Quantitative analysis of money cycle and economic stability in economomocracy

Constantinos Challoumis[1]

Abstract

The paper discusses economomocracy and representative economomocracy as innovative approaches proposed by author. These new economic systems, analogous to the political system of democracy, aim at managing global debt and promoting economic sustainability. Economomocracy is presented as a reformed economic system, distinct from capitalism, that incorporates the mechanisms of a free-market economy to address disruptions such as wars (reconstruction of countries), recessions and economic crises. The results imply that economomocracy has the potential to provide solutions to global economic issues by effectively circulating capital while promoting democratic governance and stable economies. The research involves a quantitative analysis of economic models, specifically focusing on the Economic Productive Reset (EPR) and Economic Periodic Injections (EPI) as tools to alleviate global indebtedness and maintain economic stability.

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Keywords

Introduction

The key ideas behind economomocracy introduced by Constantinos Challoumis promote a system where it is possible to reconcile economic reforms with democratic ideals. An economy and a democracy should be able to coexist peacefully

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without one intruding into the other's sphere of influence; hence the call for an economomocracy. The aim is to ensure that there is harmony between democracy and economy so that the latter does not infringe on individual rights to interact politically or socially. By emphasising localised economic stability and minimising dependence on temporary fiscal measures, democracies advocate economocratic models which would represent more sustainable and equitable economies. The framework suggests that incorporating economocracy into already established democratic models can tackle the global debt crisis very effectively through offering long-lasting solutions instead of short-term remedies. Transitioning towards an economocratic setting will mark a movement towards an even more egalitarian kind of economy incorporating both democratic governance and economic stability. Economocracy, as stated, calls for economic changes with democratic tenets so as to have a reduction in world debts and instability in societies. Thus, an Economic Productive Reset (EPR) is urgently needed, enabling states or nations to redistribute resources and reduce global debts in proportion to their Gross Domestic Products (GDP). It is through this scheme that, instead of increasing inflation or altering currency prices, economic steadiness can enable debt payment by replacing high debt with high inflation (which does not make sense). Additionally, providing regular injections of capital into the education and health sectors may be made possible by means of Economic Periodic Injections (EPI). These targeted reinforcements address particular economic concerns of different nations, especially the war- and calamity-stricken countries (Challoumis, 2024f, 2024g). Their primary objective has been to assist in further consolidating national economic stability, as well as social development, aligning directly with lifetime GDP consumption while requiring continuous development. Secondly, through EPIs assisted by EPRs, we make sure that all debts are repayable without compromising the societal obligations.

The money cycle, also known as the money flow or production-consumption-return path, involves a continuous flow of money from income sources to productive activities and then to consumption. Its main objective is to determine efficiency in terms of growth, stability and productivity. It also serves as a measure of economic performance concerning the GDP and savings patterns. When money circulates steadily in the local economy, it positively impacts GDP and promotes growth. Conversely, interruptions like "escape savings" reduce opportunities for development, leading to stagnation. This research focuses on savings capacities and economic activities that contribute to economic stability, especially relevant amid rising unemployment and inflation challenges globally (Challoumis, 2022b, 2024a, 2024d, 2024g, 2024i). One unique thing about economocracy is that it reduces public debt. By focusing on the efficient management of saving and investing preferably in local economies, economocracy is capable of generating enough economic activities to finance public services and thus limit the reliance on ex-

ternal borrowing. This stands in contrast with the conventional capitalist model which often depends on borrowed-financed growth resulting in high levels of public indebtedness over time. Moreover, although its goal is to reduce inequality, there is no need for heavy government interference characteristic of many socialist countries, which often stifles innovation and economic freedom. Major sovereign states have very high debts that are threatening world economy (Gilpin & Gilpin, 2001; Richardson, 1964; Stiglitz, 2002; World Bank, 2003). The worsening social and economic conditions, with increasing fiscal burdens, risk prolonged global recessions and economic disarray. Low savings rates limit nations' ability to invest, contributing to prolonged austerity and disorganised international finance. Liquidity declines during economic crises, compounded by high debt repayment rates and cash flow constraints, leading to stagnation and reduced productivity (Boughton, 1994; Canh & Thanh, 2020; Engels, 1844).

1. Literature review

The modern-day world economy is mainly capitalist and faces tremendous challenges, such as rising global debts, ensuring economic stability and supporting democracy (Challoumis, 2024b). It has been noted that the traditional methods of employing temporary fiscal measures or adopting reactive economic policies are not enough to deal with the interconnectedness between economic deprivation and inequality. In fact, they have been said to deepen global debt crises, cause social unrests and undermine democracy by focusing more on short term solutions rather than those that lead to long lasting results (Challoumis, 2018a, 2019, 2021, 2022a, 2023a, 2023c, 2023d, 2023e, 2023f, 2023g, 2024c, 2024e, 2024h). Economocracy is an ideal solution to the problem since it advocates a modified economic environment where the economy is stable but democratically governed. Its goal is to bring forth a more balanced and fairer approach towards economic models. Nevertheless, transitioning into an economocratic framework demands an all-inclusive understanding regarding its effectiveness in addressing key issues like:

1. Global Debt Management: It is no secret that traditional capitalist systems have failed to effectively manage global debts, often using temporary methods which do not provide a long-term solution. The economocracy proposes EPR as a means of stabilising nations' economies via resource redistribution and debt repayment on par with each nation's GDP. What remains unresolved is how to measure EPR's effectiveness in alleviating global debt without triggering inflation or altering currency rates.

2. Achieving and maintaining economic stability is important to sustainable growth and social equity. The EPI mechanism is introduced by economocracy to provide regular capital payments for essential social structures such as education and healthcare. The question is how well EPIs can promote economic stability and serve the special needs of countries faced with crises.
3. Integration with Democratic Values: The goal of economocracy is to integrate economic reforms with democratic principles, ensuring that social and political rights are safeguarded through policy. The study should examine how such integration would be accomplished, and if it really manages to strike a balance between economic stability and democracy.
4. Implementation and Impact: Switching to an economocratic system as such calls for radical structural transformations. The problem under investigation pertains to EPR and EPI implementation, its bearings on the prevailing political and economic components, , and how they can contribute to creating a balanced economic model.

