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The Return of Fiscal Policy: Disentangling Fiscal Theory of Price Level

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Fiscal policy has always been a central issue of macroeconomic theory and policy. Its content, impact, and strength as a policy tool have formed the framework of economic debate. The pandemic crisis has triggered a deep global economic recession, and the debate on debt has returned in full force. The aim of this paper is to contribute to this debate in a different point of view. Based on the Fiscal Theory of Price Level, we would like to theoretically discuss three issues, namely, whether government bonds are net wealth, whether price level is a sufficient mechanism to restore equilibrium in the case of excessive debt, and, finally, whether budget constraint is a constraint condition. The paper is organised on these three issues. We start discussing the Fiscal Theory of Price Level, and the next three sections are devoted in the abovementioned issues. We conclude with the empirical findings from US and UK.

Keywords: Fiscal Theory of Price Level, debt, fiscal policy

Introduction: The Foundations of the New Theory

The debate on the impact of fiscal policy and monetary policy was re-introduced in early 1980s. A new insight attempted to shed more light on the effects of fiscal policy both on the function of an economy and on other economic variables. Traditional economic theory focuses on monetary policy as the primary factor of price determination, usually without introducing the role of fiscal policy. This point of view assumes that monetary authority sets its control variable, that is money supply, to manage the price level, without facing any constraint. On the other hand, fiscal authorities, constrained by their budget, set their future surpluses to reassure their solvency.

However, a new approach emerged in early 1980s that reshuffled the interaction between fiscal and monetary policy in the determination of the price level. A new strand of research, in recent decades, known as Fiscal Theory of Price Level, asserted that fiscal policy may influence price level. In a polar case, and under specific circumstances, this theory showed that fiscal variables can fully determine price level. This has been the direct opposite of the monetary contention that the price level is primarily controlled by monetary variables. Thus, the Fiscal Theory of Price Level has aroused a long-standing debate on which no consensus exists.

To begin with, Sargent and Wallace (1981) claimed that even in an economy that follows monetarist assumptions (i.e. a monetary base is closely connected to the price level and a monetary authority that can raise

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revenue from money creation or seignorage), under certain circumstances, a monetary authority cannot control inflation. This assertion leaves room for the introduction of fiscal policy. Governments finance their budget in two ways, either by seigniorage (which means by increasing the money supply) or by issuing new bonds. The coordination of fiscal and monetary authority gives two alternatives. First, the central bank decides its monetary policy independently, binding the decision of the government to issue bonds. Alternatively, fiscal authorities could take the first step and decide their fiscal policy (deficit or surplus), part of which is financed by new bonds and the other part is covered by the central bank which covers the difference by increasing money stock. This latter case has two constrains. First, the public is willing to buy a certain amount of government bonds, setting an upper bound on the real stock of bonds. Second, the government is constrained by the interest rate it must pay for its bonds. As the government issues new bonds, the interest rate on bonds becomes greater than the economy's growth rate. This impedes the ability of the government to finance its budget, and eventually, monetary authorities must finance the government's deficit. In this case, "monetary authority is unable to control either the growth rate of monetary base or inflation forever" (Sargent & Wallace, 1981, p. 2). Even if the central bank holds down the monetary base to control inflation as real stock of bonds grow, a deficit cannot be covered. The only option is the increase of the monetary base from the central bank, which in turn will increase inflation. Again, the decision of the central bank to control the price level will lead to future inflation. Sargent and Wallace wanted to highlight a coordination scheme where the decision of monetary policy to control inflation could be unattainable.

