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Modern Monetary Theory: a critical assessment

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*Ai miei genitori Nanni e Marta, il cui
amore incondizionato mi ha
permesso di raggiungere questo
obiettivo.*

*A mia sorella Elisa, complice con cui
ho potuto condividere “gioie e
dolori” del nostro percorso
universitario*

A Mauro, cuore nel mio cuore

*Esprimo i miei più sentiti
ringraziamenti alla
Professoressa A. P. Florio, che
mi ha trasmesso la passione
per la sua materia.
La ringrazio per la dedizione
con cui mi ha seguita nella
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mi ha permesso di raggiungere
quello che era il mio obiettivo:
leggere i giornali e capire gli
articoli di economia!*

Abstract

The primary purpose of this dissertation consists in an in-depth study and analysis of the concepts of the Modern Monetary Theory. In fact, despite a large debate, the Theory is still very fragmented and this work represents an attempt to put together, in a single document, the several contributions on the topic.

The Theory, already summarised in seven pillars, has been critically examined in order to evaluate the applicability and potentiality in dealing with current economic and financial issues, such as the increased public debt and the resulting economic costs borne by the State and the citizens, fiscal prudence, interaction and coordination between fiscal and monetary institutions, the slow recovery after the Great Financial Crisis.

Key words: Modern Monetary Theory, fiscal dominance, monetary-fiscal interactions

Abstract

Lo scopo principale di questa tesi consiste nello studio e nell'analisi approfonditi dei concetti della Modern Monetary Theory. Seppur molto dibattuta, la Teoria risulta essere ancora molto frammentata; questo lavoro rappresenta un tentativo di riunire i diversi contributi sull'argomento, in un unico documento.

La Teoria, già schematizzata in sette punti, è stata esaminata con spirito critico al fine di valutarne l'applicabilità e le potenzialità che potrebbe fornire per affrontare le odierne questioni economiche e finanziarie, quali il debito pubblico elevato e le conseguenti ricadute in termini economici a carico dello Stato e dei cittadini, la prudenza fiscale, l'interazione e il coordinamento tra le istituzioni fiscali e monetaria, la lenta ripresa dopo la Grande Crisi Finanziaria.

Parole chiave: Modern Monetary Theory, dominanza fiscale, interazioni fiscali e monetarie

General Index

Introduction	p. 01
Chapter 1: The Modern Monetary Theory	p. 06
1.1 Origins.....	p. 07
<i>1.1.1 Chartalism</i>	p. 07
<i>1.1.2 Functional Finance</i>	p. 09
1.2 MMT pillars.....	p. 12
<i>1.2.1 The Monetary System</i>	p. 12
<i>1.2.2 The interaction between central bank, Treasury and financial system: taxes collection and government borrowings</i>	p. 15
<i>1.2.3 Newly created money is the only source of all government finance</i>	p. 18
<i>1.2.4 Public debt and natural interest rate</i>	p. 19
<i>Box 1: The Keynesian Income-Expenditures Model and Fiscal Policy Multipliers</i>	p. 23
<i>Box 2: The IS-LM model</i>	p. 29
<i>1.2.5 The rejection of the IS-LM model</i>	p. 34
1.3 Conclusions.....	p. 36
Chapter 2: Krugman’s critiques against IS-LM model rejection	p. 37
2.1 Krugman critiques towards MMT.....	p. 37
2.2 MMT and IS-LM model reconciliation.....	p. 39
Chapter 3: A critique of the MMT thought the Jones and Llewlyn (2019)’s pillar	p. 41
3.1 “A government that creates its own money generally need not, and will not, default on debt denominated in its own currency”.....	p. 42

3.1.1	<i>Chartalism and value of money</i>	p. 42
3.1.2	<i>Central bank independence rejection</i>	p. 44
3.1.2.1	<i>Central banks independence and maintenance</i>	p. 44
	<i>Box 3: A clarifier example: the independence and maintenance of the Bank of Italy</i>	p. 46
3.1.2.2	<i>Central bank independence and empirical evidence</i>	p. 48
3.1.3	<i>Monetary sovereignty and the European Union framework</i>	p. 50
	<i>Box 4: The History of the European Union</i>	p. 51
3.1.3.1	<i>European economic policies and the budget</i>	p. 54
3.1.3.2	<i>The monetary union and the creation of the common currency</i>	p. 57
3.1.3.3	<i>Optimal currency area and convergence parameters</i>	p. 59
3.1.3.4	<i>Stability and Growth Pact</i>	p. 63
3.1.3.5	<i>The Fiscal compact</i>	p. 65
3.1.3.6	<i>Conclusions</i>	p. 66
3.2	“A government deficit is necessarily mirrored by an equivalent private sector surplus”.....	p. 67
3.3	“Monetary policy is relatively ineffective in a slump: fiscal policy is more powerful”.....	p. 70
	<i>Box 5: Zero Lower Bound and Liquidity Trap</i>	p. 71
	<i>Box 6: A mix of political economy</i>	p. 72
3.3.1	<i>Ricardian equivalence: how government borrowing affects private savings</i>	p. 74
3.3.2	<i>Monetary/fiscal interactions: Leeper (1991) ’s taxonomy</i>	p. 77
3.3.2.1	<i>The Taylor rule</i>	p. 81
3.3.2.2	<i>The Fiscal rule</i>	p. 83
3.3.3	<i>The Modern Monetary Theory and Mainstream Macroeconomics</i>	p. 84
3.4	“A government can buy goods and services without the need to collect taxes and issue debt”.....	p. 88
	<i>Box 7: The business cycle</i>	p. 88

<i>Box 8: Money issuance in the AD-AS model</i>	p. 89
3.5 “Government spending and money creation need be limited only to the extent that employment becomes ‘over-full’ and encourages inflation” and “Inflation, should it arise, can readily be controlled by higher taxation and bond issuance to remove excess liquidity”	p. 93
3.5.1 <i>Inflation management: taxes in the AD-AS model</i>	p. 93
3.5.2 <i>Inflation management: economic and political feasibility</i>	p. 94
3.6 “Through money creation, interest costs can be constrained. Indeed, a substantial and persistent budget deficit can be financed at low, if not near-zero, cost”	p. 97
3.6.1 <i>Public debt and low interest rates</i>	p. 98
3.6.2 <i>How low interest rates can hurt competition and the economy</i>	p. 101
3.6.3 <i>Low interest rates and financial stability implications</i>	p. 102
3.6.3.1 <i>Financial stability: focus on banks</i>	p. 103
3.6.3.2 <i>Financial stability: focus on insurance companies and pension funds (ICPFs)</i>	p. 104
Conclusions	p. 106
Notes	p. 109
Bibliography	p. 111

Figure Index

<i>Figure 1.1:</i> Equilibrium between aggregate demand and the level of output.....	p. 25
<i>Figure 1.2:</i> Graphical representation of the Keynesian multiplier.....	p. 26
<i>Figure 1.3:</i> Equilibrium in the IS-LM model.....	p. 32
<i>Figure 2.1:</i> Expansionary fiscal policy in correspondence of full employment.....	p. 38
<i>Figure 2.2:</i> MMT concepts represented in an IS-LM model configuration.....	p. 39
<i>Figure 3.1:</i> Expansionary fiscal policy in presence of horizontal LM curve.....	p. 71
<i>Figure 3.2:</i> Expansionary fiscal policy in liquidity trap condition.....	p. 72
<i>Figure 3.3:</i> Example of optimal policy mix.....	p. 73
<i>Figure 3.4:</i> The business cycle.....	p. 88
<i>Figure 3.5:</i> Short run equilibrium point in the AD-AS model.....	p. 90
<i>Figure 3.6:</i> AS curve in reality.....	p. 92
<i>Figure 3.7:</i> Expansionary policy over full employment.....	p. 94

Introduction

Modern Monetary Theory (MMT) is an un-conventional macroeconomic theory that is taking off in macroeconomic policy debates. It states that monetary sovereign countries can print all the money they need to finance their fiscal expenditures.

Despite the countless criticisms of the Modern Monetary Theory, it cannot be denied that it represents a “positive movement”, since it not only refuses existing economic models and policies but it also offers a structured alternative framework or set of policy prescriptions. The plus point, widely recognized also by the opponents, is the rejection of the idea that prosperity and social progress must be compromised with economic growth.

The main proponents are Scott Fullwiler, Stephanie Bell Kelton and L.Randall Wray. These authors developed an alternative approach to the monetary theory by integrating contributions from Knapp’s chartalism (1905), Lerner’s functional finance (1943, 1947), Minsky’s literature about money (1986) and Godley’s sectoral balance approach (1998).

The Theory has also been embraced and further developed by other authors, such as Bill Mitchell and Warren Mosler. In particular is curious to mention the historical episode linked to the Italian fiscal position in the 90s, which sanctioned Mosler’s epiphany (McAllister, 2013). *“In the early 1990s, when investors were afraid Italy would default, Mosler understood this wasn’t a possibility. His firm (Mosler Automotive) and his clients became the largest holders of Italian lira denominated bonds outside of Italy. Italy did not default and they made \$100 million in profits”* (Dsouza, 2019).

MMT literatures expanded especially in the years 2009-2015, after the Great Financial Crises had completely reshaped the economic and financial environment. Low interest rates began to be a normal rather than an exceptional event and the consequent Sovereign Debt Crises generated concern about fiscal prudence and high levels of public debt.

Today, the theory has been embraced by some politicians as a solution for financing large economic programs when the governments lack money. Interest rates continue to remain low, reflecting the MMT argument according to which the natural interest rate is zero. Inflation is also low, giving the theory a ground for application. Supporters and opponents are fighting a real battle to confirm the validity, on one side, and deny the correctness and the possible applicability, on the other side.

The aim of this dissertation consists in studying and analysing the Modern Monetary Theory, considering all the arguments and contributions that it embraces. In fact, although the literature, made of papers, articles, economic bloggers, contributions, etc., is quite vast, it is also very fragmented. In order to create an overview of the entire literature, it is necessary to go through the several thoughts and works produced by the different authors. This is mainly due to the fact that each author usually pays particular attention to one or more specific aspects of the theory, without addressing the overall big picture.

Therefore, in chapter 1 we analyse the origins of the theory, mainly reviewing Knapp's chartalism and Lerner's functional finance. The pillars of the theory are then studied: the monetary system is interpreted in terms of *operational realities*, meaning that monetary transactions are considered for their effect on the balance sheet of the actors involved in the transaction itself, with an accounting perspective. The interdependence between taxes, borrowing and financing is explained in terms of *reserves effect*, meaning that fiscal tools are considered for their impact on the central bank's reserves. This allows to define a new role for tax imposition and government debt, interpreted as monetary tools, used to avoid both inflation and unemployment. Consequently, newly created money turns out to be the only source of government finance, in a tax driven state currency concept: the state imposes a certain currency for economic transactions, asking tax payments in that precise currency.

Using, once again, the concept of reserve effect, it is explained why the natural interest rate is zero and the consequent rejection of a relationship between the interest rate and the level of aggregate demand (through investment). The result is a natural rejection of the IS-LM model.

After an in-depth study of the essence of the theory, the main arguments, including all the criticisms, will be investigated in order to understand if it actually offers some useful insights for a different institutional approach, able to cope with today's economic and financial issues. The answer turns out to be negative.

In chapter 2, the critical assessment starts with Krugman's critique towards MMT and Krugman/Bell debate around the IS-LM model. It will be shown that their disagreement arises due to different assumptions on central bank behaviour and on the relationship between the interest rate and private investments. Reverse engineering the MMT, Nick

Rowe (2011) provides an IS-LM configuration under which MMT works, in a kind of reconciliation attempt.

Chapter 3 is devoted to sum up the theory in seven pillars thanks to the contribution of Jones and Llewellyn (2019). Their work has been used in this dissertation to test the solidity and applicability of this theory, the very purpose of this thesis.

In section 3.1, the following MMT pillar, is contrasted: “*A government that creates its own money generally need not, and will not, default on debt denominated in its own currency*” (Jones and Llewellyn, 2019). In fact, this assertion implies a distorted concept and value of money: money must be considered as a medium of exchange, since even the chartalism poses the basis in the gold standard; this has nothing to do with tax payments.

The assertion also implies the refusal of central bank independence. The conditions leading to central bank independence and maintenance are illustrated, using the Italian case as a clarifier example. The empirical evidence from Alesina and Summers (1993) is used to show the positive relationships between the degree of central bank independence and the ability to manage inflation. Moreover, independence is revealed to be crucial to address the moral *hazard problem* and *conflicts of interests* that are very likely to arise in policy definition.

Finally, this statement reveals a kind of incompleteness of the theory, since it was developed considering the USA advantageous position in terms of monetary sovereignty, having, at least apparently, nothing interesting to offer to other institutional frameworks. Therefore, no solution is provided for the European Union, other than a disaggregation of the Union itself, which would allow the member states to recover their monetary sovereignty. Since I consider this suggestion a real “snub”, the final part of the section is dedicated to the European Union. The history that led to the creation of this institution is retraced, in order to assess what are the advantages and disadvantages of the membership. Bearing in mind that membership choice is the result of a cost-benefit analysis, I conclude advocating for a further integration, rather than a disaggregation of the Union.

Section 3.2 is used to prove that the following statement is wrong: “*A government deficit is necessarily mirrored by an equivalent private sector surplus*” (Jones and Llewellyn, 2019). This assertion is shown to be false, given the wrong interpretation that MMTers give to the term “net savings”. In fact, MMT defines $(S - I)$ as “net savings” forgetting that the traditional economic definition of net savings is “*net disposable income*”

less final consumption expenditures” (Roche, 2011). The true interpretation of the term $(S - I)$ is ‘financial savings net of domestic private real investments’, i.e. very far from representing private sector savings. In fact, two important sources of private savings are ignored: (1) the surplus of investments and (2) the market value of existing assets (since assets are valued only at book value). The metaphor of "Robinson Crusoe" economics (Murphy, 2010) is used to show that the private sector does not need a public deficit to save.

In section 3.3, the following statement is analysed: “*Monetary policy is relatively ineffective in a slump: fiscal policy is more powerful*” (Jones and Llewellyn, 2019); although this concept is true, it lays the foundations for limiting the applicability of the theory. In fact, in this section it is shown that the theory can be interpreted as a form of fiscal dominance.

The section starts with the description of the liquidity trap condition as explained in the textbooks. The interaction between monetary and fiscal policies is addressed, studying the Ricardian equivalence and the monetary-fiscal mixes as defined by Leeper (1991). Going through the orthodox macroeconomics explanations of the policy interaction, MMT will be defined as a form of active fiscal, passive monetary policy mix.

Thanks to the work of Jayadev and Mason (2018) it can be concluded that functional finance and orthodox policy do not diverge because of a different understanding of the economy but because of a different judgement around the optimal assignment of the two policy instruments to price and debt stability targets. The divergence comes from different view of the capacities of policy makers to reach their target and from a diverse opinion on what kinds of errors are most likely to be made from policy makers. The review of their work allows to affirm that a policy mix AF/PM, suggested by MMT, is preferable to push the economy out of a crisis, since a stimulus coming from the fiscal authority and accommodated by the monetary one is more effective.

However, once the economy is running, it is preferable to switch to an AM/PF mix, to avoid that governments, in absence of financial constraints (weather real or imagined), are tempted to move towards larger deficits, regardless of demand conditions.

In section 3.4, the following statement is considered: “*A government can buy goods and services without the need to collect taxes and issue debt*” (Jones and Llewellyn, 2019). This actually implies that the only source of government expenditures is newly

created money. Through the use of the AD-AS model it is shown that money issuance for public expenditures financing creates a further expansion that is very likely to generate inflation. In fact, inflation requires time to appear and politicians are very tempted to foster the economy, even in a condition of full employment, with a serious risk of triggering a dangerous inflationary process.

Once again, it is reiterated that MMT would be applicable as a temporary form of AF/PM policy when the economy is far from full employment.

In section 3.5, given their strong correlation, two pillars are studied together: *“Government spending and money creation need be limited only to the extent that employment becomes ‘over-full’ and encourages inflation”* and *“Inflation, should it arise, can readily be controlled by higher taxation and bond issuance to remove excess liquidity”* (Jones and Llewellyn, 2019). The AD-AS model is used to show that taxes are not the right tool to manage inflation; in fact, if the economic condition is characterised by full employment and the government spending is financed by printing money, taxes are needed twice since the manoeuvre is doubled expansionary, once fiscal, once monetary. The private sector would be subjected to negative repercussions, rather than benefiting from fiscal expansion. Moreover, it is demonstrated that tax imposition for inflation management is not politically viable since it is very unlikely that politicians will raise taxes in a period of high inflation when the public is already upset about the loss of purchasing power.

Finally, section 3.6 analyses the following statement: *“Through money creation, interest costs can be constrained. Indeed, a substantial and persistent budget deficit can be financed at low, if not near-zero, cost”* (Jones and Llewellyn, 2019). Despite the complete truthfulness of the concept expressed, also supported by Blanchard (2019), what MMT forgets is the analysis of the implications that permanent low interest rates generate. The effects that low interest rates create on competition and financial stability are addressed.

This dissertation ends with some conclusions, useful for summing up the main concepts this work has risen.

Chapter 1

The Modern Monetary Theory

The Modern Monetary Theory (MMT) is a non-conventional macroeconomic theory according to which monetary sovereign countries can print all the money they need to finance their fiscal expenditures; consequently, the government spending is not constrained by tax revenues and borrowings. The only limit the government faces is the availability of real resources, such as workers, raw materials, semi-finished goods, capital, etc. When government spending is too high in relation to the available resources, inflation can arise if decision-makers are not careful: an aggregate demand not matched by sufficient supply exerts pressure on prices.

MMT supporters challenge conventional beliefs about how the government interacts with the economy, the nature of money, the use of taxes and the importance of budget deficits. According to them, traditional beliefs are inherited from the gold standard era and are no longer accurate, useful or necessary.

Today, MMT is highly discussed in policy debates and factions are emerging; the main topic is whether the deficit matters or not. On one side, we have those who completely reject the theory. The BlackRock CEO Larry Fink called the MMT “garbage”; the Federal Reserve Chair Jerome Powell described it as “wrong”; the economists Larry Summer and Paul Krugman denounced it.

On the other side, we find those who consider this theory interesting; in particular, they agree on the major role that the Congress should play in managing the economy. According to Paul McCulley, former chief economist at Pacific Investment Management Co. (PIMCO), interest rate and budget policies should be distinct but cooperative. He argued: “*Congress is going to have to own the unemployment target and the inflation target..., but MMTers have difficulty dealing with the political reality of an independent Fed*” (Barret, 2019). In his opinion, running large budget deficits and supporting them with easy central-bank money is not a step toward hyperinflation.

Finally, there are those who strongly support the MMT, mainly left-wing politicians, like the Democrats Alexandria Ocasio-Cortez, since they consider this theory as a

solution to finance major projects such as the “Green New Deal” and “Medicare for All” in the US, for which governments claim not to have enough money.

The theory includes many aspects developed by several authors that reinterpret some key economic pillars and concepts with a new perspective.

1.1 Origins

1.1.1 Chartalism

The Modern Monetary Theory is rooted in the ideas of a small group of economists who have developed new insights around the *chartalism*. Georg Friedrich Knapp, a German economist, coined the term “*chartalism*” in his work *The State Theory of Money* (1905). According to his view, the value of money derives from its issuance by an institutional form of government rather than spontaneously through exchange relations. More recently, Stephanie Bell Kelton explained Knapp’s thinking in her paper *The hierarchy of money* (1998) as follows: “*The State determines the money of the economy by declaring what it will accept in payment to itself*” (Bell, 1998, p. 8).

The chartalism is opposite to the so called “*metallism*”, as embodied at that time in the gold standard, where the value of a unit of currency depended on the amount of precious metal it contained or could be exchanged for.

MMT takes from the chartalism the concept of money, whose creation is seen as a balance sheet operation. The economist Hyman Minsky was the first expressing this idea. According to him, money is generated when two parties enter into a creditor-debtor relationship: one party has to accept the debt of the other party. The created debt represents an asset for the creditor and a liability for the debtor. For this reason, “*the creation of money is simply the balance sheet operation that records this social relation*” (Bell, 1998, p. 1).

Bell (2001) explained how Minsky’s definition of money creation can be incorporated in the chartalist approach, while it is not consistent with the metallism.

In the metallist view, transactions are carried out by accepting precious metals, collectively agreed on as the means of exchange; this does not require the acceptance of the debt of another party.

Within the context of the chartalism, transactions are carried out by accepting state-money, whose value is publicly recognised given the trust in the institution which issues it; it can be used to extinguish debts with the state. Therefore, the creation of money can be seen as a two-sided balance sheet operation, where the public agrees to hold, as an asset, state-issued currency (a liability to the state) which is required in payment of taxes.

The crucial point here is that one party has to accept the other party's promise of debt. Minsky formulated the so-called *hierarchy of money* according to which money can be clustered according to the level at which it was created. The simplified hierarchy of money can be seen as a four levels pyramid in which the levels represent promises with "*differing degrees of acceptability*" (Foley, 1987).

The more relationships are created, the more the hierarchy increases in volume; the composition can also change, when lower level relationships are destroyed (the debt is extinguished), while new relationships at higher levels are created, and vice versa.

The differing degrees of acceptability of each level of the hierarchy depend on the actors involved in the relationships. Starting from the bottom of the hierarchy, there are: households, firms, banks and the State at the top; in case of a flexible exchange rate regime, the State coincides with the central bank.

A lower level means a lower acceptability, because there is at least one possibility that the agreement is not respected and the debt is not extinguished. Moreover, non-liquid assets, such as firms bonds, are subjected to default risk and interest rate risk, which make them more difficult to convert in liquid money.

As for commercial banks, their promises are backed by the possibility of being converted into debts at higher level, i.e. the level of the State. Finally, the promises of the State (State money) is not accepted because they can be converted into something else but because they can be used as payment of debts to the government itself.

Consequently, the hierarchy of money leads to the *hierarchy of debt*, since in order "*to get business and household debts accepted, they might be made convertible into the debt of someone higher in the pyramid*" (Bell, 2001, p. 159), until they reach the highest level of the pyramid, where money is actually built.

Let us assume a private agent requests a very large loan from him commercial bank. Usually, commercial banks do not keep vast big amounts of money in their coffers, since they are better employed in investment activities or are kept at the central bank (reserves

in the CB liabilities). Therefore, to finance its customer, the commercial bank can apply itself for a loan from another commercial bank or the central bank. Requiring the central bank implies that a loan (a debt) is registered on the assets side of its balance sheet, while the money is credited to the commercial bank through an increase in the “reserves” section of the liabilities (deposits of the commercial bank to the central bank). The creation of debt at a low level has been converted into debt contracted at a higher level.

Let us consider another example, in which the debt is destroyed: a firm has to pay its supplier for the provision of raw materials. They agree on a 30-days postponed payment, therefore, the suppliers will remain with the promise of payment that must be extinguished on the 30th day. At that point, the payment is carried out by accessing the firm’s deposits at its commercial bank: bearing in mind that customers’ deposits are liabilities for the commercial bank, when the firm withdraws or recovers money from its account to be accredited to another account, the debt of the commercial bank to the firm decreases. In this case, the extinction of a debt at lower level has resulted in the repayment of a debt at higher level.

