

## 8. Macroeconomic policy

### 1. The Tinbergen precept (or basic rule of economic policy)

Formulated by Jan Tinbergen, the Tinbergen precept states that, when designing a specific economic policy, the number of independent instruments under the policymaker's control cannot be smaller than the number of ultimate targets. The short version of the precept is: "When designing an economic policy, have at least as many instruments as targets."

### 2. Goodhart's law

Named for Charles Goodhart, a former chief advisor to the Bank of England, it was originally formulated in 1975 as "Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes." Marilyn Strathern's formulation is "When a measure becomes a target, it ceases to be a good measure." Goodhart's law expresses for the social world what the Heisenberg principle expresses for the physical world: the act of measuring reality changes reality. By Goodhart's law, an empirical regularity tends to vanish when it is used to control the evolution of the variables involved in the regularity.

### 3. Unintended consequences

A side effect of an economic policy is a change caused by the policy on a variable that the policy did not intend to alter. Side effects could be positive (favourable) or negative (unfavourable). A revenge (boomerang, blowback) effect of an economic policy is a change caused by the policy on a variable that the policy aims to alter but in the opposite direction as intended: the policy has the opposite effect of the one intended. By definition, a revenge effect is negative. Side and revenge effects occur because new possibilities, devices, systems... interact and react with people in unforeseeable ways.

### 4. Political business cycle

The political business cycle refers to oscillations in economic activity caused by the adoption of expansionary policies just before political elections and contractionary ones some time after.

### 5. Policy rule

A policy rule is a way of mechanically relating circumstances, states, or conditions in the economy to precise economic policy measures: a policy rule makes policy actions automatic responses to changes in the economy.

### 6. Taylor's rule

Taylor's rule (due to John B. Taylor, 1993) is a monetary policy rule telling the central bank how to set the nominal interest rate. The rule is given by an equation of the sort

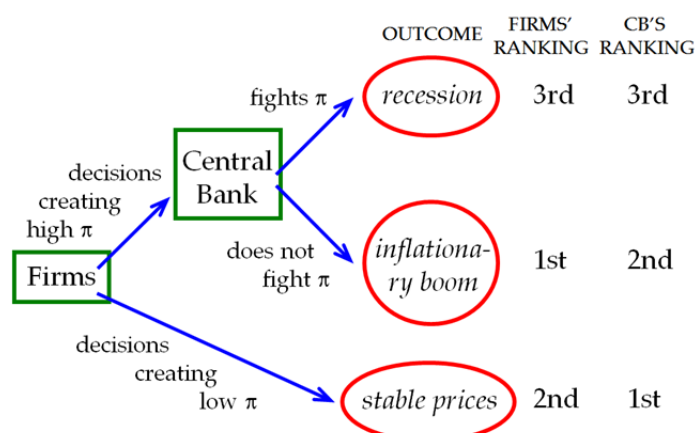
$$i = \pi + \bar{r} + A \cdot (\pi - \bar{\pi})$$

where:  $\pi$  is the current inflation rate;  $\bar{r}$  is the long-term real interest rate (assumed constant by the Fisher hypothesis);  $\bar{\pi}$  is the central bank's target inflation rate; and constant  $A > 0$  measures

the central bank's sensitivity to deviations from target  $\bar{\pi}$  (the larger  $A$ , the more aggressively the central bank fights inflation). If  $\pi = \bar{\pi}$  (the central bank's goal is met), then  $i = \pi + \bar{r}$ . That is,  $i - \pi = \bar{r}$ : the current real interest rate  $r = i - \pi$  equals the equilibrium real interest rate  $\bar{r}$ . Taylor's rule then generalizes the Fisher equation. If  $\pi > \bar{\pi}$ , then, to cool off the economy by cutting aggregate demand, the central bank rises  $i$  so that the current real interest rate  $r = i - \pi$  is above the equilibrium interest rate  $\bar{r}$ . And if  $\pi < \bar{\pi}$ , then, to heat up the economy by expanding aggregate demand, the central bank reduces  $i$  so that the current real interest rate  $r$  is below the equilibrium interest rate  $\bar{r}$ . The Taylor principle is the advice to monetary authorities that, in response to a rise in inflation, the nominal interest rate should be increased by more than the inflation rise in order to cause an increase in the real interest rate.

## 7. The importance of credibility for the effectivity of economic policy

In economic theory, a game is a model representing strategic decision-making, that is, a situation in which the consequences of an agent's decisions depend on the decisions taken by other agents. The figure below is an example of an extensive-form game and illustrates the importance of credibility and commitment for the effectiveness of policies. There are two players (decision-making agents): the firms and the central bank. Firms choose first between adopting decisions that lead to a high inflation rate or decisions that lead to a low inflation rate. In the latter case the outcome of the game situation is an economy with stable prices, so the central bank has no need to intervene. In the former case it is the central bank's turn to move by choosing to fight inflation (by conducting, for instance, contractionary open market operations) or not (by doing nothing, for example). If the central bank fights inflation, the outcome is a recession; if it does not, an inflationary boom obtains. The figure indicates the preference rankings over outcomes of each player. Firms like most of all an inflationary boom; after that, they prefer an economy with stable prices; and the least preferred outcome is a recession. The central bank's most preferred situation is price stability, followed by an inflationary boom, and the worst option is to have a recession. There are two cases.



- Case 1: the central bank acts discretionally. Solving the game by backwards induction, the central bank prefers not to fight inflation: by fighting it, the central bank achieves the third most preferred option (recession), whereas, by not fighting it, the second most preferred one is attained (inflationary boom). Given that the central bank is going to choose not to fight inflation, firms choose the high inflation option. This leads to the firms' best outcome (but the central bank's second best): an inflationary boom.
- Case 2: the central bank commits itself to fighting inflation. Assume the central bank develops a reputation for fighting inflation regardless of any other consideration. Firms then choose the

low inflation option: if they create inflation and expect the central bank to fight it, firms anticipate a recession, which is their worst option; yet, by choosing not to create inflation, firms can ensure achieving a better option (price stability). In this situation the central bank gets its best outcome (price stability) without having to engineer recessions: the belief that the central bank is willing to generate a recession to fight inflation suffices to get stable prices. Developing and maintaining reputation (credibility) is a mechanism to make credible what otherwise would be considered an incredible threat: that the central bank will choose the worst option, causing a recession, in case firms do not act consistently with price stability.

## 8. Supply-side policies

A supply-side policy is a policy measure that aims at shifting the AS function to the right by improving the productive capacity of the economy. Typical supply-policies include measures to

- rationalize the government intervention in the economy: remove unnecessary regulation, efficient provision of public services, privati-zation of public monopolies, tax reductions...
- improve the way markets operate: stimulate competition, reduce market power...
- improve the quality of inputs (retraining programmes for unemployed people) and to encourage technological progress.

