
DEBT CYCLES, INSTABILITY AND FISCAL RULES: A GODLEY-MINSKY MODEL

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GODLEY, MINSKY AND THE CRISIS

- Wynne Godley and Hyman Minsky were two macroeconomists that ‘saw the crisis coming’.
- In 1999 **Godley** published his well-known article on the ‘seven unsustainable processes’ in the US economy.
- In this article he argued that the rising private indebtedness in the US was unsustainable and, therefore, private expenditures could not be considered as a source of steady growth in the medium term.
- He also pointed to the unsustainability of the rising US net foreign indebtedness.

GODLEY, MINSKY AND THE CRISIS

- Using a stock-flow consistent framework, Godley illustrated that without a change in fiscal policy stance or an important rise in net exports, the US economy was doomed to witness a severe recession and a sharp rise in unemployment.
- These warnings were repeated in his publications as a head of the Levy Economics Institute's macro-modelling team (see e.g. Godley, 2003, 2005; Godley et al., 2005).
- The 2007-9 crisis verified Godley's fears: the US economy contracted rapidly and the unemployment rate increased substantially.

GODLEY, MINSKY AND THE CRISIS

- **Minsky** (1975, 1982, 1986) developed a theory that explains how indebtedness can increase in periods of tranquillity as a result of endogenous forces that reduce the desired margins of safety of economic units.
- This gradual reduction in the desired margins of safety was considered by Minsky as the reason behind the increasing financial fragility that accompanies economic expansion and periods of stability.
- According to his ‘financial instability hypothesis’, the increasing fragility makes the macro systems more prone to shocks that reduce the ability of borrowers to repay their debt.

GODLEY, MINSKY AND THE CRISIS

- These shocks can lead to severe economic recessions.
- The processes described in Minsky's analysis are broadly in line with the pre-crisis developments in the US and other advanced economies that ultimately led to the Great Recession.
- The emphasis that Godley and Minsky placed on financial relationships as sources of cycles and instability enabled them to provide some very important insights into the dynamics of modern macroeconomies.
- However, they did so from quite different angles.

GODLEY, MINSKY AND THE CRISIS

- Godley concentrated more on the macroeconomic relationships between the private, the government and the foreign sector and postulated that in the medium to long run the fluctuations in financial balances and growth are driven by some exogenous stock-flow norms.
- Minsky, on the other hand, focused more on the relationships within the private sector (primarily on the financial relationships between firms and banks) and explained the macroeconomic fluctuations by considering endogenous changes in norms and evaluations of risk.

AIM OF THE PAPER

- Although it is widely held that Godley's and Minsky's perspectives are both important for the explanation of macroeconomic dynamics, there is still a lack of a framework that synthesises them.
- The main objective of this paper is to make such a synthesis in a simple macrodynamic model.
- The model concentrates on certain aspects of Godley's and Minsky's approaches that are deemed more important for the explanation of debt cycles and instability in a simplified skeleton that describes the dynamics of a national macroeconomy.

AIM OF THE PAPER

- The key features of the model are the following:

First, as in Godley's projection analyses, the economy consists of three sectors: the private sector, the government sector and the foreign sector. This allows us to explicitly consider Godley's 'financial balances approach' that explains the interlinkages between these sectors and the resulting effects on debt accumulation and growth.

Second, the private expenditures are driven by a stock-flow norm (the target net debt-to-income ratio). Following Minsky, it is assumed that this norm varies endogenously as a result of changes in the expectations and conventions of borrowers and lenders during the economic cycle.

AIM OF THE PAPER

- Both Godley and Minsky emphasised the role of fiscal policy as a stabilising mechanism for the inherent unstable macro systems.
- The additional purpose of this paper is, therefore, to examine the implications of the constructed Godley-Minsky model for the conduct of **fiscal policy**.
- We do so by comparing the (de)stabilising effects of two different fiscal rules: a Maastricht-type fiscal rule that concentrates on the stabilisation of government debt and a Godley-Minsky fiscal rule that links government expenditures with private indebtedness.

STRUCTURE OF THE PRESENTATION

1. Structure of the model
2. The 2D subsystem: interaction between net private indebtedness and private spending
3. The 3D subsystem: endogenising the targeted net private indebtedness
4. Introducing fiscal rules
5. Conclusions

STRUCTURE OF THE PRESENTATION

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1. STRUCTURE OF THE MODEL

Transactions matrix

	Private sector		Government sector	Foreign sector	Total
	Current	Capital			
Government expenditures	$+G$		$-G$		0
Taxes	$-T$		$+T$		0
Exports	$+X$			$-X$	0
Imports	$-M$			$+M$	0
Private expenditures	$+P$	$-P$			0
Private sector's income	$-Y_P$	$+Y_P$			0
Interest	$-rD_P$		$-rD_G$	$+r(D_P+D_G)$	0
Change in net debt		$+\dot{D}_P$	$+\dot{D}_G$	$+\dot{D}_F$	0
Total	0	0	0	0	0

1. STRUCTURE OF THE MODEL

Accounting identities

- The output (Y) of the economy is given by the following identity:

$$Y = P + G + X - M$$

where P stands for the private expenditures (consumption plus investment), G denotes the government expenditures, X stands for exports and M denotes imports.

- The disposable income of the private sector (Y_p) is as follows:

$$Y_p = Y - T - rD_p$$

where T denotes taxes, r is the interest rate and D_p is the net private debt.

1. STRUCTURE OF THE MODEL

Accounting identities

- The change in net private debt is determined as follows:

$$\dot{D}_P = -B_P = P - Y_P$$

where B_P is the balance of the private sector and Y_P is the private income.

- The change in net government debt (D_G) is given by the following identity:

$$\dot{D}_G = -B_G = G - T + rD_G$$

where B_G is the balance of the government sector.

1. STRUCTURE OF THE MODEL

Accounting identities

- The change in net foreign debt (D_F) is:

$$\dot{D}_F = -B_F = X - M - r(D_G + D_P)$$

where B_F is the balance of the foreign sector.

- The following identity captures Godley's 'financial balances approach':

$$\dot{D}_P + \dot{D}_G + \dot{D}_F = -(B_P + B_G + B_F) = 0$$

1. STRUCTURE OF THE MODEL

- The ‘financial balances approach’ has been widely used by Godley himself and other economists to analyse the macroeconomic developments in various countries (see e.g. Godley, 1995, 1999, 2003, 2005; Godley et al., 2007; Zezza, 2009; Sawyer, 2011; Brecht et al., 2012; Wolf, 2012).
- The important implication of this identity is that the balance of one sector cannot improve without a deterioration in the balances of at least one of the other two sectors.
- Moreover, since the main components of the financial balances are also components of the aggregate demand, any attempt of the sectors to improve their balances may lead to lower output if the other sectors do not desire to experience lower balances.

1. STRUCTURE OF THE MODEL

- A distinct feature of the ‘financial balances approach’ is the consolidation of households, firms and banks into one single sector. This consolidation is a great simplification with various limitations (see Dos Santos and Macedo e Silva, 2010 and Martin, 2012 for a discussion).
- However, it has proved quite useful in Godley’s projections and other empirical analyses that focus on the interaction between private sector’s behaviour, fiscal policy and foreign balance.
- Furthermore, it serves the purposes of our simple skeleton that intends to capture the dynamics of a national macroeconomy by using a high-level aggregation.

1. STRUCTURE OF THE MODEL

Definitions

- The propensity of the private sector to spend (p) is defined as:

$$p = \frac{P}{Y(1-\tau)}$$

where τ is the tax rate.

- The government expenditures-to-output ratio is:

$$g = \frac{G}{Y}$$

1. STRUCTURE OF THE MODEL

Definitions

- The net private debt-to-income ratio is:

$$d_P = \frac{D_P}{Y(1-\tau)}$$

- The net government debt-to-output ratio is:

$$d_G = \frac{D_G}{Y}$$

1. STRUCTURE OF THE MODEL

Behavioural equations

- Taxes are equal to:

$$T = \tau Y$$

- Imports are given by:

$$M = mY$$

- For simplicity, exports grow at an exogenously given rate (g_X):

$$\dot{X} = g_X X$$

1. STRUCTURE OF THE MODEL

Behavioural equations

- The propensity of the private sector to spend is given by the following formula:

$$\dot{p} = \lambda (d_p^T - d_p)$$

where $\lambda > 0$ and d_p^T is the target net private debt-to-income ratio.

- Our formula implies that the private sector's propensity to spend declines when the actual net debt ratio is higher than the targeted one (and vice versa).

1. STRUCTURE OF THE MODEL

Behavioural equations

- This formula draws on **Godley's hypothesis** about the behaviour of the private sector. Godley argued that the private sector targets in the long run a specific stock of net financial assets as a proportion of its disposable income (a stock-flow norm).
- In our setup, d_P^T expresses the targeted net private debt-to-income ratio. Importantly, it is considered that this target is not only set by the private sector itself. It is also set by the government, and most importantly, by the foreign sector that are potentially lenders of the private sector.
- For instance, it may capture the willingness of foreign investors to lend to the private sector of a national economy (household, firms or banks). Hence, this target is affected by the decisions of both borrowers and lenders.

1. STRUCTURE OF THE MODEL

Behavioural equations

- The change in the target net private debt-to-income ratio is determined as follows:

$$\dot{d}_P^T = \theta_1 (g_Y - g_{Y0}) + \theta_2 (d_P^B - d_P^T)$$

where $\theta_1, \theta_2 > 0$, g_Y is the economic growth, g_{Y0} is a benchmark growth rate and d_P^B is the benchmark net private debt-to income ratio.

- This formula draws on Minsky who argued that during periods of expansion, when the outstanding debts are serviced without significant problems, the desired margins of safety of borrowers and lenders become lower.

1. STRUCTURE OF THE MODEL

Behavioural equations

- This happens because the recent good performance of the economy induce economic units to accept financial structures that were previously assessed as risky. The opposite holds in periods in which the economic performance and credit history are not favourable.
- Although Minsky's arguments basically refer to the behaviour of firms and banks, they can be applied to any borrower-lender relationship and, therefore, to the financial relationships between the private sector of a national economy and its lenders/borrowers.

1. STRUCTURE OF THE MODEL

Behavioural equations

- Our equation states that when economic growth is higher than a benchmark growth rate, the target net debt-to-income ratio of the private sector increases (and vice versa).
- By endogenising the target net debt-to-income ratio, our equation can be seen as a Minskyan extension of Godley's stock-flow norm for the private sector.