Why do people make contracts in a specific currency, for example, in dollars in the US? Basically, dollars are accepted as currency because the State collects taxes in dollars (it has tax liabilities denominated in dollars). The dollars become the standard unit of account for the entire hierarchy and, since people have to pay taxes in dollars, they will stipulate contracts in dollars (Keynes, 1930; Lerner, 1947; Wray, 1997). In this particular example, the US government accepts its own liabilities (the national currency, dollars) as payment of debts to the government itself (fiscal liabilities for the private sector).

Some economists, like Scott Fullwiler, Stephanie Bell Kelton, L.Randall Wray, Warren Mosler and Bill Mitchell, took those aspects of the Minsky’s literature and, along with other contributions, developed the so-called *neo-chartalism*, which was later identified in the Modern Monetary Theory.

1.1.2 Functional Finance

The macroeconomic pillar of the Modern Monetary Theory (MMT) is represented by the *functional finance*, a fiscal theory mainly developed by the economist Abba P. Lerner. Lerner (1943) argued that all the fiscal policies (government spending and taxing, borrowing and lending, issuance of new money and withdrawal of money) should be

undertaken considering only the *results* of these actions on the economy. This consists in the selection of the measure that works in the right way in the specific context, with respect to *its functionality* in the economy. In this way, we are free from any established traditional doctrine about what is good or bad.

There are two main laws behind functional finance:

- The government must take a primary financial responsibility that consists in managing the amount of public expenditures, in terms of goods and services purchased, such that the aggregate demand is exactly equal to the aggregate supply (equilibrium in the goods market). In this way, it is possible to avoid both inflation (when the aggregate demand is greater than the equilibrium one) and unemployment (when the aggregate demand is lower).

In fact, if we are in a condition in which the aggregate demand is lower than the target, the government can intervene by increasing total spending: it can spend more on its own or it can reduce taxes (people remain with more money available to spend and the aggregate demand increases). Instead, if the current level of total spending is higher than the target, the government can spend less on its own or increase taxes, leaving people with limited money available for consumption.

The difference between what the government collects and what it spends is determined by the market, since it is the result of some actions taken with the aim of preventing both unemployment and inflation.

Consequently, taxation should not be thought as a way by which the government finances its spending, but just as a tool that the government manages in order to regulate the level of spending. In 2014, L. Randall Wray wrote:

“If we look at the United States today, the federal government spending is somewhat over 20% of GDP, while tax revenue is somewhat less - say 17%. The net injection coming from the federal government is thus about 3% of GDP. If we eliminate taxes (and held all else constant) the net injection might rise toward 20% of GDP. That is a huge increase of aggregate demand and could cause inflation.” (Wray, 2014)

The idea is to have countercyclical tax revenues that help to stabilise the economy: when a boom takes place, taxes must be higher to keep the demand under control, avoiding inflation; when crises arise, taxes must be reduced to foster consumption, avoiding the generation of unemployment. Wray concluded: *“Tax rates should be*

set so that the government's budgetary outcome (whether in deficit, balanced, or in surplus) is consistent with full employment" (Wray, 2014).

- *"The government should borrow money only if it is desirable for the public to keep less money and more government bonds"* (Lerner, 1943, p. 299). It is, therefore, clear that also the role of government borrowing is strongly reinterpreted: it is not a way to finance public spending, but a way to regulate the amount of money in the hands of the public. Consequently, the market interest rate will be an outcome of such operations (borrowing and lending) and not a policy variable imposed by the monetary authority. The interest rate will be the one that permits no employment and no inflation, so, *"the most desirable level of investment"* (Lerner, 1943, p. 300); it becomes a market variable, controlled by the government through its borrowing and lending activity.

In the presence of a boom and an increasing inflation, the government can borrow money through bonds-issuance: the public will remain with more assets and less liquidity available to spend; a higher interest rate is the natural outcome. On the opposite, in presence of a crisis, the government can stop issuing bonds, people will remain with less assets and more liquidity available to spend; the natural outcome is a lower interest rate.

Applying the principles of functional finance, we see that the tax collection and government borrowing are tools to keep the level of aggregate demand equal to the level of aggregate supply (at current prices). There is no place here for discussions on how the government finances itself. If the government needs to spend, it simply prints money. This cannot generate inflation because the printed money is used by the government to pay for the expenses allowing it to reach the target spending rate correspondent to the economic equilibrium.

Lerner makes some remarks on the public debt while considering the theory. A regulation of the amount of money in the hands of the public through government borrowings, could bring public debt to reach very large numbers; however, this does not create danger for society, since the resulting level of aggregate expenses allows reaching the proper level of total demand for current output, ensuring no inflation and no unemployment.

No issues are created even if, at a certain point, the public stops to finance government debt: people remain with money that can be saved or spent. If people save, the government can pay for the interests by printing money, and people remain with more liquidity and less assets. If people spend, they sustain the total spending rate and the government does not need to borrow for spending. Should the total spending rate rise above the desired level, the public would be taxed to prevent inflation; at this point, taxes could be used to repay the government debt: eventually, the budget automatically rebalances the in presence of functional finance.

1.2 MMT pillars

1.2.1 *The Monetary System*

Scott Fullwiler (2010), an enthusiastic MMTer, was one of the authors who started to consider the monetary system as a system of *operational realities*. This concept involves three points:

- The *accounting logic of real world transactions*. Any transaction in the real economy has an impact on the financial statement of those who are engaged and any economic theory or model has to respond to accounting mechanisms of the real world to be applicable.
- The *tactical logic for operations necessary to achieve particular, fundamental ends given a particular monetary regime*. It is (a) ‘general’ in the sense that the purpose is to consider a general monetary regime (currency issuer vs currency user, etc.) not specifically referring to any particular state; it is (b) ‘particularly concerned with a hierarchy of authority’ and, therefore, hierarchy of money, which means that different monetary regimes are placed at different levels within the hierarchy.
- *What is not possible given the accounting and tactical logic*. A good example is the money multiplier. The traditional money multiplier model assumes that central banks influence the amount of money in circulation available for transactions ($M = CUR + DEP$) managing the monetary base ($MB = CUR + RES$). A manoeuvre on the MB has an impact on M that is more than proportional, thanks

to the money multiplier: $M = mm * MB$. This assumes that the accounting and tactical logic of the monetary system is wrong.

To illustrate this concept, it is useful to provide an overview to the composition of the central bank's balance sheet. Some items refer to its role as government's bank; some others to its role as bank of commercial banks:

ASSETS	LIABILITIES
SECURITIES	CURRENCY
FOREIGN EXCHANGE RESERVES	GOVERNMENT DEPOSITS
-----	-----
LOANS	RESERVES OF COMMERCIAL BANKS

government's bank
banks' bank

Assuming, as previously mentioned, that a private agent asks his commercial bank to grant him a loan and that the commercial bank has to apply itself for a loan from the central bank to satisfy the customer, it is possible analyse how the balance sheets of the actors involved are affected:

CENTRAL BANK		COMMERCIAL BANK	
ASSETS	LIABILITIES	ASSETS	LIABILITIES
LOAN +1	RESERVES +1	RESERVES +1	LOAN +1
		LOAN +1	DEPOSIT +1
		RESERVES -1	DEPOSIT -1

The central bank grants the loan to the commercial bank, crediting its reserves. The commercial bank grants the loan to its customer, crediting its account (checkable deposits). When the customer withdraws the money, the deposits decrease as well as the commercial bank's reserves. The customer will employ the money for some expenses that will feed someone else's account at his commercial bank.

At this point, the traditional money multiplier model requires that this second commercial bank can lend the excess reserves. The process continues increasing the monetary base and, in turn, the money supply. Considering this logic as true is to assume that the possibility for banks to provide loans is constrained by the reserves they hold.

However, Fullwiler (2010) and Mitchell (2009) state with strong argumentation that the real world operates very differently. Banks are always able to provide loans, even in case of limited reserves: they can always finance themselves by applying for loans on the interbank market, or, if necessary, by turning to the central bank. The lending activity can continue as long as the margin between the lending rate and the borrowing rate is positive. Therefore, the reserve position does not affect the lending activity itself, but rather the interest rate at which loans can be provided or, possibly, the loan's return.

By analysing the real-world-transactions in terms of operational realities, the result is that central banks in a flexible exchange rate regime can directly manage the amount of reserves when they impose the central bank's remuneration rate on reserves equal to the interbank market rate. In fact, being equal the return, banks will put their money in reserves, rather than in lending, since it is free of risk. In this very condition, the loan provision is influenced by the reserve position.

The concept of operational realities must also be applied in relationship to the Treasury actions. From this point of view, tax collection and government borrowings takes on a completely different meaning from the traditional and usually recognised one.

1.2.2 The interaction between central bank, treasury and financial system: tax collection and government borrowings

The optimal method for financing government spending is a controversial topic: some economists rely on the Ricardo-Barro thesis according to which the financing choice does not cause macroeconomic consequences, while the filo-Keynesian trend assumes supposes different economic effects, when it comes to choosing among borrowing, taxation or printing money.

Using the notion of operational realities, it is possible to understand how tax collection and bonds issuance have no relationships with the financing of government spending and this disruptive result can be understood by examining the reserve accounting. According to Stephanie Bell (1998) the effect of the choice of financing cannot be discussed if the impact of such operations on bank reserves is not taken into account. A new kind of interdependence between taxes, borrowings and deficit financing can be found and can be explained in terms of their “*reserves effect*”, precisely the effect that those operations produce on the central bank’s reserves.

Consequently, by analysing the interactions between the central bank and the Treasury in terms of operational realities, a new role for tax imposition and government debt is discovered. The main results related to the reserve effect of Treasury operations can be analysed in detail, as follows:

- “*Given the accounting logic of the Fed’s^{1.1} balance sheet, government spending creates reserve balances, taxes and bond sales destroy them*” (Fullwiler, 2010, reporting Bell’s view): this means that changes in the Treasury account’s, due to government expenses or revenue collection, have an impact on the central bank balance sheet, through the modification of the reserve balances. Moreover, Treasury operations also affect the institutions themselves that keep reserves with the commercial bank. This can be understood by using, again, the balance sheet of the actors involved.

When the government has to make a payment, the money flows pass from its account at the central bank to the reserves of the customer’s commercial bank at the central bank:

CENTRAL BANK		COMMERCIAL BANK	
ASSETS	LIABILITIES	ASSETS	LIABILITIES
	GOVERNMENT DEPOSITS - 1 RESERVES OF COMMERCIAL BANK +1	RESERVES +1	DEPOSIT +1

It can be observed that a reduction of the balances of the Treasury's account creates reserve balances and deposits of depository institutions.

At the same time, when citizens pay taxes, money shifts from customers' deposits to the Treasury's account at the central bank and reserves and deposits of depository institutions are drained:

COMMERCIAL BANK		CENTRAL BANK	
ASSETS	LIABILITIES	ASSETS	LIABILITIES
RESERVES - 1	DEPOSITS - 1		GOVERNMENT DEPOSITS +1 RESERVES OF COMMERCIAL BANK - 1

In this second case, it is important to highlight that the impact on reserves and deposits is the same, when it comes to taxation or government bonds purchasing. Both actions generate flows of funds from the depository institutions' account to the Treasury's.

- *“Given the tactical logic of the Fed’s operations to achieve an interest rate target, flows from/to the Treasury’s account must be offset”* (Fullwiler, 2010, reporting Bell’s view): we can define “federal funds *effective rate*” as the weighted average rate of the operations through which banks lend money to each other; it is,

basically, the interbank market rate and it is determined by the market. The effective funds rate is influenced by the Federal Reserve that manages the liquidity level on the market through *open market operations*, in order to reach the so called “federal funds *target rate*”, decided by the FOMC. In fact, if the market liquidity is too high (which means, according to the Fed, that the economy is running too fast and inflationary pressures may arise), the effective rate would be too distant from the target: the Fed can sell government bonds, the reserves are drained and the effective rate increases, aligning with the target.

Consequently, in order to keep the effective rate around the target, the flows affecting the Treasury’s account must be offset so that the level of reserve balances is consistent with the target rate.

- “*Consistent with the tactical logic of the Fed’s operations, calls/adds to/from the Treasury’s tax and loan system are universally understood to be monetary operations to minimise the influence of flows to/from the Treasury’s account on the Fed’s operations*” (Fullwiler, 2010, reporting Bell’s view): this point underlines the new meaning of tax and bonds sale. These operations turn out to be *monetary tools*, that the central bank can manage in order to keep the stability of its reserves. They are not under government control as fiscal instruments but they are used to avoid both inflation and unemployment.

Let us analyse how the central bank works to achieve these two goals: the government makes some payments and reserves balances and deposits in circulation increase; this could create inflation pressures. At this point, the central bank can raise taxes (or sell government bonds), reserve balances are reduced, liquidity is restored at a target level and the effective rate is re-aligned to the target.

From this example is very clear how taxation comes after government expenditures: taxes are the tools through which the government creates demand for the state currency and it has to, first, spend, to put the currency in circulation. Therefore, in case of state-issue currency in flexible exchange rate, the normal condition is that of the government deficit; it is known as “*tax driven state currency*” (Mitchell, 2015).

Summing up, taxes have three main roles: balancing the aggregate demand to avoid inflation, draining excess reserves to offset flows to the Treasury accounts

and creating the demand for the state currency. They do not finance government spending since their collection implies their destruction.

On the other hand, if the economy is not running very well, the government can spend without raising taxes. Reserve balances increase, the effective funds rate decreases and the economy is fostered and the no-unemployment mandate is met.

It is now very clear why the MMT considers a consolidated government sector, composed by the central bank and the Treasury, where fiscal policies are reinterpreted as monetary tools.

- *“Bonds sales are much like calls from the tax and loan accounts (monetary operations) since if the Treasury does not sell bonds, the Fed must do it to be able to hit its Fed funds rate target”* (Fullwiler, 2010): as mentioned before, in terms of reserves effect the increase in taxes or the sale of bond produce the same result. It is simply a matter of providing the private sector with an alternative to the non-interest-bearing government currency.

The essence of all these results is to recognise who sits at the top of the hierarchy of money for a given monetary regime. Since under the flexible exchange rate it is the government that issues the currency, the constraints built to limit its range of action are simply *self-imposed* and not operational.

For instance, the Fed can only purchase government bonds through open market operations, since it cannot lend directly to the Treasury. This constraint is self-imposed and does not change the operational function of the bond sale which is helping the central bank to achieve the target rate (with the caveat that interests on reserves balances equal to the target rate can potentially eliminate this necessity).

Given the new meaning and role that taxation and government borrowing take on, it is reasonable to wonder how the government can finance its own expenditures.

1.2.3 Newly created money is the only source of all government finance

It has been illustrated that changes in the total level of bank reserves cause changes in the federal funds rate (and, as a result, in other short-term interest rates) and taxation and

borrowing are monetary tools that the central bank can use to drain excess reserves when spending.

It has been also noticed that government spending comes before taxation, in the so-called “tax driven state currency”. By analysing in more depth this concept, it can be discovered that the source of government finance is newly created money.

The procedure is the following: government makes some public expenditure; it injects state issued currency in the economy, buying goods and services from the households and creating an income for them. When that the private sector has an income, it can be taxed for draining excess reserves, ensuring the funds target rate.

It is, then, clear that taxation has nothing to do with government financing; in order to spend, the government must, first, create new money to be injected in the system.

Fullwiler (2013) observed that the neoclassical perspective of the macroeconomic policy mix is probably both inapplicable and untenable; according to him, a non-Ricardian fiscal policy supported by a permanently low interest rate can be perfectly consistent with fiscal sustainability, full capacity utilisation and low inflation. Monetary policy should internalise in its own reaction function an appropriately designed functional finance fiscal policy strategy. He argued that debt unsustainability, claimed by traditional economists, comes from a non-Ricardian fiscal policy with central bank setting the interest rate on the national debt above GDP growth.

1.2.4 Public debt and natural interest rate

Bill Mitchell is another economist who is studying and divulging the MMT. He confirmed how public deficits do not require to be backed by debt-issuance for a monetary sovereign country, while deficits should be accompanied by monetary operations “*which we call Overt Monetary Financing (OMF)*” (Mitchell, 2015) or Helicopter Money.

“*The government just borrows its own spending back*” (Mitchell, 2015): this is the definition coined by the economist to explain the taxation and borrowing role, in line with the reserves effects that these two operations produce. He observed that without mechanisms to drain the excess of reserves, the interest rate would drop to zero; more precisely, he argued that “*the policy interest rate should be maintained at zero which*

means there is no need to have stocks of public debt in the hands of the non-government sector” (Mitchell, 2015).

He, basically, relied on the research of Warren Mosler and Mathew Forstater (2004), published in the paper “*The natural Rate of Interest is Zero*” (2004), where they analyse a general context characterized by:

- tax driven state currency: taxes are used from the government that issues a specific currency in order to create demand for the currency itself;
- flexible exchange rate regime: monetary regime in which “*a currency can be converted only into itself*” (Keynes, 1930).

They reached the result that in this type of context, the general budgetary condition is a budget deficit, since the government must, first of all, spend, and then raise taxes.

Since deficit spending adds reserves to the banking system, a deficit budgetary condition not backed by government bond issuance, would automatically lead to a 0% interest rate on reserves and on the interbank market. In fact, while excess reserve are continuously fed, banks do not need to borrow money on the interbank market and the rate is cut.

However, their argumentation went a step further: they pointed out that, considering the basic macroeconomics accounting identity, government budget deficit allows the non-government sector (both private and foreign) to have net saving in terms of state money:

$$G - T = (S - I) + (M - X)$$

$$\text{SPENDING} - \text{TAXES} = (\text{SAVING} - \text{INVESTMENT}) + (\text{IMPORT} - \text{EXPORT})$$

These differences represent the following aggregates:

$$\text{GOVERNMENT BUDGET DEFICIT} = \text{DOMESTIC PRIVATE SURPLUS} + \text{FOREIGN SECTOR SURPLUS}^{1,2}$$

Therefore, the government deficit is the optimal budget condition, as it becomes a source (not a use) of private savings. It is clear that MMT relationship between government budget deficit and private savings relies on Godley and McCarthy’s contribution about sectoral balances (1998).

It is also important to point out that, applying the MMT theory, the deficit condition does not imply ‘overspending’. This is because the signal of an economy that is under pressure from excessive spending is inflation, not budget deficit. Bell (2019) said: “*If you don’t have an inflation problem, you don’t have a spending problem*” and the correct application of fiscal measures following the rules of functional finance cannot create inflation.

Mitchell’s thinking extended from deficit considerations to considerations regarding public debt: since the natural rate of interest is zero, it should be maintained at zero; this would be reachable if public debt is not issued, leaving the excess reserves to increase.

He was strongly convinced that running the public debt machine is too expensive in terms of general welfare produced and none of the arguments in favour can justify the huge cost; here are some points analysed, with counter-arguments by Mitchell.

- Public debt is needed to support the yield curve and it is used as a risk free asset benchmark for pricing other products: according to Mitchell, the market could quote securities against other securities with similar characteristics or against the interest rate swap curve. However, the interest rate is the result of a demand/supply meeting. He thought that borrowers and investors can agree on a price without the government intervention.
- Public debt supports derivative markets that allow private traders to manage financial risk (in particular the interest rate risk): according to Mitchell, the business that needs to be insured against interest rate risk is that linked to speculation. It is not an appropriate use of public policy to support a business which provides nothing to the well-being of the population.
- Public debt is needed to provide a long-term investment vehicle to enable workers to put their savings into risk-free assets: according to Mitchell, this does not justify the “*massive corporate welfare that accompanies the issuance of public debt*” (Mitchell, 2015). Moreover, he wrote: “*There is a much more effective way to provide a risk-free savings vehicle for workers. The government could create a National Savings Fund, fully guaranteed by the currency-issuing capacity of the government, which could provide competitive returns on savings lodged with the fund*” (Mitchell, 2015).

- Public debt is needed to implement monetary policy: he insisted that the central bank can maintain any interest rate policy target through the use of a support rate on excess reserves.

Mitchell considered the real economic costs of public debt as the opportunity costs of using the resources of the entire machine in alternative activities. According to him, “*the public debt markets add less value to national prosperity than their opportunity cost. A proper cost-benefit analysis would conclude that the market should be terminated*” (Mitchell, 2015).

A slightly different opinion came from James K. Galbraith (2010). He agreed that a currency-issue nation cannot default on its own debt. At the same time, he thought that a major deficit reduction program would destroy the economy. He saw the public debt as the source of the economic growth; this is because government bonds inject net income into the private sector, unlike private debts which simply redistribute the wealth within the private sector itself.

The point is that government is, by its very nature, centralised and it works by law and regulation. If the banking system was transparent, run by capable people that work for the economy, the public debt machine could be dismantled, leaving the economic growth in the hands of the private banking sector. But this is not the case; until there is an effective financial reform and, more generally, strategic programs for investments, energy and the environment, public budget deficits are the only way to foster economic growth.

Box 1: The Keynesian Income-Expenditure Model and Fiscal Policy Multipliers

The Income-Expenditure Model was developed by John Maynard Keynes to explain fluctuations in production of goods and services and in spending. This is a simple model that explains the inner concepts of the Keynesian Theory, described in the book “*The General Theory of Employment, Interest and Money*” (1936), in opposition to the Neo-Classical theory:

- According to the Neo-Classical theory, the market equilibrium is reached through prices that drive the decisions of the agents. The level of employment is determined by the price of labour and there is no involuntary unemployment, at the equilibrium. In this context, the only role of the institutions is to eliminate obstacles to the proper functioning of market prices.
- According to the Keynesian Theory, the market equilibrium is achieved when there is a sufficient level of aggregate demand. The fluctuations of the real output (booms and crises) relative to the trend of potential output are caused by the relationship between the level of aggregate demand and the level of output, thus determining the economic cycle. According to these arguments, the government intervention is required to guarantee a level of aggregate demand consistent with the equilibrium.

The economic exchanges between the actors considered in the Income-Expenditure model can be explained by analysing the Circular Flow of Income and Spending that shows the relationships between different sectors of an economy. Basically, firms produce goods and services that generate rewards (income) for the factors of production - for example, wages and salaries of workers. This income - net of savings, taxes and payments for imports - is used for consumption, generating the expenditure. The demand for goods and services stimulate the production, feeding the circular flow; supply and demand always adjust.

Hypothesis:

- 1 market: for goods and services;
- 1 variable to determine: the level of production ($Y = \text{GDP}$);
- 1 equilibrium condition to determine it: supply of $Y = \text{demand for } Y$;
- Prices are fixed;

The *aggregate demand* is the total amount of goods demanded in the economy, given by the sum of all the demands of the different economic agents; the aggregate demand (AD) components are the following:

$$AD = C + I + G + (X - Q)$$

$C = C_0 + c_1 \cdot Y_D$ = household consumption

C_0 = autonomous consumption (it does not depend on disposable income)

c_1 = marginal propensity to consume: $0 \leq c_1 \leq 1$

$Y_D = Y - T + TR$ = disposable income

Y = income

T = lump sum taxes

TR = transfers

$I = \bar{I}$ = firms' investments: in this model, the investments are exogenous; in fact, Keynes wrote that investments depend on the intuition of the entrepreneurs, guided by the so called "animal spirit".

$G = \bar{G}$ = government expenditures: in this model, the government expenditures are exogenous.

$X - Q = 0$ = net exports; in this model, a closed economy is assumed.