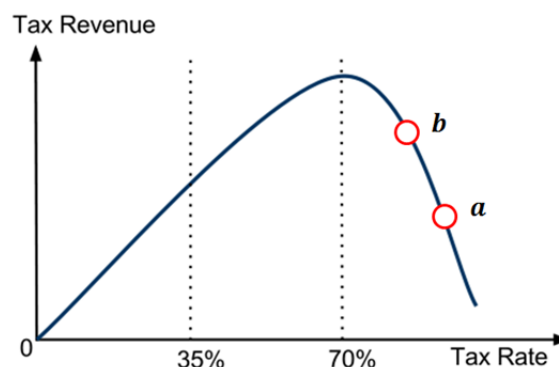
## 9. Supply-side economics

Supply-side economics is a term designating a school of economic thought that contends that the best way to stimulate growth consists of removing the obstacles to production. Two typical recommendations of supply-side economics are:

- less regulation: the less a government interferes with the economy, the better for the economy;
- and cut the income tax rate and the capital tax gain rate to provide incentives to people and firms to work and produce more (this policy is justified by the Laffer curve and the presumption that the economies lies at a point like *a* in the figure below).

## 10. The Laffer curve

The Laffer curve is a theoretical relationship (shown on the right) between the revenues obtained from taxation and the average tax rate. The tax rate reduction from *a* to *b* benefits the economy and the government: a smaller tax rate induces people to work and produce more, and more production yields higher revenues. Those opposing the principles of supply-side economics call it 'voodoo economics.'



[http://en.wikipedia.org/wiki/Laffer\\_curve](http://en.wikipedia.org/wiki/Laffer_curve)

## 11. Trickle-down economics

The expression 'trickle-down economics' refers to the presumption that the poorer members of an economy will eventually benefit from economic privileges given to firms and the richer

members of the economy (a rising tide lifts all boats). Supply-side economics could be viewed as trickle-down economics in disguise: rather than directly proclaiming that one must first take care of the wealthy, it is claimed that certain tax policies (which incidentally benefited more the wealthy) are good for the economy (and, hence, for everyone).

## 12. Two views on governance

“There are two ideas of government. There are those who believe that if you just legislate to make the well-to-do prosperous, that their prosperity will leak through on those below. The Democratic idea has been that if you legislate to make the masses prosperous their prosperity will find its way up and through every class that rests upon it.”

William Jennings Bryan, US Democratic Presidential candidate, 1896

## 13. Demand-side policies

A demand-side policy is a policy measure whose intended immediate target is to change the AD function, either to contract or to expand it. The main demand-side policies are the fiscal policy (decided by the government) and the monetary policy (decided by the central bank, when it is independent from the government). In general, demand-side policies tend to modify the AD function faster than supply-side policies modify the AS function.

## 14. Instruments and targets of fiscal policy

The fiscal policy instruments are government expenditure ( $G$ ), net transfers payments to the private sector ( $TR$ ), and the tax rate ( $t$ , the proportion of income paid to the government as taxes). The fiscal policy targets are, typically, GDP growth, unemployment, the unemployment rate and, atypically, the budget deficit.

## 15. Instruments and targets of monetary policy

The monetary policy instruments are open market operations, standing facilities, interest rates set by the central bank, and reserve requirements. The main monetary policy target is, typically, the inflation rate. Secondary targets are GDP growth, the unemployment rate, the exchange rate and financial stability.

## 16. Expansionary and contractionary demand-side policies

Expansionary fiscal and expansionary monetary policies aim at shifting the AD function to the right, by increasing expenditure. The immediate presumed effects of expansionary fiscal and monetary policies are  $\uparrow Y$ ,  $\uparrow \pi$  and (through Okun's law)  $\downarrow u$ . Contractionary fiscal and contractionary monetary policies pursue the opposite: to shift the AD function to the left. The immediate presumed effects of expansionary fiscal and monetary policies are  $\downarrow Y$ ,  $\downarrow \pi$  and (through Okun's law)  $\uparrow u$ . An expansionary fiscal policy consists of  $\uparrow G$ ,  $\uparrow TR$  and/or  $\downarrow t$ . A contractionary fiscal policy consists of  $\downarrow G$ ,  $\downarrow TR$ , and/or  $\uparrow t$ . An expansionary monetary policy consists of an expansionary open market operation, a reduction in the discount rate, and/or a reduction in the reserve requirements. A contractionary monetary policy consists of a contractionary open market operation, an increase in the discount rate, and/or an increase in the reserve requirements.

## 17. Total spending by the government (government outlays)

The total spending by the government consists of three items.

- $G$  = government consumption expenditures (purchases on currently produced goods) + government investment (purchases on capital goods).
- $TR$  = transfer payments made to individuals (like unemployment insurance benefits or pensions) from whom the government does not receive current goods in return.
- $INT$  = net interest payments = interest paid to the holders of government financial assets (such as T-bills and government bonds) – interest paid to the government.

## 18. Tax receipts of the government

The four main categories of tax receipts ( $T$ ) are:

- personal taxes, which are composed of income taxes and property taxes;
- corporate taxes, which are primarily taxes on the profits of firms;
- taxes on production (sales taxes) and imports (tariffs); and
- contributions for social insurance.

## 19. Public (or government) deficit

Government budget deficit (or just deficit) = government outlays – tax receipts =  $G + TR + INT - T$ . Primary government budget deficit (or just primary deficit) = deficit –  $INT$ .

## 20. Basic ways of financing the public deficit

There are three basic ways of financing a deficit:

- by increasing current taxes or creating new ones (= *tax now* option);
- by issuing financial assets (like government bonds and T-bills) (= *tax later* option);
- by monetizing the deficit (= creating monetary base = printing money and/or selling financial assets to the central bank).

## 21. Adverse effects of ‘taxing now’

Suppose the government implements an expansionary fiscal policy consisting of an increase in govt consumption ( $\Delta G$ ). The immediate effect of this policy is an increase in the government deficit. Let the deficit be financed by rising taxes now. Since people have less disposable income, it is likely that they will cut consumption. Hence, the expansionary effect of  $\Delta G$  on the AD function is followed by a contractionary effect caused by a reduction in consumption. This qualifies the primary effect of an expansionary fiscal: it may not alter PIB (nor hence income).

## 22. Adverse effects of ‘taxing later’

As debt financing by bond issue just postpones taxation, people realize that bonds will be paid off with future increases in taxes, so it is likely that they will save more now to be able to pay higher taxes in the future. This increase in savings will cause a consumption contraction, thereby making the expansionary fiscal policy what caused the deficit increase less expansionary. Moreover, the issuance of public debt contributes to rise the interest rate.

### 23. The Ricardian equivalence proposition (David Ricardo, 1772-1823)

The Ricardian equivalence proposition holds that an increase in the government deficit leads to an increase in saving equal to that deficit, so it does not matter if the deficit is financed by more taxes or by bond issue. If people save now the taxes to be paid in the future, consumption is reduced now and the effect of an expansionary fiscal policy may be neutralized. The rationale behind Ricardian equivalence is that people is forward-looking in anticipating that a tax cut that increases the budget deficit in the present will have to be paid for with higher taxes in the future and, for this reason, people will save more in the present to pay those future taxes. In sum, lower taxes do not imply more spending (nor more aggregate demand), though some effect on the supply-side is not ruled out. Further, as lower taxes today induce more private saving, people use the additional savings to purchase government bonds and, as a result, there is no need to monetize the debt by increasing the money stock. Since it is presumed that money growth produces inflation, Ricardian equivalence predicts that no inflationary pressure is created.

