Heterogeneous Effects of Fiscal Rules Under the Maastricht Fiscal Criterion: Budget Fiscal Deficit and Debt Sustainability Analysis

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October 2024

HETEROGENEOUS EFFECTS OF FISCAL RULES UNDER THE MAASTRICHT FISCAL CRITERION: BUDGET FISCAL DEFICIT AND DEBT SUSTAINABILITY ANALYSIS

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Summary

We contend that ambivalence or uncertainty regarding the error terms may be the root cause of many methodological misunderstandings in time-series econometrics. Macroeconomic time series have imprecise relationships, and early econometricians invariably discovered that any estimated relationship would only fit with errors.

Second part is designed to quarterly estimated structural macro econometric model for the Republic of Moldova, denoted A Classical Macroeconometric Data Model for the Republic of Moldova (MDM) in context of Neo-Classical Approach of the Economy. We have interpreted the term error from the perspective of 7 macroeconomic indicators, namely Gross Domestic Product (error, pension), Inflation Rate (error, wage and salary,) Interest Rate (error, unemployment) Unemployment Rate (error inflation rate), Budget Fiscal Deficit (error, ra-gap vat gap estimation), Public Debt (ra-gap vat gap estimation) and Exchange Rate (error, gross domestic product).

***As research methods**, We examines the interpretation of equation errors in time series econometrics. We contrast the view of errors as what is omitted from the statistical model with the view that the errors represent the shocks that are the important driving forces of model dynamics. The history of econometrics may be seen as oscillating between these interpretations of errors, with some econometricians attempting to maintain both simultaneously.*

***As results**, In 2020 due to COVID-19 we decomposes the dynamics of the modeled variable into three parts: short-run shocks, disequilibrium shocks, and innovative residuals, with only the first two of these sustaining an economic interpretation.*

***Key words:** error term, time-series, dynamic models, simultaneous-equations models, interpretation, econometrics.*

JEL classification: B23; C15; C22; C30; C32

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Introduction. The share of the world's population that needs to be saved has declined in recent decades. In 1981, 33% of the world's population lived in poverty, compared to 18% in 2001 and 9% in 2020, according to Chen and Ravallion (2004). In mediumpay countries such as Moldova and Romania, the rot is mainly due to rapid monetary growth. In spite of this, in the cause situation there are astonishing differences between countries and places. Surprisingly, the East European countries are rapidly catching up with their industrialized counterparts. Other countries, especially in the Balkans, have also been slow to catch up and there has even been an increase of those who need help. The major points of the paper should be summarised in a conclusion to the Research Paper, which would help readers understand what is going on. Although conclusions do not usually contain any new information which was not mentioned in the article, they are frequently reworded or given a fresh perspective on this subject. Illustrating their development cycles and methods, the significance of current events, the extent and commitment of development implementation techniques, and the effects on open commitments are the key goals. A stable relationship is a crucial fix on business cycle models and the readings for macroeconomics courses. However, little is understood about the fact that flexibility is caused by the same power that powers the business cycle. The following three key results are achieved: Deficit adaptation is, and in many cases very much on a consistent basis between different kinds of shocks, within the range of 2 to 3 years. Differences are more pronounced at other limited time horizons. The shocks causing the swings dictate how quickly the unemployment rate varies in relation to the yield. It emphasizes how crucial it is to take longer skylines into account. If this isn't the case, one could mistakenly conclude that the flexibility splits during some cycles. The most crucial factor in financial crises is flexibility. We believe these findings could contribute to the understanding of the early recovery of extreme shortages after the financial crisis of 2007. Compared to shocks to the financial system and public spending, it is far higher. Daly et al. (2013), who additionally measure flexibilities unique to shocks. This piece is being constructed from three angles. In any case, we are thinking about providing a more thorough protection against economic shocks.The shocks causing the swings dictate how quickly the unemployment rate varies in relation to the yield. It emphasizes how crucial it is to take longer skylines into account. If this isn't the case, one could mistakenly conclude that the flexibility splits during some

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Literature Review. Robert Solow's development model, known as neo-old style, plays a major role in shaping our current knowledge of economic development. Capital accumulation plays a vital role in the economic advancement in the Solow model. Enhanced skill levels - determined by a gain in productivity per worker; these advances in capital per skilled worker, or capital deepening, are assessed by an increase in productivity per employee (e.g. Fagerberg 1994). Capital formation will go on until the economy hits a certain level. where investment and the ratio of capital to labour remain stable. Jones 1998 suggests that the speed at which an economy should expand is negatively related to the size of its foundation. Any variations in individual income within the stable state are due to outside technological advancements. It is thought that mechanical interaction progresses at a consistent pace, yet it is impacted by monetary incentives. Some agents have noticed that considering the workforce's nature - human resources - reduces the unexplained growth, known as the Solow residual, by a slight amount in overall output growth, indicating that both capital and labour are significant. Romer (1986, 1990) and Lucas (1988) introduced the endogenous growth hypothesis, with the Solow model being central to it. Due to the allocation choices made by financial authorities, new advancements are integrated within the model itself (refer to Aghion and Howitt 1998, Veloso and Soto 2001). Research and development (R&D) activities fuelled by private companies' profit expectations drive the advancement of mechanical development. Unlike some other sources of creation information, innovation and data can be shared without being depleted (see Romer 1990). Furthermore, fresh data could improve the effectiveness of current information, resulting in increased productivity and scalability. Therefore, there is no need for wages to be equal in all countries, and the effectiveness of capital in peripheral areas does not decline as GDP per capita increases. Technology and modernization are the

