in several variations, with the largest number of companies in a balanced situation.

The measurement and evaluation of the difference between the groups are entrusted to the ANOVA test (Table 10).

Table 10

ANOVA test on Quick-ratio

SUMMARY

Groups	*Counting*	*Sum*	*Average*	*Variance*
Nord	12	18,786027	1,5655023	0,1269238
Centro	12	16,623452	1,3852877	0,0745255
Sud	12	19,791205	1,6492671	0,241315

VARIANCE ANALYSIS

Origin of the variation	*SQ*	*gdl*	*MQ*	*F*	*Significance value*	*F crit*
Between groups	0,4367158	2	0,2183579	1,4795089	0,2424661	3,2849177
In groups	4,8704072	33	0,1475881			
Total	5,307123	35				

Source: elaboration on AIDA data.

The ANOVA test confirms that the variability of the sample is minute, both between (0.436715794) and within groups (4.870407).

The liquidity index does not show statistically significant differences between North, Centre, and South (F < F crit; p-value = 0.242466075). Therefore, we accept the null hypothesis H_0 (the mean of the quick ratio is the same in all groups) and reject the alternative hypothesis H_1 (at least one of the group means is different).

This result, therefore, renders the post-ANOVA test useless.

CONCLUSIONS

The copious studies on the psychological, sociological, and legal aspects of gambling are complemented in this paper with a quantitative analysis derived from the study of the trend of two ratios that well express the short-term profitability and financial balance.

Answering the first research question (RQ1), the first hypothesis (H1) is confirmed: gambling firms have positive and sometimes high profitability. It is always positive even if fluctuations are evident due to the general economic trend. In 2009, due to the global financial crisis, low values are recorded, as well as low values during the years of the reverberation of the crisis (2012-13) that started in the American context. Profitability plummeted, although remaining positive on average, also because of the pandemic and the associated closures of gambling halls. The possibility of playing online has therefore uncompensated for the losses due to government measures. Moreover, the relief granted by the public authorities has not been sufficient to maintain similar levels of profitability as before.

This also answers the fourth research question (RQ4) and confirms the fourth hypothesis (H4): there is a clear relationship between profitability outcomes and cyclical economic trends. However, to make a more precise and considered judgement, it is also necessary to check whether there is also a relationship for financial performance.

The financial index shows an increasing availability of liquid or otherwise available resources in the short term. Responding to the third research question (RQ3) the third hypothesis (H3) is thus also confirmed: the Italian gambling companies have a prosperous cash situation, constantly increasing, regardless of their location.

The dynamics of liquidity, therefore, are not correlated with the economic cycle and are therefore independent of economic periods. Profitability is affected by the economic cycle, but the short-term financial equilibrium is not. Overall, confirming the fourth research hypothesis (H4) only partially.

The territorial location is indifferent in the income and financial perspective. The differences in the three macro-regions are minimal, statistically irrelevant, as ANOVA confirmed. The propensity to gamble is independent of the economic-social conditions of the three Italian macro-regions, which are known to be different.

The reduction in profitability during the crisis was already highlighted by (La Rosa, 2016a, pp. 101–103) during the most acute period (2007-2009) that, however, had not recorded a reduction in the propensity to gamble (La Rosa, 2016b, p. 28; Sabatino, 2016, p. 61), instead of the one typical of the following years.

It is worth noting similar income outcomes in other sectors that were also affected by the reverberations of the crisis in the period 2012-13, such as the wine industries (Migliaccio & Tucci, 2020).

This analysis is undoubtedly useful for the operators of gaming rooms, whether in presence or online because it allows useful comparisons of their economic and patrimonial situation with the average of the sector, to identify possible significant gaps that could be harbingers of future crises. The positive judgement on profitability and treasury, however, excludes significant imbalances.

Therefore, if the operators can be pleased with the conclusions of this study, certainly the information that derives from it is, in contrast, worrying from a social perspective because always positive income and the abundance of liquidity could induce new investments with the risk of uncontrolled propagation of gambling and the relative possible deviance. The effort of public authorities, therefore, should be to educate people about gambling and avoid addiction: schools, first, should launch appropriate awareness campaigns. If it is true that legal gambling is a source of considerable revenue for the Treasury, it is also true that the prevention and treatment of addiction could have high economic and social costs, as well as consequences for public order.

This study is also useful for all other stakeholders: good economic and financial balance guarantees the stability of employment and favours lenders who can calmly invest in a sector that seems to be doing well even in periods when there are serious crises and bankruptcies elsewhere.

The research re-evaluates the importance of financial statements and quantitative approaches, reaching conclusions based on official information rather than mere theoretical constructs.

It also makes it possible to systematise the accounting results of individual companies, putting them into a systemic perspective. Spatial and temporal comparisons allow synthetic assessments of the sector's performance based on the precise recording of all economic and financial events that characterise the day-to-day life of companies. The company's records, therefore, are no longer only aimed at fulfilling civil and fiscal obligations, but they assume a useful value for appropriately and adequately informed managerial decision-making processes. The aggregation of financial statements, however, organised, can prospectively become a useful model for interpreting complex phenomena.

In the future, however, the analysis should be detailed, using also other indices and correlating the results obtained using other non-accounting factors such as, for example, the gender, age, and income of the players, as well as considering their habitual residence. Everything should also be assessed from an interdisciplinary perspective, considering the psychological and social aspects of

gambling. Indeed, economic analyses are not enough to solve pathologies. Instead, what is needed is the individual's willingness to become independent (Carr, 2015), with the help of families (Corleto, 2019; Rossi et al., 2018) aided by the institutions that have the difficult task of preventing and, if necessary, sanctioning (Capitanucci, 2004).

REFERENCES

1. Altavilla, E. (1963). *ALTAVILLA 1963 RIZZOLI I Giochi D'Azzardo*. eBay. https://www.ebay.it/itm/114953675328
2. Berrittella, M., & Provenzano, C. (2016). Le infiltrazioni mafiose nel settore del gaming italiano: Un'analisi empirica. *Il gioco d'azzardo in Italia. Contributi per un approccio interdisciplinare*, 199–211.
3. Buchanan, J., & Shen, Y. (2021). Gambling and marketing: A systematic literature review using HistCite. *Accounting & Finance*, *61*(2), 2837–2851. https://doi.org/10.1111/acfi.12685
4. Caillois, R., Rovatti, P. A., Dossena, G., & Guarino, L. (2007). *I giochi e gli uomini*. Bompiani.
5. Capitanucci, D. (2004). *Gioco d'azzardo e salute pubblica*. *7*(34), 4–9.
6. Carr, A. (2015). *Vincere il gioco d'azzardo ?? Facile se sai come farlo: Prendi in mano la tua vita*. EWI.
7. Chen, B., & Gan, Q. (2021). Measuring gambling activity in options market. *Review of Behavioral Finance*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/RBF-08-2020-0206
8. Ciofalo, G., Leonzi, S., Di Stefano, A., & Barricella, S. (2016). I giochi (d'azzardo) e gli spot. La pubblicizzazione televisiva del gambling in Italia (The Promise of Unhappiness. The Television Advertising of Gambling in Italy). *SOCIOLOGIA E RICERCA SOCIALE*, *110*, 41–62.
9. Corleto, C. (2019). Gioco d'azzardo patologico: La famiglia come risorsa? In *Book for abstract* (p. 136). https://iris.uniroma3.it/handle/11590/372151
10. Croce, M., Arrigoni, F., Grosso, L., Avanzi, M., D'Agati, M., & Fumagalli, M. (2017). *Gratta e perdi: Anziani, fragilit?? e gioco d'azzardo*.
11. Ferrero, G., Dezzani, F., Pisoni, P., & Puddu, L. (2006). *Analisi di bilancio e rendiconti finanziari*. Giuffr??
12. Galimberti, U. (2019). Dipendenza da gioco d'azzardo. *Psicologia Contemporana*, *Nr.273*, 34–35.
13. Gandullia, L., & Leporatti, L. (2019). Distributional effects of gambling taxes: Empirical evidence from Italy. *The Journal of Economic Inequality*, *17*(4), 565–590. https://doi.org/10.1007/s10888-019-09423-9
14. Kalke, J., Verthein, U., Buth, S., & Hiller, P. (2011). Glücksspielsucht-Prävention bei den staatlichen Lotterien: Evaluation der Schulungen des Annahmestellenpersonals. *Suchttherapie*, *12*(04), 178–185. https://doi.org/10.1055/s-0031-1283125
15. La Rosa, F. (2016a). *Il gioco d'azzardo in Italia: Contributi per un approccio interdisciplinare*. FrancoAngeli.
16. La Rosa, F. (2016b). Il gioco d'azzardo in Italia: Contributi per un approccio interdisciplinare. *Il gioco d'azzardo in Italia*, 362.
17. La Rosa, F., & Bernini, F. (2018). Corporate governance and performance of Italian gambling SMEs during recession. *International Journal of Contemporary Hospitality Management*, *30*(3), 1939–1958. https://doi.org/10.1108/IJCHM-03-2017-0135
18. Li, J. (Justin), Bonn, M., & Kim, J.-H. (2020). A latent class segmentation analysis of gamblers in a gambling destination. *Journal of Destination Marketing & Management*, *16*, 100433. https://doi.org/10.1016/j.jdmm.2020.100433
19. Liu, M. T., Dong, S., Chang, S. K. P., & Tan, F. (2020). Macau gambling industry's quick V-shape rebound from 2014 to 2019. *Asia Pacific Journal of Marketing and Logistics*, *33*(2), 449–473. https://doi.org/10.1108/APJML-08-2019-0489
20. Liu, M. T., Dong, S., & Zhu, M. (2021). The application of digital technology in gambling industry. *Asia Pacific Journal of Marketing and Logistics*, *33*(7), 1685–1705. https://doi.org/10.1108/APJML-11-2020-0778

21. Maher, A., Wilson, N., Signal, L., & Thomson, G. (2006). Patterns of sports sponsorship by gambling, alcohol and food companies: An Internet survey. *BMC Public Health*, *6*(1), 95. https://doi.org/10.1186/1471-2458-6-95
22. Micangeli, L. (2021). Gambling Advertising between Primary Legislation, Regulation and the Role of Public Institutions: The Debate on Policies and Open Questions. *L'industria*, *2*, 275–302.
23. Migliaccio, G., & Tucci, L. (2020). Economic assets and financial performance of Italian wine companies. *International Journal of Wine Business Research*, *32*(3), 325–352. https://doi.org/10.1108/IJWBR-04-2019-0026
24. Rossi, E., Giovannini, L., Russo, S., Masala, M., & Toti Licata, S. (2018). *Percezione del gioco d'azzardo e modalit?? Di prevenzione: Un'indagine sugli stili educativi dei genitori*.
25. Sabatino, M. (2016). Gioco d'azzardo e crisi economica. In *Il Gioco d'azzardo in Italia—Contributi per un approccio interdisciplinare* (p. 34).
26. Sbordoni, S. (2010). *Giochi concessi e gioco on line*. Istituto poligrafico e Zecca dello Stato, Libreria dello Stato.
27. Teucci, S. (2019). *Vincasi o per fortuna o per ingegno: Il gioco d'azzardo nella letteratura*. Progedit.
28. Vaughan-Williams, L., & Siegel, D. S. (Eds.). (2013). *The Oxford Handbook of the Economics of Gambling* (1st ed.). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199797912.001.0001
29. Zappolini, A., & Scigliano, M. (2019). *Mettersi in gioco? L'azzardo: dalle storie di dipendenza alle strategie per combatterlo*. San Paolo.
30. Zenarolla, A. (2017). Conformismo, inconsapevolezza e desiderio di denaro in adolescenza: Riflessioni a partire dai risultati di una ricerca partecipata sul rapporto tra adolescenti e gioco d'azzardo. *Studi Di Sociologia*, *55*(3), 281–296.
31. Zhu, H., Zhang, B., & Yang, L. (2021). The gambling preference and stock price: Evidence from China's stock market. *Emerging Markets Review*, *49*, 100803. https://doi.org/10.1016/j.ememar.2021.100803

Received 03 November 2021
Accepted 15 December 2021

CIRCULAR ECONOMY IN BELARUS: VISION AND PROSPECTS (SURVEY RESULTS)[1]

Nadezhda BATOVA[2], PhD in Economics, Associate Professor,
Institute of Economics of the National Academy of Sciences of Belarus,
Irina TOCHITSKAYA[3], PhD in Economics, Associate Professor, Green Economy Expert,
Yauheniya SHERSHUNOVICH[4], Green Economy Expert

DOI: https://doi.org/10.36004/nier.es.2021.2-04
JEL: M 21; O 13; Q01; Q53; Q57
UDC: 338.2(476)

ABSTRACT

The circular economy is considered as one of the most important priorities in the National *Strategy for Sustainable Development of the Republic of Belarus until 2035. This opens new opportunities for increasing the competitiveness of traditional sectors of the economy and preserving a favourable environment as well as actualizing the issue of the readiness of the Belarusian business for circular transformation.*

The purpose of the study is to explore how Belarusian enterprises assess the possibilities of this transition, as well as to identify the barriers and drivers for the development of a circular economy in the Republic of Belarus.

The information base of the study consists in theoretical and methodological scientific research by domestic and foreign scientists devoted to the circular economy, regulatory and information materials of ministries and departments, as well as information from official sites and other Internet sources.

The article presents the results of a series of surveys of Belarusian business conducted in the 2019-2021 period The first survey dealt with the issues of waste management in the industry, construction, and trade in Belarus (the first quarter of 2019). The second one was designed to determine the level of understanding of the circular economy concept by Belarusian business. It used diagnostic interviews processed in the software product rep: grid get things straight by Dr. Rosenberger (2020). The third survey studied the possibilities of circular transformation in Belarus (2020-2021).

The results of the study show that the circular economy concept has not found widespread application in Belarus, but there are already promising examples of the implementation of circular business models in the country. Representatives of the traditional (linear) business model intend to involve secondary resources in the production process in certain production areas. Enterprises with the elements of a closed cycle focus on the full and efficient use of resources and aim at increasing profits, including through the introduction of circular innovations in any production processes.

Keywords*: circular economy, circular business models, barriers, Belarus, survey.*

În Strategia Națională pentru Dezvoltare Durabilă a Republicii Belarus până în anul 2035, economia circulară este considerată drept una dintre cele mai importante priorități, ceea ce deschide noi oportunități pentru creșterea competitivității sectoarelor tradiționale ale economiei și menținerea mediului înconjurător favorabil, precum și actualizează pregătirea afacerilor din Belarus pentru transformarea circulară.

---

[1] The work was carried out within the Economic Research Center Development Project BEROC funded by SIDA.
[2]*© Nadezhda Batova ID ORCID: https://orcid.org/0000-0003-3971-4046, email: nbatava@gmail.com*
[3]*© Irina Tochitskaya ID ORCID: https://orcid.org/0000-0001-6964-1453, email: tochitskayai@gmail.com*
[4]*© Yauheniya Shershunovich ID ORCID: https://orcid.org/0000-0002-8576-5648, email: janehallo@mail.ru*

Scopul lucrării prezintă cercetarea modului în care întreprinderile din Belarus evaluează posibilitățile unei astfel de tranziții, evidențierea barierelor și driverelor pentru dezvoltarea unei economii circulare în țară.

Baza informațională a studiului au constituit lucrările științifice teoretice și metodologice ale autorilor autohtoni și străini dedicate economiei circulare, materialele de reglementare și informare ale ministerelor și departamentelor, precum și informații de pe site-urile oficiale și alte surse din internet.

Articolul prezintă rezultatele unui sondaj al întreprinderilor din Belarus realizat în perioada 2019-2021 privind problemele de gestionare a deșeurilor în industrie, construcții și comerț (primul trimestru al anului 2019), determinarea nivelului de percepție a conceptului de economie circulară de către antreprenori din Belarus, realizat prin interviuri diagnostice și procesate în program rep:grid get things straight by Dr. Rosenberger, precum și prezintă cercetarea oportunităților de transformare circulară în Belarus (2020-2021).

Rezultatele studiului au arătat că în Belarus dezvoltarea conceptului de economie circulară nu a fost adoptată pe scară largă, dar există deja exemple eficiente de introducere a modelelor circulare de afaceri. Reprezentanții modelului de afaceri tradițional (liniar) intenționează să implice resurse secundare în procesul de producție la locurile de producție individuale. Întreprinderile circulare se concentrează pe utilizarea deplină și eficientă a resurselor și urmăresc creșterea profiturilor, inclusiv prin introducerea de inovații circulare în orice proces de producție.

Cuvinte cheie: *economie circulară, modele de afaceri circulare, bariere, Belarus, sondaje.*

Циркулярная экономика рассматривается в Национальной стратегии устойчивого развития Республики Беларусь до 2035 года как один из важнейших приоритетов. Это открывает новые возможности для повышения конкурентоспособности традиционных секторов экономики и сохранения благоприятной окружающей среды и актуализирует вопрос готовности белорусского бизнеса к циркулярной трансформации.

Цель работы - изучить как белорусские предприятия оценивают возможности такого перехода, а также барьеры и драйверы развития экономики замкнутого цикла в Республике Беларусь.

Информационной базой исследования послужили научные труды теоретического и методологического плана отечественных и зарубежных ученых, посвященные циркулярной экономике, нормативные и информационные материалы министерств и ведомств, а также информация с официальных сайтов и другие интернет-источники.

В статье представлены результаты опроса белорусского бизнеса, проведенного в период 2019-2021 гг. касательно вопросов обращения с отходами в промышленности, строительстве и торговле в Беларуси (первый квартал 2019 г.), определения уровня понимания концепции циркулярной экономики со стороны белорусского бизнеса, выполненное с помощью диагностических интервью, обработанных в программном продукте rep:grid get things straight by Dr. Rosenberger (2020 г.), исследования возможностей циркулярной трансформации в Беларуси (2020-2021 гг.).

Результаты исследования показали, что в Беларуси развитие концепции циркулярной экономики широкого распространения не получило, но эффективные примеры внедрения циркулярных бизнес-моделей уже есть. Представители традиционной (линейной) бизнес-модели намерены вовлекать в производственный процесс вторичные ресурсы на отдельных производственных участках. Предприятия с элементами замкнутого цикла ориентированы на полное и эффективное использование ресурсов и нацелены на увеличение прибыли, в том числе за счет внедрения циркулярных инноваций в любые производственные процессы.

Ключевые слова: *циркулярная экономика, циркулярные бизнес-модели, барьеры, Беларусь, опросы.*

INTRODUCTION

Topicality. Despite the success of the traditional (linear) economy in the XX century, in the new millennium this method of organizing production processes which determines the relationship between production and consumption according to the principle "the more, the better" has fully revealed its shortcomings. According to experts (*An Economic and Business Rationale for an Accelerated Transition*, 2013), in a forthcoming perspective, there will be a conscious transition of the society to sustainable production and consumption. One of the practical ways to achieve it is the introduction of circular business models.

The economic effect of the introduction of a circular economy is (1) to reduce the consumption of raw materials and energy resources through the formation of a stable demand for secondary resources; (2) reduce the volume of waste generation, including its prevention and increase the share of its involvement in production processes; (3) the emergence of new markets and the expansion of demand for existing ones against the background of increasing environmental responsibility of the society; (4) formation of an innovation ecosystem and infrastructure development; (5) expansion of opportunities for the development of small and medium-sized businesses, etc. The environmental effect includes (1) the reduction of carbon dioxide emissions; (2) decrease in the area of waste storage and disposal facilities; (3) lowering of the consumption of scarce and limited resources. The social effect encompasses (1) an increase in the level of social responsibility for the careful use of material resources; (2) an environmentally friendly attitude towards used goods; (3) increase in the number of jobs due to the formation of new and transformation of traditional sectors of the circular economy, etc. Enterprises can benefit from strengthening relationships with partners along the entire value chain, increasing the innovativeness of products and processes, increasing customer loyalty, gaining additional competitive advantages and new sources of income received; and consumers gain access to environmentally friendly products and, in some cases, with a decrease in their cost, due to cost reduction through the introduction of resource efficiency principles.

Theoretical importance. The article discusses the conceptual foundations of the formation and development of a circular economy.

Practical importance. Practical use of the proposed results and recommendations for the implementation of the principles of a circular economy will ensure more efficient use of raw materials within production cycles and achievement of sustainable development in Belarus.

LITERATURE REVIEW

Theoretical background. At the present stage, the concept of a circular economy has started gaining popularity, since it meets the interests of business, the state and the population. There are three key advantages for business: practical - depletion of natural resources increases costs of primary materials on the market; technological - new technologies facilitate the principles of introducing a circular economy; consumer - a circular approach to your own products allows you to improve communication with the consumer and offer them a product better than that of its competitors. For the state, accelerating urbanization creates an incentive to promote the development of a circular economy. For consumers, the advantage is the new circular product that the business offers. Products designed initially as circular (for example, car-sharing, furniture for rent, etc.) attract the consumer with their unusualness and significant cost savings (Olajos P., 2018).

The circular economy concept combines the most widely demanded practical approaches from various scientific schools. The systematization of the existing concepts of the development of the ecological and economic system presented in various scientific schools made it possible to establish that the theoretical and methodological approaches that form the basis of the circular economy are not fundamentally new, but accumulate the results of research by scientists in the field of industrial ecology, eco-efficiency, regenerative design, etc.:

Performance Economy - Walter R. Stahel (1986); The Functional Economy: Cultural and Organizational Change;

Industrial Ecology - Frosch and Gallopoulos, "Strategies for Manufacturing", 1989;
Eco-efficiency - World Business Council for Sustainable Development (WBCSD), 1991;
Regenerative design - John T. Lyle "Regenerative design for sustainable development", 1994;
Biomimicry - Janine M Benyus Biomimicry: Innovation Inspired by Nature, 1997;
Cradle-to-cradle - M. Brungart and W. McDonough / McDonough & Braungart Cradle to Cradle: Rethinking the Way We Make Things, 2002; “Upcycle: Beyond Sustainability - Designing for Abundance” / “The Upcycle: Beyond Sustainability - Designing for Abundance”, 2013;
Blue economy - G. Pauli, Report of the Club of Rome "10 years, 100 innovations, 100 million new jobs", "10 years, 100 innovations, 100 million new jobs", 2011.

The literature review made it possible to reveal that in foreign studies the term "circular" economy has many interpretations, the systematization of which enables to identify two fundamental approaches:

Resource oriented (Geissdoerfer et al., 2017; Geng et al., 2008; Zink & Geyer, 2017), implying a closed flow of materials, energy and waste, which can be achieved through reuse at the product level (repair or refurbishment), at the component level (reuse in production) and at the material level (recycling);

Economy oriented (Bastein et al., 2013; Hislop & Hill, 2011; Ingebrigtsen & Jakobsen, 2007), according to which the circular economy is an economic system that takes the reuse of materials and the conservation of natural resources as its starting point, seeking to create value for the people and the economy in every part of the system.

The definition given by the specialists of the Ellen MacArthur Foundation unites these two approaches. According to it, the term “circular” refers to an economy that functions as an alternative, more holistic approach that imitates natural systems with a transition aimed at distancing economic growth from environmental problems.

In recent years, one of the most common research tools is the method of qualitative data analysis, the results of which take the form of objective scientific conclusions. The specificity of the processes under study and the lack of official statistical information determines the relevance of using the survey method to study the degree of understanding and assess the possibilities of implementing a circular economy.

It was this approach that was used to determine the benefits and risks of transition from the traditional (linear) production model to closed economic systems, as well as to substantiate promising directions and measures to stimulate such transformation, etc. In particular, the GreenBiz Group company in cooperation with UPS conducted a survey of top management representatives to identify trends, factors of effective implementation of the principles of a circular economy. Industry specifics, problems, opportunities, and prospects for the implementation of the principles of the circular economy in specific industries were identified using surveys by ING Group. Based on the survey results, the World Health Organization, identified the prospects assessed the direct and indirect benefits of reducing the negative impact on the environment because of the introduction of circular economy principles (WHO, 2018).

DATA SOURCES AND METHODS USED

The data sources are the surveys by representatives of Belarusian enterprises with various forms of ownership (state, private and mixed) located in all regions of the republic (Brest, Vitebsk, Gomel, Grodno, Minsk, Mogilev, and Minsk). Top management was also interviewed using the technique of repertoire grids and the software product *rep: grid get things straight* by Dr. Rosenberger for processing results.

RESEARCH AND DISCUSSION RESULTS

Surveys of enterprises in 2019 on the use of waste and secondary raw materials confirm the growing interest in the problems of waste processing and the involvement of secondary material resources in the production process (Figure 1).

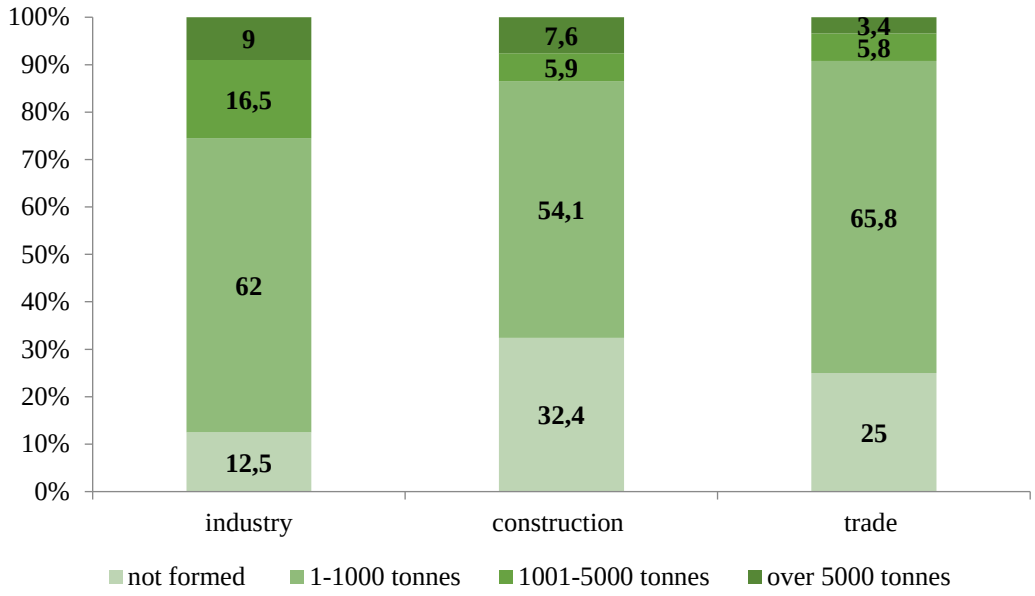

Figure 1. Annual volume of production waste generation at industrial, construction and trade enterprises, % of enterprises

Note.
1. Green arrows show the proportion of enterprises using waste in own activities, in the corresponding group by the volume of waste generation
2. Source: Figure based on the data by (Сачек, Шершунович, Точицкая, 2019).

In the industry, there is a pronounced tendency towards an increase in the use of waste in the own activities of an enterprise with an increase in the volume of its generation. This testifies the existence of a good base for the implementation of the principles of a circular economy in the industry of Belarus. In construction, the share of waste-free organizations exceeds 30%. It is necessary to clarify here that the main activity of construction enterprises is construction and installation work. This type of activity allows them to reuse certain substances and objects when backfilling roads, pits and performing other construction work. In trade, less waste is generated and used than in construction and the industry. Trade organizations most often transfer waste for recycling, since they themselves have neither production facilities for this, nor areas for storage, sorting waste, etc. In general, it should be noted that waste management issues are not a priority for enterprises. In this regard, it is of particular importance to increase the level of knowledge of enterprises on the functioning of the circular economy in their sector.

Studies to determine the level of understanding of the circular economy concept by the Belarusian business carried out in 2020. The study was carried out using Kelly repertory grid method. The results obtained enabled to answer the main research question: “To what extent does Belarusian business understand and is ready for transition to a circular economy?”(Н. Н. Батова, 2021).

As a result, it was found that the level of understanding of the circular economy concept by the Belarusian business is still in the formation stage, since the respondents have many disparate opinions regarding its essence, features and advantages of its implementation. Many respondents view circular economy through the prism of environmental responsibility and resource efficiency, often equating the two. The majority of the respondents noted in their answers that the circular economy is an inevitable global trend, and it is inextricably linked with innovation, resource efficiency and new market opportunities. The respondents defined the modern model of the Belarusian economy as more consistent with the traditional (linear) model (Figure 2).

Figure 2 Element-based analysis of the "circular economy" and Belarus elements ratio

Source: Figure based on the data by(Н. Н. Батова, 2021).

The need to comply with global trends and stay competitive both in Belarus and abroad, as well as an increase in the environmental responsibility of business and a focus on resource efficiency are factors stimulating the development of a circular economy. At the same time, the fear of enterprises about a possible decrease in quality when recycled materials are involved in production processes and the lack of information about successful circular business models hinder the development of this direction. Several elements and related factors have a multifaceted effect. Thus, the requirements of the current Belarusian legislation, on the one hand, do not restrict the introduction of a circular economy, moreover, they fully comply with its basic principles, but on the other hand, they do not contain incentive measures for the practical implementation of this concept. The development of scientific and technological progress undoubtedly has a positive effect on the development of the circular economy, but the high cost of innovation and long payback periods slow down these processes. Low economic efficiency of enterprises, their focus on solving current problems hinders the development of a circular economy, at the same time, the economic efficiency of circular business models stimulates their implementation. Elements such as “waste processing” and “secondary raw materials” form the basis of the circular economy and stimulate its development, while the underdevelopment of the internal market for secondary resources, imperfection of current waste collection and disposal system limit the possibilities of transition from the traditional (linear) model to the circular one (Table 1).

Table 1.

Classification of circular economy development factors

Factors		
Stimulating	Versatile action	Restraining
Resource efficiency	Secondary raw materials	Concerns about declining quality
Environmental responsibility of business	Waste recycling	
Global trends	Innovations	Difficulties in scaling
New opportunities / market niches	Economic efficiency	

Representatives of traditional business models argue that this type of production organization prevails in Belarus, and the circular economy is represented only by single business projects that cannot be effective without scaling. Agreeing with this statement, the respondents of enterprises with a closed economic cycle indicate that in recent years the socio-ecological responsibility of business

has been increasing in the country, the issues of preserving natural resources and reducing the impact on the environment are becoming topical. Representatives of the traditional (linear) business model in their activities focus on resource conservation and aim at maintaining the existing, albeit relatively small, but stable income. In the short term, while maintaining the previously selected specialization to increase the economic efficiency of the business, they intend to involve in the production process secondary resources in individual production areas. Enterprises with elements of a closed cycle focus on the full and efficient use of resources and strive to increasing profits, including through the introduction of circular innovations in any production process. The respondents representing the enterprises of this group believe that in the future the adherence to the circular model will remain, and the main emphasis will be placed on the prevention of waste generation, therefore, the need for their recycling fades into the background. The technological superiority of such enterprises will ensure their competitive advantages and will expand their market niche.(Н. Н. Батова, 2021).

The study about the possibilities of circular transformation in Belarus was conducted in 2020-2021 based on the survey of 403 enterprises. These enterprises were registered and operating in the territory of the Republic of Belarus with locations in Brest, Vitebsk, Gomel, Grodno, Minsk, Mogilev regions and Minsk. The questionnaire contained five blocks of questions.

Among the survey participants: 61.5% are industrial enterprises; 20.3% are engaged in agricultural production; 11.9% work in the construction industry and 6.2% provide housing and communal services. 50.6% of respondents have private ownership, 38.0% - state, 11.4% - mixed. The largest share of the respondents falls on medium-sized (46.1%) and large (39.5%) enterprises, the average number of employees in which is 103 and 1425 people, respectively. The share of small businesses in the total sample is 11.4% with an average employee number of thirteen (Батова et al., 2021).

12.4% of the respondents attributed their business to a model based on the principles of a circular economy, considering that it is more based on the “take, make, reuse” principle and is characterized by a minimization of the consumption of primary raw materials and the volume of processed resources, accompanied by a decrease in waste sent to disposal. A third of the respondents (27.3%) indicated that production processes are built according to the traditional (linear) model, which is based on the principle of “take, make, waste”, which leads to a constant increase in the burden on the environment, both in terms of extracting energy and materials useful for human economic activity from the ecosystem, and in terms of emissions of pollutants during the production, operation and disposal of various types of products. Most of the enterprises participating in the survey (60.4%) have a transitional model, which is largely based on linear approaches to the organization of production processes, with the introduction of closed cycle individual elements.

Given that the effective implementation of the circular economy principles is directly related to understanding its concept, the respondents were asked to choose from several definitions the one that, in their opinion, most accurately describes it. At the same time, the enterprises participating in the survey were able to assess eight definitions using a scale from one to five, where 1 - strongly disagree, 5 - strongly agree. One of the definitions contained the most complete interpretation of it, and the remaining seven, reflected individual elements of a circular economy (Table 2).

As a result of the survey, it was found that representatives of the Belarusian business, both with traditional and transitional models, generally have a narrow view of the circular economy essence. In particular, 31.6% of traditional and 28.5% of transitional enterprises believe that this is a theoretical business model that is difficult to apply in practice. This is a consequence of the lack of information on the best practices, as well as foreign and domestic experience in the application of the closed-cycle business model at enterprises of various industries. 53.4% of traditional enterprises consider the circular economy as a concept with the main goal to increase waste recycling, and 36.3% of the surveyed enterprises of this group consider it to be a linear business model with an emphasis on resource efficiency.