Shortly after the publication of Sargent and Wallace's paper, Willem Buiter (1982) criticised its findings. More specifically, the model, developed by Sargent and Wallace, treated the deficit as a whole, without separately analysing public expenses and taxes and without discerning variations in expenses. Buiter's model, on the other hand, classified population in two distinct categories. The first is the young and poor who hold a money balance as a store of value. The second is the young and rich who hold interest-bearing bonds and capital. This distinction is critical because "the government is a net creditor to the rich citizens in the private sector [and] a net debtor to the poor citizens who hold its non-interest-bearing monetary base" (Buiter, 1982, p. 64). According to Buiter, the government is neither a creditor nor a debtor if we consider the private sector as a whole. Another line of criticism is levelled against the micro-foundation of the model. In Sargent and Wallace's model, money is controllable because they did not incorporate a variety of assets that represent money in the real-world economy and may affect the optimising choices of private and public agents. This also has the implication that inflation tax is a very minor source of government revenue. Furthermore, if inflation is incorporated into the (higher) interest payments, the crowding out effect is less than calculated, and it may also turn a nominal deficit into a real surplus. Another correction that must be considered is cyclical adjustment. In case of recession, debt increases whereas in case of growth, debt decreases. Finally, in Sargent and Wallace's model, the deficit is attributed only either to public consumption or to the current account deficit but not to the capital formation by the public sector. To calculate this, the net public sector capital formation should be subtracted from total public spending.

In an attempt to clarify the debate, Smith (1982) introduced the distinction between monetarism and bondism. The policy that keeps public spending, tax rates, and the rate of money growth to fix and buy or sell bonds is characterised as a monetarist strategy whereas the policy that fixes public spending, taxes, and bonds and sells or buys money is characterised as bondism. Smith proved, using a dynamic IS-LM model, that

monetarist strategy is unable to keep a zero-inflation steady state, in contrast with bondism which can help the economy to attain a non-inflationary steady state.

The role of government debt in price level determination is analysed more by Sargent (1982), who introduces the crucial distinction between Ricardian and non-Ricardian regimes. Under the Ricardian regime, the issuing of new interest-bearing bonds is always backed by future taxes so as the bonds to be repaid, while under the non-Ricardian regime, new interest-bearing bonds are planned to be repaid by increasing base money. This latter case implies that the monetary base and government bonds are perfect substitutes; otherwise, the government could not monetise the debt. It becomes obvious that this is a critical issue for the non-Ricardian regime to hold. This leads to the final question, that is, whether government deficit is inflationary or not. This depends on the regime one is in. In the Ricardian regime, current deficits are less inflationary than those in the non-Ricardian regime. However, even where monetary policy is tied to a K-percent rule, for money growth there are circumstances where this rule could not hold. First, when a taxation plan is not enough to cover outstanding debt, monetary policy must cover the difference, breaking the K-percentage rule. Second, when fiscal policy selects first the path for the deficit, monetary authorities are induced to follow its path.

The idea of fiscal implications for price level determination was further developed by Aiyagari and Gertler (1985). Following Sargent's analysis, they analysed price level determination under Ricardian and non-Ricardian fiscal regimes. More precisely, under the Ricardian regime, the issuance of new bonds is backed by future taxes while in the non-Ricardian regime, debt is covered by money creation. Only under the Ricardian regime is the monetarist theory valid.[1] On the other hand, under the non-Ricardian regime, government bonds determine nominal variables, and the price level, inflation rate, and nominal interest rate are higher. Aiyagari and Gertler's (1985) model incorporated overlapping generations of two-period lived agents which are distinguished between old and young. There are also three assets: money, bonds, and equities. Thus, consumers' maximising behaviour consists of consumption demand for real balances and interest-bearing assets. On the other hand, the government finances its expenses, receiving lump-sum taxes (paid by consumers), money, and one period discount bonds. The choice between these defines the type of regime. If the government decides to back its bonds by direct taxes, the regime is Ricardian. Under the Ricardian regime, any change in the supply of bonds is backed with future taxes, leaving the price level unchanged. On the other hand, there is the non-Ricardian case where the government decides to cover expenses by money creation. In this case, the nominal interest rate will be unchanged, and the price level will increase to keep the money-to-debt ratio unchanged. It should be noted, though, that the reason for money increase matters. If money increases due to a temporary change in open market operation, then this will decrease nominal interest rates to equilibrate the money market and no change in price level will occur. Thus, increases in money supply must be due to increases in government bonds to characterise a fiscal regime as non-Ricardian.