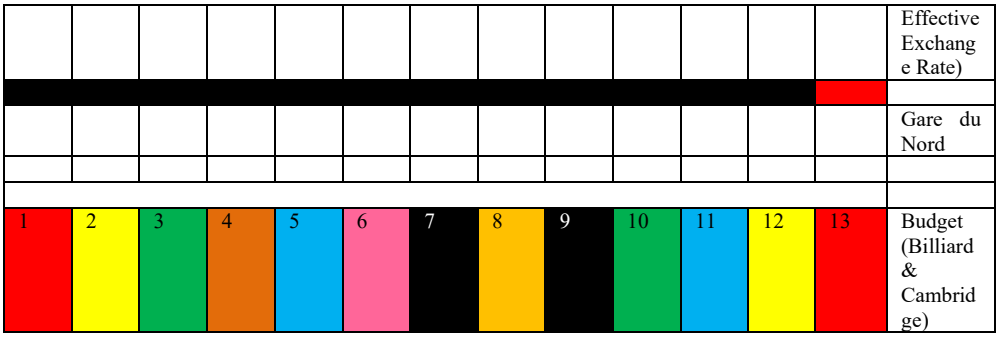
main forces behind profound change. According to Schumpeter, progress breeds "imaginative destruction," a process in which newly invented products and businesses take the place of more established ones and continue to grow and change (see Verspagen, 2000). When more useful and productive industries and businesses take the place of less benefit and productive ones, the economy becomes more efficient. As a result, technical innovation is the primary driver of the current economic expansion. Because most new innovations began in the manufacturing sector during the Industrial Revolution, Kaldor (1970) and Cornwall (1977) have argued that the expansion of this sector is a major engine for economic growth (see Verspagen, 2000). Furthermore, Cornwall (1976, 1977) pinpointed cutting-edge advancements in specific manufacturing fields as the main catalyst for enhanced efficiency in several other sectors. Manufacturing typically takes the lead and outpaces other sectors as development speeds up, as stated by Syrquin (1986). Nevertheless, even with reduced wages, assembly has minimal influence on GDP and its contribution to overall development is gradual. Faster sectoral growth dramatically increases overall output and labor productivity growth as assembly gains a greater share of outputs, frequently as a result of shifts in local demand and comparative advantage. In industrialized nations, R&D projects serve as the primary driving force behind technical developments. Nevertheless, this is not the main element of revolutionary transformation. Regardless of whether innovation and sources of information stay the same, businesses and individuals progress by taking action (refer to Bolt 1962). Since non-industrialized countries have few R&D resources and are remote from the technological frontier, the global dissemination of innovation is essential for increasing efficiency. Global financial exchanges, such as international trade and startup companies, are important catalysts for productivity development and innovation. Innovation must spread effectively if there are sufficient human resources, strong mechanical improvement incentives, and sound foundations. Initial transformation is largely driven by the need to strike a balance between national and international interests. People who are paid relatively little put a significant amount of their money toward eating expenses. This deal will typically worsen as salaries increase, even with increasing interest rates on mortgages. Similarly, as wages increase, the cost of goods rises at a slower pace compared to the quicker increase in the cost of services. Changes will

also have an effect on the economy's work efficiency, sectoral work, and result offers. Furthermore, the exchange of goods and services among countries influences the specialization trends and the pace of industrialization or fundamental transformations in companies. In a system of free trade, countries will usually import items that are costly to produce domestically and will focus on producing goods in which they have a comparative advantage. Additionally, the openness of trade is also endangered by the possibility of attracting new investments to the country. This is often crucial, particularly in the initial phases of raising capital. As local companies compete with external sources, they have the opportunity to increase their efficiency. - Nevertheless, the involvement of new trading issues and the openness of trade (like Amable, 2000; also Rodrik in this volume). Moreover, there is no guarantee that concentrating on a specific area will lead to increased growth rates by itself. This is particularly noticeable in agricultural countries that depend on primary goods. Specialization in the production of goods is sometimes needed due to decreased real global costs of non-oil goods over time, which are influenced by significant current fluctuations (refer to Bolt 1962 for example). Global spread of innovation is crucial for advancing efficiency because of the lack of research and development efforts in developing countries and their remoteness from centers of innovation. Overall, economic connections, particularly global trade and new investment opportunities, play a significant role in driving growth and expanding economic development. However, in order for innovation to spread effectively, there needs to be a competent level of HR, driven by strong technological advancement, and somewhat organized. The main driving force behind the fundamental change is the adaptation of lossiness and global interest. Individuals allocate a considerable amount of their earnings towards food expenses at a reasonable rate. As wages increase, this deal will typically decrease, as interest in manufacturing increases. Additionally, with further increases in wages, worker demand rises at a slower pace compared to the quick increase in demand for services. Changes that are well-liked will impact the efficiency of the economy's functioning and the business propositions within various sectors as well. Trade also affects the rate of industrialization or the basic transformation of industry, as well as the exceptionalization tactics adopted by nations. A free trade agreement allows countries to export pricey commodities that would otherwise be produced domestically in exchange for maintaining considerable control over the

