

INDEX OF THE CYCLE OF MONEY - THE CASE OF MOLDOVA

Constantinos CHALLOUMIS *¹

Abstract: *This paper assesses the cycle of money in an actual case scenario like this of the economic system of Moldova. The calculations of the index of the cycle of money in Moldova are compared with the global average index of the cycle of money. The results reveal that Moldova is below the average global value, but it is above the critical level of 0.2, meaning that the economy can face an economic crisis. Therefore, Moldova's results show that it is a well-structured economy and can face an economic crisis. These results are from a project for multiple countries and this is the only study until the present time about this country's index of the cycle of money. The period that is used for compiles is the global recession period of 2012 - 2020. Prior results are from the cases of Latvia, Bulgaria, Serbia, Greece, Montenegro, Ukraine, and Thailand. The current work is the only one for the case of Moldova.*

Keywords: *Index of the cycle of money, general index of cycle of money, Moldova, Cycle of Money (CM) theory, structure of the economy*

JEL Code: *D6, E1, H1*

Introduction

This paper scrutinizes the dynamic of the economy, of Moldova, using the theory of the cycle of money. The theoretical characteristics of the cycle of money support that the dynamic of an economy is formed on the idea of the number of times that money is used in an economy. An amount of money in many cases gets out from an economy to external banks or other economies. The main idea is that the larger companies and the international companies in most cases save their money on external banks and economic heavens. The decision of the G7 for the global implication of the tax rate of 15% follows the concept of the theory of the cycle of money. Thus, the tax authorities should put an additional tax on these kinds of enterprises to reduce the losses to the economy. The smaller companies and the freelancers should be taxed with lower tax rates. It would be plausible to increase the dynamic of the economy. Thus, the factories, the know-how services of large companies, the health care system, and the educational system comprise a special case for the economy, as they belong to those cases where the taxes improve the quality of the economy. The factories and the large know-how companies increase the cycle of money, as they do not substitute the activities of the small-medium companies and the freelancers. The educational and health care systems improve the quality of the economy, making the whole economy better (are an exemption) (Evans, Ringel, & Stech, 1999; Grove, Sanders, Salway, Goyder, & Hampshaw, 2020; Johnston & Ballard, 2016; Mialhe, 2017; Montenegro Martínez, Carmona Montoya, & Franco Giraldo, 2020; Persson & Tinghög, 2020; Rasmussen & Callan, 2016).

*¹ Constantinos Challoumis, phd cand. in economics, National and Kapodistrian University of Athens (N.K.U.A.), Athens, Greece. Email: challoumis_constantios@yahoo.com, ORCID: 0000-0002-7436-0506

Larger companies should not provide similar products and services, like that to smaller companies, as they can make investments in economic fields that smaller companies cannot support. In that way, an economic system achieves its best level. Moreover, the concept of the cycle of money shows that with the appropriate allocation of production units and taxes the money is cycled inside the economy achieving the maximum dynamic of the economy. This paper is about Moldova's index of the cycle of money (Burstein, 2020; Franko, Tolbert, & Witko, 2013; Hagenars, Jeurissen, & Klazinga, 2017; Rashid, Warsame, & Khan, 2020; Saraiva et al., 2020; Schram, 2018). The research is based on an actual case scenario of a country's economic system. Therefore, the principal hypothesis of this paper aims to estimate the index of the cycle of money in Moldova and to answer the question if it's near the worldwide general index of the cycle of money, according to the simple index or the general index of the cycle of money. The cycle of money in Moldova should be similar to or close to the worldwide general index of the cycle of money to be able to counteract a potential depression. The applied approach is formed totally on mathematical estimations from the relevant theory. The results establish that Moldova's economic system is properly established, as it follows the general international index of the cycle of money (the value of 0.5) which represents the average global case (Challoumis, 2018a). The countries near 0.5 and above it have an appropriate distribution of money to their financial system. Moldova's economic system is considered as well established, standing on the results of this paper. The question about the way the index of the cycle of money works in the case of Moldova is answered from the structure of its economy and the way that the money is distributed to its economy. But, it needs some improvements to have an even better index cycle of money (Challoumis, 2018c, 2018a, 2018b, 2019b, 2019a, 2020b, 2020a). Therefore, Moldova should decrease taxes for small and medium enterprises, to achieve better reuse of money in the country's economic system and simultaneously increase them of the larger enterprises (OECD, 2020a, 2020b).

