

Public financing in Brazil: a neo-chartalist approach to the "fiscal crisis" of 2015 and 2016

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Abstract

This article questions the conventional wisdom that argues the existence of a fiscal crisis in Brazil since 2014 and that fiscal consolidation would then be inevitable. Neo-chartalist authors aligned with Modern Money Theory (MMT) show there is no restriction to the financing of public debt in the context of sovereign currencies, a thesis proven correct by studies on the Brazilian economic institutions. The article shows how the relations established between the National Treasury and the Central Bank in money markets leads to unlimited demand for public debt securities. Empirical data shows substantial expansions in the National Treasury Central Account balance and an improvement on debt profile in the period, which was financed with relative ease.

Introduction

Between 2015 and 2016, Brazil has faced the largest economic recession in its history, with GDP falling 7,49 % and unemployment rising to staggering 12%. In the same period, the need for public financing has risen 63,7%, from R\$ 343,9 billion³ in 2014 to R\$ 562,8 billion in 2016, and net public debt relative to GDP went from 32,59% to 46,01%. The prevailing analysis among economists, not only in the mainstream, concludes the country is experiencing a major fiscal crisis.

The goal of this article is to propose an alternative to the conventional view about the fiscal situation of the Federal Government in the period. According to such view, shared by many, including former President Dilma Rousseff, the deterioration of public accounts imposed a limit to anti-cyclical policies and was reason for the conservative and recessive economic agenda of Rousseff's second term. It will be showed that the balance of the central government's main account was positive throughout the recessive phase, when the net emission of public debt surpassed R\$ 129

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² The views and opinions expressed in this working paper are those of the authors and do not necessarily reflect the official policy or position of National Treasury of Brazil.

³ Figures will be presented in Reais (BRL) due to the volatility of the Brazilian exchange rate, among the highest in the world. If shown in USD, the exchange rate volatility would expose trends that do not reflect the reality of public financing in Brazil. Between December 31st of 2014 and 2016, the Real (BRL) exchange rate was raised in 22%, from BRL 2.65 to 3.25 to 1 USD, reaching peaks of 57.9% or BRL 4,19.

billion and the overall liquidity of the Brazilian Treasury reached R\$ 1,05 trillion⁴. Contrary to common knowledge, the Treasury has met its financial obligations with relative ease and many indicators showed an improvement in the ability of the public sector to finance itself.

Authors from different schools of thought seem to consider fiscal balance a precondition to the improvement of trust among economic agents and, thus, to the recovery of growth. In its most radical version, "fiscalism" describes a scenario of long-term deterioration of fiscal conditions that would require an ample agenda of reforms.

Traditional analysis has been unable to explain the soundness of public accounts during the current crisis. A partial explanation was offered by some mainstream Brazilian economists in studies that deepen the knowledge on the relations between the Central Bank and the National Treasury, especially regarding transfer mechanisms and exchange rate volatility effects on international reserves. Despite such efforts, the understanding of the dynamics between distinct federal economic authorities and money markets demand a more robust analytical framework.

Abba Lerner's "functional finances", the works on public finance by James Tobin and recent developments in modern money theory (MMT) were mostly ignored by Brazilian orthodoxy. That is precisely the gap this article intends to help reduce, relating operational practices of the Treasury, Central Bank and commercial banks to a specific framework capable of producing coherent results. As it will be showed based on MMT, fiscal crisis are not feasible in countries with sovereign currencies, be it in the short or long term.

Theoretical aspects will be coupled in this article with extensive data on the mechanisms and (quite positive) conditions of public financing in Brazil in order to deny the thesis of a fiscal crisis.

The first section of this working paper will debate the conventional wisdom on the recession of 2015 and 2016, focusing on the centrality of the "fiscal crisis" for its explanation. In its different versions, the argument may lead to moderate austerity recommendations all the way to an extensive agenda of reforms.