production of goods in which they specialize. Increasing the country's openness to trade also makes it more likely to draw in foreign investment. This is frequently required, particularly in the formative phases of growth. In addition to increasing productivity, external competition may also benefit local businesses. Nonetheless, trade openness and the structure of undeclared commerce are significant (see, for instance, to Amable, 2000; Rodrik in this volume). Additionally, specialization alone does not ensure higher rates of development. This is particularly clear in underdeveloped countries that rely on crucial goods.

Framework and Assumptions. We consider a Danish Model of Fiscal Policy, where budget accumulation soars to 44% of GDP (as presented below). The remaining 56% will be considered the subject of the Pension Fund, allocated within an Overlapping - Generations Infinite Horizon model. The Gross Domestic Product is a synthetic indicator because it does not refer to the nominal convergence criteria from Maastricht (1993). Therefore, within the article, the comparison framework regarding the total indicated volume/GDP at one year is taken into account as a 100% reference.

60 %	75 %	90 %	105 %	120 %	135 %	150 %	165 %	180 %	195 %	210 %	225 %	240 %	Public Debt
W	X	Y	Z	A	B	C	D	E	F	G	H	I	
-48 %	-44 %	-40 %	-36 %	-32 %	-28 %	-24 %	-20 %	-16 %	-12 %	-8%	-4%	3%	Budget Fiscal Deficit
AAA	AA	A	BBB	BB	B	CCC	CC	C	DDD	DD	D	E	
DDG				DDF				DDB					
-12 %	-11 %	-10 %	-9%	-8%	-7%	-6%	-5%	-4%	-3%	-2%	-1%	3%	Local Fiscal Policy Deficit
AAA	AA	AA	AD	BBB	BB	B	BD	CCC	CC	C	CD	D	
-12 %	-11 %	-10 %	-9%	-8%	-7%	-6%	-5%	-4%	-3%	-2%	-1%	NR (Not Rated)	RA-GAP VAT Gap Estimat.
AAA	AA	A	BBB	BB	B	CCC	CC	C	DDD	DD	DD	N	
+96 %	+88 %	+80 %	+72 %	+64 %	+56 %	+48 %	+40 %	+32 %	+24 %	+16 %	+8 %	-4%	Gross Domestic Product
12	11	10	9	8	7	6	5	4	3	2	1	0	
-60 %	-55 %	-50 %	-45 %	-40 %	-35 %	-30 %	-25 %	-20 %	-15 %	-10 %	-5%	3%	Minimum of Existence as Maastricht Criteria (IELTS & Doina)
1	2	3	4	5	6	7	8	9	A	B	C	D	
72 %	66 %	60 %	54 %	48 %	42 %	36 %	30 %	24 %	18 %	12 %	6%	23%	Yield to Maturity (95% Prediction Inverval)
+84 %	+77 %	+70 %	+63 %	+56 %	+49 %	+42 %	+35 %	+28 %	+21 %	+14 %	+7 %	-8%	ERM II (Exchange Rate Mechanism, +/-2.25% pegged currency
12 %	11 %	10 %	9%	8%	7%	6%	5%	4%	3%	2%	1%	1%	NEER (Nominal Effective Exchange Rate
24 %	22 %	20 %	18 %	16 %	14 %	12 %	10 %	8%	6%	4%	2%	1%	REER (Real



Source: Author's calculation, Gross Domestic Product, Value-Added Tax, Budget Fiscal Deficit & Public Debt

DDG, Remittances. Percentage Points from GDP.
DDF New Budget Execution, Percentage Points from GDP
DDB Local Budget Execution, Percentage Points from GDP

Credit Rankings. We assume that Budget Fiscal Deficit and Public Debt is subject of Credit Ranking (Greece, to see 2009 Sovereign Debt Crises) and (2020 Covid-19 Medical Crises). The Relationship between these two crises concern about 11 years of economic growth and inflation. Economic growth is seems to be Gross Domestic Product, and Inflation – Harmonized index of consumer' price, which is by the way, a index which covers financial movement of economy. Interest rate is described by Taylor Rule, which consist of inflation rate and Gross Domestic Product. Interest relate a financial sector, not market sector (inflation rate).

