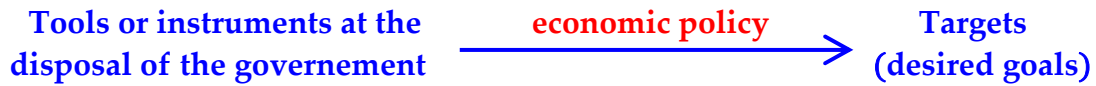


12. Theory of macroeconomic policy

1. Basic outline of economic policy

Definition 1.1. The economic policy of a government consists of all the decisions by the government that affect the economy with the purpose of achieving certain preestablished economic goals.



The above sketch represents the basic outline of economic policy. For macroeconomic policy, the desired goals are expressed as values of certain macroeconomic variables one wishes to influence.

Definition 1.2. A target of economic policy is a goal of policy identified with precision.

Definition 1.3. An instrument of economic policy is a tool that the policymaker can control or manipulate directly.

Definition 1.4. An indicator of economic policy is a variable that informs about the degree of fulfillment of a target.

Definition 1.5. An ultimate target of economic policy defines the goal in which the policymaker is really interested. An intermediate target of economic policy is a goal considered relevant or necessary to achieve the ultimate target; as it signals closeness to the ultimate target, it may be used as an indicator.

2. The Tinbergen precept

Definition 2.1. Formulated by Jan Tinbergen, the Tinbergen precept (also known as “basic rule of economic policy”) 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 “Have at least as many instruments as goals” (no policy tool can be presumed to serve two objectives: do not expect to kill two birds with one stone). For instance, to achieve three goals, the precept demands at least three instruments, each one of them capable of complying with a different goal.

Example 2.2. An economy is described by the following five equations (N is employment, whereas the bar over a symbol means that the variable takes a constant, fixed value).

AS function $Y = \pi \cdot N$ **Consumption function** $C = \bar{C} + c \cdot Y$ **Government purchases** $G = \bar{G}$

AD function $AD = C + I + G$ **Investment function** $I = \bar{I}$

In a macroeconomic equilibrium, $Y = AD$. Therefore, in equilibrium,

$$Y = \frac{1}{1 - c} \cdot (\bar{C} + \bar{I} + \bar{G}).$$

Suppose the target is a certain level of employment \bar{N} and the tool is \bar{G} . Using the last equation and the AS function,

$$\frac{1}{1-c} \cdot (\bar{C} + \bar{I} + \bar{G}) = \pi \cdot \bar{N}.$$

Solving for \bar{G} ,

$$\bar{G} = \pi \cdot (1-c) \cdot \bar{N} - (\bar{C} + \bar{I})$$

The above equation links the target \bar{N} with the tool \bar{G} . For example, letting $c = 0.9$, $\pi = 2$, and $\bar{C} + \bar{I} = 100$, the condition linking the tool \bar{G} with the target \bar{N} is $\bar{G} = 20 \cdot \bar{N}$. If the goal is to have $\bar{N} = 7$, then the necessary amount of government purchases is $\bar{G} = 20 \cdot 7 = 140$.

Example 2.3. The economy is described by the next six equations (the bar indicates a constant value).

AS function $Y = \pi \cdot N$ **Consumption function** $C = \bar{C} + c \cdot Y$ **Government purchases** $G = \bar{G}$

AD function $AD = C + I + G$ **Investment function** $I = \bar{I} - b \cdot i$ **Fisher equation** $i = \bar{r} + \pi$

The policy goals are \bar{N} (an employment level) and $\bar{\pi}$ (an inflation rate). The policy tools are \bar{G} (fiscal policy) and i (monetary policy). The Fisher equation $i = \bar{r} + \pi$ (where \bar{r} is supposed given and known) directly links the target $\bar{\pi}$ with the instrument i , since $i = \bar{r} + \bar{\pi}$. For instance, if $\bar{r} = 1$ and the inflation rate target is $\bar{\pi} = 3$, the interest rate should be set at $i = \bar{r} + \bar{\pi} = 2 + 3 = 5$. Using the equilibrium condition $Y = AD$,

$$Y = \frac{1}{1-c} \cdot (\bar{C} + \bar{I} + \bar{G}) - \frac{b}{1-c} \cdot i.$$

Inserting this into the AS function

$$\frac{1}{1-c} \cdot (\bar{C} + \bar{I} + \bar{G}) - \frac{b}{1-c} \cdot i = \bar{\pi} \cdot \bar{N}$$

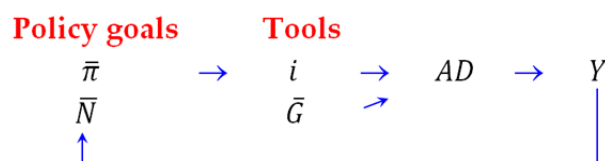
or

$$\frac{1}{1-c} \cdot (\bar{C} + \bar{I} + \bar{G}) - \frac{b}{1-c} \cdot (\bar{r} + \bar{\pi}) = \bar{\pi} \cdot \bar{N}.$$

Solving for \bar{G} ,

$$\bar{G} = \bar{\pi} \cdot [b + (1-c) \cdot \bar{N}] + b \cdot \bar{r} - (\bar{C} + \bar{I}).$$

The last expression determines the value of the fiscal policy tool \bar{G} that, given the monetary policy goal $\bar{\pi}$, makes it possible to achieve the fiscal policy goal \bar{N} . Decisions and outcomes are summarized in the sketch on the right.



3. Implementation problems

The implementation of economic policies is subject to several limitations and constraints.

- Lags. Policymaking does not hit the economy immediately: there is a delay between the moment at which intervention is needed and the moment at which the economy responds to the policies.
- Credibility of policymakers and the temporal inconsistency of policies.
- Policymaking should take into account people's reaction to policies (Goodhart's law).
- Unintended consequences of policies and the rhetoric of reaction to policies.

4. Lags

Definition 4.1. The recognition lag is the period between the moment at which a disturbance (problem) occurs and the moment at which the need to take some action is recognized (this lag makes policymaking analogous to driving a car looking backwards).

Definition 4.2. The decision lag is the time between the recognition of the problem and the policy decision.

Definition 4.3. The action lag is the delay between the policy decision and its execution.

Definition 4.4. The effectiveness lag is the time needed for the policy action to affect the economy and achieve the desired goal (the effects of the policy take time to appear).

Example 4.5. An oil tanker is heading to some obstacle at sea. The time took to detect the obstacle (from the time where it can be recognized) is the recognition lag. The decision lag refers to the time between the detection of the obstacle and the captain's decision of whether to turn to port or turn to starboard. The action lag is the time needed to communicate the decision to the helmsman. The effectiveness lag is the time the tanker takes to turn after the helmsman initiates the maneuver.

5. Temporal inconsistency of policies

Definition 5.1. A decision made at time t to be carried out at a later time t' is temporally inconsistent if, at time t' , it is better for the decision-maker not to carry out the decision.

Temporally inconsistent policies are ineffective because they are not credible: when it is the policymaker's turn to execute a temporally inconsistent, he or she will have an incentive to not execute it.

Example 5.2. To attract foreign investors, a government promises not to tax profits from firms created by foreign investors; but, once the firms get the profits, the government has an incentive to tax them.

6. Goodhart's law

Definition 6.1. 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.

Example 6.2. The Lucas critique. Formulated by Nobel laureate Robert Lucas, the critique points out that changes in policies may alter the coefficients in macroeconomic models used to formulate the policies, so policies designed to have effects on one reality could end affecting a different reality. Consequently, when designing policies, it should be taken into account how policies change reality.

Example 6.3. Imagine that it is an empirical regularity that the students attending more than 85% of the classes pass a course. To avoid the cost of preparing and correcting exams, a teacher may use the regularity to, by controlling attendance, give a pass to the students coming to enough classes. If students knew that policy, attendance would no longer be a good measure of the students' performance. Why?

By Goodhart's law, when a policymaker makes use of some empirical regularity as a policymaking instrument, the regularity will tend to disappear. Empirical regularities link variables (course attendance and course performance in Example 6.2). If one of the variables is taken as target (performance), the other variable (attendance) may act as indicator. But taking the indicator as a measure of the target invalidates the indicator: controlling the indicator instead of the target destroys the empirical regularity.