Some mainstream economists did realize the National Treasury's financing conditions were better than would be expected. In doing so, they unwillingly corroborate the MMT hypothesis regarding public financing in countries with sovereign currency. The mainstream explanation about Brazil's federal account positive performance, even as it faces severe recession, will be critically evaluated. The inadequacy of the the theoretical framework clashes with the empirical reality, which

⁴R\$ 1, 05 trillion = US\$ 309,2 billion. In the same period, the balance of US Treasury General Account was US\$ 380, 7 billion.

leads orthodox economists to adopt ad hoc assumptions do deal with these phenomena.

In the second section, we will outline the main concepts of functional finance and MMT necessary for this working paper analysis and how they relate to the operation of public finances, the Central Bank and commercial banks. Here it will be possible to understand how public expenses themselves create the private demand for its financing, the “Say’s Law for the Financing of Public Expenses”⁵ within the framework of the National Treasury, the Central Bank and its relations with money markets.

It will finally be shown how Brazil’s finances behaved soundly in the midst of the 2015/2016 recession, with improvements on the balance sheet and on debt terms.

The national mainstream, the debate on Treasury-Central Bank relations and ad hoc assumptions

In this section, we briefly evaluate arguments that affirm the existence of a fiscal crises in Brazil. We also address the debate about the relation between the National Treasury and the Central Bank, which is usually centered around the theoretic assumption of financial restrictions to Treasury expenses. Empirical data showing otherwise makes ad hoc assumptions necessary to explain this reality without abandoning orthodoxy.

Almeida Jr., Lisboa e Pessoa (2015) argue that the "fiscal crisis" is a structural problem, much more damning than short term unbalances, which demands structural reforms to be solved:

"Contrary to the prevailing vision, nonetheless, the fiscal crisis results not only on the lack of control of public expending of the last years. It is not about a short term unbalance between revenues and expenses and the discussion on fiscal adjustment measures that would allow the recovery of growth. The crisis is deeper and demands stricter structural adjustment. Measures to increase revenue and allow for a surplus in this year are insufficient to overcome the challenges faced by the country and will only postpone problems that grow worse in time"⁶ (Almeida Jr., Lisboa, & Pessoa, 2015, p.1).

⁵ In fact, it does not configure a "law" but explains the particular case of Brazil and most modern economies. The same could be argued about Say's law, which referred to the particular case of full employment, as shown by Keynes (1936). This is a more restrict assumption than that of functional finance and MMT, as there is a limit for public expense in domestic currency.

⁶ Original Version: “Ao contrário da visão dominante, no entanto, a crise fiscal não decorre apenas do descontrole das contas públicas nos últimos anos. Não se trata de um desequilíbrio de curto prazo entre receita e despesa e a discussão sobre medidas de ajuste fiscal no próximo ano de modo a permitir a retomada do crescimento. A crise é mais profunda e requer um ajuste mais severo e estrutural. Medidas de aumento da receita para viabilizar um maior superávit primário neste ano são insuficientes para superar os graves desafios enfrentados pelo país e apenas adiam o enfrentamento dos problemas, que se tornam ainda mais graves com o tempo.”

Almeida Jr., Lisboa, and Pessoa base their thesis in the tendency of larger growth of primary expenses relative to GDP observed between 1991 and 2014, an unsustainable trajectory given the already high taxes in Brazil, above the average of developing economies. In such view, the only way to finance public expenditures would be through taxation, which this paper vehemently refutes.

Salto, Afonso, Biasoto Jr. and Kohler (2015) argue that the credibility of fiscal policies will only recover with the redesign of economic policies, notably the exchange rate, that generate expressive costs to the public sector. Although these authors do not properly belong to the national orthodoxy, still they hold prejudice against public expending:

*"as much faith as governments may have in comic Keynesian books, which sees unlimited public expending as the drive for the creation of wealth"*⁷ (Salton, Afonso, Biasoto Jr., & Kohler, 2015, p.3)

Salto, Afonso, Biasoto Jr. and Kohler (2015) also affirm the possibility of the Treasury to lack the resources for public expenditures:

*"There are old conceptual issues never before dealt with. Brazil is the only country in which the Central Bank is treated as integral part of the non-financial public sector and where international reserves are comparable to resources in the Treasury's account. It is worth asking: if by any chance the Treasury defaults and there are no resources to meet debt obligations or the wages of civil servants, is the Treasury allowed to dispose of foreign reserves in order to address such commitments?"*⁸ (Salton, Afonso, Biasoto Jr., & Kohler, 2015, p.15)

This article opposes the two questions pointed by Salto, Afonso, Biasoto Jr., & Kohler. First, it is not a question of whether public expenses generate wealth or not, but the fact that such an unstable system as capitalism demands active fiscal policies in order to achieve full employment. In this case, Keynes himself could be considered a "comic Keynesian book" in the context of insufficient effective demand:

⁷ Original Version: "Por maior que seja a crença amadora do governo em um keynesianismo de almanaque, que tem fê no gasto público ilimitado como moto contínuo gerador de riqueza. "

⁸ Original Version: "Existem problemas conceituais antigos e nunca enfrentados. O Brasil é o único país em que o Banco Central é tratado como parte integrante do setor público não-financeiro e as reservas internacionais são equiparadas ao caixa único do Tesouro. Cabe perguntar: se por acaso este último entrar em default e lhe faltarem reais para honrar com o serviço da dívida vincenda ou mesmo a folha salarial ou ainda a conta de fornecedores, o Tesouro Nacional poderia lançar mão dos dólares, ouro e outras moedas do cofre do Banco Central para quitar aqueles compromissos? "

“I recently read an interesting article by Lerner [1943] on deficit budgeting, in which he shows that, in fact, this does not mean an infinite increase in the national debt, since in course of time the interest on the previous debt takes the place of the new debt which would otherwise be required. (He, of course, is thinking of a chronic deficiency of purchasing power rather than an intermittent one.) His argument is impeccable. But heaven help anyone who tries to put it across (to) the plain man at this stage of the evolution of our ideas”. (Keynes apud Colander, 1984, p. 1573-1574)”

As pointed out by Colander (1984), Keynes himself has added to the confusion between public deficits and public debt. Keynes expected then to influence economic policies, therefore his public opinions took into account the correlation of political forces of the moment. On academic debates, on the other hand, and in his discussions with disciples and Lerner himself, his positions were closer to those of Lerner's Functional Finances.

Paley (2014) also shows, in an article that heavily criticizes MMT, that the nonexistence of budgetary restrictions for public expenses was well understood for decades by early Keynesians, such as Nobel laureate James Tobin. Paley (2014) suggests that MMT has brought nothing new to the debate, once budgetary restrictions and public expenses were plainly explained by early Keynesians.

Fundamentally, though, it is not possible to comment on public debt in abstract, not factoring in the conditions in which credit is generated in the money markets, where the Treasury and the Central Bank are significant players.

Paula and Pires (2017) argue in favor of rules that limit the rise of public expenses in the long run, in order to increase agents' trust, reduce risk premiums and allow for some fiscal margin in the short run. The rise in limits for primary deficit in 2016 and the Constitutional Amendment 95, which freezes public expanding in real terms for 20 years, are considered by the authors to be steps towards long term adjustment. These measures would permit the decrease of risk premiums at the sacrifice of fiscal policy and potential long term economic growth.

Cysne (1990) was among the first Brazilian economists to study the relations between the National Treasury and the Central Bank, back in the days of high inflation and a sharp decrease in reserves held by commercial banks. In that research, he shows how fluctuations in the government's central account's balance made it difficult to determine the daily interest rates of the economy.

“The fourth problem is the lack of administrative independence of the Central

Bank faces regarding the executive power. This pushes the Central Bank to (practically unlimited) withdraws from the Treasury"⁹ (Cysne, 1990, p.8).

Cysne (1990) concludes the Treasury expenses do not face financial restrictions, but wrongly attributes this situation to the question of administrative independence of the Central Bank.