Output is at its equilibrium level when the quantity of output demanded is equal to the quantity produced. The following figure (*Figure 1.1*) explains why output is at its equilibrium level when it is equal to aggregate demand.

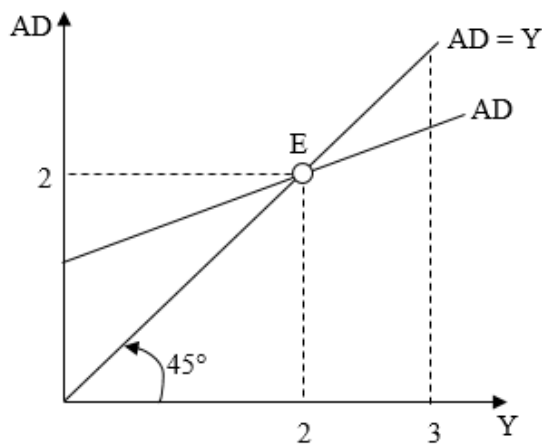


Figure 1.1

On the horizontal axis, the level of output is represented; on the 45° line, the level of aggregate demand is equal to the level of output. Point E is an equilibrium point in which, for instance, both AD and Y are equal to 2. Suppose the firms are producing a quantity $Y=3$; at this level, the production overcomes the request for the products and the firms will see their level of inventories increase. They will react cutting the output. On the other hand, if production is lower than 2, the inventories will stock-out and the firms will have to increase the output.

Therefore, point E is the only equilibrium point in which there are not forces pushing for a change in the level of output: firms produce enough and only to meet the demand.

The equilibrium of the goods market is determined by the following identity:

$$Y = C_0 + c_1 \cdot (Y - T + TR) + \bar{I} + \bar{G}$$

Which can be rearrange as follows:

$$Y = \frac{1}{1-c_1} \cdot (C_0 + \bar{I} + \bar{G} - c_1 \cdot T + c_1 \cdot TR)$$

Two components can be identified:

- Keynesian multiplier: $\frac{1}{1-c_1}$

- Autonomous component, that does not depend on the income: $(C_0 + \bar{I} + \bar{G} - c_1 \cdot T + c_1 \cdot TR)$

The *multiplier* is the amount by which equilibrium output changes, when the autonomous component increases by one unit. It, therefore, enhances the effects of the fiscal policies, in a measure determined by the marginal propensity to consume, c_1 . When the marginal propensity to consume is higher, usually during boom periods, fiscal policies are more effective; when c_1 is lower, usually during crises, fiscal policies are less effective.

The Keynesian factor can be explained into three ways:

- Analytical intuition: since $0 \leq c_1 \leq 1$, $\frac{1}{1-c_1} > 1$;
- Economic intuition: if public expenditures increase, the aggregate demand increases and, in turn, output increases; if output increases, income increases; if income increases people consume more; the higher the consumption, the higher the aggregate demand. The effect of an expansionary fiscal policy is that consumption keeps on increasing, with a negative rate. A geometric series converging to $\frac{1}{1-c_1}$ is generated.
- Graphical intuition: *Figure 1.2* shows that an increase in the public expenditures has an impact on the output that is higher than the variation itself.

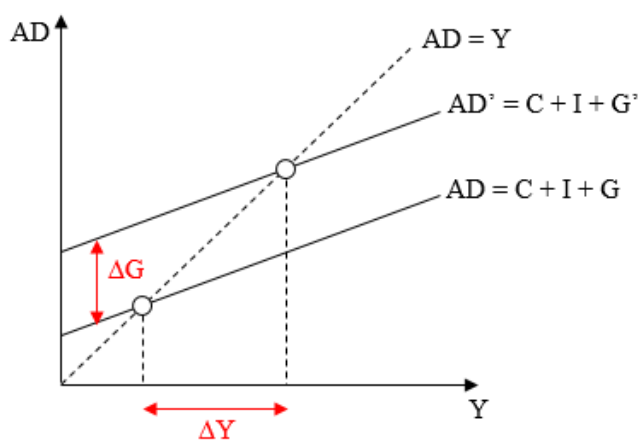


Figure 1.2

In order to assess the impact that fiscal policies have on the equilibrium output, it is possible to analyse the *fiscal policies multipliers*. They represent the variation of output with respect to a variation of G, T or TR.

- Effect of ΔG on Y: $\frac{\delta Y}{\delta G} = \frac{1}{1-c_1}$
- Effect of ΔTR on Y: $\frac{\delta Y}{\delta TR} = \frac{c_1}{1-c_1}$
- Effect of ΔT on Y: $\frac{\delta Y}{\delta T} = -\frac{c_1}{1-c_1}$

The fiscal policy multiplier related to the variation in public expenditures is higher than the one related to transfers. This implies that an increase in public expenditures boosts the economy more effectively than the transfers distribution. The explanation is grounded in the following economic intuition: money spent by the government goes directly into the economy, while money given through transfers can either be consumed or saved.

A lump-sum tax multiplier has the same impact of the transfer multiplier, with the opposite sign: a tax increase reduces the amount of money available for consumption.

The Balance Budget Theorem

The possibility to implement fiscal policies, while leaving the level of deficit unchanged, depends on the welfare of the government budget. In fact, if a government continue to accumulate debt in order to sustain its expenses, its solvency perception on financial market would be doubted and the interest rate would increase. Private firms would find difficulties in borrowing and investing and the economy would slow down.

A *budget surplus* (BS) is an excess of the government's revenues, consisting of taxes, over its total expenditures (purchases of goods and services and transfers):

$$BS = T - G - TR$$

If this amount is negative, there is a *budget deficit* (BD): the government is spending more than it is collecting and it has to issue debt for financing its expenditures.

There may be a difficult situation in which the economy needs to be stimulated but the government already has a huge budget deficit. The government should act with an expansionary fiscal policy in order to increase the level of the aggregate demand, boosting the economy. However, this measure will exacerbate the budget deficit. One solution, usually adopted, is to implement an expansionary policy with an increase of public expenditure, compensated by an equal increase in the taxation level. This measure is able to stimulate the economy, keeping the budget in balance, since the government expenditure multiplier is higher than the taxes multiplier.

Starting from the equilibrium identity, we move to the variation, imposing $\Delta G = \Delta T$:

$$Y = \frac{1}{1-c_1} \cdot (C_0 + \bar{I} + \bar{G} - c_1 \cdot T + c_1 \cdot TR)$$

$$\Delta Y = \frac{1}{1-c_1} \cdot (\Delta G - c_1 \cdot \Delta T)$$

$$\Delta Y = \frac{1}{1-c_1} \cdot (\Delta G - c_1 \cdot \Delta G)$$

$$\Delta Y = \frac{\Delta G}{1-c_1} \cdot (1 - c_1)$$

$$\frac{\Delta Y}{\Delta G} = 1$$

When government spending is financed by an equal increase in taxes, so that the budget remains unchanged, the multiplier, known as *balanced budget multiplier*, is equal to 1. The expansionary fiscal policy is effective but output rises by exactly the increase in government spending and no more.

Box 2: The IS-LM model

We move from the Income-Expenditure model to the IS-LM model, removing a single assumption: investments are no longer exogenous but depend on the interest rate, with negative rate. We can define an investment spending function of the form:

$$I = \bar{I} - b \cdot i$$

Prices are fixed, so “ i ” is either the nominal or the real interest rate. The higher the interest rate, the higher the cost of the investments, the lower the amount of investments made by the firms.

The model was developed by John Hicks, in 1937, in his paper “*Mr Keynes and the Classics: a Suggested Interpretation*”, in order to explain part of the so-called Keynesian theory, according to which, in the short run, the economic output is strongly affected by the aggregate demand.

Keynesian economists generally argue that, as aggregate demand is volatile and unstable, a market economy often experiences inefficient macroeconomic outcomes in the form of economic recessions (when demand is low) and inflation (when demand is high), and that these can be mitigated by economic policy responses. Therefore, monetary policy by the central bank and fiscal policy by the government are crucial for stabilizing output over the business cycle: government intervention should play an active role, especially during recessions.

The IS-LM model represents the equilibrium both in the goods market, in the money market and in the assets market, on the plane (Y, i) .

Equilibrium in the goods market, money market and assets market

The *equilibrium in the goods market* is represented by the IS curve and it is derived from the Income-Expenditure model.

For each equilibrium point in the Income-Expenditure model, there is a certain level of output and a certain level of aggregate demand. By rewriting the equilibrium

identity with the new expression for the investments, the following equation is obtained:

IS curve:
$$Y = \frac{1}{1-c_1} \cdot (C_0 + \bar{I} - b \cdot i + \bar{G} - c_1 \cdot T + c_1 \cdot TR)$$

For each level of output and corresponding aggregate demand, a certain level of interest rate can be found. The IS is, thus, represented on the plane (Y,i) which shows all the possible equilibrium outputs and the correspondent interest rates.

The IS curve is downward sloping: if the interest rate increases, borrowing becomes more expensive and people reduce the investments. The reduction of the investments causes a reduction in the level of aggregate demand; the output adjusts and decreases.

The *equilibrium in the money financial market* is represented by the LM curve that is defined by considering all the points for which money supply is equal to the money demand. For what concern the money supply, the hypothesis of the “helicopter money” is assumed: the central bank “goes in the sky” and throws money; this metaphor is able to express the concept of exogenous money supply.

$$\text{money supply} = \frac{M}{\bar{p}}$$

Money demand depends positively on income and negatively on the interest rate. The positive relationship with respect to the income is given by the fact that the higher the income, the higher the demand for money for buying goods.

The negative relationship with respect to the interest rate is given by the fact that this model assumes the existence of just two assets: money and bonds; the category “bonds” includes all the financial assets which are, consequently, perfect substitute. Money is wanted for buying goods; bonds are wanted to have a return equal to the interest rate. The interest rate therefore represents the opportunity cost of holding money. When the interest rate is higher, it is preferable to buy more bonds, to have a higher return in the future; on the other hand, in case of low interest rate, it is

preferable to have more money that can be used today in consumption. Consequently, when the interest rate is higher, the demand for money decreases.

$$\text{money demand} = L(Y, i)$$

The LM curve can be derived from the money market, where the money supply and demand are represented in relation to the interest rate. Given the money supply, for each level of income, the money demand is different, resulting in different levels of interest rate.

The LM curve is upward sloping: if the income increases, the demand for money increases; if the demand for money increases, the demand for bonds decreases; if the demand for bonds decreases, they price decreases and the interest rate increases.

It is possible to demonstrate that the equilibrium in the money market also implies the *equilibrium in the assets market*. Assuming the wealth of the agents to be fix: $\bar{W} = \text{money} + \text{bonds}$. This implies that the overall demand for money and bonds has to be equal to the overall supply of money and bonds:

$$L + B^D = \frac{M}{p} + B^S$$

This can be arrange in the following way:

$$L - \frac{M}{p} = B^S - B^D$$

This expression shows that an excess of money demand exists when there is an excess of supply of bonds.

When the demand for money is equal to the supply, the money market is in equilibrium; the identity implies that also the demand of bonds has to be equal to the supply of bonds. The result obtained is that also the bonds market is in equilibrium.

This result assures that if the equilibrium in both the money market and the goods market is found, also the bonds market is in equilibrium (application of the Walras' law) and, thus, the overall economy.

Equilibrium in the IS-LM model

The equilibrium in the IS-LM model is determined by the intersection of the IS curve (equilibrium in the goods market) and the LM curve (equilibrium in the money and bonds market). In *Figure 1.3*, the coordinates of the intersection point E represent the level of output Y_E and interest rate i_E for which the economy is in equilibrium:

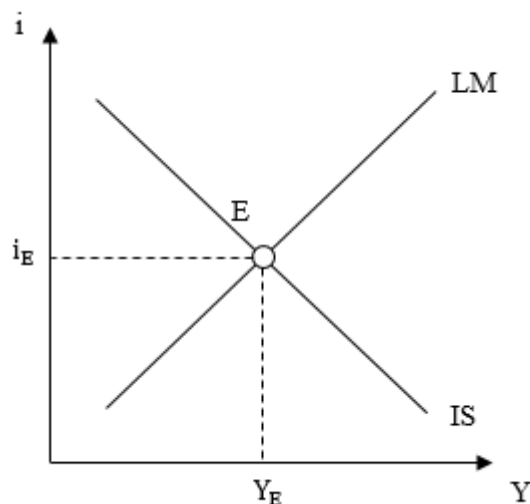


Figure 1.3

The equilibrium in the IS-LM model changes when either the IS or the LM curve shifts. A *monetary policy* is defined when the central bank changes the money supply. A *fiscal policies* is defined when the government intervenes on the aggregate demand, changing the level of government expenditures, taxes or transfers.

Monetary policy

An *expansionary monetary policy* is defined when the central bank injects liquidity in the market, increasing the money supply; in this case, the LM curve shifts to the right in the IS-LM model.

When the central bank acts with an expansionary monetary policy, the LM curve shifts to the right, the output expands and the interest rate decreases. This is because an increase in the money supply makes the interest rate decrease; a lower interest rate fosters the investments, that make increase the level of aggregate demand and, consequently, the level of output.

Conversely, a reduction in the money supply is called *contractionary monetary policy*. In this case, the LM curve shifts to the left, the interest rate increases and the output reduces. This is because the lower availability of money makes the cost of money increase; the increase in the interest rate causes a reduction of the investments; as a consequence, the aggregate demand decreases and the output adjusts, contracting the economy.

This is the monetary transmission mechanism, the mechanism transmitting the shocks from the central bank to the real economy. It is also called “*interest rate channel*” or “*money view*”: the interest rate represents the channel through which the monetary shock is moved to the real economy.

Fiscal policy and the crowding out effect

An *expansionary fiscal policy* is defined when the government operates with an increase in public expenditures, or a reduction in taxes, or an increase in transfers. In this case, the IS curve shifts to the right in the IS-LM model, because of the increase in the level of aggregate demand: the output expands and the interest rate increases.

The phenomenon for which the interest rate increases is called *crowding out effect*. The crowding out effect reduces the effectiveness of the expansionary policy, since the equilibrium output will be lower than the *potential output* that would be reachable if the crowding out effect did not exist. In this ideal situation, the interest rate in the new equilibrium would remain unchanged after the shock.

Why is the crowding out effect generated? As soon as the economy is shocked, the IS shifts to the right and the equilibrium point moves to a condition in which the output is higher and the interest rate remains the same. However, a long run equilibrium point is not reached because it does not intersect the LM curve. In particular, the situation is characterised by an excess of money demand that produces two effects:

- *Money effect*: the excess of money demand causes a reduction in bonds demand; the price of the bonds decreases and the interest rate increases, until the demand for money and bonds are rebalanced and the equilibrium in the money market is reached.

- *Real effect*: the increase in the interest rate cause a reduction in real investments, since the price of borrowing is now higher. This causes a reduction of the aggregate demand that represents the gap between the potential output and the final equilibrium output.

The crowding out is complete when the LM curve is vertical. In this case, the expansionary fiscal policy is completely ineffective. There is no crowding out effect when the LM is horizontal; this is the case in which the expansionary policy is completely effective.

When the fiscal authority implements a reduction of public expenditures, there is a *contractionary fiscal policy*. In this case, the IS curve shifts left, the interest rate decreases and the output reduces. This because the lower public expenditures make the aggregate demand reduce and the output adjusts.

1.2.5 The rejection of the IS-LM model

Another fundamental pillar of the MMT literature is the rejection of the mainstream economic doctrine according to which (1) government deficits raise interest rates and (2) rising interest rates crowd out private investments. This led to a recent debate (March 2019) between the economists Stephanie Bell and Paul Krugman. From the MMTers' point of view, both points have supporting evidence.

As for point (1), looking at the US Treasury markets, it is clear that the yields have remained low despite increasing deficits.

This is again linked to the recognition of the natural interest rate as zero. It can be deduced that an expansionary fiscal policy will reduce the interest rate, due to the presence of the interbank market. The explanation has been previously illustrated: government deficit expands reserves into the banking system. If there is no support rate on reserves, everyone will try to lend out: when there are sellers without buyers, the price goes to zero. To prevent this, the central bank pays interest on reserves but this does not change the fact that deficits put downward pressure on the short-term interest rate.

Therefore, and here point (2) is taken into consideration, MMT rejects the IS-LM model that Krugman uses to demonstrate that the widening of the budget deficit exerts

upward pressure on interest rates and crowds out private investments. Bell's arguments are the following:

- The model was designed for a fix-exchange rate regime;
- It is not a stock-flow consistent model^{1,3}; this means that is not based on a rigorous accounting framework, which guarantees a correct and comprehensive integration of all flows and stocks of an economy. De facto, it does not respect the accounting logic of real world transactions.
- The model assumes a fixed money supply: this hypothesis paves the way for the crowding out effect.
- The model does not take into consideration that investment decisions do not depend mainly on the interest rate level, but on economic prospects; when profit expectations are limited, a lower interest rate do not encourage businesses to borrow and invest more as much as a high interest rate do not induce people to reduce their investments when the economy is running and further profit growth is expected. The downward sloping IS curve does not take into account the economic and business circumstances.

Bell argues that the trade-off to be considered is not between the level of interest rate and the level of investments, but between the use of monetary or fiscal policy. There are two ways to boost economic growth: the expansionary fiscal policy (government deficit) and the banking loans. Deficit spending puts money in private pockets, increasing the net financial wealth, while loans are not given for free. The trade-off is between the use of *“monetary policy that works by leveraging the private sector’s balance sheet or fiscal policy that works by strengthening it”* (Bell, 2019).

Timothy P. Sharpe published in 2013 an empirical analysis concerning point (2) in which it emerged that crowding out effects are not generated in sovereign economies. He started from the assumption that crowding out does not occur because deficits do not bring to an increase in the interest rate. It was noticed that, after the Great Financial Crisis, different economies reacted in different ways, depending on whether they were sovereign or non-sovereign economies. Non-sovereign economies had to implement fiscal austerity measures and saw higher interest rate on government bonds. Sovereign economies, instead, *“have engaged in counter-cyclical fiscal measures despite the fact that, in some of these economies, levels of public debt relative to GDP during the crises have been*

similar to, or exceed those of the Eurozone members” (Sharpe, 2013, p.587). Therefore, sovereign economies have more freedom in policy formulation and implementation than non-sovereign economies.

The empirical analysis had shown that, despite similar trends in government debt and deficit indicators, there are differences in the response of long term interest rates among advanced economies, whether sovereign or non-sovereign.

Another critique of the so called *credit channel* comes from Warren Mosler (2014). He underlined how the functioning of the credit channel (lower rates encouraged to borrow), even if plausible at micro level, breaks down at the macro level. He wrote:

“For every dollar borrowed there is a dollar saved, so any reduction in interest costs for borrowers corresponds to an identical reduction for savers. The only way a rate cut would result in increased borrowing to spend would be if the propensity to spend of borrowers exceeded that of savers. The economy, however, is a large net saver, as government is an equally large net payer of interest on its outstanding debt. Therefore, rate cuts directly reduce government spending and the economy’s private sector’s net interest income”. (Mosler, 2014)

1.3 Conclusions

The Modern Monetary Theory is a disruptive economic and financial framework that try to give new interpretations and, thus, ranges of actions to a world unsatisfied with mainstream economics. It questions the traditional and settled economic pillars, reviewing the functioning of the monetary system, the definition of monetary and fiscal policies, the relationships between the Treasury and the central bank, the role of taxes and government borrowing and public financing sources.

There are interesting insights that could be useful to foster an innovative reasoning on hot topics that are challenging the world economic and financial environment.

However, in order to understand the value and the potential applicability of the theory, it is important to question it, testing its solidity and consistency. Therefore, in the next chapter the IS-LM model rejection and Paul Krugman’s consequent thinking and position towards MMT are addressed. Finally, the last chapter is dedicated to make a critical assessment of the theory, thanks to Jones and Llewellyn (2019)’s contribution, who summarised the essential elements of the MMT in seven pillars.

Chapter 2

Krugman's criticisms against IS-LM model rejection

The previous chapter was devoted to show the reasons why MMT rejects the IS-LM model and the empirical works that support this evidence.

Basically, MMTers do not recognise a relationship between the level of the interest rate and the private investments, leading to the conviction that deficit does not matter.

This statement has generated several critiques and it is interesting to analyse how the Nobel Prize Paul Krugman is responding to MMT.

It will be clear that the two lines of thought result from different assumptions, not clearly defined by the two parties but tacitly considered.

A reconciliation between MMT and IS-LM will be given on the basis of the work of Rick Rowe (2011), who was able to interpret MMT in a particular IS-LM configuration.

2.1 Krugman critiques towards MMT

Several criticisms have levelled at MMT. A large number of well-known economists are literally fighting a battle around the MMT. One of the most ardent is certainly Paul Krugman who is carrying on a real dispute with the MMTer Stephany Bell, in the Financial Times pages and in a verbal crossfire through Bloomberg's articles.

From Krugman's point of view, government borrowing does not raise interest rates and money creation does not cause inflation only in the presence of a depressed economy (like, for example, during the period in which Obama became president).

Today, the situation is different, since we are close to full employment. Krugman looks at two indicators: wages are rising, so workers have more bargaining power, and the rate of job abandonment has returned to pre-crisis levels, implying that they are confident to easily find a new job. In this context, the deficit spending does not boost economic growth so much because of the increase of the interest rates and the consequent crowding out effect.

Bell's and Krugman's position on the relationship between budget deficit and interest rate is at two extremes. On one hand, Krugman relies on the IS-LM model, showing that

in a situation of full employment, government expenses struggle with private expenses for a limited amount of money, causing the crowding out. The budget deficit does not matter only when monetary policy is constrained by the zero lower bound.

On the other hand, Bell starts from Lerner’s concern about a potential “crowding in” effect: government deficits would push down the interest rate, stimulating too much investment. Moving a step further, MMT actually diverges from Lerner on the following point: it rejects a clear link between rates and investments; hence, the zero interest rate proposal.

As pointed out by Michell (2019), who tried to shed light on the Krugman-Bell debate, the divergent arguments are based on very different assumptions. Krugman assumes (1) a *causal relationship* between the interest rate and private investments and (2) a central bank reaction to employment over “full” with higher interest rate. It follows the trade-off between monetary and fiscal policy. He illustrates this point using an IS curve and a vertical line, representing the “full employment” (*Figure 2.1*).

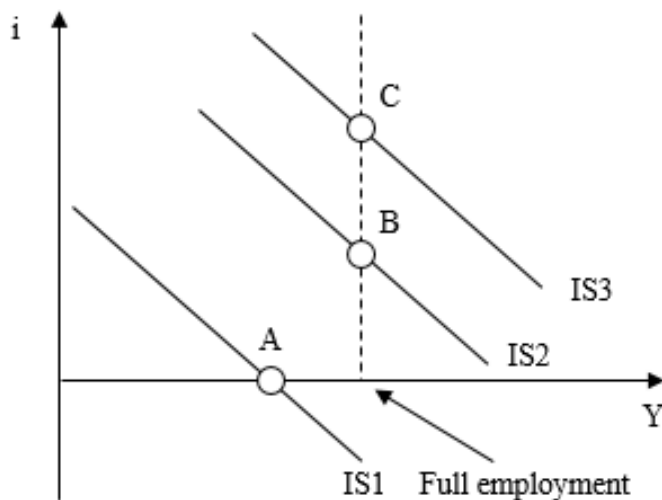


Figure 2.1

As long as the economy is in a depressed condition, an expansionary fiscal policy does not affect interest rates. The IS1 intercepts the x-axis, as if the liquidity trap condition was in place. Once full employment is reached, government expenditures crowd out private investments, as the central bank has to react with higher interest rates: it is well known that an “over employment” condition cannot be applied for a long time.