In support of the above ideas, Woodford (1995) went a step further. In contrast to Sargent and Wallace's analysis, Woodford (1995) totally disconnected monetary policy from the determination of the price level. Sargent and Wallace (1981) claimed that a monetary contraction is inflationary because it increases government

[1] According to Aiyagari and Gertler, there are four propositions that consist monetary theory. First, money is the only government liability which affects economic variable; second, money supply could be affected either by fiscal or monetary policy; third, money supply can fully determine price level; finally, money growth rate covaries exactly with nominal interest rate (Aiyagari & Gertler, 1985, p. 19).

debt that eventually is monetised. Woodford, instead, pointed out that an increase in the nominal value of the government's liabilities can be inflationary even if it is not monetised. What is worse is that this first round of price level increases will be followed by a decrease in the real money supply which in turn will increase interest rates and government liabilities. This will force the price level to increase without bound.

Sims (1997) examined the plausibility of fiscal theory, analysing the ability of monetary policy to control inflation in two extreme cases. The first is under a liquidity trap and the second is when a sudden drop in demand for a government's liabilities occurs. Under the first case, where the price level spirals downward and nominal interest rates are close to zero, the real balance increases without bound. Thus, government lending also increases without bound. In the case of a sudden drop in the demand for government liabilities, an increase in inflation will occur. To avoid this, the central bank must sell government bonds. Thus, the public will switch their portfolios from money to government bonds and eventually restrain inflation. One can see in this case that an open market operation has a fiscal side effect. When the central bank sells bonds to the public, it increases interest expenses for the government, forcing the government to increase taxes or cut expenses. In both the above cases, monetary policy is not capable on its own to control inflation. Fiscal co-operation is required.

The above analysis presents the general framework of the debate. However, the Fiscal Theory of Price Level has raised extensive dispute both at the theoretical and technical level. There have been numerous models, each highlighting either different aspects of economic behaviour or institutional issues or incorporating different economic variables. To clarify this complex debate, we propose four issues that, in our view, consist the constituent parts of this theory. The first issue refers to whether government bonds could be perceived as net wealth. This issue has been discussed before the development of the Fiscal Theory of Price Level and analysed the possibility of substitutability between government bonds and high-powered money. This is crucial for the fiscal theory as it connects the government's decision to the behaviour of economic agents. A second issue concerns equilibrium, a rather technical issue having, nevertheless, serious extension into the effects of policy decisions on the function of the entire economy. A further issue, probably the most debatable, is whether budget constraint that a government faces is a binding condition. Put differently, should government always equate its debt obligation with future taxes, bearing the responsibility to balance its budget or can it choose freely its fiscal programme, and in case of debt, will the price level balance the government's budget? Here, as in the previous issue, what is at stake is not only the function of a model but also the policy implications that have, mainly, a normative basis. Finally, an interesting strand of the debate over the fiscal theory used game theory analysis. This strand focused on the behaviour of monetary and fiscal authorities to shed more light on the coordination of the two players. In what follows, we analyse each of these issues.

Are the Government's Bonds Net Wealth

As has already been mentioned, the issue of whether government bonds are net wealth has been a central issue of fiscal policy and was not developed in the framework of fiscal theory. However, the perfect substitutability between currency and bonds has been discussed in the framework of fiscal theory. The importance of whether government bonds are net wealth for fiscal theory is based on the impact of wealth on demand and on the price level. We analysed above that fiscal theory introduced the idea that fiscal theory may affect the price level, both by inducing monetary policy and by directly affecting the price level. In this latter case, the price level could restore equilibrium. Thus, the analysis of net wealth, even though developed before the emergence of the fiscal theory of the price level, is crucial for the validity of the fiscal theory of the price level.