Leister and Medeiros (2016) show the adequacy of the Brazilian institutional framework and the relations between the National Treasury to international practices. The authors point to a certain consensus in literature regarding the centralization of resources in one or few central accounts as a means to simplify management. They also note the prevailing view that favors the issuance of Treasury bonds in the execution of monetary policy as it allows for the development of financial markets and thus an integrated dynamic for public financing.

As to where financial resources of the Federal government should be placed, either in central or commercial banks, there is no consensus in literature. The Central Bank option makes control of resources easier, lowers maintenance costs, secures competitiveness neutrality among financial institutions and minimizes credit risk; the use of commercial institutions, on the other hand, does not appear to impact the monetary base according to the flow of revenues and expenses of the Government (Leister & Medeiros, 2016).

Despite agreeing on the adequacy of the institutional framework relative to the National Treasury and the Central Bank, Leister and Medeiros (2016) suggest that any resources originating on the Central Banks operational result should necessarily be used to buy back bonds. This practice may impact the overall government debt statistic, which are themselves based on the uncanny separation of Federal Government and Central Bank accounts, but does very little to reduce the consolidated public debt of the public sector, that is, the main issue on the fiscal policy debate in Brazil. Even worse, this measure would result the Treasury's policy options, pushing it towards issuing bonds with shorter terms or tied to the SELIC, traits considered positive only by bond holders.

Mendes (2016) studies changes in the level of international reserves brought by positive or negative balance results of the Central Bank and the payments therefore made in benefit of the Treasury. Historically, equity variations of central banks should matter little, considering that its main liability was an interest-free monetary base, which allows it to produce recurring profits by heavily charging the banking system for the liquidity it provides. Low risk bonds composed the asset portfolio

⁹ Original Version: "O quarto problema é que o Banco Central não tem independência administrativa do Executivo. Isto faz como que ele tenha que "correr atrás" dos saques (na prática, ilimitados) do Tesouro."

of central banks, thus assuring another reason for its profitability.

During the past decades, though, profound changes occurred on how central banks operate both in developed and developing nations. After the 2008 crisis, the Federal Reserve and the European Central Bank engaged in actively strengthening the financial and non-financial private sector, which lead to the accumulation of expressive amounts of assets. In developing countries, large commodities exporters saw an increase in international reserves held by central banks.

Such an increase causes profits and losses that are accounted for even if the assets are not actually traded. Given the high level of exchange rates volatility in Brazil, the Central Bank's profits and losses are usually substantial. While profits are paid in cash by the Central Bank, losses are covered by the issuance of Treasury bonds, in a mechanism Mendes (2016) considers to favor the National Treasury at the expense of the Central Bank.

Underlying Mendes' analysis is the belief that National Treasury's expenses could face financial restraints.

"It is also noteworthy that effective profit paid by the Central Bank to the Treasury differs from actuarial profits in that the latter constitutes an implicit financing in benefit of the Treasury, thus loosening the fiscal restrictions imposed on the Treasury and generating public deficits" ¹⁰(Mendes, 2016, p.215).

Financial restrictions in the national currency (BRL), though, were not observed since the creation of the currency in the mid-1990s, as it will be showed in the last session of this work. In the next one, it will be argued that such restrictions are not possible given the current Brazilian institutional arrangement.

Say's Law for the Financing of Public Expenses, Functional Finances and Modern Money Theory

The theory of functional finances, first put forth by British-Russian economist Abba Lerner, proposes that fiscal and monetary policies should be assessed according to their economic results. Lerner

¹⁰ Original Version: "Outro aspecto da diferença relevante da diferença entre lucros efetivamente realizados e não realizados é que estes podem constituir um financiamento implícito do banco central ao Tesouro, afrouxando a restrição fiscal imposta ao Tesouro e estimulando a geração de déficit público."

affirms:

"The central idea is that fiscal policy, expenses and taxation, the contracting and repaying of debt and the management of the monetary base should be considered exclusively in its effects on the economy, and not based on traditional notions of what constitutes a sound policy" (Lerner, 1943, p.9, apud Wray, 2003, pp. 95).