In this study, the main aim is to look at how economocracy may serve as a great alternative to usual economic systems through an in-depth examination of EPR and EPI. This will include evaluating their effectiveness in tackling issues of global indebtedness, stability of economies and integration into democratic values (Bergh, 2009; Bourdin & Nadou, 2018; Gilens & Page, 2014). The goal is to assess if it is possible for economocracy to alleviate present day economic challenges and also establish the practical ways through which it can be used so that sustainable and fair economic development can occur. It examines how savings enforcement, along with their escape mechanisms, interconnect within the monetary circle, providing a framework that can help to understand how different forms of saving can either make or break an economy (Challoumis, 2022b).

This is particularly true in modern economic challenges, where a thin line between domestic investment and capital flight makes the difference between how well- or badly-off an economy is. This research explores economocracy, a theoretical framework offering alternatives to traditional capitalist and socialist systems. Economocracy emphasises efficient money circulation for sustaining growth without relying on interventionist policies. The study focuses on optimising economic management through mathematical modelling, highlighting the impact of the money cycle on outcomes. Economocracy promotes economic stability by balancing enforcement and escape savings, ensuring local savings support reinvestment, and reducing speculative inflation risks. Unlike traditional capitalism, it maintains stability without aggressive monetary adjustments, keeping funds within local economies for continuous growth. It also encourages large companies to invest in local production, ensuring full use of resources and gradual, stable growth (Castro & Scartascini, 2019; Menguy, 2020; Tummers, 2019). This system contrasts with

those systems where outflow of escape savings takes place, which causes domestic investments to become weak, and slows down the rate of national economies. In achieving this, economocracy avoids capitalism-related expansions and contractions by letting all the currencies be directed to stay within itself.

2. Research methodology

Economocracy, is an economic system that has been developed by Constantinos Challoumis. The current concept is a new way of managing and governing economies. It aims at dealing with current problems in economy and society, such as public debt or social inequity, through new theories and practices in economics (Challoumis, 2019, 2020a, 2020b). This paper will analyse economocracy, comparing its principles to those of capitalism and socialism, while exploring its potential for implementation and the challenges it faces. The mathematics behind money cycle theory:

$$c_y = c_m - c_\alpha \tag{1}$$

$$c_y = \frac{dx_m}{dm} - \frac{dx_m}{da} \tag{2}$$

$$i_{cy} = Y \cdot b_d \tag{3}$$

$$g_{cycountry} = \frac{c_{ycountry}}{c_{yaverage} + c_{ycountry}} \quad \text{or} \quad \frac{i_{cycountry}}{i_{cyaverage} + i_{cycountry's}} \tag{4}$$

$$g_{cyaverage} = \frac{c_{yaverage}}{c_{yaverage} + c_{yaverage}} \quad \text{or} \quad \frac{i_{cyaverage}}{i_{cyaverage} + i_{cyaverage}} = 0.5 \tag{5}$$

$$c_{ytotal} = \sum_{i=1}^{n} \sum_{t=1}^{m} c_{yi,t} =$$
$$= \sum_{i=1}^{n} \sum_{t=1}^{m} \left[\frac{\partial(\text{GDP})}{\partial(S+I+X)} d(S+I+X) - \frac{\partial(\text{GDP})}{\partial(S'+I'+M)} d(S'+I'+M) \right]_{i,t} \tag{6}$$

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. In addition, $g_{cycountry}$ symbolizes the general index of c_y of the country, $i_{cycountry's}$ or $c_{ycountry's}$ is the index of c_y of the country, and $i_{cyaverage}$ or $c_{yaverage}$ is the global index of i_{cy}. Concluding, $g_{cyaverage}$

is the general global index of c_y, and is obtained as a global constant. S is the savings, I is the investments and $\tilde{X}$ 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 oriented to banks out of the country's economy, and M are the imports.

The relationship centers around the money cycle, demonstrating that surpluses and deficits at the international level will always balance, with $g_{cyaverage} = 0.5$. Therefore, because the money issued by banks is less than they expect to receive, due to interest it is impossible to return the full amount, creating public debts. Thus, only by introducing unproductive money can the structural problem of capitalism be corrected by replacing it with economocracy (Challoumis, 2022c, 2023b).

The mathematical background of economocracy:

L_0 – the initial amount of the loan created by the bank.

r – the interest rate of the loan.

t – the time period of the loan.

T – the total amount required to be reimbursed at the end of the time period t.

Calculation of the total amount to be reimbursed: The total amount to be repaid at the end of the time period is the original loan amount plus interest.

Analysis of the relationship between borrowing and repayment: To understand why debts are constantly increasing and cannot be fully repaid, we need to compare the initial amount of the loan with the total amount required to be repaid $T = L_0 \cdot (1 + r)^t$. The non-productive money of economocracy's equaliser is the equation $N = L_0 [(1 + r)^t - 1]$.

The representation of the equation that performs these treaties is the following:

$$E_{jk} = e \cdot (\widetilde{GDP_j} + c_k) + i \cdot (\widetilde{GDP_j} + s_j) \tag{7}$$

where $j = 1, \ldots, n$ and $k = 1, \ldots, n$.

The variable E_{jk} represents the amount of money or economic value allocated to country j in relation to country k. This is an equation that dictates how much a particular country j should receive in terms of financial aid or economic assistance when compared with another country k. The coefficient of e is a variable representing a factor that must be agreed upon by multiple countries in order to balance global economies. The coefficient of e likely determines the size of EPR needed for the global balance. This coefficient could be tied to international consensus or conditions. EPR is an economic policy response aimed at mitigating financial crises or ensuring global economic stability. The coefficient i denotes the value of EPI, which is used as a benchmark or agreed-upon value for measuring economic policies. This is a constant or agreed value used in policy decisions. The relationship between e and i suggests that i is a preferred metric when estimating EPIs, while e can be avoided in those cases unless the situation calls for a hybrid approach. The GDP represents the estimated value of GDP for country j. This term

highlights the importance of considering a country's estimated economic output in the allocation of funds or resources. The c_k represents the individual factors of some economies, such as credit rating or financial stability, which must be taken into account. These factors are economy-specific characteristics (like creditworthiness) that modify the calculation of the resources allocated to each country. The s_j represents the individual characteristics and requirements of country j, particularly related to sectors like health care. This could be a socio-economic factor representing each country's unique needs, such as healthcare, education or infrastructure, which must be factored into the economic balance equation. The n_1 represents the total number of countries involved in the sum. The n_2 represents additional assistance given to countries facing special economic circumstances. The condition $n_1 \geq n_2$ ensures that additional assistance is provided only to a subset of the total countries. For debts and EPR in cases of debt management, the magnitude of e should be used without the presence of i. This implies that during debt crises, the economic balancing process should focus on the coefficient e, rather than relying on a fixed policy indicator i. For EPIs and Estimations when estimating EPI, the constant i should be preferred, and the use of e (which is more variable) should be avoided. In cases where a hybrid mixture of both e and i is required, this could indicate a need for flexible policy responses, mixing both the agreed-upon values of i and the variable e based on the current economic conditions. In the case that the condition $e >> i$ holds, it indicates that the variable economic factor e has a much larger magnitude than the constant policy indicator i. This situation might arise during periods of economic instability or global crises, where a stronger intervention (represented by e) is necessary.