Remark 6.4. One important message of Goodhart's law is that stable economic relationships may turn unstable when it is realized that they are stable: a sort of reverse Tinkerbell effect.

Remark 6.5. Arms races and Red Queen effect. Goodhart's law may also explain escalating behaviour. For instance, suppose some public authority tries to control certain activities (how much lending banks should provide, how many taxes firms must pay). The agents affected try to avoid the authority's control or interference by conducting new activities not subject to control (new forms of lending, replace activities subject to tax payments with underground activities). The authority reacts by expanding their control to the new activities. And a subsequent countereaction ensues, which induces the authority to redefine their domain of control... and so on.

7. Unintended consequences

Definition 7.1. 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).

Definition 7.2. 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.

Example 7.3. To insure bank depositors against losses, suppose the government provides deposit insurance. If, as a result of deposit insurance, more people deposit cash in banks, banks lend more money, and the spending made with the additional borrowing expands economic activity and GDP, then the GDP increase is a side effect of deposit insurance. If, on the other hand, banks adopt a more imprudent lending policy, this makes the banking system much more vulnerable to bankruptcy and endangers deposits and, hence, losses by depositors are more likely. That deposit insurance makes more likely that depositors may suffer losses is a revenge effect of deposit insurance.

Example 7.4. Imagine a drug helping to reduce weight. If the consumption of the drug in effect lowers the weight but, at the same time, changes the skin's colour, then the skin colour change is a side effect. If consuming the drug under stress turned out to accelerate weight gain then that would constitute a revenge effect of the consumption of the drug.

Example 7.5. Home washing machines were publicized as a means to free time for housewives. The widespread adoption of home washing machines created a side effect: the number of commercial laundries decreased. This forced housewives to do more washing at home, thereby generating a revenge effect: rather than reducing the time housewives spent on washing, washing machines increased it.

Example 7.6. The Jevons paradox. “It is wholly a confusion of ideas to suppose that the economical use of fuel is equivalent to a diminished consumption. The very contrary is the truth.” W. S. Jevons (see David Owen (2012): *How scientific innovation can make climate problems worse*). Jevons argued that if technological advance allowed a blast furnace to produce iron using less coal, then profits would go up, investment in iron production would be attracted, the price of iron would fall, and demand for coal would be stimulated. The technological improvement making it possible to produce iron with less coal (more efficiently) increases the total consumption of coal: even if each furnace diminishes the consumption of coal, the larger number of furnaces created by the new investments increases total consumption of coal. Adapting Jevons paradox to the present oil industry, it may be argued that new methods for producing using less oil will not stimulate the adoption of alternative energy sources, but rather the opposite: oil will be more intensely consumed.

Example 7.8. “The only way to control unanticipated events is to have Washington [= the government] do as little as possible.” Milton Friedman, quoted on page 1 of W. A. Sherden (2011): *Tyranny of unintended consequences and how to avoid them*. [Unintended consequences are attributed to public authorities, as if the decisions by private agents did not cause unintended effects.]

8. Rethoric of reaction to policy proposals

In *The rhetoric of reaction* (1991), Albert Hirschman identifies a triad, in the form of three theses, representing three ways of criticizing and ridiculing new policy proposals. Each thesis is formulated against a given, specific policy measure.

Definition 8.1. The perversity thesis (thesis of the perverse effect) holds that the attempt to solve a problem (or improve some condition) by means of the policy proposal under attack only serves to exacerbate the problem (worsen the condition).

The perversity thesis claims that trying to move things in one direction, results in a move in the opposite direction and is an expression of the motto ‘Everything backfires’.

Example 8.2. The perversity thesis is invoked when “well-intentioned” policies are accused of making things worse: social welfare programmes create more poverty; universal suffrage was first criticized on the grounds of alleged perverse effects derived from allowing everyone to vote (even “idiots”); if only believes that markets self-regulate, a minimum wage policy is said to create more unemployment.

Definition 8.3. The futility thesis asserts that the policy proposal under attack is unavailing and fails to solve the problem (or does so in an illusory way) or fails to alter the condition of interest.

The classic expression *Plus ça change plus c’est la même chose* captures the futility thesis (for example, the opinion that it does not matter what party you vote, for all of them end behaving likewise).

Definition 8.4. Goodhart's law could be related to the futility thesis, as economic agents will tend/try to nullify policies. The most orthodox economists invoke the futility thesis when contending that the government should not interfere with market outcomes: it is futile (the alternative claim that it is counterproductive involves the perversity thesis). The assertion that universal suffrage and democratic elections bring no real social or political change (already made by Vilfredo Pareto a hundred years ago) is another expression of the futility thesis.

Definition 8.5. The jeopardy thesis postulates that the cost of the policy proposal under attack is so high that it endangers some previous, desirable accomplishment: the proposed change, even if considered desirable, involves unacceptable costs or consequences.

The jeopardy thesis relies on the presumption that a new advance will imperil an older one.

Example 8.6. The jeopardy thesis is involved in the claim that, if Catalonia or Scotland become independent countries, many rights (like social security benefits and, specifically, pensions) and welfare levels will be lost.

Example 8.7. In *The Constitution of Liberty* (1960), Nobel laureate Friedrich Hayek attacks the welfare state on the grounds that it is a danger and a menace to liberty and democracy.

9. Policy debates: intervention vs no intervention / rules vs discretion

Definition 9.1. The nonactivist (no intervention, policy nihilism) position contends that public authorities should, as a general principle, abstain from intervening in the economy.

The nonactivist position is based on the belief that the economy is self-regulating and works better when left by itself. Arguments offered by the supporters of this position include the following (and rely on the perversity, futility, and jeopardy theses).

- Intervention may make things worse: policymakers have an imperfect knowledge of both the economic reality and the effects of policies, and may be guided by personal interests.
- Crises are considered good for the economy, as they purge it of inefficiencies and weaknesses.
- Policy design is subject to several constraints that limit their effectiveness: lags, temporal inconsistency, short-termism, policymakers cannot be trusted because they pursue their personal interests (giving rise to the political business cycle)...

Definition 9.2. Political business cycle. Oscillations in economic activity caused by the adoption of expansionary policies just before political elections and contractionary ones some time after.

The nonactivist position invokes the complexity of an economy and the obscure, unpredictable way in which macroeconomic variables interact to justify the conclusion that policymakers lack the necessary knowledge to understand the effects on the economy, and the consequences for people, of specific policy measures. The existence of lags further complicates the prediction of effects (particularly, when they will take place). Even if there existed policies improving the state of the economy, the difficulty in finding them justifies, according to this view, the safer option of doing nothing.

Definition 9.3. The activist (interventionist) position contends that public authorities must, as a general principle, consider the prospect of intervening in the economy.

When an activist position is adopted, the choice is between flexibility and certainty of the policy, that is, between discretion and rules. Flexibility means that policymakers do not tie their hands when choosing targets or using tools (because the economy and what is known about it changes over time). Certainty means that policy is conducted by preannounced rules that describe how the policy targets are determined and instruments used in every situation.

10. Policy debates: rules vs discretion

Definition 10.1. Policymakers are guided by discretion the chosen policy measures adapt, and try to respond adequately, to changing circumstances of the economy.

Definition 10.2. A policy rule is a way of mechanically relating circumstances, states, or conditions in the economy to precise policy measures: a policy rule makes policy actions automatic responses to changes in the economy.

Example 10.3. A rule, advocated by Nobel laureate Milton Friedman, is the constant-money-growth-rate rule: the money stock has to grow at a constant rate regardless of the state or conditions of the economy.

Example 10.4. Inflation targetting. 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

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

where: \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 (π is current inflation); \bar{y} is the "normal" growth rate of the economy (y is current growth); constant $A > 0$ measures the central bank's sensitivity to deviations from target $\bar{\pi}$; and constant $B > 0$ measures the central bank's sensitivity to deviations from normal growth \bar{y} . If the central bank only cares about inflation (and not about growth or unemployment), then $B = 0$. In this case, Taylor's rule becomes

$$i = \pi + \bar{r} + A \cdot (\pi - \bar{\pi}) \quad (1)$$

When $\pi = \bar{\pi}$ (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. The larger A , the more aggressively the central bank fights inflation.