1. STRUCTURE OF THE MODEL

Behavioural equations

- However, economic growth is not the only driver of the target net debt ratio.
- According to our equation, this target is also partially attracted by a **benchmark net debt ratio** which is constant and depends on deep institutional factors (e.g. the degree of financial development, the trade institutions, the political relationships of the country under investigation with other countries etc.).
- This benchmark net debt ratio can be either positive or negative. When it is positive the private sector has a **net debtor** benchmark position; when it is negative the private sector has a **net creditor** benchmark position.

1. STRUCTURE OF THE MODEL

Behavioural equations

- The Maastricht-type fiscal rule of the model is:

$$\dot{g} = \mu(d_G^T - d_G)$$

where $\mu > 0$ and d_G^T is the target net government debt-to-income ratio.

- This rule states that government expenditures (relative to output) decline when the net government debt-to-output is higher than the target debt ratio.

1. STRUCTURE OF THE MODEL

Behavioural equations

- The Godley-Minsky fiscal rule is:

$$\dot{g} = -\kappa (d_P^T - d_P)$$

where $\kappa > 0$.

- This rule departs from the conventional approach since it places no limits on any specific fiscal aggregate. On the contrary, its rationale is that fiscal policy should stabilise the macroeconomy by increasing government expenditures when the private sector attempts to reduce its indebtedness, producing contractionary effects.

1. STRUCTURE OF THE MODEL

- Simple mathematical estimations show that the law of motion for the net private ratio and the net government debt ratio are written as follows:

$$\dot{d}_P = p - 1 + (r - g_Y)d_P$$

$$\dot{d}_G = g - \tau + (r - g_Y)d_G$$

- Based on these equations, two points are in order:
- **First**, if we consider an exogenous growth rate, the debt ratios stabilise at a specific level when this growth rate is higher than the interest rate. This shows the importance of monetary policy for the sustainability of private and public debt.

1. STRUCTURE OF THE MODEL

- **Second**, if the growth rate is endogenous (which is the case in our model) and the net debt is positive, any attempt of the private and the government sector to reduce their indebtedness by cutting expenditures has two conflicting effects:
 - On the one hand, the decline in expenditures tends to reduce the debt ratios. We call this the **‘spending effect’**.
 - On the other hand, the decline in expenditures reduces the growth rate placing upward pressures on the debt ratios by reducing their denominators. We call this the **‘growth effect’**.

1. STRUCTURE OF THE MODEL

The 5D macroeconomic system

$$\begin{aligned} \dot{d}_P &= p - 1 + (r - g_Y)d_P && \longleftarrow \text{Net private debt-to-income ratio} \\ \dot{p} &= \lambda(d_P^T - d_P) && \longleftarrow \text{Private sector's propensity to spend} \\ \dot{d}_P^T &= \theta_1(g_Y - g_{Y0}) + \theta_2(d_P^B - d_P^T) && \longleftarrow \text{Target net private debt-to-income ratio} \\ \dot{d}_G &= g - \tau + (r - g_Y)d_G && \longleftarrow \text{Net government debt-to-output ratio} \\ \dot{g} &= \mu(d_G^T - d_G) && \longleftarrow \text{Maastricht-type fiscal rule} \\ \dot{g} &= -\kappa(d_P^T - d_P) && \longleftarrow \text{Godley-Minsky fiscal rule} \end{aligned}$$

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- 2. The 2D subsystem: interaction between net private indebtedness and private spending**
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2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

The 2D subsystem

$$\dot{d}_P = p - 1 + (r - g_Y)d_P \quad \leftarrow \text{Net private debt-to-income ratio}$$

$$\dot{p} = \lambda(d_P^T - d_P) \quad \leftarrow \text{Private sector's propensity to spend}$$

$$\dot{d}_P^T = \theta_1(g_Y - g_{Y0}) + \theta_2(d_P^B - d_P^T) \quad \leftarrow \text{Target net private debt-to-income ratio}$$

$$\dot{d}_G = g - \tau + (r - g_Y)d_G \quad \leftarrow \text{Net government debt-to-output ratio}$$

$$\dot{g} = \mu(d_G^T - d_G) \quad \leftarrow \text{Maastricht-type fiscal rule}$$

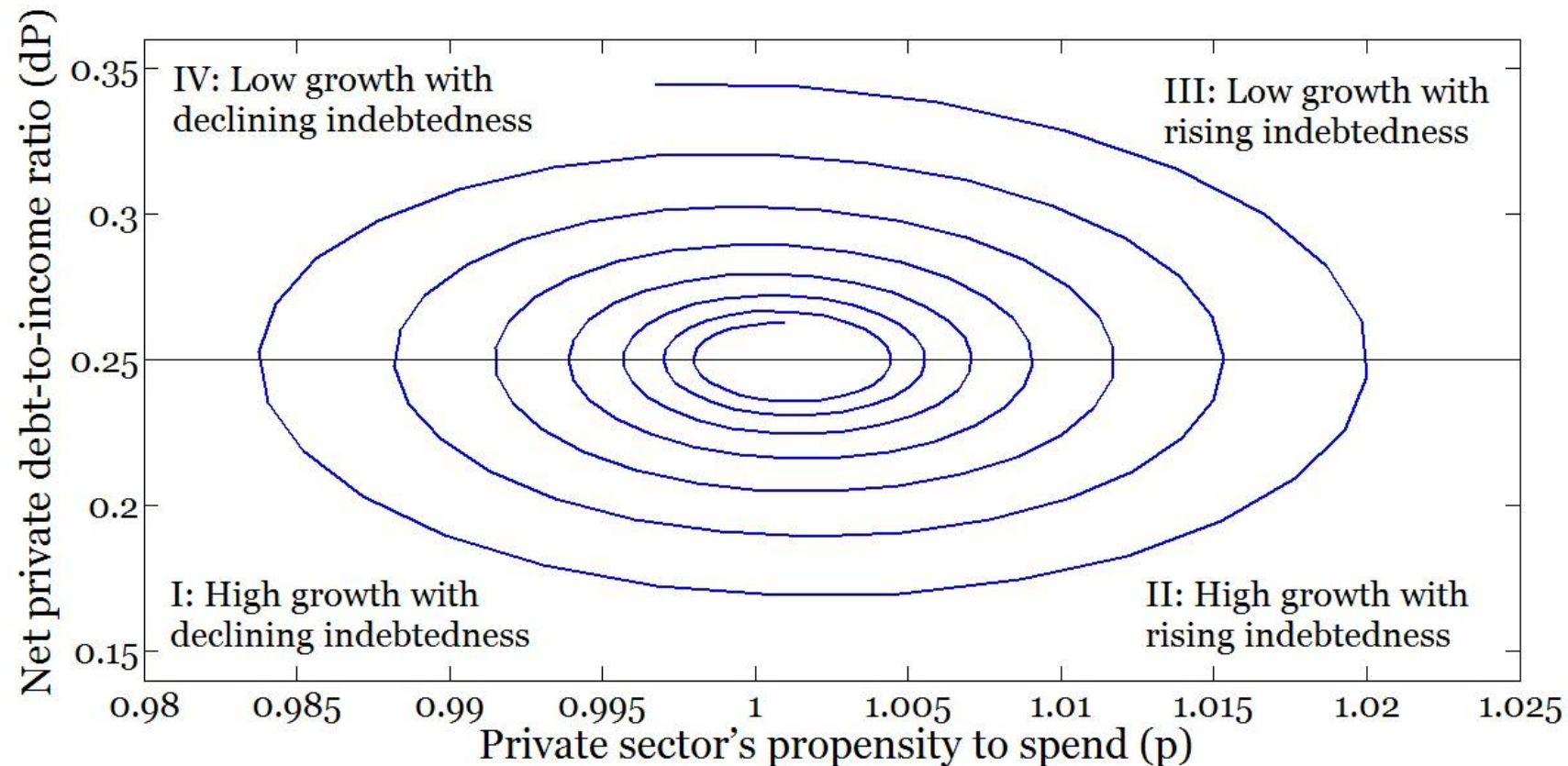
$$\dot{g} = -\kappa(d_P^T - d_P) \quad \leftarrow \text{Godley-Minsky fiscal rule}$$

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

- Mathematical analysis illustrates that the 2D subsystem becomes unstable if the responsiveness of the private sector's propensity to spend to divergences between the actual and the target debt ratios (λ) is sufficiently high. In particular, this holds when the private sector is in a net debtor benchmark position.
- The rationale is straightforward: when the net private debt ratio is higher than the target one, any attempt of the private sector to reduce its indebtedness by reducing the propensity to spend has an adverse impact on economic growth.
- For sufficiently high values of λ , this 'growth effect' dominates the 'spending effect' leading to instability.
- Moreover, it can be shown that for a wide range of λ values the 2D subsystem exhibits unstable cycles. The diagram in the next slide illustrates these cycles in our simulations.

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

Unstable cycles



2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

- Assume that the economy is initially in **phase I**. Since $d_p < d_p^T$, the private sector increases its propensity to spend producing higher than steady-state growth.
- Simultaneously, net private indebtedness declines because the propensity to spend is not high enough. Phase I can be interpreted as a phase of recovery.
- As the net private debt-to-income ratio declines, the propensity to spend continues to increase and eventually the economy enters **phase II** in which the propensity to spend is high enough to generate a rise in indebtedness.
- In this phase the economy continues to exhibit a high growth which, however, is accompanied by higher fragility.

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

- At some point, d_p becomes higher than d_p^T . At that point the indebtedness of the private sector is conceived to be extremely high from the borrowers' and/or lenders' perspective; this causes a reduction in the propensity of the private sector to spend.
- The economy enters a period stagnation (**phase III**) where low growth coexists with rising net indebtedness. This rising indebtedness reduces further the private sector's propensity to spend. Indebtedness starts declining only when the propensity to spend is low enough to outweigh the adverse effects of low growth on the debt ratio.