A – Pre-Investment Grade
B – Investment Grade
C – Upper-Investment Grade
D – Speculative Grade
E – Not Rated

Financial balances and other monetary characteristics are impacted by automatic effects and discretionary policy measures that arise from changes in the macroeconomic environment, which are frequently connected to fluctuations in output. Tax cuts and spending increases are two examples of discretionary policy measures that could negatively impact the budget balance. When economic activity slows, revenues decline and spending may naturally increase (many expenses, including unemployment benefits, adapt to the cycle). As a result, the economy's balance deteriorates. Because these changes

are the product of cyclical influences, relying just on changes in the budget balance may be misleading because they may appear to be deliberate expansionary or contractionary policy measures.

Therefore, consistent changes are implemented to manage the impact of recurring advancements on economic factors and assess the undisclosed financial status. In order to achieve this, the cyclically adjusted balance that is adjusted nominally must be defined initially. The following is a method to analyze the total fiscal balance (OB). As a result, new methods of investigation must be developed that would allows for a more precise increase in the effectiveness of applied techniques like statistical-mathematical techniques, questionnaires, descriptive methods, etc. Econometrics is the science that incorporates financial hypothesis, mathematics and statistics, at times when the way the results are interpreted involves risk and uncertainty. The point of the paper is to foster an econometric estimating model, in light of the hypothesis economic, where estimates and projections for the Republic of Moldova's gross domestic product will be made. as facts In the beginning, the series of quarterly GDP values from 1995 to 2018 (average prices in 2010) will serve. The authors were of the opinion that it was necessary to use a series expressed in constant prices; as a result, the effect was not expansion, as uncovering the genuine development of GDP is significant. The percentage of the world's population in need of assistance has declined in recent years. According to Chen and Ravallion (2004), the percentage of people living in poverty decreased from 33% in 1981 to 18% in 2001 and thereafter to 9% in 2020. The majority of the drop can be attributed to the significant economic growth seen by middle-income nations like Moldova and Romania. Nevertheless, the creative community varies surprisingly throughout countries and areas. Many nations and regions, particularly those in Eastern Europe, are quickly recovering from the recent setbacks experienced by wealthy nations. In the Balkans and in some other countries, a lot of people are falling behind; in fact, some are becoming more and more destitute.

Slovakia, the Czech Republic, Hungary, Poland, Romania, and the Republic of Moldova have seen notable economic expansion due to contemporary advancements. Poverty rates have declined in numerous countries due to rapid economic development. While certain countries have effectively achieved development with added value, others have continued to experience high levels of inequality. The key focus is on showcasing their growth processes and methods, the role of contemporary innovation, the accountability and scope of strategies for advancement performance, and the influence of development on public obligations. The survey starts with a brief theoretical conversation about the influence of current development and progress, as well

as the effect of advancement on depression and income during downturns, and then continues at the national economic model level. Public debt is expected to determine the short-term yield sensitivity of budget deficit, such as a one percentage point increase in output. In macroeconomics courses, it is important to have a consistent connection between business cycle models and the assigned readings. Yet gradually becoming conscious of whether the force propelling the economic cycle is accountable for its adaptability. An example of the complexity is whether unemployment and outcomes move differently during recessions caused by financial crises or oil supply disruptions. The lack of verification is surprising given the tensions that arise when the relationship is strained and is especially fragile during recoveries from downturns in financial market turmoil (such as Gordon, 2010). This paper presents a key technique for assessing the potential impact of a significant shock-induced budget deficit on government debt sustainability. It assesses the amount that the deficit rate falls over a given skyline in the event that a macroeconomic shock on a comparable skyscraper causes the outcome to grow by one rate point. The expectation is based on relapses of the overall deficit on the total obligation, which is the fundamental instrumental variable. Analyzing information on Moldovan government spending, fees, monetary policy, fiscal policy, technical developments, and petroleum price changes. Three key findings include: Shortfall flexibilities usually stay consistent for different types of shocks over a moderate period (two to three years). Discrepancies are more noticeable with fewer available options. The pace of unemployment fluctuations in proximity to production is influenced by the driving shocks. This highlights how crucial it is to account for longer skylines. If not, inaccurate conclusions regarding how flexibility is distributed in particular cycles may be drawn. The best times to show flexibility are during financial shocks. These findings, in our opinion, can contribute to our understanding of the early stages of the "excessive shortage" recovery following the financial crisis of 2007. Compared to government spending and financial system shocks, it is far higher. Additionally, Daly et al. (2013) assess flexibility deficiencies unique to shocks. There are three distinct ways to construct the piece. We start by looking at a more inclusive definition of macroeconomic shocks. Furthermore, in contrast to Daly et al. (2013) with their two-venture system and three-stage Klein Macroeconomic Model, we propose a single-venture approach to versatility. This increases productivity and makes creating

trust groups easier. Furthermore, we can perform weak strong induction with our approach. The latter point is crucial since large-scale shocks frequently have a little margin of error in the commitments made to pertinent variables, which might cause issues with the instruments (Gorodnichenko and Lee, 2017).