Table 2

Distribution of respondents' answers to the question "How much do you agree with the following statements on the essence of circular economy?", %

	Answer scale					Total
	1	2	3	4	5	
1. Circular economy is a theoretical business model that is difficult to apply in practice						
1.1. Traditional (linear) model	11.2	17.4	39.8	15.3	16.3	100.0
1.2. Circular model	31.8	22.7	29.6	6.8	9.1	100.0
1.3. Transitional model	17.0	19.9	34.6	15.2	13.3	100.0
2. Circular economy is like linear economy, but with more emphasis on resource efficiency						
2.1. Traditional (linear) model	9.1	20.2	34.4	24.2	12.1	100.0
2.2. Circular model	15.6	15.6	20.0	28.9	20.0	100.0
2.3. Transitional model	14.2	15.6	29.4	19.9	20.9	100.0
3. Circular economy allows you to reuse resources and only deals with waste and increasing their recycling level						
3.1. Traditional (linear) model	6.9	12.9	26.7	28.7	24.8	100.0
3.2. Circular model	6.8	9.1	34.1	31.8	18.2	100.0
3.3. Transitional model	11.8	10.9	32.7	22.3	22.3	100.0
4. Circular economy is an economy based on innovation, which, considering global trends, is gradually becoming a necessary condition for access to foreign markets						
4.1. Traditional (linear) model	12.8	16.0	19.1	27.7	24.5	100.0
4.2. Circular model	8.9	11.1	20.0	31.1	28.9	100.0
4.3. Transitional model	6.7	13.8	30.0	23.3	26.2	100.0
5. Circular economy principles need to be embedded in product design and development						
5.1. Traditional (linear) model	6.2	4.1	19.6	34.0	36.1	100.0
5.2. Circular model	7.0	4.7	23.3	25.6	39.5	100.0
5.3. Transitional model	2.9	7.6	25.2	19.0	45.2	100.0
6. Circular economy can develop only if consumers are willing to pay more for products produced in closed production systems, including from secondary resources						
6.1. Traditional (linear) model	18.9	12.6	27.4	23.2	17.9	100.0
6.2. Circular model	17.1	17.1	24.4	19.5	22.0	100.0
6.3. Transitional model	12.5	19.8	25.5	14.6	27.6	100.0

Source: Батова, Точицкая, Шершунович, 2021

Almost half of the respondents (44.6%) with a transitional business model believe that the circular economy allows for the reuse of resources and only deals with waste and increased recycling rates, and 40.8% believe that it is a linear economy with a large emphasis on resource efficiency.

The importance of the circular economy for export orientation, its relevance and innovativeness does not raise doubts among survey participants. 60% of the representatives of enterprises with a circular business model and about 50% with a traditional and transitional business model fully or partially agree with these arguments.

Most respondents (65–70% of those surveyed) indicated the need to implement the principles of a circular economy at the design and product development stage. More than 40% of the survey participants, regardless of the business model, consider a circular economy as an important component of not only sustainable production, but also consumption, supporting the point that this concept can develop subject to consumer support.

To assess the prevalence and implementation of the circular economy principles by Belarusian enterprises, respondents were asked whether they have elements of a closed cycle in production processes.

Most respondents (76.0% of the circular, 67.3% of the linear and 65.6% of those with a transitional model) sell waste/secondary resources to other enterprises. The rather high proportion of such responses is largely due to legislation requirements on waste management, including the prevention of secondary material resources disposal. In the republic as a whole, the traditional types of secondary material resources (wastepaper and cardboard, glass, plastics, rubber-containing waste, including worn-out tires) usage level generated in the industrial sector is over 94%.

The second most common element of a circular economy is the use of secondary raw materials in product manufacturing. However, among the traditional and transitional enterprises, the share of those who apply it in practice is significantly lower than among those using the closed-cycle model (42.7%, 45.7% and 64.0%, respectively) (Figure 3).

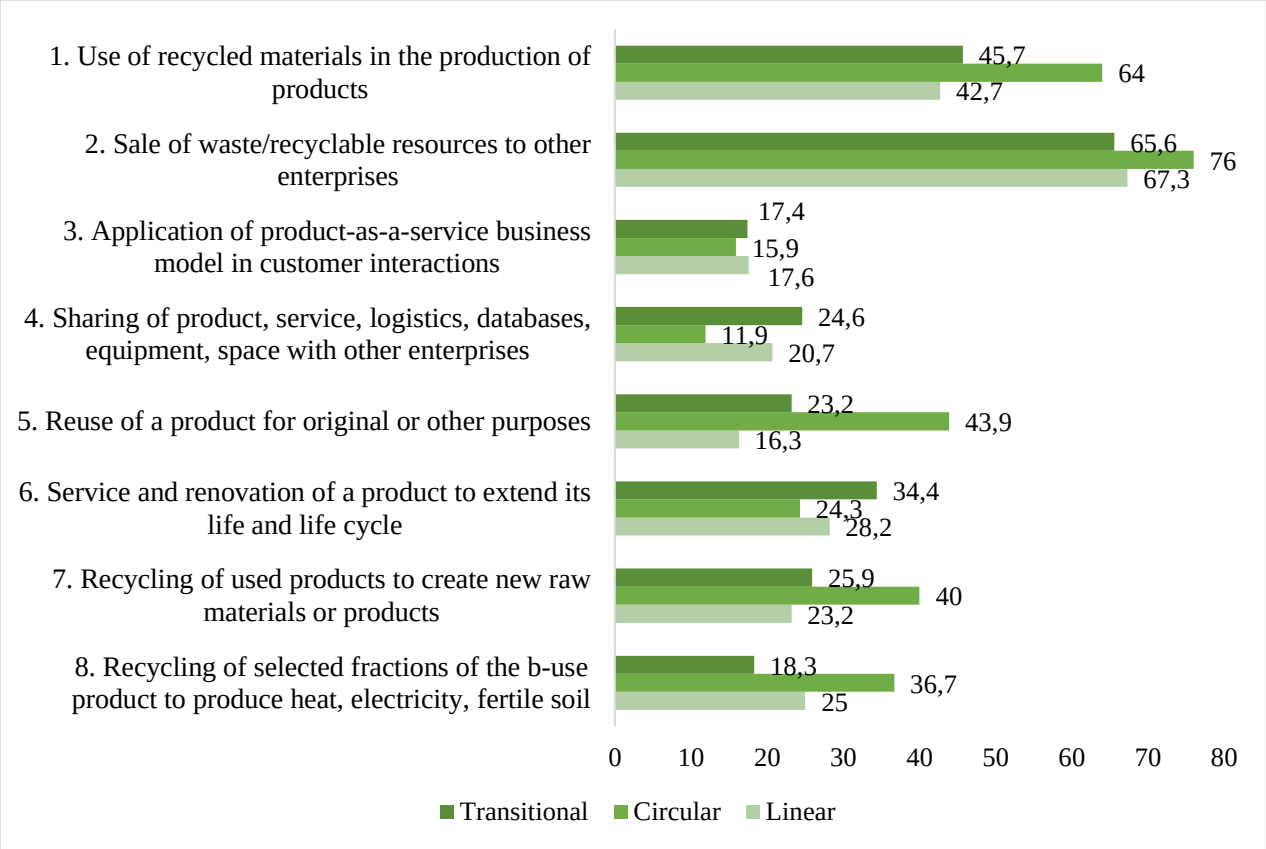

Figure 3. The presence of the elements of a circular economy in the production model

Note. Figure based on the data by (Батова et al., 2021)

About 40% of the circular enterprises participating in the survey noted that they reuse the product for initial or other purposes (43.9% of the respondents), process used products to create new raw materials or products (40.0%), and recycle certain fractions of used products for heat, electricity, a fertile soil (36.7%). Together with the previous two, these three elements formed the top 5 most common elements of a circular economy in the enterprises with a closed production cycle.

In turn, the linear enterprises implement measures for the maintenance and repair of the product to extend its useful life and life cycle, obtain heat, electricity, a fertile soil by processing individual fractions of used products. This was indicated by 28.2% and 25.0% of the respondents in this group, respectively. However, among the linear enterprises there are those who apply more progressive elements such as product processing to use new raw materials and products (23.2%).

The enterprises of the transitional production model are engaged in the maintenance and repair of the product to extend its useful life and life cycle (34.4%), joint use with other enterprises of the

product, service, logistics, databases, equipment, space (24.6%) and recycling of used products to create new raw materials or products (23.2%).

The least widespread business model is “product as a service”, which is used by only 15.9% of the circular enterprises, 17.6% of the transitional and 17.6% of the linear enterprises. The lack of prevalence of this model is largely because it presupposes a new way of interaction, both from the economic and organizational side, requiring a restructuring of production and sales processes.

It should be emphasized that in terms of the level of implementation of such elements as "product as a service", "sharing", "maintenance and repair of a product" circular enterprises are significantly inferior to traditional and transitional ones. This allows us to conclude that the circularity in the Belarusian economy has a pronounced production orientation and does not cover the service sector.

This indicates that most enterprises are not yet ready or do not have enough knowledge about the new economic and organizational approach of interacting with customers, which presupposes long-term relationships with them based on the sale of services. However, it should be noted that not all industries can use this business model.

To determine the potential and directions of circular transformation, the responses of the participants were systematized, considering the size of the enterprises, implying the possibility of introducing certain elements within the next three years (Figure 4).

The element of selling waste/recyclable resources to other enterprises will be the most common in the short term. The possibility of introducing this element (totally or partly agree) was indicated by 71.4% of the enterprises with a closed production cycle, 64.2% - with a linear one and 61.4% with a transitional one. It should be noted that the creation of a fully functioning waste market is an important prerequisite for the development of a circular economy. At the same time, the sale of waste by an enterprise does not in itself mean that it will take further steps towards a circular business model.

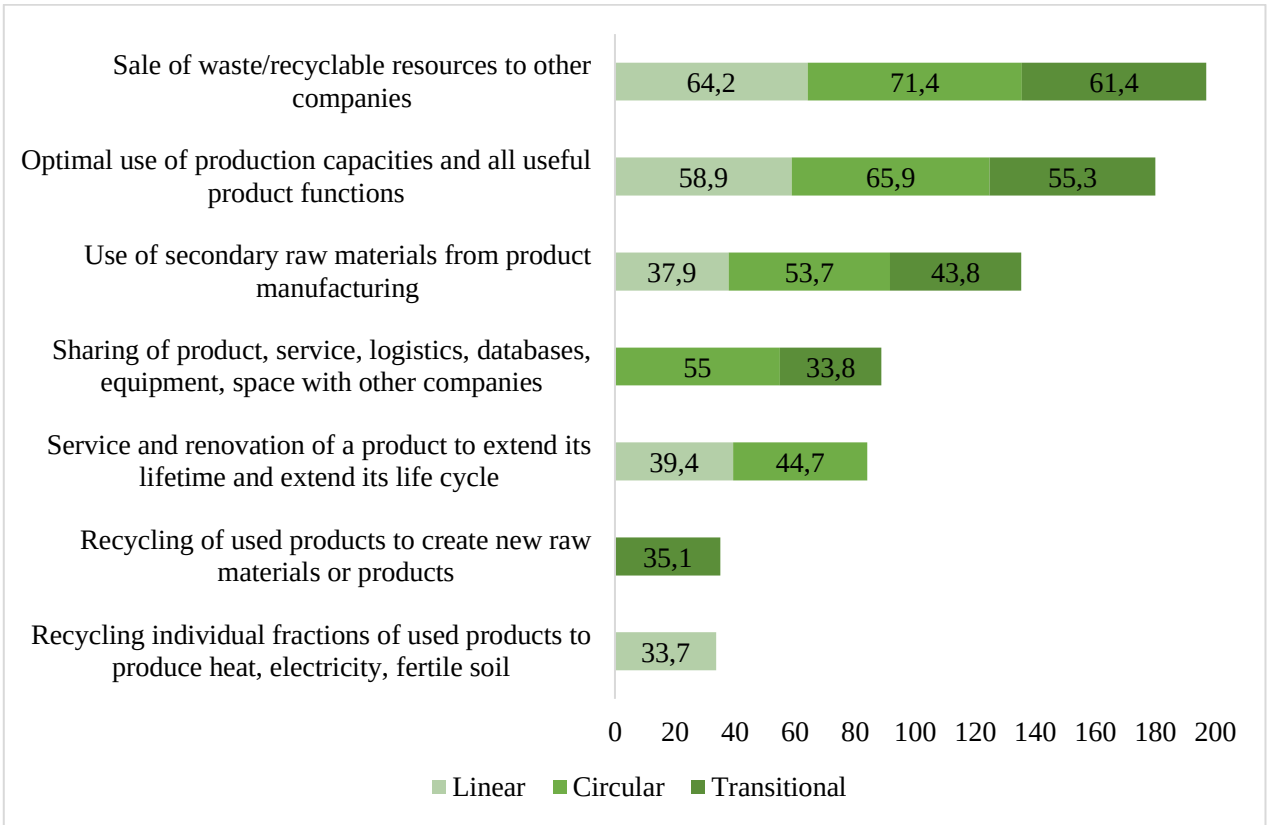

Figure 4. Preferred elements of a circular economy implementation according to respondents, %

Note. Figure based on the data by (Батова et al., 2021)

The second most popular element is the optimization of the production capacity use and all beneficial properties of the product. The development of this function was fully or partially supported by 65.9% of the circular, 58.9% of the traditional and 55.3% of the transitional enterprises. However, this component also lies more in the plane of resource efficiency, which, without using other elements of the circular business model, does not mean that traditional and transitional enterprises intend to abandon the linear economy. Therefore, to understand the readiness for circular transformation, it is important to identify what other elements of the circular cycle these enterprises plan to implement. According to the survey results, traditional (linear) enterprises in the short term intend to develop the service and repair sector (39.4%), expand the use of secondary raw materials (37.9%), and process certain fractions of used products to generate heat and electricity, a fertile soil (33.7%). This indicates that these enterprises generally do not plan to go beyond the linear business model.

In perspective, enterprises in the transitional stage of organizing production, plan to expand the share of used secondary raw materials in the manufacturing of products (43.8%), develop the sphere of processing used products to create new raw materials or products (35.1%), and share products, services, logistics, databases with other enterprises (33.8%). Consequently, in this group of the enterprises, 34 to 44% of the respondents are ready to increase the degree of circularity of their business processes, and in some cases to abandon the linear business model altogether.

Circular enterprises also plan to build a system of joint use with other enterprises (55.0%), expand the use of secondary raw materials in the production of products (53.7%) and develop the use of secondary raw materials in product manufacturing (44.7%).

Only a third (33.3%) of the circular enterprises, a quarter (25.0%) of the transitional enterprises and a fifth (21.5%) of the linear enterprises positively assess the possibility of using the product-as-a-service business model in the future. As noted earlier, this may be due both to the lack of knowledge about this model, and to the fact that enterprises are currently focused on elements of the circular economy to a greater extent related directly to production processes.

According to the survey, most respondents believe that the development of the circular economy is constrained by several barriers.

The lack of financial resources is an important and common barrier for all groups of respondents to the implementation of the principles of a circular economy. This is because most enterprises believe that the introduction of a circular economy should begin at the design and product development stage. The enterprises with a traditional (linear) and transitional production model identified the lack of technologies and information, primarily about successful projects, as the main barriers, while the circular enterprises attributed the lack of a unified electronic database on the availability of waste of secondary material resources to the main barrier.

A significant part of the respondents who have a linear (61.8%) and transitional (66.8%) way of organizing production note that there are no technologies suitable for their enterprise. Also, the representatives of these groups indicated a lack of information and practical examples of the successful implementation of circular projects - 52.8% and 56.6%, respectively. At the same time, only a third of the circular enterprises participating in the survey share this position. Moreover, 44.0% of the respondents in this group completely and partially disagree with the lack of information on the effectiveness of implementing circular economy principles and 33.3% do not agree with the argument about the absence of circular technologies.

The enterprises with a transitional production model are most concerned about the lack of consulting services (44.1%) and express uncertainty about the uninterrupted supply of secondary raw materials (32.2%). At the same time, the circular enterprises (36.1% of respondents) are more worried about the absence of a unified electronic database on the availability of waste of secondary material resources compared to the other groups of respondents.

Despite the general similarity in assessing the significance of measures that can help in overcoming barriers that impede the implementation of the principles of a circular economy, there are some differences in the answers of the respondents.

The Belarusian business sees state support as the main driver of the circular transition both through the development and implementation of specialized state support programs and through tax incentives, as well as the development of infrastructure for processing waste and secondary material resources. Thus, about 80% of the traditional (linear) enterprises and 70% of the transitional enterprises consider the development and implementation of support programs as the most effective incentive tool, while for the circular enterprises this is the second most important factor.

The program of socio-economic development of the Republic of Belarus for 2021-2025, as part of the implementation of the environmental policy, sets the goal of providing environmentally friendly conditions for the life of citizens improving environmental protection, and effectively using natural resources. A prerequisite for achieving long-term targets is the greening of the industry, which ensures a decrease in the negative impact on the environment, the involvement of wastepaper, glass, polymer waste, worn tires, waste oils, waste electrical and electronic equipment and others into economic circulation, an increase in the production and consumption of environmentally friendly , that is, processed products. Measures are outlined to develop mutually beneficial cooperation ties in terms of processing Belarusian cellulose into special types of paper and cardboard for the domestic packaging industry, board products - into furniture, wood waste and low-grade wood raw materials - into fuel pellets and briquettes. It will also continue to implement a set of measures to gradually reduce the use of plastic packaging with its replacement with environmentally friendly ones, including glass and paper (Republic of Belarus Ministry of Economy (2021).

The draft National Action Plan for the Development of a Green Economy in the Republic of Belarus for 2021-2025 (Ministry of Natural Resources and Environmental Protection (2021)), which is currently undergoing the final stage of approval by the Republic of Belarus Council of Ministers, provides a development strategy regarding the circular economy of the Republic of Belarus for the period up to 2035, as well as a number of measures to introduce the principles of the circular economy in various types of economic activity.

CONCLUSIONS

The transition to innovative circular models is becoming global in nature, and the competitive advantages of the development of this concept are becoming more obvious. In general, the concept of a circular economy has not found widespread application in Belarus, but there exist already effective examples for the implementation of circular business models in Belarus. These are factories for the production of office paper from waste paper in the city of Borisov (Unitary Enterprise “Paper Mill” of Goznak), the use of waste oils in the Krupsky District of the Minsk Region, the use of wood waste for biofuel production in the city of Brest (PKUP “Kommunalnik”), operating services for the provision of rental housing, cars, bicycles and scooters; biogas energy complexes based on the use of agricultural waste in a number of agricultural organizations; implemented innovative projects for the introduction of low-waste technologies at industrial and metallurgical enterprises, etc.(Н. Батова et al., 2021).

The implemented projects on a "green" economy and cleaner production at individual enterprises have only opened a window of opportunity for a circular economy. For the formation of sustainable growth, further generalization of the results achieved in building "green" growth points and formulating directions that ensure an increase in the efficiency of the use of material resources is required. Large-scale development and ensuring the effectiveness of the implementation of circular business models require a combination of technological advances, innovations, as well as joint efforts of stakeholders, business, and government representatives.

Studies show that representatives of the traditional (linear) business model intend to involve secondary resources in the production process in certain production areas soon, while maintaining the previously selected specialization to increase the economic efficiency of the business. .

The enterprises with elements of a closed cycle are focused on the full and efficient use of resources and aim at increasing profits, including through the introduction of circular innovations in

any production process. The technological superiority of such enterprises in the long term will ensure their competitive advantages and will expand their market niche.

Considering modern global trends associated with, among other things, the introduction of mechanisms for cross-border carbon regulation, trends in the introduction of a circular economy in the Belarusian economy, as well as subject to the development and implementation of a set of all measures planned for the current five-year period to develop a green, circular economy, the prospects for the implementation of these concepts in the medium and long term can be assessed as optimistic. The development of a circular economy in Belarus will contribute to economic growth through more efficient use of available resources, recycling of waste and production of goods from secondary resources.

REFERENCES

1. Bastein, T., Roelofs, E., Rietveld, E., & Hoogendoorn, A. (2013). *Opportunities for a circular economy in the Netherlands*.
2. Ellen MacArthur Foundation (Ed.). (2013). *An economic and business rationale for an accelerated transition*. https://ellenmacarthurfoundation.org/towards-the-circular-economy-vol-1-an-economic-and-business-rationale-for-an
3. Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The Circular Economy – A new sustainability paradigm? *Journal of Cleaner Production*, *143*, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048
4. Geng, Y., Zhu, Q., Doberstein, B., & Fujita, T. (2008). Implementing China's circular economy concept at the regional level: A review of progress in Dalian, China. *Waste Management (New York, N.Y.)*, *29*, 996–1002. https://doi.org/10.1016/j.wasman.2008.06.036
5. Hislop, H., & Hill, J. (2011). *Green Alliance Reinventing the wheel—A circular economy for resource security*. https://green-alliance.org.uk/page_77.php
6. Ingebrigtsen, S., & Jakobsen, O. D. (2007). *Circulation economics: Theory and practice*. Peter Lang.
7. WHO. (2018). *Circular economy and health: Opportunities and risks*. World Health Organization. Regional Office for Europe. https://apps.who.int/iris/handle/10665/342218
8. Zink, T., & Geyer, R. (2017). Circular Economy Rebound. *Journal of Industrial Ecology*, *21*(3), 593–602. https://doi.org/10.1111/jiec.12545
9. Батова, Н. Н. (2021). Зеленая экономика как направление устойчивого развития Республики Беларусь. *Вестник Кыргызского Национального Университета Имени Жусупа Баласагына*, *2 (106)*. https://www.elibrary.ru/item.asp?id=47427127
10. Батова, Н., Точицкая, И., & Шершунович, Е. (2021). Потенциал развития циркулярной экономики в Беларуси: Результаты опросов предприятий. *BEROC Policy Paper Series*, *PP No. 25*, 16.

Received 01 November 2021
Accepted 15 December 2021

STRUCTURAL CHANGE AND ECONOMIC GROWTH IN UKRAINE

Inna SHOVKUN[1], PhD in Economics,
Leading Researcher, Institute for Economics and Forecasting of the
National Academy of Sciences of Ukraine

DOI: https://doi.org/10.36004/nier.es.2021.2-05
JEL: C2; C5; F6; J24; L5; L6; O2; O3; O4
UDC: 338.1(477)

ABSTRACT

Deep structural shifts have been the leading feature of the modern world. The study considers the parameters and causes of structural change in the Ukrainian economy, as well as the relationship between structural change on the one hand, and labor productivity and economic growth on the other. The study shows that the accelerated reduction of the industrial sector, its technological simplification and narrowing the variety of industries were the key features of the structural changes model that occurred in Ukraine's economy after the global financial crisis. This was accompanied by increased dominance of the tertiary sector and the growth of the primary sector. Such a trend of structural shifts is not able to generate the necessary boost of economic growth.

Comparison of parameters and trends of structural changes in Ukraine's economy and in a comparable group of countries and the world as a whole shows that the changes in the structure of Ukraine's economy were more intensive, but did not create sufficient potential for sustainable economic growth. The author analyzes the gaps in labor productivity between economic activities and sectors of Ukraine's economy, as well as changes in their dynamics, which leads to the conclusions about the relationship between the rates of technological development of different sectors of Ukraine's economy and the gradual slowdown of the already imperfect technological development of this country's industry. Using the apparatus of econometric modeling, the author evaluates the dependence of the dynamics of GDP growth on the change of the indices of GVA in the sectors of this country's economy.

Keywords: *structural changes, index of structural changes, labor productivity, economic growth, industrial sector, technological development.*

Schimbările structurale profunde au devenit principala caracteristică a economiei mondiale moderne. Acest studiu examinează parametrii și cauzele schimbărilor structurale în economia Ucrainei, precum și relația dintre schimbările structurale, productivitatea muncii și creșterea economică. Studiul a arătat că trăsăturile cheie ale modelului de schimbări structurale care au avut loc în economia Ucrainei, după criza financiară globală, țin de reducerea accelerată a ponderii sectorului industrial, simplificarea tehnologică a acestuia și restrângerea varietății de tipuri de producție. Aceasta a fost însoțită de o creștere a dominației sectorului terțiar și de creștere a sectorului primar. O astfel de traiectorie a schimbărilor structurale nu poate să genereze o accelerare necesară a creșterii economice.

Compararea parametrilor și tendințelor schimbărilor structurale în economia Ucrainei cu un grup comparabil de țări și cu întreaga lume a arătat că schimbările în structura economiei naționale au fost mai intense, dar nu au condus la crearea unui potențial de creștere economică durabilă. Au fost analizate decalajele în productivitatea muncii între tipurile de activitate economică și sectoare ale economiei, precum și schimbările în dinamica ale acestora, ceea ce a dat temei pentru concluzii despre raportul dintre ritmul de dezvoltare tehnologică a sectoarelor economiei și încetinirea treptată în dezvoltarea

[1] ***© Inna Shovkun*** ***ID ORCID: https://orcid.org/0000-0003-2873-0761,*** ***e-mail: econshovk@ukr.net***

tehnologică a industriei naționale. Cu ajutorul aparatului de modelare econometrică se estimează parametrii dependenței dinamicii creșterii PIB de modificările indicilor VAB ai sectoarelor economiei.

Cuvinte cheie: *schimbări structurale, indicele schimbărilor structurale, productivitatea muncii, creștere economică, sector industrial, dezvoltare tehnologică.*

Основным признаком современной мировой экономики стали глубокие структурные сдвиги. В данном исследовании рассматриваются параметры и причины структурных изменений в экономике Украины, а также связь структурных изменений с производительностью труда и экономическим ростом. Проведенное исследование показало, что ключевые особенности модели структурных изменений, происходивших в экономике Украины после мирового финансового кризиса, заключались в ускоренном уменьшении веса индустриального сектора, его технологическом упрощении и сужении многообразия видов производств. Указанное сопровождалось усилением доминирования третичного сектора и ростом первичного. Такая траектория структурных сдвигов не способна генерировать необходимое ускорение экономического роста.

Сравнение параметров и тенденций структурных сдвигов в экономике Украины и в сопоставимой группе стран и мире в целом показало, что изменения в структуре национальной экономики были более интенсивными, однако не привели к созданию достаточного потенциала для устойчивого экономического роста. Проанализированы разрывы в производительности труда между видами экономической деятельности и секторами экономики, а также их изменения в динамике, что дало основания для выводов о соотношении темпов технологического развития секторов экономики и о постепенном замедлении технологического развития национальной индустрии. С использованием аппарата эконометрического моделирования оценены параметры зависимости динамики роста ВВП от изменения индексов ВДС секторов экономики.

Ключевые слова: *структурные сдвиги, индекс структурных изменений, производительность труда, экономический рост, индустриальный сектор, технологическое развитие.*

INTRODUCTION

Structural shifts due to advances in production technologies and services are the main factor in economic growth and a sign of development in a modern economy (Kuznets, 1973). According to the three-sector model of economy, the principal direction of structural transformation is the transition from primary production (agriculture and mining) to processing industries and then to the provision of services (or the tertiary sector). The absorption of capital and technologies, which ensures the achievement of high productivity, thus creating a basis for the flourishing of the post-industrial service economy is of great importance for the development of the manufacturing, starting from the stage of industrialization. The impulses of structural change are transmitted via the channels of increasing productivity and redistributing factors of production in favor of sectors with higher efficiency to attain sustainable economic growth.

The decade after the global financial crisis was marked by structural trends opposite to those prevailing in previous period. The role of manufacturing in the world economy strengthened and it returned to leading positions. In particular, the contribution of the manufacturing to the generation of global GDP increased by 1.3% during 2009-2018 to reach 15.4% (2018), including in developing countries - by 1.1%, and in the industrialized countries - by 0.7% (UNIDO 2019). The radical transformations in the world's industrial landscape caused by the development of technologies of the "fourth industrial revolution" led to the emergence of new types of production, which gave additional impetus to structural changes in the global economy and exacerbated competition in the markets. Against this background, for Ukraine, with its inefficient economic structure and insufficiently modernized production technologies, the risks of further sliding down to the margins of global

development and weakening of its geopolitical positions are increasing. Therefore the problem of structural reforms primarily based on industry and achievement of sustainable growth of the national economy becomes of particular importance.

STRUCTURAL CHANGE AND ECONOMIC GROWTH: A LITERATURE REVIEW

Structural shifts and assessments of their impact on the economic growth of individual countries and the world have long been a subject of scientific research (Saccone & Valli, 2009). These topics have never lost their relevance, given the dependence of each country's geopolitical position on the production structure of its economy (*IDR2020*, 2019). The researchers' attention is attracted by the trends in structural changes (Diao et al., 2017), and identification of their levers and determinants (labor, capital, innovative technologies, savings, national and foreign investment, and foreign trade) (Bekkers et al., 2021).

In the Ukrainian academic community, there is an intense debate about the challenges facing this country's economy in the context of structural shifts in the world economy. The external factors of the obvious process of structural simplification of Ukraine's economy and its approach to the structural characteristics of the less developed economies are revealed, which are due to the peripheral status of this country's economy in global production chains (Сіденко, 2017). Analysis of the key features of Ukraine's economy, which is classified as small, open and raw material based in terms of the structure of production and exports (Кораблін, 2017), revealed a weakening of macroeconomic dynamics, and the threat of further technological lag behind more innovative and dynamic economies. Study of the domestic causes of the distortion of the structure of Ukraine's economy showed their institutional dependence on property relations, which appeared against the background of non-transparent campaigns for the privatization of state property, the emergence of super-profitable private monopolies and establishment of the power of oligarchs (Kindzerski, 2021). The specific features of the business financing models are revealed, which are based on the use of shadow reserves and "offshorization" of financial relations, which create considerable financial constraints to restructuring the economy (Зимовець et al., 2019).

Consideration of a wide range of issues of inclusive development made it possible to substantiate the need for transition to a model of economic growth, in which a human, with the level and quality of his life is the center of concentration of efforts intended to implement structural changes (Бобух et al., 2020). In the context of the search of tools for effective economic policy, the advisability of "smart specialization", which is based on a combination of scientific and technological, innovational, regional and industrial policies and is intended to promote structural modernization of the economy is proven (Єгоров et al., 2020). The study of regional proportions and the hierarchy of regions in the national economy showed the priority of the development of manufacturing to ensure the well-being of regional population, and proved that the further decentralization of state powers, development of a new industrial sector based on Industry 4.0 technologies is the key to strengthening regional economic viability and overcoming structural and territorial disparities. (Shovkun, 2019a). The expediency is substantiated of implementing a development strategy based on the expansion of domestic market, and on its ability to meet the consumers' needs and to correct imbalances in foreign trade (Ostaško, 2019) (Shovkun, 2020).

This study involves assessing the parameters of structural changes that took place in Ukraine during the 2000s, identifying the efficiency of structural changes in terms of labor productivity and dynamics of economic growth, and determining approaches to the development of structural policy.

Methods for measuring structural shifts

Structural shifts are estimated using several indicators. Most often, the structural change index is used (Diao et al., 2017), which estimates the degree of shifts in the sectoral composition of the economy that occurred over a certain period.

$$ISC_{VA} = {}^{1}/_{2} \sum_{i=1}^{n} |VA_{it} - VA_{i(t-1)}| \qquad (1)$$

where ISC_{VA} - index of structural changes in terms of value added;

n - number of economic sectors (economic activities, industries);

VA_{it} and $VA_{i\,(t-1)}$ - share of value added of sector i in the current period t and in previous period $(t-1)$.

The other indicator, the coefficient of structural changes, measures the changes in the composition of employment by economics sectors:

$$ISC_L = {}^{1}/_{2} \sum_{i=1}^{n} |L_{it} - L_{i(t-1)}| \ , \qquad (2)$$

where ISC_L - index of structural changes by the number of employed;

and L_{it} and $L_{i(t-1)}$ - the share of employed in economic sector (economic activity, industry) i in the current period t and in previous period $(t-1)$, respectively.

Both variants of the index are used to measure the intensity of spatial structural changes - in individual countries, and in economic regions, which ensures the comparability of estimates.

To identify the qualitative effect of structural shifts, a complex indicator is used − *the index of productivity gains* ($I_{\Delta P}$) , which is calculated by the shift-share method:

$$I_{\Delta P} = \sum_{i=1}^{n} \frac{L_{i(t-1)} \Delta P_i}{P_{(t-1)}} + \sum_{i=1}^{n} \frac{P_{i(t-1)} \Delta L_i}{P_{(t-1)}} + \sum_{i=1}^{n} \frac{\Delta L_i \Delta P_i}{P_{(t-1)}} \ , \qquad (3)$$

where, in addition to the already mentioned indicators, there is $P_{(t-1)}$ - labor productivity (that is, value added in constant prices per one employed) in the base period;

ΔP_i - the increase in labor productivity in sector i in the current period (t) compared to the base period $(t-1)$;

ΔL_i - the increase in the share of employed in economic sector i in the current period compared to previous (base) period.

Transformation of the structure and dynamics of Ukraine's economy

According to UN data on industrial development, Ukraine's economy belongs to the category of emerging industrial economies, closely integrated into global trade and production chains (*IDR2020*, 2019). Such integration potentially promotes the transfer of new production technologies, and intensifies industrial development and economic growth. However, in the global system of production linkages, Ukraine has a predominantly raw material specialization, which causes this country's excessive dependence on price fluctuations in the global markets and economic instability. Ukraine's GDP growth during 2000-2019 with short periods of ups was dominated by waves of crises and deep falls (Figure 1), which were caused by external influences (the global financial and economic crisis of 2008-2009, and by the loss of part of this country's economic potential as a result of Russian aggression and occupation of territories of industrially intensive regions since 2014).