The aggregate value of stability in economomocracy is determined by the following relationship:

$$E = \sum_{j=1}^{n_1} \sum_{k=1}^{n_2} E_{jk} \tag{8}$$

where $j = 1, \ldots, n_1$ and $k = 1, \ldots, n_2$.

This equation defines the quantity of money, E which is needed for international balance and serves at the same time the democratic and economocratic concerns. The function representing the economomocracy impact, $\tilde{E}$ is given by the equation:

$$\tilde{E} = \widetilde{\text{EPR}} + \widetilde{\text{EPI}} + \sum_{j=1}^{n_1} \tilde{f}_j \tag{9}$$

Besides, in the process of defining the variables, the factor of $\tilde{f}_j$ construes the economic structures of each economy accordingly. Estimated $\widetilde{\text{EPR}}$ and $\widetilde{\text{EPI}}$ defined by the equations:

$$\widetilde{\mathrm{EPR}} = e \cdot (\widetilde{\mathrm{GDP}_j} + c_k) \tag{10}$$

$$\widetilde{\mathrm{EPI}} = i \cdot (\widetilde{\mathrm{GDP}_j} + s_j) \tag{11}$$

This section details the methodology used to analyse the effects of enforcement and escape savings on economic performance under economocracy. The analysis includes six key plots visualising the savings distribution, GDP impact and money cycle dynamics. The study assumes a hypothetical economy with a GDP of 1,000 units and total savings of 300 units (70% enforcement, 30% escape). Efficiency is modelled using two indices (both approximately 0.94) to represent savings efficiency and overall economic efficiency. The first bar chart shows savings distribution, while the second illustrates their impact on GDP. The pie chart highlights the ratio of enforcement to escape savings, emphasising their importance for growth. The 2D line chart shows GDP changes under different scenarios, and the 3D line chart provides a holistic view of the effects of savings on GDP. These plots demonstrate the impact of savings distribution on economic performance, supporting the money cycle theory.

The Q.E. method has been applied to establish initial estimates, followed by a computational procedure using generated-code data (Challoumis, 2018b, 2019, 2024b), to validate the theoretical background, ensuring a comprehensive analysis, as real data for the application of economocracy do not exist, unlike in capitalism.

3. Results

The analysis is based on hypothetical data to demonstrate how money operates according to the theory of Cycle of Money as well as an additional aspect of the economic system, where using real data would be possible to reduce debts in a hypothetical framework. Money cycle analysis provides insight into the functioning and stability of an economy. Hence, the author tries to reach an optimal balance between enforcement and escape savings in this work when evaluating their influence on general health. Indeed, it contributes to the general understanding of how these savings impact GDP and the economic structure as a whole. Typified by capital retained locally within the banking system, enforcement savings are critical to boost the economy. These savings contribute to investment in more domestic businesses and infrastructures, leading to increased economic activity and optimised productivity. On the other hand, escape savings, which involve siphoning capital out of the local economy, undermine economic stability through the reduction in circulation and effective use of the funds within the country. As it turned

out, these results imply a more resistant and self-sustained economy characterised by a higher velocity of money, working with the fullest possible use of resources, in the presence of stronger enforcement savings. This contrasts with escape savings, which lead to reduced activity and hence pose the risk of structural imbalances. It also underlines how the efficiency of the money cycle, reflected in indices close to the theoretical ideal value, contributes to overall economic stability and growth. In addition, the results underline the necessity of focused policy intervention in keeping the money cycle effective. The author sheds some light on how these different ways of savings work, comparing the effects of enforcement with those of escape savings on economic performance and stability. These are important insights in the context of informing policies aimed at economic resilience with the objective of fostering sustainable growth.

The graph (Figure 1) illustrates the division between enforcement and escape savings, highlighting their economic impact. According to the Cycle of Money theory, enforcement savings stay in the local economy, supporting businesses and investments, which strengthens economic stability through sustained spending and employment. A higher percentage of enforcement savings indicates a stronger local economy. In contrast, escape savings are diverted away, reducing capital availability and hindering growth. Figure 1 emphasises the importance of maximising enforcement savings for a healthy economy and highlights the negative
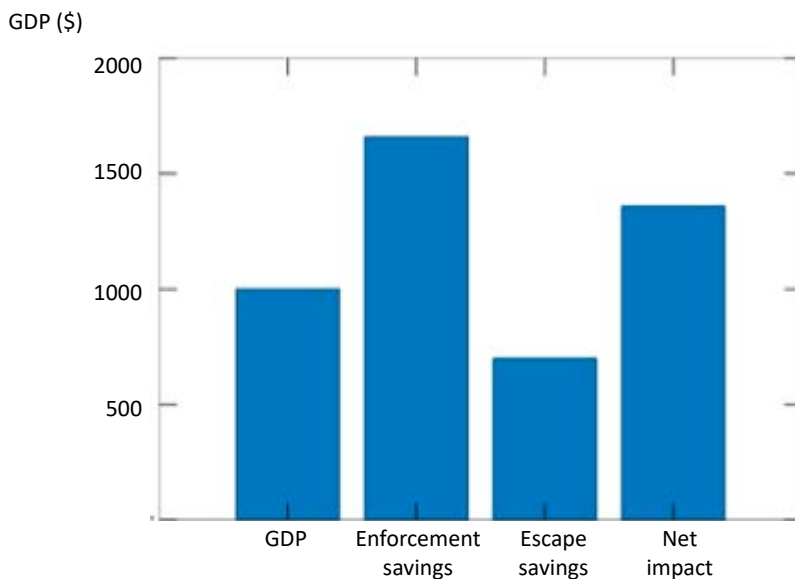

Figure 1. Enforcement vs escape savings

Source: author's own work, see Appendix A.

impact of high escape savings. It visually reinforces the emphasis put in the Cycle of Money theory on managing the balance between these savings to ensure economic stability and growth.