The level of public debt. The market-access country (MAC) debt sustainability analysis (DSA) framework is based on a general and flexible identity characterizing the evolution of the stock of public debt. In its most basic form,

the evolution of public debt can be characterized in the following way:

$$D_{t+1} = \frac{e_{t+1}}{e_t}(1 + i^f_{t+1}) * D^f_t + (1 + i^d_{t+1}) * D^d_t - (T_{t+1} + G_{t+1} - S_{t+1}) + O_{t+1} + RES_{t+1}) \quad (35) \quad (1)$$

Obligations associated with one-	Primary	Other
the stock of debt from the	Fiscal	time
factors		
previous period	Balance	

Where subscripts refer to time periods and superscript *"f", "d"*, refer to foreign-currency and domestic-currency denominated debt, respectively.

D^f_t is the stock of foreign currency as obligations-denominated debt at the end of period t.
D^d_t is the stock of domestic currency as obligations -denominated debt at the end of period t.
e_{t+1} is the stock of foreign currency as obligations -denominated debt at the end of period t.
i^f_{t+1} is the stock of domestic currency as obligations -denominated debt at the end of period t.
i^d_{t+1} is the stock of domestic currency as obligations -denominated debt at the end of period t.
T_{t+1} is the stock of taxes-denominated debt at the end of period t.
G_{t+1} is the stock of grants-denominated debt at the end of period t.

S_{t+1} is the stock of expenditures-denominated debt at the end of period t.
O_{t+1} is the stock of other one-time factors-denominated debt at the end of period t.
RES_{t+1} is the stock of other one-time factors -denominated debt at the end of period t.

For simplification, the primary balance (PB) is no longer decomposed into taxes (T), grants (G) and expenditures (S). The basis for the decomposition of the change in the debt-to-GDP ratio—the debt dynamic—is as follows:

$$D_{t+1} = (1+\varepsilon_{t+1}) * (1+i^{f}_{t+1}) * D^{f}_{t} + (1+i^{d}_{t+1}) * D^{d}_{t} - PB_{t+1} + O_{t+1} + RES_{t+1} \quad \text{(b)}$$

Where, ,$1+\varepsilon_{t+1} = \frac{e_{t+1}}{e_t}$

The debt-to-GDP ratio and debt dynamics. To gauge the obligation trouble, scaling the supply of obligation by a proportion of reimbursement capacity is fitting. Since the format centers around the development of the obligation to-GDP proportion, this segment presents just the decay of this proportion.

Dividing equation (2) by nominal GDP in local currency (Y) in period t+1, yields the following expression:

$$\frac{D_{t+1}}{Y_{t+1}} = (1+\varepsilon_{t+1}) * (1+i^{f}_{t+1}) * \frac{D^{f}_{t}}{Y_{t+1}} + (1+i^{d}_{t+1}) * \frac{D^{d}_{t}}{Y_{t+1}} - \frac{PB_{t+1}}{Y_{t+1}} + \frac{O_{t+1}}{Y_{t+1}} + \frac{RES_{t+1}}{Y_{t+1}}$$

Using small caps to express contemporaneous ratios:

$$d_{t+1} = (1+\varepsilon_{t+1}) * (1+i^{f}_{t+1}) * \frac{D^{f}_{t}}{Y_{t+1}} + (1+i^{d}_{t+1}) * \frac{D^{d}_{t}}{Y_{t+1}} - PB_{t+1} + o_{t+1} + res_{t+1}$$

Let $Y_{t+1} = (1+g_{t+1}) * (1+\pi^{d}_{t+1}) * Y_t$, where g is the real growth rate of the economy and π is domestic inflation (as measured by the change in the GDP deflator), we can further define the previous expression:

$$d_{t+1} = \frac{(1+\varepsilon_{t+1}) * (1+i^{f}_{t+1}) * D^{f}_{t}}{(1+g_{t+1}) * (1+\pi_{t+1}) * Y_t} + \frac{(1+i^{d}_{t+1}) * D^{d}_{t}}{(1+g_{t+1}) * (1+\pi_{t+1}) * Y_t} - pb_{t+1} + o_{t+1} + res_{t+1}$$

Deducting dt from both sides, the change in the debt-to-GDP ratio (the debt dynamic) is therefore:

$$d_{t+1} - d_t = \frac{(1+\varepsilon_{t+1}) * (1+i^f_{t+1})}{(1+g_{t+1}) * (1+\pi_{t+1})} * d^f_t + \frac{(1+i^d_{t+1})}{(1+g_{t+1}) * (1+\pi_{t+1})} dd_t - pb_{t+1} + o_{t+1} + res_{t+1} - d_t$$