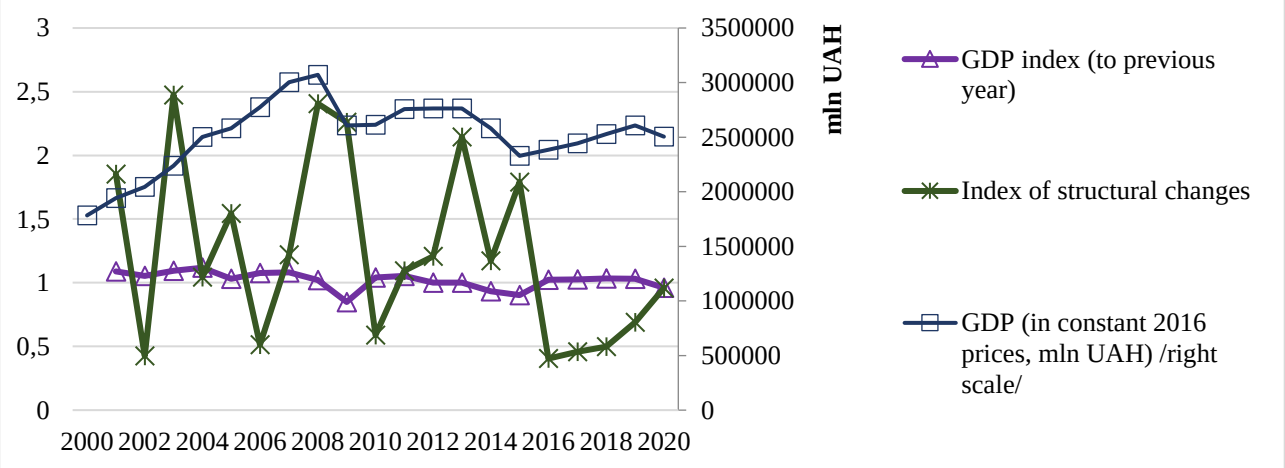

Figure 1. GDP dynamics and structural changes in Ukraine's economy in 2000-2020.

Source: calculated according to data of the State Statistics Service of Ukraine. http://www.ukrstat.gov.ua/

At the same time, the structural changes that took place in Ukraine's economy exceeded in intensity the world level and the level of the comparable group of Central European and Baltic countries (similar to Ukraine by development level) (Figure 2). In particular, the average level of the index of structural changes (estimated in terms of value added) in Ukraine reached 2.1 in 2000-2019, while in the comparable group of countries it registered 0.6, and globally - 0.5.

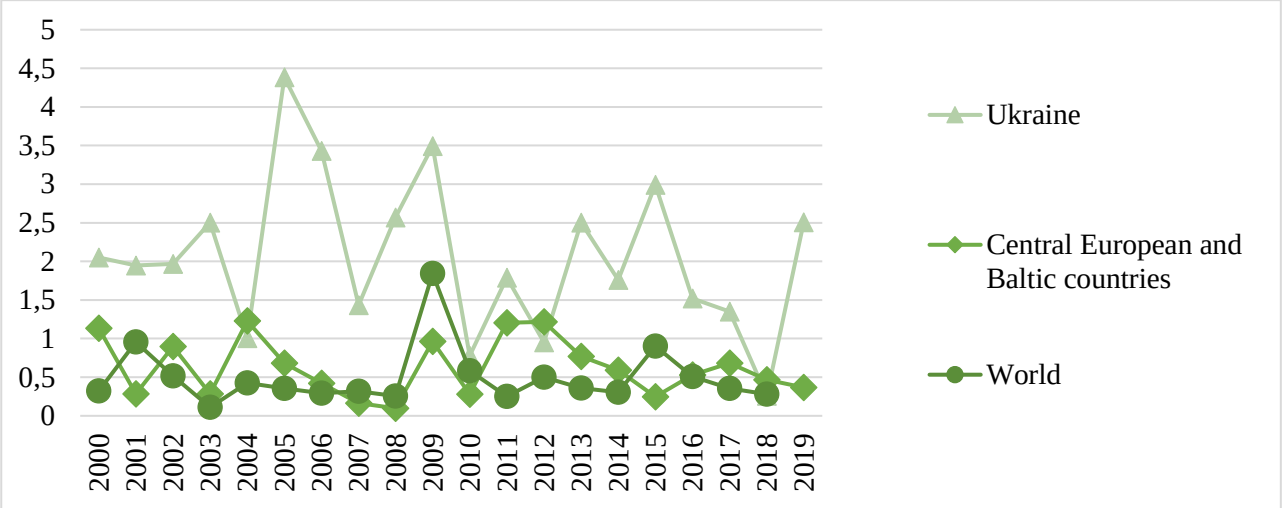

Figure 2. Index of structural changes (value added) globally and in Ukraine in 2000-2019.
Source:World Development Indicators. https://databank.worldbank.org

Usually, intensive structural change is associated with greater opportunities for economic growth arising due to increased aggregate productivity and income (Mijiyawa & Conde, 2020). This is confirmed by the examples of Asian countries (China, India, etc.), where structural changes contributed to economic growth (Bekkers et al., 2021). However, structural shifts in Ukraine appeared destructive for the economy, because they were accompanied by the loss of a significant part of *the manufacturing* potential, a considerable GDP decline and sluggish economic dynamics.

The share of service sector is constantly growing. This tendency in the Ukrainian economy appeared a long time ago and did not change during 2000-2019 (Figure 3). The development of service sector in Ukraine corresponds to global trends, but the development of the industrial and agricultural sectors is different. The short period of industry based economic recovery and growth (2000-2007) was interrupted by the strikes of crises that caused significant damage to this country's industrial potential. Distinctive features of the structural changes in Ukraine's economy after 2007 were, on the one hand, a significant decrease in the share of the industrial sector (primarily the manufacturing), and on the other, a rapid increase in the share of the tertiary and primary sectors (Figure 3). In particular, the reduction in the share of the industrial sector in Ukraine's GDP reached 22.5% (at the end of the analyzed period), which is less than the world level (25.6%) and less than that of the comparable group of Central European and Baltic countries (27.6%). At the same time, the share of the manufacturing in Ukraine reduced to 10.8% of GDP, while globally it is 15.4%, and in the comparable group it is 17.6%.

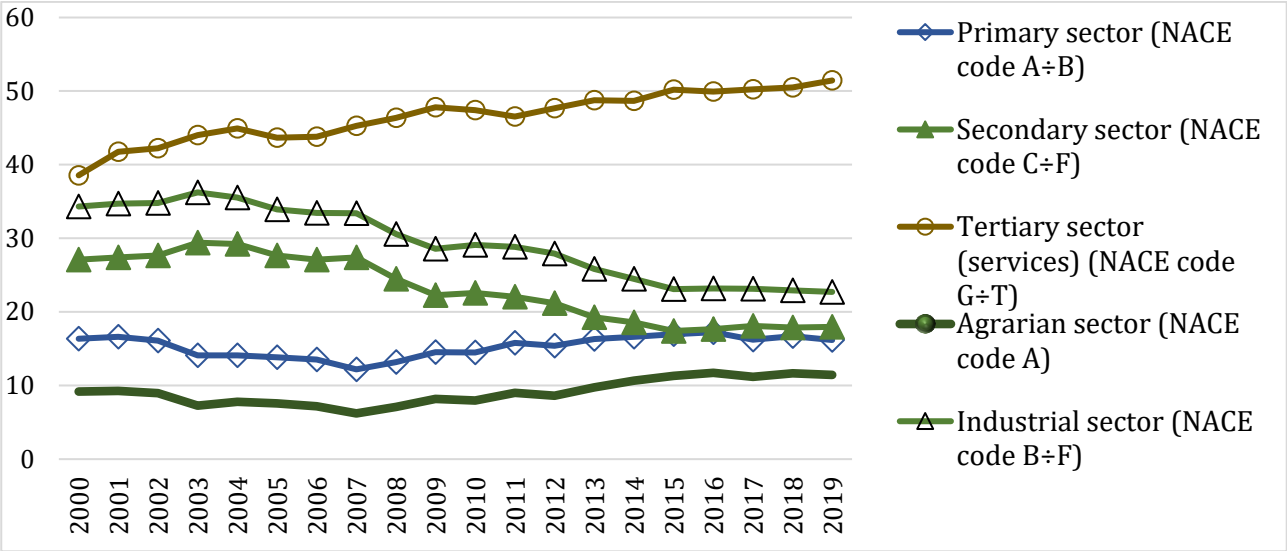

Figure 3. Sectoral composition of gross value added in Ukraine in 2000-2019 (at constant 2016 prices), %.
Source: State Statistics Service of Ukraine. http://www.ukrstat.gov.ua

However, by the share of agricultural sector (9% of GDP in 2019), Ukraine is almost three-fold ahead of global average, and even more so relative the comparable group of countries. The advantages associated with developed agriculture and the ability to build long chains of domestic production are underutilized and are even lost for economic growth leading to the situation when it is raw materials that are exported to world markets, rather than processed products. Moving from the agrarian economic pattern to the industry and service based one provides countries with economic progress in the form of rapid growth in real GDP and overcoming poverty, while movement in the opposite direction will not produce such results. In general, the reproduction mode of the primary sector (mining and related primary processing industries, and agriculture) is only capable of generating relatively low rates of economic growth.

Efficiency of Structural Change: Labor Productivity and Economic Growth

Efficient structural change is a determining condition for economic development. Estimations of efficiency carried out using labor productivity indicators show contradictory processes in the Ukrainian economy. On the one hand, there are long-term trends towards increased productivity in all sectors, which indicates their modernization. But on the other hand, the dynamics of productivity growth is slowing down, which is associated with the negative impact of shifts in employment structure on the overall productivity.

There are significant disparities in labor productivity across economic sectors. Calculations suggest that industry retains the leading position in labor productivity (hereinafter we refer to the indicator of the volume of gross value added in constant 2016 prices per one employed by economic activity) surpassing the service sector, and furthermore the agricultural sector (Figure 4). However, the gap between the sectors is constantly decreasing.

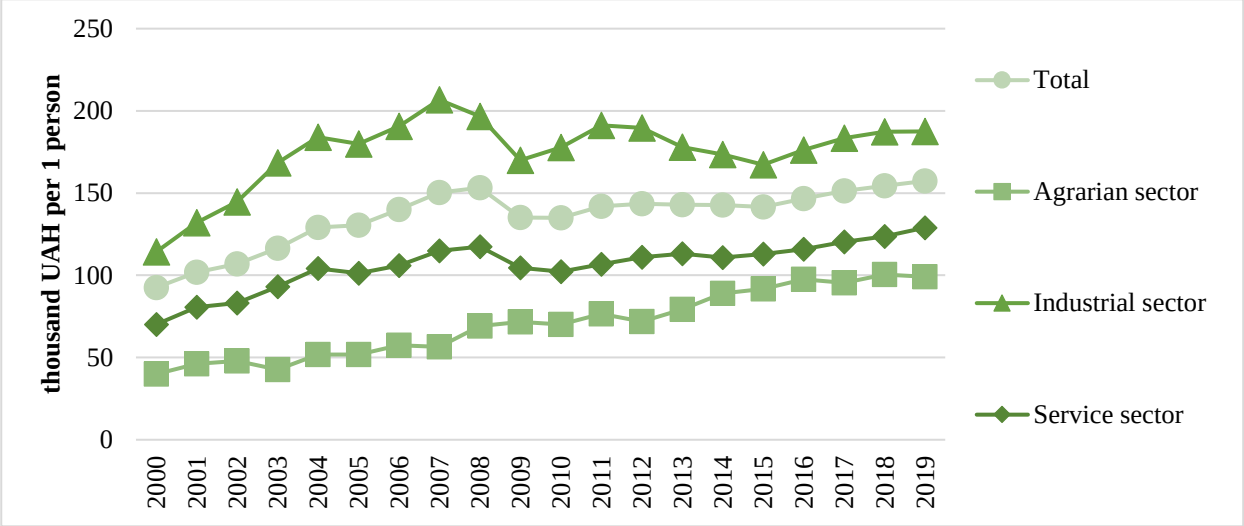

Figure 4. Labor productivity in terms of gross value added by sectors of Ukraine's economy in 2000-2019.

Source: calculated according to data of the State Statistics Service of Ukraine. http://www.ukrstat.gov.ua/

Analysis of the growth dynamics in productivity for 2000-2019 indicates the positions of the above mentioned sectors are diametrically opposite. Productivity in the agricultural sector grew almost continuously, so the final value reached the highest level of 2.5. Productivity indexes in the services and industrial sectors only were 1.8 and 1.6, respectively, although the two sectors had better starting positions in 2000-2007. The lag of these two sectors is caused by a fall in their productivity during the crisis in 2008-2009, and in the industrial sector also during 2012-2015 (which was due to the severance of trading ties with the main at that time and traditional for Ukrainian exporters sales markets in the CIS countries).

Detailed data about employment and productivity by economic activity (Table 1) show a high concentration of workers in industries with low productivity. In particular, Ukraine's main employers are trade and agriculture (where more than 41% of employed are concentrated), whose productivity levels are among the lowest of all economic activities. While by the number of employed, trade ranks first, in terms of productivity this sector ranks 11th, and agriculture - 2nd and 10th, respectively. These low-productivity sectors are characterized by relative stability in employment even during crises and by the ability to absorb free labor.

Intelligently intensive commercial services and services using new technologies are characterized by high productivity. Activities in these categories surpass the average level of productivity in the economy by 3.0 - 3.5 times (2019), and some of them - by more than 4.2 times (realty, financial and insurance, information and telecommunications). These activities together provide jobs for 13.4% (2019) of total employed in the economy. The number of employees in the sectors with highest productivity decreased over the observation period, for example, because of the systemic banking crisis in Ukraine, which was accompanied by the liquidation of dozens of banks in 2014-2016. The limit of the ability to absorb labor in the whole group of high-productivity services so far never exceeded 15.5%. Other activities in the service sector (including trade) are lagging far behind by productivity, but it is in them where most employees (50%) are concentrated, which determines the sector's total productivity.

Table 1

Labor productivity (LP) and employment by economic activity in Ukraine in 2012-2019

Activity	LP, thousand UAH per 1 person	LP ranking	LP index	Share of employed, %	Employed number ranking	Employed number index
	2019	2019	2019 to 2012	2019	2019	2019 to 2012
Total	157.4		1.10	100.0		0.86
Agriculture, forestry and fishing	99.0	10	1.38	18.2	2	0.91
Industry	208.3	4	0.96	14.8	3	0.76
Construction	114.6	8	1.35	4.2	8	0.84
Wholesale and retail trade; repair of motor vehicles and motorcycles	93.0	11	0.92	22.9	1	0.91
Transportation and storage	171.8	6	1.15	6.0	5	0.87
Accommodation and food service activities	62.7	14	1.27	1.8	12	0.93
Information and communication	380.3	3	1.35	1.7	13	0.97
Financial and insurance activities	427.7	2	1.56	1.3	15	0.67
Real estate activities	665.9	1	1.63	1.6	14	0.81
Professional, scientific and technical activities	188.3	5	1.30	2.5	9	0.84
Administrative and support service activities	104.3	9	1.22	1.9	11	0.92
Public administration and defence, compulsory social security	144.2	7	1.32	5.3	7	0.87
Education	65.6	13	1.10	8.4	4	0.85
Human health and social work activities	60.5	15	1.07	5.9	6	0.82
Arts, entertainment and recreation	73.7	12	1.12	1.2	16	0.88
Other types of economic activity	58.5	16	1.44	2.2	10	0.90

Source: calculated according to data of the State Statistics Service of Ukraine. http://www.ukrstat.gov.ua/

The next in terms of productivity is industry, which occupies the 4th place by this indicator and exceeds the average level by 1.3 times. Industry remains a major employer providing jobs for 14.8% of the employed population, but is rapidly reducing its jobs number (-24% during 2012-2019). People who lost their jobs in industry mainly move to low-productivity industries because transition to high-productivity sectors is constrained for them by a lack of corresponding vocational training. Therefore, there is a need to promote education, in particular, by encouraging people of all ages to study and renew their professional skills.

Analytical calculations (Figure 4, Table 1) illustrate the fact that the productivity in the industrial sector itself serves not only the main source of total productivity, but also an engine of economic dynamics. Therefore, changes in the structure of employment associated with the flow of

workers from industry to low-productivity sectors, as well as the conversion of labor flow into a driving force of structural transformation, slow down the overall potential for increasing productivity and growth of the national economy.

The sources of increasing productivity in economic sectors include, firstly, capital accumulation, technological changes, and rational use of economic resources; second, the movement of workers from low to high-productivity activities. The influence of sources of both categories on the change in labor productivity is defined by the shift-share method. Calculations reveal a significant difference between them both in the impact strength and in impact direction (Figure 5).

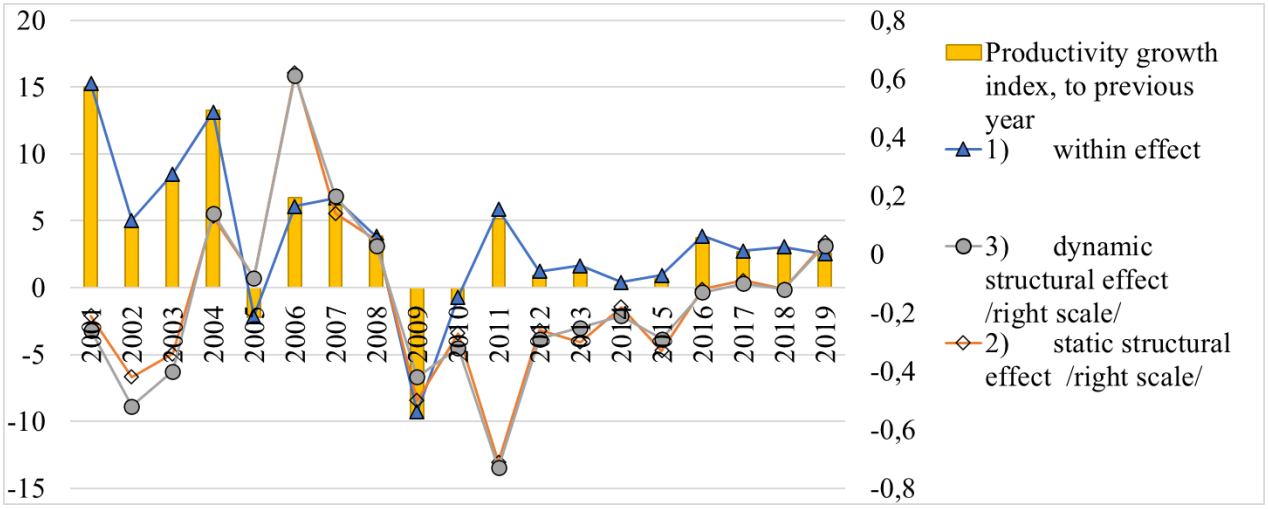

Figure 5. Structural components of labor productivity growth index in Ukraine' economy in 2000-2019

Source: calculated according to data of the State Statistics Service of Ukraine. http://www.ukrstat.gov.ua/

The influence of internal sources on the productivity dynamics (within effect), being the former's effectiveness based on investment, technological innovation, and careful use of resources, is dominant and mostly positive. The internal resources determine about 90% of productivity change in the economy. Thanks to them, according to calculations, the labor productivity index almost doubled during the observation period. However, the lack of capital accumulation by industrial enterprises, passivity in the introduction of new technologies, and irrational expenses made their impact, leading to negative productivity dynamics in 2005, and in 2009-2010 and slowed down its growth in subsequent periods. No wonder the unfavorable investment climate, low investment activity of business, and the investors' disappointment in the possibility to receive loans on acceptable terms are recognized as the main obstacles to accelerating economic growth in Ukraine (Shovkun, 2019b) (Zymovets et al., 2021).

The contribution of the static structural effect, as well as that of dynamic structural effect, to changes in the productivity dynamics is relatively small and mostly negative. Statistical assessments of both these effects confirm that shifts in employment proportions between sectors negatively affected productivity growth rates between 2000 and 2019. (Figure 5). Temporary positive effects took place during periods of accelerated productivity growth in all sectors, especially in the industrial sector (in 2004, 2006-2008), as well as against the background of a shift in the employment proportions in favor of real production (2019).

The structural factors are closely integrated into the process of economic growth. A multiple regression model was built (I) to test the influence of structural factors on economic dynamics. Selection of the model's factorial features was preceded by analysis of the correlation between the explanatory (exogenous) variables and testing for multicollinearity. Considering the existence of a linear relationship between the dynamics of growth in the service sector and that in the industrial sector, two exogenous variables were selected for the model.

$$GDP\_gr = 0{,}135 + 0{,}167\ Agr\_gdp\_gr + 0{,}713\ Ind\_gdp\_gr \quad \textbf{(I)}$$

Prob. t-Statistic (0,0358) (0,0009) (0,0000)

$R^2 = 0{,}95$; DW = 1,577; Prob (F-statistic) = 0,0000;

where GDP_gr - GDP physical volume index (in prices of previous year);

Agr_GDP_gr - index of physical volume of gross value added in the agricultural sector (in prices of previous year);

Ind_GDP_gr - index of physical volume of gross value added of the industrial sector (in prices of previous year).

The multiple coefficient of determination (0.95) demonstrates a significant tightness of the joint influence of independent variables on the dependent variable. The regression equation is quite reliable, which is confirmed by the statistical significance of the regression coefficients, F-statistics. Investigation of the model's random deviations (using the Durbin-Watson statistics, Breusch-Godfrey test, White, Glazer and Breusch-Pagan tests) indicates the absence of autocorrelation of residuals (1st and 2nd orders) and homoscedasticity of the variance of residuals, which confirms reliability of the regression's estimates.

The results of econometric simulation show that in 2003-2020, the growth of GDP physical volume was determined by the corresponding dynamics of the industrial and agricultural sectors. The equation's coefficients measure the quantitative influence of each factor on the dependent variable, and therefore it can be stated that GDP index increases by an average of 0.167 points due to the increase in GVA index of the agricultural sector by 1 point per year (other exogenous factors being unchanged), but by 0.713 points - due to increase in GVA index of the industrial sector (under similar conditions). Thus, the second factor has a greater effect on the result than the first one. Therefore, the parameters of regression simulation confirm the influence and significance of the structural factors for economic dynamics.

CONCLUSIONS

The study shows that Ukraine's economy has experienced significant structural shifts over the past two decades. The intensity of these shifts exceeded not only the global average, but also the level of a comparable group of Central European and Baltic countries. However, the change in the direction of structural transformations, whose turning point was the global financial crisis of 2008-2009, determined the fact those transformations did not yield a sufficient potential for sustainable economic growth. While at the initial stage (2000-2007) the rise in the tertiary sector's share in GDP was combined with the strengthening of the secondary sector, which together created proper conditions for a dynamic increase in productivity and provided high rates of economic growth, then at the final stage the configuration of forces changed. A decrease in the share of the secondary sector (especially the loss of part of the potential in the manufacturing, the latter's technological simplification and narrowed product assortment), together with the strengthening of the primary sector, and waves of economic crises and Russian aggression, led to a temporary drop in productivity, followed by a slowdown of its growth rates and a deceleration of economic recovery. This pattern of structural changes is burdened by the risks of deeper structural inconsistency of Ukraine's economy with the cardinal changes taking place in the world economy, generated by the progress of Industry 4.0 technologies and by production diversification.

The considerable productivity gap between economic activities is only deepening. The contrast is especially sharp within the tertiary sector between high-tech services and the rest of services, where the gap is more than 11 times. This although the differences between sectors' labor productivity remain, as well as the distances between them are reducing. Certainly, productivity gaps between individual economic activities and sectors reflect the degree of differences in their technological development, which depends on the pace of introduction of new production technologies, the rate of capital investment inflow, and the quality of labor force. On that basis, we note that technological development is proceeding more rapidly in the agricultural and service sectors than in the industrial

sector, which indicates a gradual slowdown of the already imperfect technological development of Ukraine's industry threatening with a subsequent loss of its competitiveness.

Under such conditions, it is quite predictable that technological backwardness of this country's industry causes a slowdown in economic growth. The study substantiates that GDP index rises by an average of 0.71 percentage points as the industrial sector's GVA index grows by 1 point per year (other exogenous factors being unchanged). Therefore, industrial development is an influential and significant prerequisite of economic growth, and no other sector has such a driving force.

The estimates made based of calculating the disaggregated components of labor productivity index revealed that the dominant positive role in productivity growth is played by internal sources based on capital investments, introduction of technological innovations, and prudent use of resources. Thanks to their action, labor productivity in Ukraine's economy almost doubled during 2000-2019. The other source - shifts in the employment structure - plays a modest and mostly negative role in the changes in labor productivity. Proportions of the distribution of employment are shifted towards low-productivity activities and sectors (more than 41% of the employed are concentrated in trade and agriculture, while only a minority are engaged in high-productivity services and the manufacturing). Changes in the employment structure associated with the loss of jobs and transfer of workers, primarily from industrial sector to low-productivity ones, are causing a decline of the overall potential of labor productivity and economic growth.

The results of the study show that when developing structural policy, the goal should be to attain high productivity by changing the balance of power in the economy towards the formation of centers of economic growth based on encouraging investment in innovative and technological modernization and diversification of production.

REFERENCES

1. Bekkers, E., Koopman, R. B., & Rêgo, C. L. (2021). Structural change in the Chinese economy and changing trade relations with the world. *China Economic Review*, *65*, 101573. https://doi.org/10.1016/j.chieco.2020.101573
2. Diao, X., McMillan, M., & Rodrik, D. (2017). *The recent growth boom in developing economies: A structural-change perspective*. 62.
3. *IDR2020* (Industrial Development Report 2020 ID/449). (2019). https://www.unido.org/resources-publications-flagship-publications-industrial-development-report-series/idr2020
4. Kindzerski Yuri. (2021). Ukrainian economy facing the challenges of deindustrialization. In *Concepts, strategies and mechanisms of economic systems management in the context of modern world challenges*. Zenodo. https://doi.org/10.5281/ZENODO.5024676
5. Kuznets, S. (1973). Modern Economic Growth: Findings and Reflections. *The American Economic Review*, *63*(3), 247–258.
6. Mijiyawa, A. G., & Conde, L. (2020). *Structural Change and Productivity Growth in Guinea* [Working Paper]. World Bank. https://doi.org/10.1596/1813-9450-9341
7. Ostaško, T. O. (2019). *Strukturni zminy u svitovij torhivli jak čynnyk rozvytku vnutrišn'oho rynku Ukraïny: Kolektyvna monohrafija* (Instytut Ekonomiky ta Prohnozuvannja, Ed.). DU 'Instytut ekonomiky ta prohnozuvannja NAN Ukrainy'.
8. Saccone, D., & Valli, V. (2009). Structural Change and Economic Development in China and India. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1486093
9. Shovkun, I. (2019a). Industrial development in decentralized conditions: Experience of leading industrial countries and conclusions for Ukraine. *Ekonomìka ì Prognozuvannâ*, *2018*(4), 38–64. https://doi.org/10.15407/eip2018.04.038
10. Shovkun, I. (2019b). Investment climate as a factor of industrial development in Ukraine. *Ekonomìka ì Prognozuvannâ*, *2019*(4), 70–103. https://doi.org/10.15407/eip2019.04.070

11. Shovkun, I. (2020). Dependence of Ukrainian economy on industrial import and prerequisites of forming effective industrial specialization. *Economy of Industry*, *3*(91), 5–28. https://doi.org/10.15407/econindustry2020.03.005
12. Zymovets, V., Sheludko, N., & Shyshkov, S. (2021). Macroeconomic and institutional barriers of "normalization" of an enterprise's financing models in Ukraine. *Economy of Industry*, *2*(94), 45–58. https://doi.org/10.15407/econindustry2021.02.045
13. Бобух, І. М., Кіндзерський, Ю. В., Фащевська, О. М., Снігова, О. Ю., Щегель, С. М., & Тищук Т.А. (2020). *Структурні зміни як основа інкл юзивного розвитку економіки України*. Київ : http://ief.org.ua/docs/mg/332.pdf
14. Єгоров, І. Ю., Бажал, Ю. М., Хаустов, В. К., & Черненко, С. М. (2020). *Формування «розумної спеціалізації» в економіці України: Колективна монографія*. Київ. http://ief.org.ua/docs/mg/331.pdf
15. Зимовець, В. В., Даниленко, А. І., Терещенко, О. О., Іванов, Ю. Б., Корнилюк, А. В., Єршова, Г. В., Кошик, О. М., Гаркавенко, В. І., Брус, С. І., & Федоренко, А. В. (2019). *Розвиток фінансів підприємств корпоративного сектора економіки україни* (p. 62). http://ekmair.ukma.edu.ua/bitstream/handle/123456789/17257/Rozvytok_finansiv_pidpryiemstv_korporatyvnoho_sektora_ekonomiky_Ukrainy.pdf?sequence=3
16. Кораблін, С. О. (2017). *Макроекономічна динаміка України: Пастка сировинних ринків - Сергій Кораблін - Тека авторів*. Київ. http://chtyvo.org.ua/authors/Korablin_Serhii/Makroekonomichna_dynamika_Ukrainy_pastka_syrovynnykh_rynkiv/
17. Сіденко, В. (2017). *Структурні трансформації у світовій економіці: Виклики для україни* (p. 186) [Аналітична доповідь]. https://razumkov.org.ua/uploads/article/2017_svit_ecovom_Annotation.pdf

Received 30 September 2021

Received 01 November 2021
Accepted 08 December 2021

INTERCULTURAL PROFILE OF MANAGERS IN THE REPUBLIC OF MOLDOVA IN THE CONTEXT OF THE TROMPENAARS AND HAMPDEN-TURNER THEORY OF CULTURAL DIMENSIONS

Angela PIRLOG,[1] university lecturer, researcher,
Academy of Economic Studies of Moldova

DOI: https://doi.org/10.36004/nier.es.2021.2-06
JEL Classification: M14, Z13
UDC: 005.732(478)

ABSTRACT

This paper is focuses on the intercultural side in the management of enterprises in the Republic of Moldova. It aims to identify and analyse the cultural characteristics of managers with business experience in enterprises in various branches of the Republic of Moldova economy and students enrolled in economic studies, potential future managers. The survey conducted in 2020 and 2021 was based on the culture model of Trompenaars and Hampden-Turner that includes seven dimensions: universalism versus particularism, individualism versus communitarianism, neutral versus affective, specific versus diffuse, achievement versus ascription, sequential versus synchronous time, inward direction versus outward direction. The main purpose of the study is to establish the ”national profile" of the Republic of Moldova, which was developed based on information collected from two segments of respondents: managers and students pursuing economic studies.

The results of the study showed that the "national profile" of the Republic of Moldova is characterized by particularism, individualism, neutrality with interconnected personal relationships, with the assignment of status in accordance with personal achievements, consistent temporal orientation and internal control of the environment. In turn, the knowledge of national characteristics can also determine the influence of intercultural management of Moldovan enterprises. Based on the identified cultural characteristics, the basic principles of management (behavioural and relational) were determined, contributing to the reduction of cultural differences both in Moldovan business at national and international level - for foreign enterprises in the Republic of Moldova. To increase the effectiveness of intercultural interaction, the study of the cultural environment from the point of view of the identified parameters will contribute to the selection of the most efficient management methods.

Keywords: *Cultural dimension, national culture, Republic of Moldova, manager, Trompenaars and Hampden-Turner, management, cultural profile.*

Prezenta lucrare vizează latura interculturală în managementul întreprinderilor din Republica Moldova. Ea are drept scop identificarea și analiza caracteristicilor culturale ale managerilor cu experiență în afaceri în cadrul întreprinderilor din diferite ramuri ale economiei Republicii Moldova și ale studenților înmatriculați, la studii economice, potențiali viitori manageri. Sondajul realizat în 2020 și 2021, s-a bazat pe modelul culturii a lui Trompenaars și Hampden-Turner care include șapte dimensiuni: universalism versus particularism, individualism versus comunitarism, neutru versus afectiv, specific versus difuz, realizare versus atribuire, timp secvențial versus timp sincron, direcție internă versus direcție externă. Scopul principal al studiului este de a stabili „profilul” național din Republica Moldova, care a fost elaborat în baza informațiilor colectate la două segmente de respondenți: manageri și studenți ce urmează studii economice.

Rezultatele studiului au arătat că „profilul național” al Republicii Moldova se caracterizează prin particularism, individualism, neutralitate cu relații personale interconectate, cu atribuirea

[1] ***©Angela Pirlog ORCID ID: https://orcid.org/0000-0003-1137-1555 e-mail: angela.pirlog@yahoo.com .***

statutului în conformitate cu realizările personale, orientare temporală consecventă și control intern al mediului. La rândul său, cunoașterea caracteristicilor naționale poate determina și influența managementul intercultural al întreprinderilor moldovenești. Pe baza caracteristicilor culturale identificate, au fost determinate principiile de bază ale managementului (comportamental și relațional), contribuind la reducerea diferențelor culturale atât în cadrul afacerilor moldovenești la nivel național, cât și internațional - pentru întreprinderile străine din Republica Moldova. Pentru a crește eficacitatea interacțiunii interculturale, studiul mediului cultural din punctul de vedere al parametrilor identificați va contribui la selectarea celor mai eficiente metode de management.

***Cuvinte cheie**: dimensiune culturală, cultură națională, Republica Moldova, manager, Trompenaars și Hampden-Turner, management, profil cultural.*

Данная работа фокусируется на межкультурной стороне управления предприятиями в Республике Молдова. Она направлена на выявление и анализ культурных характеристик менеджеров с опытом ведения бизнеса на предприятиях в различных отраслях экономики Республики Молдова и студентов экономических факультетов - потенциальных менеджеров. Опрос, проведенный в 2020 и 2021 годах, был основан на культурной модели Фонса Тромпенаарса и Ч. Хэмпден-Тернера, которая включает семь измерений: универсализм против партикуляризма, индивидуализм против коммунитаризма, нейтральный против аффективного, конкретный против диффузного, достижения против атрибуции, последовательное время против синхронное время, внутреннее направление по сравнению с внешним направлением. Основная цель исследования - установить «национальный профиль» в Республике Молдова, который был разработан на основе информации, полученной от двух сегментов респондентов: менеджеров и студентов, изучающих экономику.

Результаты исследования показали, что «национальный профиль» Республики Молдова характеризуют партикуляризм, индивидуализм, нейтральность с взаимосвязанными личными отношениями, с присвоением статуса в соответствии с личными достижениями, последовательной временной ориентацией и внутреннем контролем окружающей среды. В свою очередь, знание национальных особенностей может определять и влиять на межкультурный менеджмент молдавских предприятий. На основе выявленных культурных характеристиках были определены базовые принципы управления (поведенческие и реляционные), способствующие сокращению культурных различий как внутри молдавского бизнеса на национальном уровне, так и международном - для иностранных предприятий в Республике Молдова. Для повышения эффективности межкультурного взаимодействия, изучение культурной среды с точки зрения выявленных параметров, будет способствовать выбору наиболее эффективных методов управления.