The initial idea was put forth by Bryant and Wallace (1980). According to them, the difference between yields on two government liabilities, currency, and bonds, is due to legal restrictions, "which serve to separate markets, and the multiplicity of liabilities allow different prices (rate of return) to be offered in different markets" (Bryant & Wallace, 1980, p. 5). In the absence of legal restriction, arbitrage would wipe out yield differentials. In accordance with this, another crucial issue that is heavily debated is whether government debt is perceived as net wealth by the private sector. Modigliani (1961) pointed out that an increase in the government's bonds is perceived as an increase in net wealth by households, which increases their consumption relative to savings. However, as interest rates also increase, capital accumulation diminishes. Thus, Modigliani accepts the, initially at least, positive effects of fiscal policy. Thompson (1967), who assumed finite lives, supported this idea by arguing that the horizon of interest payments is longer than the horizon of future taxes. In the same line of argument, Mundell (1971), based on the imperfections of capital markets, claimed that the discount rate of interest payments will be lower than that for tax liabilities. The issue was elaborated further by Blinder (1982) who introduced the relations between the wealth effect and capital accumulation. As far as the wealth effect is concerned, Blinder claimed that under bond financing of deficit, a new bond has a positive income effect, but also due to increases in the interest rate, there is an effect on demand for money which increases the interest rate more. Thus, the interest rate is increased both due to an increase in consumer spending and an increase in money demand. Thus, the effect on income seems to be ambiguous. If the deficit is financed by bonds, there is an increase in income until the induced tax brings the budget into balance. In the case of money finance, there is also a liquidity effect which makes income rise faster. For the second issue, capital accumulation, standard neo-classical economics has concluded that money finance is the better choice. However, this conclusion is not definite because wealth effects and interest elasticities should be taken into consideration. Thus, an increase in money supply lowers interest rates which induce a wealth effect which reduces the effects of the initial increase in money. Further, lower interest rates increase investments and income as well. The result is ambiguous because "the wealth effects could be strong enough to offset the original effect of M on the LM curve" (Blinder, 1982, p. 8). The above discussion would give support to the Fiscal Theory of Price Level on the grounds that if government bonds are net wealth, then agents would increase their consumption, which in turn would increase the price level, decreasing the real value of debt and restoring, eventually, the budget constraint.

The idea of positive effects of government bonds has been criticised on the grounds that future taxes offset the positive effects of fiscal policy. Tobin noted that "additional taxes which are necessary to carry the interest charges reduce the value of other components of private wealth" (1952, p. 91). Bailey also supported this idea, asserting that "if future tax liabilities implicit in deficit financing are accurately foreseen, the level at which total tax receipt are set is immaterial; the behaviour of the community will be exactly the same as if the budget were continuously balanced" (1962, p. 77). In the same line of argument, Barro (1974) developed an overlapping generation model. In this context, households behave as they are infinitely lived as there are intergenerational transfers. Thus, government bonds are not affected by net wealth. Net wealth effects could be positive if private capital markets are imperfect. Finally, Barro introduces transaction cost for the issuance of new bonds and for tax collection and found that the net wealth effect is negative.

Attempting to reconcile the quantity theory of money and the Fiscal Theory of Price Level, Woodford (1995) claimed that quantity theory is based on a set of requirements that are not sufficient to define equilibrium. In other words, the equilibrium conditions posed by quantity theory are incomplete. Woodford

insisted that fiscal policy can determine price level. For example, an increase in the price level reduces the real value of the government bonds held by the private sector. This also reduces the wealth of the private sector (this is the conventional wealth effect). The decrease of private wealth also decreases aggregate demand and as a result the price level is diminished. A change in the money supply by a monetary authority does not affect this mechanism. In this example, it is shown that fiscal policy and wealth effect determine the price level. Even if monetary aggregate is defined exogenously, the equilibrium conditions set by quantity theory are not enough to determine equilibrium. Thus, an extra condition involving fiscal theory is needed to uniquely determine the price level. In other words, the mechanism that defines the price level must incorporate the role of government. It is because an increase in government liabilities or a future increase in the government deficit will cause households to believe that their budget has expanded (i.e. positive wealth effect) and their consumption will be increased. This would be inconsistent with equilibrium at the existing price level. There is only one special case where the price level could be determined under the quantity theory. This is the case of a Ricardian policy regime where the wealth effect does not exist, and thus only the quantity theory's factor plays a role in determining price level.

As we have seen, Barro (1989) refuted that government bonds are net wealth but did so on the grounds that fiscal policy is Ricardian. Thus, it is the Ricardian fiscal policy that makes bonds not net wealth. Woodford (1998a; 2001) insisted that under a non-Ricardian regime, bonds could be considered as net wealth. More precisely, if the government's surpluses diminish, then households feel wealthier and aggregate demand will increase. As a result, the price level will increase and the real value of households' assets will decrease up to the point where the real value of assets will be equal to the present value of future surpluses.