Bell, instead, “*is tacitly assuming that all deficits are monetised and that issuing bonds is an additional, and possibly unnecessary, ‘sterilisation’ operation. Under these*

assumptions, deficits will automatically lead to an increase in central bank reserves and therefore to a fall in the money market rate of interest” (Michell, 2019).

Thus, Krugman’s assumption of a mechanical relationship between interest rates and investment (downward sloping IS curve) is rejected by Kelton. Moreover, they are assuming different central bank behaviour. Krugman assumes that the central bank will react to fiscal expansion with tighter monetary policy in the form of higher interest rates; Kelton assumes, firstly, that fiscal policy can be set at the “full employment” level, without any direct implications for interest rates and, secondly, that deficits are monetised so that money market rates fall as the deficit expands (elaboration from Michell, 2019).

2.2 MMT and IS-LM model reconciliation

Many authors have wondered if MMT and IS-LM can be reconciled in any way. The answer is “yes, sort of” (Michell, 2019). Nick Rowe (2011) has “reversed-engineered” MMT, trying to figure out what the IS-LM configuration should be, so that the MMT’s results make sense. He, basically, analysed the MMT concepts in depth and disjointed them, absorbing their meaning and putting them on an IS-LM model; the result was the following (Figure 2.2):

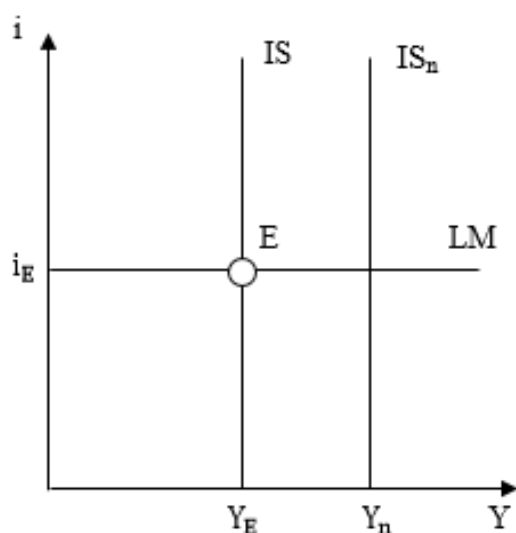


Figure 2.2

The LM curve is horizontal since the central bank chooses the market interest rate (and not the money supply) and, at the selected interest rate, is willing to supply any amount of money.

The IS curve is vertical because investments (and therefore, consumption and production) are not affected by the interest rate. There is no natural rate of interest at which full employment is guaranteed: in fact, if the IS is not aligned with the full employment line, there is no interest rate that, through investments, moves the IS towards full employment. On the contrary, if the IS corresponds to full employment, any kind of interest rate is compatible.

Moving forward, the MMT AD curve is vertical. In fact, a fall in the price level will not be balanced by higher money supply to keep the interest rate constant. It should be noted that, even if the rate of interest was to fall, output would not be affected. We can consider the AD curve to be *doubly* vertical. Consequently, monetary policy has no effect on AD and fiscal policy must be used for ensuring price stability. “*The price level is indeterminate, unless active fiscal policy makes it determinate*” (Rowe, 2011).

Since monetary policy has no role to play in determining AD, the central bank may set any interest rate it considers appropriate to set; at this point, it is convenient to set a zero interest rate to avoid the opportunity costs of holding zero interest currency rather than bonds.

It is, therefore, very easy to set an interest rate below the growth rate of GDP, ensuring debt sustainability. Consequently, the government is no longer bounded by budget constraints and the debt size does not affect consumption, with a clear rejection of Ricardian equivalence.

It can be concluded that the IS-LM model has been overkilled in this context and the MMT could be explained by reverting to the simple Income-Expenditure model.

In section 3.3, the relationship between monetary and fiscal policy will be carefully analysed; the reasons why MMT can be interpreted as a form of “fiscal dominance” will be explained, as sketched by Rowe in his reconciliation attempt with the IS-LM.

The next chapter will be devoted to an in-depth analysis of the MMT pillars identified by Jones and Llewellyn (2019) with a particular focus on the main issues and criticisms.

Chapter 3

A critique of the MMT through the Jones and Llewellyn (2019)'s pillars

Many economists have spent time demonstrating the inaccuracy and inconsistency of the MMT paradigm, through academic literature, economic bloggers' posts and comment sections on social media.

In order to make a critical assessment of the Modern Monetary Theory, I rely on Jones and Llewellyn (2019)'s contribution. They summarised the essential elements of the MMT in seven points:

1. A government that creates its own money generally need not, and will not, default on debt denominated in its own currency.
2. A government deficit is necessarily mirrored by an equivalent private sector surplus.
3. Monetary policy is relatively ineffective in a slump: fiscal policy is more powerful.
4. A government can buy goods and services without the need to collect taxes and issue debt.
5. Government spending and money creation need be limited only to the extent that employment becomes 'over-full' and encourages inflation.
6. Inflation, should it arise, can readily be controlled by higher taxation and bond issuance to remove excess liquidity.
7. Through money creation, interest costs can be constrained. Indeed, a substantial and persistent budget deficit can be financed at low, if not near-zero, cost.

This chapter deals with these seven pillars, investigating the arguments of the opponents and analysing the main critiques that are being expressed against the MMT.

Since strong correlated, point 5 and 6 are analysed together, therefore the chapter is structured in six main sections. Along the chapter, some boxes are introduced to provide insights or references to theoretical concepts useful for a more complete and exhaustive explanation.

3.1 “A government that creates its own money generally need not, and will not, default on debt denominated in its own currency”

There are many criticisms of this statement. First, it implies a distorted concept of money creation and money value: embracing Knapp’s chartalism, MMT supporters deny the role of private credit demand as fundamental to economic development, and their definition of money value they assume does not provide for any link between money and things.

Secondly, it assumes a central bank that completely serves the government, neglecting whatever form of central bank independence. The importance of central bank independence will be illustrated, explaining the necessary conditions to move from a dependent to an independent central bank. The Italian case will be used as clarifier example.

Finally, an issue of monetary sovereignty has to be tackled. This theory was developed bearing in mind the advantageous position of the US, given their privileged monetary sovereignty, as the dollar is the dominant currency in the world. However, the theory does not propose a solution to all the various cases around the world. In particular, in the case of the European Union, the theory suggests nothing in order to solve debt issues of some countries, such as Italy, except for an exit from the Eurozone. The history of the European Union will be addressed to stress the reasons that led to the foundation of this institution; it must be understood that the break-up of this economic arrangement is something no one should wish for.

3.1.1 Chartalism and value of money

MMT proponents argue that fiat money systems have abolished the dependence from the gold standard and that the economic recovery is limited by a lack of understanding of the functioning of modern money and banking.

However, Frank Shostak (2019), an Associated Scholar of the Mises Institute, by analysing how the value of money is created, explained that the chartalism actually poses its foundations in the historical link with gold. He relied on the contribution of Mises (1912), the so-called *regression theorem*, according to which “*today’s demand for money is determined by yesterday’s purchasing power of money*” (Shostak, 2019, reporting Mises, 1912). Thus, for a given money supply, yesterday’s price of money has been set;

the procedure applies to all the past periods, till a point in time is reached in which money was just an ordinary commodity where demand and supply set its price. The commodity had an exchange value in terms of other commodities, meaning that when it became money, it already had an established purchasing power or price in terms of other goods, that allowed the demand for this commodity to be set as money.

Shostak pointed out that, by applying Mises's line of reasoning, it is not possible to consider money as a "creature of the State", as defined by Lerner, but money must emerge as commodity. What is the connection with paper money? Originally, paper money was used as representation of gold. In order to avoid a breakdown of the market economy, the supply of paper certificates had to be managed to prevent that banks over-issue them, leading to a general bankruptcy. Therefore, the central bank was founded to control the level of paper issuance: money purchasing power is established given its historical link to gold and paper certificates can be exchanged at fix rate in central bank money.

"It follows that it is only on the account of the historical link to gold that the central bank's pieces of paper acquired purchasing power, not by government decree" (Shostak, 2019).

Therefore, Shostak highlighted what is wrong with the MMT concept of money creation and money value: according to MMT, the government can issue any amount of money, influencing its value and this means that it also determines the rate of exchanges between money and goods. This implies that the government is also responsible of price setting, bypassing market forces and leading to an inefficient use of resources and economic impoverishment.

It can be concluded that money must be simply considered in its essence as a means of exchange, as means of facilitating payment that has nothing to do with paying taxes to the government. Therefore, the quantity on money in circulation has to be carefully managed by the central bank, a topic closely linked to central bank independence.

3.1.2 Central bank independence rejection

3.1.2.1 Central banks independence and maintenance

Central banks represent key institutions in the process of policymaking, since their main role consists in developing monetary policy and in working as financial agent for the government. However, their relationship with the government can be characterised by higher or lower degrees of autonomy, according to the different policy preferences of politicians and central banks.

Dependent central banks largely respond to political pressures to satisfy the interests of the parties in power. Politicians are usually more focused on economic growth and employment, rather than on price stability.

On the contrary, the independent central banks are able to implement policies, which do not respond to political interests and preferences, pursuing the unique goal of price stability.

If independence allows central banks to act freely from government pressures, how is it possible that independence is allowed from governments and how can central banks maintain their independence, once gained?

Goodman (1991) investigated exactly these points, discussing the independence of the Italian Central Bank in the light of his explanations. According to Goodman, the independence must be understood on the basis of two political variables: “*coalitions of societal actors and expectation of political leaders regarding tenure in office*” (Goodman, 1991, p. 330).

Societal actors – farmers, unions and firms (manufacturing and financial) – have different preferences in terms of economic policies. In order to pursue their preferences, they organise themselves in coalitions and they elect politicians as their representatives.

The different societal actors have different positions in terms of monetary policy; for example, the financial sector prefers a contractionary monetary policy that allows higher interest rates. The independence is thus seen as a guarantee of more efficient financial markets. On the other hand, workers, unions and the agricultural sector favour expansions that allow them to run their business, preferring a higher, rather than too low inflation; independence is seen as an obstacle to free government actions.

However, the financial sector alone cannot be politically successful; it needs the support, or at least not to be strongly opposed, by the non-financial sectors. Changes in the preferences of the non-financial sector can occur, for example, in case of high inflation that erode manufacturing firms' competitiveness on the international scene, when the fix exchange rate regime applies.

The presence of a specific societal coalition holding political power is therefore the first variable that contributes to the decision on central bank independence.

The second variable is linked to the expectations that political leaders have of their possibility to maintain power over an extended time horizon. If politicians expect their mandates to be maintained for a limited period of time, in favour of the other party, they prefer to go through a process of central bank independence. They reduce their room of action for a short time but, then, they also constrain their successors' actions, preventing manoeuvres that would go against their preferences.

The second point discussed by Goodman (1991) concerned the ability of central banks to maintain independence, once it has been gained. The concern arises from the definition of independence. Independence means the possibility for the central bank to implement policy clashing with political preferences. How can it, then, maintain its independence? The answer relies on the ability of the central bank to manage two aspects:

- The relationships with the different political forces: this consists in “giving ground” to fiscal policies in case of particular situations.
- The support from key societal actors: the financial sector represents the first level of that support; then, the central bank has to work at the level of non-financial actors, but linked to the financial world, such as industrial firms connected with the financial markets or non-financial actors who are major players of the financial markets.

Box 3 is introduced to illustrate the independence and maintenance of the Bank of Italy, as clarifier example.

Box 3: A clarifier example: the independence and maintenance of the Bank of Italy

Treasury Minister Nino Andreatta announced the independence of the Bank of Italy in the summer of 1981. With the “*divorce*”, the Bank of Italy “*would no longer be required to be the residual purchaser of the Treasury securities tendered at auction*” (Goodman, 1991, p. 340); this means that it would no longer have financed the government deficits.

The divorce can be explained in the light of the change of attitude of the societal actors and the expectations of political leaders regarding the mandate in the early 1980s.

Despite its legal dependence, in the post-war period the Bank of Italy was able to formulate clear economic policies; it gained prestige and respect, being the only authority with deep economic expertise, able to quickly analyse the economic circumstances and to suggest the best reactions. However, it was not strong enough to implement a monetary policy diverging from political preferences.

At that time, the Italian political scene was dominated by the Christian Democratic Party (DC). The Party was, basically, a group of factions: it gained strong consensus, since the large electoral base was satisfied thanks to the great efforts made to foster economic growth.

In the 50s and 60s the economic growth was achieved without problems in terms of inflation: the period was characterized by high unemployment and the weak unions were not able to bargain high wages. Later, starting from the *hot autumn* 1969, the unions gained more power and the workers’ revolts, concentrated in the metalworking sector, were calmed down by granting higher wages. From then on, the economic growth was accompanied by an increase in inflation.

The 70s were characterised by a very high level of inflation, with picks up to 25%. The oil price shock dramatically increased the cost of energy and production costs. In fact, this was the period in which the fragility of the Italian economic structure emerged: the dependence on the automotive sector was found to be harmful for the economy and the lack of investments in innovation and productivity improvement showed its negative effects.

Moreover, wage indexation further enhanced inflation. Salaries were higher, demand for goods increased but production was scarce and not able to meet the demand. The Italian deficit escalated to the point that Italy had to turn to the IMF for a stand-by loan in 1976. After this episode, the Bank of Italy was allowed to adopt more restrictive policies to contain the inflation.

In the 80s the political and social environment changed and shifts in preferences will later turned out to be decisive for independence.

Banks were, as expected, in favour of independence. The Italian Communist Party (PCI) also expressed strong support for the divorce; the unions remained silent, because of their links with the PCI and in order to avoid clashes on the subject. Export-oriented firms were hit by the high inflation that reduced their international competitiveness and remained silent on the divorce.

“The lack of opposition from these key domestic actors was necessary for the implementation of the divorce.

The expectations of Italy’s political leadership were critical to the decision” (Goodman, 1991, p. 342). In the early 1981, the stability and credibility of the DC party was threatened by the discovery that DC ministers and other officials were members of the secret Masonic Lodge, P2.

A Republican government guided by Spadolini was established; the Treasury Minister was the DC Nino Andreatta. Expectations regarding the longevity of this new government were not high, so, when inflation exceeded the 20%, Andreatta took the opportunity to constrain future Italian governments. In his opinion, an independent central bank was necessary to counteract a government *“which was induced to weaken unpopular measures due to electoral pressures of tensions within the cabinet”* (Goodman, 1991, p. 342).

After gaining its independence, the Bank of Italy was able to implement more restrictive monetary policies. However, over the years, conflicts have emerged with the various political leadership; the central bank was able to set its own policy, but in order not to jeopardise its position had to “give ground” more than once. The so-called Treasury Current Account was, in fact, maintained: through this channel, the Bank of Italy was obliged to anticipate up to 14% of budget appropriations, with the possibility of exceeding this limit in extraordinary conditions. In 1982, for example, the

government deficit reached 13,1%/GDP and the central bank purchased considerable amounts of Treasury bills to balance the collapse of demand for government securities. The Bank of Italy proved, once again, to be accommodating to the financing needs of state.

3.1.2.2 Central bank independence and empirical evidence

The independence of the central bank turned out to be crucial for maintaining price stability and facing the shocks of the post-war period around the world.

The reason behind the granting of independence was a time-inconsistency between the implementation of the monetary policy and the promise to manage the inflation in a later future. Policy makers were no longer able to keep people inflation expectations anchored; this has been embedded in price setting and wage adjustment which led to a real higher inflation.

The independence of central bank has been a tool to restore expectations on the right path, thanks to the guarantee of a strong institution able to maintain the levels of inflation stable, free from political pressures.

Alesina and Summers (1993) showed that independent central banks have been able to keep lower level of inflation without impacting on real economic performance. They took a sample of central banks, including Italy, Germany and USA. They used the definition of “political independence” by Bade and Parkin (1982), defined as “*the ability of the central bank to select its policy objectives without influence from the government*” and they added the definition of “economic independence” by Grilli, Masciandaro and Tabellini (1991), defined as “*the ability to use instruments of monetary policy without restrictions*”. This last point refers to how easily the government can finance its debt through central bank credit.

The central banks of the different countries were classified according to their degree of independence and their macroeconomic performances have been recorded over the period 1955-1988.

The analysis showed that the average inflation and its variability were lower for countries with a strong independent central bank, such as Germany, while higher in countries with no independence, like Italy.

No relationship, instead, was found between the degree of independence and the level of GDP, the level of unemployment and the level of real interest rates.

So, when MMT claims that “*a government that creates its own money generally need not, and will not, default on debt denominated in its own currency*” (Jones and Llewellyn, 2019) it tacitly implies a debt monetisation and central bank actions completely obeying to government’s impositions.

What MMT forgets is the significance of central bank independence: the positive relationship between the degree of independence and inflation (greater independence ensures lower inflation); the importance of guarantee predictable value for the currency, avoiding extreme fluctuations that could damage the economy. MMT also puts aside credibility and people expectations.

Economists argue that without an independent central bank, economic policy loses credibility, given the moral *hazard problem* and *conflicts of interests* that are very likely to arise. In fact, if politicians can easily create money they will be tempted to finance any program they wish, forgetting their responsibility to avoid currency depreciation: since it takes long time for inflation to emerge, while the political payoffs from funding of popular projects can be immediate, a classic moral hazard problem arises.

Moreover, it cannot be easily assumed that government spending is highly efficient: Janos Kornai (1986) mentioned the so-called *soft budget constraint syndrome*. The easier it is for firms to acquire funding and subsidies, the less incentives they have in pursuing efficiency. This syndrome will tend to cause ever rising costs, waste, inefficiencies and, therefore, inflation. If people start to fear that this could happen in the future, inflation will manifest itself in a self-fulfilling crisis.

Therefore, the purpose of monetary independence is to avoid the moral hazard and the soft budget constraint syndrome, which are very likely to occur when policy makers can both create and spend money according to their own will.

3.1.3 Monetary sovereignty and the European Union framework

Doug Henwood (2019), a journalist, economic analyst and financial trader, is very critical about MMT; in particular, he pointed out the “*embeddedness in a rich-country perspective, and in particular American exceptionalism that comes with issuing the world’s dominant currency*”.

In fact, the US government can handle giant deficits and borrow on a large scale with little constraint, since it will always find someone willing to lend. As countries all around the world keep their foreign reserves in dollars and they need dollars to pay for crucial commodities, they hold those dollars in the form of US Treasury bonds. It can be stated that the US can join the highest level of monetary sovereignty, as well as other countries such as Canada, Japan and Britain, while he added: “*less privileged countries have to worry about foreign investors dumping their bonds and driving down the value of their currency, which would jack up interest rates and inflation*”.

Henwood argued that MMT’s dependence on the US privileged monetary sovereignty is not addressed by its proponents. The theory does not propose to find a solution to all the various cases around the world.

About the European Union framework, MMT supporters simply suggest a disaggregation of the Union; the Member States would return to monetary sovereignty and MMT is suggested “*as the best way for the economic process to be managed to provide the soundest foundation for the future growth and prosperity of the current membership*” (Lodi, 2014, citing Wolfson prize, 2011).

However, in undertaking this type of discussion, the European Union value is completely debased and the legal and economic issues linked to the exit are in no way considered.

For this reason, *Box 4* will be dedicated to the history of the European Union for understanding the very reasons that lead to the establishments on this institution. This will allow to understand the meaning behind the policy regulating the Union, illustrated in the next sections, for a deep understanding of the advantages and disadvantages the Country Members are subjected to.

It is important to remember that the decision on creating and joining the Union is the result of a cost-benefit analysis, specifically, the benefits have to exceed the costs.

Belonging to a large Union implies the imposition of certain rules for the alignment of the interests of the different countries in a common direction; each country must give up some independent sovereignty, which is transferred to a common level. From here the need to introduce some restrictions such as the Stability and Growth Pact (1997) and the Fiscal Compact (2013) for managing Member States behaviour, when dealing with a single monetary policy. On the other hand, the members can use the advantages of joining a powerful network of countries that can compete at a higher level in the international landscape.

Box 4: The History of the European Union

The European Union (EU) is a political and economic union consisting of 28 Member States located in Europe. It is composed by a set of institutions in charge of the regulation at common level of some crucial aspects of the political, economic and social life.

It was created as a custom union with the addition of free movement of people. The concept of custom union implies an agreement between different countries that totally liberalise trades between them and agree on a common level of tariffs, applied to the rest of the world.

The starting point was the *Treaty of Rome* of March 25th 1957, by which France, Italy, Belgium, Germany, Netherland and Luxemburg established the *European Economic Community*.

Europe came out completely destroyed by the Second World War: there was no longer an economic system and small countries, such as the European ones, could not have the ambition to compete on global scale. Moreover, the war had hit European peoples hard and a long period of peace was strongly desired.

The first seed of the European Community was planted with the *European Coal and Steel Community*, established with the Treaty of Paris on April 18th, 1951. The idea was to pull Franco-West German production of coal and steel because the two raw materials were the basis of the war industry and constituted the economic power of the two countries. Behind the Treaty, there was a completely political reason: the idea was that moving crucial industries to a higher and common level in a logic of

cooperation, would have prevented any prevarication attempt, avoiding potential future wars.

However, the political experiment had positive results that far exceeded expectations. At that time, the requirements for steel and coal in Europe were very high because of the reconstruction process; managing this crucial industry at a common level made it possible to achieve very positive gains in terms of efficiency, price stability was guaranteed and there was a much smaller gap in terms of demand and supply. It was found that economic cooperation in some crucial industries could generate great economic advantages and could make countries much more competitive.

At the time, the only economic super-power was the USA. In order to compete with the USA, European leaders understood that the creation of a large market was necessary, to develop major corporations capable of achieving a high level of efficiency thanks to economies of scale and the exploitation of location advantages (I produce where it is cheaper and easier to produce).

The stipulation of the Treaty of Rome represented the expansion of the cooperation effort earlier initiated. Competition policies (rules-setting policies) and cohesion policies (policies transferring income) were developed. Policies will be described in detail in section 3.1.3.1.

In 1968, there was the second step towards the establishment of the single market. This date marked the disappearance of all the tariffs between the Member States of the community. Of course, it did not happen over-night but it was the result of a transitional phase that led to the complete liberalisation of trades in those countries. The 60s represented a very good economic period for Europe: countries were growing a lot, markets were running and many people thought that the integration of the market was the main reason. At the same time, countries outside the Union started to suffer the consequences of “isolation”. It can be shown that countries excluded from an economic union suffer losses both in terms of quantity of goods sold and price at which they are able to sell.

This created the so-called “*domino effect*”, which led one country after the other to join the Union during the following years.

The first enlargement of the European Economic Community took place in 1973: UK, Ireland and Denmark became members. Obtaining the membership can be a long process; in fact, in order to be accepted as members, countries must meet some requirements, determined by the Treaty of Rome:

- The country must be a full democracy (*principle issue*): joining a union means giving up certain independent sovereignty in order to set some rules on common ground. Consequently, authoritarian governments that could create potential tensions are excluded.
- The country must be ready to adopt the system of rules that the European Community is using: this means that countries must be ready to give up their system of rules in favour of the common set of rules that allows to build a single economic system.
- The country must have a similar level of development of the members of the European Community (*practical issue*): this is because finding common rules is easier when countries are similar and their interests are pretty much aligned.