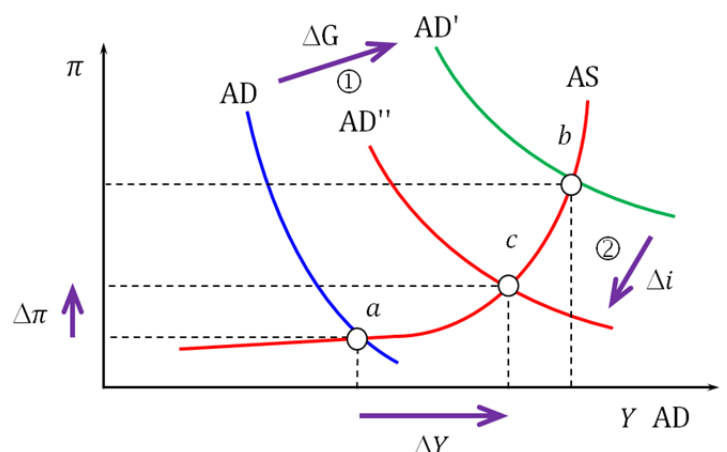
### 24. Objections to Ricardian equivalence

Empirical evidence does not seem to support the predictions of the Ricardian equivalence. In addition, there are some theoretical objections to the Ricardian equivalence proposition.

- Objection 1. People may be myopic and hence may not anticipate that lower taxes in the present will lead to more taxes in the future. Moreover, it is uncertain when that future will occur: is it a near or a distant future?
- Objection 2. The people who benefit now from tax cuts could not be alive in the future to pay the higher taxes.
- Objection 3. People suffering from borrowing constraints may be unable to spend what they would. A tax cut would allow them to do so?

### 25. The crowding-out effect

Let an expansionary fiscal policy consists of a rise in  $G$  financed by bond issue. This shifts the demand for liquidity in the liquidity market to the right causing the interest rate  $i$  to go up. The rise in  $i$  will presumably lower consumption and investment. As a result,  $G$  (public spending) crowds out  $C + I$  (private spending). The figure on the right illustrates crowding out: instead of reaching  $b$ , the economy reaches  $c$  due to the effect of the fiscal policy on  $i$ . (But if the CB sets  $i$ , an expansionary OMO will be conducted to revert  $i$  to its initial value and no crowding out arises.)



### 26. Rolling debt over

To roll debt over is to pay debt with more debt. Rolling debt over allows a country, or even a major corporation, to never repay the debt.

- A major corporation may allow the debt to grow period after period, even choosing not to pay back the original loan, because the funds that would cancel the debt can be used in investment projects that generate sufficiently high profits.
- A government may roll debt over (take on more debt) in a booming economy if there is a better use for the funds than debt repayment and the revenue obtained from the GDP increase suffices to pay the interest on the new debt.

## 27. The burden of the government debt

The burden of the (government) debt refers to the annual interest on the debt as a percentage of annual GDP or, alternatively, it refers to the taxes, as a percentage of GDP, needed to pay the interest on the debt. As an illustration, suppose debt is not rolled over and spending is not altered. Taxes must therefore rise at least enough to meet the interest payments. Part of the additional taxes collected go abroad if foreigners own part of the debt. On the other hand, higher taxes tend to reduce AD and, therefore, GDP. This reduction limits the government's ability to repay debt in the future.

## 28. A debt rule

A possible debt rule: the growth rate of nominal debt should not be higher than the growth rate of nominal GDP. Under the debt rule, a rising government debt does not imply a rising burden of the debt. To prevent the burden from rising, it is not necessary to run budget surpluses or reduce total debt. It all boils down to control the rate at which total debt grows.

- Table 1 shows an example in which debt grows but the burden of debt remains constant. The example assumes that debt and nominal GDP both grow at 5%.

$t$	$GDP_n$ growth	$GDP_n$	nominal debt	$\frac{\text{debt}}{GDP_n}$	$i$	interest payment	<b>burden of debt</b> $\frac{\text{interest payment}}{GDP_n}$
1	5%	100	80	80%	3%	2.4	2.4%
2	5%	105	84.2	80%	3%	2.526	2.4%
3	5%	110.25	88.2	80%	3%	2.646	2.4%
4	5%	115.7625	92.61	80%	3%	2.7783	2.4%
5	5%	121.550625	97.2405	80%	3%	2.917215	2.4%

Table 1. Burden of debt with nominal debt and nominal GDP growing at 5%

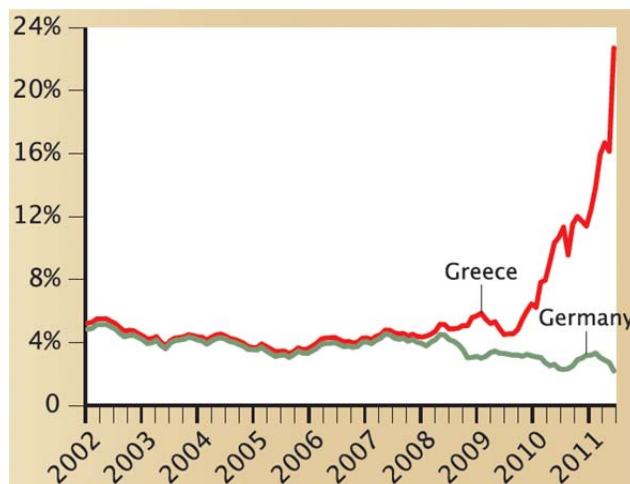
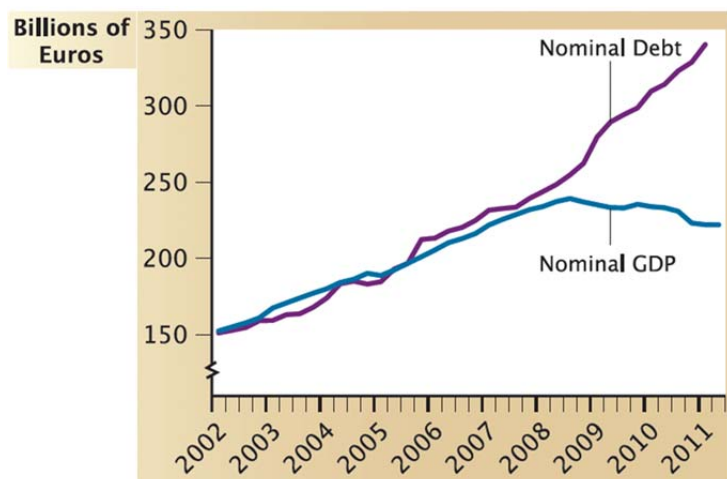
- Table 2 presents an example in which debt grows and the burden of debt rises. The example assumes that debt nominal grows at 10% whereas nominal GDP grows at 5%.