In Lerner's view, the key variable for governments to control the level of aggregate demand is public expending, that should allow for the purchase of all potential production. By controlling aggregate demand, governments can achieve the goals of increasing employment and limiting inflation.

Dos Santos (2005) adapted Lerner's functional finances to restraints in the balance of payments, a situation of special interest for Brazil and other developing countries frequently subject to currency crisis.

During the 1940s, the Keynesian revolution faced resistance by the doctrine Lerner named "sound finance", which proposed governments should aim at balanced budgets and limits to debt. Lerner did not envision, however, any theoretical ceiling to either debt or deficit. Following on the teachings of Functional Finances, fiscal policy should have full employment and controlled inflation as goals, in opposition to the so-called "sound finance".

The limits to debt and deficit would be given by full employment itself or by the rise in inflation as the economy approaches full employment. The goals of economic policy will establish, therefore, the limits to fiscal policy.

"Such automatic limit to the growth of public debt stems from the fact that public debt is an asset for those who hold it. If debt is indeed too large, it is possible that bond holders feel so much wealthier that their consumption alone might lead the economy to full employment. This could happen either through the partial consumption of incomes or the use of the bond stocks themselves, in case the preference for consumption outgrows the preference for accumulation. In this situation, according to the principles of functional finances, the government would be pushed into action to prevent the level of employment from falling below full employment. Public debt would then be

halted and might even start to decrease"¹¹(Dos Santos, 2005, pp.44-45).

The first principle of functional finances is, according to Lerner (1943), the government's commitment to keeping the overall rate of expenses at a level that allows production at current prices. When expenses are too high, the government must cut expenses or raise taxes, either way reducing the economy's total expenses. On the other hand, when expenses are too low, the government must raise expenses or lower taxes, thus raising the total expenses.

The trade of public bonds aims at balancing interest rates in order to achieve the desired level of investments. In this mechanism, the government issues bonds to raise interest rates and reduce investments or buys back bonds to lower rates and increase investments.

"Functional Finance rejects completely the traditional doctrines of 'sound finance' and the principle of trying to balance the budget over a solar year or any other arbitrary period. In their place it prescribes: first, the adjustment of total spending (by everybody in the economy, including the government) in order to eliminate both unemployment and inflation, using government spending when total spending is too low and taxation when total spending is too high; second, the adjustment of public holdings of money and of government bonds, by government borrowing or debt repayment, in order to achieve the rate of interest which results in the most desirable level of investment; and third, the printing, hoarding or destruction of money as needed for carrying out the first two parts of the program. (Lerner, 1943, p.41, apud Wray, 1998, pp. 76).

In functional finances, as in other variations of post-keynesianism, there is no dynamic analogous to "crowding out", when an increase in public expending result in higher interest rates and a decrease in private investment.

An economic system marked by uncertainty, in which currency plays a fundamental role in preserving purchase power and liquidity, shows no intrinsic tendency towards full employment. In this sense, public expenditure is a central tool of public policy as it allows the government to pursue

11 Original Version: "Esse limite automático ao crescimento da dívida pública decorre da dívida pública ser uma riqueza nas mãos de quem a possui. Se a dívida for realmente muito grande, é possível que os detentores de títulos de dívida se sintam tão ricos que seu consumo sozinho seja capaz de levar a economia para o pleno emprego. Isso pode acontecer apenas com o consumo de parte da renda de juros ou, via a utilização do próprio estoque de títulos, caso prefiram em algum momento consumir a acumular, a partir de certo ponto. Nessa situação, seguindo os princípios das finanças funcionais o governo, para impedir que seja ultrapassado o nível de pleno emprego, é obrigado a eliminar o déficit público. A dívida governamental, portanto, pararia de crescer e talvez até cairia"

full employment, possibly leading to the increase of private investments.

Modern Money Theory (MMT) originates in the context of post- keynesianism and clarifies the logic of public financing, showing that countries who issue a sovereign currency are not subject to restrictions to financing public expenses.