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

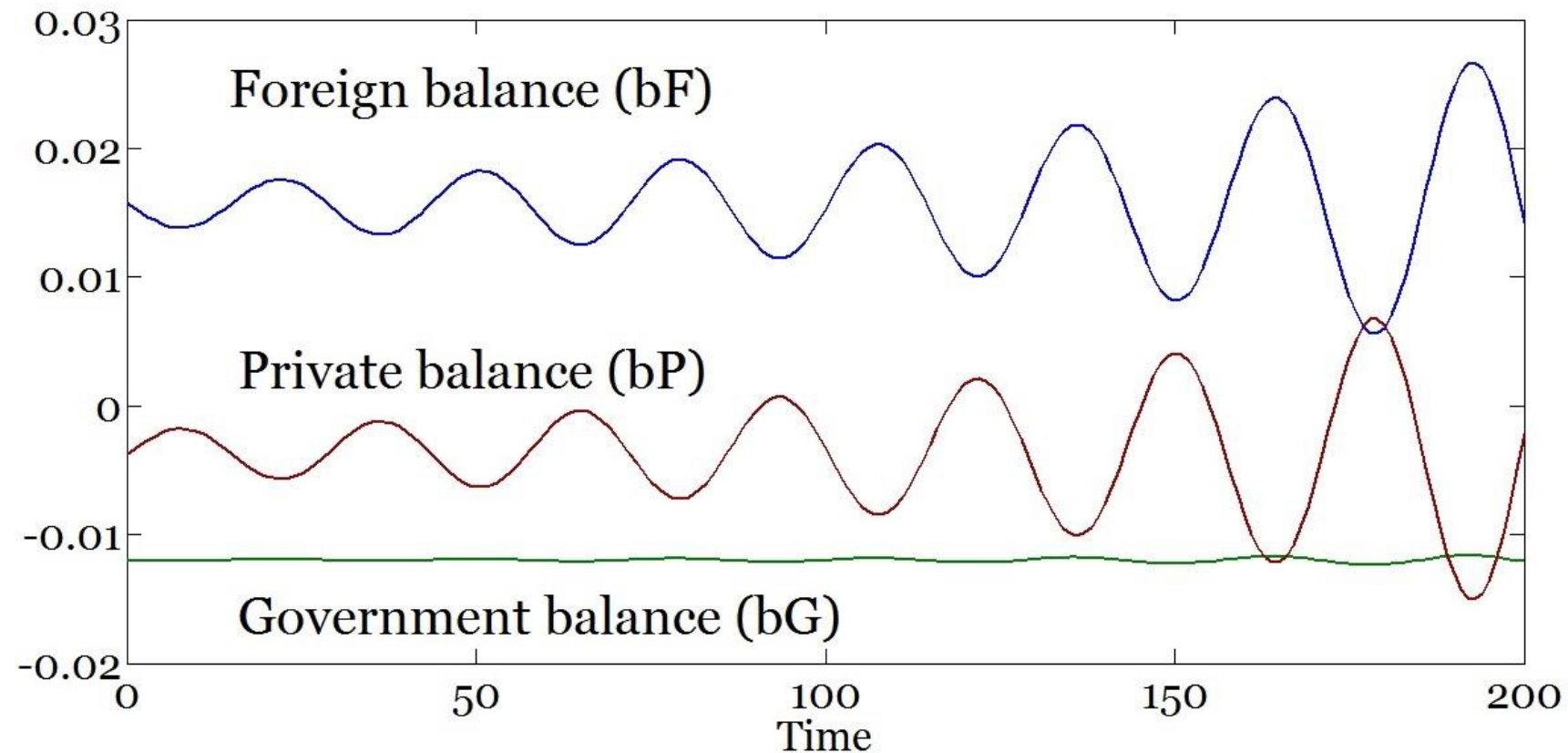
- When this happens, the economy enters a new phase (**phase IV**) where economic growth remains low (since d_p is still higher than d_p^T).
- However, declining indebtedness sets the stage for the recovery that occurs when d_p falls short of d_p^T . When this happens, a new cycle begins.

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

- Since the cycles are unstable, economic fluctuations become gradually more severe. Therefore, the more the private sector and its lenders attempt to put net private indebtedness under control by adjusting private expenditures, the more the private debt ratio destabilises.
- Arguably, this is a ‘**paradox of debt**’ result: the macroeconomic effects of the change in expenditures prevent the realisation of desired indebtedness.
- The next slide shows the unstable cycles in the **three balances** of the economy as time passes. Since in the 2D subsystem the government expenditures-to-output ratio is constant, any deterioration or improvement in the financial balance of the private sector is almost entirely mirrored in the balance of the foreign sector.

2. 2D SUBSYSTEM: INTERACTION BETWEEN PRIVATE INDEBTEDNESS AND PRIVATE SPENDING

Financial balances (in proportion of output)



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3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

The 3D subsystem

$$\dot{d}_P = p - 1 + (r - g_Y)d_P \quad \leftarrow \text{Net private debt-to-income ratio}$$

$$\dot{p} = \lambda(d_P^T - d_P) \quad \leftarrow \text{Private sector's propensity to spend}$$

$$\dot{d}_P^T = \theta_1(g_Y - g_{Y0}) + \theta_2(d_P^B - d_P^T) \quad \leftarrow \text{Target net private debt-to-income ratio}$$

$$\dot{d}_G = g - \tau + (r - g_Y)d_G \quad \leftarrow \text{Net government debt-to-output ratio}$$

$$\dot{g} = \mu(d_G^T - d_G) \quad \leftarrow \text{Maastricht-type fiscal rule}$$

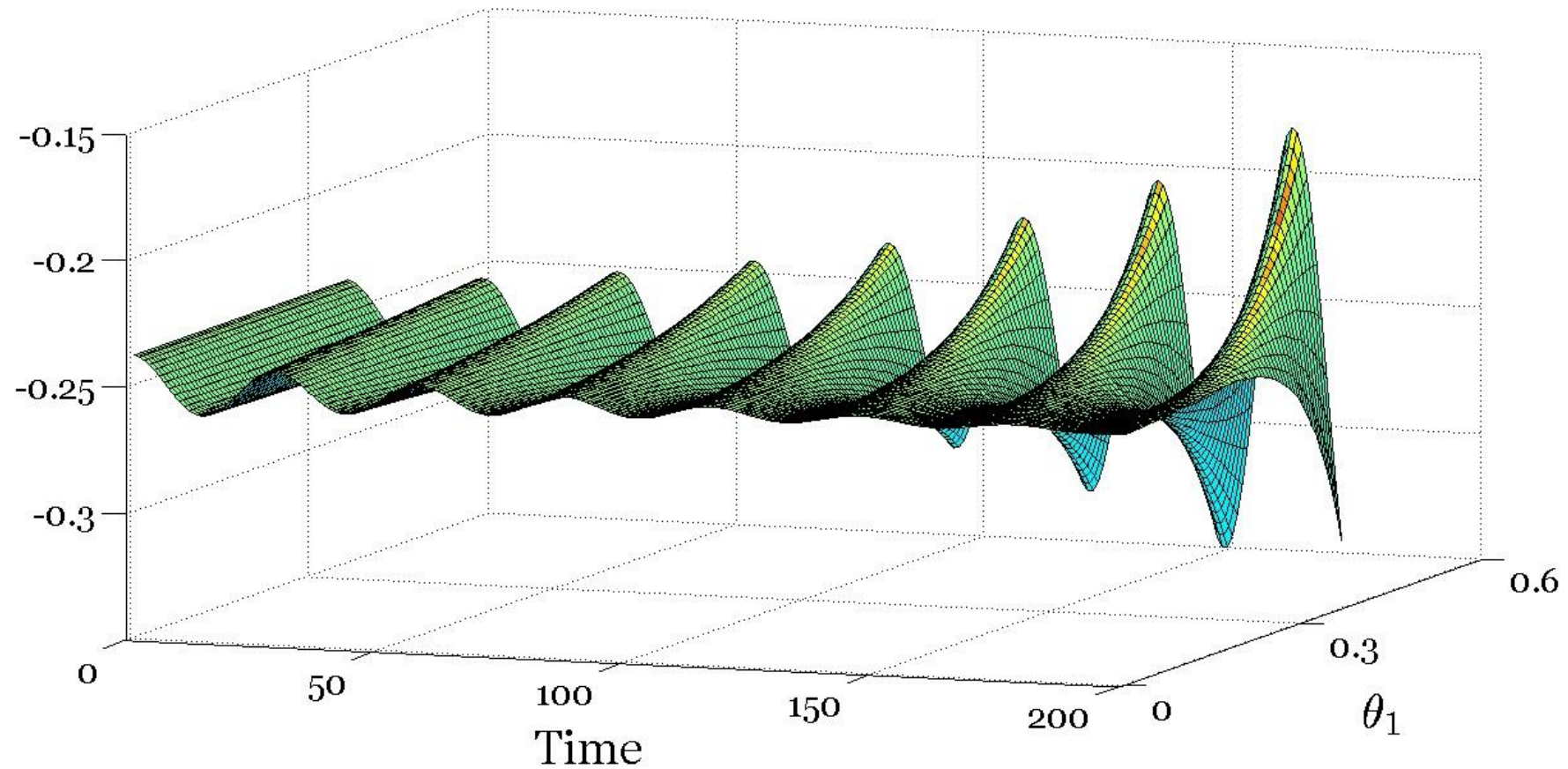
$$\dot{g} = -\kappa(d_P^T - d_P) \quad \leftarrow \text{Godley-Minsky fiscal rule}$$

3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

- We consider a stable 2D subsystem and allow the target net debt ratio of the private sector to change endogenously.
- According to our equation, a higher θ_1 implies a higher responsiveness of the target debt ratio to the economic cycle.
- It can be shown mathematically that a higher θ_1 is conducive to instability.
- In the simulations presented in the next slides it is illustrated that this is actually the case. We start from a stable system and we can see that as θ_1 increases the system becomes unstable.