The second and the third point are the reasons why the accession process can sometimes require a lot of time. Countries must implement certain policies in order to make their economic system competitive enough to apply the common rules. However, the European Community has always shown a great support: some redistribution and cohesion policies have been implemented in order to help poorer countries and regions. For example, Ireland is a very successful case: it joined the union that was underdeveloped and is now it is a country whose income is higher above the EU average.

It is important to remember that the presence of a poor country generates negative effects (negative externalities) for everyone, while well-developed countries bring benefits to everyone.

In 1986, new countries joined the European Community: Greece, Spain and Portugal became members and, in the same year, the single market was created. This represented a further step in terms of integration, since the single market allows the free movement of goods, people and firms, factors of production and financial capital. The underlying concept is the creation of a single demand curve and a single supply curve at European level. It means producing cars where it is more efficient and where

there are the resources and competences to produce cars. It means growing vegetables where the climate is optimal and workforce is cheaper. All this implies a very broad set of policies and regulations that must be sketched at European level: the set of rules was completely re-designed for the creation of a common market for the factors of production.

Finally, the European Union was born. During the 70s, there were some crises. The oil shock caused a long period of very high inflation; the fixed exchange rate system broke apart. The EU leaders decided to do something to relaunch the economy and, given the positive experience of the 60s, they worked in favour of greater integration. Some political events contributed to produce positive results: in 1989 the Berlin Wall fell down and in 1991 the Soviet Union disappeared; some countries that initially had no economic relationships with the west, began to approach the common market.

The integration efforts were consolidated in February 7th, 1992, when the *Treaty of Maastricht* was signed and the European Union was born. It came into force on November 1st, 1993. The Treaty reformed and amended the treaties establishing the European Communities, the first pillar of the EU. It renamed European Economic Community to European Community to reflect its expanded competences beyond economic matters. It also created two new pillars of the EU about the Common Foreign and Security Policy and Cooperation in the Fields of Justice and Home Affairs.

It is now interesting to move on to the analysis of the economic policies that have shaped the European economic system from the Treaty of Rome to the establishment of the monetary union with the adoption of the common currency in 2002.

3.1.3.1 European economic policies and the budget

Economic policies can be distinguished into two main groups in terms of impact on the budget. There are *competition policies* that basically set the rules of competition, give indications on how firms can behave in the market and on what governments can or cannot do to support their national firms. These policies are not very expensive from a budgetary point of view: they require small amounts of money only to implement and

enforce them. *Cohesion policies* are policies transferring income from one region to another and they are very expensive in terms of budget.

For an in depth explanation of the policies, it is useful to take a look at the budget composition.

The EU budget expenditures were set at € 165.8 billions in 2019. Although the amount seems to be huge, it represents more or less only 1% of the total European GDP. At the national level, public expenditures are in the order of G/GDP~ 15%, so the European Union budget is very small compared to that of any individual country. There are mainly three sources of money composing the budget:

- Tariffs: since the level of tariff is set at the European border, tariffs go directly in the EU budget.
- A share of the value added taxes (VAT, in Italy IVA): this represents the largest part of the budget and the reasoning behind it is that it is very difficult to tax the value added where the value is actually created, when dealing with a single market.
- Fines of firms: money that firms that violate competition law or compliance with certain standards have to pay.

The EU's long-term budget is set on time horizon of 7 years. Today we are in the so-called Multiannual Financial Framework (MFF) 2014-2020, which sets the limits of the EU expenditures for each policy area. The EU expenditure is divided into six broad categories: the first and the second categories absorb most of the resources, since they deal with the *cohesion or transfer policies*.

The first category is named "Smart and inclusive growth": it accounts for the 34% of total expenditures and includes funds for the poorest regions of Europe for economic, social and territorial cohesion. Part of the funds is allocated for training programs for developing job opportunities and part for developing research and innovation (for example, the program "Horizon 20-20"). This money is earmarked for closing the gap between more advanced and less advanced regions. The beneficiaries are regions because even within individual countries there can be large differences in term of development and wealth and those policies are aimed directly at economically disadvantaged regions that have income per capital below 75% of the EU average. The money received must be

spent quite quickly on a well-defined and structured project that has to be co-financed by local authorities.

The second category is “Sustainable growth: natural resources”: it accounts for the 41% of the total expenditures and it refers to money allocated to agricultural policies. The agricultural sector has always been the most subsidised, since food self-sufficiency has always been considered crucial by individual countries. In order to avoid distortions in the level of competition due to government subsidies, this policy area was put on a common level. However, some discussions have emerged, since countries with larger agricultural sector benefitted more from the policy. This was also the reason why UK did not join the union, at first.

The other expenditure areas are “Security and Citizenship”, “Global Europe”, “Administration” and “Compensations”.

Competition policies, on the contrary, do not require much money because their role consists in setting the competition rules for the well-functioning of the single market, in order to guarantee that competition occurs at European level. There are three areas of regulation:

- Cartels and agreements between firms are prohibited: cartels cause great damages in terms of competition and a common regulation at European level is necessary to prevent and punish non-compliant behaviour with a common set of rules.
- The possibility of a single monopoly: in Europe, monopolists are allowed as long as they do not abuse their dominant position, preventing other firms from playing in the market. Thus, mergers and acquisitions are only allowed to achieve efficiency gains and are forbidden if the goal is only to eliminate of a crucial competitor.
- State aid is prohibited: governments cannot favour domestic firms in the common market with strong subsidies because distortions at the level of competition could emerge.

Over, a very high level of integration between the Member States has been reached. The market has really expanded, the Union has started to be competitive at the level of USA and China, economies of scale have been reached which have led to great savings in terms of efficiency and higher specialisation has been achieved. New members have joined the Union, making it wider and stronger. The membership process was not always easy

because countries needed to undertake a homogenisation process in order to meet the membership criteria. However, cohesion policies have been very successful and most of the new members have experienced great growing paths.

In this overall picture, one last element should be added: the *common currency*. The currency was the last barrier for the ease of transactions, as firms were exposed to the exchange rate fluctuations. The problem was that a single currency means a single monetary policy that may not satisfy all needs. Again, for aligning diverging interests some criteria have been set to assess whether or not a country is ready to join the monetary union. It has to be mentioned that the more the countries are similar, the lower the cost of having a single compromise monetary policy is.

3.1.3.2 The monetary union and the creation of a common currency

The role of the monetary policy is crucial since it ensures the equilibrium of the economic system, providing the right amount of money and setting the market interest rate.

A well-defined monetary policy can intervene to reduce the impact of cyclical shocks that negatively affect the economy, by stabilising the level of GDP.

When an economy is open to transactions with other economic systems, exchanging both physical and financial goods, interest rates should be perfectly aligned, otherwise financial capital will tend to move where the return is higher. This leads rise to the *impossible trinity principle*: if a country is an open economy, two out of the following three conditions can coexist:

- a. *Full financial capital mobility*
- b. *Fixed exchange rate*
- c. *Independent monetary policy*

In fact, to allow the free movement of financial capital with a fixed exchange rate, then it is necessary to use the monetary policy to stabilise the exchange rate that is driven around by financial flows. Consequently, monetary policy cannot be used to sustain the economy, in case of negative shock.

If capital mobility is not allowed, the exchange rate remains fixed and monetary policy can be used as preferred.

In order to guarantee both financial mobility and monetary policy independence, the fixed exchange rate must be abandoned, as it will be affected by the movement of financial flows.

The implications of the impossible trinity principle can explain the last stage of the European integration process. With the creation of the Economic Community and the complete liberalisation of trade occurred in 1968, the number of cross-border transactions by the members increased considerably. As long as the world was regulated by the fixed exchange rate system, firms did not suffer any uncertainty related to exchange rate fluctuations.

However, in 1973 the fixed exchange rate broke and the value of the exchange rates was determined on the basis of the demand for the different currencies. Higher demand implies an appreciation of the currency, lower demand implies a depreciation. These fluctuations are potentially very dangerous for firms operating in an international environment. In fact, prices are set according to the current level of exchange rate; if payment is postponed and, meanwhile, exchange rate changes, the exporter may suffer losses. More in depth, if the currency of the exporting country appreciates (the exchange rate reduces), this is equivalent to a depreciation of the foreign currency. Since the price of the goods on the international markets remains the same, the amount of foreign currency received is the same, but once converted, it equals a lower amount in terms of domestic currency.

At a certain point, the European leaders realised that the volatility of the exchange rate was highly inefficient: on March 13th, 1979, the European Exchange Rate Mechanism (ERM) was introduced by the European Economic Community as part of the European Monetary System (EMS). It was defined as a metric system according to which the value of one currency against the other was set; a narrow band was maintained allowing fluctuations between $\pm 2,5\%$.

By restoring the fixed exchange rate, the choice for a while was to keep independent monetary policies at the expenses of free movement of capital: high restrictions in terms of capital mobility were set. The problem was that those restrictions were completely

incoherent with the concept of the common market and free movement of capital had to be re-introduced in 1990.

At the beginning, nothing formal happened in terms of monetary policy: each country continued pursuing its own monetary policy even if it violated the impossible trinity principle. The practical demonstration of the principle was not long in coming: in 1991, Germany unified and implemented two monetary policies in the opposite direction in a very short time. First, there was a huge monetary expansion due to the unification of the eastern and western currencies; later, a great monetary restriction was introduced, in order to absorb the enormous amount of money that would have created deflation.

This caused large exchange rate fluctuations, financial capital shifted from one country to the other and the fixed exchange rate system broke apart again. This was the time in which the EU began to think about the common currency; by definition, the monetary policy became one for the entire system and compromises had to be found.

Later, in order to lay the foundations on which the Economic and Monetary Union would have been built, *The Exchange Rate Mechanism* (ERM II) was established on January 1st, 1999. In ERM II, the exchange rate of the non-euro area Member State is fixed against the euro, with a certain tolerance, to ensure that exchange rate fluctuations between the euro and other EU currencies do not disrupt economic stability within the single market, and to help non euro area countries prepare to enter the euro area (elaboration from European Commission Website).

3.1.3.3 Optimal currency area and convergence parameters

The decision whether to join a union is the result of a cost-benefit analysis; with reference to a monetary union, the costs and benefits are those of sharing a common currency. The benefits are the following:

- The presence of network externalities: the more the people use the common currency, the higher the benefits for all.
- The elimination of transaction costs: people had to incur very high transaction costs every time they converted the currency.
- Elimination of the exchange rate risk: international transactions are no longer subjected to exchange rate fluctuations.

On the other hand, the costs are related to the presence of a single monetary policy that could not be good for all the countries in the same way. The more the economic systems sharing the common currency are different, the higher the costs related to the single monetary policy. More in depth, the advantage of an independent monetary policy lies in the possibility to react to asymmetric shocks that affect different countries in different ways. Assuming that the economy of a country is very much dependent on the car sector and that the demand for cars suddenly falls. There is a mismatch between demand and supply that could be balanced by a monetary expansion. However, if the monetary policy is the same for more than one country, the monetary expansion would create inflation in the countries not affected by the shock.

The compromise will be an intermediate level of expansion that leaves the country affected by the shock with a small negative output gap and the countries not affected by the shock with a small positive output gap.

In order to join the monetary union, the sum of all the benefits must exceed the sum of the compromise cost given by the single monetary policy.

Some criteria for minimising costs have been identified; these criteria contribute to the definition of the so-called *Optimal Currency Area*, defined by the economist Robert Mundell as a geographical region where the presence of a single currency would maximize economic efficiency. There are three *economic criteria*:

1. *High mobility of the factors of production*: if factors of production, such as workers, are very mobile, they can be easily transferred from one country to another to face asymmetric shocks. If one area is saturated, workers can migrate to areas in where the labour force is needed, avoiding unemployment.
2. *Similar business cycles*: if countries share economic booms and crises, there is no need for different policies. The more similar the economic cycles are, the less likely is the exposure asymmetric shock; this concept is linked to the level of *differentiation* of the different economies. If the economies of the countries are well differentiated between sectors, the weight of each sector is lower and sectoral shocks have a limited impact on the overall economy.
3. *Degree of openness and integration*: if countries are well integrated and financial capital can easily move from one country to another, the price level is more or

less the same across the area. The alignment of prices guarantees a similar response of different economic systems to the same monetary policy.

There are also three *political criteria*, linked to economic issues:

1. *The possibility to have some form of fiscal coordination*: this allows to implement some redistribution and transfer policies to areas directly affected by economic difficulties. The European Union lacks of this fiscal coordination and the European sovereign debt crises of 2009-2015 was the evidence of the failure of this criterion. This point is quite controversial as it implies the allocation of resources from stronger countries to support countries in difficulty. This leads to the second political criterion.
2. *Solidarity*: solidarity is important for the implementation of fiscal transfers. Of course, it has to be conceived from an economic perspective: the presence of poorer countries generates negative externalities even for the richest. However, individual countries are not inclined to donate the taxes collected from their citizens in order to recover a crisis situation happening in another country.
3. *The presence of homogeneous preferences*: preferences are understood in terms of policy priorities. In Europe, the European Central Bank is in charge of the monetary policy and its concern is price stability, before unemployment. For this reason, in Europe there is a tendency to have a lower level of liquidity in circulation, rather than a higher level. This is the concept of homogeneous preferences: countries agreed to have a certain level of money injected into the system, to ensure a certain inflation target.

Therefore, it was clear that countries need to be similar in order to be efficiently subjected to the same monetary policy. For this purpose, some *convergence criteria* for joining the monetary union have been defined; in the website of the European Commission it is stated that:

“In order to adopt the euro, EU countries have to bring their national legislation in line with relevant EU law and meet specific conditions designed to ensure economic convergence. These requirements, agreed by the EU Member States in Maastricht in 1991, are known as the convergence criteria.” (European Commission Website)

These are measurable and observable parameters that countries must meet that are much more practical than the criteria defining the optimal currency area.

- *Price stability*: harmonised consumer price inflation is assessed. It should not exceed by more than 1,5 percentage points the rate of the three best performing Member States. This criterion allows for similar price dynamics which guarantees good performances of the monetary policy.
- *Sound and sustainable public finances*: the government deficit and debt must be lower than a certain threshold. In fact, a huge public debt absorbs huge amounts of liquidity, generating negative externalities for the other members of the monetary union.
- *Durability of convergence*: it is assessed observing the market interest rate for three years that must be aligned with that of the union. It must not exceed by more than 2 percentage points the rate of the three best performing Member States in terms of price stability. In fact, if a country with an interest rate of 10% suddenly joins a union with an interest rate of 2%, huge capital flows move from one area to another.
- *Exchange rate stability*: the exchange rate development is assessed; it requires the participation in ERM II for at least 2 years without severe tensions, in particular without devaluing against the euro.

With the adoption of the common currency, the level of integration has become so high that certain countries have started to worry about some constraints. The single monetary policy seemed inadequate for some countries; this was the first time that the integration path was divided into two directions: some countries decided to join the monetary union, others decided to keep their own currency, eventually joining the ERM II.

From here the distinction between the European Union and the *Eurozone*: the European Union is composed of 28 countries (27 after the Brexit) and identifies the political-economic union; the Eurozone (officially called the Euro Area) is a monetary union of 19 of the 28 Member States of the European Union (EU) which have adopted the euro (€) as their common currency.

3.1.3.4 The Stability and Growth Pact

The Stability and Growth Pact (SGP) is a legal framework designed to guarantee sustainable public finances and the coordination of the fiscal policies for the stability of the Economic and Monetary Union (EMU). It is interesting to assess the reasons for the development of this set of rules, by analysing how the implementation works.

It was first introduced in 1997, in order to strengthen the convergence criteria defined in the Maastricht Treaty. In fact, it was understood that the convergence criteria for EMU membership should be further internalised in the behaviour of the Member States even during the permanence in the EMU itself.

The aim of the convergence criteria, first, and of the SGP, later, was to guarantee fiscal discipline so as to strengthen the credibility of monetary policy. It is well known that, for a well-functioning monetary union, national fiscal policies must be coordinated: uncoordinated fiscal policies produce cross-border effects that can harm the functioning of the EMU.

Uhlig (2002) investigated exactly this point and interpreted the SGP as a tool to prevent the so-called *free-riding behaviour* that national states would be tempted to adopt. He wrote:

“Ideally, fiscal policy should respond to the country-specific demand shocks, leaving it to the European Central Bank to respond to the average of the country-specific “cost push” shocks. However, each fiscal authority will be tempted to try to improve the situation for its country expanding government demand or government deficits precisely when the ECB need to combat cost push shocks with higher interest rate. With all countries doing so, the ECB ends up combatting not only the cost-push shocks, but the additional fiscal demand as well: while the ECB could ultimately be successful in avoiding any consequences for European inflation rate, the end result would be higher nominal interest rates and a situation that is worse for everybody.” (Uhlig, 2002)

Therefore, the Stability and Growth Pact was developed to undertake a further commitment to budgetary discipline for three main reasons, well explained by Buti, Franco, Ongena (1998):

- *To enforce the credibility of the single monetary policy:* without strong fiscal rules, the legal independence of the ECB could be threatened by the pressure

of high-debt countries asking not to increase the interest rate in presence of inflationary pressures or demanding unexpected inflation for debt relief. The ECB would not be able to set the interest rate allowing price level control, but it would adjust it in order to ensure public finance solvency. The policy mix would turn to be active fiscal/passive monetary with high inflationary escalation potential.

- *To limit politicians' actions to counter a debt inclination:* the pact ensures fiscal prudence since governments may feel less inclined to pursue fiscal discipline as they are subjected to lower interest rates in comparison to a condition of flexible exchange rates.
- *To achieve a balanced policy mix:* fiscal discipline creates the conditions for the desirable monetary response to potential shocks.

The budgetary criteria established by the Stability and Growth Pact are the following:

- $\frac{\text{GOVERNMENT DEFICIT}}{\text{GDP}} \leq 3\%$
- $\frac{\text{PUBLIC DEBT}}{\text{GDP}} \leq 60\%$

The SGP framework is structured in two parts: the *preventive arm* and the *dissuasive arm*. The *preventive arm* commits countries to maintain fiscal discipline, regulating the medium term fiscal policy and setting for each country a budgetary medium-term objective (MTO). The MTOs are conceived to meet the two criteria of the SGP, “*while ensuring governments have enough room to manoeuvre and a safety margin against breaching the EU’s fiscal rules*” (European Commission Website).

The *dissuasive (or corrective) arm*, known as the *Excessive Deficit Procedure* (EDP), applies to Member States that breach the SGP budgetary requirements for reasons that are not “temporary” nor “exceptional” and do not show corrective actions in the direction of the targets. In case the projected budget of a country, submitted to the European Commission, leaves space for a potential breach of the Pact, *early-warnings* are sent to bring the country back on the right track. When the EDP is opened, indications for implementing corrective policies are imposed to the

noncomplying Member State and certain results must be achieved in a defined period of time. As long as the behaviour does not show signs of improvement, the surveillance is increasingly rigorous and the measures may extend to the impositions of pecuniary penalties, up to 0,5% of the country's GDP (Civitas, Stability and Growth Pact, 2015).

The Pact has been considered too rigid in many occasions, to the point in which three revisions have been made over the years, namely in 2005, 2011 and 2013. The amendments were necessary to ensure a higher flexibility but, at the same time, caused further complexity.

Flexibility was needed to include in the Pact considerations about the specific economic circumstances to which single Member States are subjected. In fact, in a particular economic environment, outside the fiscal behaviour, a country could find more difficulties than other countries in reaching certain targets.

Consequently, the complexity of internalising specific aspects in the Pact while ensuring impartiality and equality of treatment between Member States emerged. Full support was expressed for the establishment of detailed rules, under which the assessment of potential violation was fairer, rather than under exercise of judgement.

3.1.3.5 The Fiscal Compact

The *Treaty on Stability, Coordination and Governance* (TSCG) in the Economic and Monetary Union, known as *Fiscal Stability Treaty*, is an intergovernmental Treaty introduced to enforce the Stability and Growth Pact, signed on the March 2nd, 2012 by all Member States of the European Union (EU), except the Czech Republic and the United Kingdom. The Treaty entered into force on the January 1st, 2013.

The *Fiscal Compact* is the fiscal chapter of the Treaty (Title III) and it regulates the Member States of the Eurozone plus Bulgarian, Denmark and Romania.

Compliance with the Fiscal Compact implies that the national budget is in balance or in surplus, as defined in the Treaty. Corrective actions must be taken to solve potential mismatches between the real situation and the definition of "balanced budget". The Treaty defines a *balanced budget* as a general budget deficit not exceeding 3.0% of the gross

domestic product (GDP) and a structural deficit not exceeding a country-specific MTO which may be set at a maximum of 0.5% of GDP for states with a debt-to-GDP ratio exceeding 60% or at maximum of 1.0% of GDP for states with debt levels within the 60% limit. The definition therefore includes the compliance with the criteria established by the Stability and Growth Pact. The Treaty was designed to be internalised into fundamental national laws: Italy introduced it into the Constitution.

3.1.3.6 Conclusions

It is very clear that the membership to the European Union constraints the policy of the Member States and imposes strict rules. However, those rules are necessary to ensure the coordination and integration of different needs and preferences. The benefits of the Union are many and it should not be forgotten that the membership choice is the result of a cost-benefit analysis. The creation of the Union implies that the benefits exceed the costs, caused by the constraints.

As far as the European Union is concerned, Modern Monetary Theory has nothing to suggest to solve debt issues affecting some countries, other than the exit from the Eurozone, thereby regaining their monetary sovereignty.

I strongly disagree with this statement, since, in case a MMT proposal would be suggested for the European environment, I firmly believe in a further integration rather than a disaggregation. If the Member States of the European Union consolidate the integration process towards a higher level of fiscal coordination, the MMT would eventually be applied to the Union, rather than to the single state.

Obviously, this would require great efforts and willingness on the part of all Member States that would be involved in a strong process of review and restructuring institutions.

3.2 “A government deficit is necessarily mirrored by an equivalent private sector surplus”

Despite the countless criticisms of the Modern Monetary Theory, it cannot be denied that it represents a “positive movement”, since it not only refuses existing economic models and policies, but it also offers a structured alternative framework or set of policy prescriptions. In this regard, much effort has been invested by MMTers, studying the monetary operations and institutional structure of monetary sovereign countries. However, all the considerations about the operational realities of the monetary system and the accounting logic according to which the reserves market has been treated, seem to be, at best, misleading in the eyes of many.

The opponents of the MMT do not question the correctness of the arithmetic analysis of bank reserves but rather, its limited relevance for the big economic picture. Roche (2011) simply argued that MMT looks “*at the flow of money without inquiring too deeply about the economic significance behind the flows*” (Roche, 2011).

More deeply, Henwood (2019) underlined that the MMT lacks completely the relationship between money and people, between money and private economy, “*where workers labour and capitalists profit from their toil and compete with each other to maximise that profit, a complex network of social relations mediated by money*” (Henwood, 2019).