Under rule (1), 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} . Conversely, 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} .

Definition 10.5. 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.

Example 10.6. Let $\bar{r} = 1\%$, $\bar{\pi} = 3\%$, and $A = \frac{1}{2}$ (so, for each inflation point above the goal, the central bank rises i by 0.5 points). Suppose $\pi_0 = 3\%$. Then the central bank sets $i_0 = \pi_0 + \bar{r} + (\pi_0 - 3)/2 = 3 + 1 + 0/2 = 4\%$. If $\pi_1 = 5\%$, $i_1 = \pi_1 + \bar{r} + (\pi_1 - 3)/2 = 5 + 1 + (5 - 3)/2 = 7\%$, so $r_1 = i_1 - \pi_1 = 7 - 5 = 2 > \bar{r} = 1\%$.

Definition 10.7. Constrained discretion (suggested by Ben Bernanke and Friedrich Mishkin) defines a type of policy framework in which policymakers commit in advance to general objectives and tactics, not to specific actions. This option combines the certainty of rules with the flexibility of discretion.

Remark 10.8. Advantages of rules. (i) Thanks to the rules, when making decisions, private agents anticipate the policymakers' actions and that reduces uncertainty. (ii) Rules constitute a mechanism to discipline policymakers, avoid the political business cycle, and prevent the temporal inconsistency problem. The presumption is that policymakers cannot be trusted: they make policy errors systematically and are tempted for electoral reasons to pursue overexpansionary policies guided by their short-term consequences and disregarding long-term, undesirable effects.

Remark 10.9. Shortcomings of rules. (i) Rules will be eventually changed. If the change is frequent, there is no much difference with discretion. Moreover, must there be rules for the change of rules? (ii) People need to believe that rules will be followed and this requires policymakers to have developed a reputation for respecting the rules. (iii) Rules cannot foresee every contingency (since 2008, the European Central Bank has adopted several unprecedented extraordinary measures). (iv) Rules are formulated presuming a model of the economy. If the model is wrong, the policy prescription by rules will most likely to be wrong as well. (v) The "sanctification" of rules in the theory of economic policy (see K. Vela Velupillai (2014): "Towards a political economy of the theory of economic policy", Cambridge Journal of Economics 38, 1329–1338). In its origins, macroeconomics was inseparable from policy activism. The prevalence of rules is actually justified by denying the significance of the fallacy of composition through the transformation of macroeconomics into microfounded macroeconomics. Recognizing the fundamental importance of the fallacy of composition is the unifying vision of activism.

Remark 10.10. Advantages of discretion. (i) Using discretion, unexpected or serious economic problems can be attacked efficiently. Success of a policy could depend on the ability to act flexibly using discretionary measures. (ii) It is easier under discretionary policy to handle the impact of structural changes in the economy. (iii) Not all the information concerning an economy is quantifiable (which what rules require), for which reason the best course of action for the policymakers would involve making judgements (which is what rules replace).

Remark 10.11. Shortcomings of discretion. (i) Under discretion, predicting the policymakers' actions becomes a new problem for the agents in the economy (since policies may be erratic and arbitrary). (ii) Policymakers need not possess such an accurate knowledge of how an economy works to make policies always produce the desired results and never generate unintended non-favourable effects.

11. How important is credibility?

The orthodox view favours the adoption of rules to avoid the negative effects of political short-termism (to care only about short-run effects of policies, neglecting the possibly of non-favourable long-term

consequences) and temporal inconsistency problems. Given also the inflationphobia of the orthodox view (though the inflation of the prices of financial assets never gives rise to complaints), the central bank is considered the central policy-making institution.

The orthodox view recommends a central bank to be independent (free from “political interference”) and credible (to have the reputation that induces people to believe that the rules adopted and the general mandate of price stability will be respected at all cost central banks have become the “guardians of an economy’s credibility”). Necessary or not for the performance of a central bank’s functions, central bankers have developed an interest in maintaining the belief that central banks should be independent (which contributes to preserve their status) and supply credibility.

Example 11.1. The Maastricht Treaty, Art. 107 (emphasis added): “When exercising the powers and carrying out the tasks and duties conferred upon them by this Treaty and the Statute of the ESCB, neither the ECB, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Community institutions or bodies, from any government of a Member State or from any other body. The Community institutions and bodies and the governments of the Member States undertake to respect this principle and not to seek to influence the members of the decision-making bodies of the ECB or of the national central banks in the performance of their tasks.”

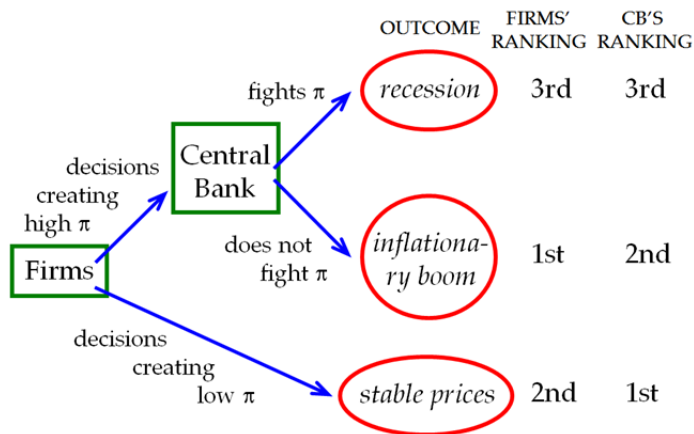
www.eurotreaties.com/maastrichtec.pdf

The heterodox reply to this view of central banks is that central bank independence contradicts the democratic principle of policymakers being responsible (accountable) to citizens. It is then regarded as undemocratic to have one of the policies affecting most people in the economy (monetary policy) under the control of an elite group responsible to no one. Another heterodox argument against central bank independence is that this independence has not always been successfully exercised (currently, the eurozone CPI is far below the target and in the pre-crisis period it was frequently above target).

The orthodox view has identified some approaches to establish central bank credibility.

- Approach 1. Adopt the monetary policy strategy known as “inflation targeting”, which typically involves:
 - public announcement of inflation targets;
 - the adoption of price stability as the primary goal of monetary policy;
 - to follow a transparency strategy in which governors of central banks may make their plans and objectives public, often through press conferences;
 - accountability of the central bank for attaining the inflation objective.
- Approach 2. Appoint central bankers who have a known strong aversion to inflation. This type of central bankers are called “conservative”, “tough”, or “hawkish on inflation”.
- Approach 3. Give the central bank more independence from the political process. The presumption is that a politically insulated central bank has more freedom to pursue long-run goals (like price stability).

Example 11.2. The example, based on Fig. 1, illustrates by means of an extensive-form game the importance of credibility and commitment for the effectiveness of policy. 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. Fig. 1 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. Consider two cases.

Fig. 1. A game to illustrate central bank credibility

- **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.

12. Typology of macroeconomic policies

Macroeconomic policies can be classified into two broad categories: supply-side and demand-side.

Definition 12.1. 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, privatization of public monopolies, tax reductions...
- improve the way markets operate: stimulate competition, reduce market power...

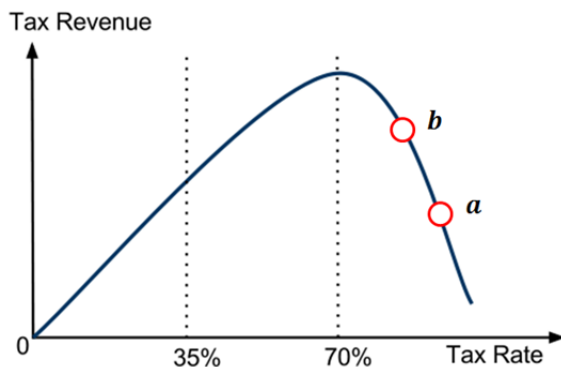
- improve the quality of inputs (retraining programmes for unemployed people) and to encourage technological progress.

Definition 12.2. 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 Fig. 2).

Definition 12.3. The Laffer curve is a theoretical relationship (shown in Fig. 2) 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'.