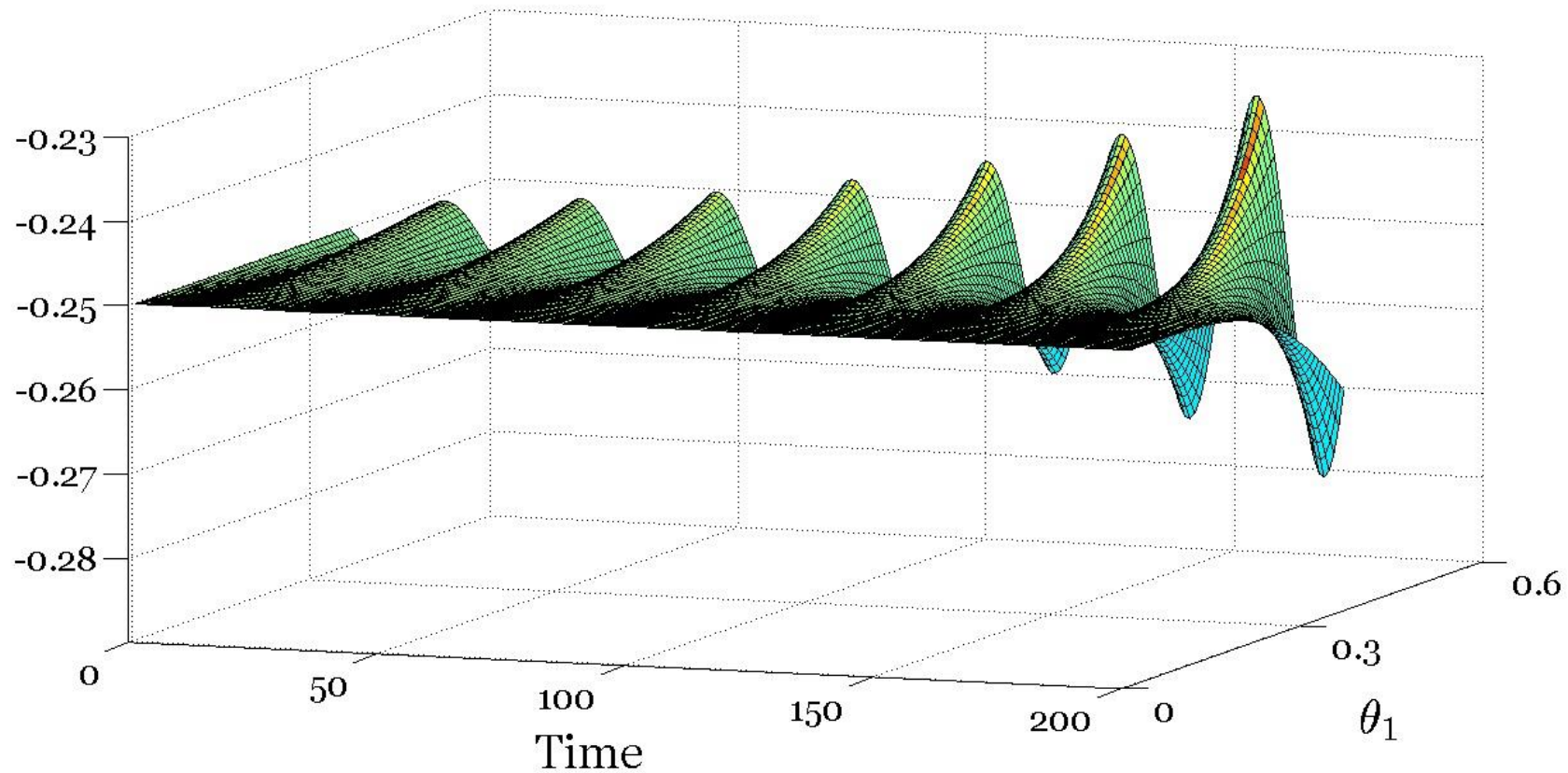
3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

Net private debt-to-income ratio



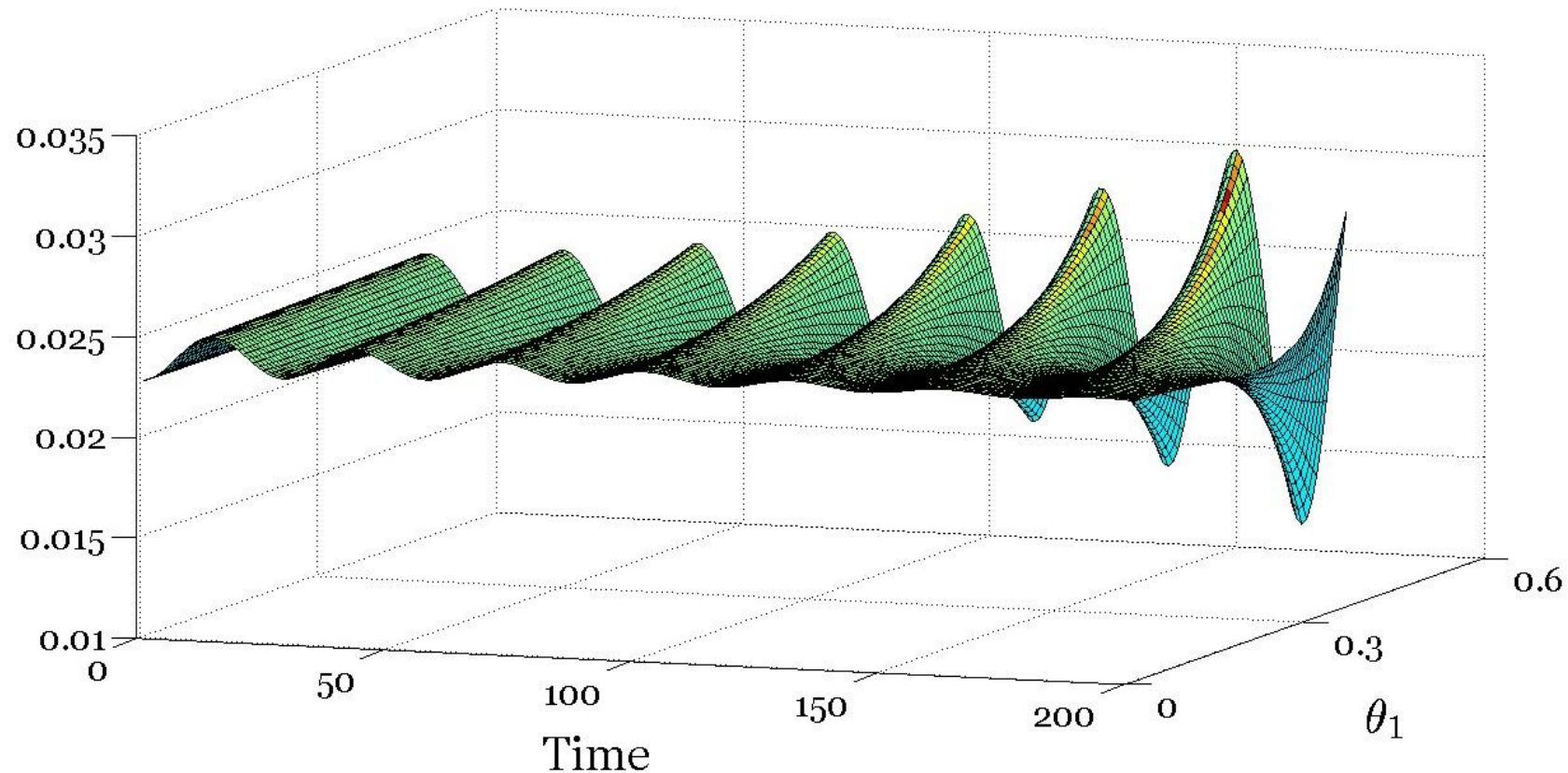
3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

Target net private debt-to-income ratio



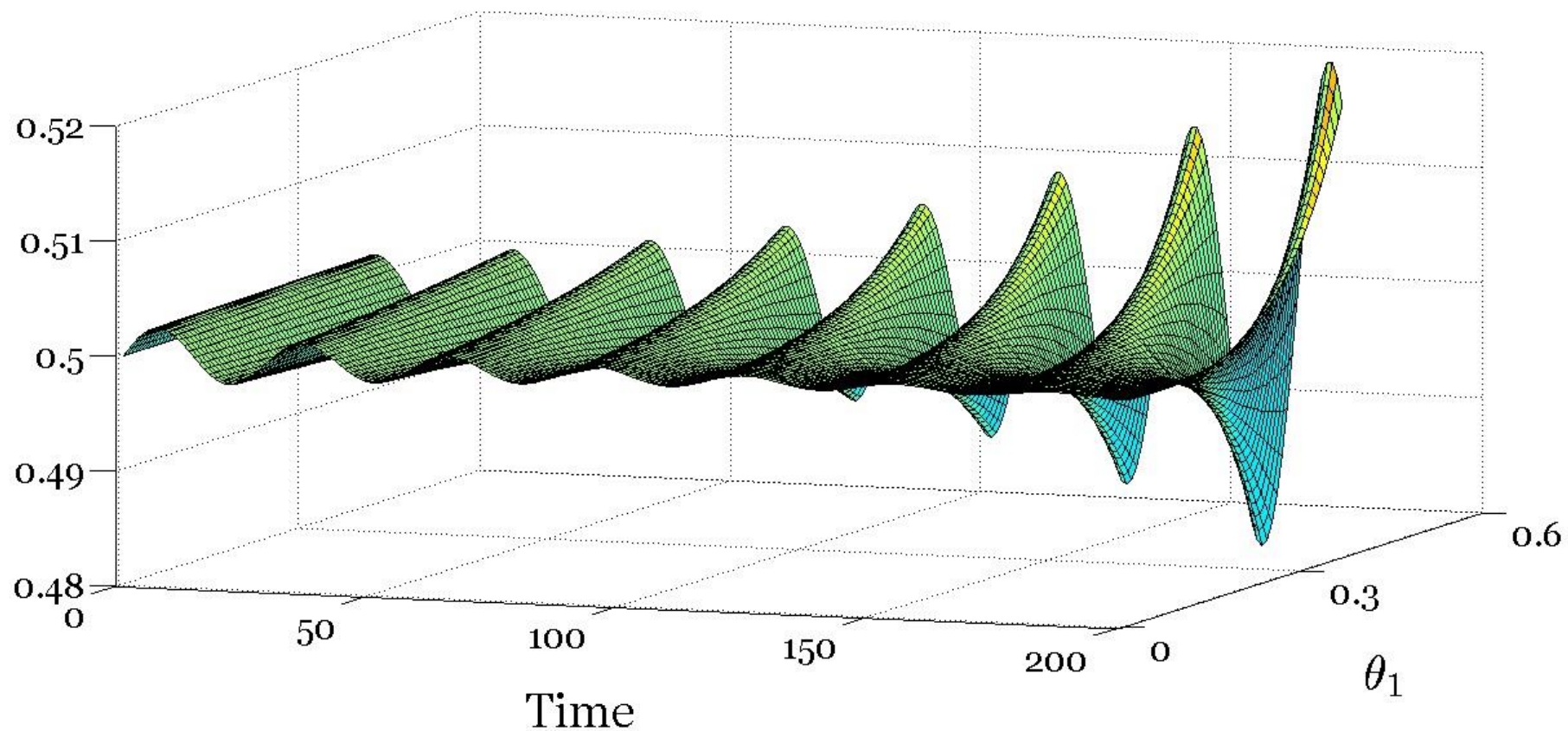
3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

Growth rate



3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

Net government debt-to-output ratio



3. 3D SUBSYSTEM: ENDOGENISING THE TARGETED NET PRIVATE INDEBTEDNESS

- The underlying mechanism of these results can be explained as follows.
- In **periods of low growth**, when net private indebtedness is high, the deterioration in borrowers' and lenders' expectations induces them to target a low net debt ratio. Consequently, the difference between the actual and the target ratio increases, producing a higher decline in the propensity to spend (and, hence, in economic growth) compared to the 2D subsystem.
- Inversely, in **periods of high growth**, the favourable expectations due to the good performance of the economy make the perceived risk lower. This leads to a higher target net debt ratio that makes more important the rise in the propensity to spend and economic growth.