***Ключевые слова:** Культурное измерение, национальная культура, Республика Молдова, менеджер, Тромпенаарс и Хэмпден-Тернер, менеджмент, культурный профиль.*

INTRODUCTION

Nowadays we are all witnesses of a high level of international interaction of people, societies, and countries. The cultural metamorphoses in the Republic of Moldova are very intense, without historical precedent, both due to the general trend of globalization (foreign trade, investments, etc.), the transition to another economic-political system, and mass emigration. People assimilate new knowledge, new ways of approaching problems, new values, attitudes and skills. The modern world is much more complex than we may think. Modern technologies, especially in this period of Covid-19 pandemic, offer companies possibilities to interact virtually across borders and most businesses, either multinational, middle-sized or small, connect with their clients, partners and suppliers coming from abroad using off-line or on-line approaches. (emails, messages, projects, conferences, meetings etc). Both approaches need to use intercultural management as tool of successful interaction (Huang, 2020).

The topics describing the influence of national culture on business and management are increasingly analysed in international scientific papers by researchers all over the world (Jacob, 2005; Taras et al., 2009). They help develop our understanding of the interaction between culture and management through different paradigms at different levels: international, national, organizational, interpersonal and individual (Romani et al., 2018).

In the Republic of Moldova, the importance of studying the peculiarities of national culture is still poorly realized at the societal level, on one hand, and at the management level of enterprises, on the other hand. There is a limited number of researches identifying the specifics of the national culture carried out within the Moldovan economic entities. The „cultural profile" in the Republic of Moldova containing a set of specific characteristics called "cultural dimensions" that represent value constructs used to describe and differentiate cultures (Management Association, 2014) was established. Awareness to the dimensions of the national culture in our country will let us identify intercultural specific characteristics in the management of enterprises in the Republic of Moldova, thus, being possible to determine the methods and techniques to be imported in order to increase the managerial efficiency of domestic economic entities. In addition, it will help to educate an individual with a „global mindset"[1] which is the only way for a business to succeed across cultures**.**

In order to assess the national culture similarities and differences, it is certainly necessary to use specific models to examine the cultural dimensions of values. The models proposed by various specialists in the field of culture and management are not all encompassing and are not mutually exclusive (F. Trompenaars & Hampden-Turner, 2011). Each approach presents different perspectives and can be useful separately or in combination with others.

The goal of the present study is to analyse the dimensions of the two research segments' cultural and intercultural organizational framework: managers and students that have chosen their future career in management or business.

In this regard, we set the following specific objectives:

- ✓To analyse the way in which individuals from the two segments, managers and students, perceive the national-cultural reality of the Republic of Moldova.
- ✓To make a comparative analysis of the two investigated groups cultural dimensions.
- ✓To establish general national cultural profile in the Republic of Moldova and analyse its influence on intercultural management of Moldovan enterprises.
- ✓To offer specific recommendation to improve intercultural management in accordance with each cultural dimension.

Based on the literature, observations of managers and students behaviour in the context of the problem presented, the following hypotheses were advanced and verified:

1. There is a differentiation in terms of nature and level of importance of values and behaviours according to the proposed model between active managers and students, representatives of the population not influenced by economic and/or economic/managerial education, belonging to generation Z, those born after 1995, perhaps the most argued generation, representing the managers of the near future of enterprises in the Republic of Moldova. The fact that they are "digitally" born, have had access to communication and information technologies from a young age, have had access to all the knowledge of the world at a click's distance, almost anytime and anywhere make them very different from previous generations (David, 2015).

2. Knowledge of the Moldovan "cultural profile" would be useful at the national level, as well as internationally, to offer managerial advice to enterprises to become more competitive in domestic and international markets.

[1] Why Global Mindset® is Essential on https://thunderbird.asu.edu/knowledge-network/global-mindset-essential

LITERATURE REVIEW

Intercultural concepts and contexts have inspired researchers, especially those who analyse culture and its impact on enterprise management, to examine the effect of a society's norms and values on the individual within a society and enterprise. Adler argues that *"*organization culture does not erase or diminish national culture. Employees and managers bring their ethnicity to the workplace*"* (Adler & Gunderson, 2008).

The model that we have applied in our research is that of Fons Trompenaars[1], Dutch researcher and practitioner in the field of culture and business issues, and Charles Hampden-Turner[2], British researcher and author of numerous books on culture, intercultural competence, and business dilemmas. They based their model with seven key dimensions, having foundation in the works of anthropologists Kluckholn and Strodtbeckin stating that people from different cultures are accustomed to have specific hierarchies of values, called "**a continuum",** that depend on the perceived importance of each value. Cultures are different due to specific 'value orientations', i.e. conceptions of what is considered desirable or appropriate and vice versa. According to Kluckhohn and Strodtbeck (Kluckhohn & Strodtbeck 1961:11), there are possible criteria for describing value orientation: orientation towards the human being; the human-nature orientation; orientation in time (past, present, future); orientation in activity; and relational orientation regarding the concept of space (private/public).

Parsons & Shils proposed a model of five pairs of cultural dimensions that determine people's preferences and choices: affectivity - affective neutrality; orientation towards "I" - orientation towards the community; universalism - particularism; attribution - realization; and specificity - diffusion (Parsons & Shils 1951:80-85).

The measure of inward-outward control that Trompenaars and Hampden –Turner used is that of Rotter's locus of control theory (Rotter, 1966) and the measure of time perspective is derived from Cottle's reserch (Cottle, 1968).

Thus, Trompenaars and Hampden-Turner, based on the above-mentioned concepts, came to define culture as a "matrix" of assumptions, categories, concepts and values that describe people's attempts to solve various problems that arise in everyday life but also in business. They focused on the idea that people solve problems in three ways: "those that arise from our relationships with other people; those that come from the time perception; and those related to the environment" (F. Trompenaars & Hampden-Turner, 2011). Their model goes beyond the framework of anthropology and sociology and shows how these dimensions also affect the process of management in different cultures. The cross-cultural model contains seven polar dimensions of culture.

Universalism versus Particularism are parameters of culture that characterize the importance of formal relations in society.

Individualism versus Communitarianism are parameters of culture that characterize the behaviour of individuals and groups in a society.

Neutral versus Affective are cultural parameters that characterize the degree of emotionality and its exteriorization in social and business relationships.

Specific versus Diffuse are the parameters of culture that characterize the degree of differentiation between the personal and public space of a person.

Achievement versus Ascription are parameters of culture that characterize the ways of acquiring high status in society.

Sequential time versus Synchronous time are parameters of culture that characterize people's perception of time.

Outward direction versus Inward direction are parameters of culture that characterize people's attitude to their environment.

---

[1] Http://www2.thtconsulting.com/about/people/fons-trompenaars/

[2] http://www2.thtconsulting.com/about/people/charles-hampden-turner/

For the first time, the mentioned model was used in cross-cultural study in the Republic of Moldova for establishing the dimensions and their variations in 2017 (Pîrlog, 2017). Later, the model was used to analyse the impact of cultural dimensions on intercultural competence development within Universities in the Republic of Moldova and Romania (Covas & Pirlog, 2019).

Data sources and used methods

As mentioned before, the main purpose of our research was to identify and analyse the cultural features of managers with business experience in various branches of the economy and students who are potential future managers to establish the „cultural profile" in the Republic of Moldova.

The sampling and selection of respondents for the research were in line with the proposed goal and objectives. The questionnaire was addressed to two main categories of respondents:

- ✓ Various level managers of small, medium and large enterprises from the Republic of Moldova in different fields of activity.
- ✓ First year students in Economics (aged between 17 and 24 years old) - potential managers.

It is important to mention that we chose first year students of ASEM (Academy of Economic Studies of Moldova) to participate to our survey, who were supposed to investigate the "pure/authentic" cultural dimensions, not affected by studies in business or management.

To realize the objectives of the present study, a questionnaire, consisting of two sets of questions, was used. The first one contains questions aiming to analyse the demographic profile of students, managers and the enterprises they work. These characteristics that we considered important to be analysed are: age, level of education, gender, location, level in the managerial hierarchy, types of enterprises by nature of capital and spheres of activity.

The second set contains questions described by Trompenaars and Hampden-Turner in the book "Riding the Waves of Culture", chapter entitled „test yourself". They were translated into Romanian according to the international translation protocol in research, suggested by Brislin (Brislin, 1970), adapted for managers and students in economics from the Republic of Moldova. This part of the questionnaire consists of seven dilemma situations (for seven cultural dimensions) with four answer options each. Both groups of participants were asked to offer an opinion about their vision and possible behaviour in a certain dilemma situation, by choosing one of the four given options.

The response options were developed to measure the cultural dimensions, being designed in a way that there are two extreme poles and two intermediate points describing a dimension.

To make the quality of the study as high as possible, we started by sending the questionnaire by e-mail to 220 managers, as well as 150 economics students. The advantage of the on-line questionnaire is the low cost, the distribution can be in a wider geographical area, and the respondents can complete the questionnaire when they want and can distribute it to others who want to participate in the survey.

The disadvantage of an on-line survey is the low response rate. In our case, from 370 questionnaires sent, 201 were answered. At the same time, the researcher cannot control the conditions in which the questionnaire is completed, cannot observe the respondents' reactions to the questions (Neuman, 2000). In our case, in the situation of the COVID pandemic, this was the only way to reach the respondents.

We consider it useful to present qualitative data in tables and diagrams to make the information clear to the reader. Table 1. displays the demographic profile of the respondents of the two segments of respondents.

Table 1

Demographic profile of respondents of the two respondent segments.

Individual Characteristics		Managers (%)	Economist students (%)
Gender	Female Male	62% 38%	65 % 35%
Age (years)	16-24 25-35 36-50 51-65	28% 23% 35% 14%	100%
Location of respondents	Chisinau Other regions	70% 30%	33% 67%
Level of education	College High school Bachelor degree Master's degree Doctorate Other	3% 7% 35% 33% 8%	29% 68%
The level of management they represent	High-level (top) Middle-level Lower level	40% 45% 15%	

Source: *Developed by author*

Based on the answers from the both groups of respondents, it should be noted that more managers are aged between 16-35 (51%), age 36-50 (35%), 14% - age 51-65. The students, being in the first year at university, between 16 - 22 years old, which constitutes 95% of the given sample. Also, the share of females is much higher than that of males in both segments, 62% - females and 38% - males for managers and 65% - females and 35% - males for students. Regarding the level of accomplished studies, most of the respondent-managers have undergraduate level-35% and master's degree-33%. 68% of students come with high school studies and 29% - with college studies. The location of the respondents was as follows: managers from Chisinau constitute 70%, and those from other localities - 30%, students from Chisinau have a share of 34%, the other 64% are people from other regions of the country. The middle-level managers have constituted the major segment in the study - 45%, followed by the high- level managers with 40%. The lower-level managers segment makes up 15%.

The table below evaluates the profile of the studied enterprises.

Table 2

Profiles of the investigated enterprises

Characteristics of the enterprise		No. (%)
Enterprise (by size)	Big Medium-sized Small Micro	15% 18% 40% 27%
Enterprise (by type of capital)	Private Public Mixed With foreign capital	70% 17% 5% 8%
Enterprise (by field of activity)	Trade Transport and storage Education, culture Financial-banking and insurance services Health construction Light industry Food industry Other (cumulative)	28% 18% 10% 8% 7% 5% 5% 3% 6%

Source: Developed by the author

The results of research and discussions

The attitude of the two segments of respondents in which the study was conducted reflect their perception of the general cultural dimensions of the society (in case of students) and enterprises (in case of managers) where they belong. The cultural "profile" in the Republic of Moldova was built up based on dimensions described below. In accordance with the obtained results, a set of general rules, for each dimension, to improve intercultural behaviour and relations (Gordon 2021) was provided.

To determine whether the national culture of the Republic of Moldova is **universalist or particularistic**, we asked the respondents to choose the closest option to a dilemma situation for them. The question is whether the respondent believes to follow the rules strictly or to be flexible and to act according to a specific situation i.e. by deviating from rules. Universalism presupposes the construction of social and business relations within a society with uniform/universal rules, procedures and standards that are applicable always and in any circumstance. Particularism represents relationships based on flexibility of personal connections and actions taken according to specific situations (A. Trompenaars & Hampden-Turner, 2020).

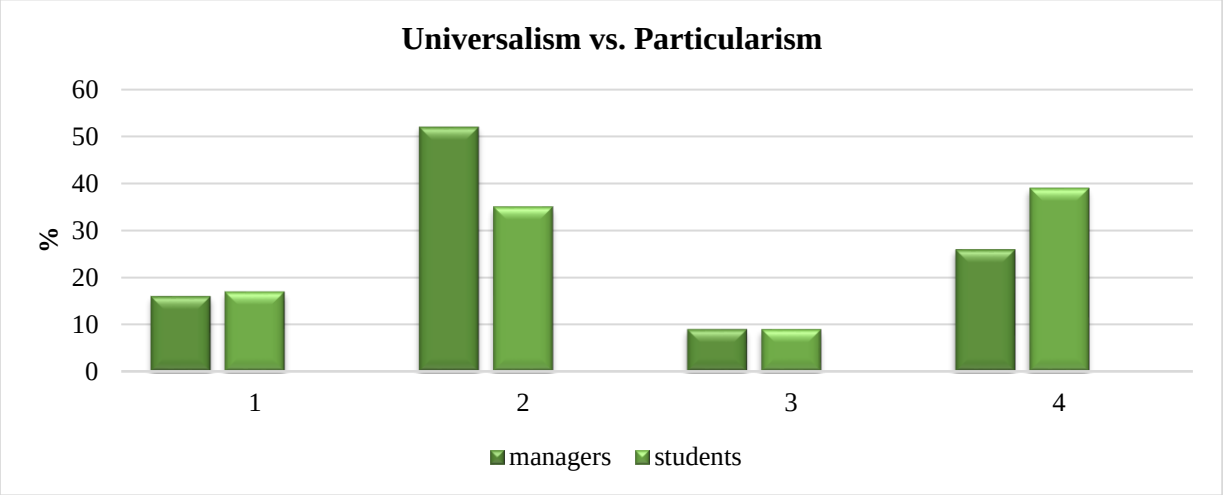

Figure 1. Universalism versus Particularism Dimension
Source: Developed based on own study

Figure 1 represents the Universalism vs. Particularism Dimension, in which the results look as follows:

1. Completely universalist response.
2. Completely particularistic response.
3. Particularistic response doubled by universalist orientation.
4. Universalist response but with the recognition of social relations.

The obtained results demonstrate that the Republic of Moldova is a predominantly particularistic society. A particularistic managerial culture is based on decisions made according to specific situations or circumstances. This type of culture is found in less developed societies, where people tend to place a lot of value on emotional issues and sometimes tend to make decisions based on how the situation evolves, as it is believed that each situation may take a different perspective and require different solutions. The students segment shows a moderate inclination to universalist values with recognition of particularistic social relations is predominant that means that there is a tendency to trust rules and standards, and to act accordingly.

Thus, the most appropriate managerial strategies should be based on:

- ✓ granting autonomy to employees.
- ✓ respecting the other people needs of in the decision-making process;
- ✓ developing flexibility in decision-making;

✓ allocating time to build relationships and interact with people in a way their needs are better understood;

✓ highlighting the essential rules and policies to be followed.

To determine the level of **individualism versus communitarism** among the respondents from the Republic of Moldova, we used a dilemma situation with four alternative answers about the role of competition and cooperation for the success of an enterprise. In an individualistic culture, a person relies on himself/herself in the organization of their life and business activity, on their unique knowledge, abilities and experience. In a communitarist/collectivist culture, a person feels like a member of a team/group and manages their personal and business relationships according to group standards (A. Trompenaars & Hampden-Turner, 2020).

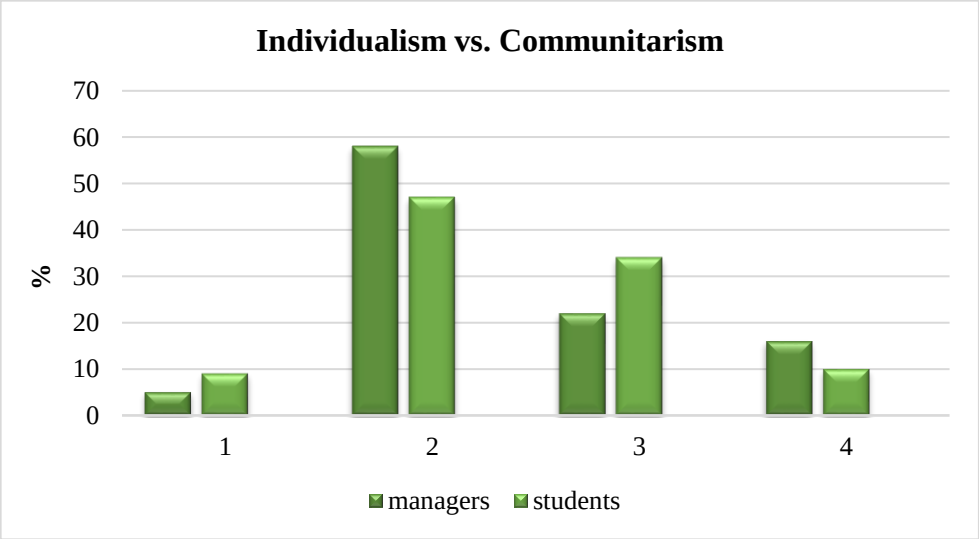

Figure 2. Individualism versus Communitarism Dimension
Source: Developed based on own study

Figure 2 shows the variables for the Individualism vs. Communitarism Dimension, and represent the following:

1. Radical individualistic response;
2. Answer that affirms competitive individualism, but in combination with collective cooperation;
3. Answer that demonstrates the pre-eminence of the group, but also allows the existence of competitive individuals;
4. Radical collectivist response.

The results for this dimension, presented in Figure 2, show a moderate attitude towards both extremes in both segments: managers and students. Being, for a long time, a component part of the USSR, people developed a collective thinking, as demonstrated by the representatives of older generations in our survey. After gaining independence, since 1989, the Republic of Moldova has adopted several Western attitudes due to the process of openness and globalization. The answer given by them indicates competitive individualism, where to get results collective cooperation is allowed. This means that culture praises and rewards individual performance in collaboration with others, people's needs come before those of organizations, people have moderate initiative and autonomy to make their own decisions, people are moderately allowed to be creative and learn from their mistakes.

Considering the survey results, the most appropriate managerial strategies should be based on:

✓ Recognizing and rewarding individual performance within the group but also involving others in decision making;

✓ avoiding favouritism;

✓ stimulating the initiative and autonomy of employees within and in favour of the group/community;

✓ connecting the needs of people with those of the group or enterprise;

✓ promoting collective creativity through the contribution of each member of the group.

The **Neutral versus Affective dimension** reflects the degree and range of emotion expression. In neutral cultures, it is customary not to show the feelings. Emotional/affective cultures are characterized by openness, excessive talkativeness, and spontaneous expression of feelings (F. Trompenaars & Hampden-Turner, 2011).

To determine whether the national culture in the Republic of Moldova is affective or neutral, we asked respondents how they would react if they felt insulted during a meeting with a business partner.

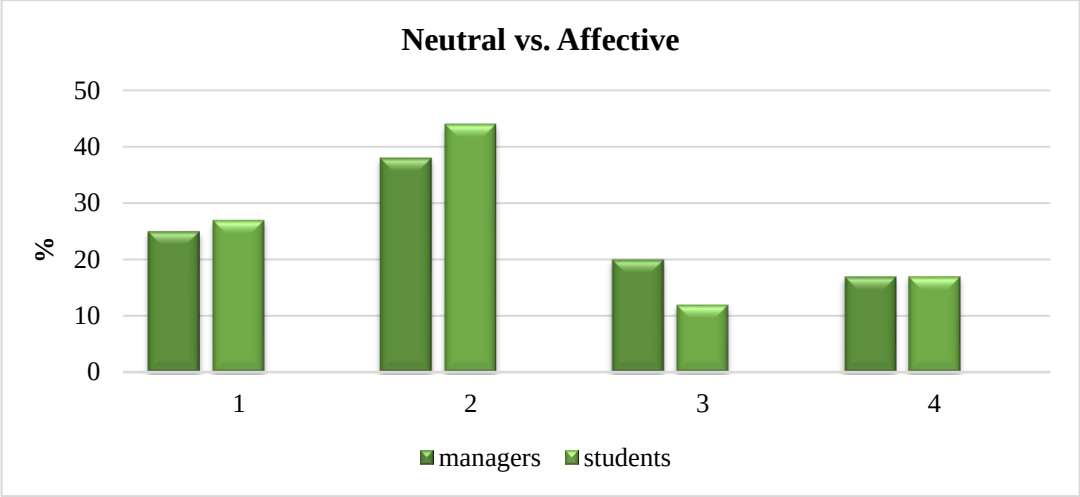

Figure 3. Neutral versus Affective Dimension
Source: Developed based on own study

Figure 3 presents the Neutral versus Affective Dimension in the Republic of Moldova, in which the results look as follows:

1. Radical response for neutral orientation;
2. Neutral orientation response, but recognizes the importance of emotions for good relationships;
3. Affective orientation response, which involves controlling interactions;
4. Radical response to emotional orientation.

The results in the figure 3 indicate that the respondents who chose option 1 or 2 proving that the society in the Republic of Moldova is a neutral one, in which emotions are not openly expressed, but anyway, emotions are important for establishing relationships. In neutral cultures, people believe that they should always control their emotions; also, their actions are influenced by reason rather than emotions. In our country, people are expected to rigorously manage their feelings; they do not allow them to interfere with professional life.

The most appropriate managerial strategies in the case of this dimension should be based on:

✓ effective management of emotions;

✓ using body language carefully in the sense of transmitting negativity;

✓ non-deviating from the object or core meaning of meetings and other interactions;

✓ being attentive to people's reactions because they are reluctant to show their genuine emotions.

The **Diffuse versus Specific dimension** indicates the degree of involvement and refers to the interconnection of the private and professional spheres. Specific means a rigid separation of private and business life. The private sphere of a person is closed to other people, except for the closest

friends and colleagues. Diffuseness is a cultural characteristic in which the overlap of public and private spaces of a person is considered a norm.(A. Trompenaars & Hampden-Turner, 2020)

To determine whether a culture is specific or diffuse oriented, we asked respondents to choose the closest, in their opinion, among four alternatives, answer concerning relationship between the profitability of the enterprise and its stakeholders**.**

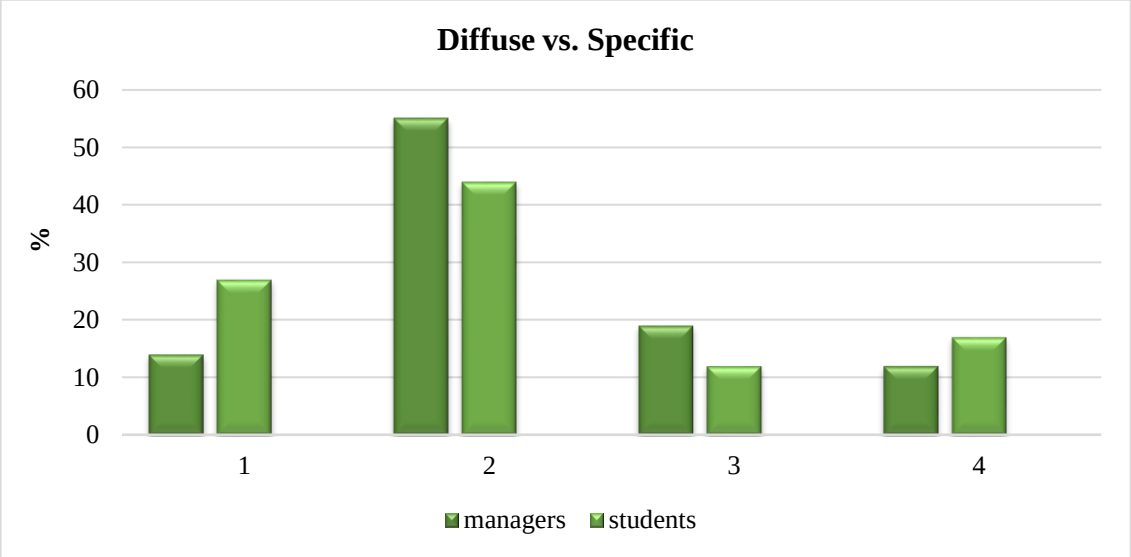

Figure 4. Diffuse versus Specific Dimension
Source: Developed based on own study

Figure 4 shows the variables for the **Diffuse vs. Specific dimension** which represent the following:

1. Response for diffuse orientation;
2. Compromise response for both, having a diffuse starting point;
3. Compromise response for both, with specific starting point;
4. Response for specific orientation.

Management activity involves establishing relationships with other colleagues, employees, superiors. Results in figure 4 obtained as part of our study shows that professional relationships and hierarchies are transferred to "private lands" in the Republic of Moldova, i.e. a manager is a manager, no matter where an employee meets him, which explains the diffuse-oriented approach. Also, the study indicates the prevalence of the diffusely oriented approach more clear among students than managers. This situation is influenced by the young age of respondents especially when they are not yet employed, who have respect for those above them in hierarchy.

Thus, the most appropriate managerial strategies should be based on the following:

- ✓ building good personal relationships with people before moving on to business issues;
- ✓ in-depth information about the people you will work with and the companies you will do business with;
- ✓ discussing business during social interactions and having personal discussions at work;
- ✓ avoiding rejection of social involvement.

Ascribed versus Achieved status is a dimension developed in the studies of F. Trompenaars and Ch. Hampden-Turner that analyses the position and status that a person has in a society or a company and the way they have achieved it. The culture of achievement is characterized by the fact that the status of a society member is determined by the success of them fulfilling their tasks and functions as well as the results obtained. In a culture of ascription, a person's age, origins and work experience determine their status and authority (A. Trompenaars & Hampden-Turner, 2020).

To determine whether the national culture in the Republic of Moldova indicates status by ascription or achievement, we asked respondents to choose one of the four declared alternatives that they considered appropriate for the situation about how a person obtains their status.

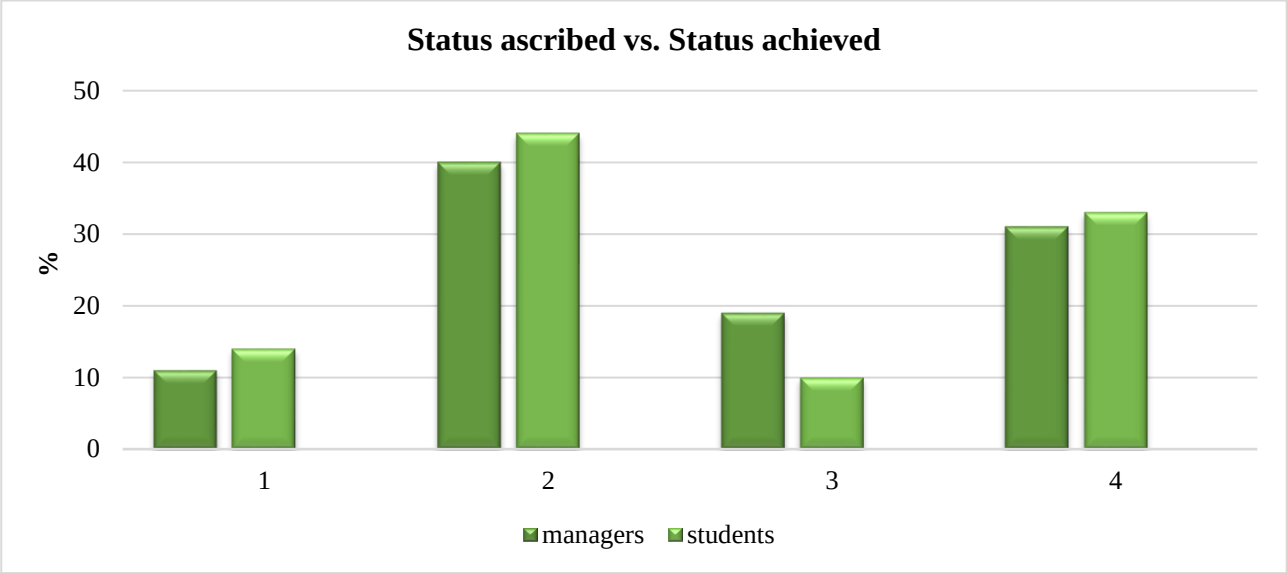

Figure 5. Ascribed status vs. Achieved status dimension
Source: Developed based on own study

Figure 5 shows the variables for the ascribed vs. achieved status dimension in the Republic of Moldova which represent the following:

1. Radical response showing the ascribed status;
2. Response for the belief that the ascribed status provides social and managerial benefits;
3. Response for the belief that the achieved status will lead to social an also, to managerial growth;
4. Radical response for the achieved status.

In our research, the opinion that a person's status should depend on their achievements and not on age or origin obtained 31-33% of support from both groups of respondents. The opinion that approves the assigned status that offers social benefit obtained the highest support 42% in the group of managers and, respectively, 44% in students (Figure 5).

In the case of this dimension, the most appropriate managerial strategies should be based on:

- ✓ rewarding and recognition of good performance in an appropriate manner;
- ✓ using titles only when it is relevant;
- ✓ the importance of a positive role model.

Another dimension studied by Trompenaars and Hampden-Turner is **Sequential versus Synchronous Time,** that identifies how people understand and manage the time.

In cultures with sequential perception of time, people believe that time passes from past to future, not having inter-time connection, each moment of time is unique, time is a valuable resource that must be used in the most effective way. Accordingly, in such cultures, people tend to do one thing in a specific period of time, accurately respect the deadlines, be punctual for business meetings and strictly follow the developed plan. People in cultures with synchronous orientation of time consider time cyclical, they believe that it is impossible to catch the time, so they need to be more relaxed and not worry if they are late. Therefore, in synchronous cultures, people work on several projects at the same time and are flexible about plans and obligations (F. Trompenaars & Hampden-Turner, 2011).

In our survey, we asked respondents to choose an option about the best ways to improve the use of time in the process of products delivery on the market, when they are needed.

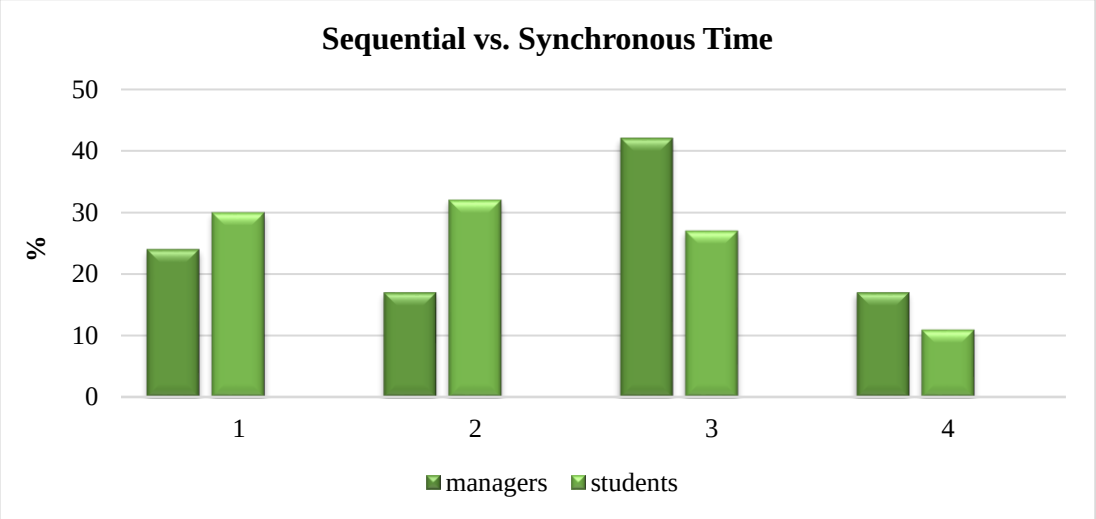

Figure 6. Sequential Time vs. Synchronous Time

Source: Developed based on own study

Figure 6 shows the variables for the dimension of time perception in the Republic of Moldova which represent the following:

1. Radical response for the sequential orientation of time;
2. Response for sequential option, but connected to synchronously managed processes;
3. Synchronous orientation response, but connected to high-speed processes managed sequentially;
4. Radical response to synchronous orientation.

There are differences between the two groups of respondents, which refer to the way of perceiving and managing time. Students demonstrate a sequential attitude regarding time, i.e. punctuality, compliance with programs, planning are not its basic ingredients. There is not a high level of synchronous orientation among managers, who demonstrate a perception of time at a mean level of both directions. (Figure 6).(F. Trompenaars & Hampden-Turner, 2011).

Analysing this dimension, the most appropriate managerial strategies should be based on:

- ✓ offering flexibility in the sense of personal as well as group approach to work;
- ✓ providing employee autonomy in the work schedule;
- ✓ giving people flexibility and tolerance to reach events later;
- ✓ explanation of any ambiguity, deadlines could be flexible, but should be met.

Outward versus inward indicates people's orientation concerning their environment. People in an inward oriented culture believe that the environment presents no threat, so they focus on managing internal resources, solving internal problems, and internal control. In a culture of outward orientation, people believe that they must work together with their environment to achieve goals and live in harmony with them. In these cultures, flexible and good relationships with partners are more important than focusing on personal achievements.

To show the general trend in the Republic of Moldova concerning this dimension, respondents were asked to express their attitude whether the strategy should be designed at the top of the enterprise and transmitted down, being implemented locally, or it should be initiated and implemented at the base of the enterprise where the interaction with customers, could be more effective.