This superficiality and “arrogance” of being able to explain every single economic aspect in an accounting perspective, resulted in the well-consolidated statement that “*government deficits becomes a source (not a use) of private savings*” (Mitchell, 2009). It has been seen that Mitchell relied on the basic macroeconomics identity:

$$\text{SPENDING} - \text{TAXES} = (\text{SAVINGS} - \text{INVESTMENTS}) + (\text{IMPORT} - \text{EXPORT})$$

Leaving aside the international-trade aspect, he derived:

$$\text{GOVERNMENT BUDGET DEFICIT} = \text{DOMESTIC PRIVATE SURPLUS}$$

Roche (2011) and, later, Murphy (2019) attacked harshly this result, as derived through accounting tautologies, by not relying on any particular economic theory. They identified a major mistake in the interpretation that MMTers give to the term $(S - I)$.

MMT defines $(S - I)$ as “net savings” forgetting that the traditional economic definition of net savings is “*net disposable income less final consumption expenditures*” (Roche, 2011). The real interpretation of the term $(S - I)$ is “*financial savings net of domestic private real investments*” (Roche, 2011), i.e. far from representing private sector savings. In fact, two important sources of private savings are ignored: (1) the surplus from investment and (2) the market value of existing assets (since the assets are valued only at book value). MMT is neglecting most of the fundamental assets representing private wealth, such as real estate, corporate stocks, corporate bonds, etc. MMT completely leaves aside the “*revaluation of assets that is reflected in the way the market values all of the innovations and output that make life worth living*” (Roche, 2011).

In this regard, the metaphor of "Robinson Crusoe" economics (Murphy, 2010) is useful to show that the private sector does not need a public deficit to save.

"Robinson Crusoe" economics is a barter economy where Crusoe is able to harvest 10 coconuts per day, representing his “real income”. In order to “invest” his time for improving his wealth, he must, first of all, save. He decides to consume only 8 coconuts per day, living below his need, and after 20 days he put aside a buffer of 40 coconuts, enough to feed himself for 5 days. During these days, he can spend time on various activities such as collecting sticks and frays, necessary for creating useful tools to improve his productivity in the harvesting of coconuts.

Crusoe’s prior savings were converted into investments in capital good and this was possible without the presence of another entity running a budget deficit. Living below his means, allowed him to increase the future productivity, leading to a higher income (and consumption) in the future.

The misconception of MMT lies in referring to “net savings” with the meaning of “*people collectively save more than people collectively invest, instead of people collectively save more than people collectively borrow*” (Murphy, 2019).

It can be concluded that “*MMTers concentrate on accounting tautologies that do not mean what they think*” (Roche, 2011).

It is also very interesting how Murphy (2019) was able to further disprove MMT's ideas, using this accounting identity to demonstrate how public expenditures are actually subjected to the crowding out phenomenon denied by the MMTers.

If the government increases its budget deficit, which means that an increase in G is not financed by an equivalent increase in tax revenues, then both the right-hand and the left-hand sides of the identity increase. When focusing on the term $(S - I)$, the increase can be caused by two factors:

- An increase in private sector savings due to lower consumption (caused by higher interest rates and higher taxes expectations in the future);
- A reduction in private sector investments, due to higher interest rates.

In other words, a higher government deficit may result in lower private consumption, higher interest rates, and real resources transferred to finance public projects, whose usefulness and positive impact on the economy are not ensured.

3.3 “Monetary policy is relatively ineffective in a slump: fiscal policy is more powerful”

The Modern Monetary Theory proposes a new institutional framework, attempting to give an innovative and original interpretation to the interaction between monetary and fiscal policies. However, this theory can be interpreted as a form of ‘fiscal dominance’, in which the fiscal entity has the reins to set the policy mix at will. From here, the criticism of several orthodox economists, who argue the lack of novelty of the MMT that would rather be something leading to higher inflation now or in the future, in accordance with a non-Ricardian regime.

In this section, the liquidity trap condition is analysed in *Box 5* as explained in the textbooks. This will allow to confirm that pillar 3 from Jones and Llewellyn (2019) is correct. Then interactions between monetary and fiscal policies are addressed, first with a theoretical approach in *Box 6*, later studying the Ricardian equivalence and the policy combinations as defined by Leeper (1991). By examining the orthodox macroeconomics explanations of the policy interaction, it will be possible to define MMT as a form of active fiscal, passive monetary policy mix.

Jayadev and Mason (2018), economists outside the MMT, but sympathetic to it, recognise that MMT consists of a number of distinct elements – “*a theory of money, a discussion of current monetary operations, an exercise in national income accounting and a program of macroeconomics policies*” (Jayadev and Mason, 2018). They focused on the macroeconomics policy pillar – stating that fiscal policy should be in charge of the guarantee of full employment, regardless the fiscal position. This is the MMT component referring to Lerner’s functional finance. They concluded that functional finance and orthodox policy do not diverge because of a different understanding of the economy but because of a different judgement on the optimal assignment of the two policy instruments to the price and debt stability targets. The divergence comes from different view of the capacities of policy makers to reach their target and from different opinion on which kinds of errors are most likely to occur on the part of policy makers.

Therefore, Jayadev and Mason concluded, “*while MMT’s policy proposals are unorthodox, the analysis underlying them is entirely orthodox*” (Jayadev and Mason, 2018).

Their work showed that a policy mix AF/PM, suggested by MMT, is preferable to bring the economy out of a crisis, since a stimulus coming from the fiscal authority and accommodated by the monetary one is more effective.

However, once the economy is running, it is preferable to leave the central bank to impose its behaviour setting the market interest rate, while the government in charge of the debt sustainability; in fact, in absence of financial constraints (weather real or imagined) governments would be tempted to shift to larger deficits, regardless of demand conditions.

Box 5: The Zero Lower Bound and the Liquidity Trap

The effectiveness of an expansionary fiscal policy is equal to its potential when the LM curve is horizontal; in this case, the interest rate remains constant and the crowding out effect does not operate (*Figure 3.1*).

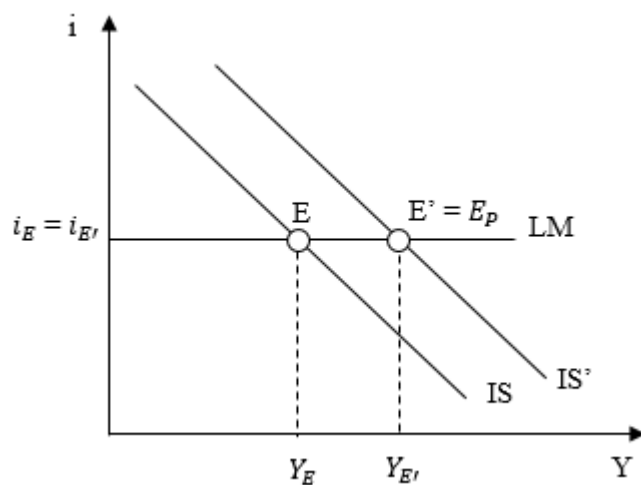


Figure 3.1

This situation, on the other hand, leads to a complete ineffectiveness of the monetary policy. The central bank is not able to manage the interest rate, because the public is willing to take even greater amounts of liquid money, whatever the quantity supplied.

This phenomenon is called *liquidity trap* and occurs when the interest rate is very low (*Figure 3.2*), around zero (*zero lower bound*). At zero interest rate, the public does not want to hold any bonds because they are dominated by money.

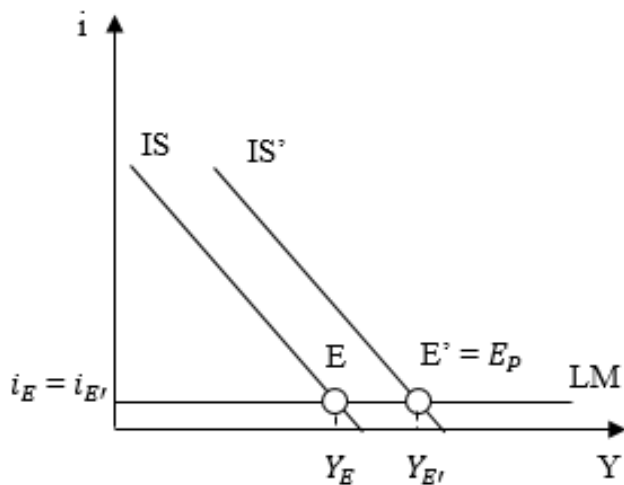


Figure 3.2

An increase in the money supply would have no effects on the interest rate or income and the central bank can only operate with non-conventional monetary policy tools to stimulate economic growth, such as *forward guidance* and *quantitative easing*.

Box 6: A mix of political economy

Monetary and fiscal policy are the two tools that can be managed in order to reach specific macroeconomic objectives. Usually, the purpose of fiscal policy is to increase the aggregate output of the economy, while the main objective of the monetary policy is to set the liquidity level of the economy and the correspondent interest rate. The trade-off is between a higher interest rate that keeps inflation under control and a lower interest rate that sustains the aggregate output, through an increase of private investments. The two policies, especially in the textbook models, interact precisely through the macro-variables output and interest rate.

Traditionally, both policy instruments were under the control of the national governments, which could obtain the *optimal policy mix* (Figure 3.3); this consists in managing the policy tools in such a way as to guarantee the maximum level of output and the minimum deviation from the target inflation.

If the economy is in equilibrium at point E, assume the government would have to reduce public expenditures, in order to decrease the budget deficit. It could operate through a contractionary fiscal policy that reduces aggregate demand and, thus, output

(point E'). This would generate a slowdown of the economy, frustrating economic agents. In order to counterbalance the reduction in output, the central bank could act with an expansionary monetary policy. Liquidity is injected into the system, interest rates decrease and the output expands again, coming back to its original value (point E^F , where F stands for “final”).

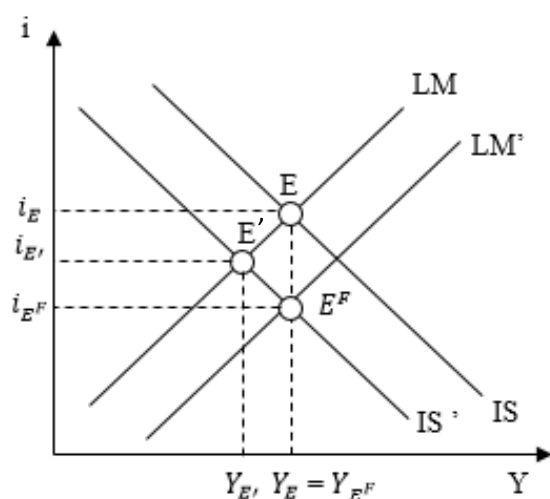


Figure 3.3

More recently, there has been a structural change in the interaction between monetary and fiscal policies, due to the independence of central banks from national governments, the formation of monetary unions and the attempts made to form fiscal unions.

The independence of the two authorities causes an issue of interaction of the two policies, which can be complements or substitutes for each other. Policy makers define two policies as *strategic substitutes* when one fiscal (monetary) policy expansion (contraction) is countered by a monetary (fiscal) policy contraction (expansion).

The two policies, by contrast, act as *strategic complements* when one fiscal (monetary) policy expansion (contraction) is met by a monetary (fiscal) policy expansion (contraction).

When it comes to fiscal policy, one question must be addressed, that is how the government can finance its own expenditures. The central bank independence means that new money cannot be printed to finance public consumption; the government can, thus, issue new bonds or levy taxes.

Since the issuance of bonds consists in borrowing money, in the future the money will have to be repaid, presumably by raising taxes later. Therefore, the choice is “tax now or tax later”. It is interesting to investigate how this decision affects consumption.

3.3.1 Ricardian equivalence: how government borrowing affects private savings

David Ricardo was the first to state a result of “neutrality” for fiscal policies, in the eighteenth century. He discussed whether would be preferable to finance a war via new Government debt or via a temporary tax.

Later, in 1974, Barro resumed Ricardo’s thinking and investigated whether or not government bonds are net wealth. If not, the way government finances its expenses has no real effect on consumption.

Buchanan (1976) noted a close relationship between Barro’s and Ricardo’s works and coined the expression “Ricardian equivalence”, meaning that the choice “tax now or tax later” has the same effect on households’ consumption; the debt is, thus, defined neutral with respect to consumption, since debt is only referred taxes.

Barro developed a model based on the assumption that consumers are forward looking and they internalize the government's budget constraint when making their consumption decisions. The effect is that for a given pattern of government spending, the method of financing that spending does not affect agents' consumption decisions, leaving aggregate demand unchanged.

Here, is illustrated the treatment made by Eric Sims (2016) around Barro’s model. There is a two-periods ($t, t+1$) model, in which economic agents earn income equal to (Y_t, Y_{t+1}) and the government makes expenditures equal to (G_t, G_{t+1}) . The real interest rate is assumed to be constant, equal to r_t .

As mentioned before, government can finance G_t by raising taxes T_t or by issuing debt B_t . B_t represents the stock of government debt issued in t and carried out into $t+1$; assuming an initial level $B_{t-1}=0$. For the second period, the government also has interest expenses on debt $(r_t \cdot B_t)$. The government faces two budget constraints in the two periods:

- Period t : $G_t \leq T_t + B_t$
- Period $t+1$: $G_{t+1} + r_t \cdot B_t \leq T_{t+1} + B_{t+1} - B_t$

The terminal condition assumed is $B_{t+1} = 0$; the government cannot end up with a positive net debt because this would mean that some creditor would not be repaid (Perotti, 2013). At the same time is not optimal for the government to end up with negative net debt (positive net assets), as this would imply that some resources had not been exploited.

By replacing the terminal condition in the constraint of period 2, it can be computed B_t and, by replacing it in the constraint of period 1, it can be derived the *government intertemporal budget constraint*:

$$G_t + \frac{G_{t+1}}{1+r_t} = T_t + \frac{T_{t+1}}{1+r_t}$$

The future flows are brought to the present value, discounting for the real interest rate. Conceptually, government's budget must be balanced in an intertemporal present value sense and not period-by-period.

Regarding households, the *representative household* (all the households behave in the same way) is considered. The household has a certain lifetime utility, determined by consumption in period 1, C_1 , and consumption in period 2, C_2 :

$$U = u(C_t) + \beta u(C_{t+1})$$

The household is also subjected to two budget constraints during the two periods, since the available income (allocable in either consumption or savings) is limited by the amount of taxes imposed by the government:

- Period t : $C_t + S_t \leq Y_t - T_t$
- Period $t+1$: $C_{t+1} + S_{t+1} - S_t \leq Y_{t+1} - T_{t+1} + r_t S_t$

If the terminal condition $S_{t+1} = 0$ is imposed, the *household's intertemporal budget constraint* is the following:

$$C_t + \frac{C_{t+1}}{1+r_t} = Y_t - T_t + \frac{Y_{t+1}-T_{t+1}}{1+r_t}$$

The household optimisation problem is given by the maximisation of the utility with respect to savings in the first period S_t :

$$u'(C_t) = \beta (1+r_t) u'(C_{t+1})$$

The household's constraint can be written in the following way:

$$C_t + \frac{C_{t+1}}{1+r_t} = Y_t + \frac{Y_{t+1}}{1+r_t} - [T_t + \frac{T_{t+1}}{1+r_t}]$$

Since the present value of taxes must equal to the present value of public expenditures, this is:

$$C_t + \frac{C_{t+1}}{1+r_t} = Y_t + \frac{Y_{t+1}}{1+r_t} - [G_t + \frac{G_{t+1}}{1+r_t}]$$

$$C_t + \frac{C_{t+1}}{1+r_t} = Y_t - G_t + \frac{Y_{t+1}-G_{t+1}}{1+r_t}$$

In other words, *taxes drop out*. This means that the household's consumption depends only on government expenses, whether they are financed through taxes or debt. By qualitatively deriving the consumption function via indifference curves and budget lines, it is possible to show that it does not depend on T_t or T_{t+1} .

As a result, the concept of Ricardian equivalence states that the impact of public expenditures on the economy does not depend on a tax finance decision or a deficit finance decision. Consequently, the debt issuance is totally equivalent to raise future taxes and debt issued must be equal to the present value of government's primary surplus:

$$B_t = \frac{1}{1+r_t} [T_{t+1} - G_{t+1}]$$

The result of Barro's framework has been criticized many times, due to the strong assumptions on which it is based, which seem to be too restrictive compared to the real world:

- Taxes must be lump-sum and affect all the households in the same way;
- There are no borrowing constraints;
- Households are forward-looking.

However, the basic intuition of the Ricardian equivalence is very useful especially when monetary and fiscal policies are put in relation with government's debt shocks.

Prof. Eric Sims (2016) showed that when the Ricardian equivalence holds, the government spending multiplier is equal to 1. In fact, a deficit-financed expenditure works exactly as a tax-financed expenditure. As already seen, a fiscal policy implemented by keeping the budget in balance influences the output with a one-to-one proportion.

On the other hand, when the Ricardian equivalence does not hold up because the household is not forward-looking, a deficit-financed expenditure affects the output more than proportionally, as taxes remain unchanged and people consume more.

3.3.2 Monetary/fiscal interactions: Leeper (1991)'s taxonomy

In the actual environment with independent policy institutions, it is interesting to investigate the relationships between monetary and fiscal policies and, in particular, the impact that they generate on the public debt.

The interactions between monetary and fiscal policies were studied by Eric Leeper, in 1991. Leeper defined a policy as "active" or "passive" according to its response to Government debt shocks.

An *active policy* is implemented by an authority, either monetary or fiscal, that does not consider the level of public debt. Thus, it sets its control variable according its preferable level.

A *passive policy* is implemented by an authority that agrees to take on a residual role, adjusting its control variable to respond to government debt shocks. The authority that behaves passively has a limited range of action, since it is constrained by imposition of the active authority and by the actions of public optimisation.

Consequently, the actors involved in the determination of the final equilibrium are the central bank (monetary authority), the government (fiscal authority) and the private sector.

The goal of the central bank is to supply the right amount of money in the economy and to set the relative interest rate. The trade-off is between a higher liquidity (lower interest rate) that sustains the economy and a lower liquidity (higher interest rate) that keeps inflation under control. Monetary policy is considered as inflation taxes; in fact, an expansionary monetary policy leads to greater liquidity, inflation increases and purchasing power deteriorates: people can buy less with the same amount of money.

The government's task is to set the level of taxes, depending on the demand for interest-bearing public debt from the private sector, in order to keep the debt sustainable. For simplicity, fiscal policies are restricted to direct lump-sum taxes.

The demand for government bonds by the private sector constrains the government affecting the interest rate it must pay on bonds.

In case of active policy, the policy rule is unresponsive to current budgetary conditions; in case of passive policy, the authority uses its tax to balance the budget.

Four possible combinations can be identified:

- *Active monetary and passive fiscal policy*: in this context, the monetary authority dominates the fiscal one and it can react to inflation by setting high interest rates, if necessary. Depending on the level of interest rate, the government receives a certain demand for government bonds. The only action that the fiscal policy can take consists in setting a certain tax level in order to keep the budget in balance.

Let us suppose that the government needs to finance a healthcare project and it needs to increase government expenditures. This would have a negative impact on public debt. The central bank acts actively: it does not consider the budgetary condition and keeps the interest rate at the previous equilibrium level that is the right to ensure price stability. At this level of interest rate, the government receives a certain demand for bonds. Consequently, the government can only act passively: it cannot issue new bonds because the public is not interested in buying them. The only action it can undertake consists in raising lump-sum taxes.

Under these policies, fiscal disturbances do not influence equilibrium prices, interest rate or output, in accordance with the Ricardian regime (Leeper, 1991; Sargent, 1986).

- *Passive monetary and active fiscal policy*: in this context, the fiscal authority dominates the monetary one and it can freely undertake fiscal policies, setting the market interest rate it prefers. Depending on the level of interest rate, a certain demand for government bonds is generated and the monetary authority behaves passively to balance the debt shock. In particular, the central bank will supply more money, generating more seigniorage revenues that allow the government to pay the debt. In this process, the central bank obeys to government impositions and inflation is created; inflation taxes (in the form of loss of purchasing power), which have an impact on the private sector, represent the policy tool through which the monetary authority can balance the budget.

Under these policies, deficit shocks increase inflation now or in the future, in accordance with a non-Ricardian regime.

“Active behaviour completely specifies policy and uniquely determines the equilibrium pricing function. Passive policy prevents an explosive path of government debt” (Leeper, 1991, p. 138). This is the reason why the two combinations described above lead to a unique and stable equilibrium.

- *Passive monetary and passive fiscal policy*: in this context, both authorities behave passively as they were both constrained to balance the budget. Without the imposition of the active authority, there are several possible equilibrium conditions, characterized by different levels of prices and money in circulation. This is the so-called *price-level indeterminacy* result obtained by Sargent and Wallace (1975), in case the interest rate is pegged and the money supply is whatever it must be to satisfy the demand for it.
- *Active monetary and active fiscal policy*: in this context, both the authorities try to impose their behaviour, neglecting the budget constraint. It is not possible to determine an equilibrium level of prices and a money growth process that allow the private sector to hold public debt in a situation in which the policy shocks are independent.

The private sector expects the policy authorities to act without coordination and two possible outcomes can emerge: an increase in inflation expectations, which could potentially lead to hyperinflation (Loyo, 1999) or the inability of the policy maker to increase inflation expectations (Bianchi and Melosi, 2017).

Specifically, the monetary authority insists in maintaining price stability, by setting an interest rate that can counteract inflation; on the other hand, the fiscal authority procrastinates the fiscal adjustment. The policymakers disagree on whether inflation should be used or not to balance the budget.

When the fiscal authority is not concerned about debt stabilisation and the central bank does not agree to take a follower role, not only inflation cannot be managed but more fiscal imbalances are generated, fostering the inflation path.

In fact, if the monetary authority accepts to take a passive role, the inflation increases just enough to stabilise the fiscal imbalance. On the other hand, if the monetary authority tries to impose its own behaviour, not allowing an increase in inflation, the economy can enter a negative spiral of lower output, higher inflation and higher debt. This is because households expect an increase of inflation to tackle the fiscal imbalance. The central bank does not realise the expectations and the fiscal position worsens, feeding expectations for a future increase in inflation. This is the case in which agents believe that the monetary authority should be charged with changing its policy to coordinate with the other.

Loyo (1999) analysed the actual episode of hyperinflation in Brazil in the 80s. At that time, the monetary policies in Brazil were carried out by a hawkish central bank, strongly focused on fighting the high inflation. It, thus, implemented a very aggressive policy, setting a high interest rate that led to an increase in debt services: the government had to pay higher returns on its bonds. In this context, households' expectations played a crucial role; the public sector did not expect a government manoeuvre to finance the higher cost of debt through future tax imposition and it continued to spend rather than save. The persistent demand exerted further pressure on prices and a spiral of higher inflation, higher interest rate and impossibility of stabilisation led the country to a deep crises.

By contrast, when the public expects the fiscal authority to accommodate the monetary one, policy makers are incapable to raise inflation expectations and a potential recession cannot be avoided.

The equilibrium can only be achieved when one authority accepts the passive role and the outcome is different depending the expectations of the agents.

In order to avoid the generation of negative loops that bring to a condition of *stagflation*, it is important to enforce a credible mix of monetary and fiscal policies.

This concept is particularly important in the European scenario, where the unique monetary policy has to be coordinated with many different fiscal policies. The only possible outcome is, thus, a policy mix made of one active monetary policy, that allows to set an interest rate coherent with the target inflation rate at European level, and many passive fiscal policies, through which each government can keep the debt behaviour under control. The aim of the Stability and Growth Pact in force in Europe is exactly to set some constraints for the fiscal agent in terms of borrowing behaviour (Von Thadden, 2003).