STRUCTURE OF THE PRESENTATION

1. Structure of the model
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4. INTRODUCING FISCAL RULES

- The **Maastricht-type fiscal rule** has destabilising effects in our simulations. Intuitively, the following mechanisms are at play:
- Whenever economic growth is low (as a result of high net private indebtedness), there is a tendency for the net government debt-to-output ratio to increase.
- At some point during the period of low growth, the government debt ratio becomes higher than the target one. To guarantee fiscal discipline the government responds by reducing the expenditures-to-output ratio.
- This reinforces the contractionary effects for two reasons.

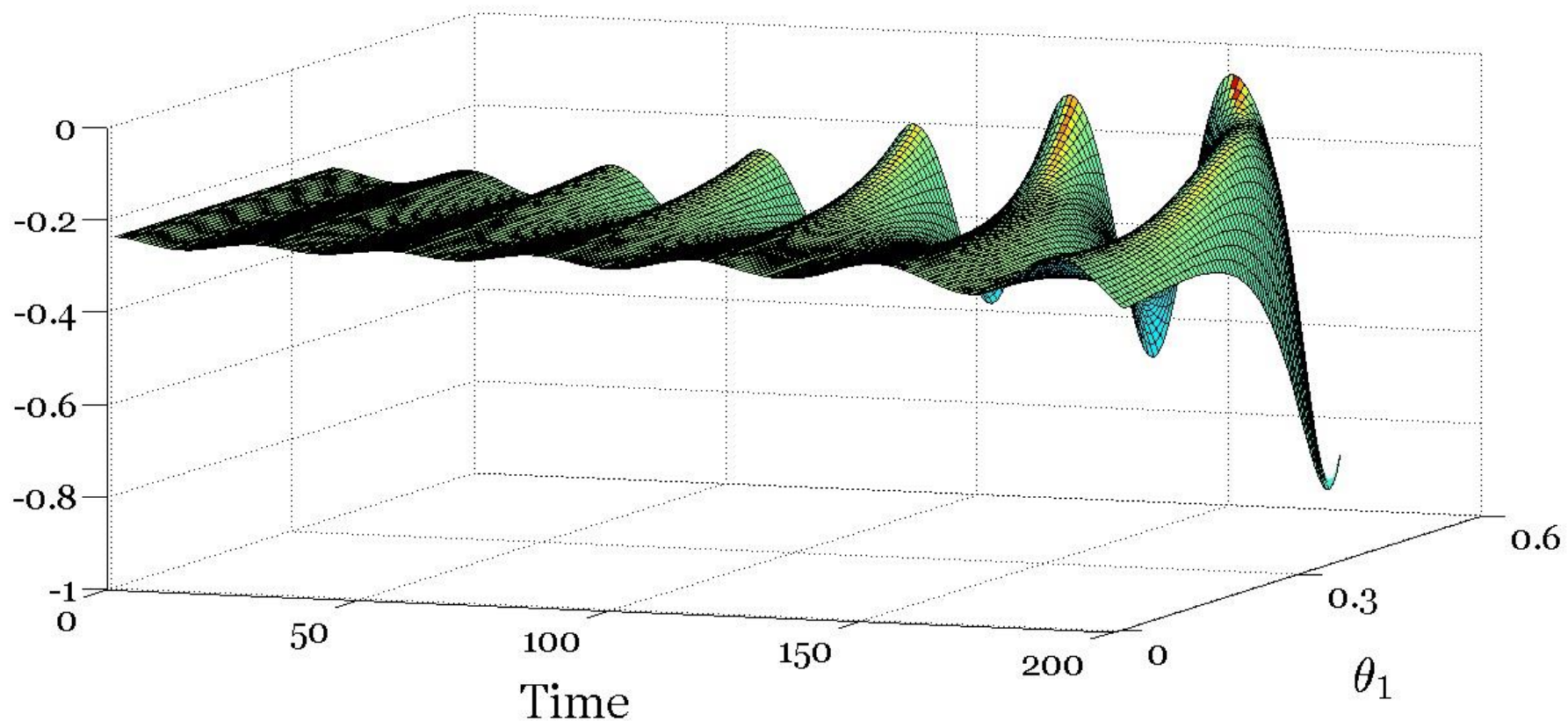
4. INTRODUCING FISCAL RULES

- **At a first place**, economic growth is directly affected by the decline in government expenditures.
- **At a second place**, the additional decline in growth enhances the deterioration in expectations reducing further the target debt ratio of the private sector. This places more downward pressures on economic growth.
- The inverse mechanisms are at work when economic growth is high.
- The overall result is that the Maastricht-type fiscal rule increases the amplitude of economic cycles, as shown in the diagrams of the next slides.