Let $\rho_{t+1} = (1+g_{t+1}) * (1+\pi_{t+1})$

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}} [(1+\varepsilon_{t+1}) * (1+i^f_{t+1}) * d^f_t + (1+i^d_{t+1}) * d^d_t] - pb_{t+1} + o_{t+1} + res_{t+1} - d_t$$

Isolating the contribution from the exchange rate,

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}} [(1+i^f_{t+1}) * d^f_t + (1+i^d_{t+1}) * d^d_t + \varepsilon_{t+1} * (1+i^f_{t+1}) * d^f_t] - pb_{t+1} + o_{t+1} + res_{t+1} - d_t$$

Moving the right-hand side dt inside the brackets…

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}} [(1+i^f_{t+1}) * d^f_t + (1+i^d_{t+1}) * d^d_t + \varepsilon_{t+1} * (1+i^f_{t+1}) * d^f_t - d_t * (1+g_{t+1}) * (1+\pi^d_{t+1})] - pb_{t+1} + o_{t+1} + res_{t+1}$$

Isolating the contribution from real GDP growth,

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}} [(1+i^f_{t+1}) * d^f_t + (1+i^d_{t+1}) * d^d_t + \varepsilon_{t+1} * (1+i^f_{t+1}) * d^f_t - d_t * g_{t+1} -$$

$$-d_t(1+\pi_{t+1} * g_{t+1} + \pi_{t+1}) - pb_{t+1} + o_{t+1} + res_{t+1}$$

Isolating the contribution from interest rates,

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}} [i^f_{t+1} + d^f_t + i^d_{t+1} * d^d_t + d^f_t + d^d_t + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t - d_t * g_{t+1} -$$

$$-d_t(1+\pi_{t+1} * g_{t+1} + \pi_{t+1}) - pb_{t+1} + o_{t+1} + res_{t+1}$$

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}}[i^f_{t+1} + d^f_t \quad + \quad i^d_{t+1} * d^d_t + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t - d_t * g_{t+1} + d^f_t + d^d_t \quad - \quad d_t - d_t * (\pi_{t+1} * g_{t+1} + \pi_{t+1})] - pb_{t+1} + o_{t+1} + res_{t+1}$$

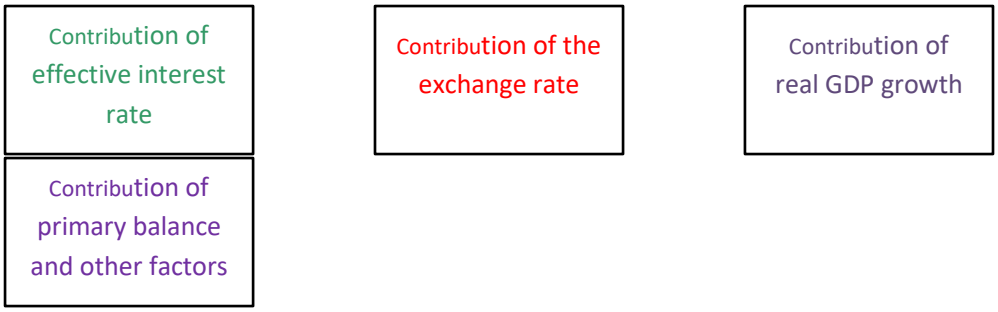
$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}}[i^f_{t+1} + d^f_t \quad + \quad i^d_{t+1} * d^d_t + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t - d_t * g_{t+1} - d_t * \pi_{t+1}(1 + g_{t+1})] - pb_{t+1} + o_{t+1} + res_{t+1}$$

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}}\left[d_t * \left(\frac{i^f_{t+1} * d^f_t}{d_t} + \frac{i^d_{t+1} * d^d_t}{d_t}\right) - d_t * \pi_{t+1} * (1 + g_{t+1}) + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t \quad - d_t * g_{t+1}\right] - pb_{t+1} + o_{t+1} + res_{t+1}$$

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}}\left[d_t * i_{t+1} - d_t * \pi_{t+1} * (1 + g_{t+1}) + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t \quad - d_t * g_{t+1}\right] - pb_{t+1} + o_{t+1} + res_{t+1}$$

Effective nominal interest rate (weighted average)

$$d_{t+1} - d_t = \frac{1}{\rho_{t+1}}\left[d_t * (i_{t+1} - * \pi_{t+1} * (1 + g_{t+1})) + \varepsilon_{t+1} * (1 + i^f_{t+1}) * d^f_t \quad - d_t * g_{t+1}\right] - pb_{t+1} + o_{t+1} + res_{t+1} \quad (36)$$