The formulation of two hypotheses has been made, one related to the level and another to the impact of the index level on the policy decisions and/or the economic evolution.

1. Literature review

This work presents empirical results about the form and content of controlled transactions in the global economy, and the impact they have on the economies of individual countries. Especially in this case is examined the economy of Moldova.

- Controlled transactions include transfer pricing, triangular transactions, and in general any form of control aimed at achieving profits.
- In the cases of health and education, any expenditure contributes to the achievement of qualitative characteristics of an economy and substantially upgrade it, i.e. returns to the economy in a multiplier way.
- This theory predicted the need for a minimum fixed tax on international transactions, some years before its imposition by the G20 decision.

- The theory detects the resilience of an economy, depending on the use of money, structural deficiencies are with the functionality of an economy, since depending on the "dispersion" and the "reuse" of the money cycle, the state of an economy is detected.
- It is indicated the percentage and the amount of need to be strengthened.
- The 'structural' characteristics of an economy can be identified on the basis of its 'functional' characteristics, i.e. on the basis of 'flow', otherwise 'dispersion' and 're-utilisation' of the amount of money in an economy. In this way it is understood that economics are identified with society, since both a term of dispersion and the re-use of money indicate that society is the economy, identifying from this perspective that society and economy are the same. Otherwise economies present structural and functional problems.
- The concept of the function and structure of an economy is in direct connection with each other.
- While GDP shows economic figures, the MC (Money Cycle), beyond the economic magnitudes, indicates the characteristics of the economy, otherwise it gives it an "identity". Allegorically expressed, as in the human body from blood can identify pathogenies in the organism (organs), so in an economy the role of blood is performed by the money that is within it, otherwise if there is a malfunction in the functioning of the economy (distribution and reuse of money), then structural problems are identified. Thus, function and structure are inextricably linked to each other.

The theoretical background of the cycle of money for lower taxes to big capital, companies from manufacturing and factory activities, the free market will act better for the small and medium companies. The case of Latvia, Bulgaria, and Serbia presented the condition of the country's economy and how to react to an economic crisis, according to the index of the cycle of money. Similar results are concluded for the cases of Serbia and Bulgaria. These results are based on the theoretical approach of the theory of the cycle of money, where this theory suggests that in an economy the taxes return to the society; basically, this happens in the case of the education and the health system. But, the main rule is that the authorities should keep the taxes as low as is plausible, for the medium or small economic units (meaning any kind of economic unit e.g. freelancers), and companies. The arm's length principle is the principle where the authorities apply the taxes to an international group of companies. The arm's length principle is the method that the tax authorities to estimate the tax obligations of the companies which participate in international transactions. For the authorities using the arm's length principle, it is tough to obtain the controlled transactions, as the international companies offer similar data with that of the uncontrolled transactions and they hide with the purpose to avoid paying taxes. Therefore, the government needs to apply the fixed-length principle. The fixed-length principle indicates that the companies of controlled transactions manage transactions and achieve avoiding tax paying.

Thus, according to the fixed-length principle, international companies should pay a fixed amount of tax. In that way, the cycle of money is enhanced, because the larger

companies generally send the money out from the society and the economy and save them in international banks. Consequently, that money is lost from society, decreasing consumption. Then, according to the fixed-length principle, the local companies which save their money in local banks should have lower tax rates (Acs & Szerb, 2007; Andriansyah, Taufiqurokhman, & Wekke, 2019; Androniceanu, Gherghina, & Ciobănașu, 2019; Castro & Scartascini, 2019; Nash, Bright, Margetts, & Lehdonvirta, 2017; Russo Rafael et al., 2020).