Fig. 2. A non-symmetric Laffer curve with a maximum revenue point at around a 70% tax rate | http://en.wikipedia.org/wiki/Laffer_curve

Definition 12.4. 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). http://en.wikipedia.org/wiki/Trickle-down_economics

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).

"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

Definition 12.5. "The Matthew effect (or accumulated advantage) is the phenomenon where 'the rich get richer and the poor get poorer'". http://en.wikipedia.org/wiki/Matthew_effect

Definition 12.6. 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.

Definition 12.7. 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).

Definition 12.8. The fiscal policy targets are, typically, GDP growth, unemployment, the unemployment rate and, atypically, the budget deficit.

Definition 12.9. The monetary policy instruments are open market operations, interest rates set by the central bank, and reserve requirements.

Definition 12.10. The main monetary policy target is, typically, the inflation rate. Secondary targets are GDP growth, the unemployment rate, and the exchange rate.

Definition 12.11. 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 $\uparrow t$.

Definition 12.12. 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.

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) $\uparrow u$.

13. Government deficit

Definition 13.1. The total spending by the government (government outlays) 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

Definition 13.2. 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.

Definition 13.3. Government budget deficit (or just deficit) = government outlays – tax receipts = $G + TR + INT - T$.

Definition 13.4. Primary government budget deficit (or just primary deficit) = deficit – INT.

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).

14. Qualifying the expansionary effects of an expansionary fiscal policy

When considering the effects of an expansionary fiscal policy, the way it is financed should be taken into account, as it may offset the primary effect of the fiscal policy.

• **Case 1: adverse effects of taxing now.** Suppose the government implements an expansionary fiscal policy consisting of an increase in govt consumption (ΔG). 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 ΔG 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 Y^* .

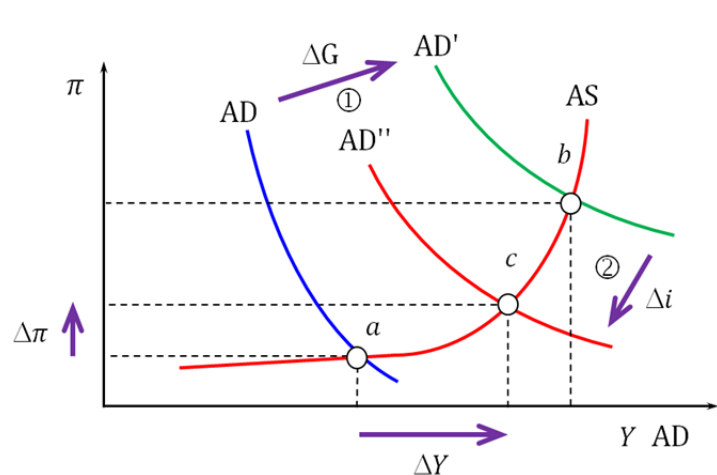
• **Case 2a: adverse effects of taxing later by issuing government bonds and the Ricardian equivalence proposition.** As debt financing by bond issue just postpones taxation, people realize that bonds will be paid off with future increases in taxes, so it is likely that they will save more now to be 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.

Definition 14.1. Ricardian equivalence proposition. Suggested by David Ricardo (1772-1823), the 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.

There are some objections to Ricardian equivalence (leaving aside that the empirical evidence does not seem to support its predictions).

- 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.
- **Case 2b: adverse effects of taxing later by issuing government bonds and 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 increase in i will presumably have a negative impact on consumption and investment. Thus, private spending is reduced. As a result, G (public spending) crowds out $C + I$ (private spending). The figure on the left illustrates crowding out: instead of reaching b , the economy reaches c due to the effect of the fiscal policy on i .

15. Rolling debt over

Definition 15.1. 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.

Definition 15.2. The burden of the (government) debt refers to the annual interest on the debt as a percentage of annual GDP or, alternatively, to the taxes, as a percentage of GDP, needed to pay the interest on the debt.

For instance, if interest payments on the debt rise by 3%, government spending is not altered, and debt is not rolled over, then taxes must rise by 3%. 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 limits the government's ability to repay debt in the future.

Definition 15.3. A possible debt rule: the growth rate of nominal debt should not be higher than the growth rate of nominal GDP.

For example, according to the debt rule, if nominal GDP grows at 3% per year, then nominal debt cannot grow by more than 3% per year. 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.

Example 15.4. Table 3 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	$\frac{\text{debt}}{\text{GDP}_n}$	i	interest payment	burden of debt
							$\frac{\text{interest payment}}{\text{GDP}_n}$
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 3. Burden of debt with nominal debt and nominal GDP growing at 5%

Example 15.5. Table 4 provides 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	$\frac{\text{debt}}{\text{GDP}_n}$	i	interest payment	burden of debt
							$\frac{\text{interest payment}}{\text{GDP}_n}$
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 4. Burden of debt with nominal debt growing at 10% and nominal GDP growing at 5%

Example 15.6. Greece's debt disaster is shown in Figs. 5 and 6: Fig. 5 displays nominal GDP and nominal debt in Greece and Fig. 6 charts 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...

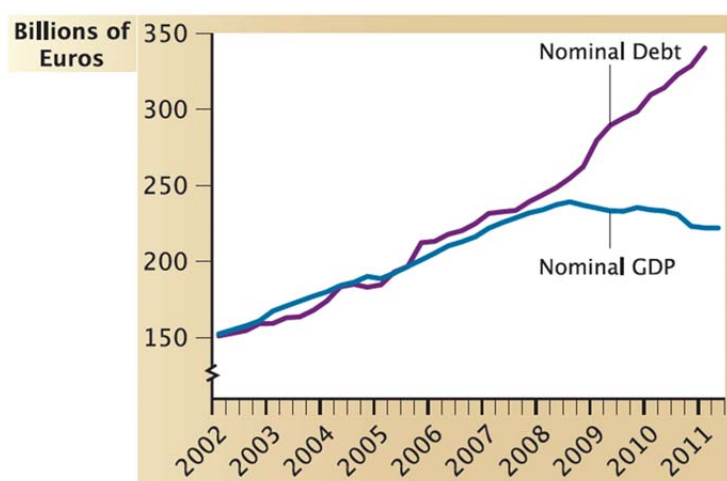


Fig. 5. Greece's nominal debt and nominal GDP

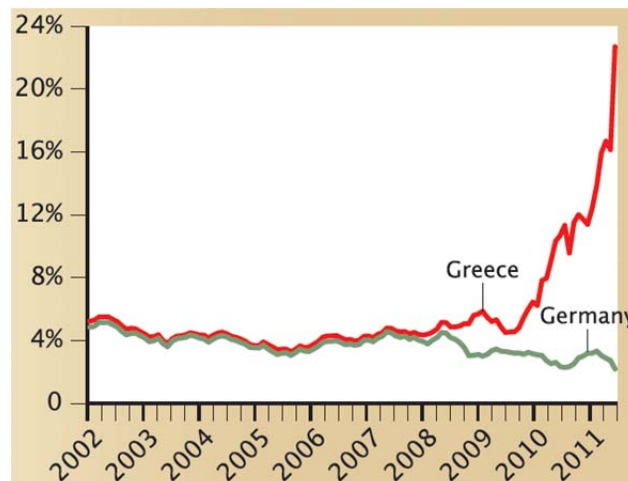


Fig. 6. Long-term interest rate, Greece and Germany

R. E. Hall; 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.

16. Austerity economics

Definition 16.1. 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.

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.

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.