$t$	$GDP_n$ growth	$GDP_n$	nominal debt	$\frac{\text{debt}}{GDP_n}$	$i$	interest payment	<b>burden of debt</b> $\frac{\text{interest payment}}{GDP_n}$
1	5%	100	80	80%	3%	2.4	2.4%
2	5%	105	88	83.8	3%	2.64	2.51%
3	5%	110.25	96.8	87.8	3%	2.904	2.63%
4	5%	115.7625	106.48	91.9	3%	3.1944	2.75%
5	5%	121.550625	117.128	96.3	3%	3.51384	2.89%

Table 2. Burden of debt with nominal debt growing at 10% and nominal GDP growing at 5%

## 29. Violations of the debt rule

The two charts below illustrate Greece's debt disaster: the chart on the left displays nominal GDP and nominal debt in Greece and the chart on the right the annual interest rate on 10-year government bonds. The recession after the 2008 financial crisis increased Greece's budget deficit. Since GDP was falling, Greece's debt-to-GDP ratio went up rapidly. Lenders started worrying about a possible debt default and demanded a higher interest rate, which caused the debt to increase faster, which escalated fears of default, which led to higher interest rates...



R. E. Hall i M. Lieberman (2012): *Macroeconomics: Principles and applications*, p. 346

Violations of the debt rule can only be transitory, since taxes collected from nominal GDP to pay the burden have nominal GDP itself as the upper limit. Violation of the debt rule raises the debt burden. Lower government spending and/or higher taxes are necessary to cover the additional interest payments. If the rule is restored, spending need not be reduced further nor the tax rate raised again. The problem is that, in comparison with the values before the burden increased, spending is now (permanently) lower and/or the tax rate higher. To reduce the debt burden, the nominal GDP growth rate must be higher than the nominal debt growth rate, at least temporarily. This can be achieved by means of two options

- Option 1. Raise the nominal GDP growth rate above the nominal debt growth rate.
- Option 2. Lower the nominal debt growth rate below the nominal GDP growth.

Allowing more inflation is the easiest way to implement Option 1. But, by the Fisher effect, a rise in the interest rate is to be expected. The interest payments of the new debt will then be higher, so the burden reduction will be in danger.

To implement Option 2, the government budget deficit must be lowered. This requires a temporary rise in tax rates and/or a cut/slowdown in spending ('fiscal austerity'). A fiscal stimulus leads to an initial GDP boom, but the long-run effects on GDP could be negative if taxes have to be raised to pay for the stimulus. By symmetry, fiscal austerity may contract GDP at first, to next expand it as lower taxes are expected in the future due to lower government debt.



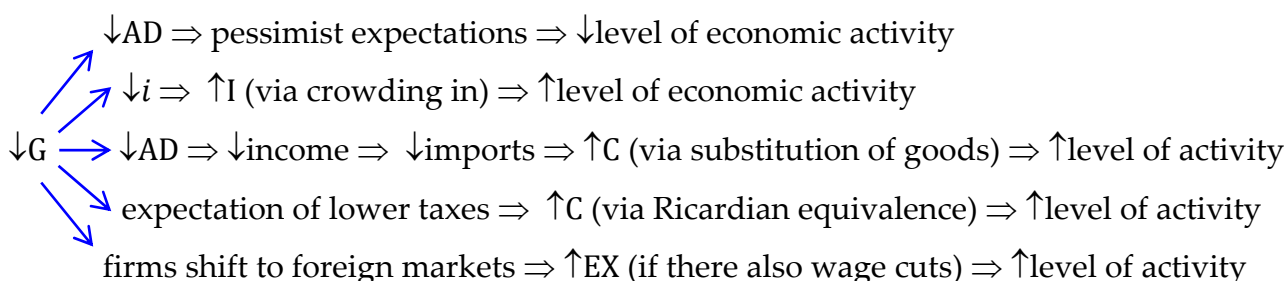
### 30. Austerity economics

The expression 'austerity economics' refers to a set of policy recommendations that rely on the presumed expansionary effect of contractionary fiscal policies that aim at balancing the government budget (successful contractionary policies have been the exception, not the norm).

- How can a contractionary fiscal policy be expansionary for economic activity? In the AS-AD model, the immediate effect of a higher budget deficit (arising from a tax cut or a rise in government spending) is expansionary. Symmetrically, a reduction in the budget deficit would have a contractionary effect. Austerity economics claims that a sustained balancing of the budget may have favourable effects because a deficit reduction would imply that taxes need not be increased in the future to finance deficits. Lower taxes are said to stimulate capital formation, which is a positive supply shock. The story goes on with people and firms expecting the higher future income, which would encourage them to spend more now.
- Besides, a reduction in government spending would crowd in private investment: as the government does not contribute to push the interest rate by asking for funds in the liquidity market to finance the deficit, the interest rate diminishes, which expands private investment, GDP growth, and employment.
- In addition, fiscal austerity may calm down financial markets in a debt crisis. Interest rates fall and, through the increase in value of financial assets, financial wealth rises.

Thus, even if fiscal austerity reduces GDP in the short-run (mandated social spending may rise and tax revenues fall when economic activity declines), it is argued that long-term positive effects outweigh short-term negative effects: an initial contractionary measure economically turns out to be expansionary by boosting both aggregate supply and aggregate demand.

The underlying vision of austerity economics is that a market economy free from public interference is structurally stable and that crises are triggered by inappropriate public interventions. To determine whether fiscal policy (for instance, an increase in government spending  $G$ ) is expansionary or contractionary one should consider the various channels through which  $G$  affects the level of economic activity. Some of these channels are shown next.



Hence, whether austerity measures stimulate economic activity is an empirical matter of analysis: there are channels contracting activity (direct spending reduction and creation of adverse expectations) and others potentially expanding it (crowd in effect, Ricardian equivalence effect, competitiveness effect). Presenting the possible expansionary effect of contractionary fiscal policy as a necessary result would constitute an example of policy based on wrong economic ideas that make economic problems worse.

### 31. Debt-to-GDP ratio

Deficit is a flow variable: the current borrowing of the government (in one year, for instance).  
Debt is a stock variable: what the government currently owes as a result of past deficits. The change in the government debt in period  $t$  equals the government budget deficit in period  $t$ .  
 Formally,

$$B_t - B_{t-1} = r_{t-1} \cdot B_{t-1} + (G_t + TR_t - T_t)$$

**(real) change in debt = (real) interest payment + (real) primary deficit**

Defining  $PD_t = G_t + TR_t - T_t$ , and letting the real interest rate be constant, the previous expression can be rewritten as

$$B_t = (1 + r) \cdot B_{t-1} + PD_t.$$

Let real GDP  $Y$  grow at a constant rate  $g$ , so  $Y_t = (1 + g) \cdot Y_{t-1}$ . Dividing both sides by  $Y_t$ ,

$$\frac{B_t}{Y_t} = (1 + r) \cdot \frac{B_{t-1}}{(1 + g) \cdot Y_{t-1}} + \frac{PD_t}{Y_t}$$

and using the approximation  $\frac{1+r}{1+g} \approx 1 + r - g$

$$\frac{B_t}{Y_t} \approx (1 + r - g) \cdot \frac{B_{t-1}}{Y_{t-1}} + \frac{PD_t}{Y_t}.$$

In sum,

$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} \approx (r - g) \cdot \frac{B_{t-1}}{Y_{t-1}} + \frac{PD_t}{Y_t}.$ <p style="text-align: center; margin: 0;"> <span style="margin-right: 20px;"><b>change in the debt-to-GDP ratio</b></span> <span style="margin-right: 20px;"><b>real interest rate minus GDP growth</b></span> <span style="margin-right: 20px;"><b>initial debt-to-GDP ratio</b></span> <span><b>primary deficit-to-GDP ratio</b></span> </p>	(1)
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Since  $B_t = (1 + r) \cdot B_{t-1} + PD_t$ , when  $PD_t$  is always zero, debt grows at a rate  $r$ . As GDP grows at rate  $g$ , the difference  $r - g$  is the rate of growth of the debt-to-GDP ratio under zero primary deficit. It follows from (1) that a reduction in the debt-to-GDP ratio requires

- that  $g > r$  (the GDP growth rate is larger than the real interest rate), or
- that  $PD_t < 0$  (the current primary deficit is reduced).