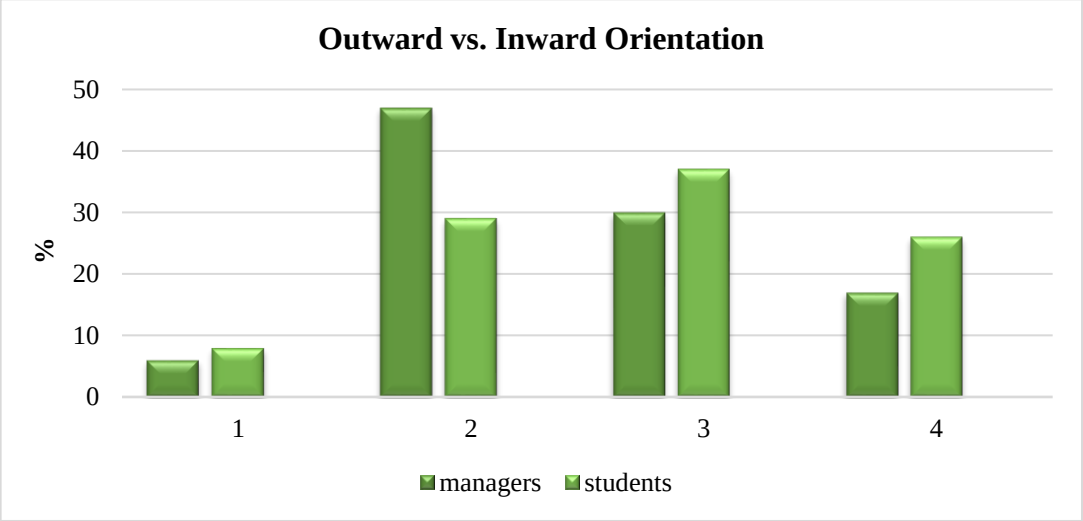

Figure 7. Outward versus inward orientation dimension
Source: Developed based on own study

Figure 7 shows the variables for the dimension outward versus inward orientation in the Republic of Moldova which represent the following:

1. Radical response for outward orientation;
2. Outward response with inward-facing connections;
3. Radical response to inward orientation;
4. Option for inward orientation but with connections to outward oriented strategies.

Students and managers in the Republic of Moldova mainly emphasize self-confidence and the dominant attitude towards the environment that is shown in Figure 7. The opinion that all achievements and merits should be attributed to their own actions and should depend only on the work and actions of individuals is 37% for students and 30% for managers. The highest percentage of support for the opinion on the dependence of actions and the decision of outward orientation factors with internal implication was found in the group of managers- 47%, but also for students-28%. The characteristics of outward oriented groups include a flexible attitude, willingness to compromise and living in harmony with nature, i.e. acceptance of the environment.

Thus, the most appropriate managerial strategies recommended to implement according to this cultural dimension should be based on:

- ✓ stimulating individuals to self-develop the skills and abilities and to self-control the learning;
- ✓ setting clear goals with which employees' agreement;
- ✓ developing openness to different opinions and constructive conflict settlement.

CONCLUSIONS

Despite the importance of cross-cultural studies, Moldovan national and business cultures are still unknown neither for local managers nor for foreign businesses, investors and entrepreneurs: no deep research has been done in this field and there are very few resources to provide coherent information about the subject. We tried to complete this gap with the present study. Due to data obtained in the survey we could „design" the national profile, according Trompenaars and Hampden-Turner model in the Republic of Moldova and to distinguish some relevant characteristics.

Moldovan society is a particularistic one, in which people believe that the circumstance and relationship can establish the rules that they live by. The focus in Moldovan society is more on relationships than on rules.

Moldovan society is moving to competitive individualism where collective cooperation is also allowed. People of younger generations believe in personal freedom and achievements. They believe in their own decisions, and about the obligation to take care of themselves. Peoples' individual needs come before those of organizations, they are allowed to be creative and learn from their mistakes.

According to Trompenaars and Hamden-Turner model, people in Moldovan society have a neutral orientation. People make effort to control their emotions and reason influences their actions more than their feelings. Moldovans often try to hide their emotions, even, when supervisors hurt them.

In the Republic of Moldova, there is a diffuse starting point of perception of the public and private space. There is an overlap between people's work and personal life. They believe that good relationships are vital to achieve business goals and in their social life, whether they are at work or outside it. People can spend time with colleagues and clients in informal conditions.

Regarding the attribution of the status in the Republic of Moldova, on one hand, we have the situation when the assigned status offers social benefits. People believe individual should be valued for whom they are. Power, title and position are more important for the older group of our respondents (managers), and these characteristics define their behaviour. On the other hand, we see the tendency for achieved status that prevails in younger respondents' answers, proving that they tend to recognize value and reward good performance.

In the Republic of Moldova, managers have a balance between the synchronous and the sequential perception of time: they see the past, present, and future as interconnected periods. Plans and commitments could be flexible and changeable. Students are sequential: they prefer events to happen in order. They value planning, respect punctuality and following schedules. "Time is money" is their motto. These controversial data lead us to the idea that Moldovans emphasize punctuality, but more often, they are not punctual.

There is an inward orientation trend in both groups of respondents, more among students, because they have a great ability to control their environment, especially in the technological sense, due to the development of information technologies. Managers in the Republic of Moldova have a tendency (40%) of outward orientation with internal-facing connections that means that people believe that nature, or their environment controls them, that means, they must work in tandem with the environment to achieve goals. In conditions of work or in personal relationships, they concentrate their attention and actions on others, and they try to avoid conflict as possible. People, with this time orientation, often need reassurance or approval upon doing a good job.

Description of these cultural dimensions let us offer some general directions to be taken into consideration by any individual or business interacting with representatives from the Republic of Moldova to have successful relationship on any level.

We have to mention that cultural dimensions established and analysed in the research do not take into account people's personal experiences or differences between sub-cultures within our country. This is especially relevant in today's global environment, where people can be influenced by many different cultures. We consider, that the examination of the organizational cultural environment of the enterprise in the context of the examined, in this paper, dimensions will allow them to select the most appropriate management methods.

REFERENCES

1. Adler, N. J., & Gunderson, A. (2008). *International dimensions of organizational behavior* (5th ed). Thomson/South-Western.
2. Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301
3. Cottle, T. J. (1968). The location of experience: A manifest time orientation. *Acta Psychologica*, *28*, 129–149. https://doi.org/10.1016/0001-6918(68)90009-7

4. Covas, L., & Pirlog, A. (2019). The Importance Of National Culture Dimensions On Intercultural Competence Development Of Future Managers. *CrossCultural Management Journal*, *2*, 111–119.
5. David, D. (2015). *Psihologia poporului român: Profilul psihologic al românilor : într-o monografie cognitiv-experimentala*.
6. Huang, J. (2020). Intercultural Management as a Powerful Business Tool. În J. Huang, *Sino-German Intercultural Management* (pp. 9–26). Springer International Publishing. https://doi.org/10.1007/978-3-030-38763-1_2
7. Jacob, N. (2005). Cross-cultural investigations: Emerging concepts. *Journal of Organizational Change Management*, *18*(5), 514–528. https://doi.org/10.1108/09534810510614986
8. Management Association, I. R. (Ed.). (2014). *Cross-Cultural Interaction: Concepts, Methodologies, Tools, and Applications*. IGI Global. https://doi.org/10.4018/978-1-4666-4979-8
9. Neuman, W. L. (2000). *Social research methods: Qualitative and quantitative approaches* (4th ed). Allyn and Bacon.
10. Pîrlog, A. (2017). *Analysis of the Dimensions of National Culture in the Republic of Moldova According to Fons' Trompenaars and Hampden-Turner's Model*. *Vol.1*, 161–165. https://ibn.idsi.md/vizualizare_articol/58284
11. Romani, L., Barmeyer, C., Primecz, H., & Pilhofer, K. (2018). Cross-Cultural Management Studies: State of the Field in the Four Research Paradigms*. *International Studies of Management & Organization*, *48*(3), 247–263. https://doi.org/10.1080/00208825.2018.1480918
12. Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1–28. https://doi.org/10.1037/h0092976
13. Taras, V., Rowney, J., & Steel, P. (2009). Half a century of measuring culture: Review of approaches, challenges, and limitations based on the analysis of 121 instruments for quantifying culture. *Journal of International Management*, *15*(4), 357–373. https://doi.org/10.1016/j.intman.2008.08.005
14. Trompenaars, A., & Hampden-Turner, C. (2020). *Riding the waves of culture: Understanding diversity in global business.*
15. Trompenaars, F., & Hampden-Turner, C. (2011). *Riding the waves of culture: Understanding cultural diversity in business* (2. ed., repr. with corrections). Brealey.

Received 14 September 2021
Accepted 11 November 2021

TEMPORAL TRENDS AND PATTERNS IN COVID-19 MORTALITY IN THE REPUBLIC OF MOLDOVA

Olga PENINA[1], doctor in medicine, Associate Professor,
Nicolae Testemitanu State University of Medicine and Pharmacy

DOI: https://doi.org/10.36004/nier.es.2021.2-07
JEL Classification: I100
UDC: 314.14(478)

ABSTRACT

The Republic of Moldova Ministry of Health releases individual death records of COVID-19 patients on a daily basis since March 18, 2020. It is important to understand the quality of this data and to compare them to medical death certificate data available for 2020 where COVID-19 infection was indicated as an underlying cause of death. Aim: To analyse the temporal trends and age and sex pattern of mortality from COVID-19 infection and to assess the impact of the pandemic on the overall mortality in Moldova. Materials and methods: individual death records published by the Ministry of Health between March 18, 2020 and October, 10 2021 and medical death certificates for 2017-2020. Demographic methods of mortality analysis, descriptive and inferential statistics were used. Results: In Moldova, mortality from COVID-19 infection is limited to laboratory-confirmed cases, which does not meet the WHO recommended definition. The weekly dynamics of COVID-19-related deaths published by the Ministry of Health are mainly consistent with the death certificate data for 2020. Three waves of mortality were identified with their peaks in the middle of December 2020, March 2021 and October 2021. Excess mortality among the elderly in late 2020 (wave 1) is attributed in part to cardiovascular disease. The male-to-female ratio for mortality from COVID-19 infection is higher in older age and much less so in middle age. The COVID-19 pandemic has had quite a sizable effect on mortality trends and cause-of-death patterns in 2020.

***Keywords**: mortality, COVID-19, data quality, excess mortality, Republic of Moldova*

Ministerul Sănătății al Republicii Moldova publică zilnic înregistrările individuale ale deceselor pacienților cu COVID-19 începând cu 18 martie 2020. Este important să înțelegem calitatea acestor date și să le comparăm cu datele privind certificatele medicale de deces disponibile pentru 2020, unde infecția cu COVID-19 a fost indicată ca o cauză principală a decesului. Scop: Să analizeze tendințele temporale și structura pe vârstă și sex a mortalității prin infecția cu COVID-19 și să evalueze impactul pandemiei asupra mortalității generale în Moldova. Materiale și metode: înregistrările individuale de deces publicate de Ministerul Sănătății în perioada 18 martie 2020 – 10 octombrie 2021, precum și certificate medicale de deces pentru anii 2017-2020. Au fost utilizate metode demografice de analiză a mortalității, statistici descriptive și inferențiale. Rezultate: În Moldova, mortalitatea prin infecția cu COVID-19 este limitată la cazurile confirmate de laborator, ceea ce nu corespunde definiției recomandate de OMS. Dinamica săptămânală a deceselor COVID-19 publicată de Ministerul Sănătății este în concordanță, în principal, cu datele certificatelor de deces pentru 2020. Au fost identificate trei valuri de mortalitate, cu vârfuri la mijlocul lunii decembrie 2020, martie 2021 și octombrie 2021. Mortalitatea excesivă în rândul persoanelor în vârstă la sfârșitul anului 2020 (valul 1) este atribuită parțial bolilor cardiovasculare. Raportul dintre bărbați și femei pentru mortalitatea cauzată de COVID-19 este mai mare la vârsta înaintată și mult mai puțin la vârsta mijlocie. Pandemia de COVID-19 a avut un efect destul de considerabil asupra tendințelor și structurii mortalității pe cauze de deces în 2020.

[1] *© Olga PENINA ORCID ID https://orcid.org/0000-0002-3884-2751 e-mail: olga.penina@usmf.md*

***Cuvinte cheie**: mortalitate, COVID-19, calitatea datelor, mortalitatea excesivă, Republica Moldova*

Министерство здравоохранения Республики Молдова публикует ежедневно индивидуальные записи о смерти пациентов с подтверждённой инфекцией COVID-19, начиная с 18 марта 2020 года. Важно понимать качество этих данных, а также произвести их сравнение с данными медицинских свидетельств о смерти, доступными за 2020 год, в которых инфекция COVID-19 была указана в качестве основной причины смерти. Цель: проанализировать временные тенденции и возрастно-половые особенности структуры смертности от инфекции COVID-19, а также оценить влияние пандемии на общую смертность в Республике Молдова. Материал и методы: собраны индивидуальные записи о смерти пациентов с COVID-19 инфекцией, которые были опубликованы Министерством здравоохранения в период с 18 марта 2020 по 10 октября 2021, а также медицинские свидетельства о смерти за 2017-2020 годы. Были использованы демографические методы анализа смертности, методы описательной и инференциальной статистики. Результаты: В Республике Молдова смертность от инфекции COVID-19 ограничивается лабораторно подтвержденными случаями, что не соответствует определению, рекомендованному ВОЗ. Еженедельная динамика смертей от COVID-19, публикуемых ежедневно Министерством здравоохранения, главным образом согласуется с данными медицинских свидетельств о смерти за 2020 год. Были определены три волны смертности с пиками в середине декабря 2020 года, в марте и октябре 2021 года. Избыточная смертность среди пожилых людей в конце 2020 года (волна 1) частично может быть объяснена заболеваниями сердечно-сосудистой системы. Соотношение мужчин и женщин по смертности от инфекции COVID-19 в пожилом возрасте значительно выше, чем в трудоспособном возрасте. Пандемия COVID-19 оказала значительное влияние на тенденции и структуру смертности по причинам смерти в 2020 году.

***Ключевые слова**: смертность, COVID-19, качество данных, избыточная смертность, Республика Молдова*

INTRODUCTION

The COVID-19 outbreak began in late 2019 and spread rapidly around the world, with significant health impacts. National and international authorities have established several indicators to track the pandemic. Analysis of mortality by sex and age is a useful tool for better understanding pandemic evolution and monitoring the effect of health policy measures. If the number of positive cases of COVID-19 or hospitalizations is directly dependent on the country's resources, the death counts are less dependent. Furthermore, various data collection systems exist and the differences between them influence the comparative analysis between the countries(Garcia et al. 2021).

According to the definition of what constitutes a COVID-19 death recommended by the World Health Organization, “a death due to COVID-19 is defined for surveillance purposes as a death resulting from a clinically compatible illness, in a suspected or confirmed COVID-19 case unless there is a clear alternative cause of death that cannot be related to COVID disease (e.g., trauma). There should be no period of complete recovery from COVID-19 between illness and death”. This definition was approved by the Ministry of Health (MH) of the Republic of Moldova with the following ICD-10 codes:

U07.1 – COVID-19, virus identified

U07.2 – COVID-19, virus unidentified

However, in reality, only laboratory-confirmed cases of death due to COVID-19 (U07.1) are registered in the country. Hospitals, if a patient with confirmed COVID-19 infection died in hospital, or primary health care institutions, if a patient with confirmed COVID-19 infection died at home, notify the National Agency for Public Health daily about the confirmed COVID-19 deaths. These data are transferred to the MH to be published on their website.

This paper addresses the comparability of different data sources on COVID-19 and changes in temporal mortality trends and patterns in Moldova between March 18, 2020 and October 10, 2021. The research questions are as follows:

1. Are individual COVID-19 death records published daily by MH comparable to medical death certificate data in 2020?
2. What are the weekly mortality trends and mortality patterns by sex and age for COVID-19 infection?
3. What impact did the COVID-19 infection have on overall mortality in 2020?

LITERATURE REVIEW

A growing number of publications on COVID-19 mortality, including international comparative analyses, have appeared in recent times. Many countries, including the Republic of Moldova, publish COVID-19 death counts on a regular basis. However, before analysing such data, it is essential to understand the principles behind the registration of COVID-19-related deaths in a given country. From this perspective, the "Demography of COVID-19 deaths" database (https://dc-covid.site.ined.fr/en/) produced by the French Institute for Demographic Studies (INED) gathers deaths by age and sex across 21 countries, including the Republic of Moldova, and provides metadata for each country (INED 2021c). According to Garcia et al., some countries report numbers of deaths attributable to COVID-19, according to different sources and definitions (Garcia et al. 2021). For example, in England and Wales, the Office for National Statistics (ONS) provide COVID-19 death data that include "COVID-19 or suspected COVID-19 mentioned anywhere on the death certificate, including in combination with other health conditions" (INED 2020). Garcia et al. consider this type of data as "comprehensive". At the same time, the National Health Service provides data on COVID-19-related deaths in England that occurred in hospitals among people who tested positive for COVID-19. This type of data is considered "restrictive" by the same author. Moreover, the definition of COVID-19 death can vary within one country over time. For example, in Belgium, only PCR-confirmed death counts were reported initially, while probable or presumed cases began to be included as the pandemic progressed (Garcia et al. 2021). In Belgium, in the first wave, only 68.8% of the COVID-19-related deaths were laboratory-confirmed, while in the second wave, due to improved testing capacity, this share reached 95.3% (Peeters et al. 2021). In Romania, COVID-19 death statistics refer to laboratory-confirmed deaths reported by medical facilities, but deaths among suspected cases need to be laboratory-confirmed post-mortem. Of the 1 360 individual death records published by the Romanian Ministry of Health between March 22, 2020 and June 10, 2020, 2.5% were diagnosed with COVID-19 infection post-mortem. However, these figures may be underestimated as the daily publication of death records reduces the accuracy of the data (since June 11, 2020, Romania has released aggregate death data related to COVID-19). Analysis of COVID-19 mortality time series should also be interpreted with caution and based on metadata released by the responsible authorities. For example, in Romania, since May 28, 2021, daily data on COVID-19 deaths also include deaths that occurred before the reference date which coincides with the date of reporting. As a result, of the 46430 COVID-19-related deaths reported on October 28, 2021, nearly 8% occurred prior to the reference date.

Garcia et al. demonstrate that in the group of countries with comprehensive death counts, such as England and Wales (ONS data), the distribution of COVID-19-related deaths by age and gender is characterized by the highest proportion at age 90 and older. In these countries, the distribution of COVID-19 deaths by gender and age is primarily similar to that of death from all causes. Countries that provide the restricted data sources on COVID-19 deaths, such as Italy or Ukraine, have younger age distribution.

DATA SOURCES AND USED METHODS

In the study, we use two data sources regarding COVID-19 deaths:

1. Daily death records published by the Ministry of Health on the website https://msmps.gov.md since March 18, 2020 up to now;
2. Death certificates with the underlying cause of death U07.1 provided by the National Agency for Public Health for 2017-2020.

The Ministry of Health publishes daily death records notified to the National Agency for Public Health during the last 24 hours with the indication of the serial death number, age in complete years, sex, district, name of the medical institution where the case of death was registered and concomitant diseases. If a deceased person belonged to medical personnel, his/her name, age, and place of work are usually indicated. Prior to November 11, 2020, the MH also published the date of hospitalization or transfer to another hospital. On October 14, 2021, 96% of deaths from COVID-19 were registered as occurred in hospitals, while 0.4% of deaths were registered at home due to the patient's refusal of hospitalization as indicated in the daily MH report. For the remaining deaths (3.6%), the place of death was not indicated. Further, for reasons of simplicity, we will refer to this data source as "hospital death records". The MH also publishes data on deaths registered in the Transnistrian region (8% as of October 14, 2021 or 600 out of 7137 deaths). However, in our analysis, deaths from COVID-19 in Transnistria were excluded from the analysis because of the lack of data on the corresponding population. In Moldovan official statistics, death counts registered in this region are not included since 1998. To calculate weekly probabilities of death, we used population counts referring to the usually resident population (without Transnistria) as of January 1, 2020 and January 1, 2021.

In the analysis, we used weekly probabilities of death, life tables, the method of decomposition (Andreev and Shkolnikov 2012), standardised death rates (direct method, the 2013 European standard population), descriptive and inferential statistics. Since data on the age of death are skewed (Shapiro-Wilk test, $p<0.05$ and data visualization based on Q-Q plot), we used median and interquartile range (IQR) as descriptive statistics and Wilcoxon rank sum test as inferential statistics. To analyse weekly excess mortality in 2020, we used the 2017-19 average as a baseline to ensure better robustness of data over time. Data were analysed in R.

THE RESULTS OF RESEARCH AND DISCUSSIONS

Figure 1 presents weekly changes in COVID-19 deaths in Moldova based on two data sources: hospital death records of laboratory-confirmed COVID-19 cases from March 18, 2020 to October 7, 2021 and death certificate records with the underlying cause U07.1 from March 18, 2020 to December 31, 2020.

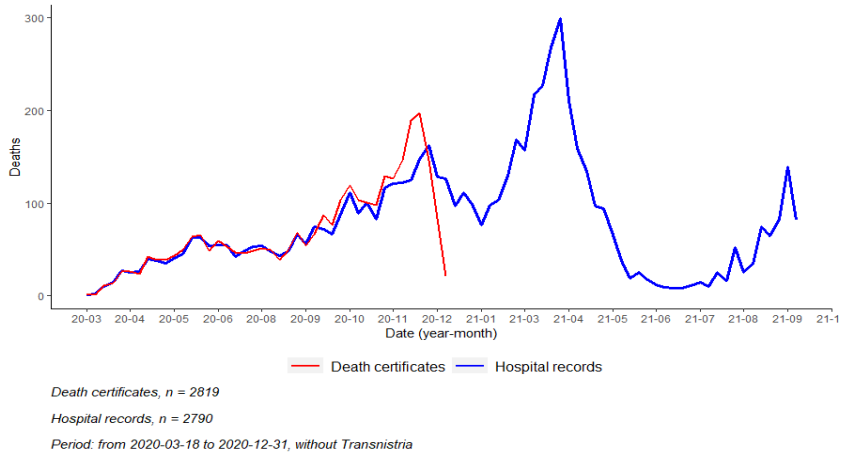

Figure 1. **Hospital death records (laboratory-confirmed deaths) *versus* death certificate records (underlying cause = U07.1), Moldova, both sexes**

Source: Hospital death records – Ministry of Health (https://msmps.gov.md); death certificate records – National Agency for Public Health

Following a relatively steady increase in COVID-19-related deaths since March 18, 2020, the first wave occurred between late November and late December, with the highest weekly deaths in mid-December 2020. The second wave occurred shortly after the first one, from early March to late April, and the intensity was much higher. Finally, after a certain relief in May and summer, the new wave started in the fall of 2021.

At least before early November 2020, in other words, before the first wave, the two curves coincide nearly exactly. The intensity of the first peak in mortality in November and December 2020 is underestimated and somewhat delayed over time, based on hospital death records, compared to certificate death records. The explanation for this is simple. During this period over-burdened medical facilities have sent information to the National Agency for Public Health on a daily basis with some delay. On the other hand, weekly deaths, according to death certificates, fall sharply at the very end of 2020, while those according to hospital death records decrease smoothly until mid-January 2021. This situation for the temporal evolution of death certificate records is quite typical since some deaths that occurred at the end of December will be registered at the beginning of the next year. Nonetheless, the cumulative number of deaths on December 31, 2020 is very close according to two sources.

Figure 2 shows the weekly probabilities of COVID-19 deaths by gender for the pre- and post-60 age groups. Data for the whole period are based on hospital death records.

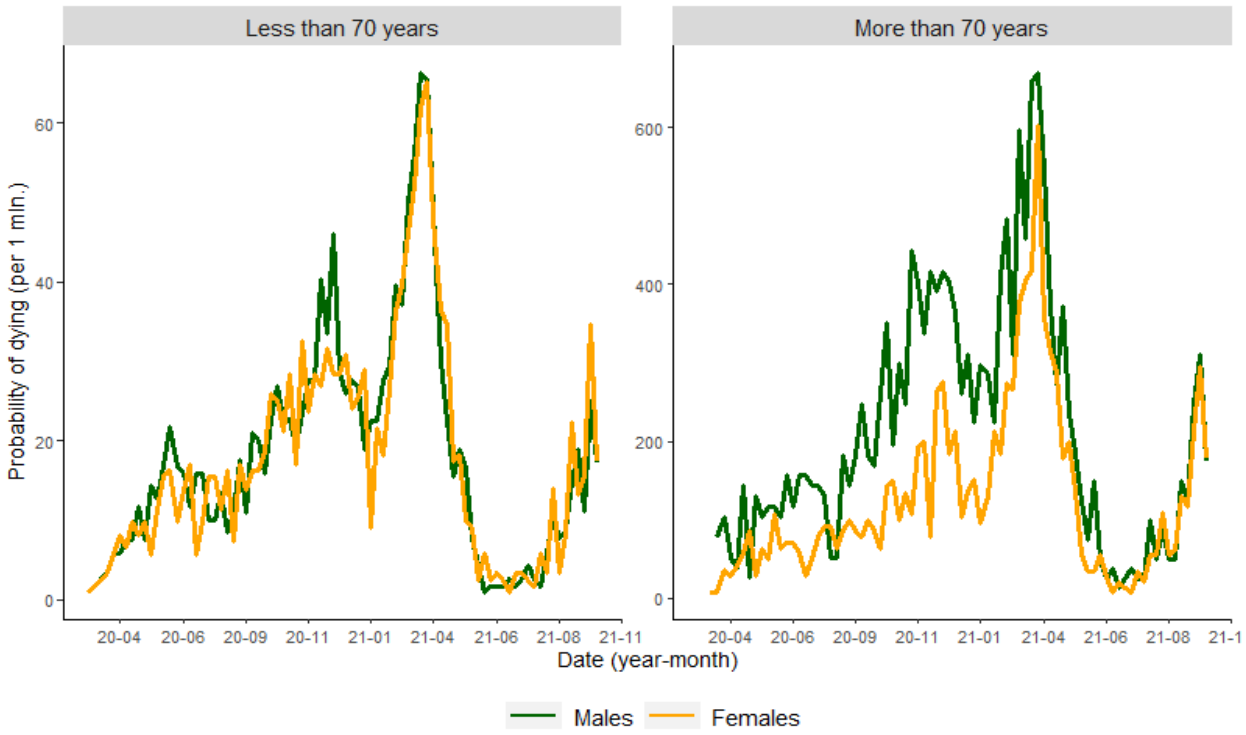

***Figure 2*. Weekly probability of dying from COVID-19, hospital death records (laboratory-confirmed cases), Moldova, by sex and age**

Source: Hospital death records – Ministry of Health (https://msmps.gov.md)

Note: without Transnistria

It is interesting to note that in the pre-70 age group, the crude probabilities of death do not differ by gender. At the same time, mortality is higher among males than females in the post-70 age group prior to the start of the second wave. During the second and third waves, the intensity of COVID-19-related mortality does not appear to differ by gender, whether in middle-aged or elderly individuals. For both genders and all ages, the second wave referring to the warm season (spring) proved much stronger than the first wave referring to the cold season (late autumn – beginning of winter). The situation improved substantially in the months when the lowest (January, February) or highest (late spring,

summer) temperatures were observed. Certainly, these improvements are in part a result of restrictive measures against COVID-19. In Moldova, vaccination for COVID-19 started in early March 2021, and as of October 23, 2021, 849435 individuals had received two doses of the COVID-19 vaccine (Government of the Republic of Moldova 2021), representing 33% of the usually resident population. The impact of the vaccination campaign will be particularly important for the current third wave.

The distribution of cumulative COVID-19 deaths by gender and age as of December 31, 2020 and October 7, 2021 is shown in Figure 3. On December 31, 2020, the maximum number of deaths was recorded in the 65-69 age group for both males and females. The median age at death was 67.0 years in males and 67.5 years in females at that time, with no statistically significant difference ($p>0.05$, Wilcoxon rank sum test). On October 7, 2021, the maximum cumulative number of deaths attributable to COVID-19 occurred in the same age group (65-69). However, this time, the distribution of deaths has shifted according to gender. The proportion of deaths among older men, particularly those aged 70 to 74 and 85 and over, has increased considerably. Among women, as of October 7, 2021, the distribution of deaths remained essentially the same as at the end of 2020, although the impact of the oldest age group increased as it also did among men. These changes are most likely due to a better diagnosis of COVID-19 in the elderly. As a result, the median age at death has increased in men (68.0 years, IQR=61-74) and women (69.0 years, IQR=62-75). The difference in the median age at death among men and women on October 7, 2021 is statistically significant ($p<0.05$, Wilcoxon rank sum test). The same applies to the difference between the two points in time, for both men and women.

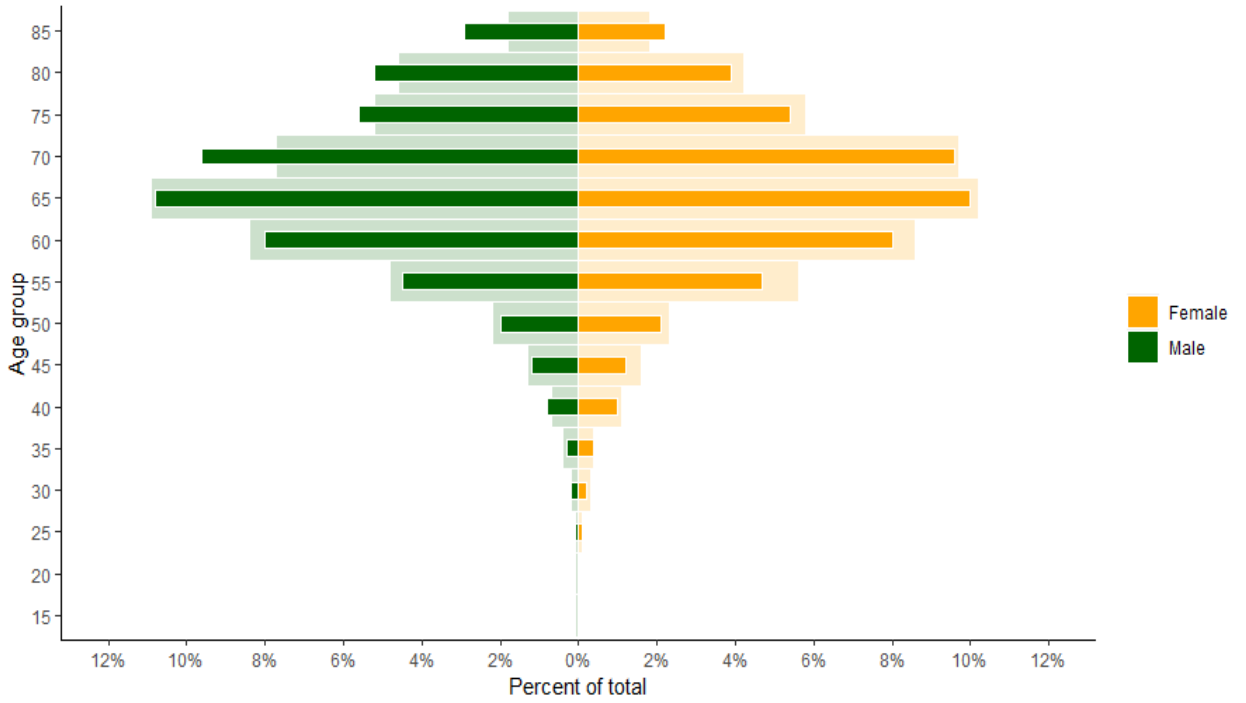

***Figure 3*. Age and sex distribution of COVID-19 deaths as of 07 October 2021 as compared to 31 December 2020, Moldova**

Source: *based on hospital death records published by the Ministry of Health (https://msmps.gov.md)*

Another important aspect in the analysis of time series is excess mortality that can be defined as the ratio of weekly probabilities of dying in 2020 to the average in 2017-19. This ratio calculated for all ages and causes of death has the highest values (2.5-3.0) at the end of 2020 when the first wave was recorded. Figure 4 presents weekly excess mortality in 2020 by main age groups for all causes of death and diseases of the circulatory system. Excessive all-cause mortality for those over the age of 40 in November and December 2020 makes perfect sense. However, it is not quite usual to see excess mortality from diseases of the circulatory system among the elderly in late 2020. This is most likely the result of misdiagnosis and attribution of undiagnosed COVID-19 deaths to cardiovascular disease.