The graph (Figure 2) depicts the effect of enforcement and escape savings on GDP. It explains how escape savings improve GDP due to their interactions, which helps reinvest money within the economy. On the other hand, it explains how enforcement savings decrease GDP through siphoning money from the local economy. The net impact of GDP is a combination of the above-mentioned, as theoretically, enforcement savings enhance the economy while escape savings weaken it.

The pie chart (Figure 3) shows the balance between enforcement and escape savings, which, according to the Cycle of Money theory, determines economic health and efficiency. Enforcement savings remain in the local banking system, supporting domestic reinvestment, stimulating business activity and creating jobs. A higher proportion of enforcement savings indicates more capital available
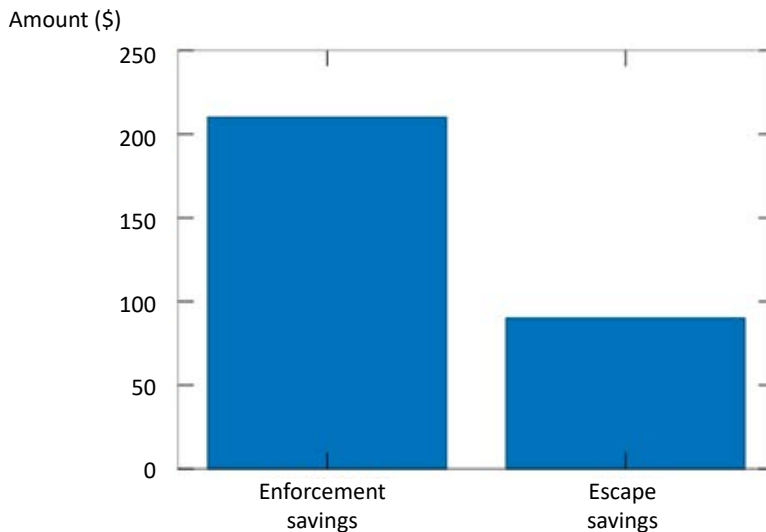

Figure 2. GDP impact

Source: author's own work, see Appendix A.

for local economic growth. In contrast, escape savings leave the local economy, reducing domestic investment and hindering growth, jobs and financial stability. The pie chart helps policymakers and economists assess the effectiveness of current economic policies. A high percentage of enforcement savings aligns with a strong, self-sustaining economic cycle, reflecting continuous capital circulation and reinvestment. Conversely, a larger share of escape savings highlights issues like capital flight or insufficient local investment incentives.
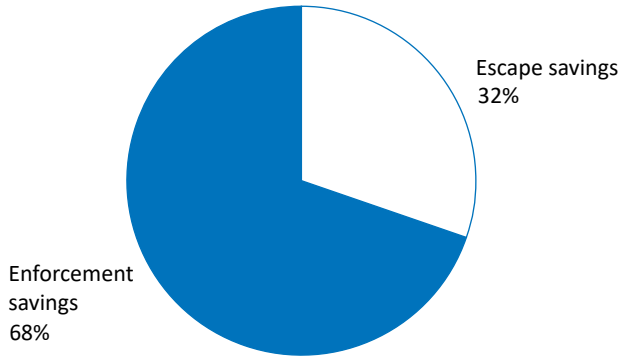
Figure 3. Savings ratios

Source: author's own work, see Appendix A.

Figure 4 presents the development of GDP influenced by enforcement and escape savings, illustrating the Cycle of Money theory. Initially, GDP reflects standard conditions. Reinvesting enforcement savings locally leads to a significant GDP increase by stimulating business activity and improving resource allocation. Conversely, escape savings reduce GDP by diverting funds from domestic investment, resulting in diminished growth. The net impact line balances these effects, emphasising that enforcement savings boost local activity while escape savings
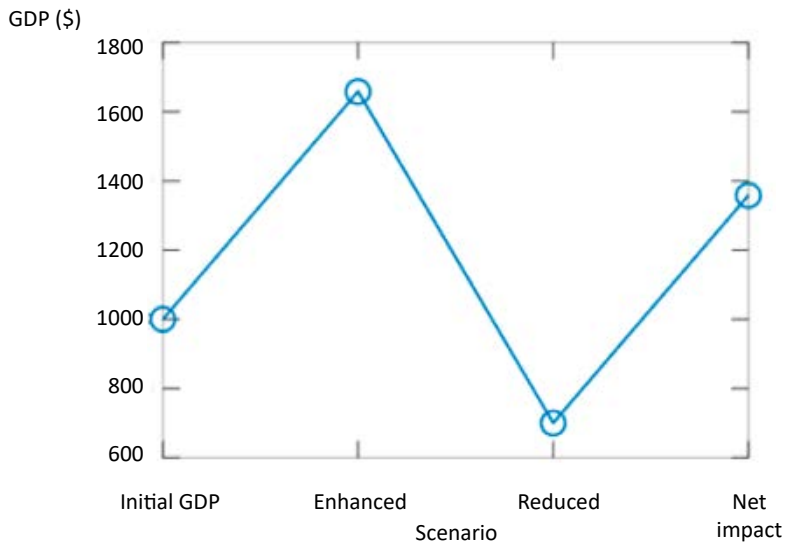

Figure 4. GDP impact (2D line plot)

Source: author's own work, see Appendix A.

hinder growth. This visualisation supports the importance of optimising saving strategies for economic stability and growth.

X-Axis – "Scenario" – categorises various scenarios analysed: Initial GDP, Enhanced by Enforcement Savings, Reduced by Escape Savings and Net Impact. Y-Axis – "Savings($)" – represents the dollar value of savings, whether enforcement or escape. Z-Axis – "GDP($)" – shows GDP in dollars, capturing the variation across scenarios based on savings type. The 3D plot illustrates the impact of enforcement and escape savings on GDP across different scenarios, supporting the theory that enforcement savings boost GDP, while escape savings reduce it. Figure 5 clearly demonstrates the interdependence between savings behaviour and economic outcomes, aligning with the theoretical focus on the money cycle. These visualisations make theoretical concepts more tangible by showing how enforcement savings enhance GDP, escape savings hinder growth and the money cycle's efficiency maintains economic health. Together, the theory and the figures provide a comprehensive view of the relationship between savings types, the money cycle and economic stability.
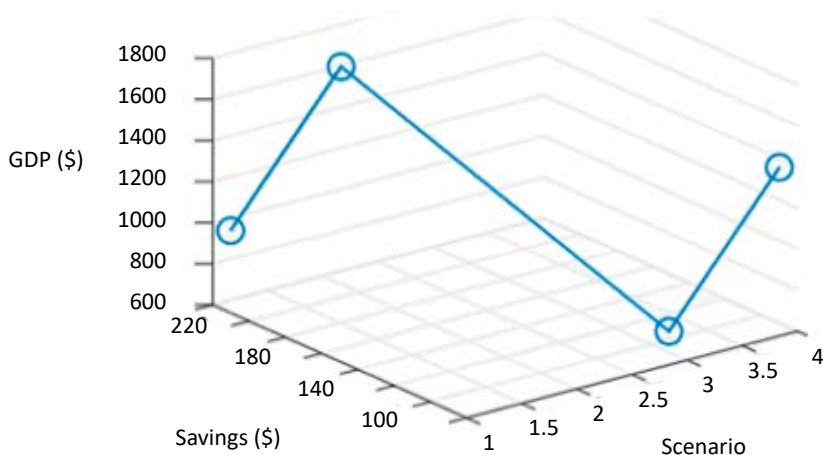