Could the Price Level Adequately Restore Equilibrium

A second core component of the fiscal theory of the price level refers to equilibrium. More precisely, it asks whether a fiscal policy that is characterised as non-Ricardian could freely choose its future deficit and whether the impact that has on the price level could restore equilibrium. Thus, is fiscal policy alone able to provoke a change in the price level that restores equilibrium? If so, then the impact of monetary policy on price level determination is neither a necessary nor a sufficient condition. This also brings forth the relations between fiscal and monetary policy.

Eric Leeper (1991), in an attempt to examine the relations between fiscal and monetary policies, introduced an influential distinction between active and passive policy. An active authority "pays no attention to the state of government debt and is free to set its control variable as it sees fit" (Leeper, 1991, p. 130) while a passive authority is constrained by an active authority's decisions. Leeper distinguishes four distinct cases. In the first case, monetary policy plays the central role for price level determination and fiscal policy is constrained by both monetary policy and the private sector's maximising behaviour. Thus, inflation and nominal interest rates depend entirely on monetary policy which can control inflation. This corresponds to Aiyagari and Gertler's polar Ricardian case. The second case describes an active fiscal authority which freely decides the level of debt without backing it with future taxes. Thus, monetary authority passively follows fiscal policy and is unable to define the price level. This is because if taxes are not raised to back debt, an increase in the nominal interest rate should occur to induce households to hold government debt. To avoid this, monetary authority expands the money supply now and generates tax revenues to balance the budget. This is studied in Woodford (1998b) and assumes pegged nominal interest rates and exogenous direct taxes. Besides those, there

are two more cases. First, there is the case where both policies are passive and are constrained by the budget. This is the Sargent and Wallace (1981) case where the price level is indeterminate. In the last case, both policies are active and seek to determine the price level, disregarding budget constraints. Under this the system, we get two unstable solutions because "there is not a money-growth process that ensures consumers will hold government debt unless the policy shocks are related in a way that violates the assumption of mutually uncorrelated shocks" (Leeper, 1991, p. 139).

In general, Woodford (1995) identified three channels by which equilibrium is restored. First is the diminishing of the real value of existing nominal government bonds due to inflation. Second is an increase in revenues by seignorage, and finally, there is a diminishing of the real debt service burden. None of the above circumstances involves the intervention of monetary policy. The only case where quantity theory is valid is the case of the Ricardian regime where the present value of future primary government surpluses must equal the value of outstanding government debt. According to Woodford, this is a rather theoretical case given that the government should not follow its budget constraints. The reason is that households' behaviour reassures the government's balance. This is because, following Walras Law, it is assumed that if households' budgets are balanced, then the government's should also be balanced, too.

The Fiscal Theory of Price Level has also raised objections. Buiter (1998) criticised fiscal theory and Woodford's model as invalid because it represents a 'solution' to an ill-posed general equilibrium problem. Buiter addressed two lines of disagreement. The first is that Woodford's model implies that the government's budget constraint holds only in equilibrium and not for all sequences of the price level and interest rates. Both households' budget constraints and the government's budget constraints must hold not only in equilibrium but also out of equilibrium sequences for these constraints to co-determine endogenous variables. Another line of criticism derives from the over-determination of the fiscal model. The reason is that if the sequence of real public spending and the sequence of real taxes are exogenous, then the sequence of the real debt cannot be determined (in more technical words, the sequence of real public debt is non-stationary). This means that government solvency constraint should not be satisfied.

Another criticism of the fiscal theory was made by McCallum (2001). The main criticism is based on the validity of the fiscal theory. McCallum proposed an alternative solution for the model that is in line with monetarist properties. McCallum showed that the fiscal solution is a bubble solution because of debt explodes, violating transversality conditions which state that households will not lend to the government as the number of government bonds increases.