In conclusion, the fixed-length principle serves the theory of the cycle of money, where the small and medium companies pay lower taxes than the larger companies, which substitute their activities. The arm's length principle estimates the taxes standing on methodologies provided by the companies that make international transactions. In that way, the large companies cover the activities of the smaller companies. The mainstream is that small and medium companies boost the distribution of money to a country's economy as usually, they don't save their money out of the country's economic system, and reuse the money inside the economy. Therefore, the money distributed inside the economy increases the cycle of money many times. The reason why money increases the cycle of money is obvious according to eq. (4) of the general index of the cycle of money (Challoumis, 2021e).

A prior application of the theory of cycle money could be found in the case of Latvia, Bulgaria, Serbia, Greece, and Thailand are above the value of 0.2 meaning that is a well-structured economy and would not collapse into an economic crisis. In the case of Moldova, the index of the cycle of money is above 0.2, anticipating that Moldova could also face a strong economic crisis, but with a little bit slower rhythm. The countries that are above this value, can face economic crises (Challoumis, 2021c, 2021b).

2. Methodology

Hinged on the methodology "Index of the cycle of money – The case of Greece" (Challoumis, 2021a): "The methodology applied for this work is revealed below, being in the same line with the presented theory. The estimations of the cycle of money are clarified by the following mathematical types:

$$c_y = c_m - c_\alpha \quad (1)$$

$$c_y = \frac{dx_m}{dm} - \frac{dx_m}{da} \quad (2)$$

$$i_{cy} = Y * b_d \quad (3)$$

$$g_{cy \text{ Country}} = \frac{c_y \text{ country}ts}{c_y \text{ Average} + c_y \text{ country}ts} \quad (4)$$

$$g_{cy \text{ Average}} = \frac{c_y \text{ Average}}{c_y \text{ Average} + c_y \text{ Average}} = 0.5 \quad (5)$$

The c_m is the velocity of financial liquidity, c_α is the velocity of escaped savings and c_y is the cycle of money. The i_{cy} is the index of the cycle of money, Y is the national income

or GDP, and b_d is the bank deposits of the country. Moreover, $g_{cy\ country}$ symbolizes the general index of c_y of the country, $c_{y\ country's}$ is the index of c_y of the country, and $c_{y\ Average}$ is the global index of c_y . Finally, $g_{cy\ Average}$ is the general global index of c_y , and is obtained as a global constant. The main hypothesis is to establish the connection between the index of the global average c_y , and the bank deposits and the GDP per capita, with an econometric approach.

The eq. (4) and (5) mean that an economy that do register a value close to 0.5 can face immediately an economic crisis. Results close to this value represent an appropriate index of the cycle of money, revealing an adequate economic structure of the society and then the fine distribution of money between the citizens - consumers. Equation (1) is the term for the cycle of money which used to define the $c_{y\ country's}$ and $c_{y\ Average}$ of eq. (2). The cycle of money to a quantity value is expressed by GDP, which is an expression of $\frac{\partial(GDP)}{\partial(S+I+X)}$, according to $\frac{dx_m}{dm}$ and $-\frac{\partial(GDP)}{\partial(S'+I'+M)}$ based on $\frac{dx_m}{da}$. Then, $c_y = d(GDP) = \frac{\partial(GDP)}{\partial(S+I+X)} d(S + I + X) - \frac{\partial(GDP)}{\partial(S'+I'+M)} d(S' + I' + M)$, formed on $c_y = \frac{dx_m}{dm} - \frac{dx_m}{da}$, of eq. (2).

Thus, S is the savings, I is the investments and X is the exports. Then, S', is about the savings which are oriented to banks out of the country's economy, I', is about the investments which are oriented to banks out of the country's economy, and M is the imports. Therefore, the cycle of money expresses the GDP as the following one: $Y = S_T + I_T + (X - M)$, or $Y = (S - S') + (I - I') + (X - M)$ or $Y = \Delta S + \Delta I + (X - M)$.