Figure 5. Savings and GDP impact (3D line plot)

Source: author's own work, see Appendix A.

Figure 6 shows a bar chart comparing the effects of economocracy on debt reduction across major economies. It displays the "Original Debt" and the "New Debt" under the economocracy model for each country. The results show significant debt reductions: the United States' debt falls from $20 trillion to $15 trillion (a 25% decrease), China's debt is halved from $10 trillion to $5 trillion, and Germany's debt decreases from $3 trillion to $2 trillion. The United Kingdom and France also see notable reductions, from $2.5 trillion to $1.8 trillion and $2.4 tril-
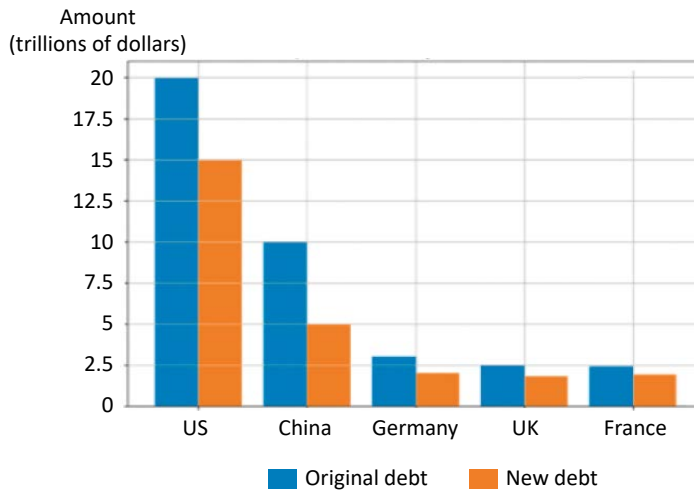
Figure 6. Impact of economocracy on debt reduction

Source: author's own work, see Appendix B.

lion to $1.9 trillion, respectively. These results highlight economocracy's potential to substantially reduce national debt, offering a solution to the global debt crisis. Debt reduction under economocracy could increase economic stability by freeing up fiscal space for investments in social programs and infrastructure. The chart supports the broader argument that adopting economocracy could address systemic issues within the current global economic system, promoting a more sustainable economic environment with manageable debt levels aligned to productive capacities.

Figure 7 illustrates trends in global GDP and debt from 2020 to 2024, showing a growing disparity between economic output and indebtedness. Global GDP increased from $83 trillion in 2020 to $95 trillion in 2024, reflecting gradual economic growth. In contrast, global debt rose from $90 trillion to $105 trillion, consistently outpacing GDP, highlighting a growing reliance on borrowing. By 2024, debt exceeds GDP by $10 trillion, underscoring a critical imbalance in the global economy. This growing debt burden suggests that the current economic framework is unsustainable.

Comparisons to similar studies, including those by Challoumis, strengthen the study's foundation. The Cycle of Money theory is linked to findings from Poland and Germany. Relationships between enforcement and escape savings are explored, demonstrating how enforcement savings boost GDP growth while escape savings hinder stability. Economocracy offers a sustainable debt reduction approach by emphasising efficient local capital flow (Challoumis, 2022b, 2024a, 2024g). Key elements include EPR for resource redistribution to repay debt and EPI for capital
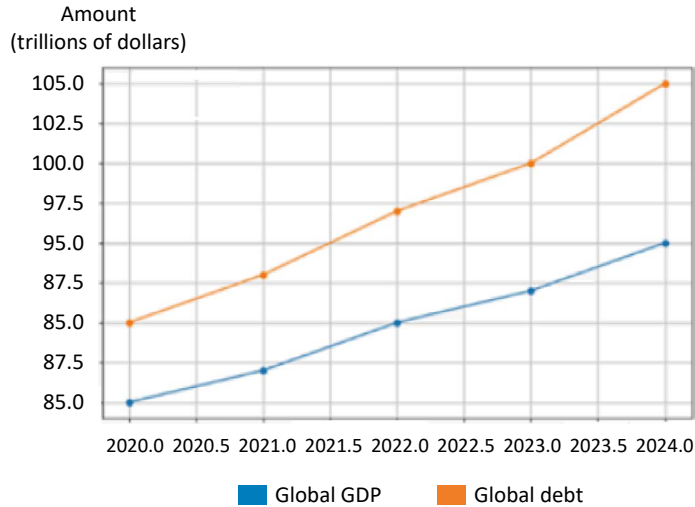
Constantinos Challoumis

Amount
(trillions of dollars)

Figure 7. Track of global GDP and global debt
Source: author's own work, see Appendix C.

allocation to essential sectors. Unlike traditional capitalism, economocracy encourages local reinvestment, reducing reliance on external borrowing. For postwar recovery, economocracy focuses on rebuilding infrastructure and stimulating growth through targeted investments. EPR allocates resources to critical sectors, while EPI ensures ongoing capital flow. This fosters financial stability, reduces reliance on foreign aid and supports sustainable development (Challoumis, 2022b, 2024a, 2024g). For post-war recovery, economocracy focuses on rebuilding infrastructure and stimulating growth through targeted investments. EPR allocates resources to critical sectors, while EPI ensures ongoing capital flow.