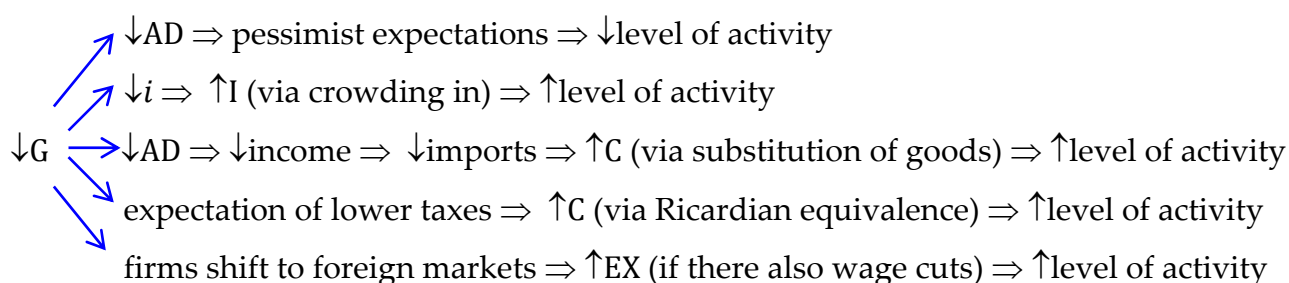
To sum up, even if fiscal austerity reduces GDP in the short-run (mandated social spending may increase and tax revenues decrease when economic activity declines), it is argued that long-term positive effects outweigh short-term negative effects. Hence, in the end, an initial contractionary measure economically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

Example 16.2. Two apparent expansionary fiscal contractions: Denmark 1983-86 and Ireland 1987-89. In 1982, the new government of Denmark began a fiscal austerity programme which lowered the budget deficit by 15% of GDP in four years. Real GDP averaged a 3.6% growth rate from 1983 to 1986. In 1987, the new government in Ireland launched an austerity programme that brought down the deficit by 7% of GDP. After this fiscal retrenchment, Ireland experienced the 'Irish miracle', as the economy started growing at high growth rates.

Examples like Denmark and Ireland notwithstanding, successful expansionary consolidations are the exception, not the rule (see Robert Boyer (2012): "The four fallacies of contemporary austerity policies: the lost Keynesian legacy", Cambridge Journal of Economics 36, 283-312).

Example 16.3. The new 'German miracle' in the early 2000s has been considered a strategy to be emulated to implement successful expansionary fiscal contractions: wage moderation, welfare reforms (including lower compensation for unemployment), and countercyclical tax policy to sustain an export-led growth model. But this strategy forgets the fallacy of composition effect that the trade surplus of an economy requires the trade deficit of others. The German experience was successful because its trade partners had growing domestic demands that made room for German exports: The German fiscal contraction worked because the rest did not launch austerity programmes.

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 indicated next.



In view of the above, whether austerity measures stimulate economic activity is a matter of empirical analysis: there are channels contracting activity (direct spending reduction and creation of adverse expectations) and others that potentially expand 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, with persistence in wrong policies multiplying problems and the harm done.

17. 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 government budget constraint implies that the change in the government debt in period t equals the government budget deficit in period t . That is,

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

(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,

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

change in the
real interest rate
initial debt-to-
primary deficit-
debt-to-GDP ratio
minus GDP growth
GDP ratio
to-GDP ratio

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).

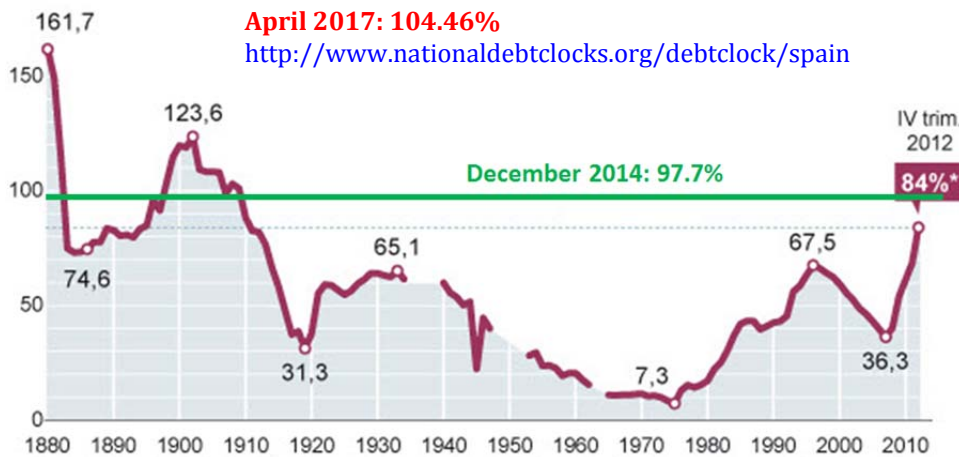


Fig. 7. Spain's debt-to-GDP ratio

<http://www.zerohedge.com/news/2013-02-18/chart-day-spanish-debt> | <http://www.datosmacro.com/deuda/espana>

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 $\frac{PD_t}{Y_t}$.

High $\frac{B}{Y} \Rightarrow \uparrow$ default risk $\Rightarrow \uparrow i \Rightarrow \uparrow r \Rightarrow \downarrow AD \Rightarrow \downarrow Y \Rightarrow \downarrow g \Rightarrow$ need to $\downarrow \frac{PD}{Y} \Rightarrow$ fiscal austerity $\Rightarrow \downarrow AD \Rightarrow \downarrow Y \Rightarrow \downarrow g \Rightarrow \uparrow$ default risk $\Rightarrow i \Rightarrow \uparrow r \Rightarrow \dots$ debt-to-GDP ratio harder to lower and more likely a debt explosion is.

18. 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*.

- Crowding out, less investment, less production, 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 (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.

19. Automatic stabilizers and destabilizers

Definition 19.1. 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.

Example 19.2. 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.

Example 19.3. 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 fund, propping up aggregate demand.

Example 19.4. 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.

20. Neo-liberalism

Definition 20.1. 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; 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.

21. The Swan diagram

Definition 21.1 (informal). The internal balance of an economy requires full employment of resources (sufficiently low unemployment rate) and price stability (low and stable inflation rate): not too much unemployment, not too much inflation.

Definition 21.2. External balance corresponds to a balanced current account (the supply and demand for the domestic currency are balanced). For simplicity, external balance is defined as zero trade balance.

Internal balance and external balance both are assumed to depend on two variables: domestic expenditures and the real exchange rate. Domestic expenditure is given by sum of the components C (consumption), I (investment), and G (government purchases) of aggregate demand. The remaining component, NX (net exports), depends on competitiveness, which is measured by the real exchange rate.

Definition 21.3. The IB function (drawn in Fig. 8) consists of those combinations of domestic demand and real exchange rate that lead the economy to the internal balance.

The IB function is assumed increasing for the following reason. Let the economy be initially at a point, like point *a* in Fig. 8, where the internal balance condition holds (the economy has the "right" amount of unemployment and inflation). If a real appreciation occurs (the real exchange rate increases), then imports rise and exports fall. That is, there is a switch in demand from domestic to foreign goods. As a result, unemployment goes up and the economy moves from point *a* to *b*. To restore internal balance by reaching point *c*, unemployment must be eliminated. This requires an increase in domestic expenditure.

If follows from the previous analysis that points above the IB function (excessive expenditure abroad) imply the existence of unemployment. Below the IB function failure of internal balance is not due to unemployment but to inflation; see Fig. 9. For instance, at point *d* in Fig. 8, given the corresponding real exchange rate e'_r , domestic expenditure is excessive with respect to the level D_a required to reach internal balance. This excess of domestic expenditure manifests itself in the form of inflation.

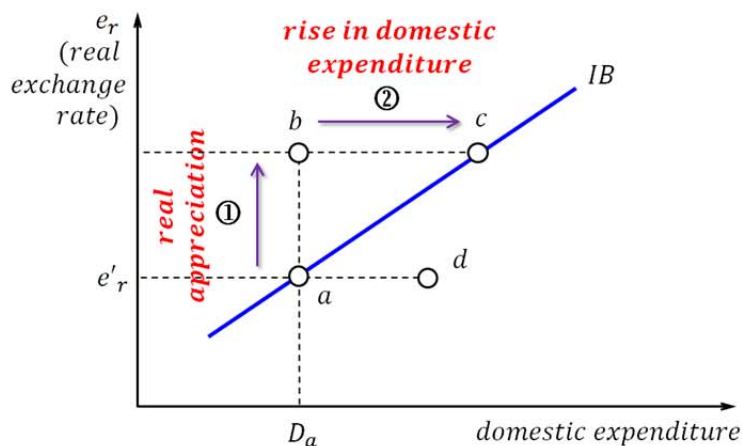


Fig. 8. The internal balance function IB

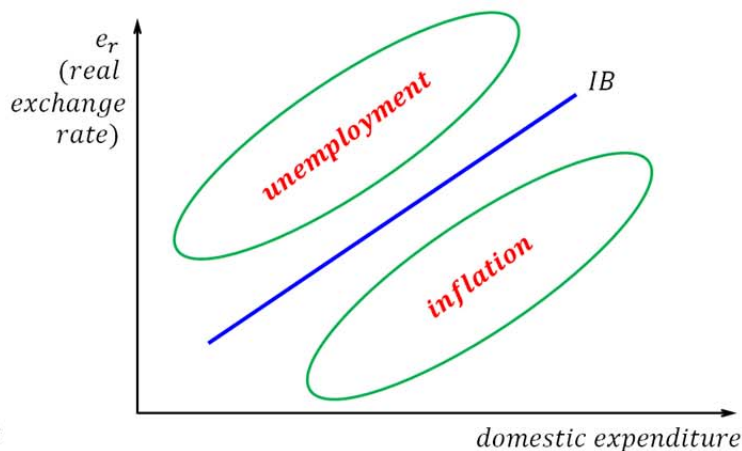


Fig. 9. What occurs outside the IB function

Definition 21.4. The EB function (drawn in Fig. 10) consists of those combinations of domestic demand and real exchange rate that lead the economy to the external balance.