It is now interesting to investigate one possible monetary rule and one possible fiscal rule in order to analyse the behaviour of the parameters in case of an active or passive policy.

3.3.2.1 The Taylor Rule

The Taylor rule was introduced by John Brian Taylor in 1993 with the idea of providing the central bank with a *reaction function*: the central bank should set the nominal interest rate in order to respond to divergences between the rate of actual and target inflation and of actual GDP relative to potential. The rule is the following:

$$i_t = i_t^* + \alpha (\pi_t - \pi^*) + \beta (y_t - y_t^*) + \varepsilon_t$$

π_t is the effective inflation rate;

π^* is equal to the target inflation rate of 2%;

y_t is the current GDP;

y_t^* is the potential GDP, identified by the trend;

i_t^* is the target interest rate that the Central Bank should set when the inflation rate is equal to the target and the output is equal to the potential;

i_t is the nominal interest rate that the central bank should set; the real interest rate can be calculated by making the difference between the nominal and the effective inflation rate.

The version suggested by Taylor assumed $\alpha = 1,5$ and $\beta = 0,5$. The two parameters are both positive but $\alpha > 1$. This is the so-called “*Taylor principle*” and implies a stronger reaction the higher the inflation gap; when $\alpha > 1$, the central bank is able to implement *stabilising policies*. On the other hand, when $\alpha < 1$ there is a *destabilising policy* because the nominal and the interest rate go in opposite directions. In fact, the real interest rate is given by the difference between the nominal and the inflation rate and if $\alpha < 1$, i_t is not large enough; the result would be a real interest rate below the zero lower bound.

The Taylor rule can also be useful to estimate the size of the parameters α and β , when in presence of historical time series. The knowledge of the past trend of the inflation gap and the output gap allows to investigate the historical periods in which monetary policy were stabilising or destabilising, through the use of some econometrics tools.

The results are the following:

- When $\alpha > 1$, the central bank succeeds in setting an interest rate able to contrast inflation; in this case, the monetary policy is stabilising.
- When $\alpha < 1$, the central bank does not respond to the inflation gap; the monetary policy is destabilising.
- When $\beta > 0$, the central bank also considers the output gap, when setting the interest rate.
- When $\beta = 0$, the central bank only cares about the inflation gap, in the so called “*pure inflation targeting*”.

In the Taylor rule used by Leeper, the nominal interest rate is a function of contemporary rate of inflation, with no focus on the output gap. With this condition, determinacy is obtained with a policy mix that is active monetary / passive fiscal or active fiscal / passive monetary; however, this last policy mix can lead to high levels of inflation.

Branc, Davig and McGough (2006) extended Leeper, studying the cases in which the Taylor rule is forward-looking and backward-looking.

In the first case, the interest rate rule responds to expected level of inflation and a locally unique non-explosive rational expectations equilibrium exists only when fiscal

policy is active. In the second case, the interest rate rule responds to level of past inflation and determinacy is guaranteed when the policy mix is active fiscal / passive monetary policy.

3.3.2.2 *The Fiscal Rule*

For the description of the fiscal rule, the formula defined by Leeper (2016) is proposed. The structure shows “*that low debt is good*” (Leeper, 2016, p. 1) and countries should choose sustainable fiscal policies that support the inflation goal of the monetary authority; in other words, the fiscal behaviour must adapt to the monetary one.

The government should set the amount of taxes in order to respond to the divergence between the past real government debt outstanding and the target one. The rule is the following:

$$T_t = \bar{T} + \gamma (b_{t-1} - b^*) + \varepsilon_t$$

T_t is the tax revenues net of transfers expressed as ratio of GDP that the government should set;

\bar{T} is the target tax revenues that the government should set when the past real government debt outstanding is equal to the target;

b_{t-1} is the past real government debt outstanding expressed as ratio of GDP

b^* is the target level for debt/GDP

By analysing the historical series on taxes and the amount of debt, it is possible to discover the behaviour of the parameter γ in relation to the attitude of the fiscal authority:

- When $|\gamma| > 1$, a debt above the target is balanced by higher taxes: the fiscal policy is passive;
- When $|\gamma| \leq 1$, a debt above the target is not balanced by higher taxes: the fiscal policy is active.

To conclude, combining the terminology coined by Leeper regarding policy behaviour with the policy parameters, the following outcome is obtained:

$ \alpha > 1$	$ \gamma > 1$	ACTIVE MONETARY POLICY / PASSIVE FISCAL POLICY
$ \alpha < 1$	$ \gamma \leq 1$	PASSIVE MONETARY POLICY / ACTIVE FISCAL POLICY

3.3.3 *The Modern Monetary Theory and the Mainstream Macroeconomics*

Policy regimes that can reach a unique and stable equilibrium are the combinations AM/PF and AF/PM: one instrument is in charge of price stability, the other is in charge of debt sustainability.

Jayadev and Mason (2018) focused on the macroeconomics policy program proposed by MMT, which reference to Lerner’s functional finance, and realised that “*despite disparate policy beliefs, MMT and orthodox macro rely on many of the same theoretical foundations*”.

In fact, the economic analysis behind MMT’s policy plan is essentially the same as that used by orthodox policymakers since they are built on the same key assumptions:

- In the short run, output is determined by the aggregate demand.
- In the short run, the higher the level of output, the lower the level of unemployment, the higher the level of inflation.
- There is a level of output, called ‘potential’, in which full employment and price stability are ensured. An output level lower than the potential corresponds to unemployment and deflation; an output level higher than the potential causes inflation. This relation can be represented by a Phillips curve.
- Aggregate demand depends, among other things, on the interest rate and the budget position of the government. Lower interest rate and larger deficits are associated with higher demand and output; higher interest rate and lower deficits are associated with lower demand and output. It should be noted that functional finance and mainstream economists are in contrast, when it comes to the size of these two parameters. Actually, it is important to remember that MMT diverges from functional finance as regard the relationship between the interest rate and the aggregate demand. Assuming that no relationship exists, MMT strongly suggests setting the interest rate at zero, avoiding the opportunity cost of holding non interest-bearing money.

- The evolution of the public debt-GDP ratio over time depends on the primary balance, the interest rate on outstanding public debt and the nominal growth rate of the GDP.

MMT and mainstream macroeconomics agree that macroeconomics policy should act with the objective of a zero output gap (difference between the current and potential output), so that the employment is low and the price level is stable.

According to the world of mainstream policy, debt sustainability is another desirable target. Actually, the target is not well specified; sometimes it refers to the debt-GDP ratio converging to a finite value, sometimes the ratio must remain at or below its current level, sometimes it must remain at or below certain exogenously given level. On the other hand, MMT does not recognise the debt ratio as a target per se, but as something whose size is indirectly determined by economic circumstances, defined by the level of aggregate demand necessary to ensure full employment.

Jayadev and Mason (2018) observed that “*since both the output gap and the change in the debt ratio are jointly determined by the primary balance and the interest rate, we have two instruments and two targets*” (Jayadev and Mason, 2018) so as to be able to identify a single condition of equilibrium. It follows that the two streams of thought diverge on targets assignment of the policy instruments. Mainstream economists assign the interest rate instrument, managed by an independent central bank, to the output target, while they assign the fiscal position, in the hands of the government, to the debt sustainability target. Conversely, supporters of functional finance assign the fiscal balance, managed by the government, to the output target, while the monetary authority is in charge of debt sustainability.

It is important to underline that, in case of perfect implementation, a single stable equilibrium can be reached, whatever the instrument assigned to any target and no one would be able to say what kind of assignment recipe is in place. On the other hand, the instrument assignment becomes crucial every time the “*implementation is less than perfect*” (Jayadev and Mason, 2018); in this case the assignment choice will be driven by considerations involving practical judgement on policy execution:

- Instruments should be assigned in a way in which they primarily affect their target; if the demand is highly sensitive to the interest rate and fiscal multipliers are small, the choice falls on the orthodox recipe. If not, the suggestion for the functional

finance is more appropriate. Since MMT does not recognise a relationship between the interest rate and the level of aggregate demand through investments, we understand why it suggests the functional finance policy mix. Considering the debt, the higher the debt ratio, the greater the effect of the interest rate on the debt; therefore, to manage a high debt ratio the interest rate tool is more effective, leaving the fiscal instrument dealing with output stabilisation, “*the case for active fiscal policy gets stronger as the debt ratio rises*” (Jayadev and Mason, 2018).

- “*Given simple policy rules, the stability of the two assignments may vary*” (Jayadev and Mason, 2018). If policy makers are uncertain about the outcome of the current policy mix, they can act through small iterative adjustments, monitoring their effects. “*In general this procedure will converge to the equilibrium only if the effect of the instrument on its assigned target are larger than the effects on the other target*” (Jayadev and Mason, 2018). The problem is that, in presence of a high debt ratio, only the functional finance policy mix converges to the equilibrium, or at least, it converges more rapidly, since fiscal policy outcomes take effect more rapidly than monetary policy ones.
- “*Demand conditions are more subjected to fluctuations than the debt ratio is*” (Jayadev and Mason, 2018). Therefore, the instrument that adjusts more quickly should be assigned to demand stabilisation. The trade-off is between the faster decision-making speed by the monetary authority compared to the procedures required to grant a fiscal measure, and the slower transmission of monetary policy compared to fiscal policy.
- “*The assignment determines which target is missed in a setting where both cannot be hit*” (Jayadev and Mason, 2018). In the case of the zero lower bound, the interest rate cannot be set at negative levels to stabilise the output. Since the fiscal policy works very well in this situation, its assignment to the output target causes that the target assigned to the interest rate is missed. In the context of ZLB, the debt ratio cannot be managed, implying a higher path.
- The potential violation of policy rules by policy-makers cannot be left ignored. Jayadev and Mason (2018) considered macroeconomic policy as a principal-agent problem, where each instrument should be assigned to the target for which it is easiest to monitor the behaviour. Since the level of debt ratio is much easier to

measure than the level of aggregate demand and “*macroeconomic policy in democratic polities suffers from a systematic bias toward deficits and inflation*” (Jayadev and Mason, 2018), it is certainly more reasonable to assign the debt stabilisation to the fiscal authority. “*If for whatever reason we are not confident in the ability of elected government to pursue a socially optimal output gap, this becomes an argument for assigning this target to an independent body*” (Jayadev and Mason, 2018).

The analysis by Jayadev and Mason has allowed to place MMT and orthodox policy on the same theoretical basis. It has been confirmed that, in case of a slump, MMT can provide the economy with a more effective policy framework than the orthodox stream.

What is more, Davig and Leeper (2010) have also shown that in the short run, AF/PM policy mix allows government spending to stimulate output and consumption more than AM/PF. Basically, fiscal multipliers are higher when the government acts actively. They relied on a conventional dynamic stochastic general equilibrium (DSGE) model with nominal price rigidities and complete specifications of monetary and fiscal policies. The model includes the possibility that policy rules may evolve over time according to a known probability distribution and that private agents form expectations of policy based on that distribution. This contributes to determine how any fiscal stimulus is expected to be financed, influencing the size of the fiscal stimulus and, consequently, the effectiveness of the fiscal multipliers. The authors state:

“When monetary policy is active and fiscal policy is passive, the fiscal stimulus creates a modest expansion in output and it raises inflation and real interest rates, while government debt and taxes rise substantially and persistently. On the other hand, passive monetary policy and active fiscal policy generate an appreciably larger boom in output and consumption, and a significantly larger run-up in inflation, while rapidly reducing the real value of government liabilities.” (Davig and Leeper, 2010, p. 213)

Despite the analysis by Davig and Leeper (2010) leads to favour the fiscal dominance, this policy combination is not able to deal with moral hazard, inflation bias, conflicts of interests, etc. In a world overflowing with opportunism and political and economic interests, it is difficult to think to a radical and disruptive change that implies ‘human sovereignty’, rather than ‘rules sovereignty’.

3.4 “A government can buy goods and services without the need to collect taxes and issue debt”

It has been shown in chapter 1 that MMT, using the notion of *operational realities*, is able to deal with the collection of taxes and the issuance of bonds in terms of *reserve effect*: under this lens, there is no relationships with the financing of government spending, since taxes and bonds issuance turn out to be monetary tools.

Therefore, MMT defines newly created money as the only source of all government finances. This is a very much debated and crucial point of the theory, since mainstream economists argue that monetary financing of public expenditures causes inflation runaway. In this section, the AD-AS model is used to demonstrate, once again, that the theory would be successfully applicable just in case of a depressed economy far from full employment. For this purpose, *Box 7* is introduced to provide some definitions, useful for a deep understanding of the economic conditions represented in the AD-AS model while *Box 8* illustrates the AD-AS model with a mere theoretical approach.

Later, in the final section, it will be addressed why MMT suggestions for fighting inflation through tax collection and bond issuance is clearly not applicable.

Box 7: The business cycle

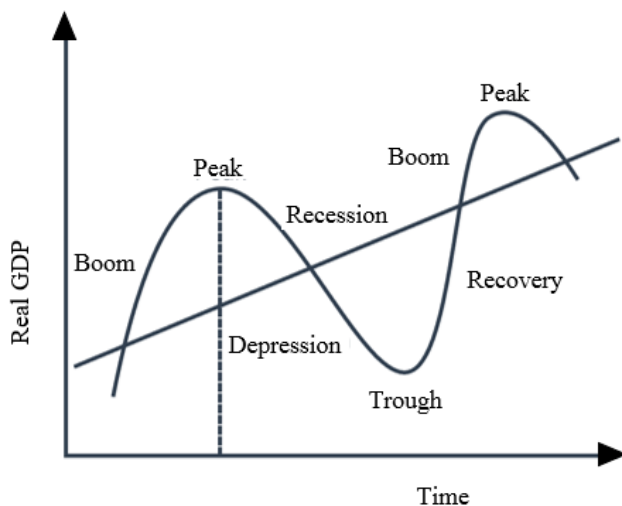


Figure 3.4

Figure 3.4 represents the so-called *business cycle*, i.e. the downward and upward movement of gross domestic product around its long-term growth trend, the *potential GDP* (identified by the straight line in the figure). The potential GDP represents the maximum output that an economy is able to produce, given a certain production

function and in absence of unemployment. Specifically, no unemployment condition corresponds to the so-called *structural unemployment*, which endogenously characterizes the economy. The Federal Reserve System defines structural unemployment as follows:

“Even in good times, a healthy and dynamic economy will have at least some unemployment as workers switch jobs, and as new workers enter the labour market and other workers leave it. The lowest level of unemployment that the economy can sustain is difficult to determine and has probably changed over time due to changes in the composition of the labour force, and changes in how employers search for workers and how workers search for jobs”.

Over time, the actual GDP may be above or below the potential GDP; the difference between the potential and the actual GDP is called *output gap*.

- There is a *negative output gap* when economic output is below the potential; in this situation, unemployment is high and, more generally, resources are under-utilised. A possible deflation risk could arise.
- There is a *positive output gap* when economic output is above the potential; in this situation, unemployment is zero and, more generally, resources are over-exploited (e.g. shift work and overtime). Inflationary pressures linked to demand and cost pressures are very likely to occur.

Thanks to these definitions, the impact of money creation on the economic cycle can be better understood.

Box 8: Money issuance in the AD-AS model

The AD-AS model is a macroeconomic model with flexible prices, which represents the economic relationship between prices and output through the interaction between aggregate demand and aggregate supply.

The AD curve represents all the combinations of output and prices when goods market and the financial (money) market are in equilibrium; it is, therefore, derived from the intersection of the IS and LM curve, for different interest rate. The equation results from the following system, substituting “*i*” of the second equation in the first:

$$\left\{ \begin{array}{l} Y = \frac{1}{1-c(1-t)} [\bar{C} + c \cdot TR + G + I - b \cdot I] \\ \frac{M}{p} = k \cdot Y - h \cdot i \end{array} \right.$$

The AS curve represents the equilibrium between price and wage setting and is derived by the following system, replacing wages W from the first equation in the second:

$$\left\{ \begin{array}{l} W = P^e \cdot F(u, z) \\ P = (1 + \mu) \cdot W \end{array} \right.$$

The first equation represents workers wage level request, given the expected price level of the economy and as a function on the unemployment level and other variables such as unemployment insurance, firing regulation, etc. The second equation represents the prices of goods fixed by the firms, given input compensations (wages) and considering a certain mark up.

The economic equilibrium is achieved when the AD and the AS curves intersect:

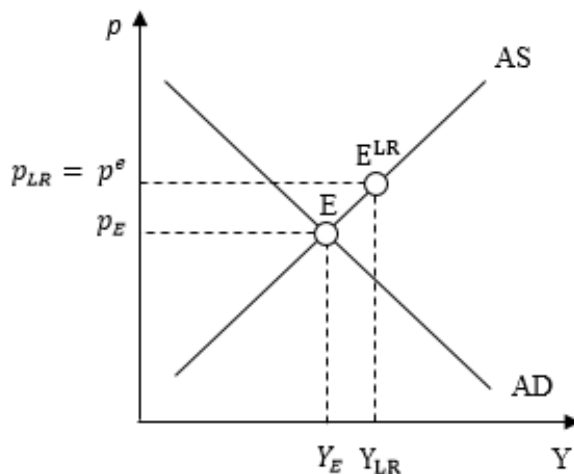


Figure 3.5

The variables of *Figure 3.5* are the following:

- Point E: short run equilibrium point;
- E^{LR} : long run equilibrium point in which prices are equal to expected prices ($p_{LR} = p^e$) and the output is equal to the potential output ($Y_{LR} = Y^e$)

- p_E : price level in correspondence of the short run equilibrium point;
- p^e : expected price level of the economy;
- p_{LR} : price level in correspondence of the long run equilibrium point;
- Y_E : output in correspondence of the short run equilibrium point;
- Y_{LR} : output in correspondence of the long run equilibrium point, equal to the potential output.

Point E in *Figure 3.5* represents the short run equilibrium; in particular, $p_E < p^e$ and $Y_E < Y_{LR}$; the output gap is negative, the economy is in a depressed condition, affected by deflation and unemployment is high.

Since the economy is underperforming, the government can intervene increasing aggregate demand through public expenditures. This would shift the AD curve to the right, until the potential output is reached. It should be noted that the output increase is associated with price increase. If one considers financing such public expenditures with newly printed money, a further expansionary policy takes place, further shifting the AD curve to the right. The risk of pushing the economy in a positive output gap state, creating inflation, is very high. A first major issue arises, namely the identification of the right amount of public expenditures and the right amount of money to be printed. This is not a trivial topic.

It can be stated that fiscal expenditures financed by a monetary manoeuvre could be employed when the economy is in a very depressed condition, characterized by high unemployment levels. In this context, a monetary/fiscal collaboration would be the key to foster economy. On the other hand, when the economy is around full employment, it is very likely that the manoeuvre produces runaway inflation.

In *Box 8*, the AD-AS model has been presented in a merely theoretical way, specifically, representing the AS curve as upward sloping. However, for a more complete analysis, it should be considered what exactly affects the slope of the curve, making a distinction between short term and long term. It is important to remember that the long term corresponds to the equilibrium point in which the output gap is equal to zero (output equal to the potential), with the unemployment rate equal to the structural rate and prices equal to expected prices.

In the short term, firms possess fixed factors of production, including prices, wages, and capital; consequently, the AS curve is flat, since prices and wages cannot be easily adjusted. This is the so-called “Keynesian area”, as prices are fixed and the economy can be analysed through the simpler IS-LM model. An economic stimulus provided by fiscal expenditures generates effects only on output.

In the medium term, the AS curve becomes upward sloping; as unemployment decreases, workers acquire more bargaining power, wages can be adjusted according to price expectations and prices increase proportionally. In this context, an economic stimulus provided by fiscal expenditures generates an effect on both output and prices; inflation begins to rise.

As the long term approaches, the AS becomes vertical, in a complete classical configuration; the AS coincides with the vertical line in correspondence to the potential output level (output gap = 0). In this context, a further economic stimulus through public expenditures and money creation does nothing more than generate higher and higher inflation. This more precise AS representation is illustrated in *Figure 3.6*.

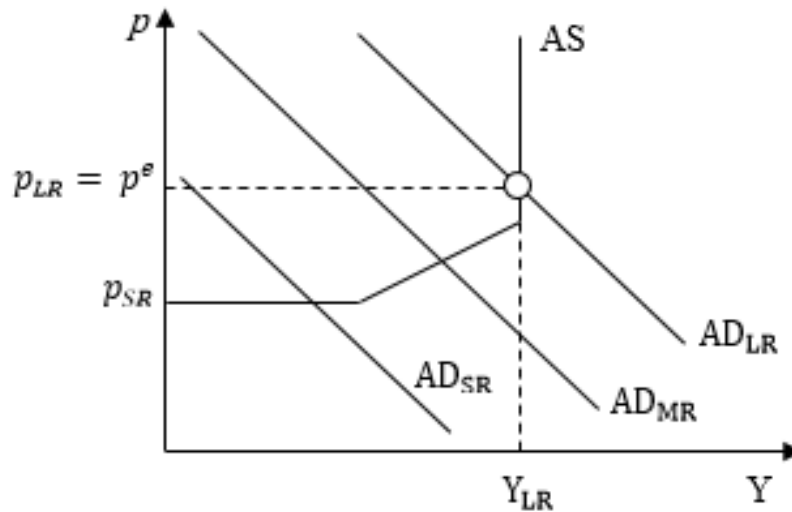


Figure 3.6

Once again, it has been proved that MMT would be applicable as a temporary form of PM/AF policy, when the economy is far from full employment. When the context is characterized by an output gap ≥ 0 , newly created money only affects prices, with the serious risk of triggering a dangerous inflationary process.

3.5 “Government spending and money creation need be limited only to the extent that employment becomes ‘over-full’ and encourages inflation” and “Inflation, should it arise, can readily be controlled by higher taxation and bond issuance to remove excess liquidity”

MMT recognises the risk of creating inflation. However, critics identify a kind of superficiality of the theory, coherent with reality inconsistency. In fact, while on the one hand, MMT can be recognised as a positive movement, proposing an original institutional framework, rather than merely denying the traditional economy, on the other hand, it does not consider the political and practical implications of its proposals. This issue particularly arises when considering the new role of taxes and public debt. There are two relevant aspects worth analysing: the amount of taxes eventually needed to balance the money creation and the political feasibility of tax increase.

3.5.1 Inflation management: taxes in the AD-AS model

One of the problems of the MMT is the lack of quantitative indications. It does not incorporate some feasibility aspects, such as the difficulties in determining the right level of expenditures, the right level of money to be printed, the inflation impact, assessed in quantitative terms, that these policies can create. Since fiscal policies are, after all, shaped and commanded by human being, it is very likely that some mistakes, whether voluntarily or not, can generate unpleasant troubles.

Let us assume the economy is not very far from full employment. This is a positive economic condition and the politicians currently in office have all the interests to act with further expansionary policy, in order to maintain a broad and solid consensus. Public expenditures, financed by newly created money, increase: the AD curve shifts to the right, in the positive output gap region (*Figure 3.7*). There are two main issues:

- Inflation does not appear instantaneously and, once manifested, reactions require additional time to become effective; in the meantime, inflation has the time to erode purchasing power.
- Even assuming an instantaneous reaction, the amount of taxes required to balance both money creation and fiscal expansion is huge and its burden on the private

sector. In fact, the monetary financing of public expenditures results to be a double expansionary policy; it is much more feasible raising taxes by an amount that is limited to the fiscal financing to keep the fiscal position as before.