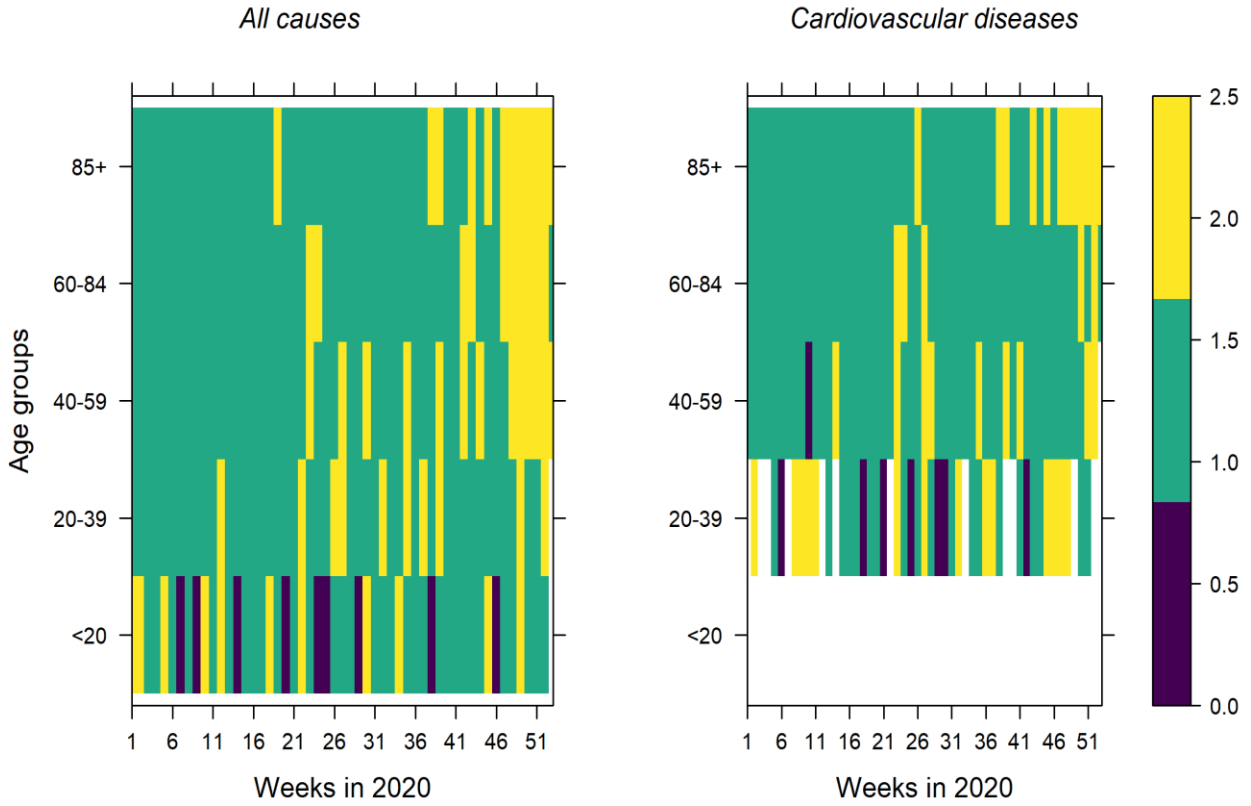

Figure 4. **Ratio of weekly probabilities of dying from all causes and cardiovascular diseases in 2020 to average in 2017-2019, by main age groups, both sexes, Moldova**
Source: *based on death certificate records provided by the National Agency for Public Health*

To understand the impact of COVID-19 infection on life expectancy at birth (e_0), it is possible to decompose the changes in e_0 between 2019 and 2020 by age and cause of death (Fig. 5). In Moldova, life expectancy at birth decreased by 0.8 years in males and 1.1 years in females in 2020 (65.8 in males and 73.9 in females) compared to 2019 (66.6 in males and 75 in females). In men, this drop in life expectancy is explained by the increase in mortality from infectious diseases (-0.6 years) and diseases of the circulatory system (-0.2 years). In women, the increase in mortality from infectious diseases is also the main cause of the decrease in life expectancy (-0.8 years), while the impact of cardiovascular diseases is noticeable (-0.2 years). The increase in infectious disease-related mortality in 2020 was between 50 and 79 for males and between 45 and 79 for females. Cardiovascular mortality has increased in 2020 compared to 2019 in some older age groups (65-74 in men and 70-74 and 85+ in women). In Moldova, positive annual trends in old-age mortality from cardiovascular diseases, especially among women, have been observed since at least 2005. The reversal in 2020 is very likely the result of excessive cardiovascular mortality among older adults in late 2020. The lack of mortality growth in the oldest age group can be attributed to positive trends in cardiovascular mortality that also continued in 2020 up to the first wave of COVID-19.

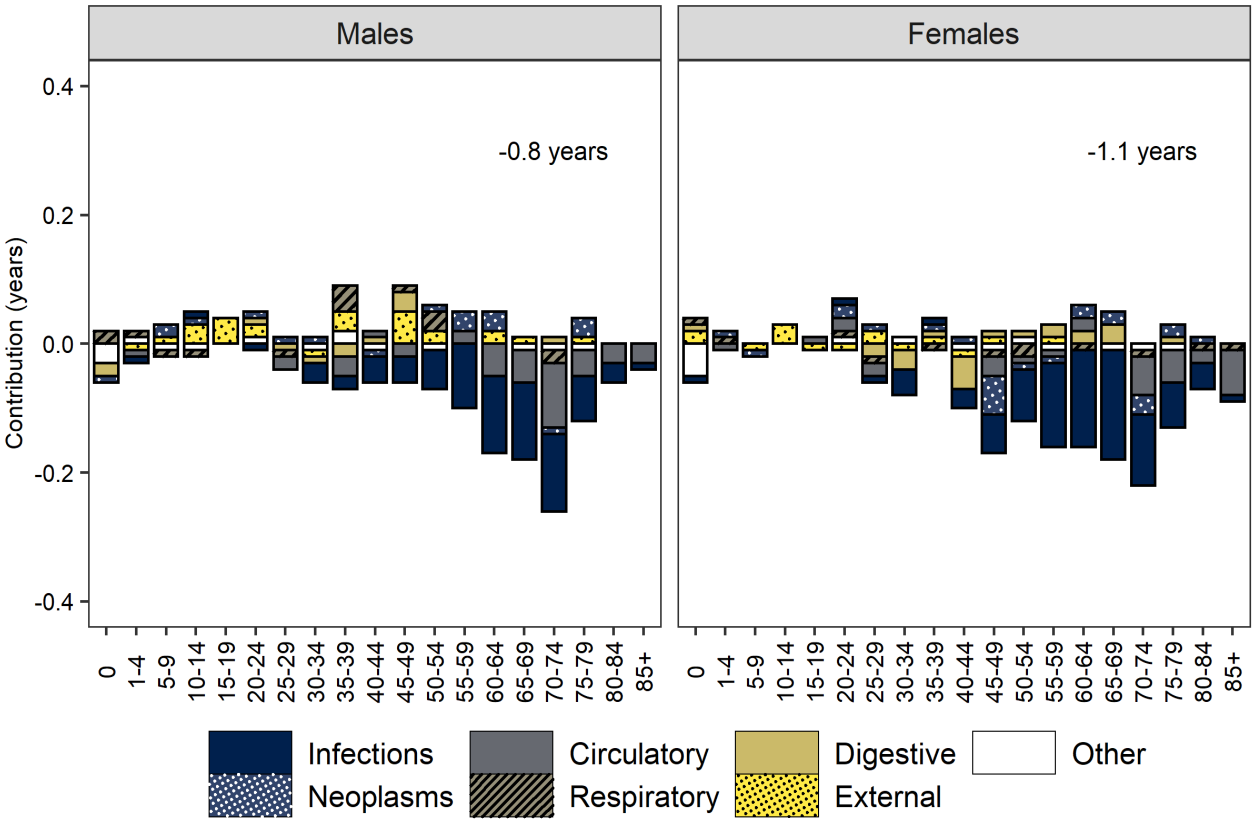

Figure 5. **Decomposition of changes in life expectancy at birth in 2020 compared to 2019 by age and causes of death in Moldova, by sex**

Source: *based on death certificate records provided by the National Agency for Public Health*

In terms of the standardised death rates, the COVID-19 pandemic resulted in a 10-fold increase in infectious disease mortality in 2020 compared to the previous year for both men and women. As a result of this enormous increase, the risk of dying from infectious diseases in 2020 was even higher than that from injury and poisoning in males or identical to that from diseases of the digestive system in females.

CONCLUSIONS

The COVID-19 deaths registration system in Moldova is limited to laboratory-confirmed cases recorded in hospitals or at home when a patient refuses to be hospitalized. In 2020, hospital records statistics are more or less consistent with death certificate information where COVID-19 is reported as an underlying cause of death. In 2020, deaths from COVID-19 infection were under-registered, especially among older adults. Excess mortality among the elderly in late 2020 (wave 1) is attributed in part to cardiovascular disease. In 2021, the registration of COVID-19 deaths has improved compared to 2020, especially among the elderly, due to better testing capacities. The male-to-female ratio for COVID-19 mortality is higher in older age and much less so in middle age. The gender difference among older adults is larger for the first wave and smaller for the second wave and the start of the current third wave. An important aspect of the research is the gender difference in COVID-19 mortality from an international perspective. Disregarding the under-registration of COVID-19 deaths in 2020, the pandemic has had a quite sizable effect on life expectancy at birth for both genders. Considering the intensity of the second wave and the current third wave, the impact of infections seems to increase in 2021. Vaccination is the only solution to overcome the crisis.

REFERENCES

1. Andreev, Evgueni M., and Vladimir M. Shkolnikov. 2012. *An Excel Spreadsheet for the Decomposition of a Difference between Two Values of an Aggregate Demographic Measure by Stepwise Replacement Running from Young to Old Ages*. 0 ed. TR-2012-002. Rostock: Max Planck Institute for Demographic Research. doi: 10.4054/MPIDR-TR-2012-002.
2. Garcia, Jenny, Catalina Torres, Magali Barbieri, Carlo Giovanni Camarda, Emmanuelle Cambois, Arianna Caporali, France Meslé, Svitlana Poniakina, Jean-Marie Robine, and Karine Guerrouche. 2021. 'Différences de Mortalité Par Covid-19 : Conséquence Des Imperfections et de La Diversité Des Systèmes de Collecte Des Données': *Population* Vol. 76(1):37–76. doi: 10.3917/popu.2101.0037.
3. Peeters, I., M. Vermeulen, N. Bustos Sierra, F. Renard, J. Van der Heyden, A. Scohy, T. Braeye, N. Bossuyt, F. Haarhuis, K. Proesmans, C. Vernemmen, and M. Vanhaverbeke. 2021. *Survellance of Covid-19 Mortality in Belgium Epidemiology and Methodology during 1st and 2nd Wave (March 2020 - 14 February 2021). Brussels, Belgium : Sciensano. 2021, September.* D/2021/14.440/57. Sciensano.

Acknowledgements

The study was carried out within the framework of the Research Project 21.00208.8007.02/PD "Disparitățile socio-demografice și regionale ale mortalității în Republica Moldova".

Received 02 November 2021
Accepted 15 December 2021

INTERNATIONAL MIGRATION AND POPULATION CHANGES IN MOLDOVA

Tatiana TABAC*[1]*, PhD student, scientific research,
Center for demographic research of the
National Institute for Economic Research

DOI: https://doi.org/10.36004/nier.es.2021.2-08
JEL Classification: J11, R23
UDC: 331.556.4+314.116(478)

ABSTRACT

The paper focuses on analyzing the implications of international migration on changes in the number and structure of the population in Moldova in the 2014-2020 period. The paper is based on revised data on the population with usual residence and international migration. The research methodology consists of estimating and analyzing specific indicators of migration and population change: emigration and immigration rates, gross and net migration rates, age-specific net migration rates by sex, population growth rate, and others.

Results show that the emigration rate during this period increased from 43 to 58 emigrants per 1000 population. The cumulative net migration is -221,3 thousand or -7,7% of the population of 2014. The mobility of Moldova's population is higher than the population mobility of Moscow or Luxembourg. The share of women involved in the migration process is lower than that of men. Youth (aged 20-34) make up a third of the annual flow of emigrants, while return migration increases at pre-retirement ages. At the same time, there is an increase in the number of children involved in international migration, which indicates the increase in families' migration for settlement. The population of Moldova decreased by -225,3 thousand in 2014-2020 or by -7.9%. The population growth rate varies between -0,7% and -1,8% annually. The paper concludes that the most important contribution to population decline is negative international migration. Population decline remains the biggest demographic challenge for Moldova.

Keywords: *international migration, demographic processes, consequences of migration, population decline, Moldova.*

Articolul se focusează pe analiza implicațiilor migrației internaționale asupra schimbărilor în numărul și structura populației în Moldova în perioada 2014-2020. Lucrarea are la bază datele revizuite ale populației cu reședința obișnuită și a migrației internaționale. Metodologia cercetării constă în estimarea și analiza indicatorilor specifici ai intensifății migrației și schimbării populației: ratele de emigrare și imigrare, rata migrației nete și migrației brute, ratele specifice ale migrației nete, rata de creștere a populației și altele.

Rezultatele demonstrează că rata de emigrare în această perioadă a crescut de la 43 la 58 emigranți per 1000 populație. Migrația netă cumulată este de -221,3 mii persoane sau -7,7% din populația anului 2014. Nivelul de mobilitate al populației Moldova este mai înalt și decât nivelul de mobilitate al populației din Moscova sau Luxembourg. Ponderea femeilor implicate în procesul migrațional este mai mică comparativ cu cea a bărbaților. Tinerii (20-34 de ani) constituie a treia parte din fluxurile anuale de emigranți, în timp ce migrația de revenire crește la vârstele pre-pensionare. Totodată, este înregistrată creșterea copiilor implicați în migrația internațională ceea ce denotă intensificarea migrației familiilor cu stabilirea reședinței în străinătate. Populația Moldovei a scăzut cu -225,3 mii persoane în anii 2014-2020 sau cu -7,9%. Rata de scădere a

[1] *© Tatiana TABAC ID ORCID: https://orcid.org/0000-0001-9526-6642; e-mail: tania.tabac@gmail.com*

populației variază între 0,7-1,8% anual. Articolul concluzionează că cea mai importantă contribuție în declinul populației aparține migrației internaționale negative. Cea mai mare provocare demografică pentru Moldova rămâne a fi declinul populației.

Cuvinte-cheie: *migrația internațională, procese demografice, consecințele migrației, declinul populației, Moldova.*

Статья посвящена анализу влияния международной миграции на изменения численности и структуры населения Молдовы в период 2014-2020 гг. Работа основана на пересмотренных данных о населении с постоянным местом жительства и международной миграции. Методология исследования заключается в оценке и анализе показателей интенсивности миграции и изменения численности населения: коэффициенты интенсивности эмиграции и иммиграции, коэффициенты миграционного оборота и чистой миграции, коэффициенты чистой миграции по возрасту и полу, темпов роста населения и других.

Результаты показывают, что уровень эмиграции за исследуемый период увеличился с 43 до 58 эмигрантов на 1000 населения. Кумулятивная чистая миграция составляет -221,3 тыс. человек или -7,7% от общего числа населения 2014 г. Уровень мобильности населения Молдовы выше, чем уровень мобильности населения Москвы или Люксембурга. Доля женщин, вовлеченных в миграционный процесс, ниже, чем доля мужчин. Молодое население (20-34 года) составляет треть годового потока эмигрантов, в то время как возвратная миграция увеличивается в пред-пенсионном возрасте. В то же время увеличилось количество детей, вовлеченных в международную миграцию, что свидетельствует об увеличении миграции семей с детьми на постоянное место жительства. Население Молдовы уменьшилось на -225,3 тыс. человек в 2014-2020 гг. или на -7,9%. Темпы убыли населения колеблются в пределах 0,7–1,8% ежегодно. В статье делается вывод о том, что наиболее важным вкладом в убыль населения является отрицательная международная миграция. Самой большой демографической проблемой для Молдовы остается постоянная убыль населения.

Ключевые слова: *международная миграция, демографические процессы, последствия миграции, убыль населения, Молдова.*

INTRODUCTION

International estimates have shown that only European countries will have population declines by the second half of the 21st century. A UN projection based on the zero-migration scenario shows a dramatic decrease in Europe's population by -9% in 2050 and by -28.5% in 2100 (United Nations, n.d.). This decrease will be more significant in Bulgaria, Hungary, Poland, Romania, Moldova, Ukraine, Latvia, Lithuania, Croatia, Greece, Italy, Portugal, Serbia, Germany, mainly due to the low level of fertility, while for some post-Soviet countries, also due to the high level of mortality.

The attenuation of the population decline in the European space can only take place due to international migration. According to the medium projection scenario (which assumes that international migration remains at current values), population decline on the European continent will reach -5% by 2050 and -16% by 2100 (United Nations, n.d.). Maintaining current trends in international migration may stop the population decline in all Western and Northern European countries (except the Baltic States, which are characterized by high emigration rates and low immigration rates), but not in any country of Southern and Eastern Europe. We thus find that migration has already made an important contribution to increasing/decreasing the European population.

Moldova is part of the group of Eastern European countries, where the population dynamics are drastically affected by high population emigration rates and low immigration rates, but in the future, the population decline will continue at an even faster pace. Estimates by the Vienna Institute of Demography show that the relative decrease in the population of Moldova in the 2015-2050 period due to international migration will reach up to -31.4% (Scherbov et al., 2016). According to the

medium scenarios of the Centre for Demographic Research projection, the population of Moldova will drop -19,1 by 2035 (Gagauz et al., 2016) and -28,2% by 2040.

The most important contribution to the depopulation of Moldova is the increase in the last decades of long-term emigration, often characterized by a change of usual residence abroad. The ongoing migration from independence to the present has led to the formation of significant stocks of Moldovan citizens abroad encouraged by the unstable socio-economic and political situation, as well as the strengthening of social networks over time. Moldovan migrants prefer European countries, such as Russia, Italy, Spain, Portugal, the Czech Republic, Germany, France and the United Kingdom. Fewer may be found in Switzerland, the Netherlands, Belgium, Austria, Poland, Greece, Canada, and the USA.

The purpose of this paper is to analyze recent trends in international migration from Moldova and to estimate the consequences on the population dynamics and its characteristics. The scientific novelty lies in exploring new data on international migration, for the first time estimating some indicators of migration (gross migration rate, age-specific net migration rates), the analysis based on the dynamics of migration and impact on the population structure. We note that until 2019, the national statistical system did not have reliable official data on population migration.

LITERATURE REVIEW

The literature mentions that international migration is the third force capable of changing the population size specifying that, unlike fertility and mortality which have changed globally over time from high to low levels, international migration has been constantly expanding, with the number of global migrants increasing as the global population grows (National Research Council (U.S.) et al., 2000). Analyzing the impact of migration in Europe, Coleman (2008) argues that international migration influences the population size in most European countries, contributing to population growth in the Nordic countries, slowing population decline in the Southern countries and accelerating depopulation in Eastern countries. Conclusions expressed by Coleman in 2008 continue being supported by recent studies and projection (United Nations, n.d.) (Cangiano, 2019).

However, a much-debated aspect in the literature is not so much the impact of migration on the population dynamics, but rather on its age structure. Still at the end of the twentieth century, Blanchet (1989) examined the idea of using immigration as a tool for demographic control, but from the perspective of managing the age structure of the population, rather than the total number. And Coleman (2008) warns that even though migration contributes to the reduction of the average population age in host countries, it can only solve the problem of demographic ageing if foreign population inflows occur in large proportions and increase exponentially.

Nevertheless, the simple attraction of migrants is not a mandatory condition for mitigating the challenges related to demographic aging, a more favorable solution is for immigrants to be highly qualified and employed into the labor market. However, research has shown that the share of immigrants employed in the host country is lower than the share of natives, especially immigrant women, and that the immigration of highly qualified population can better solve the tax problems of demographic aging (Zaiceva & Zimmermann, 2014).

At the same time, mass recruitment of migrant workers cannot make up for the long-term labor shortage. Russia is one of the countries in the world that has, for decades, used international labor migration as a tool to make up for the shortage of labor. However, after the entry of younger generations born in the 1990s into the working-age group, the size of the labor force in Russia has declined enormously and the flows of migrant workers can no longer prevent the deficit in the working-age population (Зиверт et al., 2011).

While migration can address the challenges of demographic aging and the labor market in host countries, then for donor countries is a force capable of causing population decline. This is the case of Moldova, but also of other ex-Soviet countries that have entered the process of population decline caused by mass migration and negative natural growth (Estonia, Latvia, Lithuania, Georgia and

Armenia). National estimates have shown that Moldova's population has declined by about 17-20% in the last three decades due to long-term emigration (Gagauz et al., 2016; Tabac & Gagauz, 2020). However, migration has affected not only the population but also its demographic characteristics due to the high share of the working-age population involved in the migration process. Migration has accelerated demographic aging observed in terms of demographic dependence indicators (Poalelungi & Mazur, 2017).

In the context of these, the biggest demographic challenges remain for the countries of origin which, due to the massive outflows, face the depletion of the economically productive population, the deformation of the age structure, the acceleration of the demographic ageing process and the future increase of the tax burden.

RESEARCH DATA AND METHODS

The intensification of migration flows from Moldova has also been a challenge for the national statistical system. Given increased emigration, it was difficult to measure the stocks of Moldovan emigrants abroad and to assess the demographic impact of migration. Along the way, there have been several attempts to estimate international migration (Poalelungi & Mazur, 2017; Tabac & Gagauz, 2020), but also the revision of the actual population of Moldova, which excludes the population that has left Moldova more than one year (Penina et al., 2015). Only in 2019, the national statistical organization implemented a new methodology for estimating annual migration flows according to international recommendations (United Nations, 1998) and the population with the usual residence. For this analysis the estimates of the National Bureau of Statistics with reference to migration flows and the population with usual residence for 2014-2020 were used.

The current measurement of emigration and immigration fully complies with international recommendations and is based on the concept of usual residence. According to the definitions, an emigrant is any person who lived in Moldova for a year before moving abroad for a period of at least one year. An immigrant is a person who has lived abroad for at least a year and returned to Moldova to stay here for a year. And because international recommendations suggest that temporary absences for purposes of recreation, holidays, business, medical treatment or religious pilgrimage are not considered, one-year periods have been set at 275 days out of the 365 calendar days. The period of 275 days is estimated cumulatively and does not represent the number of consecutive days during the year.

Among other things, current data allows for the estimation of immigrants-foreign nationals versus immigrants-citizens of the Republic of Moldova. The ratio of foreign immigrants in the annual immigrant flows varies between 40-60%, so we consider an important part of the immigration flows as return migration. This finding is also supported by the fact that there is an unknown number of Moldovan citizens who use only documents issued by foreign countries to cross the state border (the effect of dual citizenship).

Current data allowed the estimation for Moldova the indicator of age-specific net migration rates by sex, which demonstrates the migration intensity at different age and sex categories. In essence, this indicator shows the intensity of net migration in different categories of the population: children, youth, working-age population, and the elderly). New data also allow other international migration indicators to be determined - emigration and immigration rates, gross migration rate and net migration rate. At the same time, based on these data, the impact of migration on the population structure was estimated in terms of the main demographic indicators. Results are presented below.

MAIN RESULTS

Current migration trends

International migration from Moldova has been increasing during 2014-2019 (Table 1). With some insignificant fluctuations, the emigrant flows increased from 123,4 thousand in 2014 to 155,3 thousand in 2019, while the immigrant flows increased from 98,7 thousand in 2014 to 117,2 thousand in 2019. The emigration rate during this period is estimated between 43 and 58 emigrants per 1000

population, and the immigration rate between 34 and 44 immigrants per 1000 population. Most unfavorable is the negative net migration that, cumulated, for 2014-2019 represents -221,3 thousand in absolute values and 7,7% in relative values. Such proportions of migration from Moldova were only during 2007-2011 when emigration flows intensified under the influence of family reunification policies in European countries (Tabac & Gagauz, 2020).

Gross migration shows the level of population mobility, which in the case of Moldova has increased in recent years, from 222 thousand migrants involved in long-term migration in 2014 to 272.5 thousand migrants in 2019. Gross migration rate has increased from 77 to 101 international migrants per 1000 population. For comparison, the level of international mobility of the Moldovan population in 2019 is similar to that of the St. Petersburg region (103 migrants per 1000 population) and higher than the level of population mobility in Moscow city (44 migrants per 1000 population) (Shcherbakova, 2020). Compared to the migration trends in European countries in this period, the gross migration rate in Moldova is comparatively higher than the gross migration rate in Luxembourg – the country with the highest level of population mobility among all EU-28 states (Щербакова, 2020).

The share of women involved in the migration process is lower than that of men. The gender gap is greater for immigrant women than for emigrant women.

An obvious feature is the high proportion of youth involved in migration processes. With fluctuations in some years, young emigrants aged 20-34 make up a third of the annual emigrant flows, while another third belongs to adults aged 35-59. At the same time, we note that the share of adult immigrants (35-59 years) and elderly immigrants (60+ years) is comparatively higher than the share of adult and elderly emigrants. Considering that the immigrant flows is made up of a larger proportion of Moldovan citizens than of foreign nationals, such results tell us that there is an increase in return migration to pre-retirement ages.

Table 1

Demographic characteristics of migration flows in Moldova, 2014-2019

Indicators	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*
emigrants, thousands	123,4	126,9	153,2	159,1	158,1	155,3
immigrants, thousands	98,7	105,6	107,2	109,7	116,4	117,2
gross migration, thousands	222,1	232,5	260,4	268,8	274,5	272,5
net migration, thousands	-24,7	-21,3	-45,9	-49,4	-41,8	-38,2
emigration rate, per 1000 population	43,0	44,6	54,2	57,2	57,9	57,8
immigration rate, per 1000 population	34,4	37,1	38,0	39,5	42,6	43,6
gross migration rate, per 1000 population	77,4	81,7	92,2	96,7	100,5	101,4
net migration rate, per 1000 population	-8,6	-7,5	-16,3	-17,8	-15,3	-14,2
% of emigrant women	46,7	45,8	43,4	43,0	45,5	47,0
% of immigrant women	41,7	42,7	42,9	43,0	43,7	44,9
sex ratio of emigrants, men per 100 women	114	118	131	133	120	113
sex ratio of immigrants, men per 100 women	140	134	133	132	129	123
emigrants by age group, %						
age 0-19	25,2	24,4	21,6	20,5	23,0	24,6
age 20-34	39,2	38,4	39,2	38,7	36,4	33,2
age 35-59	30,4	31,2	33,1	34,4	33,9	34,4
age 60+	5,3	6,0	6,0	6,4	6,7	7,8
immigrants by age group, %						
age 0-19	17,2	17,3	18,1	16,4	15,2	16,2
age 20-34	36,6	35,1	33,9	33,7	33,2	31,2
age 35-59	39,4	40,1	40,1	41,3	41,6	42,2
age 60+	6,8	7,5	7,9	8,6	10,0	10,4

Source: author's calculations based on NBS data

High youth migration is more evident when estimating the age specific net migration rates (Fig. 1), the indicator that demonstrates the migration intensity by different age groups and sexes (women-men, children, youth, adults and older people). The estimates show that the highest migration was between the ages of 20-29 and in the years 2016-2019. Other active age groups in international migration are youth aged 15-19 and children up to age 10.

In 2017, the net migration of men aged 20-24 was 56 men per 1000, while in the 25-29 age group it was 48 men per 1000. In the case of women, the net migration in the age group 20-24 was 43 women per 1000, while 32 women per 1000 were in the 25-29 age group. Emigration rates of youth decreased slightly by 2019, however, they remain at very high levels compared to other age groups. For example, 34 men per 1000 men in the age group 20-24 migrated on a long-term period in 2019, compared to 10 men per 1000 men aged 34-39. This trend is also observed among women.

An even more worrying trend observed in 2018-2019 is the increase in the ratio of children involved in international migration. The net migration rate of boys aged 0-4 was 32-35 boys per 1000, and at the age of 5-9, it was 27 per 1000. The net migration rate of girls aged 0-4 was 33-37 girls per 1000, and at the age of 5-9, it was 25-29 girls per 1000. Since children cannot migrate without their parents, we consider that these data tell us about the intensification of families' migration for settlement which was already demonstrated in other works.

While children and youth migrate from Moldova, adults and the older people tend to return to Moldova. In the years 2014-2015, there was a positive net migration for men in age groups 40-69 and for women in age groups 45-69. Starting with 2016, the age of positive net migration increases from age 50+ for both sexes, with some insignificant variations.

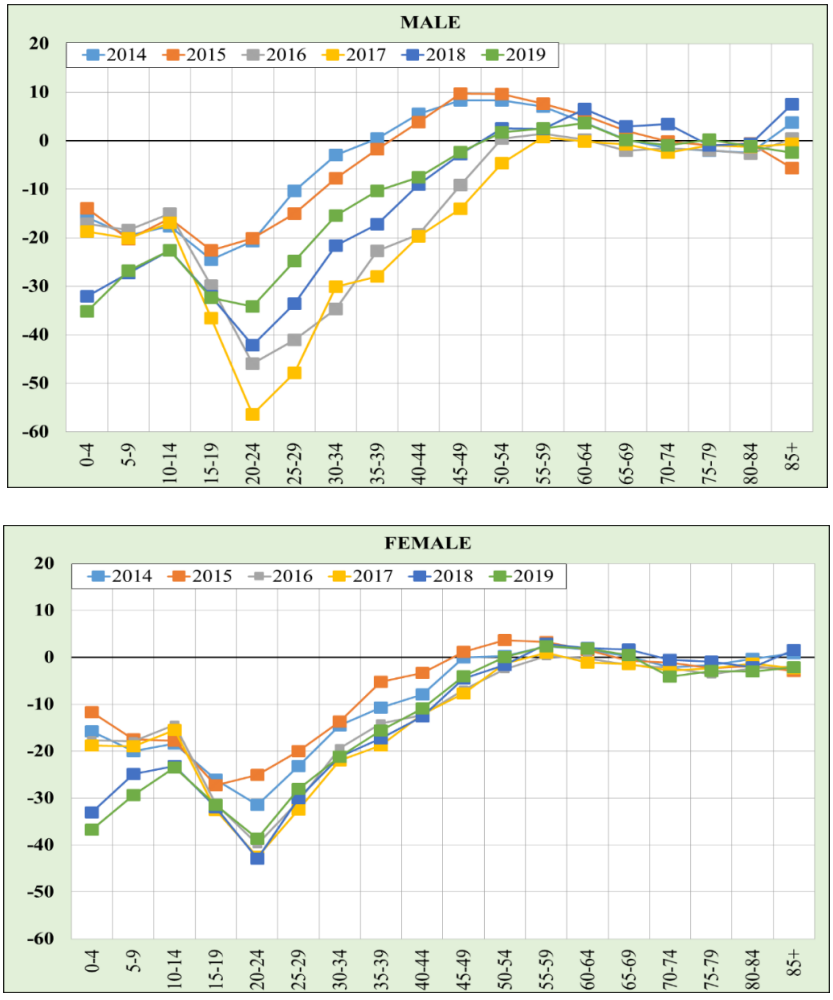

Figure 1. Age-specific net migration rate by sex, 2014-2019, per 1000 population

Source: author's calculations based on NBS data

EFFECTS OF MIGRATION ON POPULATION CHANGE

Migration has major consequences on Moldova's population dynamics and composition. First, international migration leads to a fast-paced decrease in the population of Moldova. In the 2014-2019 period, the population decreased by 7.9% (or -225.3 thousand). The population decline is largely due to negative international migration (7.7%) and only slightly due to the negative natural decrease (-0,14%, which increased due to the Covid-19 pandemic). The population growth rate varies between -0,7% and -1,8% annually (Table 2).

Secondly, international migration causes rapid changes in population composition. High rates of negative migration among the young population cause depletion of the working age and reproductive population and accelerate the demographic ageing in Moldova. The mean age of the population increased by 1,8 years in the period 2014-2020. If the share of the population under 18 years registers stable values in the analyzed period, then the share of youth (18-34 years old) shows a decrease of 4,6 thousand. Despite the fact that Moldova is going through a period of demographic dividend (Gagauz et al., 2016), the size of the working age population remains stable (in the absence of emigration, the number of working age population would continue to grow). At the same time, there is an increase in the older aged 60 and over, as well as the aged 65 and over. The dependency ratio in 2020 is 49 of dependents to 100 working-age population, increasing by 9 dependents more than in 2014.

Table 2

Some demographic characteristics and indicators of the population of Moldova, 2014-2019

	2014	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
total population, thousands	2869,2	2844,7	2824,4	2780,0	2730,4	2686,1	2643,9
population growth rate, %	-	-0,9%	-0,7%	-1,6%	-1,8%	-1,6%	-1,6%
natural growth, thousands	1,2	0,7	1,2	-0,4	-2,7	-4,0	-9,9
migration growth, thousands	-24,7	-21,3	-45,9	-49,4	-41,8	-38,2	n/d
mean age, years	36,9	37,1	37,3	37,6	37,9	38,3	38,7
% under 18	21,7	21,5	21,4	21,7	21,9	21,8	21,7
% 18-34	27,3	26,9	26,4	25,5	24,5	23,6	22,7
% 35-59	33,5	33,5	33,6	33,6	33,6	33,8	33,9
% 60+	17,5	18,1	18,5	19,2	20,0	20,8	21,7
% 65+	10,9	11,5	12,0	12,6	13,2	13,8	14,4
gender ratio, men to 100 women	92	93	93	92	91	91	91
dependency ratio	40	42	43	45	47	48	49

Source: author's calculations based on NBS data

Note: The dependency rate is estimated as the ratio between children (0-14) and older people (65+) in the working-age population (age 15-64).

CONCLUSIONS AND DISCUSSIONS

Migration exchanges between Moldova and the rest of the world were possible only three decades ago, with the break-up of the Soviet bloc and independence. Emigration rates have been extremely high throughout the independence period, and net migration was negative, cumulating, according to estimates by the Center for demographic research, over 1 million citizens who emigrated permanently or for a long-term period.

This paper provides evidence that international migration continues to be particularly high and negatively affects the dynamics and composition of Moldova's population. The current migration trends are as follows: the international mobility of the population is one of the highest in the world, the migration of youth is constantly increasing and so is the migration of families with children, at the same time, there is an increase in the return migrants close to retirement age. According to results, about 98% of the population decline in the analyzed period is due to international migration, the total decrease caused by migration being 7.7%. Massive youth migration accelerate the demographic aging: the lack of youth increases the proportion of older aged 60 and over and the demographic burden. In addition, the emigration of the working-age population inevitably leads to a depletion of the labor force and an increase in the deficit in the internal labor market.

The high migration, especially of young people, indicates (probably the most important thing) that the population is discouraged about social opportunities at home, opportunities for the professional ascent, employment and earning a decent income, of low life quality, etc. At the same time, Moldova is inevitably in a process of competitiveness with the destination countries which, due to the high level of socio-economic development, are attractive for talented and smart youth. Contemporary literature argues that migration does not decrease until the country of origin reaches a comfortable (though not necessarily equal) standard of living compared to that of the destination country.

Return migrants of pre-retirement and retirement age represent the population involved in labor migration many years and who return to Moldova due to old age. In most cases, the government will have to cover their social protection needs. Some of them may receive an old-age pension paid by the host country; others may have financial accumulations as a guarantor for a decent life in Moldova. However, the proportion of insured persons does not appear significant.