The increase in the debt-to-GDP ratio will be larger

- the higher the initial debt-to-GDP ratio  $\frac{B_{t-1}}{Y_{t-1}}$ ;
- the higher the real interest rate  $r$ ;
- the lower the growth rate  $g$  of real GDP; or
- the larger the primary deficit to GDP ratio  $\frac{PD_t}{Y_t}$ .

The following argument justifies the danger of a high debt-to-GDP ratio:  $\text{high } \frac{B}{Y} \Rightarrow \uparrow \text{default risk} \Rightarrow \uparrow i \Rightarrow \uparrow r \Rightarrow \downarrow \text{AD} \Rightarrow \downarrow Y \Rightarrow \downarrow g \Rightarrow \downarrow \frac{PD}{Y} \text{ needed} \Rightarrow \text{fiscal austerity} \Rightarrow \downarrow \text{AD} \Rightarrow \downarrow Y \Rightarrow \downarrow g \Rightarrow \uparrow \text{default risk} \Rightarrow i \Rightarrow \uparrow r \Rightarrow \dots$  debt-to-GDP ratio harder to lower and a debt explosion becomes more likely.

### 32. Is government debt a burden?

There are arguments supporting the view that a rising government debt represents a burden; see chapter 6 in Frederic Mishkin (2011): *Macroeconomics: Policy and practice*.

- More public debt makes crowding out worse, investment falls, production declines, future generations worse off.
- Government is supposed not to make wise investments in physical and human capital: most government spending is consumption and government investment may be unproductive, like airports without airplanes or high-speed trains without passengers.
- A growing government debt increases indebtedness to foreigners.
- Government budget deficits and rising government debt involve a transfer of wealth in the future to government bondholders. Since bondholders are likely to be richer than those who do not own bonds, rising government debt involves redistributing from relatively poor people to relatively rich people, which widens income inequality.
- Debt intolerance (spreads): when the amount of government debt relative to the size of the economy becomes very large, investors may begin to fear the government will default on the debt and, by engaging in debt repudiation, fail to pay it all back (on top on that, a default on government debt could send the economy into a financial crisis).
- A rising government debt may led to high tax wedges (difference on income before and after paying taxes), and a high wedge makes people and firms less willing to work or invest.

### 33. Automatic stabilizers and destabilizers

An automatic stabilizer is a variable or mechanism that smooths out fluctuations in GDP by stimulating aggregate demand during recessions and dampening (or slowing down) aggregate demand during expansions. An automatic destabilizer does the opposite.

- A progressive income tax is an automatic stabilizer. During an expansion, as income grows, takes a growing fraction of income. Since income grows less than otherwise would have grown, spending and, therefore, GDP is slowed down. In a recession, taxes take a smaller bite out of income, for which reason spending and GDP do not fall as much as otherwise would have felt.
- Unemployment insurance is an automatic stabilizer. During an expansion, taxes replenish the insurance fund and moderates aggregate demand. In a recession, the unemployed receive payments from the government fund, propping up aggregate demand.
- Deficit targeting is an automatic destabilizer (K. E. Case, 2011, *Principles of macroeconomics*). Without deficit targeting, suppose a negative demand shock causes income to fall. As

income falls, tax revenues drop and transfer payments increase. Since both are automatic stabilizers, the demand expansion derived from falling taxes and increasing transfers in part offsets the initial negative shock. With deficit targeting the deficit increase due to the fall of tax revenues and the rise in transfers has to be neutralized to reach the deficit target. Hence, taxes must rise and/or government spending be cut. This reinforces the initial negative shock and worsens the income reduction.

### 34. Spain's public deficit

The top table shows the percent change in the Spanish public sector, from 2011 to 2016. The bottom table exhibit the projections, for the period 2016-2020, made in March 2018 (as indicated in the presentation to investors by the Spanish treasury in March 2018).

[http://www.thespanisheconomy.com/stfls/tse/ficheros/2014/180307\\_Kingdom\\_of\\_Spain.pdf](http://www.thespanisheconomy.com/stfls/tse/ficheros/2014/180307_Kingdom_of_Spain.pdf)

Net Lending(+)/Borrowing. (% of GDP. Excl. Financial Sector One-Offs)						
	2011	2012	2013	2014	2015	2016
Central Government	-5.4	-4.3	-4.5	-3.6	-2.6	-2.52
Autonomous Regions	-3.4	-1.9	-1.6	-1.8	-1.7	-0.82
Local Governments	-0.4	0.3	0.6	0.5	0.5	0.64
Social Security Administrations	-0.1	-1.0	-1.1	-1.0	-1.2	-1.62
<b>General Government</b>	<b>-9.3</b>	<b>-6.8</b>	<b>-6.7</b>	<b>-5.9</b>	<b>-5.1</b>	<b>-4.33</b>

Net Lending(+)/Borrowing. (% of GDP. Excl. Financial Sector One-Offs)					
	2016	2017	2018	2019	2020
Central Government	-2.48	-1.0	-0.8	-0.3	0.0
Autonomous Regions	-0.84	-0.6	-0.4	-0.1	0.0
Local Governments	0.61	0.0	0.0	0.0	0.0
Social Security Administrations	-1.59	-1.4	-1.1	-0.9	-0.5
<b>General Government</b>	<b>-4.29</b>	<b>-3.0</b>	<b>-2.3</b>	<b>-1.3</b>	<b>-0.5</b>

### 35. Fiscal policy rules

- Golden rule of fiscal policy: the government should borrow to invest, not to fund current expenditure.
- Golden rule of budget stability, expressed in the form of a constitutional limit to public deficit.