4. INTRODUCING FISCAL RULES

Maastricht-type fiscal rule

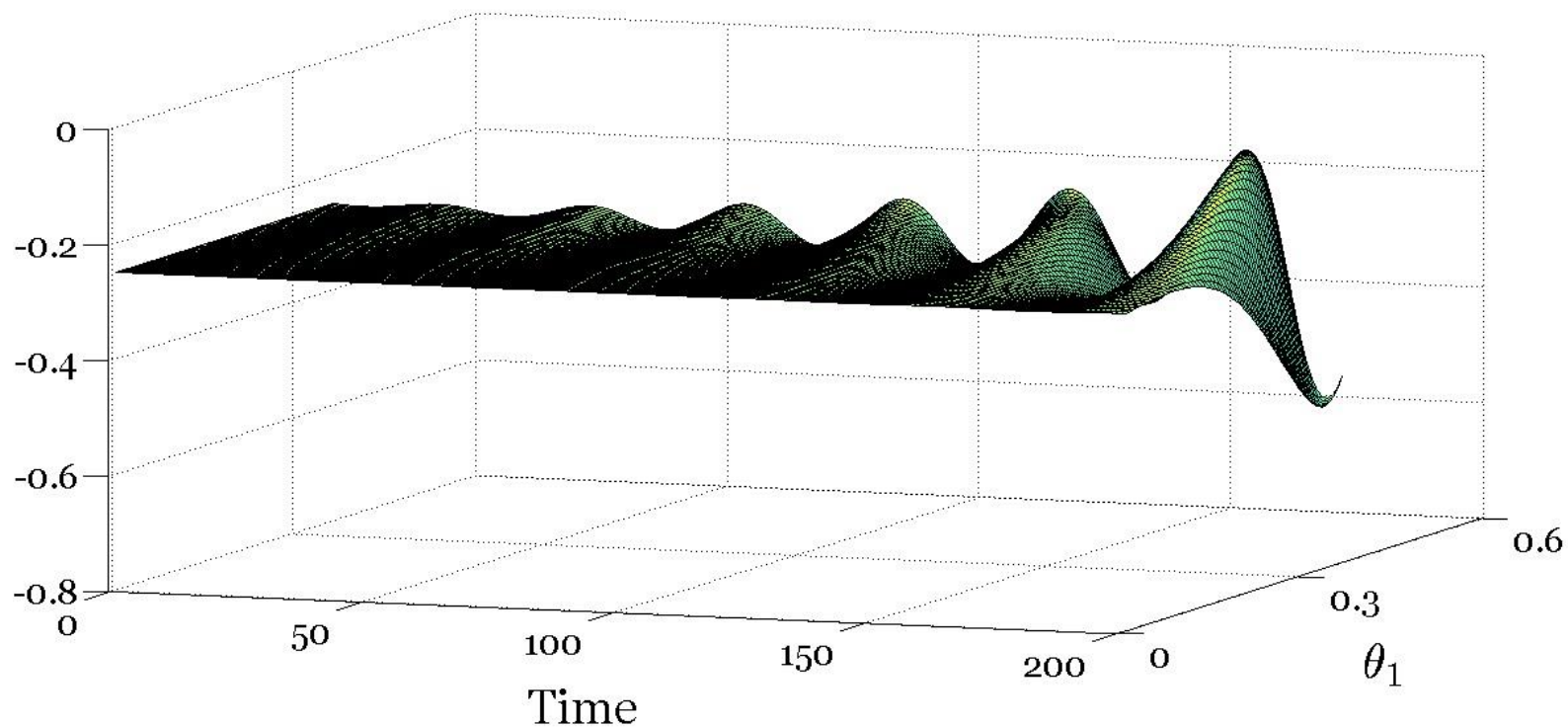
Net private debt-to-income ratio



4. INTRODUCING FISCAL RULES

Maastricht-type fiscal rule

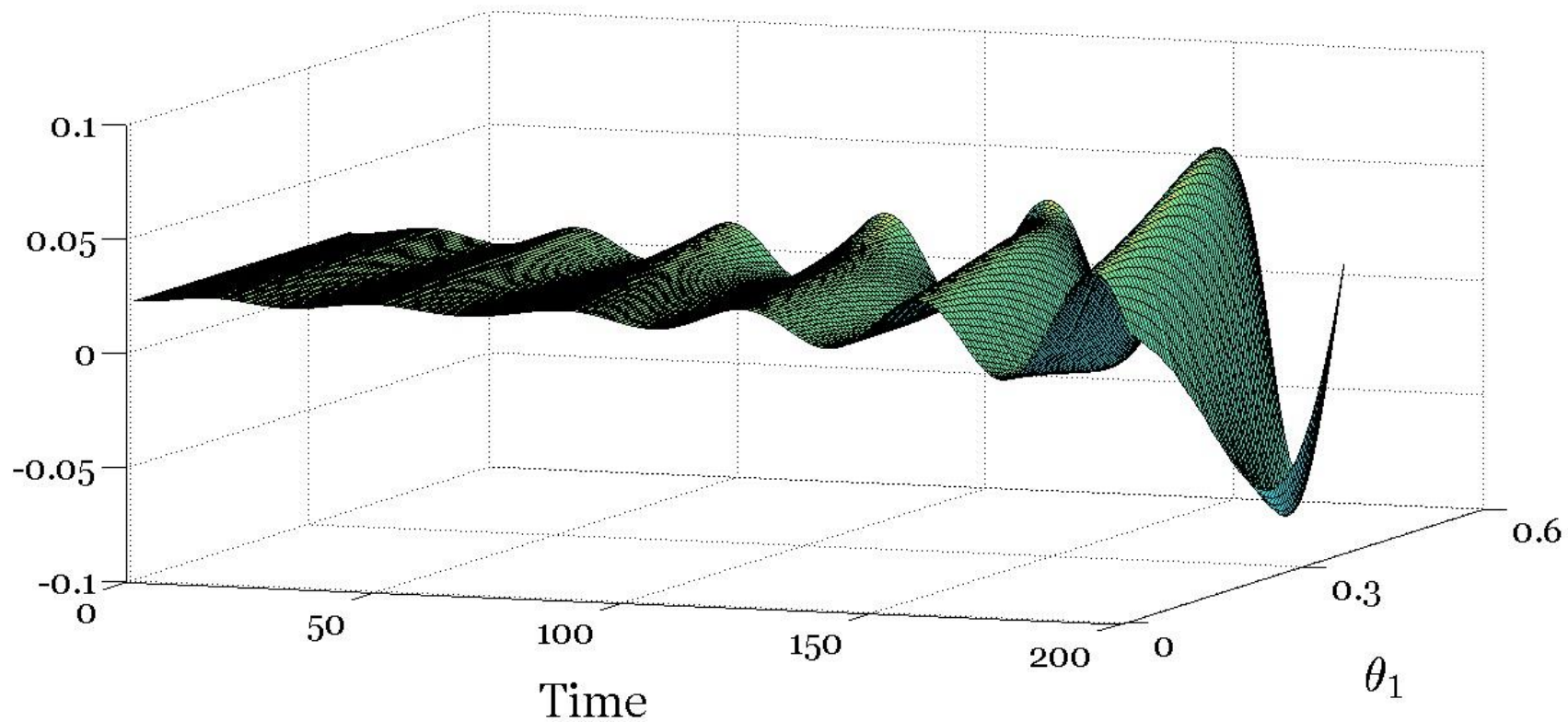
Target net private debt-to-income ratio



4. INTRODUCING FISCAL RULES

Maastricht-type fiscal rule

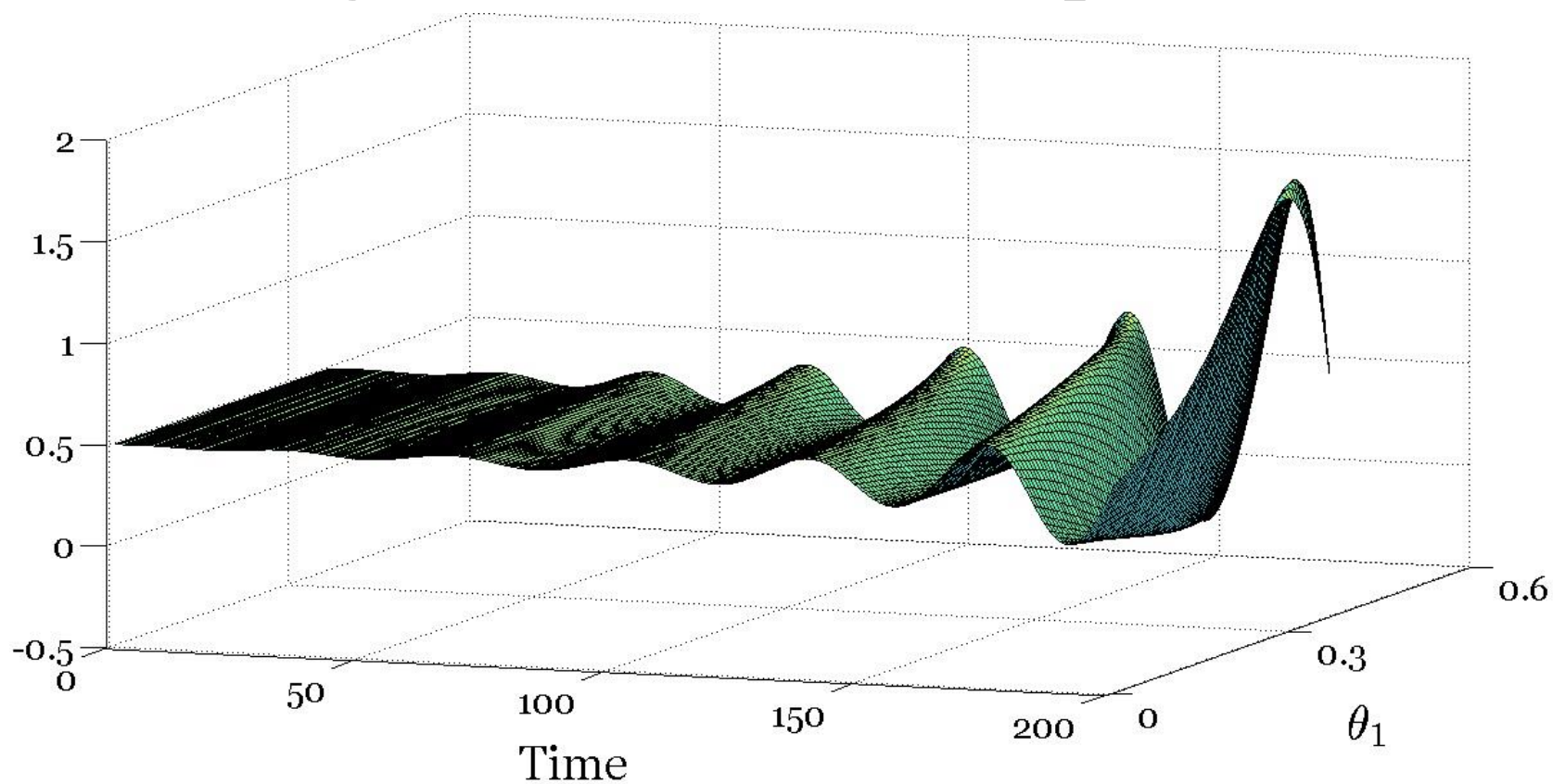
Growth rate



4. INTRODUCING FISCAL RULES

Maastricht-type fiscal rule

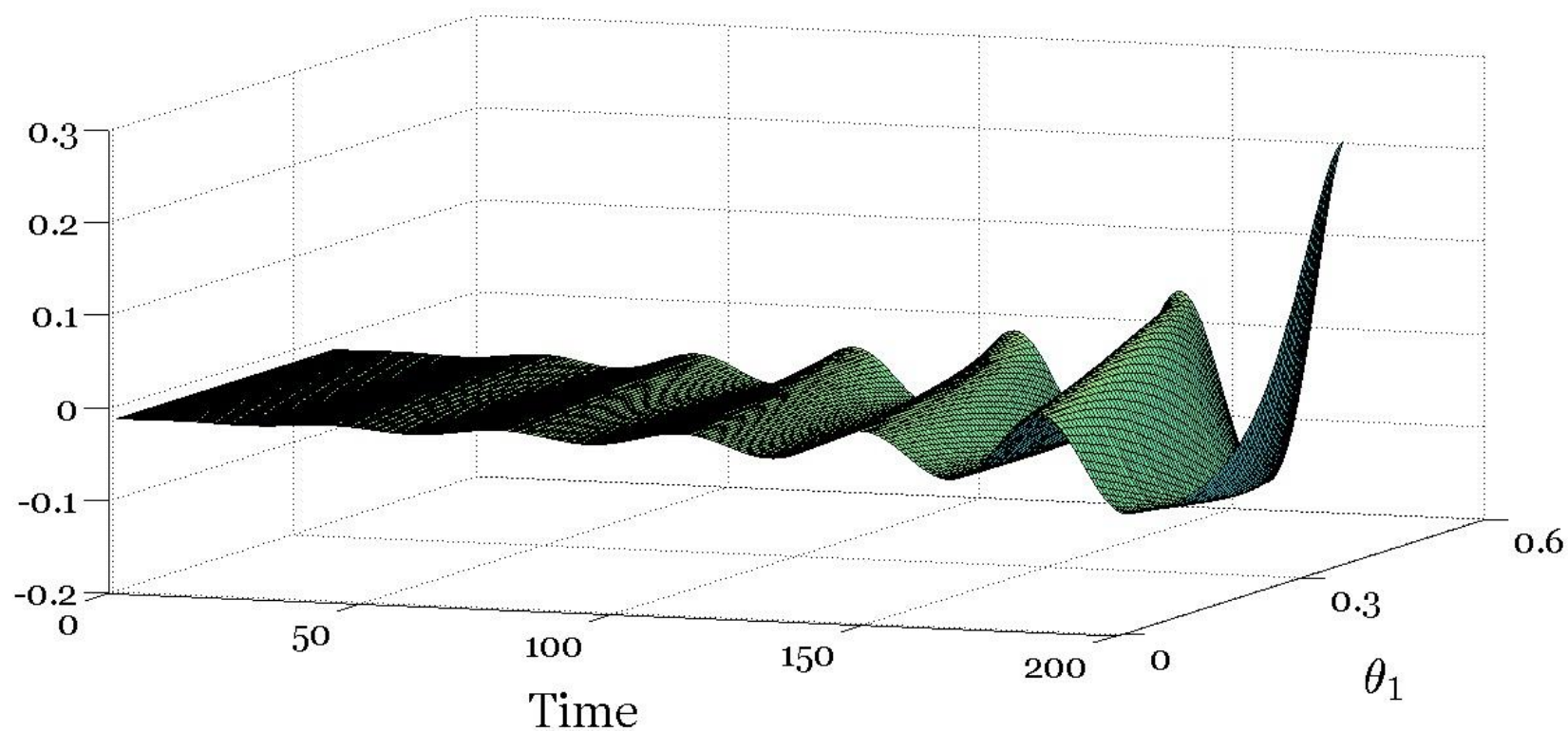
Net government debt-to-output ratio



4. INTRODUCING FISCAL RULES

Maastricht-type fiscal rule

Government balance-to-output ratio



4. INTRODUCING FISCAL RULES

- Based on our results, it can be argued that in an economy in which the private expenditures respond to changes in private indebtedness the currently fashionable ‘debt brake’ rules do not only destabilise the private sector but they may also be ineffective in ensuring fiscal prudence.
- Actually, a ‘**paradox of debt**’ result emerges: the more the fiscal authorities attempt to target a specific government debt ratio by changing the government expenditures the more this ratio destabilises.