The EB function is assumed decreasing for the following reason. Suppose the economy is initially at a point, like point *a* in Fig. 10, where the external balance condition (the trade balance is zero) is satisfied. If domestic expenditure increases, GDP and, consequently, income also increase. Part of this additional income is spent buying foreign goods and a trade deficit ensues. To restore external balance by reaching point *c*, the trade deficit must be neutralized. This requires a reduction of the real exchange rate: a real depreciation (an improvement of competitiveness)

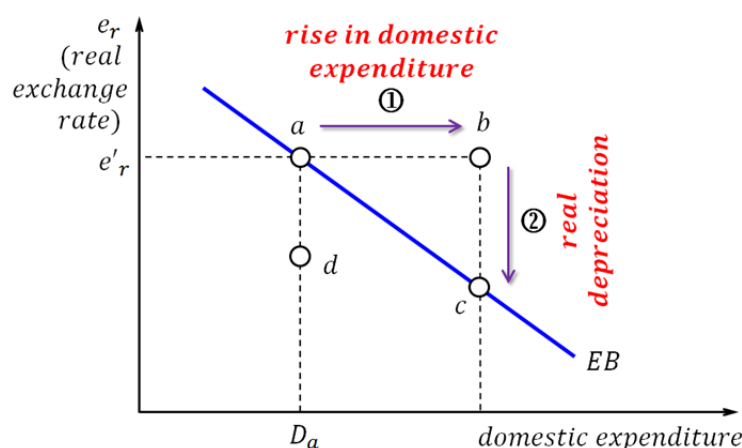


Fig. 10. The external balance function EB

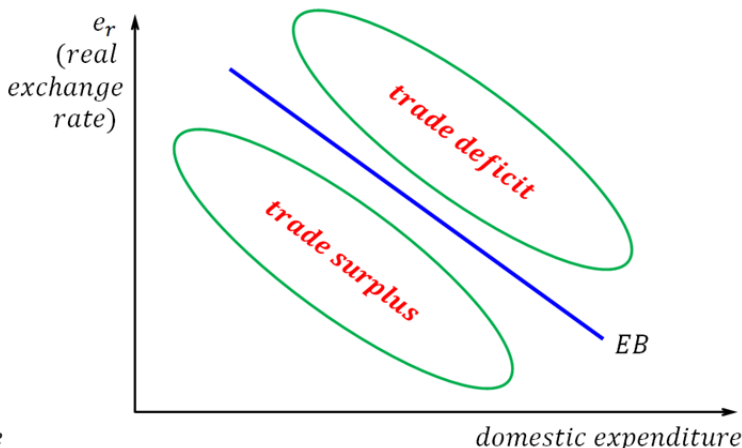
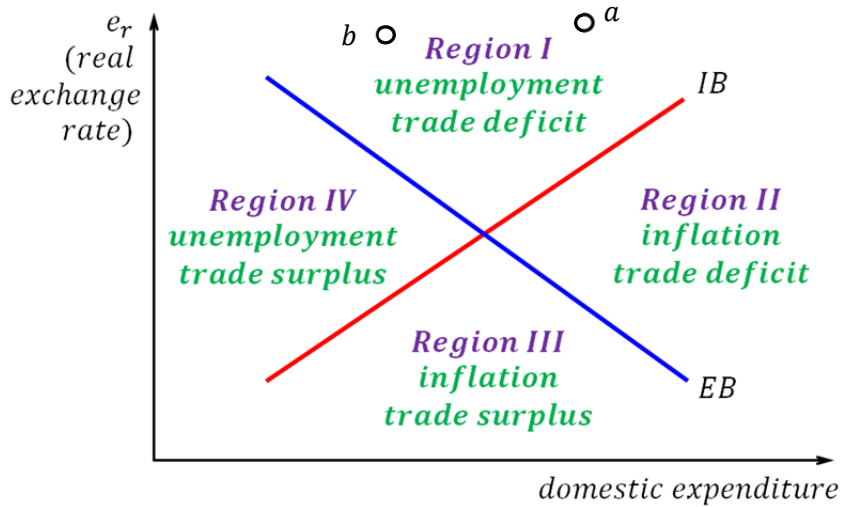


Fig. 11. What occurs outside the EB function

If follows from the previous analysis that points above the EB function (excessive domestic expenditure) generate a trade deficit. Below the EB function failure of external balance is not due to a trade deficit but to trade surplus; see Fig. 11. For instance, at point *d* in Fig. 10, given the corresponding level D_a of domestic expenditure, the real exchange rate is smaller than the value e'_r required to reach external balance with D_a . That is, the economy is “too competitive” and therefore runs a trade surplus.

Definition 21.5. The Swan diagram (due to Trevor W. Swan) combines the IB and EB functions (see Fig. 12) to identify the real exchange rate level and the amount of domestic expenditure that allows the economy to simultaneously reach its internal and external balances.



The Swan diagram separates the plane into four regions. In region I, there is unemployment and trade deficit (Spain, Egypt, Poland). In region II, inflation coexists with a trade deficit (Brazil, Turkey, Colombia, Morocco). In region III, there is inflation and a trade surplus (China, Russia, Korea). In region IV, there is unemployment and a trade surplus (Hungary, Slovakia).

Fig. 12. The Swan diagram

Though the Swan diagram may lack precision (how is internal balance unambiguously defined?), it is useful to illustrate some points. Firstly, it shows that a way to solve a problem may worsen another problem, so policies must take into account their full effects not just the desired or intended ones.

Example 21.6. Suppose the economy is in point *a* of Region I in Fig. 12. At *a*, the economy suffers from excessive unemployment. It may appear that more expenditure is needed to reduce unemployment. Yet, the diagram suggests that the unemployment problem is not solved by changing expenditure (increasing it) but by shifting expenditure. To reach the intersection of lines IB and EB, domestic expenditure must fall and net exports rise (through depreciation). If only the unemployment problem is attacked by boosting domestic expenditure, internal balance could be reached at a price: the trade deficit worsens.

Indeed, in an economy that lies in Region I in Fig. 12 moves horizontally towards the IB function (by increasing domestic expenditure) to solve the unemployment problem, the consequence is that the economy moves away from the EB function (the trade deficit worsens, as more expenditure lead to more income and more income boosts imports).

Secondly, the Swan diagram alerts against the orthodox principle “one size fits all”, according to which solutions to macroeconomic problems need not take into account particular features of the economy suffering from those problems. That is, the principle maintains that if it works once, it works always.

Example 21.7. Suppose two economies are in Region I in Fig. 12, one situated on point *a* and the other on point *b*. If both economies want to meet the conditions of internal and external balance, it is plain that both should reduce the real exchange rate (become more competitive to reduce the trade deficit). But, to reach internal balance, the economy on *b* should expand domestic expenditure, whereas the economy on *a* should contract domestic expenditure. Consequently, there is not a single recommendation for both economies to attain internal and external balance.

Remark 21.7. The Swan diagram would also illustrate how to assign policies (fiscal policy and the exchange rate policy, for instance) to reach each of the two policy goals, internal and external balance.