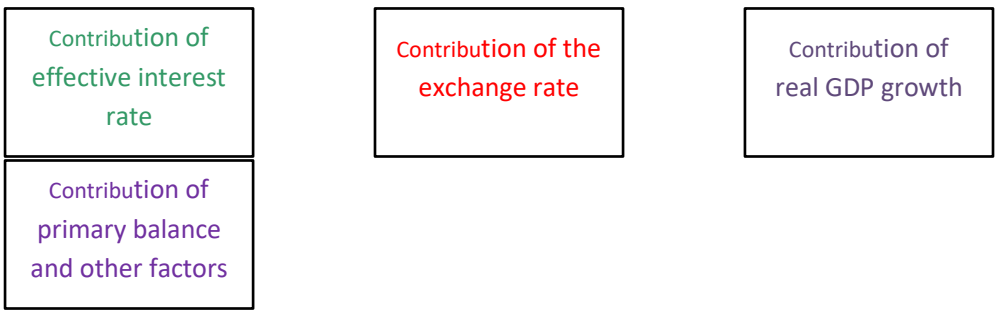


Where it+1 is the effective nominal interest rate (weighted average)

Where i_{t+1} is the effective nominal interest rate (weighted average)

This can also be expressed in terms of real interest rates and real exchange rates:

$$d_{t+1} - d_t = * \left(d_t * \left[r^d_{t+1} \frac{d^d_t}{d_t} + r^f_{t+1} \frac{d^f_t}{d_t} \right] - d_t * g_{t+1} + d^f_t * \xi_{t+1} * (1 + r^f_{t+1}) \right) - pb_{t+1} + o_{t+1} + res_{t+1}$$



Where,

$(1 + i^d_{t+1}) = (1 + r^d_{t+1}) * (1 + \pi^d_{t+1})$

$(1 + i^d_{t+1}) = (1 + r^f_{t+1}) * (1 + \pi^f_{t+1})$

$$1 + \xi_{t+1} = \frac{e_{t+1}}{e_t}\left(\frac{1 + \pi^f_{t+1}}{1 + \pi^d_{t+1}}\right)$$

What is debt sustainability analysis. Debt sustainability analysis (DSA) asks if, under current policies, a country or a government will be able to service its debts in the medium and long run without renegotiating or defaulting, and without having to undertake policy adjustments that are implausibly large economically and politically. DSA frameworks provide an intertemporal consistency check by testing whether macroeconomic plans are viable not only from a "flow balance" perspective but also from a "stock balance" point of view. They may also help dissuade policymakers from pursuing policies that deliver short-term benefits at the cost of creating unsustainable debts in the future. In recent years, the IMF developed an approach to debt sustainability that is now used in surveillance and lending decisions[2]. These DSAs help policymakers assess the risks associated with short-run macroeconomic forecasts and the policies on which such forecasts are based. A first risk is that projections of external or public debt may not be always grounded on sufficiently conservative assumptions. For instance, some governmental-supported programs have been based on assumptions about growth in export volumes and prices that proved to be optimistic, contributing to excessive borrowing. A second key risk to the realism of forecasts is the assumed path of the real exchange rate. Countries may be able to sustain relatively large stocks of foreign currency denominated debt through real exchange rate appreciation over the medium term. As discussed, moreover, it may be reasonable to assume that some countries will experience secular real appreciation as an equilibrium phenomenon due to catch-up growth. While the assumption of real appreciation may be defended in some circumstances, experience in several countries that underwent substantial real depreciations following crises suggests that it is risky to base policies on the assumption that real appreciation will continue indefinitely. DSAs also allow policymakers to identify the economic sectors responsible for excessive debt accumulation, be they the national government (as in a number of African countries in the 1990s), subnational governments and state enterprises (as in some transition economies), or the private sector (as in the Asian crisis countries).

In many emerging market countries, debt ratios may be moderate and the main risk to sustainability may arise from liquidity problems. In some cases, countries do not have sufficient liquidity to cover maturing obligations even when they can be considered solvent, i.e., have relatively low and declining external debt-to-GDP ratios. Concerns about liquidity may arise, for instance,

[2] See, "Assessing Sustainability," IMF (2002, 2003).

if the sovereign or private sector needs to make large amortization payments to creditors in the near future and foreign exchange or government revenues are insufficient. In such cases of temporary illiquidity, much depends on the willingness of creditors to maintain or increase their exposure in the short run. Market confidence is a crucial ingredient, and the vulnerability to confidence crisis needs to be evaluated and addressed alongside long-term sustainability. For low-income countries that do not borrow from private capital markets, the sustainability of the public debt is largely de-linked from the sentiments of the market. It depends, instead, on the willingness of official creditors and donors to continue providing positive net transfers through concessional loans and grants[3]. For low-income countries that have high debt ratios, solvency is more of a concern than liquidity. DSAs allow a study of the exposure of the IMF and other multilateral creditors to individual borrowers. Finally, DSAs are also useful to assess the impact and response to powerful technological and demographic changes that constrain government policies in the long run. Fiscal DSAs help quantify the fiscal impact of population aging, immigration, and other long-run population changes.