### 36. Budgetary stability in the Spanish constitution

- Balanced budget amendment. Spain amended in September 2011 its 1978 constitution (the second constitutional amendment in 33 years) to set the structural deficit (the deficit independent of the business cycle) not above 0.4% of GDP from 2020 and to give priority to debt repayment.
- "All Public Administrations shall adapt their actions to the principle of budgetary stability." Art. 135.1, Spanish Constitution of 1978
- "Neither the State nor the Autonomous Communities shall enter into a structural deficit beyond the limits stipulated, if applicable, by the European Union for its Member States. An organic law shall set the structural deficit ceiling allowed for the State and for the Autonomous Communities according to their gross domestic product. Local Authorities shall present a balanced budget." Art. 135.2
- "The State and the Autonomous Communities shall have to be authorised by law to issue public debt or to enter into borrowing commitments. Loans to cover the interest and capital

of the Administrations' public debt shall always be understood to be included in the expenditure statement of their budgets and repayment of the same shall be awarded utmost priority. These loans may not be amended or modified provided that they comply with the conditions set forth in the issue law." Art. 135.3

- "The volume of public debt for all the Public Administrations as a whole as a ratio of the State's GDP shall not surpass the benchmark figure set forth in the Treaty on the Functioning of the European Union." Art. 135.3
- "Ceilings on structural deficit and public debt volume may only be overrun in the event of natural catastrophes, economic recession or situations of extraordinary emergency which are beyond the State's control..." Art. 135.4

[http://www.congreso.es/constitucion/ficheros/c78/cons\\_ingl.pdf](http://www.congreso.es/constitucion/ficheros/c78/cons_ingl.pdf)

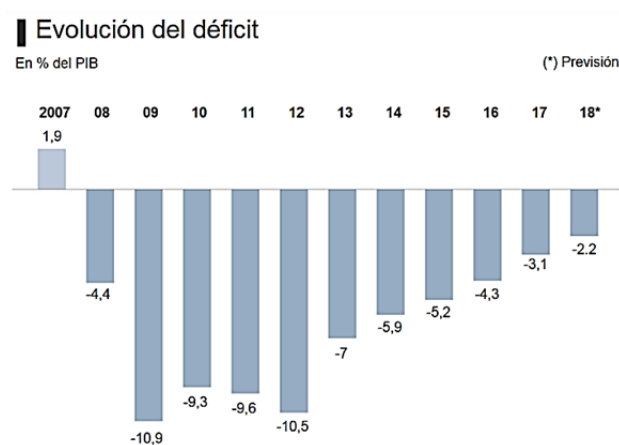
### 37. Spanish spending rule ('regla de gasto')

The Spanish law 2/2012, from the 27 of April, on budget stability and financial sustainability states that annual public expenditure cannot grow above the rate of growth of nominal GDP in the medium run, except if the increase can be financed by additional permanent revenue (art. 12). The Spanish public deficit target for 2017 was 3.1% of GDP. The target for 2018 is 2.2%.

<http://www.boe.es/buscar/act.php?id=BOE-A-2012-5730>

<https://www.airef.es/es/contenidos/noticias/436-quieres-conocer-ia-regia-de-gasto>

<http://www.elmundo.es/economia/macroeconomia/2018/04/05/5ac4c7cf22601de5588b45a7.html>



Spain, public deficit with respect to GDP

### 38. Spanish spending ceiling ('techo de gasto')

The Spanish spending ceiling is one of the mechanisms to achieve budgetary stability. It is the maximum amount of non-financial spending available to all the public administrations. It is calculated every year from the executed budget of the previous year. The ceiling was €123,394 million in 2016, a 4.4% less with respect the 2015 ceiling. The ceiling for 2017 was €118,337 million. The ceiling for 2018 is €119,834 million (a rise of €1,497 million with respect to 2017).

<http://www.lamoncloa.gob.es/consejodeministros/Paginas/enlaces/03072017-enlaceestabilida.aspx>

### 39. Spanish public debt ceiling

The Spanish law 2/2012, from the 27 of April, on budget stability and financial sustainability holds that the amount of public debt outstanding cannot be above of nominal GDP (art. 13). 44% of the limit is attributed to the national administration, 13% to regional administrations and 3% to local administrations. Interest payments and debt capital repayments have absolute priority with respect any other expenditure (art. 14).

<http://www.boe.es/buscar/act.php?id=BOE-A-2012-5730>

#### 40. Neoliberalism

Neo-liberalism is the doctrine that economic policy is reduced to a basic strategy of 'leaving it to the market' and eliminating any public intervention in markets. The last two or three decades has witnessed a shift in economic policy towards neoliberalism; see Philip Arestis and Malcolm Sawyer (2004): *Neo-liberal economic policy*, p. 1. The shifts in economic policy along the neoliberal lines include:

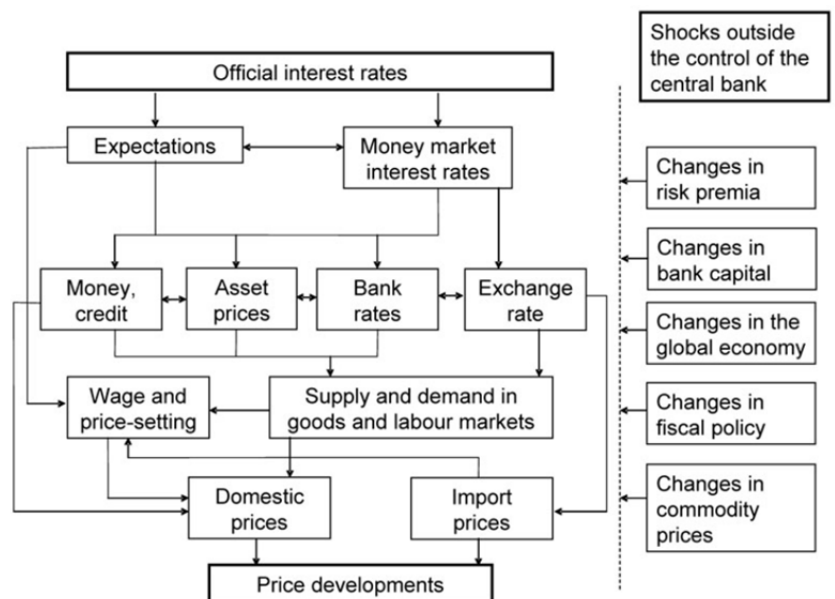
- discarding fiscal policy in favour of monetary policy;
- policy goals no longer concentrating on employment and growth but on inflation and price stability;
- ascribing the causes of unemployment to the operation of the labour market and, in particular, its "inflexibility";
- unemployment can only be solved through labour market 'reforms' and remove their 'rigidities', associated with trade union power, long-term employment contracts, and minimum wage regulations;
- the solution to the unemployment problem does not stem from demand-side policies nor regional and industrial policies designed to tackle structural unemployment;
- the liberalization and deregulation of markets (particularly, financial markets) and the removal of capital controls that regulate the flow of capital between countries;

#### 41. Monetary policy design

Monetary policy can be summarized by the following sketch.

**Instruments (tools) the central bank has → Intermediate targets → Ultimate targets**

Instruments of monetary policy are the tools under the central bank's direct control: open market operations, interest rates set by the central bank, and reserve requirements. Intermediate targets are variables that the central bank can influence directly and signal if the central bank is closer to the desired target:  $i$ ,  $M2$ ,  $M1$ , growth of  $M1$ ... Ultimate targets are the goals of monetary policy (GDP, GDP growth rate, inflation rate, unemployment rate, that is, variables in which the central is really interested (the desired target) and can be affected in a predictable way by the intermediate targets.



**Transmission mechanism from interest rates to prices**

<http://www.ecb.europa.eu/mopo/intro/transmission/html/index.en.html>

#### 42. Transmission mechanism from interest rates to prices and economic activity

There are at least four main channels through which monetary policy affects the price level and, therefore, the inflation rate and aggregate demand.