Definition 21.8. Robert Mundell's principle of effective market classification: "Policies should be paired with the objectives on which they have the most influence".

"In countries where employment and balance-of-payments policies are restricted to monetary and fiscal instruments, monetary policy should be reserved for attaining the desired level of the balance of payments and fiscal policy for preserving internal stability. The opposite system would lead to a progressively worsening unemployment and balance-of-payments situation"

<http://robertmundell.net/major-works/the-appropriate-use-of-monetary-and-fiscal-policy-for-internal-and-external-stability>

22. Policies under profit-led and wage-led economies

Orthodox macroeconomic models put more emphasis on the supply side of the economy and presume that demand follows supply. In this regard, it is customary in orthodox analysis to treat wages as just a cost of production and neglect that wages are also a source of demand.

Definition 22.1. An aggregate demand regime is wage-led when a rise in the wage share (or a fall in the profit share) increases aggregate demand.

Demand is wage-led if the increase in consumption resulting from a rise in the real wage (or a rise in the wage share or a fall in the profit share) more than compensates the reduction in private investment and exports caused by a higher real wage. Conversely, the decrease in consumption resulting from a fall in the real wage exceeds the increase in private investment and exports that may follow a lower real wage.

Definition 22.2. An aggregate demand regime is profit-led when a rise in the profit share (or a reduction in the wage share) increases aggregate demand.

Demand is profit-led if the reduction in consumption resulting from a fall in the real wage (or a fall in the wage share or a rise in the profit share) is more than compensated by an increase in private investment and exports derived from a lower real wage. Conversely, the increase in consumption resulting from a rise in the real wage does not compensate the presumed contraction in private investment and exports derived from a higher real wage. It follows from Definitions 22.1 and 22.2 that:

- an increase in the wage share expands aggregate demand if the demand regime is wage-led;
- an increase in the wage share contracts aggregate demand if the demand regime is profit-led;
- an increase in the profit share expands aggregate demand if the demand regime is profit-led;
- an increase in the profit share contracts aggregate demand if the demand regime is wage-led.

The four components of aggregate demand are private consumption expenditure C , private investment expenditure I , government expenditure G , and net exports (NX , exports minus imports). The domestic components of aggregate demand are C , I , and G . Since G can be considered essentially as exogenous, to determine the domestic demand regime it is enough to assess how a change in income distribution affects C and I . The orthodox presumption is that income distribution plays no role in establishing aggregate demand, since the proportion of income that is consumed (the propensity to consume) out of wages is supposed to be the same as the proportion consumed out of profits.

Empirical evidence suggests that the propensity to consume (save) out of profits is smaller (higher) than the propensity to consume (save) out of wages. In this case, a shift in income distribution towards wages will increase consumption. But is this favourable effect on aggregate demand overturned by the negative impact of a higher wage rate on private investment?

- **View 1** (Michael Kalecki). An increase in the wage share is not detrimental to investment because investment depends on expected profitability, which to a great extent depends on realized profitability (sales). Investment is seen as the result of an accelerator effect: the multiplier effect ($\uparrow I \Rightarrow \uparrow AD \Rightarrow \uparrow Y$) is reinforced by the accelerator effect $\uparrow Y \Rightarrow \uparrow I$ arising from the fact that an expanding economy stimulates further investment (as previous investment proved to be profitable).

- **View 2** (Marxists). Expected profitability is a function of the profit share in aggregate income or, more precisely, of the profit rate firms expect to obtain from its productive capacity under normal circumstances. With everything else given, higher real wages are paid off the profit margin. As a result, a higher real wage lowers profitability and this reduces investment.

Under View 1, the domestic demand regime is wage-led: an increase in the wage share also increases aggregate consumption and investment. Under View 2, the domestic demand regime could be profit-led: an increase in the wage share would reduce the sum of aggregate consumption and investment whenever the change in consumption is smaller than the change in investment.

	<u>Effects of national increase in profit share on:</u>					<u>Effect of worldwide increase in profit share on aggregate demand</u>
	C/Y	I/Y	NX/Y	private excess demand/Y	aggregate demand	
	A	B	C	D (A+B+C)	E	
Euro area-12	-0.439	0.299	0.057	-0.084	-0.133	-0.245
Germany	-0.501	0.376	0.096	-0.029	-0.031	-
France	-0.305	0.088	0.198	-0.020	-0.027	-
Italy	-0.356	0.130	0.126	-0.100	-0.173	-
United Kingdom	-0.303	0.120	0.158	-0.025	-0.030	-0.214
United States	-0.426	0.000	0.037	-0.388	-0.808	-0.921
Japan	-0.353	0.284	0.055	-0.014	-0.034	-0.179
Canada	-0.326	0.182	0.266	0.122	0.148	-0.269
Australia	-0.256	0.174	0.272	0.190	0.268	0.172
Turkey	-0.491	0.000	0.283	-0.208	-0.459	-0.717
Mexico	-0.438	0.153	0.381	0.096	0.106	-0.111
Korea, Rep. of	-0.422	0.000	0.359	-0.063	-0.115	-0.864
Argentina	-0.153	0.015	0.192	0.054	0.075	-0.103
China	-0.412	0.000	1.986	1.574	1.932	1.115
India	-0.291	0.000	0.310	0.018	0.040	-0.027
South Africa	-0.145	0.129	0.506	0.490	0.729	0.390

To establish the total demand regime the effect on net exports of a change in the wage share should be determined. With constant export prices, a wage raise may render some exports unprofitable; and if a raise in export prices accompany the wage raise, some exports may turn uncompetitive. In sum, an increase in the wage share is detrimental to exports and net exports (as a wage share raise promotes imports). The table on the left (M. Lavoie and E. Stockhammer (2013): *Wage-led growth*, p. 31) provides evidence of demand regimes.

The world economy a closed economy. Thus, while an economy can expand demand by exporting more, it is not possible that all economies expand their demands by exporting more. If an economy enjoys a profit-led demand regime, a wage restraint will have an expansive effect on aggregate demand. But if all economies restrain wages, the total effect on demand could be regressive, leading to a world-wide recession. Conversely, if wages are increased (or taxes on wages are reduced) in all economies, even if some of them have profit-led demand

regimes, the world effect on demand could be positive if the domestic demand of the profit-led ones is wage-led. Recent empirical studies indicate that the world economy appears to be wage-led.

Remark 22.3. Empirical evidence suggests that the demand regime of most European countries (Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Spain, Sweden, United Kingdom) is wage-led. The demand regime of Japan and the United States appears to be profit-led.

Definition 22.4 (informal). An economy is profit-led (or the economy is in a profit-led economic regime) if a shift towards profits has a favourable effect on the economy. An economy is wage-led (the economy is in a wage-led economic regime) if a shift towards wages has a favourable effect on the economy.

A wage-led economy poses a serious challenge to orthodox economics. This “wisdom” recommends austerity policies (which, in requiring a reduction of public expenditure, adversely affect the recipients of the lowest wages) and “structural reforms” (euphemism for “wage cuts”). The application of those measures in a wage-led economy has a negative impact on economic activity. This negative impact worsens the budget deficit (so governments are told to deepen and pursue further austerity policies) and renews the call for more structural reforms (inasmuch as wage reduction are deemed insufficient). The result is a devilish spiral of austerity policies, structural reforms, and contraction of economic activity, as seen in recent years in Spain. The obvious alternative to the orthodox medicine in a wage-led economy is to implement a wage-led growth strategy. This strategy will be even more successful if coordinated internationally, given that the world economy is most likely to be wage-led.

Definition 22.5. A pro-capital distributional policy is a policy that reduces the wage share in aggregate income. A pro-labour distributional policy is one that result in an increase in the wage share.