According to the theoretical background, for the lost money from the economies, the problem of controlled transactions could be administrated, if an organization could identify the money transitions between the economies, by a comparison of the global economies, by ΔS , ΔI , and $(X-M)$. Thus, $c_{y\ total} = \sum_{i=1}^n \sum_{t=1}^m c_{yi,t} = \sum_{i=1}^n \sum_{t=1}^m [\frac{\partial(GDP)}{\partial(S+I+X)} d(S + I + X) - \frac{\partial(GDP)}{\partial(S'+I'+M)} d(S' + I' + M)]_{i,t}$.

Applying this methodology to the current work is estimated the country's indexes (Challoumis, 2021d, 2021e, 2021a).

Finally should be mentioned that the analysis of the methodology based on the concept of GDP: The reason $S=C$ is used is because in the CM (Cycle of Money), $S^*=I$, i.e., $Stot.=S+S^*=C+I$, as any amount of money not used in the economy is considered as savings. With S being the supporting savings and S' (=C'), where $Stot.' = S'+S^*= C'+I'$, the escaped savings. Otherwise, it is considered that the concept of the cycle of money is directly linked to consumption, and investments, when they do not take active place by consumption or investements.

3. Empirical Results

The following results deducted form the analysis of the index of the cycle of money for the case of the economy of Moldova (from 2012 to 2020, should be mentioned that data of financial deposits for 2018-2020, are waved, because of lack of data):

Table 1. Moldova's regression analysis (unit root test)

OLS			
Variables	Coefficient	std. error	p-value
Constant	-401503	7845.99	5.39e-08 ***
Moldova's financial deposits	11019.1	144.809	7.43e-09***
Moldova's GDP per capita	36.8967	0.539972	1.27e-08***
Global index of the cycle of money	-0.0389961	0.0100779	0.0614*

Source: Author's estimations using data.worldbank.org

In the prior table, the values with three asterisks symbolize the cases where the coefficients are below 0.01, then there is a confirmed significant level. In addition, one asterisk corresponds to 0.1, then confirms the significant level. Should be mentioned that the Durbin-Watson result is 2.262209. The indexes reveal Moldova's distribution of money and the form of its economic structure (see Table 2). The Global Index of the cycle of money is expected to not belong to the significant level, as the country's influence on the global GDP, is a small part of it. Estimations of Tables 1 and 2 determined that Moldova belongs to a good economy, as it has a general index of the cycle of money higher than 0.2 (the lower limit), meaning that it can recover from a potential economic crisis. Thus, to these results, it's plausible to determine the situation of the cycle of money in Moldova:

Table 2. Moldova's index of the cycle of money

Year	Financial Deposits Global Average (%)	Financial Deposits Moldova (%)	Global GDP per Capita (\$)	Moldova GDP per Capita (\$)	Index of Global Average Cy (\$)	Index of Moldova's Cy (\$)
2012	52.48	37.59	16,653.01	9,000.66	873,949.96	338,334.81
2013	53.96	40.4	17,266.62	9,817.00	931,706.82	396,606.80
2014	55.81	41.73	17,159.02	10,314.00	957,644.91	430,403.22
2015	59.38	39.82	15,295.71	10,361.00	908,259.26	4112,575.02
2016	60.77	37.21	15,330.03	10,943.00	931,605.92	407,189.03
2017	60.07	31.67	15,082.49	11,651.00	906,005.17	368,987.17
2018	61	33	21772.48	12,363.00	1,328,121,28	407,979.00
2019	62	34	21983.87	13,022.00	1,362,999.94	442,748.00
2020	61.5	32.5	19632.86	12,325.00	1,207,420.89	400,562.50
Results					9,407,714.15	3,605,385.55

Source: Author's estimations using data.worldbank.org

Figure 1 presents the situation of bank deposits in Moldova's financial system, as a percent of the GDP, for the period from 2012 to 2020