- The interest rate channel of monetary policy collects all the effects on the economy that work through changes in the (real) interest rate. The following sequence illustrates how the channel works when the monetary policy measure consists of an expansionary open market operation (the sequence presumes that  $i$  reacts quicker than  $\pi$ , which seems reasonable since the prices of financial assets change typically faster than the prices of goods).

$$\uparrow M0 \Rightarrow \uparrow M1 \Rightarrow \downarrow i \Rightarrow \downarrow r \Rightarrow \uparrow C \uparrow I \Rightarrow \uparrow AD \Rightarrow \uparrow Y$$

- The exchange rate channel of monetary policy collects all the effects on the economy that work through changes in the (real) exchange rate  $e_r$ . A tightening of monetary policy raises  $e_r$ . Since  $e_r$  is a measure of the economy's competitiveness, a contractionary monetary policy erodes competitiveness. The following sequence shows how this channel works when the monetary policy measure consists of an expansionary open market operation.

$$\uparrow M0 \Rightarrow \uparrow M1 \Rightarrow \downarrow i \Rightarrow \downarrow e \Rightarrow \downarrow e_r \Rightarrow \uparrow NX \Rightarrow \uparrow AD \Rightarrow \uparrow Y$$

- The credit channel of monetary policy collects the effects on the economy that work through credit supply and demand.
  - Supply. If the reserve ratio is increased, banks cut lending to accumulate more reserves. Purchases by consumers or small firms that depend on that lending cannot be carried out and aggregate demand falls.
  - Demand. A tight monetary policy makes borrowers less eligible for loans: if  $i$  rises, the firms' financial costs also rise (so their profits fall) and, for consumers, their financial wealth is reduced ( $\uparrow i \Rightarrow \downarrow \text{price of shares}$ ).
- The stock market channel of monetary policy collects all the effects on the economy that work through changes in the stock prices (and, in general, in the financial asset prices). The following sequence shows how this channel works when the monetary policy is given by an expansionary open market operation.

$$\uparrow M0 \Rightarrow \uparrow M1 \Rightarrow \downarrow i \Rightarrow \uparrow \text{price of financial assets} \Rightarrow \uparrow \text{wealth} \Rightarrow \uparrow C \uparrow I \Rightarrow \uparrow AD \Rightarrow \uparrow Y$$

#### 43. The classical dichotomy

The classical dichotomy holds that real variables do not depend on nominal variables, at least in the long run. For instance, according to the dichotomy, real GDP or employment levels are not affected by changes in  $M1$  or the price level. The classical dichotomy is not consistent with the Phillips curve, which describes a relationship between a real variable, the unemployment  $u$ , and a nominal variable, the inflation rate  $\pi$ .

- It appears that most macroeconomists (and virtually all textbooks) believe that the classical dichotomy holds in the long run: even though nominal variables may have an impact on real variables in the short run, in the long run that effect vanishes. Therefore, according to this view, in the long run, monetary policy is ineffective and, in particular, cannot be used to reduce the unemployment rate.

#### 44. Money neutrality

Money is neutral if changes in the money stock do not affect real variables (but merely the price level).

- The belief that the classical dichotomy holds in the long run implies the belief that money is neutral in the long run. Money neutral in the long run means that more money in the economy only amounts, eventually, to more inflation not more wealth. Orthodox economists regard money as neutral in the long run (that justifies the present role of central banks: regulate just a nominal variable, the inflation rate).

#### 45. Monetarism

Monetarism is a school of economic thought that holds that the money stock is the chief determinant of the (short-run) aggregate demand (and, therefore, the nominal GDP, the price level, and the inflation rate). The main policy recommendation of monetarism is to regulate the inflation rate by controlling the money stock. According to Milton Friedman (1912-2006), monetarism's leading exponent, "Inflation is always and everywhere a monetary phenomenon". Monetarism is based on the quantity equation.

#### 46. The quantity equation (quantitative theory of money)

The quantity equation (or equation of exchange) is

$$M \cdot V = P \cdot Y$$

where  $M$  = money stock,  $V$  = velocity of money (number of times per year a euro turns over),  $P$  = price level,  $Y$  = real GDP (so  $P \cdot Y$  is nominal GDP). The equation says that the total number of euros spent in a year ( $M \cdot V$ ) equals the nominal value of the goods produced that year (nominal GDP =  $P \cdot Y$ ). That is, the nominal value of everything sold equals the nominal value of everything bought (question: what about sales of commodities produced in previous years?)

#### 47. The quantity equation with rates of change

Using lower case letters to designate rates of change, the version of the quantity equation expressed in rates of change is

$$m + v \approx \pi + y.$$

If the velocity of money remains constant,  $v = 0$ . In this case,  $m \approx \pi + y$ . That is,  $\pi \approx m - y$ . This means that the excess of money growth with respect to the economy's growth is inflation. If the economy does not grow ( $y = 0$ ), then  $\pi \approx m$ : all the increase in the money stock becomes inflation (more money, higher inflation).



- The quantity equation implicitly presumes that all the money in the economy is used in the real sector, purchasing goods. But a sizeable part of the money stock is used in the purchase of financial assets. As a result, it is more likely that any 'excess of money' rather creates asset inflation (and, hence, speculative bubbles) than CPI (commodity) inflation. In fact, where is the CPI inflation that, according to the quantity equation, must have caused the trillions injected by central banks of the whole world during and after the financial crisis of 2008? (Hint: take a look at the stock market indices).
- Heterodox economists question that inflation be a monetary phenomenon. For instance, John Weeks (2012, *The irreconcilable inconsistencies of neoclassical macroeconomics: A false paradigm*) contends that "it cannot be demonstrated in logic that:
  - 1 real wages and the aggregate level of employment are negatively related;
  - 2 unregulated markets automatically equilibrate to bring about full utilization of resources (*full employment*), nor that they equate supply and demand in single markets;
  - 3 the aggregate price level is determined by the supply of money, and inflation is the result of changes in the supply of money."

#### 48. Monetization of budget deficits

A central bank monetizes budget deficits when it purchases debt issued by the government to finance a deficit. In practice, monetizing the deficit is like paying the budget deficit by issuing/printing new money. This source of revenue for governments is known as seigniorage. Monetization may feed inflation. If the central bank does not monetize the deficit and the government finances it by issuing bonds, the interest rate will rise and crowd out private expenditure.