“One of the main contributions of Modern Money Theory (MMT) has been to explain why monetarily sovereign governments have a very flexible policy space that is unencumbered by hard financial constraints. Not only can they issue their own currency to meet commitments denominated in their own unit of account, but also any self- imposed constraint on their budgetary operations can be by-passed by changing rules. As such, this type of government is not financially constrained in the way that non-sovereign units are, so that it can focus on issues such as full employment and price stability”.
(Wray & Tymoigne, 2013)

MMT allows for a detailed analysis of the institutional aspects of both monetary and fiscal policies, highlighting the relations between Treasury and Central Bank, which are fundamental for this paper's argument. Thus, MMT goes beyond the pioneer works of Abba Lerner on "functional finances", showing the validity of its theoretical framework on the studies of contemporary economics in sovereign and non-sovereign currency systems. (Bell S., 2000); (Bell & Wray, 2002); (Fullwiler, 2006); Mosler & Forstater, 1999); (Rezende, 2009), (Wray L. , 2002) (Wray L. , 2003),(Wray L. , 2003a) and (Wray L. , 2015).

Rezende (2009) and Pimentel and Serrano (2016) applied the assumptions of MMT to the Brazilian case. While evaluating the institutional framework of public expenses financing, Rezende (2009) concludes that financial restrictions are self-imposed in the context of sovereign currencies, a case in which there is no limit for public debt in local currency.

“The rules of the game under which the Brazilian federal government is operating are mostly self-imposed. The rules of the game are completely different or should be completely different with a nonconvertible currency. Within this monetary framework, it does not make sense to balance the government budget because a sovereign government cannot become insolvent on its own currency. Self-imposed constraints on government spending should be removed. The government spends by crediting bank accounts, and when taxes are paid, reserves are eliminated.” (Rezende, 2009, p. 95)

Pimentel and Serrano (2016) demonstrate the validity of MMT assumptions for the Brazilian economy, in a situation where long term interest rates are closely related to short term rates such as SELIC. The authors argue that a strong fiscal adjustment and other recessive measures were not necessary to manage the level of debt. They also show that the increase in debt costs were mainly due to the elevation of short term rates determined by the Central Bank.

Modern Money Theory explicitly incorporates elements of functional finances, adding to the analysis the role of taxation in directing currency, the relation between bank reserves and the institutional framework of modern central banks and the dynamics of public expenses and full employment. (Wray L., 2003).

Central to the functional finances approach is the Chartalist conception of currency, which considers currency to be a creation of the state, referencing especially the works of Knapp. The states capability of expending accordingly to macroeconomic needs derives from the chartalist notion of currency, that is, the state's ability to issue it.

“The Chartalist approach, money is a creature of the state; at least in the case of modern money, examples of stateless money are hard to come by. The state defines money as that which it accepts at public pay offices (mainly in payment of taxes). This has important policy implications. Once the state imposes a tax on its citizens, payable in a money over which it has a monopoly of issue, it can influence the value of that money by setting the conditions under which the population can obtain it. The government does not 'need' the public's money in order to spend; rather, the public needs the government's money in order to pay taxes. This means that the government can 'buy' whatever is for sale in terms of its money merely by providing that money”.
(Wray L., 1998, pp. 18)

Chartalists views on money oppose those of mentalism, in which the value of a money stems from the metallic standards adopted and, later, from the amount of goods that it can purchase, in the case of fiduciary currencies.

George Friedrich Knapp developed a theory of state money in way similar to chartalism. In his theory, money is that which is accepted in public payments, going well beyond the idea of law enforced currencies.

According to Aggio (2008), the conventional-money generally accepted in capitalist economies is the state money. When the community of payments involves the whole of economic agents, one can affirm that the other payment communities are inserted in the state's community of payment. In this case, private money such as banking checks can be defined in terms of the state's money unit and also be converted, at a discount rate, into the state money itself.

In Knapp's conception, payments involving the state are considered "centric"; when the state is in the receiving end, it is said to be "epicentric", and "apocentric" for those in the opposite direction. Transactions between private agents are considered "paracentric" (Wray L., 2003).