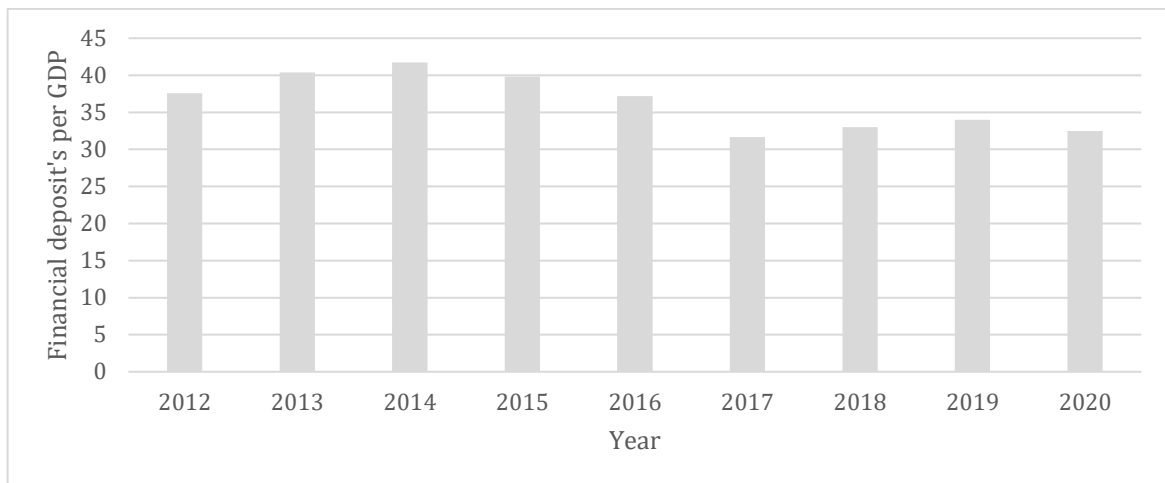


Figure 1. Moldova's financial deposits per GDP

Source: data.worldbank.org

Figure 1 presents the condition of the GDPs of Moldova's economy for the period from 2012 to 2020. Also, the next scheme (fig. 2) presents the GDPs of Moldova, for the same period.

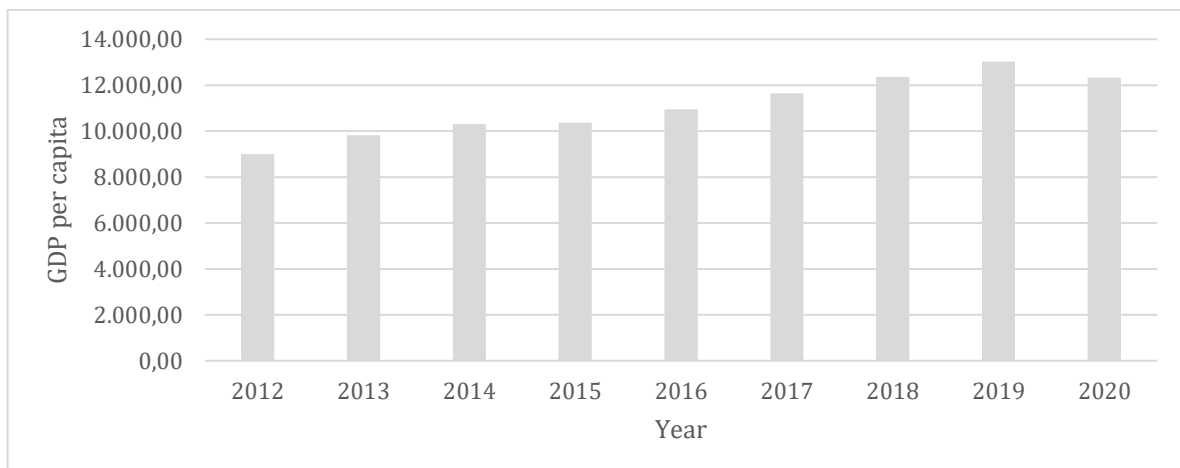


Figure 2. Moldova's GDPs per capita

Source: data.worldbank.org

Thus, Moldova's c_y is 3,605,385.55 \$.