Another interesting insight was introduced by Kocherlakota and Phelan (1999), who developed a model of infinite, discrete time where the price path rapidly increases and money becomes valueless. Thus, optimising households hold a positive but shrinking real balance, and the economy enters a situation of speculative hyperinflation. To reach equilibrium, the government is introduced. If a government follows a Ricardian fiscal policy, which means that the present value of taxes equals government debt held by households, net wealth remains constant, and for that, the government's policy cannot affect the price path. Instead, if a policy is non-Ricardian, some price path that cannot fulfil the government's budget constraint must be rejected. Thus, "a non-Ricardian policy is an equilibrium rejection device" (Kocherlakota & Phelan, 1999, p. 20).

The Fiscal Theory of Price Level was further developed by Cochrane (1998), who incorporated the maturity structure of the debt as an additional issue to the debate. Findings indicate that in the case of long-term debt, the nominal value of the debt is not fixed but depends on nominal bond prices which depend on expected

future inflation. Under this circumstance, if future surpluses are expected to decline, then expectations for future inflation will appear. This will decrease the relative price of nominal debt, leaving the current price level unaffected. On the other hand, if debt is short-term, the nominal value of debt is fixed, and any change in future surpluses cannot change the price of the debt. In this case, a change in the price level is the only way to find a new equilibrium.

Is Budget Constraint a Constraint Condition

Another critical issue of the Fiscal Theory of Price Level concerned the budget constraint. The proponents of the fiscal theory claimed that the budget constraint is not a condition that should restrict governments when deciding their fiscal programmes. In other words, governments should not cover their present deficit with future taxes. This does not mean that a government can freely generate a deficit. Equilibrium will be restored by an increase in the price level. On the other side of the camp, the opponents of the fiscal theory perceived budget constraint as a binding constraint that must always hold. In more technical terms, the former solves their model with the budget constraint as an extra equation while the latter does so as a binding constraint. This also has political extensions. If the budget constraint is a binding condition, then fiscal expansion should be followed by fiscal contraction. This is the Ricardian point of view. On the other hand, following the fiscal theory, this is not the case because equilibrium of the budget constraint will be restored by changes in the price level, leaving room for fiscal expansion. This is the non-Ricardian case.

Sargent (1982) pointed out a critical difference between the debt of a private firm and that of government. More precisely, the government can create debt entirely unbacked in the form of fiat money while a private firm's debt must always be backed. The government's debt is based on the future taxes that the government plans to levy, which is not always the case. Further, private debt is not dominated by the value of another asset. The government, on the other hand, issues debt denominated in the value of money that the same institution issues. According to Sargent, "the ways […] in which one explains these two 'facts' are sensitive matters in macroeconomics" (1982, p. 4).

In the same line of argument, Woodford (1998a; 2001), pointed out that taxation is an exogenous variable and independent from endogenous variables (such as goods prices, asset prices, or the value of public debt). Under a non-Ricardian regime, any fiscal disturbances have wealth effects and determine the price level. For example, a tax cut without any expectations for future tax increases will increase consumption at a level greater than total output. This will increase prices. Thus, the case is not that fiscal policy induces monetary expansion which in turn increases the price level. Instead, an increase in the public deficit will increase the price level which in turn will increase public desire for real balance and money supply (Woodford, 2001, pp. 674-675). In all, the government's budget constraint holds due to change in prices that affect the real government debt, equilibrating in this way real public debt with the present value of future government budget surpluses under the condition that private agents are optimisers and the market clears. For any anti-inflationary policy, a fiscal policy should also be taken into consideration. The reason is that a monetary authority could not be sure that fiscal authorities will follow a Ricardian policy or, alternatively, remain committed to a non-Ricardian policy. In the case of deviation from fiscal discipline, even monetary policy will be unable to stabilise economy. In contrast to the model of Sargent and Wallace (1981), who assumed an upper limit of government debt beyond which the central bank should be involved, increasing the money supply increases in this way the price level. Woodford (2001) pointed out that fiscal policy alone has the capacity to affect the price level. Thus, if the