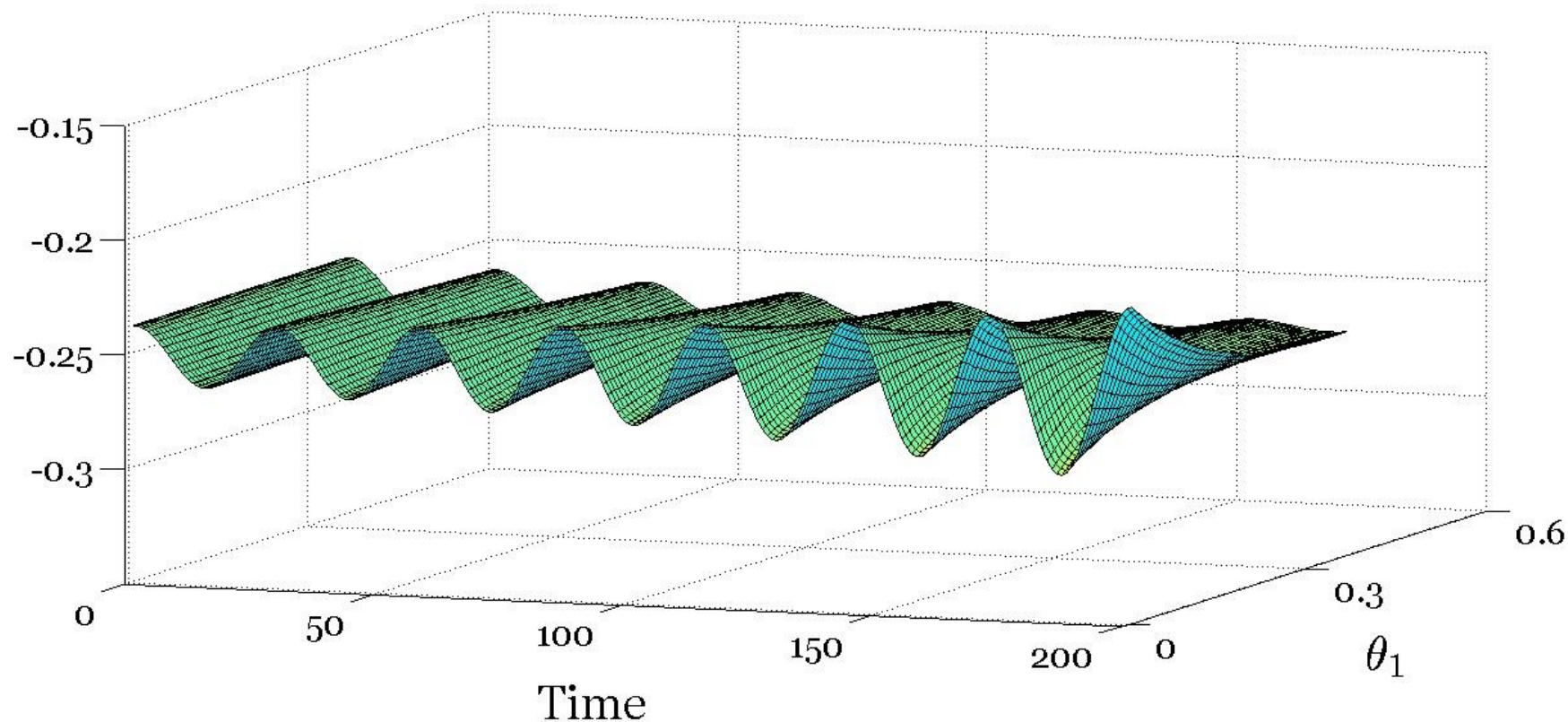
4. INTRODUCING FISCAL RULES

- On the contrary, the Godley-Minsky fiscal rule suggested in the paper is capable of stabilising both the private economy and the government sector for high values of θ_1 .
- This stabilising effect is explained by the fact that due to its countercyclical logic the Godley-Minsky rule does not allow significant rises or falls in economic growth as well as important changes in expectations.
- Furthermore, the Godley-Minsky rule also ensures fiscal sustainability. By stabilising the private economy, this rule gradually also stabilises the fiscal aggregates.
- The next slides illustrate this.