The index of global average c_y is 9,407,714.15 \$

The general index c_y for Moldova is $g_{cy\ Country} = 0.277$

The general index of c_y global view is $g_{cy\ Average} = 0.5$

It is deduced that Moldova's index cycle of money is close to the global average cycle of money. Then, the dynamic of Moldova's economy complies with the global average and its structure is near to the initial hypothesis. Then we receive the next scheme:

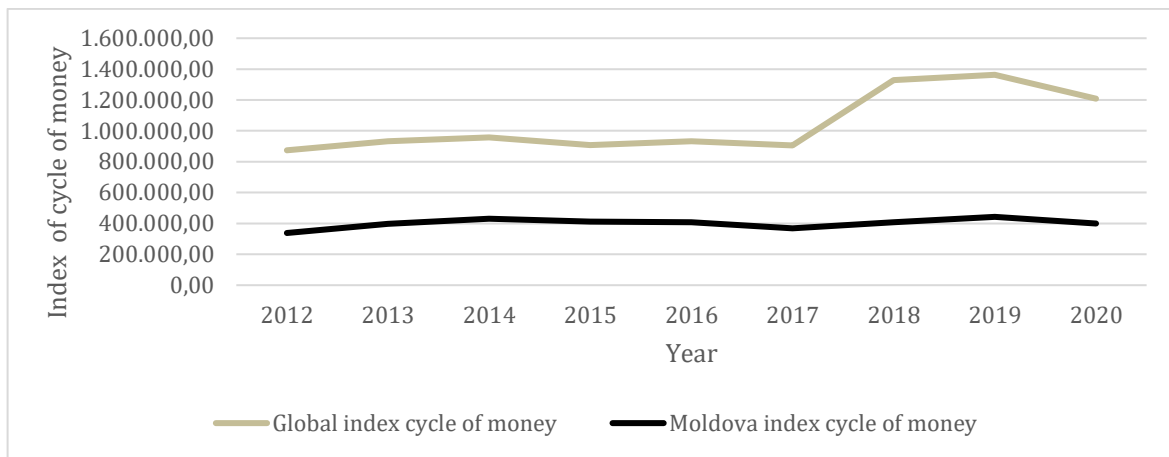


Figure 3. Graph of the index of the cycle of money

Source: Author's Conclusion

The index of the cycle of money in Moldova's economic system is close to the global average of the index of the cycle of money, which is 0.5. The economic structure of Moldova has a good distribution of money to its economy.

The international and the larger companies replace the SMEs. In addition, the government should protect more the SMEs to avoid losing money from transactions of bigger companies. The authorities should imply the fixed-length principle, then higher taxes should be put on the bigger companies. The general index of the cycle of money is presented in the following figure:

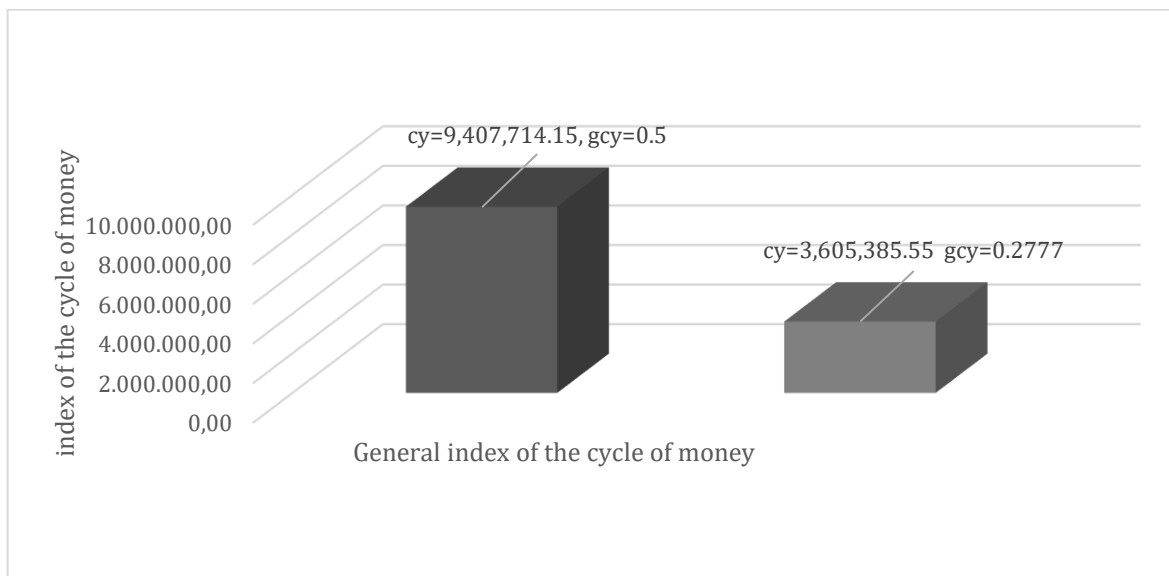


Figure 4. The cycle of money indexes

Source: Author's Conclusion

The connection between the global average indexes and Moldova's index is presented. Moldova is part of the countries which are near to the global average index of the cycle of money.

4. Discussion

According to OECD (OECD, 2020c) “ Small and medium enterprises (SMEs) are a source of jobs and growth. They also have a role to play in the diversification of output, export, and employment, and are a vital source of entrepreneurial human capital. This is particularly important at a time when the countries of Eastern Europe and the South Caucasus strive to make their economies more inclusive and more resilient to shocks. SME development has therefore been central to co-operation within the framework of the Eastern Partnership (EaP), a joint initiative of the European Union and six neighbors – Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine ”. Therefore, according to SME policy, especially in the case of the Republic of Moldova, the theory of the cycle of money has a key role in the development of the economy and social prosperity. The Republic of Moldova has made good progress in further developing a conducive business environment for small and medium enterprises. Then, Moldova has advanced in the implementation of the SME Development Strategy 2012-2020 with important progress in the diminishing burdensome regulation, the implementing appropriate regulatory impact analysis, and the provision of business development services for SMEs. Significant reforms also include a reinforced policy framework for entrepreneurial learning, broadened e-government applications, start-up support for new and young entrepreneurs, an expansion of the credit guarantee scheme, and a formalized public-private dialogue platform. Moldova should focus on promoting a level playing field for all companies through an effective competition policy and a transparent and independent judiciary. Emphasis should be given to entrepreneurial learning, including meeting the specific skills requirements of SMEs. The not wide internationalization of Moldovan SMEs is a long-term challenge, and more attention could be done to making better use of Moldova’s DCFTA with the EU. Moreover, Moldova could further support the green economy and the innovation activities of SMEs and their transition.

Growth in Moldova has recovered noteworthy fast from the slowdown caused by the banking crisis and an unfavourable international environment, which resulted in a contraction in 2015. This reflects improvements in both external economic conditions and domestic fundamentals. In the cases of unemployment and inflation rates reached their lowest levels since 2012 and, together with lower interest rates on new loans, contributed to a modest increase in investment and domestic demand. Personal remittances, continue to play an important role in Moldova, affecting domestic demand and the current account deficit. Although services represent a high rate of GDP, the agriculture sector continues to play a significant role, affecting significantly GDP and employment. Manufacturing in Moldova is driven by its traditionally strong food-processing sector, which accounts for a significant part of manufacturing production. FDI inflows showed mainly towards the automotive and machinery sectors are changing the landscape of Moldovan manufacturing. Besides major improvements in the operational environment for both domestic and foreign companies, important structural challenges should happen. For instance, massive emigration and a rigid education system have led to shortages of skilled labor; one of the main constraints in doing business reported by SMEs. Moldova has developed a well-structured institutional and regulatory framework containing all the main building blocks of a proactive

SME policy. Progress since it has been good, with more marked improvements in the area of regulatory reform and regulatory impact analysis (RIA) application. Moldova has aligned its SME policy with the guidelines set by the European Union's Small Business Act for Europe (SBA). The country's SME orientation follows the EU direction. Its SME approach, covering the 2012-2020 period, is scheduled according to the EU SBA framework. The policy implementation is horizontal, placing a particular scope on improving the business climate and reducing administrative burdens, encouraging entrepreneurship; among women and in the less developed area of the country, and improving access to finance for SMEs. A section is dedicated to the role that could be played by remittances, a major national income source in Moldova, for the development of small enterprises. The SME development is in the same line with the country's mid-and long-term development strategies, "Moldova 2020" and "Moldova 2030".