4. Discussion

The findings regarding enforcement savings align with the principles which suggest that capital retention within local economies contributes to growth (Altman, 2008; Dollery & Worthington, 1996; Koethenbuerger, 2011; Lin et al., 2020; Rizzo & Throsby, 2006; Ruiz et al., 2017; Ud Din et al., 2016; Wilson & Gowdy, 2013). The reduction in public debt observed under economocracy's EPR mechanism is also consistent with Challoumis's analysis of the Cycle of Money in Poland, which highlights the importance of optimising the balance between enforcement and escape savings. Policymakers and financial institutions should develop mechanisms

to encourage enforcement savings, such as incentives for local investment like tax breaks for reinvestment. Financial technologies can further enhance the efficiency of the money cycle, building a resilient, self-sustaining economy. Policy recommendations include encouraging domestic investment, reducing capital flight, lowering corporate tax rates for businesses investing locally and tightening regulations to prevent tax dodging. Governments should provide incentives for local reinvestment to maximise enforcement savings and implement measures to limit escape savings. Practical examples of successful local savings retention strategies provide actionable guidance for stakeholders, supporting long-term economic stability.

Conclusions and implications

Analyses of the money cycle reveal the relationship between enforcement and escape savings and their impact on economic stability and growth. Enforcement savings, retained and reinvested locally, play a vital role in fostering a strong economy by boosting domestic investments and increasing overall economic activity. In contrast, escape savings reduce money circulation and undermine stability by limiting funds for local reinvestment. Policymakers should prioritise enforcement savings for economic stability and growth. Policies that encourage local reinvestment through favourable tax incentives and regulations can retain capital within domestic banks.

Economocracy provides a solution to global debt and the restructuring of war-affected countries through EPR and EPI. The EPR mechanism aims to reduce global debt by redistributing resources proportional to each nation's GDP, ensuring economic stability without causing inflation or currency devaluation. EPI focuses on providing regular capital injections into critical sectors such as education, healthcare and infrastructure, which are vital for the reconstruction and recovery of war-torn countries. By emphasising internal stability and sustainable resource allocation, economocracy promotes economic resilience and social development, offering an alternative path to manage global economic challenges effectively.

Further research on economocracy should focus on proving its viability and impact on global economic systems. First, empirical studies are needed to simulate and analyse the effects of the EPR and EPI mechanisms on different economies, including interactions with existing policies, potential for reducing global debt and impacts on inflation and currency stability. Second, research should explore the practical challenges of integrating economocracy with current political and economic systems, including necessary reforms to democratic institutions and potential conflicts with capitalist interests. Third, comparative studies between econo-

mies that have implemented elements of economocracy and those that have not could highlight its effectiveness in securing economic stability and social equity. This could involve case studies of transition economies and those in debt crises to assess real-world implications. On the theoretical front, further refinement of EPR and EPI concepts is needed to evaluate their long-term sustainability and adaptability, helping shape a robust framework for wider empirical testing and implementation.

Appendix A

The following code was developed in Octave specifically for the purposes of this paper:

```
% (C)(R) 2024 All Rights Reserved Constantinos Challoumis
% Set global figure and axes background to white
set(0, 'DefaultFigureColor', 'white');
set(0, 'DefaultAxesColor', 'white');

% Parameters
GDP = 1000; % Total GDP
total_savings = 300; % Total savings in the economy
enforcement_savings_ratio = 0.7; % Percentage of savings as
enforcement savings
escape_savings_ratio = 1 - enforcement_savings_ratio; % Percentage
of savings as escape savings

% Calculate enforcement and escape savings
enforcement_savings = total_savings * enforcement_savings_ratio;
escape_savings = total_savings * escape_savings_ratio;

% Money cycle indices (hypothetical values)
high_index_money_cycle = 0.94; % Efficiency of the money cycle for
enforcement savings
general_index_money_cycle = 0.94;

% Economic impact of enforcement vs escape savings
```

```
% Assuming enforcement savings contribute positively to GDP while
escape savings do not
GDP_enhanced_by_enforcement = GDP * (1 + high_index_money_cycle *
enforcement_savings_ratio);
GDP_reduced_by_escape = GDP * (1 - escape_savings_ratio);

% Net GDP after considering savings
net_GDP = GDP_enhanced_by_enforcement + GDP_reduced_by_escape -
GDP;

% Results
fprintf('Enforcement Savings: $%.2f\n', enforcement_savings);
fprintf('Escape Savings: $%.2f\n', escape_savings);
fprintf('GDP Enhanced by Enforcement Savings: $%.2f\n', GDP_
enhanced_by_enforcement);
fprintf('GDP Reduced by Escape Savings: $%.2f\n', GDP_reduced_by_
escape);
fprintf('Net GDP Impact: $%.2f\n', net_GDP);

% Plot 1: Enforcement vs Escape Savings (Bar Chart)
figure;
bar([enforcement_savings, escape_savings]);
title('Plot 1: Enforcement vs Escape Savings');
ylabel('Amount ($)');
set(gca, 'XTickLabel', {'Enforcement Savings', 'Escape Savings'});
set(gca, 'FontSize', 12);
disp('Displaying Plot 1: Enforcement vs Escape Savings');

% Pause and clear for the next plot
pause(2);
clf;

% Plot 2: GDP Impact (Bar Chart)
figure;
bar([GDP, GDP_enhanced_by_enforcement, GDP_reduced_by_escape, net_
GDP]);
title('Plot 2: GDP Impact');
ylabel('GDP ($)');
set(gca, 'XTick', 1:4, 'XTickLabel', {'GDP', 'Enforcement
Savings', 'Escape Savings', 'Net Impact'});
set(gca, 'FontSize', 12);
set(gca, 'XTickLabelRotation', 45);
set(gca, 'Position', [0.1, 0.2, 0.8, 0.7]);
xlim([0.5, 4.5]);
disp('Displaying Plot 2: GDP Impact');

% Pause and clear for the next plot
pause(2);
```

```
clf;

% Plot 3: Savings Ratios (Pie Chart)
figure;
pie([enforcement_savings_ratio, escape_savings_ratio],
{'Enforcement Savings', 'Escape Savings'});
title('Plot 3: Savings Ratios');
set(gca, 'FontSize', 12);
disp('Displaying Plot 3: Savings Ratios');

% Pause and clear for the next plot
pause(2);
clf;
% Plot 4: Money Cycle Indices (Bar Chart)
figure;
bar([high_index_money_cycle, general_index_money_cycle]);
title('Plot 4: Money Cycle Indices');
ylabel('Index Value');
set(gca, 'XTickLabel', {'High Index', 'General Index'});
set(gca, 'FontSize', 12);
disp('Displaying Plot 4: Money Cycle Indices');

% Pause and clear for the next plot
pause(2);
clf;

% Plot 5: 2D Line Plot for GDP Impact
figure;
x = [1, 2, 3, 4]; % x-axis points
y = [GDP, GDP_enhanced_by_enforcement, GDP_reduced_by_escape, net_
GDP]; % y-axis values
plot(x, y, '-o', 'LineWidth', 2); % 2D line plot
title('Plot 5: GDP Impact (2D Line Plot)');
xlabel('Scenario');
ylabel('GDP ($)');
set(gca, 'XTick', x, 'XTickLabel', {'Initial GDP', 'Enhanced',
'Reduced', 'Net Impact'});
set(gca, 'FontSize', 12);
disp('Displaying Plot 5: GDP Impact (2D Line Plot)');

% Pause and clear for the next plot
pause(2);
clf;

% Plot 6: 3D Line Plot for Savings and GDP Impact
figure;
z = [GDP, GDP_enhanced_by_enforcement, GDP_reduced_by_escape, net_
GDP];
```

```
plot3(x, [enforcement_savings, enforcement_savings, escape_
savings, escape_savings], z, '-o', 'LineWidth', 2);
title('Plot 6: Savings and GDP Impact (3D Line Plot)');
xlabel('Scenario');
ylabel('Savings ($)');
zlabel('GDP ($)');
grid on;
set(gca, 'FontSize', 12);
disp('Displaying Plot 6: Savings and GDP Impact (3D Line Plot)');
```