“In the Chartalist approach, the public demands the government's money because that is the fonn in which taxes are paid. It is not a coincidence that the modem state uses the same valuta money in its apocentric payments that it accepts in epicentric payments - it uses taxes as a means of inducing the population to supply goods and services to the state, supplying in return the money that will be used to retire the tax liability. In the modem economy, it appears that taxes are paid using bank money, but analysis of reserve accounting shows that tax payments always lead to a reserve drain (that is, reduce central bank liabilities), so that in reality only the government's money is definitive (fmallly discharging the tax liability)”. (Wray L., 1998, p. 37)

The conception of money among MMT and other post-Keynesian theorists radically diverge from orthodox notions, which stress the role of currency as a mere facilitator of transactions. On the contrary, post-Keynesians focus on the role of credit in the economy and the state aspect of money.

“The Money originated as a vehicle to settle debts. A proof of the above is that most of the so-called modern financial innovations, based on scriptural manipulations, were known since antiquity and were in practice just before and during the Renaissance. In the post-Keynesian approach, money is a social relation, with two somewhat different justifications. The first one says that credit money requires a property-based society, where pledges based on legal property – collateral – permit the expansion of loan contracts (Heinsohn and Steiger, 1983; de Soto, 2000). The second justification is based on the tax-driven approach, also called the chartalist view following Knapp (1973), which is at the heart of the MMT reconstruction of monetary theory. It says that the general acceptance of a non-metallic form of money

is due to the fact that the state requires taxes to be paid in this medium (Wray,2000). The usefulness of chartal money is derived from the state's authority to impose and collect taxes. (Lavoie, 2014, p. 188)

In this way, MMT portrays money as fundamentally state-driven, its consolidation and general acceptance stemming from its use for the payment of taxes and other contributions to the state.

The understanding of the money's state character allows MMT to explain the essentially monetary aspect of public expenses. One of the main contributions by MMT, in this sense, is to show the validity of the principles of functional finances in the context of the modern institutional framework of central banks and national treasuries, especially concluding that the state is always solvent in its sovereign money.

“Perhaps the most important original contribution of MMT has been the detailed study of the coordination of operations between the treasury and the central bank. The procedures involved can obscure how the government “really spends””. (Wray L., 2015, p. 2)

MMT shows the role played by the treasury in monetary policy, the way how central banks implement such policy, the importance of national accounting identities and the economic irrelevance of self-imposed restrictions to the financing of public expenses. (Wray & Tymoigne, 2013).

MMT considers the division between central bank and treasury to be artificial and to hide the true nature of bond issuing by the treasury, which is an operation of monetary policy rather than financing

States generally issue currency in the following situations:

Treasury

- i. pays a public expense and
- ii. buys back bonds held by the public

Central Bank

- iii. buys public bond in definitive
- iv. issues or buys back reverse repos
- v. loans to commercial banks at a rediscount (idem)

- vi. lowers mandatory deposits of commercial banks in the Central Bank
- vii. whenever a commercial bank withdraws voluntary reserves held by the Central Bank
- viii. acquires foreign reserves
- ix. pays losses in operations involving derivatives.

Whenever the treasury pays for a public expense, the amount is debited from its account at the central bank and credited to the commercial bank responsible for operating the transaction. Public expense therefore results in the expansion of the monetary base. In case the payment's final destiny is a third commercial bank, the first bank to be credited by the treasury will then make a deposit in the reserves account of the final destination commercial bank at the central bank.

It is important to remember that the monetary base is composed of paper currency held by the public and of commercial bank's reserves deposited at the central bank. In modern capitalist economies, paper currency held by the public is secondary in relevance to banking deposits. Those deposits could, anyway, if needed or desired, be converted into paper money.

Public expense configures the issuing of money and increases market liquidity, contributing to satisfy the demand for liquid assets. The immediate result, therefore, is a reduction of interest rates in the money markets, given that banks will offer the excess liquidity in overnight operations. So as to keep interest rates above the target established by the central bank, the treasury could itself recompose liquidity levels by issuing bonds, otherwise the central bank would have to sell treasury bonds in its portfolio or engage in alternative short term operations. Less usual tools in current central bank's practices to reduce liquidity are the increase in mandatory deposits and the reduction of loans in the discount window.