Perhaps the biggest demographic challenge for Moldova remains the decline in human capital. Not only is the population declining, but the process of reducing the economically active and reproductive population by migration is also in swing. The results of scientific research have long signaled the intensification of migration in the working-age population, and demographic projection show that current migration trends will lead to a deterioration in the population's composition. Finally, there is an urgent need to build a demographic perspective for Moldova in migration policies, which in turn are strongly influenced by the geopolitical and economic system.

ACKNOWLEDGMENTS

This paper was developed within the "Migration, demographic change, and stabilization policies" State Program (2020-2023) 20.80009.0807.21.

REFERENCES

1. Cangiano, A. (2019). *Briefing: The Impact of Migration on UK Population Growth*. https://migrationobservatory.ox.ac.uk/wp-content/uploads/2016/04/Briefing-The-Impact-of-Migration-on-UK-Population-Growth-Dec-2019.pdf
2. Gagauz, O., Stratan, A., Buciuceanu-Vrabie, M., Penina, O., Ciubotaru, V., & Cheianu-Andrei, D. (2016). *Population Situation Analysis in the Republic of Moldova* (p. 174). Chisinau. https://moldova.unfpa.org/sites/default/files/pub-pdf/PSA_engleza.pdf
3. National Research Council (U.S.), Bongaarts, J., & Bulatao, R. A. (Eds.). (2000). *Beyond six billion: Forecasting the world's population*. National Academy Press.
4. Penina, O., Jdanov, D. A., & Grigoriev, P. (2015). *Producing reliable mortality estimates in the context of distorted population statistics: The case of Moldova* (WP-2015-011; 0 ed., p. WP-2015-011). Max Planck Institute for Demographic Research. https://doi.org/10.4054/MPIDR-WP-2015-011
5. Poalelungi, O., & Mazur, J. (2017). *Extended migration profile of the Republic of Moldova 2010-2015: Overview of migration trends for the period 2005-2015: analytical report*. International Organization for Migration, Mission to Moldova.

6. Scherbov, S., Mamolo, M., Potančoková, M., Sobotka, T., & Zeman, K. (2016). *European Demographic Datasheet 2016* [Other]. Wittgenstein Centre (IIASA, VID/OEAW, WU), Vienna. http://www.populationeurope.org/about
7. Tabac, T., & Gagauz, O. (2020). Migration from Moldova: Trajectories and Implications for the Country of Origin. In M. Denisenko, S. Strozza, & M. Light (Eds.), *Migration from the Newly Independent States* (pp. 143–168). Springer International Publishing. https://doi.org/10.1007/978-3-030-36075-7_7
8. United Nations. (n.d.). *World Population Prospects—Population Division—United Nations*. Department of Economic and Social Affairs. Retrieved 27 January 2022, from https://population.un.org/wpp/Download/Standard/Population/
9. United Nations (Ed.). (1998). *Recommendations on statistics of international migration*. United Nations.
10. Zaiceva, A., & Zimmermann, K. F. (2014). *Migration and the Demographic Shift*. 74.
11. Зиверт, С., Захаров, С. В., & Клингхольц, Р. (2011). *Исчезающая мировая держава. Демографическое будущее России и других бывших союзных государств*. Berlin Institute for Population and Development. https://publications.hse.ru/books/69691826
12. Щербакова, Е. (2020). *В 2019 году за счет миграционного обмена со странами СНГ увеличилось население 76 регионов, за счет обмена с другими регионами России—19*. Демоскоп Weekly. http://www.demoscope.ru/weekly/2020/0851/barom04.php

Received 15 November 2021
Accepted 20 December 2021

COST GENERATED BY DOMESTIC VIOLENCE DURING THE COVID 19 PANDEMIC

Corina DRĂGAN[1], PhD student,
Doctoral School of Advanced Studies, Romanian Academy, Bucharest, Romania,

DOI: https://doi.org/10.36004/nier.es.2021.2-09
JEL Classification: Q52, H60.
UDC: 336.5+316.356.2:316.624

ABSTRACT

The study aims to analyze the evolution of costs generated by domestic violence during the Covid-19 pandemic in the Romanian space. The cost generated by violence is not well highlighted in Romania's budgets, however there are methods that may be used to quantify it. In our country, studies focused more on the analysis of the dimension of domestic violence, and less on the analysis of the costs generated by this phenomenon. However, an analysis of these costs was carried out in 2014 by the European Institute for Gender Equality, which estimated the costs of gender-based violence in the European Union. For this study I will use administrative data at the national level, which come from local entities with responsibilities in preventing and combating domestic violence. The study I propose will be an analysis of secondary data provided by authorities while also containing comparative methods (compared to 2020, the year of the Covid-19 pandemic). The results will describe the evolution of the costs generated by domestic violence during the pandemic, a period that worsened access to support services for victims of domestic violence. There are opinions that question the adequacy of the Romanian system in providing support to victims during the pandemic restrictions or to those who had difficulties in asking for help. Measures taken by the authorities to limit the spread of the Covid-19 pandemic were of general application, with specific ones having been implemented later, but even then their individualization was difficult, since each social field had a different response to this new context.

Keywords: *domestic violence, cost, victim of domestic violence, Covid 19, budget.*

Studiul își propune să analizeze evoluția costurilor generate de violență domestică, din spațiul românesc în pandemia de Covid 19. Costul generat de violență nu este bine evidențiat în bugetele României, dar există metode care pot fi folosite pentru a-l cuantifica. În țara noastră, studiile s-au concentrat pe analiza dimensiunii violenței domestice, și mai puțin pe analiza costurilor generate de acest fenomen. Dar o analiză a acestor costuri a fost făcută în 2014 de Institutul European pentru Egalitatea de Gen, care a estimat costurile violenței bazate pe gen în Uniunea Europeană. Pentru acest studiu voi folosi datele administrative la nivel național, care provin de la entitățile locale cu atribuții în prevenirea și combaterea violenței domestice. Studiul pe care îl propun va fi o analiză a datelor secundare furnizate de autorități, dar va conține și metode comparative (față de 2020, anul pandemiei Covid 19). Rezultatele vor descrie evoluția costurilor generate de violența domestică în timpul pandemiei, perioadă care a înrăutățit accesul la servicii de suport, al victimelor violențelor domestice. Sunt opinii care pun la îndoială adecvarea sistemului românesc în acordarea de sprijin victimelor în timpul restricțiilor pandemiei sau care au avut dificultăți în a cere ajutor. Măsurile luate de autorități pentru limitarea răspândirii pandemiei de Covid-19, au fost cu aplicabilitate generală, ulterior fiind implementate unele specifice, dar și atunci individualizarea lor a fost dificilă, pentru că fiecare domeniu social a avut un răspuns diferit la acest nou context.

Cuvinte-cheie: *violență domestică, cost, victimă a violenței domestice, Covid 19, buget.*

© Corina DRĂGAN ID ORCID: https://orcid.org/0000-0002-5783-1396 e-mail: dragancorina102@yahoo.ro

Целью исследования является анализ эволюции издержек, связанных с насилием в семье в Румынии во время пандемии Covid 19. Стоимость насилия недостаточно отражена в бюджетах Румынии, но существуют методы, которые можно использовать для ее количественной оценки. В нашей стране исследования были сосредоточены на анализе масштабов домашнего насилия и в меньшей степени на анализе издержек, связанных с этим явлением. В 2014 году Европейский институт гендерного равенства оценил издержки гендерного насилия в Европейском союзе. Для данного исследования использовались административные данные на национальном уровне, поступающие от местных организаций, отвечающих за предотвращение и борьбу с насилием в семье. Исследование представляет собой анализ вторичных данных, предоставленных властями, а также содержит сравнительные методы (по сравнению с 2020 годом, годом пандемии Covid 19). Результаты представляют динамику расходов, связанных с домашним насилием во время пандемии, когда ухудшился доступ к службам поддержки для жертв домашнего насилия. Есть мнения, которые ставят под сомнение адекватность румынской системы оказания поддержки пострадавшим во время пандемических ограничений или тем, кому было трудно обратиться за помощью. Меры, предпринятые властями для ограничения распространения пандемии Covid-19, носили общий характер, позже были реализованы конкретные меры, но их индивидуализация была затруднена, поскольку каждое социальное поле по-разному реагировало на этот новый контекст.

Ключевые слова: *домашнее насилие, стоимость, жертва домашнего насилия, Covid 19, бюджет.*

INTRODUCTION

In Romania, domestic violence is defined as "any inaction or intentional action of physical, sexual, psychological, economic, social, spiritual or cyber violence, which occurs in the family or domestic environment or between spouses or ex-spouses, as well as between current or former partners, regardless of whether the aggressor lives or has lived with the victim" (Romani et al., 2018).

An important step towards preventing and combating domestic violence was the signing of the Council of Europe Convention on Preventing and Combating Violence against Women and Domestic Violence (Council of Europe Convention on Preventing and Combating Violence against Women and domestic violence - Istanbul Convention) by Romania on 27.06.2014. The approach continued with the ratification of the Istanbul Convention by Law no. 30/2016, this stage representing the beginning of the legislative reforms that ensured the harmonization of the national normative acts, incidents in this field, with the provisions of the Convention. On June 18, 2018, the Romanian Parliament adopted two very important draft laws in preventing and combating domestic violence, which practically represented the true implementation of the provisions of the Istanbul Convention. The two projects aimed at amending and supplementing Law 202/2002 on equal opportunities and treatment between women and men (which regulates the concept of gender-based violence) and specifically amending and supplementing Law 217/2003 on preventing and combating domestic violence (with the central pillar on the regulation of the emergency ban order, as provided for in Article 52 of the Council of Europe Convention on Preventing and Combating Violence against Women and Domestic Violence).

In the "*Assessing the costs of violence against women in Romania*" report (Dragan, 2021) it was mentioned that in Romania, the studies focused on the analysis of the dimension of domestic violence and less on the analysis of the costs generated by this phenomenon. But an analysis of these costs was made in 2014 by the European Institute for Gender Equality, which estimated the costs of gender-based violence in the European Union. The methodological report used two strategies: the first was to build in detail, piece by piece for each of the main types of costs, and the second strategy was to estimate costs across the EU based on extrapolation from the Member State case which has the best evidence to support the costing exercise (*The EU Mutual Learning Programme in Gender*

Equality Methodologies and good practices on assessing the costs of violence against women - online - 7-8 July 2021, f.a.). The report has compiled a European ranking of spending on gender discrimination and violence for each of the EU-28 states. (Fig.1).

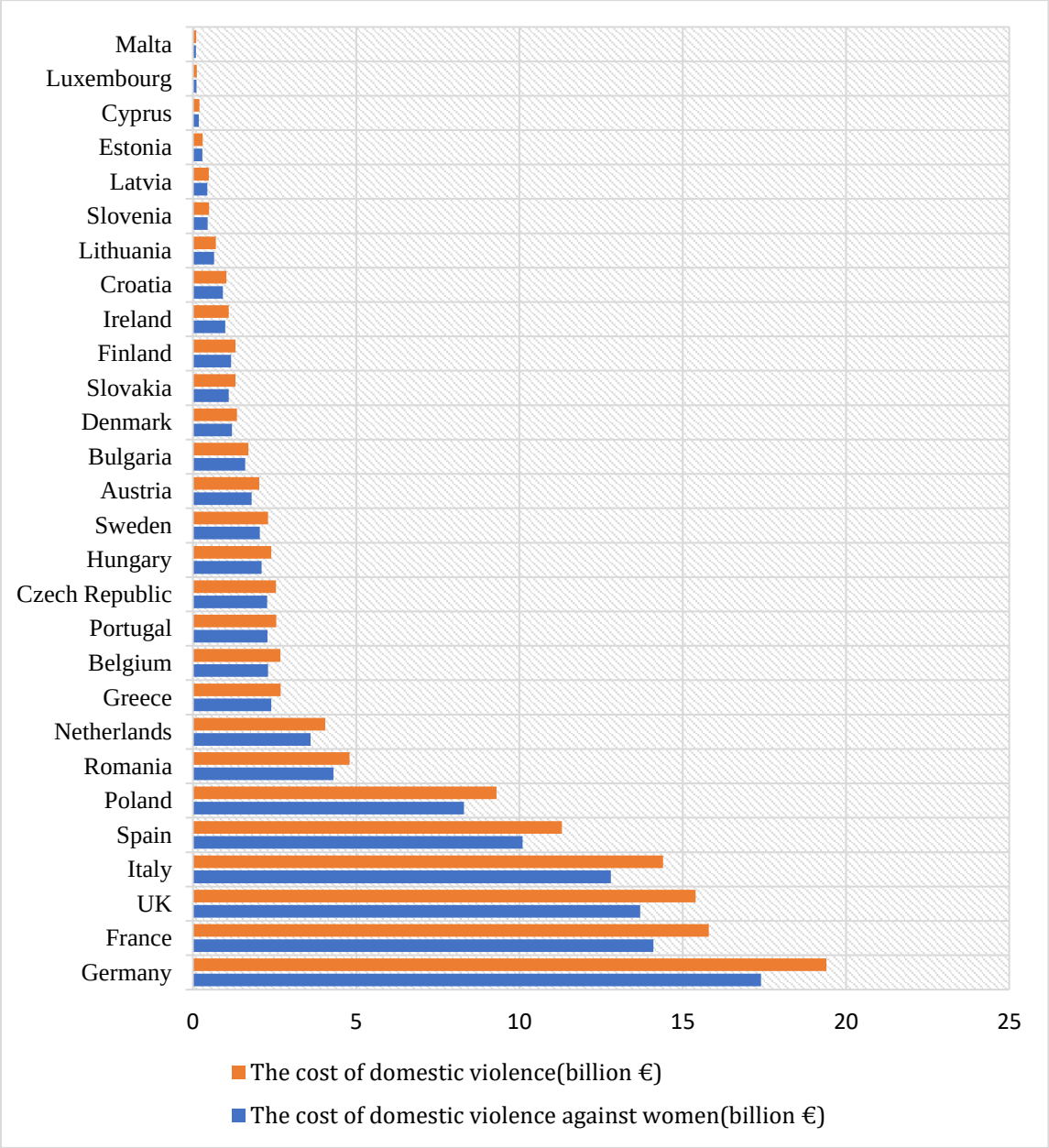

Figure 1. ***Estimated costs of domestic violence in EU Member States***
Data Source: European Institute for Gender Equality Report

DEGREE OF TOPIC APPROACH IN SCIENTIFIC LITERATURE

At the international level, the assessment of the costs of domestic violence has different approaches, being largely influenced by policies specific to the national and international context. Therefore, there is no general calculation model valid for all states that are interested in identifying this type of cost. For a better understanding of the situation at the international level, were analyzed the studies carried out since 1997, which tried to identify a model that could determine the costs generated by domestic violence as accurately as possible. The analysis of the studies showed that not only the way in which domestic violence is defined has become more and more complex over the

years, but also the way in which costs are assessed and even the cost categories have become much better determined or determinable.

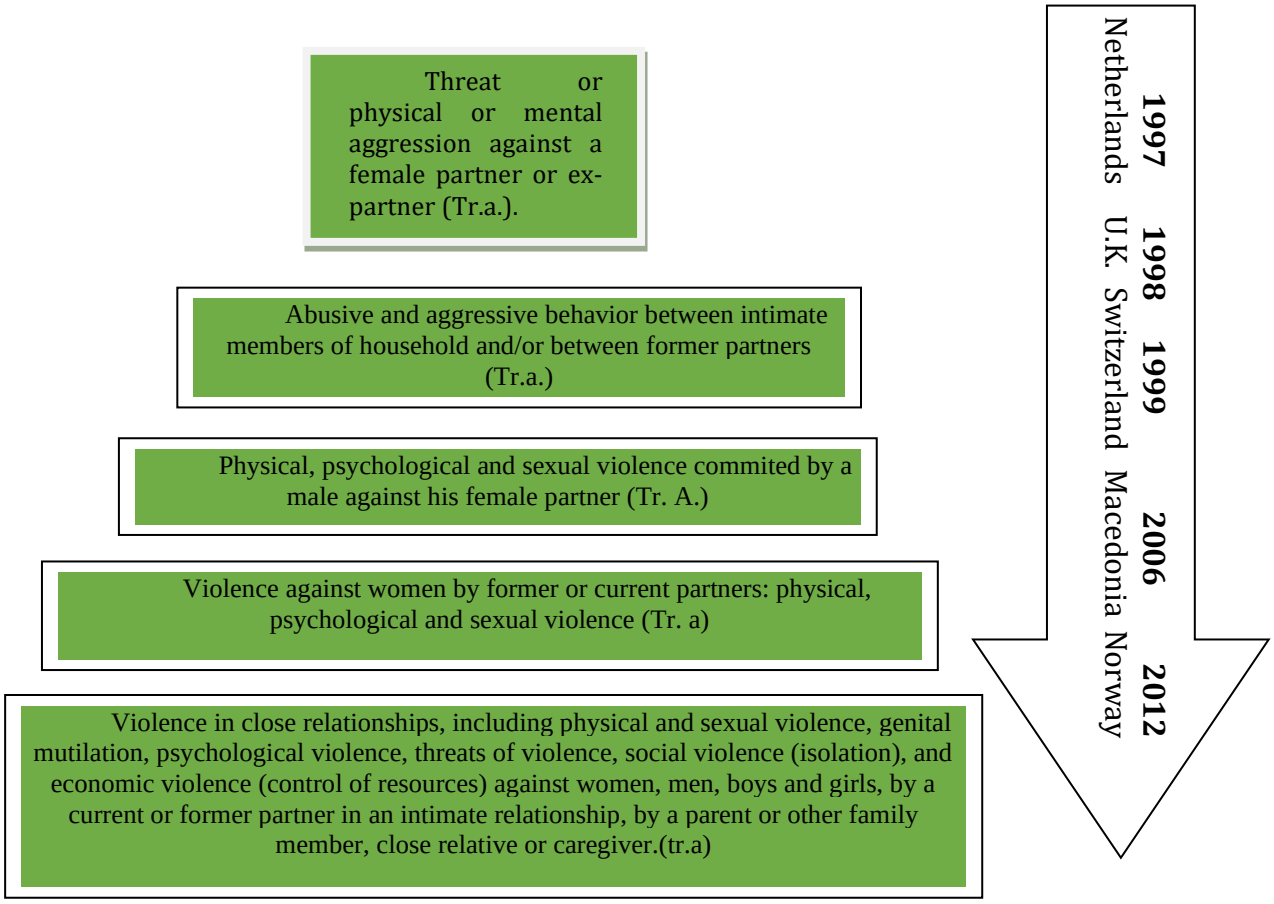

Figure 2. The evolution of the meaning of the term domestic violence

Dutch model in 1997

The *"Economic Costs of Domestic Violence Against Women" study* conducted in 1997 by Dirk J. Korf, H. Meulenbeek, H., E. Mot, E. and T. van den Brandt, the perpetrators considered a certain type of violence, namely that against women and exercised by their life partner, and the situations identified referred to threats or other acts such as those of a physical and psychological nature.

The data considered in the study were collected between 1996 and 1997, and the information came from various agencies and service providers. He said that the data was underestimated because only the situations exposed by the victims of domestic violence that were registered by the shelters and support institutions were considered. In identifying the costs of domestic violence, it considered the following cost categories:

- medical assistance (family doctor and hospitals).
- psychosocial care.
- law enforcement (criminal justice sector and police).
- employment (medical leave).
- social insurance (payments of allowances/rent reduction).

Swiss model in 1999 and 2013

The „*Report of the Economic Costs of Violence Against Women*" *Study* carried out by authors Carrie Yodanis and Alberto Godenzi, in 1999 referred to the situation in Switzerland. The definition of the type of violence considered by the report included the physical, psychological, and sexual

violence perpetrated by a person against their female partner. Data collection was done through a national survey and official statistics provided by various sources. A 12-month prevalence rate of 11.3% was used to approximate the number of incidents per year. In identifying the costs of domestic violence, it considered the following cost categories:

- medical care
- support and counseling
- victim-oriented financial support
- criminal justice sector
- research

In their 2013 „*Coûts de la violence dans les relations de couple*" research report, Juliane Fliedner, Stephanie Schwab, Susanne Stern, Rolf Iten (Juliane et al., 2013), made a much more complex in relation to the study. The study includes violence in relationships between heterosexual and homosexual partners, both physically, sexually, or psychologically, and even integrates children as direct or indirect victims. Both legally constituted relationships (marriages) and consensual relationships (in the form of cohabitation) are considered and even if in the meantime a process of separation between partners has taken place. The report is based on official statistics and various other sources. The annual cost calculation was based on 2011 data, or an annual average. The most important sources of data were given by the police (from their interventions), from the centers and shelters that provide specific services, both at cantonal and federal level. The limits of their research were some gaps in the available data on legal proceedings, the transfer between health and social care, and the decrease or even loss of productivity. In some costing areas, the data collected relates to domestic violence in general, rather than partner violence. In such cases, it has been estimated that intimate partner violence accounts for 70% of all domestic violence cases. They also concluded that these calculations were most likely to be underestimated because they did not include all categories of costs due to lack of data in civil proceedings, child and adult protection services, support services for affected children, and health care costs for children affected and for men in terms of mental health services.

The report divides cost categories as follows:

Costs per sector:

- Police and Justice (Police, Prosecutor's Office, courts, criminal justice system)
- Victim and aggressor assistance services (Victim and Aggressor Counseling Centers, emergency assistance, financial compensation, shelter)
- Specialized and coordinating agencies (federal level, cantonal level)
- Health care services (Physical Consequences, Psychological Consequences)
- Loss of productivity: illness (paid/unpaid), disability (paid/unpaid), Death (unpaid)

Types of costs:

- Tangible direct costs (e.g., police interventions)
- Tangible indirect costs (e.g., loss of earnings, profit, and economic value)
- Intangible costs (e.g., loss of quality of life)

Finland model in 2001-2002 and 2021

Study was conducted by authors M. Heiskanen and M. Piispa, in 2001-2002, in the works *"The Price of Violence. The Costs of Men's Violence against Women in Finland*" (Heiskanen, 2002) and *"The Costs of Violence in a Municipality*"(Council of Europe, 2012; Heiskanen, 2002). Both 2001 and 2002 studies consider the same type of violence: violence against women, with a focus on violence committed by the partner. The data used for the 2001 study was based on a survey of 7,000 women, an earlier study called "Faith, Hope, and Strike," conducted by the same authors. Other data sources were also: statistics provided by the government, databases and agencies' budgets, activity reports, etc; interviews with experts to obtain the percentage of attendance at the support service for

women victims of violence; two case studies. In terms of cost categories, there are considerable differences between the two studies, as follows:

2001:

- Direct costs: Health, including visits to the doctor, hospital care and medicine. Shelters, crisis services, social assistance, therapy, police, trials, prison.
- Indirect costs: deaths or those that use the human capital approach.

2002:

- Social sector: shelters, home services, childcare services, schools, emergency aid, social assistance provided by churches, family counseling clinics.
- Healthcare sector: including hospital and ambulance, patient transport and psychiatric as well as psychological treatment in health centers.
- Criminal justice sector: police, legal aid office, criminal prosecution, courts, prison, mediation.

A new study was conducted in 2021 by Heli Siltala and Tomomi Hisasue, in the *"Assessing the costs of violence against women in Finland" country* report (Siltala & Hisasue, 2021), held at the "*Methodologies and good practices on assessing the costs of violence against women*" International Seminar, Finland, 8-9 July 2021. Tomomi Hisasue of the University of Tampere and Heli Siltala of the University of Jyväskylä stated the methodological challenges for assessing the costs of domestic violence on how to identify all victims and assess direct and indirect costs, such as lost productivity, quality of life impact, even between generations in their paper. They noted that there is no perfect standard for estimating costs. Among the gaps in information collection, they identified that administrative data, such as hospital records, can allow for a long-term impact assessment, but inadequate medical coding systems and under-reporting are a challenge. In addition, the need to protect data to comply with GDPR standards can be very costly and time consuming. Surveys often underestimate the prevalence and cost of underreporting victims or not identifying all the services used. Study data included various measures for the use of health services, reflecting both immediate and long-term health effects. However, the study did not include costs for the justice system or the social services system. The cost categories considered in the study were:

- medical treatment for physical injuries related to violence.
- hospital stays.
- use of primary health care services.
- use of mental health services.
- medicines for mental health.

Swedish Model, in 2006 and 2021

This study was conducted by Elis Envall and Annika Eriksson in the *"Costs of violence against women"* paper (Envall & Eriksson, 2006). The type of violence considered in the analysis was violence against women by their intimate partner. The data used in the study were official statistics held by the Swedish National Council on Crime and Prevention, government agencies or structures funded or co-financed by local governments, the National Health Council and the Epidemiology Center's own welfare registry and even data obtained by applying questionnaires to women housed in shelters and crisis centers of local authorities. The cost categories considered were as follows:

- Expenditure of society for health and healthcare, police, prosecutor, courts, penitentiary, and social services, as well as costs for civil society (shelters for women and other volunteer organizations) and costs for business/employers.
- Expenditure of central government agencies to reduce the effects of violence and try to counter it, as well as all preventive measures.
- Expenses incurred by each woman victim for herself, her children and all those close to her, in the sense of trying to determine how these costs were affected in relation to the present or future situation.

- Indirect costs due to decreased productivity.
- Transfers, i.e., resource flows: sickness benefits, insurance, social assistance, and compensation for victims of crimes induced by violence.

Costs for dental services, medicines, mental health care, harm to children, pain and suffering were not calculated for the study.

A new study was conducted in 2021 by Petra Ornstein (Statistician) and Åsa Eldén (Sociologist), in the "*A coherent understanding of the costs of men's violence against women*" paper (Petra & Åsa, 2021) presented at the "*Methodologies and good practices on assessing the costs of violence against women*" International Seminar, Finland, 8-9 July 2021. The paper analyzes the costs from the perspective of the value of a life without gender violence, to include the expenses of victims of violence, who will never return their previous ability to produce and participate, as well as their quality of life. Therefore, the cost categories considered by the authors in the study were as follows:

- direct answers / interventions of the company.
- loss of productivity by victims of violence.
- loss of quality of life for victims of violence.
- Freedom lost due to risk reduction options.

Model of Macedonia in 2006

The main author of the study was Yordanka Gancheva, who in 2006 completed the paper "The Costs of Domestic Violence against Women in the Former Yugoslav Republic of Macedonia: A Costing Exercise for 2006" The paper analyzed costs generated by domestic violence against women by former or current partners: physical, psychological, and sexual violence. The data used for the study were from official statistics and budgetary information sources; questionnaires sent to institutions dealing with domestic violence issues concerning NGOs and donors, which provided information such as budgets, number of services, number of victims registered, etc; interviews with public employees (social workers, police officers, prosecutors, judges), doctors (psychologists, dentists, gynecologists, etc.) and representatives of NGOs; interviews with 50 victims. The cost categories considered were:

Estimated costs:

- estimating costs determined by the criminal justice and the social system (personnel costs, costs for vehicle fuel and depreciation as well as some basic administrative costs such as communications, printing, copying, etc.).
- estimating the costs of the non-governmental sector, respectively the costs for the direct services offered to the victims, awareness through campaigns, training and policy making.

Direct costs:

- Social services - Social assistance centers and NGO services, including counseling, shelter, legal counseling, etc; telephone lines for victims of domestic violence, awareness campaigns.
- Criminal and justice sector - time allotted by the police to deal with domestic violence - registration of complaints, response to appeals, making arrests, time allotted for carrying out the necessary acts to judge the case, etc.; prosecution; the criminal court; civil court etc.

The analysis did not include the costs of the health sector, the costs of the Ministry of Labor and Social Affairs for monitoring and policy development, the costs borne by the victims themselves and a wide range of costs that were not measurable.

U.K. Model in 2004 and 2009

The study conducted in 2004 on the situation in the U.K., was conducted by Sylvia Walby, in her book "The Costs of Domestic Violence" (Walby, f.a.). The research estimated the cost of domestic

violence through state spending, employers, and men and women who were affected by these situations. The methodology was based on the Ministry of the Interior's system for determining the costs of crime, including the specific costs of domestic violence. The cost estimate provided an additional perspective for examining the devastating consequences of domestic violence for both society and victims. The cost categories considered were as follows:

- Expenses from the criminal justice system: the cost of domestic violence for the criminal justice system (the largest component is that of the police. Other components include prosecution, courts, probation, imprisonment, and legal aid);
- Healthcare expenses: the costs of the family medicine system and hospitals, because of physical injuries, but also of mental health care.
- Social service costs: costs for children are higher than for adults, especially for those victimized by domestic violence and child abuse.
- Expenses for shelter insurance: Expenses for emergency housing include costs for local authorities and Housing Associations for housing homeless people due to domestic violence.
- Expenses incurred by the realization of the civil legal system includes both specialized legal actions, such as orders to detain or expel a violent partner, as well as actions such as divorce and child custody.
- Economic costs: medical leave.

Sylvia Walby is also the one who in 2009 conducted a new study focusing on the costs of domestic violence, the work entitled "*The Cost of Domestic Violence: Up-date 2009*" (Walby, 2009). The type of violence under study was domestic violence, in terms of physical, psychological, and sexual violence, both in relation to the aggressors who were current or former intimate partners. The data used for the study were cases of domestic violence registered at the level of central institutions, reports of the Department of Transport, information of the service agency, reports that include information on the degree of use of services by those affected by domestic violence, and the cost (per unit) of these services, the findings of previous research. The cost categories considered were those in:

- Services: criminal justice (police, prosecutor's office, courts, probation, and prisons), medical care (physical and mental health), social services (child-related costs), housing and shelter (cost of local emergency authority, housing, and shelter), and civil legal costs (costs of lawyers and orders).
- Loss of productivity and earnings for employers and employees: e.g., sick leave due to injuries related to domestic violence.
- Pain and suffering: based on the notion that people could be paid to stop suffering humanly and emotionally.

The study does not consider additional productivity losses due to stress and reduced performance, nor the long-term effects on children.

Model of Spain in 2010 and 2021

In Spain, Elizabeth Villagómez is the author of "The economic and social costs of domestic violence against women in Andalusia" (*The EU Mutual Learning Programme in Gender Equality Methodologies and good practices on assessing the costs of violence against women - online - 7-8 July 2021*, f.a.) (Villagómez, 2010), a study that analyzed the costs of domestic violence in Andalusia in 2010. The type of violence analyzed in the study included domestic violence against women by an intimate partner or former partner. The data on which the analysis was based were obtained through a survey of 300 women victims of violence perpetrated by a partner or ex-partner. In establishing cost categories, the author developed a system of indicators on domestic violence, over 100 indicators, structured around six criteria: severity and prevalence, impact on victims, risk factors, institutional and social response, access and use victim-oriented services and social perception and attitudes. The annual costs were:

- direct costs (resources used by victims)
- indirect costs (the value of goods and services that have been abandoned due to violence, affecting the well-being of the victim and society as a whole).

In 2021, a new study was conducted by authors Luis F. Rivera-Galicia, Elena Mañas-Alcón, María Teresa Gallo-Rivera and Óscar Montes-Pineda, in the paper entitled "Assessing the costs of violence against women in Spain" (Rivera-Galicia et al., 2019), held during the "Methodologies and good practices on assessing the costs of violence against women" International Seminar, Finland, 8-9 July 2021. The current data are obtained from the macro-survey on violence against women, which is the most relevant statistic on violence against women in Spain. It is carried out every 4 years since 1999. Since 2011 it has been managed by the Government Delegation for Gender Violence and since 2015 it has been carried out together with the Spanish Center for Sociological Research. The study includes:

- tangible direct costs (related to the monetary value of goods and services, expenses for the prevention and treatment of the effects of violence).
- tangible indirect costs (referring to resources that are lost due to reduced economic activity or loss of income due to higher inactivity of women or unemployment caused by sexual violence).
-

Mode of Denmark in 2010 and 2021

The study was conducted by Karin Helweg-Larsen, Marie Kruse, Jan Sørensen and Henrik Brønnum-Hansen in 2010, and was entitled "*The Cost of Violence: Economic and Personal Dimensions of Violence Against Women in Denmark*" (Kruse et al., 2011). The study includes two samples of the population of women exposed to violence: the sample was obtained from data based on 20,482 women aged 16-64, who in the 2002-2005 period reported a situation of violence to the police or died because of the violence and/or contacted the emergency department because of the violence. Also including women in shelters who report cases of violence to the police or have contacted the Emergency Department; the second sample is based on data provided by the Danish Health System and a Morbidity Surveys in 2000 and 2005, which included questions about exposure to violence in the last 12 months. In addition, data on the socio-economic condition, contacts with healthcare and the consequences on the labor market and data recorded by social services were introduced. The cost categories considered were:

- Costs of the judicial system of the police, in situations reported as violence against women: consumption of time at the police, prosecutor's office and courts combined with specific salaries and court fees, as well as prison and court fees.
- Crisis center costs: shelter rates and number of accommodations per year.
- Costs for society: including the national budget allocated to initiatives initiated under the Danish national action plans to combat violence against women, 2002-2009.

In 2021, Marie Kruse returns with a new study, entitled "Data on the cost of violence and identification of violence victims in Denmark"(Kruse et al., 2011), held at the "Methodologies and good practices on assessing the costs of violence against women" International Seminar, Finland, 8-9 July 2021. The study makes recommendations on how to quantify the costs of domestic violence, so:

- by using a comparison group so that unrelated costs are not falsely considered the costs of violence.
- by applying a longer time horizon, the costs of violence are often borne later. The period should be of at least 1-2 years, and the analysis should also include the effects on children and general health for a much longer timespan.
- mentioning self-reported violence which is very different from violence recorded by emergencies, shelters, and police.
- mentioning gender-based violence which is equally important and therefore data for both genders should be collected to allow comparison between men and

women. More men than women are victims of violence, but violence against men is of a different nature (most often by a stranger).