central bank is committed to low inflation, fiscal policy must be Ricardian to control inflation. Instead, if fiscal policy is non-Ricardian, the only way to reach equilibrium is through changes in the price level. Another core issue that Woodford dealt with is the necessity for a fiscal policy to be strictly Ricardian. This brings us to another issue at stake in this debate: Should a fiscal policy be Ricardian? The government is not a private agent that must decide within the limits of its budget constraints. The government has the choice of borrowing and rolling over its debt in contrast to households that, due to unlimited needs, prefer to borrow and consume more and more. This impedes, in this way, determining any market clearing prices. Such a problem is of little importance in a general equilibrium framework, and as said above, a policy could be non-Ricardian and still have rational expectations equilibrium. Moreover, for private agents, prices are given. Instead, the government is a central player making decisions that could change equilibrium prices. Thus, the government could decide whether (or not) to follow a Ricardian or a non-Ricardian policy, according to the price level it desires.

Sims (1999a) also supported this idea by comparing debt which is issued by private companies and debt which is issued by public authorities. A first difference is that the private sector has a limited capacity to collect revenues. The government, on the other hand, can increase taxes to cover its expenses. Even if this is not the case, there is a mechanism that is able to balance the government's budget. More precisely, a private company's debt cannot affect the price level. Instead, if a government's current real value of debt is not balanced by the discounted present value of real future primary surpluses, then the price level will be affected in a way that re-balances the government's budget. A further difference lies in the fact that the private sector cannot produce "money" to repay its debt instead of the government which is able to issue new "paper" at nearly zero cost.

Cochrane (2001) pointed out that government decides to issue bonds according to its needs and to pay its debt on the nominal value, not the other way around. Put differently, it is not the price level that forces the government to issue bonds. Neither debt is paid according to the price level. The choice for the issuance of debt is taken without any consideration of the price level, and there is no constraint in this decision. All the above indicates that the government is not subjected to any constraint when deciding for its bonds. However, the government must repay its debt, and for that reason, it must increase surpluses when it increases the issuance of bonds. If surpluses are less that the value of bonds, then the government must increase the money supply which in turn increases prices. Thus, the government should not increase surpluses given that the role of equilibrium is undertaken by the price level. The above does not mean that the government should be totally indifferent to its solvency. Any decision to increase debt without increasing surpluses will end up in default because outstanding government debt will be devalued.

One of the most significant opponents of the fiscal theory was Willem Buiter. In "The Fallacy of the Fiscal Theory of the Price Level" (Buiter, 1998), Buiter sought to "put an end to this fruitless line of enquiry by demonstrating the nature and origins of the fallacy" (p. 1). Buiter claimed that fiscal theory is not only theoretically fallacious but also politically harmful, given that it allows a government to exogenously decide primary surpluses plus seignorage, and solvency is achieved by changes in the price level. To support this view, Buiter developed two lines of arguments. First, he pointed out that a budget constraint must hold for all endogenous variables and not only in equilibrium. When a model implies that a government exogenously decides its primary surpluses without taking into consideration its budget constraint, it is ill-posed because default is not ruled out. Buiter also claimed that the price level cannot play the equilibrate role that fiscal theory ascribes to the price level.

Following his previous argument (that budget constraint is a constraint that must be followed by any agents—households, firms, and the government—and that holds universally and not only in equilibrium), Buiter (2001) re-considered the distinction between Ricardian and non-Ricardian policy and distinguished three cases: the Ricardian regime with contract fulfilment, the Ricardian regime without contract fulfilment, and the non-Ricardian regime. The first regime

> is a set of sequences for real public spending, […] net real taxes […] and either a sequence of nominal money stock […] or a sequence of nominal interest rate […] which identically satisfies the government's inter-temporal budget constraint and ensures that all outstanding contractual debt are met exactly. (Buiter, 2001, p. 16)

Under the above setting, any rule for taxes that satisfies inter-temporal budget constraints is appropriate. This is the Sargent and Wallace (1981) model. The second case was illustrated by Woodford (1995) and Cochrane (1998). In this case, the inter-temporal budget constraint is satisfied but the contractual debt obligations do not have to be met exactly. The last case is the non-Ricardian case which is characterised by an exogenous nominal money rule (or exogenous non-negative sequence of nominal interest rate), exogenous sequence of real public spending, and exogenous sequence of real net taxes. A non-Ricardian case is overdetermined, and an inter-temporal budget constraint is satisfied only in equilibrium.