Data. The data series used in the empirical analysis have a quarterly frequency and were obtained from the National Bureau of Statistics for the Economy of the Republic of Moldova, as well as from the Area Wide Model (AWM) database (for more details see Fagan et al., 2005 as well as the website - https://eabcn.org/page/area- wide-model). The analysed periods are 2000: 1– 2021: 1. Regarding the determination of potential GDP, the HP filter was used to estimate it. As primary references or used two sources mainly as follows: https://www.mathworks.com/help/econ/hpfilter.html but also the article by Robert J, Hodrick and Edward C. Prescott[4] from 1999. Phillips used in its unemployment rate model, however lately, the output gap is being used more and more frequently due to the problems encountered by measuring NAIRU, the natural unemployment rate, this being the reason why we used the production gap. We assumed that there are different models of dynamic Phillips Curve (PC)- price adjustment in a common framework. The system draws intensely on the model of exogenous ostensible inflexibility and the model of inflation targeting. Time is discrete. Each period, incompletely competitive firms deliver output utilizing labour as their as it were input. As within, the production function is one-for-one; in this way total output and total labour input are rise to. The model excludes government purchases and

[3] For treatment of debt sustainability in low-income countries, see IMF,(2004, 2004a).

[4] Hodrick, Robert J, and Edward C. Prescott. "Postwar U.S. Business Cycles: An Empirical Investigation." Journal of Money, Credit, and Banking. Vol. 29, No. 1, February 1997, pp. 1–16.

worldwide exchange, total consumption and total output are equal. Households maximize utility, taking the ways of the real wage and the real interest rate as given. Firms, which are claimed by the households, maximize the present discounted value of their profits, subject to constraints on their price-setting (which shift over the models we'll consider). At last, a central bank decides the way of the real interest rate through its conduct of money related arrangement.

Conclusions and Discussions. Modern progress has had a major impact on the economic growth of the countries studied. In many nations, increasing yield has been associated with export expansion, increased trade openness, economic growth, and better business environments. Nevertheless, import security and targeted government involvement have also been employed. In numerous developing countries, poverty is a common problem, and improving agricultural productivity is often crucial in reducing poverty at the beginning of economic growth. This phenomenon has been observed in countries like Indonesia and Moldova, where economic changes have led to a decrease in national uniqueness due to a reduction in the sense of national urgency, particularly at the early stages. During the rapid industrialization of Korea and Taiwan, pay distribution remained relatively moderate as a result of previous land reforms. Oil revenues were utilized to promote rural development in Indonesia. In any event, modernization is crucial for sustained long-term growth and poverty alleviation following the early stages of economic development. In the countries being looked at, the expansion of the manufacturing industry has created job opportunities beyond agriculture. Yet, due to the fact that the manufacturing process in these nations initially emphasized subpar quality, it is the underprivileged who have profited. In the same way as in Korea, specific stages of progress visibly favoured the impoverished, causing them to have a comparative edge over those who are not poor. However, there are significant variations among nations regarding the effects of industrialization on the disadvantaged. In Moldova, skilled professionals benefitted more than incompetent ones from the growth of the manufacturing sector in the late 1980s and mid-1990s. Although there may be a reduction in real poverty levels, the economic development in Moldova has shown an increase in inequality during certain timeframes. Industrialization exemplifies how modern technology effectively decreases poverty and inequality. Numerous countries depend on a mix of importing innovation and fostering domestic advancements and technical expertise. As financial growth

progresses, the scale often tilts towards the latter choice. There is some connection between the two approaches. Laws have a substantial effect on the enhancement of skills and the increase of foreign direct investment. Every country studied has, at some point, implemented certain modern strategies aimed at shifting industrial growth towards areas with greater potential for faster productivity growth. During the initial phases of establishing their manufacturing hubs, Taiwan and Korea's governments successfully integrated import protection and state intervention. Although successful government intervention may seem justified based on recent success stories, developing countries have less policy freedom compared to past decades. Nevertheless, legislatures are essential in facilitating sustainable economic growth, particularly growth that alleviates poverty. Additional essential government tasks include skills training, technology assistance, funding for innovation, infrastructure enhancement, and provision of various public goods, as well as ensuring stability, effective institutions, and proper regulation (like labour laws). All of these factors have an influence on the economic development and commerce of a country. Overall, rapid economic growth will lead to a reduction in dependency. An increase in pay discrepancy could occur due to fast expansion, however, it is not guaranteed. The concept of tax collection and utilization tactics, alongside the skillset readiness of experts for specific economic reforms, can influence whether an economy thrives. Despite the expansion of small and medium enterprises (SMEs) and encouragement for forming local connections, inequality can be lessened by offering free school admission, discounted housing, fair tax evaluation, or redistributing resources such as land.

Acknowledgements. This article is a result of the grant (general budgetary fund[5]) "ASEM doctoral grants for the period 2019-2023" - contract number: ASEM-2019/11/05/NR/89/ST; financing from the state budget during the doctoral studies, but also value-added as an post-planned activity I carried out as a scientific researcher at the National Institute for Economic Research (NIER) in Chisinau, Moldova – between May 2019 and December 2019.

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