“Pro-capital distributional policies (...) include measures that weaken collective bargaining institutions (by granting exceptions to bargaining coverage), labour unions (for example, by changing strike laws) and employment protection legislation, as well as measures (or lack of measures) that lead to lower minimum wages. There are also measures that alter the secondary income distribution in favour of profits and the rich (...) Ultimately, pro-capital policies impose wage moderation. Pro-labour policies, in contrast, are often referred to as policies that strengthen the welfare state, labour market institutions, labour unions, and the ability to engage in collective bargaining (...). All else being equal, with a pro-labour distributional policy, the wage share will remain constant or will increase over the long run, as real wages grow in line with labour productivity or exceed productivity. By contrast, in the case of a pro-capital distributional policy, real wages will not grow as fast as labour productivity.” Marc Lavoie; Engelbert Stockhammer (2013): *Wage-led Growth: Concept, Theories and Policies*, chapter 1

		Distributional policies and strategies	
		Pro-capital	Pro-labour
Economic regime	Profit-led	‘Neoliberalism in theory’ Trickle-down capitalism	‘Doomed social reforms’ (TINA)
	Wage-led	‘Neoliberalism in practice’ – Unstable, has to rely on exogenous growth drivers (debt-led growth or export-led growth)	Social Keynesianism Post-war Golden Age

Fig. 13. Economic regime, pro-capital policies, and pro-labour policies, *Wage-led Growth*, p. 20

Fig. 13 identifies the four scenarios that arise from the combination of economic regimes (profit-led or wage-led) with redistribution policies (pro-capital or pro-labour).

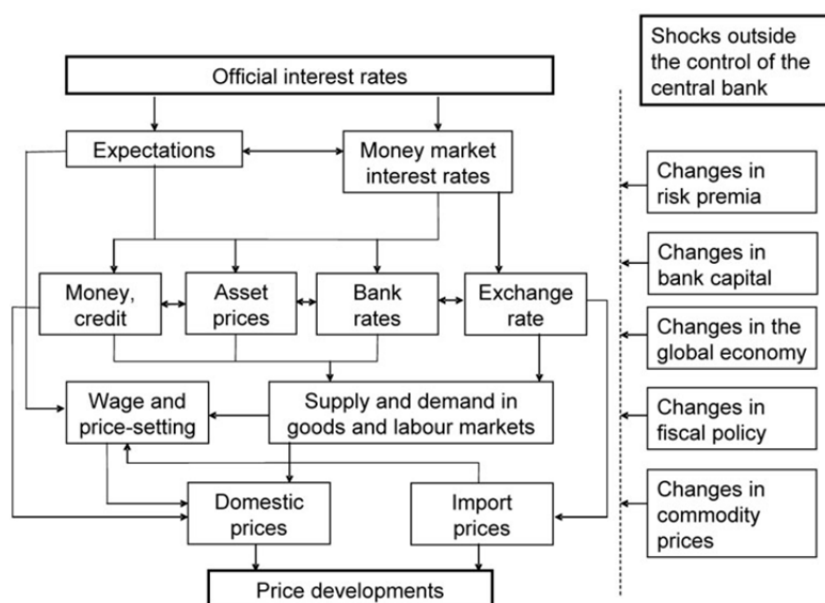
- Pro-capital policies in a profit-led economy lead to a profit-led growth process. This scenario is associated with trickle-down economics, as policies that favour entrepreneurs are presumed to lead to an expansion, with workers eventually benefiting from wage cuts as higher profit margins induce entrepreneurs to increase productive capacity and more employment.
- Pro-labour policies in a wage-led economy lead to a wage-led growth process. This scenario seems to characterize the interval 1945-1970s: the expansion of the welfare state in advanced economies led to an age of growth with rising real wages and labour productivity that benefited workers and entrepreneurs.
- Pro-labour policies in a profit-led economy generate stagnation or unstable growth. In this context, social reforms are doomed to fail. This is the situation that neoliberals presume that occurs when progressive social reforms are implemented and would correspond to the 'there is no alternative' (TINA) scenario: it is futile to try to conduct policies favouring workers because they are inconsistent with the nature of the economic regime and will eventually have to be abandoned.
- Pro-capital policies in a wage-led economy generate stagnation or unstable growth. This is described as "neoliberalism in practice" insofar as a couple of decades of pro-capital policies (1980s-2000s) has resulted in more inequality and disappointing economic growth in comparison with the 1945-1970s period. Pro-capital policies have been complemented by an excessive reliance on the financial sector (debt-led growth) and/or on foreign demand (export-led growth). Such a reliance has produced economic and financial instability.

23. Monetary policy design

Monetary policy can be summarized by the following sketch.

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

Definition 23.1. 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.



Definition 23.2. 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 $M1$...

Definition 23.3. 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 [desired target] and can be affected in a predictable way by the intermediate targets.

Fig. 14. Transmission mechanism from interest rates to price

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

24. Transmission mechanism from interest rates to prices

There are at least four main channels through which monetary policy affects the price level

Definition 24.1. 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 π , which seems reasonable since the prices of financial assets change typically faster than the prices of goods).

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

Definition 24.2. 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.

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

Definition 24.3. 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 ($\uparrow i \Rightarrow \downarrow$ price of shares).

Definition 24.4. 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.

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

25. Classical dichotomy

Definition 25.1. 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 π .

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.

Definition 25.2. 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).

26. Monetarism and quantity equation

Definition 26.1. 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.

Definition 26.2. 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. 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).

Heterodox economists question that inflation is 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”.

27. Monetization of budget deficits and central bank independence

Definition 27.1. 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.

Example 27.2. 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 $6.5 \times 10^{1080}\%$ (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.

The following summarizes the orthodox reasons to defend the independence of the central bank from the government.

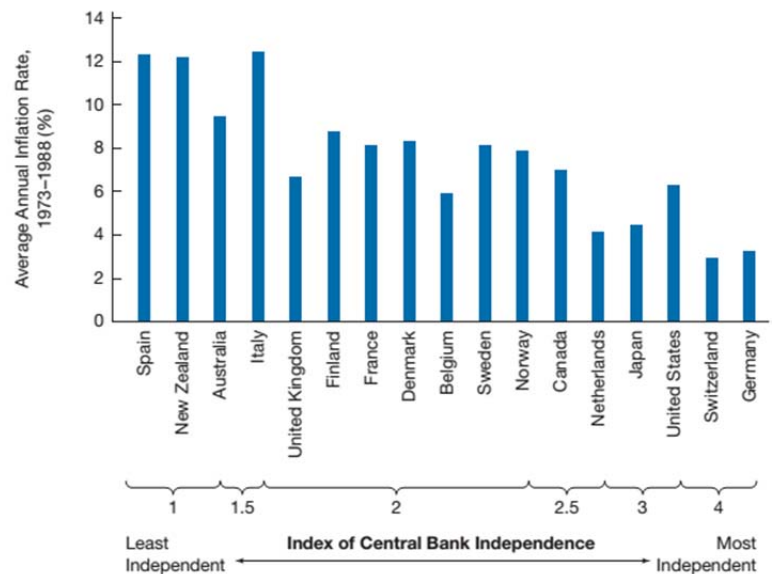
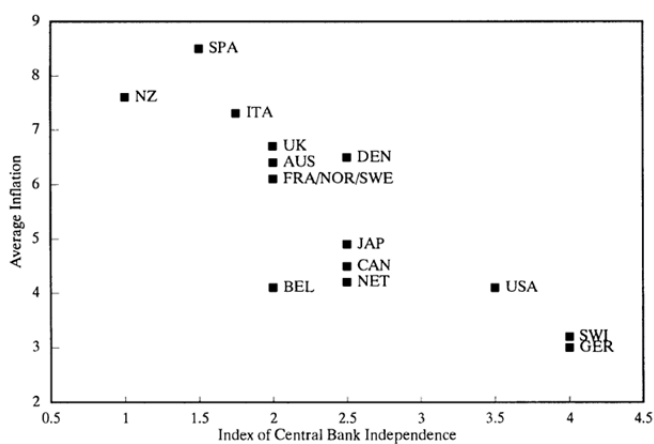
“The central banker’s task is to provide the monetary and credit conditions that achieve the ideal balance between accommodating economic expansion and engendering inflation or deflation. [...] Why do we have independent central banks? To provide a barrier between government and the money supply. Why 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>

Figs. 15 and 16 show empirical evidence typically provided in support of the claim that independent central bank achieve greater price stability.

Remark 27.3. Costs of inflation. (i) 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. (ii) Inflation as a tax. A rising inflation reduces the purchasing power of money (is like losing money). (iii) Inflation implicitly redistributes wealth from lenders (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.



Figs. 15 and 16. Central bank independence and inflation performance

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

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

28. A policy dilemma of 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).]