Appendix B

The following code was developed in Python:

```
# (C)(R) 2024 All Rights Reserved Constantinos Challoumis
import matplotlib.pyplot as plt
import pandas as pd

# Sample data
data = {
 'Country': ['US', 'China', 'Germany', 'UK', 'France'],
 'Original Debt': [20, 10, 3, 2.5, 2.4],
 'New Debt': [15, 5, 2, 1.8, 1.9]
}

df = pd.DataFrame(data)

# Plot
df.plot(x='Country', kind='bar', figsize=(10, 6), width=0.8)
plt.xlabel('Country')
plt.ylabel('Amount (Trillions of Dollars)')
plt.title('Impact of Economocracy on Debt Reduction')
plt.xticks(rotation=45)
plt.grid(True)
plt.show()
```

Appendix C

The following code developed in Python:

```
# (C)(R) 2024 All Rights Reserved Constantinos Challoumis
```

```
import matplotlib.pyplot as plt
import pandas as pd

# Sample data
data = {
 'Year': [2020, 2021, 2022, 2023, 2024],
 'Global GDP': [85, 87, 90, 92, 95],
 'Global Debt': [90, 93, 97, 100, 105]
}

df = pd.DataFrame(data)

# Plot
plt.figure(figsize=(10, 6))
plt.plot(df['Year'], df['Global GDP'], marker='o', label='Global
GDP')
plt.plot(df['Year'], df['Global Debt'], marker='o', label='Global
Debt')
plt.xlabel('Year')
plt.ylabel('Amount (Trillions of Dollars)')
plt.title('Track of Global GDP and Global Debt')
plt.legend()
plt.grid(True)
plt.show()
```

References

Altman, M. (June 27, 2008). *Behavioral economics, economic theory and public policy*. SSRN. https://doi.org/10.2139/ssrn.1152105

Lin T.-F., Chan Y.-S., & Chen J. (2020). Awareness of tobacco tax policy and public opinion on tobacco tax reform in Taiwan. *Asian Pacific Journal of Health Economics and Policy*, *3*, 2–14. https://doi.org/10.6011/apj.2020.03

Bergh, J. C. J. M. van den. (2009). The GDP paradox. *Journal of Economic Psychology*, *30*(2), 117–135 Retrieved from https://doi.org/10.1016/j.joep.2008.12.001

Boughton, J. M. (1994). *The IMF and the Latin American debt crisis: Seven common criticisms*. IMF Policy Discussion Papers, 023. https://doi.org/10.5089/9781451962154.003

Bourdin, S., & Nadou, F. (2018). La French Tech: Une nouvelle forme de mobilisation des territoires pour faire face à la compétition mondiale? *Annales de Geographie*, (723–724), 612–634. https://doi.org/10.3917/ag.723.0612

Canh, N. P., & Thanh, S. D. (2020). Financial development and the shadow economy: A multi-dimensional analysis. *Economic Analysis and Policy*, *67*, 37–54. https://doi.org/10.1016/j.eap.2020.05.002

Castro, E., & Scartascini, C. (2019). Imperfect attention in public policy: A field experiment during a tax amnesty in Argentina. *IDB Discussion Paper*, (April). https://doi.org/10.18235/0001661

Challoumis, C. (2018a). Methods of controlled transactions and the behavior of companies according to the public and tax policy. *Economics*, *6*(1), 33–43. https://doi.org/10.2478/eoik-2018-0003

Challoumis, C. (2018b). The role of risk to the international controlled transactions. *Economics and Applied Informatics*, *23*(3), 57–64. https://doi.org/10.26397/eai1584040917

Challoumis, C. (2019). The R.B.Q. (Rational, Behavioral and Quantified) model. *Ekonomika*, *98*(1), 6–18. https://doi.org/10.15388/ekon.2019.1.1

Challoumis, C. (2020a). The impact factor of costs to the tax system. *Journal of Entrepreneurship, Business and Economics*, *8*(1), 1–14. http://scientificia.com/index.php/JEBE/article/view/126

Challoumis, C. (2020b). The impact factor of education on the public sector – the case of the U.S. *International Journal of Business and Economic Sciences Applied Research*, *13*(1), 69–78. https://doi.org/10.25103/ijbesar.131.07

Challoumis, C. (2021). Index of the Cycle of Money – the case of Bulgaria. *Economic Alternatives*, *27*(2), 225–234. https://doi.org/10.37075/EA.2021.2.04

Challoumis, C. (2022a). Conditions of the CM (Cycle of Money). In M. V. Kaya (Ed.), *Social and economic studies within the framework of emerging global developments* (vol. 1, pp. 13–24). Peter Lang. https://doi.org/10.3726/b19907

Challoumis, C. (2022b). Economocracy versus capitalism. *Acta Universitatis Bohemiae Meridionalis*, *25*(1), 33–54.