4. INTRODUCING FISCAL RULES

Godley-Minsky fiscal rule

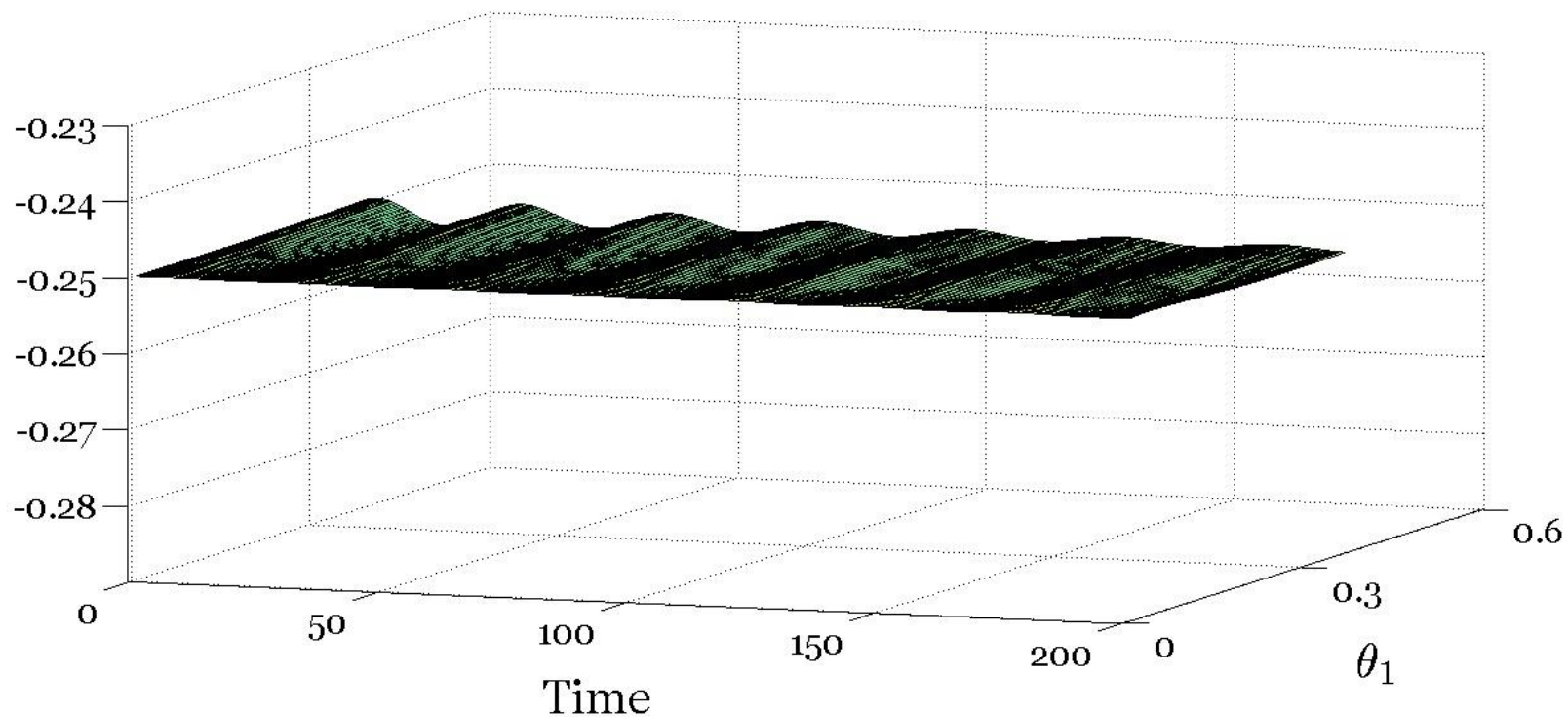
Net private debt-to-income ratio



4. INTRODUCING FISCAL RULES

Godley-Minsky fiscal rule

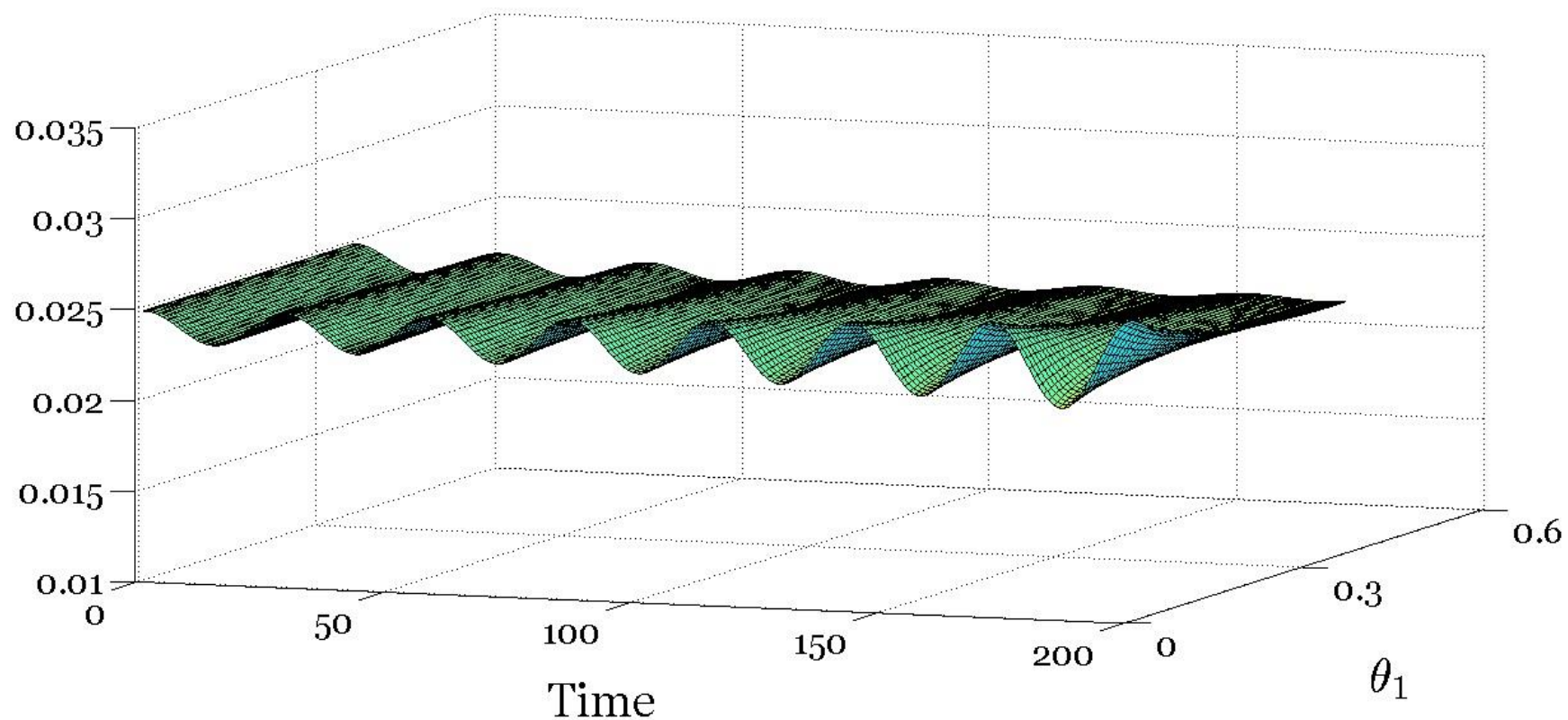
Target net private debt-to-income ratio



4. INTRODUCING FISCAL RULES

Godley-Minsky fiscal rule

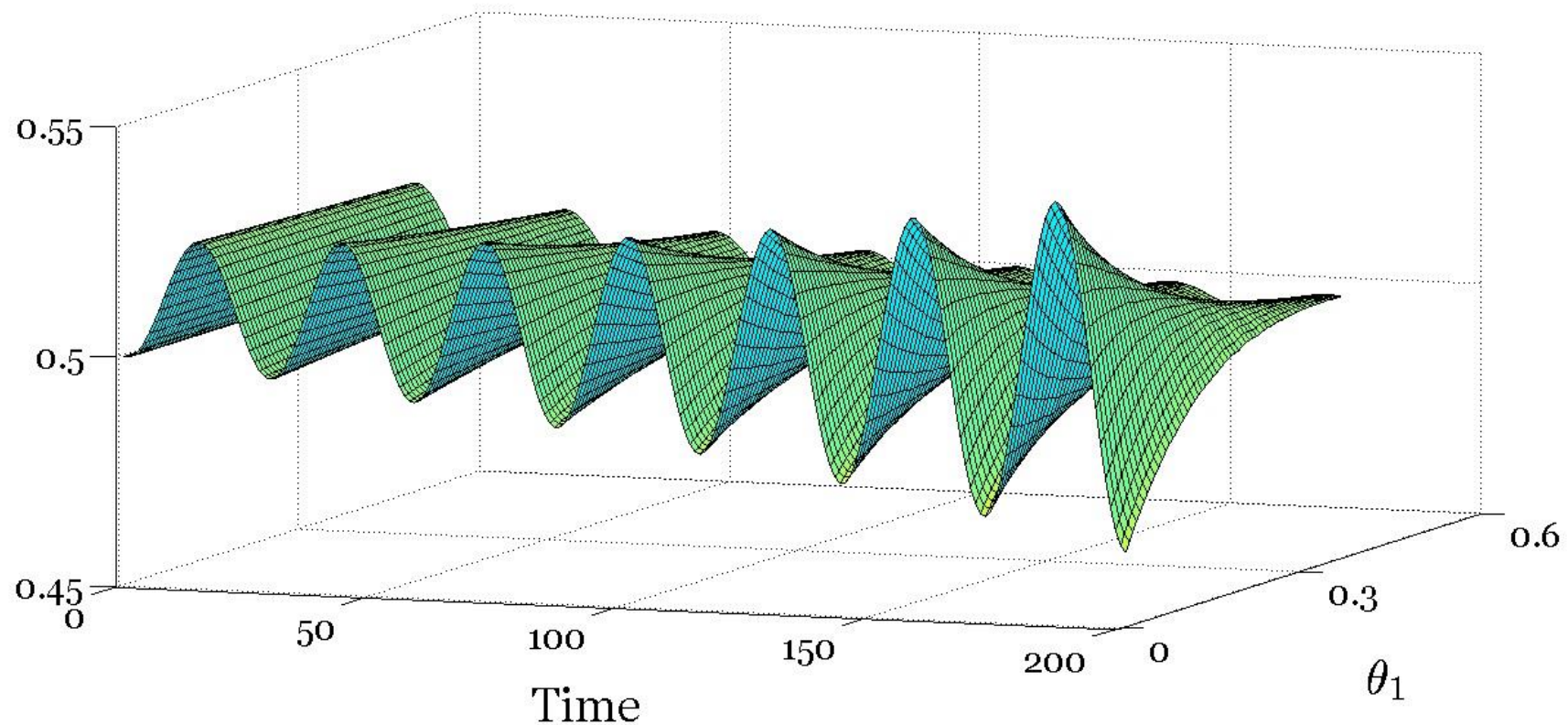
Growth rate



4. INTRODUCING FISCAL RULES

Godley-Minsky fiscal rule

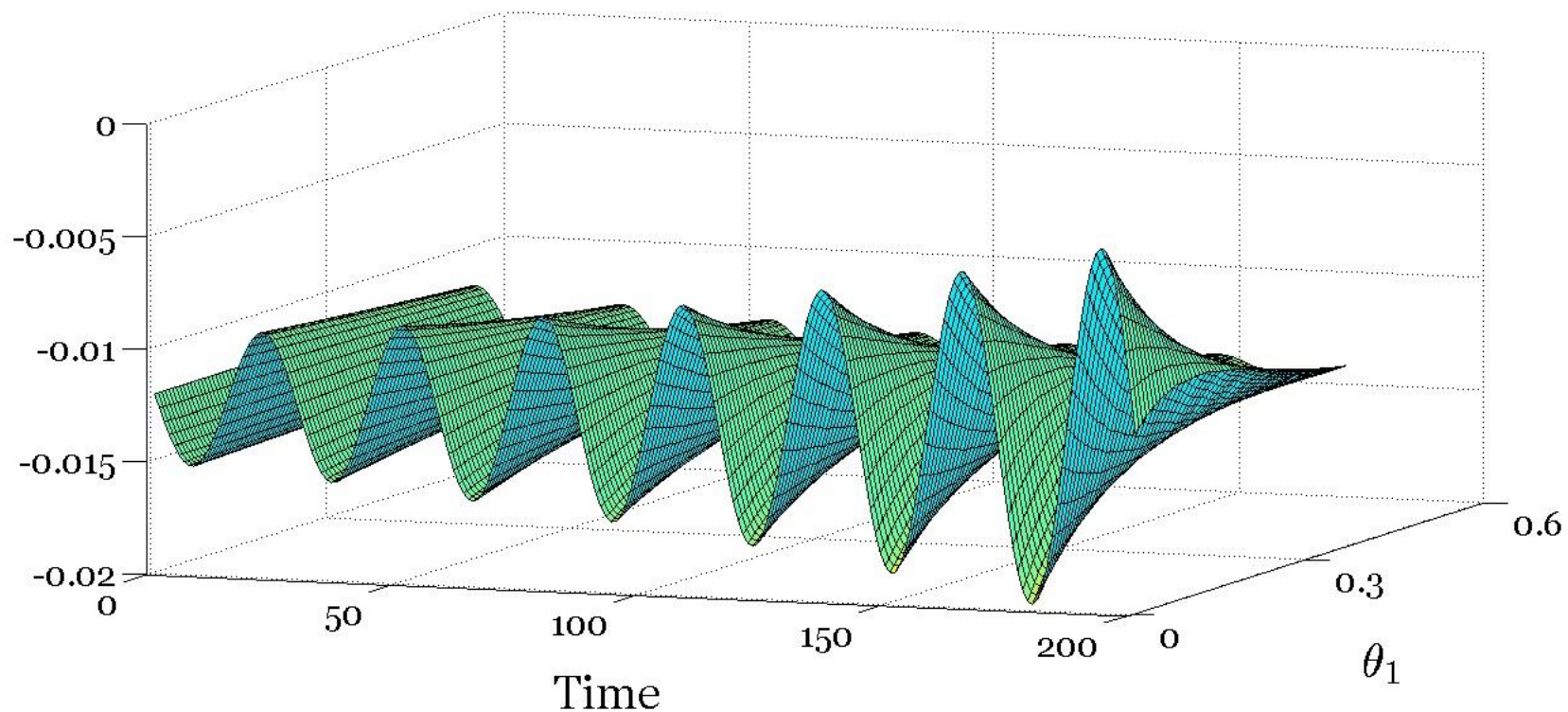
Net government debt-to-output ratio



4. INTRODUCING FISCAL RULES

Godley-Minsky fiscal rule

Government balance-to-output ratio



STRUCTURE OF THE PRESENTATION

1. Structure of the model
2. The 2D subsystem: interaction between net private indebtedness and private spending
3. The 3D subsystem: endogenising the targeted net private indebtedness
4. Introducing fiscal rules
- 5. Conclusions**

5. CONCLUSIONS

- This paper constructs a simple macrodynamic model that synthesises certain aspects of Godley's and Minsky's analytical frameworks.
- Within the skeleton developed in the paper it was shown that **unstable debt** and **economic cycles** can emerge as a result of the endogenous responsiveness of private sector's propensity to spend to divergences between actual and target net private debt ratios.
- A principal outcome of the analysis was that the endogenous changes in the target net private debt ratio during economic cycles reinforce the destabilising forces in the macro system. Hence, the alterations of the stock-flow norms via the **Minsky mechanism** put forward in the paper can be an important source of instability.

5. CONCLUSIONS

- The paper compared the (de)stabilising effects of two different fiscal rules.
- Simulation analysis illustrated that the **Maastricht-type fiscal rule** is destabilising. The ‘paradox of debt’ appears to apply to the government sector: the more the fiscal authorities attempt to target a specific government debt ratio by changing the government expenditures the more this ratio destabilises.
- On the other hand, the **Godley-Minsky fiscal rule** that links government expenditures with private indebtedness turned out to be stabilising.

5. CONCLUSIONS

- Overall, the results of the paper bring to the fore the importance of Godley's and Minsky's views about the inherent instability of the macroeconomy and the stabilising role of fiscal policy.
- Based on these views, the paper provided a new look at the dynamics of the modern macroeconomies.
- An important line of future research would be to combine the Godley-Minsky cycles produced in this paper, which focus on the role of debt, with the traditional Goodwin cycles, that concentrate on the role of income distribution.