Model of France in 2010

The study was conducted in 2012 by Marc Nectoux, Claude Mugnier, S Baffert, Bertrand Thélot as well as M. Albagli and is entitled "*An Economic Evaluation of Intimate Partner Violence in France*" (Nectoux et al., 2010). Direct costs were analyzed through: a micro-level analysis based on interviews with experts (responsible for childcare and accommodation, telephone helplines, departmental observatory for combating partner violence); at the mid-level they used data from national medical facilities, social, administrative and legal records (institutional reports, national registers) and allowed a national cost estimate; and at the macro level by exploiting national and international economic databases (public spending budgets on health, justice and police, social services, economic cost and GDP, taken from EUROSTAT). The cost categories considered for analysis were:

- Loss of social utility generated by violence.
- Costs for the health system: Direct medical costs (drug use, consultations, etc.).
- Costs for the forensic and social sector: use of police and justice (budget of penitentiary administration, police, and criminal proceedings related to convictions); use of social services (costs related to shelters in the case of a separated couple, housing benefits, benefits for single parents, costs related to termination of employment, situation directly attributed to intimate partner violence).
- Loss of productivity: loss of production due to deaths, incarceration, and absenteeism.
- Loss of quality of life: psychological and human costs, human costs of rape and injuries (the phenomenon of deteriorating daily quality of life of women victims of mood disorders, intense fatigue, sleep problems, costs of indirect effects through a decrease in future income caused declining productivity (disability, death), costs related to declining living standards resulting from separation and intangible costs).

Model of Norway in 2012

The report was co-authored by Ingeborg Rasmussen, Steinar Strøm, Sidsel Sverdrup and Haakon Vennemo, and the title of the paper was "*Samfunnsøkonomiske kostnader av vold i nære relasjoner*" (Rasmussen et al., f.a.). The report covered the following types of violence: domestic violence, including physical and sexual violence, genital mutilation, psychological violence, threats of violence, social violence (isolation) and economic violence (resource control), violence against women, men, boys, girls, violence perpetrated by a current or former intimate partner in a relationship, by a parent or other family member, close relative, or caregiver. Data used in the report are obtained from estimates from official statistics and budgetary information sources from 2010. The study uses data from the legal field (police, justice, criminal justice, legal aid), health sector (emergency care, long-term care) as well as in the social sector (support services and social benefits). Crime Victims, Children's Advocacy Centers and NGOs. The authors concluded that the calculations are most likely to be underestimated due to underreporting domestic violence and difficulty in estimating socioeconomic costs. The cost categories were as follows:

- Costs per sector:

- Police;

- Justice (Prosecutor's Office, Children's Law Centers, Courts, Correctional Services, Mediation);

- Health care services (medical care, psychological care);

- Support services (Crisis Centers, Family Therapy Centers, Child Protection Service, Treatment Centers, Telephone Helpline);

- Education and training (Norwegian Center for Violence and Traumatic Stress, Regional Center for Violence, Traumatic Stress and Suicide Prevention, Research Funding);
- Other ministries and state institutions (Ministry of Health and Care Services, Directorate of Health, Ministry of Education and Research, Ministry of Children, Equality and Social Inclusion, Directorate of Children, Youth and Family, Business, Ministry of Justice);
  - Taxes (marginal cost of public funds);
  - Loss of labor productivity (inability to work);
  - Lives lost.

At European level, there has been a growing interest in domestic violence following the adoption of the European Parliament Resolution of 26 November 2009 on the Elimination of Violence against Women. The studies revealed to the authorities the economic dimension of the phenomenon of domestic violence, but also the negative social repercussions, which entail imbalances at individual, group or even community level. Studies have also shown that in assessing the costs of violence, we must not limit ourselves only to the direct costs, which are quite well highlighted by the authorities through the statistical data they have, but also indirect costs, which are equally important and may have medium- and long-term implications.

PURPOSE OF RESEARCH

At European level, there was a growing interest in domestic violence following the adoption of the European Parliament Resolution of 26 November 2009 on the Elimination of Violence against Women. The studies revealed to the authorities the economic dimension of the phenomenon of domestic violence, but also the negative social repercussions, which entail imbalances at individual, group or even community level. Studies have also shown that in assessing the costs of violence, we must not limit ourselves only to the direct costs, which are quite well highlighted by the authorities through the statistical data they have, but also indirect costs, which are equally important and may have medium and long term implications, as stated by Zamfir Elena "in the conditions of severe limitation of financial and human resources, a correct prioritization of needs was extremely important for active measures to reduce and prevent new social risks for vulnerable people and groups" The negative effects of the phenomenon of domestic violence are extremely difficult to identify on a personal level, primarily on the background of poor education, a situation that leads to a poor understanding of individual rights, but also a poor promotion of services that may benefit victims of such crime. In Romania, most social services dedicated to victims of domestic violence are public and are either subordinated to the General Directorates of Social Assistance and Child Protection at county level/sectors of Bucharest or subordinated to the Public Directorates of Social Assistance at the level of town halls or are private and are managed by economic operators or non-governmental organizations licensed as such service providers. These services are not uniformly located in the territory, in the sense that we do not find a minimum package of support services for victims of domestic violence, which can be accessed in each locality. They were set up according to the budgets of each Territorial Administrative Unit, but also to the potential to access dedicated lines with European funding (http://ithub.gov.ro/2016/11/25/harta-serviciilor-sociale-licentiate/). Unfortunately, this situation has created discrimination, being of course advantaged in relation to the ease of accessibility of services, victims of domestic violence who live in urban areas, even large urban (municipalities) that offer most, but also the most diverse dedicated social support services dedicated (counseling and information centers, shelters, sheltered housing, emergency reception centers, recovery centers for victims of domestic violence, etc.).

METHODOLOGY OF RESEARCH

Starting from the cost analysis models of other authors mentioned in the first part of the study, I was able to outline my own research methodology, which would be based on the system of social

support services at the national level. The analysis considers only the direct costs, the indirect ones to be analyzed in another research. Therefore, this research will be quantitative and will follow the previously mentioned analysis models, focusing on direct, tangible costs, related to the expenses incurred by the services for treatment/removal of the effects of violence, provided through licensed social structures, according to law, in this purpose. This study will not cover the costs of preventing domestic violence.

In Romania, it is very difficult to use a model for estimating the costs caused by domestic violence. However, in the social sector there is a system of centralization of cases of domestic violence, through a bottom-up transmission, respectively from the local level to the level of the central structures. At the same time, we can estimate the costs in the case report, given the fact that all the social services provided to victims of domestic violence were standardized by Government Decision no. 426 of 27 May 2020 on the approval of cost standards for social services.

To determine the structures that have such attributions of data collection and transmission, we studied the national legislation, as well as the organization and functioning regulations according to Table1.

Table 1

List of structures and authorities responsible for collecting data in the field of domestic violence

No.	Structure name	Structure type	Legal provision
1.	**General Directorates of Social Assistance and Child Protection**	Structure with legal personality at county level	**GD no.49/2011 (**Government of Romania, 2011)**:** „employees of the monitoring department within the D.G.A.S.P.C. complete the appropriate summary sheets (for example, the summary sheet for child abuse and neglect, the summary sheet for cases of labor exploitation and children at risk of labor exploitation, sexual exploitation, child trafficking, summary sheet cases of child trafficking, domestic and cross-border) and send them to the MLFPS - DGPC; based on the summary sheets, compiles statistical data on situations of violence against children and domestic violence;" **G.D. no. 797/2017** (Government of Romania, 2017) „8. compiles the database regarding the cases of domestic violence and reports at county level and respectively at the level of the sectors of the Bucharest municipality and reports these data quarterly to the National Agency for Equal Opportunities between Women and Men;"
2.	**Local Intersectoral Teams**	County level structures, without legal personality, constituted by County Council decisions, whose members can be: 1. General Directorate of Social Work and Child Protection (DGASPC); 2. county police inspectorate/General Police Directorate of the Bucharest Municipality and sectoral police units;	**G.D. no .49/2011** (Government of Romania, 2011) „c) annually analyzes statistical data compiled by the D.G.A.S.P.C. on child abuse and neglect, children exploited and at risk of labor exploitation, children victims of trafficking in persons, children victims of other forms of violence in other states and domestic violence" „e) prepares biannual reports on the activity in the field of prevention and combating violence against children and domestic violence, based on the analysis of statistical data, good practices collected and other relevant information;"

		3. the county gendarmerie inspectorate/General Directorate of Gendarmes of the Bucharest Municipality; 4. county public health directorate/Bucharest Municipality Public Directorate; 5. county school inspectorate/ Bucharest Municipality General School Inspectorate; 6. Territorial Labor Inspectorate; 7. non-governmental organizations.	
3.	**National Authority for the Rights of Persons with Disabilities, Children and Adoption**	Central level structure, with legal personality, subordinated to the Ministry of Labor and Social Protection	**G.D. no.49/2011** (Government of Romania, 2011) c) At central level, the M.M.F.P.S. - D.G.P.C. has the following obligations: 1. centralizes data received from the D.G.A.S.P.C. on the whole issue of violence against children, based on the above-mentioned summary sheets; 2. prepares annual reports on child violence and domestic violence, based on E.I.L. and of the monitoring compartments within the D.G.A.S.P.C .; 3. Contributes to the preparation of country reports on various forms of violence against children and domestic violence; 4. makes proposals for changes in legislation and policies in the field. **G.D. no. 1002/2019 art.4** „g) collects, processes and disseminates statistical data in the areas of competence;"
4.	**National Agency for Equal Opportunities for Women and Men**	Central level structure, with legal personality, subordinated to the Ministry of Labor and Social Protection	**G.D. no.177/2016** (Government of Romania, 2016) Art.4 „d) collects statistical data according to Law no. 226/2009 on Organization and functioning of official statistics in Romania, as subsequently amended and supplemented, prepares reports, studies, analyzes and forecasts on applying the principle of equal opportunities and treatment between women and men, in all areas of activity;"

According to regulations in force, in Romania, any natural or legal person can report the existence of a situation of domestic violence. The General Directorates of Social Work and Child Protection (D.G.A.S.P.C.) at county level and respectively each sector of Bucharest, through the "domestic violence department" (Government of Romania, 2017), have attributions such as "identify risk situations for the parties involved in violence situations domestic and directs the parties to specialized/mediation services; compiles the database on cases of domestic violence at county level, respectively at the level of the sectors of the Bucharest municipality and reports these data quarterly to the National Agency for Equal Opportunities between Women and Men (...) ". Through this study we identified several limitations of the system for collecting data on cases of domestic violence:

- Public and private structures at local and county level transmit these data to D.G.A.S.P.C. which centralizes them, but due to the General Data Protection Regulation, there is no victim

identification data, so sometimes the same victim can be reported by several structures (for example a victim can report to the police about her situation, can benefit medical or social support, and the DGASPC may register the case three times, even if it is the same victim);

- Data is interpreted and collected differently from a D.G.A.S.P.C. to another (there is no unitary practice of understanding the reporting methodology).
- Data are insufficient and do not reveal much information on medium and long term situation of victims, nor data on costs of domestic violence information collected: distribution of victims of domestic violence (cases) by age groups, sexes, home; distribution of victims of domestic violence (cases) by citizenship and ethnicity; distribution of victims of domestic violence (cases) by level of education, in the reported period; distribution of victims of domestic violence (cases) by occupation, income and ownership of the home, during the reported period; distribution of victims of domestic violence (cases) by marital status, during the reported period; distribution of victims of domestic violence (cases) according to the victim's relationship with the family aggressor, during the reported period; distribution of victims of domestic violence (cases) by type of violence, in the reported period; distribution of victims of domestic violence (cases) by types of violence according to the frequency of aggression, during the reported period; services benefited by victims of domestic violence; legal proceedings initiated or withdrawn by victims of domestic violence during the reported period; risk associated with domestic violence during the reported period.

In this study, we chose to only estimate the costs of accessing housing services for victims of domestic violence, using data collected on *services that benefited victims of domestic violenc*e - housing. However, the accommodation is seen as a complex of services that benefit the victims and not just housing. The cost standard provided by H.G. 426/2020 for residential centers is established differently depending on the type of service provided respectively:

- for emergency centers (Ministry of Labor and Social Justice, 2019) (shelters) - the standard cost/year/beneficiary is 26,775 lei;
- for recovery centers for victims of domestic violence (Ministry of Labor and Social Justice, 2019) - the standard cost/year/beneficiary is 34,167 lei;
- for sheltered housing for victims of domestic violence (Ministry of Labor and Social Justice, 2019) - the standard cost/year/beneficiary is 34,167 lei.

Because the data collected does not specifically identify in which type of residential center the victim was housed, we estimated the cost/victim/accommodation as an average of the cost standard for the three types of centers mentioned above, resulting in a cost average of 31,703 lei.

$$\text{Average cost/center/year} = \frac{CPRU+CRVVF+LP}{3} = \frac{26775+34167+34167}{3} = 31.703 \text{ lei}$$

In analyzing annual costs, we multiplied the number of cases per year by the average cost standard for residential (hosting) centers, using the calculation formula below and where CVD is the cost of domestic violence per year, CV represents the number of cases, CPRU represents the cost standard for the emergency reception center, CRVVF represents the cost standard for the recovery center for victims of domestic violence, and LP represents the cost standard for sheltered housing.

$$CVD = CV * \frac{(CPRU+CRVVF+LP)}{3}$$

Were also identified factors that can affect cost estimation using this method, for example:

- Cost standard is set per year, but a victim can benefit from this service for a period of several days, weeks or months and not necessarily a full year.
- Cost standard is a minimum, indicative amount, because each County Council can supplement the funds allocated to these services, to ensure services of a higher quality.

- Standard cost does not include all direct and indirect costs.
- The analysis of the evolution of the costs generated by domestic violence was of longitudinal type, i.e., were compared the data from the years 2018, 2019, 2020, while the benchmark for the period of the Covid 19 pandemic was the year 2020.

MAIN RESULTS

In 2020, the year of the Covid 19 pandemic, there were 24% fewer cases of domestic violence than in 2019 (Fig.3). These figures also don't mean that there were fewer cases of violence in the year of the pandemic, but rather that there were fewer cases reported. Unfortunately, the measures to limit the spread of the Covid 19 pandemic, ordered by the authorities since March 2020, have made it difficult for the victims, who in order to protect themselves, would have wanted to leave their homes, this most often being the place where most violence types are exercised. Also, travel ban measures made it even more difficult to access the support services dedicated to them, which, as I mentioned earlier, are often condensed in large urban areas.

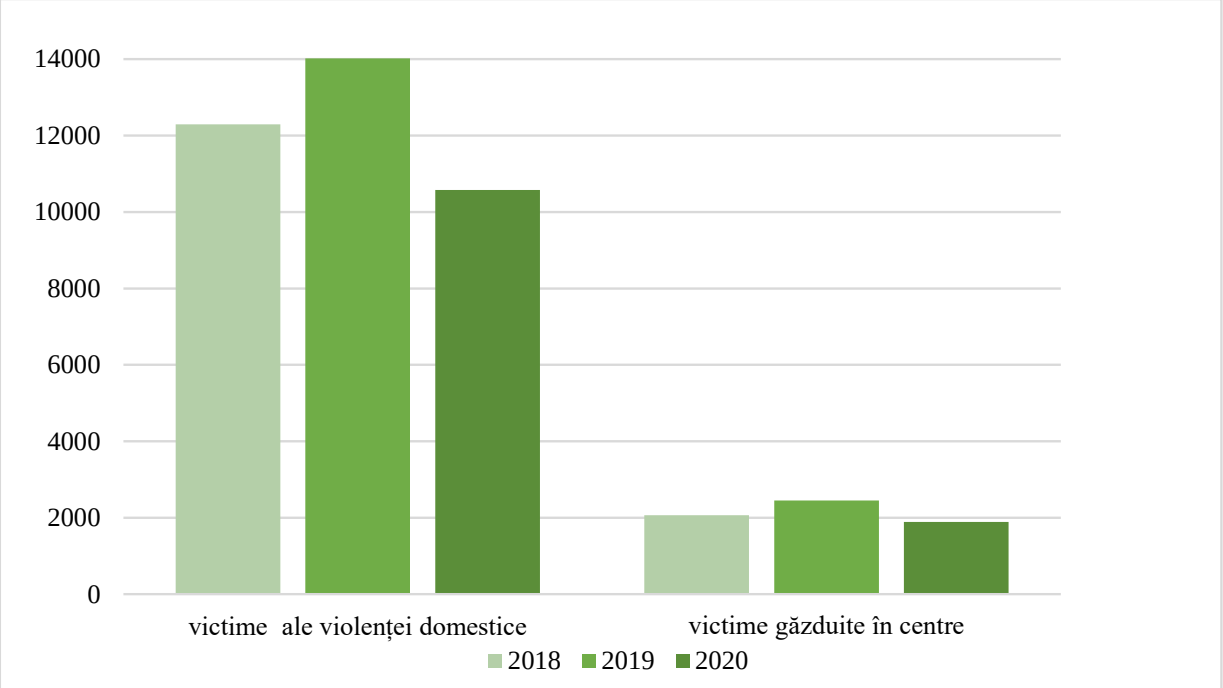

Figure 3. The dynamics of cases of victims of domestic violence and the use of accommodation services

Data Source: National Agency for Equal Opportunities for Women and Men

A similar situation is registered regarding the number of victims of domestic violence who chose to benefit from hosting services in 2020, the percentage being 22% lower than in 2019. Measures imposed by the authorities to limit the spread of the Covid pandemic 19 had effects not only on the reporting of domestic violence cases (and thus the figures are below the real ones), but also on the decisions to use the services offered in these situations. Implicitly, the costs generated by hosting victims of domestic violence in 2020 are 22% lower than in 2019.

Using the above calculation formula, we may be able to determine the costs of hosting services for victims of domestic violence.

Considering the last 5 years, the highest costs were in 2018, subsequently decreasing in 2019 and 2020. The decrease recorded in 2019 was not caused by the pandemic, since there were no cases of COVID-19 infections in Romania in that period. In 2018, on July 13, 2018, the Romanian Parliament adopted Law No. 174/2018 amending and supplementing Law No. 217/2003 to prevent and combat domestic violence, published in the Official Gazette No. 618 of July 18, 2018. „*New*

regulation creates a victim-centered approach and the development of measures to prevent acts of domestic violence (psychological counseling in cases of divorce with a history of domestic violence, monitoring of protection orders/measures to prevent their violation) and also, provides for emergency intervention measures in situations of immediate risk"(https://anes.gov.ro/legislatie-nationala-violenta-domestica/).

Some of the services received by victims of domestic violence have the costs covered by the center in which they are beneficiaries, for example accommodation, primary, social, legal, psychological counseling and even representation in court or obtaining medical documents attesting to the aggression (fig.4). To benefit from these facilities free of charge, victims of domestic violence must be the beneficiaries of support centers, as the amounts are covered by the licensed social service provider.

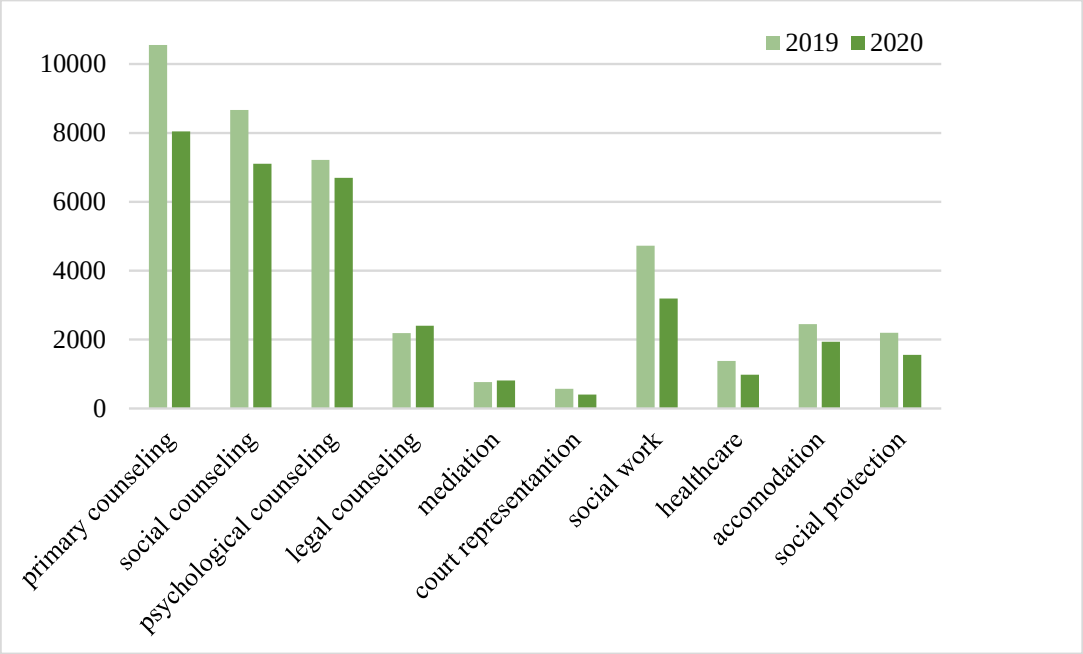

Figure 4. Services provided to victims of domestic violence in 2019 and 2020
Data Source: National Agency for Equal Opportunities for Women and Men

From the analysis of the data and as shown in Figure 3, I found a growing trend of victims of domestic violence to seek legal advice. These figures may be based on the decisions of the authorities to limit the spread of the Covid 19 pandemic, through lockdown measures, periods of time in which the victims were forced to stay with the aggressor in the same house, a fact which led to a strong emotional imbalance because *"By interacting with others, we perceive a reflected image from which we appropriate some of the perceptions of others"* (Fitzek, 2020).

The statistical situation shows that in 2019, 24% more actions were taken to address judicial authorities, compared to 2020 *(Fig. 5).* The trend is decreasing in most cases (for obtaining medical documents, reporting to the police, criminal complaints, protection orders, evacuation requests, obtaining custody, divorce applications), except for procedures related to the maintenance pension and the visiting schedule of the child. The Covid 19 pandemic caused an economic contraction, influenced primarily by the restriction or even closure of some economic activities, which generated the need to access money from various sources to cover financial needs, including actions to change the amount of the maintenance pension (increase or decrease). An explanation for the increase in actions regarding the modification of the child visitation schedule may also be since among the few exceptions to restrictions on the free movement of persons was "*travel for justified reasons, such as child care/accompaniment*", according to the provisions of art. 1 of the Military Ordinance no. 3 from 24.03.2020.

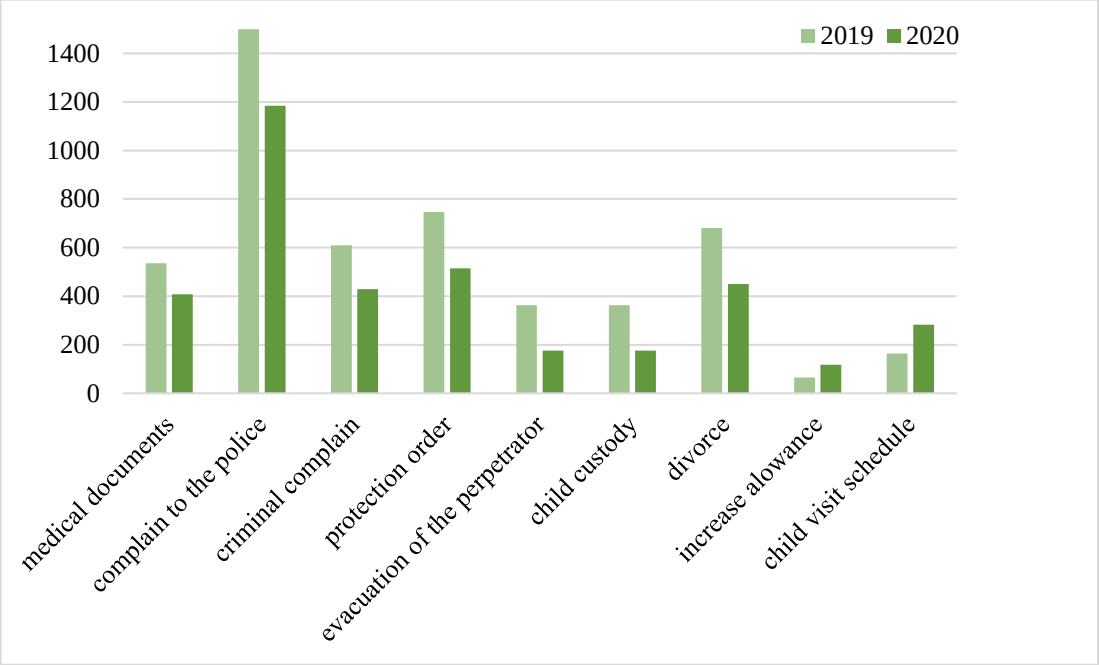

Figure 5. The legal proceedings situation in 2019 and 2020
Data Source: National Agency for Equal Opportunities for Women and Men

Legal action can be taken both on behalf of the victims of domestic violence and by the authorities on their behalf. In this context, there are costs that do not involve costs (filing a criminal complaint), but also others that have costs due to the need to hire a lawyer (for example to obtain a protection order, evacuation of the aggressor, child custody, divorce, parental leave, child visitation schedule).

CONCLUSION

Regarding the methodological difficulties of the investigation, I found that in Romania the data collected by the authorities may be distorted by situations such as double registration of cases, the reality of those declared by the victim/witnesses, different reporting methodologies, etc. It is also well known that domestic violence is rarely reported to the authorities, with the victim choosing not to disclose it. A disadvantage of Romania's case is that there are still data that are not included in the statistics being treated globally, for example the expenses generated by the conviction of criminals, medical services etc.

This approach to quantifying the costs of domestic violence is a challenge for any researcher, especially as each state has a different social and legislative context. However, efforts must be continued and supported primarily at the governmental level, especially after the adoption of legislative measures that have a major impact on society. Such an approach may reflect whether the measures taken are optimal or need to be adjusted according to the results of scientific studies. At European level, efforts are being made to think of unitary methodologies for assessing the phenomenon of domestic violence, so that the figures can be easier to compare, but most importantly, to make trends easier to predict.

REFERENCES

1. Council of Europe (Ed.). (2012). Overview of studies on the costs of violence against women and domestic violence. Strasbourg. https://rm.coe.int/168059aa22
2. Dragan, C. (2021). Assessing the costs of violence against women in Romania. Finland,; https://ec.europa.eu/justice/grants1/programmes-2014-2020/rec/index_en.htm.
3. Envall, E., & Eriksson, A. (f.a.). Costs of Violence against Women (p. 11). National Board of Health and Welfare, Sweden.
4. Fitzek, S. (2020). Sacrul si puterea politică. Abordari psihosociale ale imaginarului colectiv.
5. Heiskanen, M. (2002). The Costs of Violence in a Municipality: A Case Study of Violence Against Women and Its Costs in the City of Hämeenlinna 2001, Based on Estimates Provided by Authority Representatives. Ministry of Social Affairs and Health.
6. Juliane, F., Stephanie, S., Susanne, S., & Rolf, I. (2013). Coûts de la violence dans les relations de couple (p. 134) [Rapport de recherche]. Zurich, novembre.
7. Kruse, M., Sørensen, J., Brønnum-Hansen, H., & Helweg-Larsen, K. (2011). The Health Care Costs of Violence Against Women. Journal of Interpersonal Violence, 26(17), 3494–3508. https://doi.org/10.1177/0886260511403754
8. Nectoux, M., Mugnier, C., Baffert, S., Albagly, M., & Thélot, B. (2010). Évaluation économique des violences conjugales en France. Santé Publique, 22(4), 405. https://doi.org/10.3917/spub.104.0405
9. Petra, O., & Åsa, E. (2021). Methodologies and good practices on assessing the costs of violence against women. Finland,. https://ec.europa.eu/info/sites/default/files/aid_development_cooperation_fundamental_rights/mlp_se_comments_paper_fi_july_2021_en.pdf
10. Rasmussen, I., Strøm, S., Sverdrup, S., & Vennemo, H. (f.a.). Samfunnsøkonomiske kostnader. Rapport nummer 2012/41, 126.
11. Rivera-Galicia, L., Gallo-Rivera, M., Mañas-Alcón, E., & Montes Pineda, O. (2019). The costs of gender-based violence against women in Spain.
12. Romani, L., Barmeyer, C., Primecz, H., & Pilhofer, K. (2018). Cross-Cultural Management Studies: State of the Field in the Four Research Paradigms*. International Studies of Management & Organization, 48(3), 247–263. https://doi.org/10.1080/00208825.2018.1480918
13. The EU Mutual Learning Programme in Gender Equality Methodologies and good practices on assessing the costs of violence against women Online 7-8 July 2021. (f.a.). [Text]. European Commission - European Commission. Preluat în 20 ianuarie 2022, din https://ec.europa.eu/info/eu-mutual-learning-programme-gender-equality-methodologies-and-good-practices-assessing-costs-violence-against-women-online-7-8-july-2021_en
14. Walby, S. (f.a.). The Cost of Domestic Violence. 117.
15. Walby, S. (2009). The cost of domestic violence: Up-date 2009 [Report]. Lancaster University. https://openaccess.city.ac.uk/id/eprint/21695/

Received 01 November 2021
Accepted 20 December 2021

REGULATIONS
of publication scientific articles in „Economy and Sociology" journal, category B+, indexed in international databases

Presentation of the manuscript and decision on publication

Authors wishing to publish articles in the Economy and Sociology journal are asked to send manuscripts electronically to **incemd.redactie.es@gmail.com.**

They can also be mailed or handed over to the editorial board on paper and in electronic form. Manuscripts run the peer-review process and the authors get a response in about 4 weeks.

By sending the manuscript to the editorial office, the responsible author confirms that he has read and agrees with the ethics of publication published in the journal Economy and Sociology.

All the manuscripts received are reviewed by the editorial staff in terms of meeting the formal requirements of the journal. Articles that do not match the journal's topic and are not written in accordance with the journal's rules are not accepted for review, and the respective notice is sent to the author.

The articles accepted for examination are discussed at the editorial board meeting where the reviewers are appointed.

After reviewing the article (peer review, double blind), the comments and objections of the reviewers and the Editorial board are sent to the author with a proposal to make corrections to them or to repeatedly submit the article. If the manuscript is not accepted for publication, a motivational refusal is sent to the author.

After the article is accepted, the author must send the editorial (if any) files with diagrams and data for them.

The finally print

The layout of the articles accepted for publication (after review and final drafting by authors) is sent to the authors for the fine print. The authors are asked to reply to the editorial office within 3 days. The authors receive 1 copy of the article (extracted in pdf).

Agreement for publication

The copyright for published articles belongs to the National Institute for Economic Research. Reprinting of the materials is possible only with the Editorial board's approval. Authors submitting articles to the editorial office implicitly declare their consent under these conditions.

Access to the contents of the journal

Access to the contents of the magazine is free on-line, the print version can be purchased with payment to the NIER Editorial Complex, including the order sent to the applicants or by subscription.

The editor of the journal, the National Institute for Economic Research, performs the electronic backup copy and will provide access to the contents of the journal if it will not be published.

Submissions are accepted all year round with the current waiting time of max. 6 months.

There are no author fees or charges required for manuscript processing and/or publishing.

TECHNICAL INSTRUCTIONS

The article structure:

TITLE of article: *English, Romanian, Russian*

THE DATA ON AUTHOR/AUTHORS: *Name Surname, scientific degree, scientific title, institution (without abbreviations), in: English, Romanian and Russian* with a footnote at the first page of the article: ©Name Surname (author), e-mail.

THE ABSTRACT will contain actuality, aim of the research, main methods of researching, and the most relevant obtained results from the research in *English, Romanian and Russian*.

KEYWORDS: *6-8 keywords in English, Romanian and Russian*.

JEL Classification (Journal of Economic Literature Classification System: https://www.aeaweb.org/econlit/jelCodes.php)

Articles should be structured in the following sections:

1. **INTRODUCTION** (the argumentation of the actuality of the research/research problem)
2. **LITERATURE REVIEW**
3. **DATA SOURCES AND USED METHODS**
4. **THE RESULTS OF OWN RESEARCH AND DISCUSSIONS**
5. **CONCLUSIONS**
6. **REFERENCES:** *up to 30 sources*

Typing rules

- The form of basic text: A4 (edges: 20x20x20x20 mm); Times New Roman; 12pt; line spacing – 1,5, left-right alignment, the paragraph 10 mm
- The article title (centered, in capitals, 12pt.)
- The author of the article (right alignment, bold, italic), the last name of the author with capitals, 12pt.
- The abstract (left-right alignment, italic, paragraph 10 mm, 12pt. (250 words)
- Keywords (left-right alignment, italic, paragraph 10 mm, 12pt.
- JEL Classification (right alignment, bold, italic, 12pt.)
- The work will contain 10-15 pages (from 25 to 40 thousands signs)
- Graphic elements (tables and figures) must be elaborated by author, have high quality (color), will be placed, directly, after concerned reference in the text. All the elements, mandatory, shall be accompanied by name and order number (above the table, below the figure), source and, as needed, additional information: note, legend (underneath the element).
- Bibliographic references are placed at the end of the article (Name, surname initial, title, editor, year, pages, ISSN). In the text shall be indicated bibliographical references, which include the name of the author and the year the publication was published (i.e., (Kessel, 2010), (Hinde, 1998; Pullum, 2004), (Eurostat, 2015). The reference page must be indicated by a colon (Rachkov, 2011:213).

Review. All the supplies, submitted for publication in „Economy and Sociology" journal, are subject to the review „double-blind review system" by Editorial board.

Detailed information on the publishing process can be found at
https://es.ince.md/index.php/Economy_and_Sociology

Bun de tipar: 11.02.2022. Tirajul 100 ex.
Coli editoriale: 14,40. Com. 6.
Serviciul Editorial al INCE, 2020

Editor's address:
National Institute of Economic Research
Ion Creanga Street, 45, mun. Chisinau, MD-2064
e-mail: incemd.redactie.es@gmail.com
website: https://economy-sociology.ince.md
Tel. + 373 22 501130