Moldova has made important progress in several areas affiliated with the operational environment for SMEs, such as company registration and licensing. Moldova should imply an open, competitive, job-creating economy. The government of the Republic of Moldova has put poverty reduction and economic growth as the main target of its master plan. The Republic of Moldova, with education and the business environment as core sections for reform. This pillar considers the way that Moldova is addressing entrepreneurship promotion in its education system; considering the developments within the European Union, it then reviews developments in women's entrepreneurship as part of the wider range for competitiveness.

Moldova has taken serious steps to facilitate SMEs' access to finance. Important policies include an expansion of the economic system for movable assets, which has ameliorated the ecosystem for registering collateral. The consolidation of the banking sector has indexed palpable results, with international investors returning to the country abiding by credit growth recovery. Support for SME finance is donor-dependent, though the expansion of the Credit Guarantee Fund is a significant step in mitigating the perceived risks of SME lending. A law on non-bank financial institutions is one more important step in diversifying sources of financing for SMEs, though available statistics show limited market penetration of these instruments. Public procurement in Moldova is regulated by the Public Procurement Law (PPL), with some subsequent amendments. While it was reflecting the EU's public procurement directives Moldova's Association Agreement with the EU now needs further changes to conform with the directives, which give provisions for facilitating SME participation in public procurement. The same objective is also covered in the SME Development Strategy, for paradigm through corresponding training. The main policy-making institution in this facet of public procurement is the Ministry of Finance, with the Public Procurement Agency, subordinated to the Ministry, in amendment of policy implementation. In addition, the review of complaints is administered, without any charge, by the National Agency for Settlement of Complaints. Moreover, the establishment of the National Agency for Research and Development (NARD) is a significant development in the institutional setting for innovation since the latest SBA assessment. According to its obligations, the Agency should manage national funds for innovation, increase public

knowledge of R&D and scientific resources, and develop the activity of the innovation infrastructure. The most affiliated program is managed by NARD and provides grants for technology transfer projects. These grants need some co-financing from the beneficiaries and are awarded through a competitive selection process that considers the degree of innovation of the project, its impact, and the capability to implement it.

Conclusions

The case of Moldova shows that Moldova complies with the hypothesis that it could face a potential economic crisis. The formulation of two hypotheses has been made, one related to the level and another to the impact of the index level on the policy decisions and/or the economic evolution. Both of them are satisfied. In the case of the level of the index of the cycle of money, the value of 0.277 shows that Moldova is above the lower limit of 0.2. Countries with a value lower than theirs cannot face a potential crisis or can recover at an extremely low rate. From empirical results of prior estimations from other countries like the case of Greece, each 0.1 value for the general index of the cycle of money is about 3 to 5 years of recovering to return the country to the prior level of its economy. The policy decision it could be satisfied will be followed the concept of the cycle of money, meaning to have low tax rates for SMEs and low tax rates for high technology companies and the factories. On the contrary high tax rates should imposed on companies that substitute economic activities that could be offered by SMEs. In that way, high distribution and reuse of money could succeed. SMEs have a key role in an economy as represent not only the current case but in general, approximately more than 90 % of the economic units of a country's economy. Then if the hypothesis of the general index of the cycle of money is over 0.2 is satisfied this means that this economy has an appropriate frequency of reuse of money, with an appropriate distribution of money between its economic units.

The G7 decision for minimum global tax at the rate of 15 % is in the same line with the fixed-length principle, showing the minimum additional tax to the companies that participate to control transactions. The theory of the cycle of money is connected with the principles of this decision. The increase of taxes on the large companies will ameliorate the volume of money to the country's economy, as this amount of money was saved for tax heavens and international banks.

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