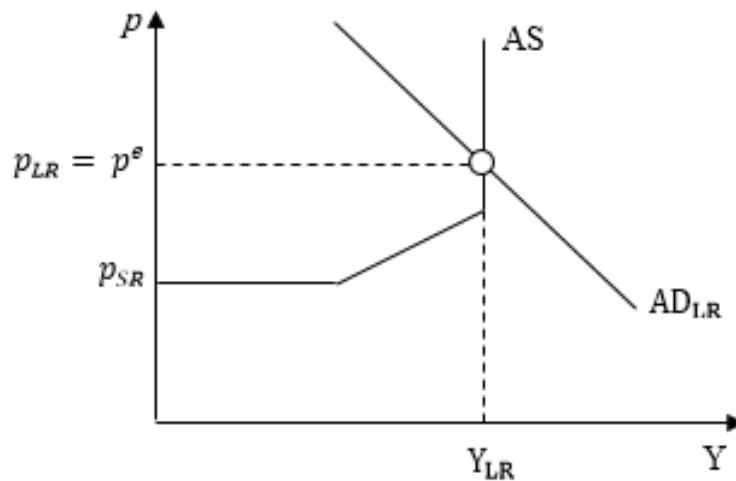


Figure 3.7

3.5.2 Inflation management: economic and political feasibility

Before discussing the effectiveness of taxes for inflation management, it should be noted that the new taxation role played by MMT reveals, first of all, a general neglect of the connection between taxation, spending and resource allocation. What is ignored is the redistribution effect that taxes and public expenditures generate: “*Fewer Lamborghini, more bullet trains. Fewer Hamptons houses, more public housing*” (Henwood, 2019), this is what is not taken into consideration.

In fact, aware of the potential inflation risk that could hit the economy in case of too much money circulating in the system, MMTers propose taxation and government borrowing as tools to employ to drain the banks reserves, bringing the level of liquidity back to the target coherent with low unemployment and low inflation.

The concerns of the opponents are various. First, Henwood (2019) highlighted that it takes time to understand the economic situation and even more time to have an authority reaction able to stabilise potential shocks. Moreover, economic circumstances cannot be always classified as “black or white”. Taking the example of the 70s, the context was characterized by both high unemployment and high inflation. What would MMT have done? Following the reasoning of MMT, the government would have spent, to foster

employment; the excess liquidity would have been absorbed by tax imposition, which, at that point, would have taken the already starving population to the extreme.

This leads to the second opponents' concern. Taxation to prevent inflation is not politically feasible. It is not very likely that politicians will raise taxes in a period of high inflation when the public is already upset by the loss of purchasing power.

Moreover, according to Lewis (2019), it is exactly the new role of the printing of money for financing purposes and, consequently, the lack of the role of taxes as a government financing tool, that would lead to an inflation explosion. In his opinion, subjected to the politicians' will, the currency would be unreliable and the demand for the currency would fall, since nobody is willing to hold an unreliable currency. This would occur even if the supply of money remained unchanged; it is a matter of loss of confidence.

Lewis explained that the money printing financing is something that actually exists but "*it works best when the government acts as if it cannot*" (Lewis, 2019); in this way, the confidence in the currency or the government's bonds is maintained and printing-press finance does not cause disastrous and immediate consequences. The mechanism in place today works as follows: the central bank decides how much money to print for ensuring a well-functioning economy. Therefore, in case of an economic expansion, people ask for more money and the central bank responds to match money demand and money supply; price stability is guaranteed, with benefits for the state that has more money available.

When the authority in charge of the printing activity is the central bank, the public is willing to hold a higher amount of money because of its trust in the monetary authority; the central bank acts to pursue price and economic stability and the public knows it. On the contrary, if the responsibility for printing were transferred to the Treasury, the printing role as a deficit-financing need would generate a loss of credibility, as this would imply a necessity for the Treasury of doing that, which would be negatively perceived by the public. It should always be borne in mind that inflation depends not only on government spending and interest rates but also on inflation expectations. What central banks should do is to instil trust, while keeping inflation expectations anchored (Mackintosh, 2019).

Furthermore, the use of taxation or government borrowing as a tool to control inflation is not as trivial as MMT makes it seem. Hummel (2019) underlines that MMT simplifies the draining process through taxation. Once the money has been pulled out of the system,

it is important to make sure it is not later reinjected. In fact, an increase in government deposits at the central bank must be offset somewhere else on the central bank balances sheet: if the government does not spend, the larger deposits must be balanced with “*newly invented assets*” (Hummel, 2019), produced by the central bank. This accounting aspect is completely ignored by MMT, revealing an inadequate structure of the institutional arrangement they have in mind.

Finally, MMTers are accused of carelessness, with regard to inflation: they never say when inflation is “too much”, they never expose themselves by defining how much is this “too much” and they place great trust in their ability to control it. This reveals a lack of connection with practical reality.

3.6 “Through money creation, interest costs can be constrained. Indeed, a substantial and persistent budget deficit can be financed at low, if not near-zero, cost”

Since MMT does not recognise a relationship between the interest rate and the level of aggregate demand (and output), its supporters advocate that the interest rate should remain permanently pegged at or close to 0%. In such a scenario, the monetary authority loses its ability to stabilise the economy in favour of the fiscal authority that is, therefore, in charge of managing output and inflation, in the so-called ‘fiscal dominance’ condition. By keeping the interest rate at 0% (corresponding to the *permanent zero interest rate policy*: PZIRP) government debt and government money become close substitutes, up to the point that the effects on the economy of increased money or increased debt are perceived as very similar. This is the reason why MMT has no concern about the well-known consequences of high public debt. It argues that public debt is sustainable as long as the interest rate paid on bonds is lower than the economic growth rate. The PZIRP would be the key to address this issue.

Since, starting from the Great Recession, most of the global economy has experienced a prolonged period of historical low interest rates, many researchers investigated the effects spurring from low interest rates.

Olivier Blanchard (2019) analysed the relationship between public debt and low interest rates. In presence of low interest rates debt rollovers, which means that the issuance of debt without a subsequent increase in taxes could be feasible. In other words, public debt may have no fiscal costs. However, even in the absence of fiscal costs, public debt reduces capital accumulation, and could therefore have welfare costs, although potentially smaller than typically assumed.

As Blanchard specified several times in that paper, his purpose is not to argue for more public debt but to reflect on the cost of public debt and fiscal policy. Indeed, he concluded by providing some argumentations regarding why high public debt should not be desirable; especially, he mentioned the existence of multiple equilibria in which investors believe the debt to be risky and, by requiring a risk premium, make the debt harder to pay back, triggering a mechanism of self-fulfilling expectations.

However, even though low interest rates can actually reduce the fiscal burden, many economists argue that the permanent suppressing of rates is not a desirable situation, which leads to the distortion of competitive environment and financial instability.

In an article published on the Chicago Booth Review (2019), some researches explained that low interest rates could damage competition and the economy in favour of large companies, to the detriment of small ones.

The financial system could also be negatively affected by long periods of low interest rates. In fact, financial institutions could see a profitability reduction, due to mismatches between assets and liabilities maturities. The Committee on the Global Financial System (2018) established a Working Group to identify and provide evidence of the channels through which persistently low interest rates might weaken financial stability, focusing on banks, insurance companies and pension funds.

Moreover, the post Keynesian economist Thomas Palley (2019) argued that setting permanently rates to zero would force nominal appreciation of the currency due to the covered interest parity, causing financial instability. The exchange rate pegging, advocated by MMT in response to this observation, would imply limitations in money issuance that would in fact constraint the government, generating a real paradox with the MMT principle of monetary sovereignty.

3.6.1 Public debt and low interest rates

Looking at the present day environment in which interest rates are low and are expected to remain low, many authors are investigating the potential effects of this condition.

Olivier Blanchard (2019) focused on the impact that low safe interest rates produce on public debt; safe interest rate means the interest rate paid on risk-free assets, i.e. short-term government bonds.

Assuming that investments with higher levels of risk offer substantially higher returns, the safe interest rate is the risk-adjusted rate of return on capital, where the rate of return on risky capital is adjusted for risk. *“If the safe rate is lower than the growth rate, the risk-adjusted rate of return on capital is in fact low”* (Blanchard, 2019, p. 1), therefore, the government intertemporal budget constraint is always respected. In such a situation, fiscal costs are absent and welfare costs can be lower than typically assumed. In fact,

welfare costs are determined by both the average safe rate and the average risky rate. Since the average risky rate represents the average marginal product of capital (the return of an additional unit of capital invested), “*the lower the marginal product, the lower the welfare cost of debt*” (Blanchard, 2019, p. 1).

Blanchard used an intergenerational transfer (as approximation of debt rollover) in an overlapping generation model with uncertainty to investigate welfare effects. He considered an economy populated by people living for two periods: working in the first and consuming in both. Savings in the first period represent the capital of the second period. The transfer outcome on welfare is the result of two different forces: reduced capital accumulation and induced change in the return to labour and capital.

In a context of risk-free certainty, the marginal product of capital is exactly equal to the average safe rate; in such a condition, Diamond (1965) demonstrated that when the safe rate is lower than the growth rate, the transfer improves the welfare.

In fact, when the safe rate is low enough (lower than one in the model), “*the transfer gives a higher rate of return to savers than does capital*” (Blanchard, 2019, p. 13). Moreover, an increase in debt decreases capital (and, thus, wages) and the lower capital stock leads to an increase in the marginal product of capital (and, therefore, in the safe rate). The reduction in the capital leads to an equal increase in income in the first period and increase in income in the second period. When the safe rate is low enough the income generated in the second period thanks to the transfer produces higher welfare than that which the capital would provide.

It can be concluded that in a context of certainty, when the safe rate is lower than the growth rate, an intergenerational transfer produces positive effects, due to the reduced capital accumulation and the induced change in the return to labour and capital.

The introduction of uncertainty into production implies that the marginal product of capital becomes uncertain due to the presence of risk. Since people are risk-averse, “*the average safe rate will be less than the average marginal product of capital*” (Blanchard, 2019, p. 14). Blanchard showed that the welfare effects of such a transfer are determined by both the average safe rate, i.e. the rate on sovereign bonds, and the average marginal product of capital. Maximising people utility under budget constraint, it can be learnt that the safe rate is responsible for the direct effect of the transfer on the welfare. In any period in which the safe rate is lower than the growth rate ($R_{t+1}^f < 1$ in the model), the transfer is

welfare-improving, since it generates a higher utility for savers than capital. This is because people are compensated by the intergenerational transfer with a rate of return (the safe rate) higher than the risk-adjusted rate of return on capital. However, the welfare effect through the price channel (change in the marginal product of capital and labour) is determined by the marginal product of capital, which is the risky rate. Using the notation of the model by Blanchard, capital yields a rate of return equal to R_{t+1} . The change in the factor of production compensation due to the decrease in capital represents an implicit transfer with rate of return R_{t+1}/R_t . Therefore, the welfare effect of the transfer depends on R_t , the marginal product of capital and it is positive if R_t is lower than the growth rate ($R_t < 1$ in the model).

Therefore, in an uncertain context, both the safe rate and the risky rate are relevant for the debt welfare effect. Nowadays, it seems that the safe rate is lower than the growth rate, but the average marginal product of capital exceeds the growth rate; this condition leads to an ambiguous effect of transfer. Consequently, debt produces positive net effect *“if the safe rate is sufficiently low, and the average marginal product is not too high”* (Blanchard, 2019, p. 3).

In short, Blanchard showed that when the safe rate is sufficiently low and the risky rate is not too high the creation of debt has not fiscal nor welfare costs or, at most, limited welfare costs. However, the purpose of the French economist is not that of advocating for more public debt but having an objective discussion on the topic. After having listed the limitations of the model that would lead to a potential revision of the results, Blanchard presented some arguments against a future high public debt, among which it is interesting to mention the presence of fiscal multiple equilibria, already analysed in the past by many authors. In this regard, Blanchard wrote: *“over a wide range of debt, there may be two equilibria with the good one being the one where the rate is low, and the bad one characterised by a high risk premium on public debt, and a higher rate”* (Blanchard, 2019, p. 33). In fact, when investors believe debt is risky, they demand a risk premium, making the debt harder to repay and triggering a self-fulfilling expectations mechanism.

Blanchard (2019) dealt meticulously with the issue of low interest rates in relation to public debt, especially by making a clear distinction between the safe rate and the risky rate. Instead, one of the sharply criticised point is the approximation with which Modern Monetary Theory relates to “the” interest rate (Henwood, 2019). In particular, MMT

supporters do not think that investors are compensated by higher or lower interest rates, depending on the different levels of default risk and the maturities of different financial assets; therefore, the generalisation on the single interest rate, to which MMT refers, does not allow in-depth discussions, when in presence of uncertainty and expectations.

The MMTers would replay that the central bank should buy the bonds, avoiding the necessity to sell long term bonds at higher interest rates; this leads to the already discussed concern about the lack of central bank's independence and inflation runaway.

Besides, nothing is said about loans. Would lenders be prepared to grant long-term loans with a compensation rate that is not high enough?

Even in this case, MMT reveals a superficial approach and a lack of “quantitative” directions and instructions.

3.6.2 How low interest rates can hurt competition and the economy

An article appeared a few months ago on the Chicago Booth Review in which it has been reported the work of Princeton's postdoctoral research associate Ernest Liu, Princeton's Atif Mian and the Chicago Booth's Amir Sufi on the influence that low interest rates can have on competition.

The general acknowledgement is that lower interest rates foster productivity, since money is cheaper and small businesses are encouraged to borrow to finance new investments. In addition to the repeatedly stating that MMT rejects this statement, the current economic situation of the United States only doubts this typically agreed belief. In fact, “*after a decade of ultralow interest rates, productivity growth in the US and many other developed countries is relatively low*” (Chicago Booth Review, 2019).

However, the three researchers have been able to find a relationship between low interest rates and economic growth, which is paradoxically opposite to what is conventionally assumed. In fact, their work shows “*why low rates can hurt competition and hold back economic growth*” (Chicago Booth Review, 2019).

Imagine having a small player in any market and its larger competitor. When interest rates decrease, both actors are encouraged to borrow money to invest in new equipment and updated technologies, fostering their productivity. The paper showed that these expectations are met when the two players have more or less the same market share or, at

least, when the productivity of one can balance the market share of the other. On the other hand, when the competitive position of the two players is not comparable, rates reduction causes a productivity gap, discouraging both companies from investing.

In fact, the dominant player, having more resources available, will be able to invest more, its productivity will increase and it will be able to steal market share from the smaller player, until it will reach a monopolistic position. The traditional competitive analysis shows that monopolistic markets generate a negative net effect on common welfare. Moreover, another consideration has to be added: once the initially dominant player has remained the sole in the competitive environment, it is discouraged from making further investments, as no longer sees threat from smaller competitors. Therefore, the market loses twice: first in terms of competition and, after a certain period, also in terms of limited innovation and improvement.

The researchers concluded: *“the fall in long term rates has been associated with a rise in industry concentration, higher mark-ups and corporate profit share, and a decline in business dynamism^{3.1}. In shorts, rich companies got richer and smaller companies got stuck, or worse”* (Chicago Booth Review, 2019).

3.6.3 Low interest rates and financial stability implications

The global economy is experiencing a prolonged period of low interest rates which are expected to remain low for a long time.

“Persistently low rates would likely affect the profitability of financial firms, thus potentially impacting the structure and resilience of the financial sector. They might also incentivise changes in the business models of financial firms potentially bringing about changes in the desired risk profile and exposures. As a result, a prolong period of low interest rates could have implications for the stability of the financial system.” (Committee on the Global Financial System, 2018)

These are the introductory words of the report presented in July 2018 by a Working Group (WG) established by the Committee on the Global Financial System (CGFS). The Group was co-chaired by Ulrich Bindseil (European Central Bank) and Steven B. Kamin (Board of Governors of the Federal Reserve System). The CGFS commissioned the WG to investigate if and how persistently low interest rates could positively or negatively

affect the financial stability, focusing on banks, insurance companies and pension funds. The WG identified three possible scenarios in which institutions performances were analysed:

- A *baseline* scenario, involving a gradual increase in interest rates, consistent with the central bank's inflation targets;
- A *low-for-long* scenario, where interest rates remain low for a long and indefinite period of time;
- A *snapback* scenario, in which initially low interest rates are suddenly risen.

Since MMT advocates for the permanent anchoring of interest rates at zero, there is a clear correspondence with the second scenario, the low-for-long; therefore, the results of the analyses related to the second scenario can be used to address the financial consequences that would be generated, when following this MMT foundation.

3.6.3.1 Financial stability: focus on banks

The profitability of banks is influenced by low interest rates through the net interest margin (NIM), defined as the difference between the interest rate received on their assets and the interest rate paid on their liabilities. Specifically, when short-term interest rates decrease, the return on loans and other assets also declines but banks may not be able to lower deposits rates, with negative effects on the NIM. This is particularly likely to happen when the market rate is very close to zero; banks may be unable to adjust deposits rate at negative level to ensure even a small profitability space.

Fortunately, there are some mitigating factors for the negative effect of low interest rates on NIM. Since assets and liabilities are characterized by a different duration, in particular, longer-term assets and shorter-term liabilities, a positive duration gap can support profitability as long as assets mature and are later issued with the lower market interest rate.

Moreover, banks can react by undertaking riskier investments or by re-shaping their business model, increasingly moving towards fee-based activities.

Finally, the reduced profitability can be balanced by a higher loan demand, sustaining the NIM and the RoA, at least in the short term.

The major issue consists in the behaviour of banks that, tempted to seek higher yields, focus on riskier business, “*shifting towards lower quality lending in return for higher premiums*” (Committee on the Global Financial System, 2018). Banks’ risk profile could be increased manoeuvring at the maturity level: banks try to grant longer term assets, taking advantage of the duration mismatch, but ultimately worsening their exposure. This kind of risk-taking behaviour, at least partially mitigated by compliance regulations, only undermines financial stability and fails to ensure that any future losses are absorbed.

The analysis of the WG suggested that the negative effects of low interest rates vary according to the nature of the banking system: specifically, they are exacerbated in case of less concentrated banking markets and in case of banks’ businesses mainly focused on lending and deposit-taking activities. On the contrary, banks operating in more concentrated markets with a more diversified portfolio are better protected.

The analytical methodology used by the WG to carry out the analysis employed two types of econometric regressions to identify the link between NIM and RoA and the level of interest rate. The first regression type is applied to a sample aggregate country-level data for 19 countries (Country-Level Analysis), while the second uses bank-level information for more than 10,000 banks (Bank-Level Analysis).

The results of the study lead to the conclusion that “*evidence is consistent with a lack of significant deterioration in bank-soundness as rates decline*” (Committee on the Global Financial System, 2018).

3.6.3.2 Financial stability: focus on insurance companies and pension funds (ICPFs)

Unlike banks, the balance sheet of ICPFs is characterised by negative duration gaps between assets and liabilities, particularly liabilities are more long-term oriented while assets are more short-term oriented. Moreover, long-term payments are relatively insensitive to interest rates, amplifying the effect of the negative mismatch.

The methodology used to investigate the impact of low interest rates on ICPFs’ cash flows and funding ratio^{3.2} is based on model simulations, differently from the approach used in the study of banks. It involves simulating measures of profitability for an ICPF with a typical balance sheet that offers long-term savings and retirement products.

The analysis of the WG took, as a sample, the CGFS members: ICs in Netherlands and Sweden and PFs in Luxemburg. They all had a duration gap of more 10 years in 2016; the report mentions: *“To the extent that these positions are not hedged, a fall in interest rates by 1% would bring about a decline in the funding ration in excess of 10%”* (Committee on the Global Financial System, 2018).

The profitability performances of these institutions can be assessed in terms of RoA. During the Great Financial Crises, the RoA was sharply hit and if future interest rates are pegged at very low levels, the history is likely to repeat itself.

After a long term exposure to low interest rates, Net Cash Flows (NCF) are expected to become negative since *“investments returns have fallen so much that the firm can no longer cover the difference between cash outlays associated with legacy return-guaranteed liabilities and investment returns without dipping into equity”* (Committee on the Global Financial System, 2018). Just when legacy liabilities are replaced by new liabilities with lower interest to be paid, NCFs can return to positive levels. However, at that point, the loss will have already been huge.

In the case of ICPFs, too, business model adaptations or changes in terms of balance sheet items duration can help mitigate the negative effect of low interest rates. This can lead, for example, to grant longer maturity investments, which in fact entail a higher risk.

The analysis of the WG showed that ICPFs are more vulnerable than banks to low interest rates. It is reported: *“Although ICPFs are less connected to the rest of the financial system than banks, distress and failure of individual ICPFs could still have systemic consequences, especially given some of the adjustments undertaken by firms”* (Committee on the Global Financial System, 2018).

It can be therefore concluded that, in supporting the PZIRP, MMT does not take into account all the aforementioned considerations, revealing, once again, a lack of connection with economic reality.

Conclusions

The aim of this dissertation was to investigate whether the Modern Monetary Theory could be applied as an alternative institutional framework in order to solve some of the main issues that characterise the current economic environment: the high public debt and the consequent economic and welfare costs, fiscal prudence, the interaction and coordination between the fiscal and monetary institution and the slow recovery after the Great Financial Crises.

The in-depth and detailed analysis of the theory has made it possible to demonstrate that its institutional framework is well structured. However, the strong link with accounting rules causes an abstraction from reality, which results to be destructive for the theory itself. In fact, the analysis shows that the MMT assertion that a private welfare exists when a public deficit exists, is completely misplaced; based on accounting transformations, without a correct interpretation linked to reality, it has been easily disproved by the opponents. This is the most illustrative case; more in general, the accounting schematisation of the interactions that characterise the financial system is simply irrelevant for the great economic picture, as reported by Roche (2011): “*MMT looks at the flow of money without inquiring too deeply about the economic significance behind the flows*” (Roche, 2011).

Moreover, the application of the theory is threatened by the traditional market imperfections that affect the financial and economic environment. In this thesis, it has been shown that current monetary-dominated institutional framework, with the central bank independence and the limited action of the fiscal authority is necessary in order to face the presence of opportunism, moral hazard and conflicts of interests. In fact, economists argue that without an independent central bank, economic policy loses credibility: when politicians can easily create money they will be tempted to finance any program they wish, forgetting their responsibility to avoid currency depreciation: since it takes long time for inflation to emerge, while the political payoffs from funding of popular projects can be immediate, a classic moral hazard problem arises. As MMT can be thought as a form of active fiscal/passive monetary policy regime, it would not be able to cope in that direction.

However, in an attempt to mediate, it can be stated that a closer collaboration and cooperation between the fiscal and the monetary authorities would be useful to push out the economy, when it finds itself in a depressed condition.

Notes

Chapter 1:

1.1 We refer to the Fed meaning an environment characterized by flexible exchange rate regime and monetary sovereignty

1.2 Also called “trade deficit”

1.3 Example of a stock-flow consistent model is the ‘flow of funds’

Chapter 3:

3.1 Dynamism is defined as the likelihood of a follower company overtaking a leader

3.2 The funding ratio is the ratio of the current value of assets to the present value of the firm’s liabilities

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