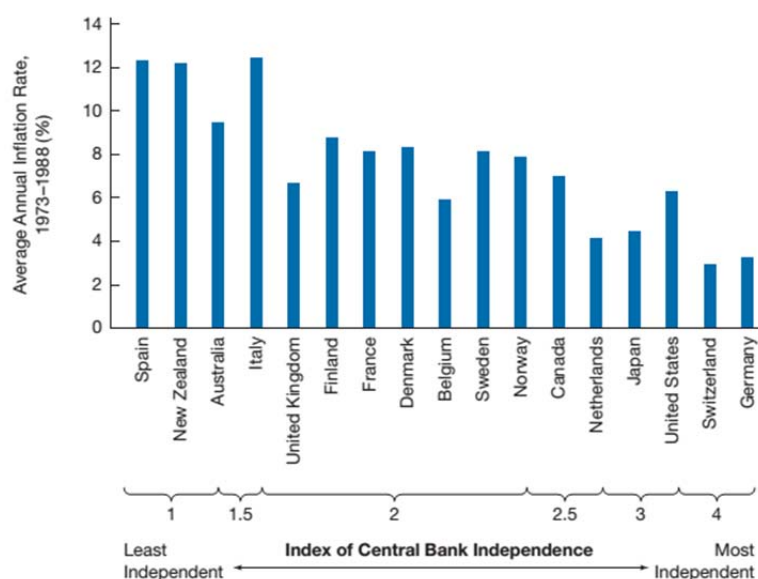
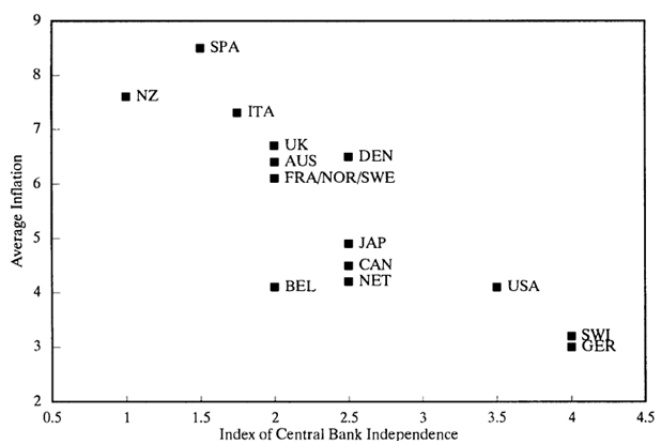
- Zimbabwe experienced hyperinflation from 2004 to April 2009, with an unemployment rate of 94% at the beginning of 2009, thereby becoming one of the worst economies in the world. By December 2008, annual inflation was estimated at  $6.5 \times 10^{108}\%$  (6.5 octodecillion = 650 million googol; 1 googol = 10 sexdecilliard =  $10^{100}$ ). In 2007, President Mugabe unsuccessfully declared inflation illegal. Final solution: in April 2009 the home currency (Zimbabwean dollar) was suspended and foreign currencies were adopted instead.

#### 49. Independence of a central bank from the government

The following text summarizes the orthodox defence of central bank independence.

"The central banker's task is to provide the monetary and credit conditions that achieve the ideal balance between accommodating economic expansion and engendering inflation or deflation. [...] Why do we have independent central banks? To provide a barrier between government and the money supply. Why is this necessary? Because doing the right thing for the long-term interests of the people can be very hard to do. Monetary policymakers often have to make decisions that can cause economic pain for real people in the short term, or decide not to do things that could help people out of an immediate bad situation, in order to preserve the welfare of the people over the long run." <http://www.dallasfed.org/news/speeches/fisher/2008/fs080207.cfm>

The figures below show empirical evidence typically provided in support of the claim that independent central bank achieve greater price stability.



<http://www.deu.edu.tr/userweb/yesim.kustepeli/dosyalar/alesinasummers1993.pdf>

F. Mishkin (2011), *Macroeconomics: Policy and practice*, p. 561

## 50. Inflation costs

- The cost of holding money rises with inflation. A cost of holding money is the interest forgone by not holding an interest-bearing asset. By the Fisher effect, more inflation leads to higher interest rates.
- Inflation as a tax. A rising inflation reduces the purchasing power of money (is like losing money).
- Inflation implicitly redistributes wealth from lenders to borrowers (typically active in the financial sector: banks and buyers of financial assets) to borrowers (typically active in the real sector: consumers and producers of goods). This redistribution is due to the fact that inflation reduces the value of debt in real terms: an increasing inflation lowers the purchasing power of a given amount of money. Deflation does the opposite: it involves a transference of wealth from borrowers to lenders. A negative inflation rate means that money increases its purchasing power.

## 51. A policy dilemma for central banks

Central banks face a policy dilemma in a booming/bubble economy: action vs inaction. Suppose borrowing and spending is considered excessive, with indebtedness growing alarmingly and the typical economic agent being reluctant to save. There are two options.

- Option 1: puncture the bubble. The typical measure to try to discourage borrowing and spending, is to raise the interest rate. But this rise may result in a sharp contraction in economic activity. In this case, borrowing and spending appears insufficient.
- Option 2: let the boom continue and the bubble burst. If no policy is adopted to control or regulate the high levels of borrowing and spending, a worse contraction may occur when it is realized that the levels of borrowing and spending can no longer be sustained.

Financial activities were liberalized during the 1970s and 1980s. The liberalization transferred the control of the financial sector from the public to the private sector by removing controls over financial flows. The financial liberalization allowed the accumulation and international circulation of large amounts of money and also permitted interest rates to be established in the financial sector itself without substantial public interference. In view of the empirical evidence, the following sequence appears plausible:

financial deregulation → free mobility of capital and no credit control →  
 → debt increase everywhere (by governments, firms, households...) →  
 → threat to financial stability → financial crises.

[What distinguishes the rich from the rest is that the rest (workers, self-employed workers, owners of small businesses) need to work to earn income (coming from a salary or the sales of goods). The rich receive income from real and financial assets (rents on assets or profits from speculation with assets).]

## 52. Big laws of capitalist economies (Michael Hudson)

“The inexorable tendency of debt to grow beyond the ability to be paid.”

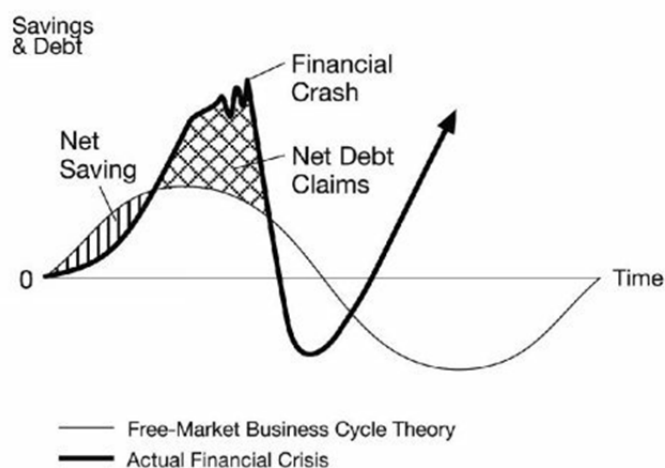
“There is no way to sustain the rise in debt without killing the economy.”

Días necesarios para pagar la deuda autonómica (2018)



<http://www.airef.es/-/la-airef-senala-que-la-reduccion-de-la-ratio-de-deuda-sobre-el-pib-en-2017-ha-sido-baja-pese-a-la-positiva-evolucion-macroeconomica>

Financial Crisis vs. Business Cycle



Michael Hudson (2017): *J is for junk economics: A guide to reality in an age of deception*

“Neoliberals say they’re against government, but what they’re really against is democratic government. (...) As Germany’s Wolfgang Schäuble said, ‘democracy doesn’t count.’ Neoliberals want the kind of government that will create gains for the banks, not necessarily for the economy at large. Such governments basically are oligarchic. Once high finance takes over governments as a means of exploiting the 99%, it’s all for active government policy – for itself.”  
 Michael Hudson