Evidence From USA and UK

Bohn (1998) follows the widely implemented test of the correlation of surplus to debt to examine the fiscal behaviour of the government. To this end, he used data from the US during the period from 1916-1995 for surpluses and debt-to-GDP ratios. The results show a positive correlation that indicates the Ricardian nature and the sustainability of fiscal policy, even though in some periods there were high fiscal deficits due to war and cyclical reasons.

Sala (2004) developed a dynamic general equilibrium model in the new neo-classical tradition and a VAR analysis to test the fiscal regime in the US during the period from 1960-2003. For the period from 1960-1979, results showed that fiscal policy is non-Ricardian. At the end of the 1980s, there was increasing concern for the sustainability of the debt. In this period, there was a negative response of the real interest rate to a tax shock, indicating a swift to a Ricardian regime.

Apart from the classification of the regime into the two categories (fiscal and monetary), an interesting issue also concerns the change between the two regimes. This was the focus of the work of Favero and Monacelli (2005) and the work of Davig and Leeper (2011), which are analysed below.

To test fiscal policy in the US economy for the period from 1960-2002, Favero and Monacelli (2005) employed a Markow-switching regression method. This model involves multiple equations that can characterise the time series behaviours in different regimes, allowing one to examine the changes of a regime endogenously. Further, they specified a specific target level at which the primary deficit should converge. Thus, it is crucial to identify such a target level. This target level incorporates a fiscal gap so as to capture the cyclical component of fiscal policy. Second, there is the debt-stabilising deficit, that is, "that level of the primary deficit that would be consistent […] with constant government debt" (Favero & Monacelli, 2005, p. 3). Thus, according to them, the rule is the elasticity of the primary deficit to the debt-stabilising deficit, which characterises the fiscal regime as either active or passive. The results showed that in the US there have been two fiscal regimes. The first extended from 1960 until the early 1990s and was characterised by a sharp

increase of the debt-to-GDP ratio, followed by destabilising behaviour for the debt-stabilising rule and by little concern for the stabilisation of output. This period's fiscal policy could be characterised as non-Ricardian. In the early 1990s, the status of fiscal policy changed as primary deficits were aligned with debt stabilisation and with the stabilisation of the output. Until the beginning of the 2000s, there was a steady decline in the debt-to-GDP ratio. The regime changed again in 2001 as the Bush Administration had little concern for fiscal stabilisation.

Using the same methodology, Davig and Leeper (2011) examined a model where monetary policy follows a Taylor rule (for the US economy using quarterly data from February 1948-January 2004, that is, the nominal interest rate is determined by inflation, the output level, and a fiscal policy that adjusts taxes on government debt and other variables). The central issue for them is not to test which of the two theories are valid but to uncover the relation between the two regimes. Their analysis found that there were periods with active monetary and passive fiscal policy and periods with passive monetary and active fiscal policy. There are also periods where both policies were passive or both were active. Particularly, monetary policy was passive from 1948 to October 1979, with a short period from 1959-1960 when monetary policy was active. Further, monetary policy was passive shortly after the two recessions of 1991 and 2001. It is more complicated with fiscal policy which was intensely changed from passive to active. After the WWII, there were 12 fiscal regime changes, beginning with active; then the period from 1950-1951 became passive, and from the mid-1950s to the mid-1960s, fiscal policy turned passive. From 1979-1981, fiscal policy became active again. From the mid-1980s to 2001, fiscal policy turned active, and finally in the period from 2002-2003, fiscal policy became active again.

Conclusion

Since the broke up of the financial crisis of 2007-2008, global economy has witnessed a soar of public debt to unparalleled levels. The debate of the fiscal policy has, once again, drawn the attention of economists and has given rise to a lively debate on the fiscal policy. We attempted to contribute to this debate by reintroducing Fiscal Theory of Price Level to discuss three major issues of fiscal policy: first, whether government bonds are net wealth, second whether price level is a sufficient mechanism to restore equilibrium in the case of excessive debt, and, finally, whether budget constraint is a constraint condition. We argue that those three issues form the core elements to understand the nature and the impact of fiscal policy.

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