Challoumis, C. (2022c). Index of the Cycle of Money – the case of Poland. *Research Papers in Economics and Finance*, *6*(1), 72–86. https://doi.org/10.18559/ref.2022.1.5

Challoumis, C. (2023a). A comparison of the velocities of minimum escaped savings and financial liquidity. In H. Özüdoğru, M. V. Kaya, & U. Kaya (Eds.), *Social and economic studies within the framework of emerging global developments* (vol. 4, pp. 41–56). Peter Lang. https://doi.org/10.3726/b21202

Challoumis, C. (2023b). Currency rate of the CM (Cycle of Money). *Research Papers in Economics and Finance*, *7*(1), 48–66. https://doi.org/10.18559/ref.2023.1.195

Challoumis, C. (2023c). From savings to escape and enforcement savings. *Cogito*, *15*(4), 206–216.

Challoumis, C. (2023d). Impact factor of liability of tax system according to the theory of Cycle of Money. In M. V. Kaya, & S. Bayrakdar (Eds.), *Social and economic studies within the framework of emerging global developments* (vol. 3, pp. 31–42). Peter Lang. https://doi.org/10.3726/b20968

Challoumis, C. (2023e). Index of the Cycle of Money: The case of Costa Rica. *Sapienza*, *4*(3), e23041. https://doi.org/10.51798/sijis.v4i3.620

Challoumis, C. (2023f). Risk on the tax system of the E.U. from 2016 to 2022. *Economics*, *11*(2). https://doi.org/10.2478/eoik-2023-0058

Challoumis, C. (2023g). Utility of Cycle of Money without the escaping savings (protection of the economy). In M. V. Kaya (Ed.), *Social and economic studies within the frame-

work of emerging global developments (vol. 2, pp. 53–64). Peter Lang. https://doi.org/10.3726/b20509

Challoumis, C. (2024a). Economocracy's equalizer. In *International Conference on Science, Innovations and Global Solutions* (pp. 320–324). Futurity Research Publishing. http://dx.doi.org/10.2139/ssrn.4910366

Challoumis, C. (2024b). From axiomatics method to multiple axiomatics method – Q.E. (Quantification of Everything) method. *International Journal of Multicultural and Multireligious Understanding*, *11*(6). https://doi.org/10.2139/ssrn.4878629

Challoumis, C. (2024c). From economics to economic engineering (the Cycle of Money): The case of Romania. *Cogito*, *17*(2), 161–170.

Challoumis, C. (2024d). How is the Cycle of Money and economocracy being transformed by AI innovations? In *XIII international scientific conference. Toronto. Canada. 26–27.09.2024* (pp. 360–383). https://doi.org/10.2139/ssrn.4975037

Challoumis, C. (2024e). Impact factor of liability using the Sensitivity Method. In M. V. Kaya (Ed.), *Social and Economic Studies within the Framework of Emerging Global Developments* (vol. 6, pp. 77–86). Peter Lang.

Challoumis, C. (2024f). The index of the Cycle of Money: The case of Switzerland. *Journal of Risk and Financial Management*, *17*(4), 135. https://doi.org/10.3390/jrfm17040135

Challoumis, C. (2024g). Integrating money cycle dynamics and economocracy for optimal resource allocation and economic stability. *Journal of Risk and Financial Management*, *17*(9), 1–25. Retrieved from https://doi.org/10.3390/jrfm17090422

Challoumis, C. (2024h). Rewarding taxes on the Cycle of Money. In K. Cebeci, & M. V. Kaya (Eds.), *Social and Economic Studies within the Framework of Emerging Global Developments* (vol. 5, pp. 37–46). Peter Lang.

Challoumis, C. (2024i). What challenges does AI present to the Cycle of Money and economocracy? In *XIII international scientific conference. Toronto. Canada. 26–27.09.2024* (pp. 384–418). https://doi.org/10.2139/ssrn.4975035

Dollery, B. E., & Worthington, A. C. (1996). The evaluation of public policy: Normative economic theories of government failure. *Journal of Interdisciplinary Economics*, *7*(1), 27–39. https://doi.org/10.1177/02601079x9600700103

Engels, F. (1844). *The condition of the working class in England*. Otto Wigand.

Gilens, M., & Page, B. I. (2014). Testing theories of American politics: Elites, interest groups, and average citizens. *Perspectives on Politics*, *12*(3). 564–581. https://doi.org/10.1017/S1537592714001595

Gilpin, R., & Gilpin, J. M. (2001). *Global political economy*. Princeton University Press. https://doi.org/10.1515/9781400831272

Koethenbuerger, M. (2011). How do local governments decide on public policy in fiscal federalism? Tax vs. expenditure optimization. *Journal of Public Economics*, *95*(11–12). 1516–1522. https://doi.org/10.1016/j.jpubeco.2011.06.006

Menguy, S. (2020). Tax competition, fiscal policy, and public debt levels in a monetary union. *Journal of Economic Integration*, *35*(3). 353–395. https://doi.org/10.11130/jei.2020.35.3.353

Richardson, G. B. (1964). *Economic theory*. Routledge Taylor & Francis Croup.

Rizzo, I., & Throsby, D. (2006). Chapter 28 cultural heritage: Economic analysis and public policy. *Handbook of the Economics of Art and Culture*, *1*, 983–1016. https://doi.org/10.1016/S1574-0676(06)01028-3

Ruiz, J. C., Jurado, E. B., Moral, A. M., Uclés, D. F., & Viruel, M. J. M. (2017). Measuring the social and economic impact of public policies on entrepreneurship in Andalusia. *CIRIEC-Espana Revista de Economia Publica, Social y Cooperativa*, *1*(90), 75–102.

Stiglitz, J. E. (2002). *Globalization and its discontents*. W.W. Norton & Company.

Tummers, L. (2019). Public policy and behavior change. *Public Administration Review*, *79*(6). 925–930. https://doi.org/10.1111/puar.13109

Ud Din, M., Mangla, I. U., & Jamil, M. (2016). Public policy, innovation and economic growth: An economic and technological perspective on Pakistan's telecom industry. *The Lahore Journal Of Economics*, *21*(Special Edition). 369–391. https://doi.org/10.35536/lje.2016.v21.isp.a16

Wilson, D. S., & Gowdy, J. M. (2013). Evolution as a general theoretical framework for economics and public policy. *Journal of Economic Behavior and Organization*, *90*, S3–S10. https://doi.org/10.1016/j.jebo.2012.12.008

World Bank. (2003). *World development report 2003: Sustainable development in a dynamic world*. World Bank. https://openknowledge.worldbank.org/handle/10986/5985