“A sovereign government operating under a nonconvertible currency does not really “borrow.” Government deficits allow positive net savings by the nongovernment sector. When the government runs a deficit, it is spending more than it taxes, thereby allowing positive net savings in the form of government liabilities. Government deficits increase savings in a particular form: either reserves or government bonds. Note that this saving is in the safest and most liquid asset one can have.” (Rezende, 2009, p. 94)

Public expenditures are, thus, a way to supply liquidity demanded by private agents as to mitigate the effects of uncertainty.

“If we add a government, then its deficit spending allows net (outside) saving

by the household sector ignoring, again, the foreign sector). In this case, when the household sector desires to save more than the business sector wishes to invest, the government's spending can provide the extra income that households do not wish to spend. In this expanded economy, household saving equals business investment plus the government's deficit". (Wray L., 2003, pp. 82-83).

Central bank's expenditures, such as the purchase of bonds, foreign currencies and other assets held by the market, and also the payment of derivative's operations losses, result in the increase of banking reserves deposited in the central bank itself as assets of commercial banks, potentially convertible to paper currency.

Besides public expenditures, central banks can also offer loans to the financial system through the discount window. Nonetheless, given the tendency towards prohibitive interest rates, this mechanism is used ever more sporadically.

Another alternative available to central banks in order to supply the market with money is by reducing mandatory deposits, thus freeing resources and increasing the system's liquidity.

On the opposite direction, measures such as taxation, the selling of bonds by the treasury or central bank, the receiving of loans through the discount window and the increase in mandatory deposits reduce the amount of money in circulation, therefore reducing liquidity in the economy. Public expenditure, on the other hand, increases the amount of currency in circulation or, more specifically, the commercial bank's reserves deposited in the central bank.

The equilibrium between supply and demand of liquidity in money markets at a certain interest rate is affected by government expenditure, which increases the supply of liquid assets deposited by central banks. As the supply of liquidity increases, interest rates are supposed to fall until a new equilibrium is reached. Public expending increases the supply of liquidity in the same amount expended. There seems to exist, consequently, a Say's Law for the financing of public expenses, which create the demand for its own financing¹².

"Public expenditure is never limited by the amount of bonds markets desire to purchase; instead, bonds are sold as to create a profitable alternative to

12 In a narrower perspective, MMT researchers such as Wray deny that bonds selling characterize financing of public expenses, the logical reason being that currency must be created before it can be converted into bonds or taxes. Nonetheless, it is important, in the context of this working paper, to understand that public expenses will generate the necessary demand for the issuance of bonds and securing the Treasury's liquidity, an explanation closer to the institutional framework in Brazil

excessive reserves and paper cash held by agents. Public expenditure is only limited by the desire of the private sector to supply the government with goods and services in exchange for government currency; a desire that hinges on willingness of the public to hold government currency in order to pay taxes and hold liquid assets. Anything offered in terms of local currency may be acquired through the creation of fiduciary currency by the government". (Wray L., 2003, p.108).

Most central banks establish a short-term interest rate target as a guideline for monetary policy. In this arrangement, public expenditure makes necessary for the central bank or even the treasury to issue bonds in order to recompose liquidity levels. If nothing is done, interest rates will fall below the target determined by the central bank.

Public expenditures and its finance do not seem to have a necessary relation to the possibility of unlimited public expending. In the very short-term, holders of liquid assets may choose, contrary to economic logic, not to finance public debt in search for better rates and conditions, especially in oligopolistic financial markets such as those in developing countries. For this reason we adopt, in this study, the hypothesis of a " Say's Law for the Financing of Public Expenses", considering that, while potential demand is created by public expenses themselves, the effectiveness of such financing might depend on the strategies of oligopolistic financial markets and competing alternatives like "committed" operations and other financial instruments.

The creation of demand for public expenses financing by public expenses themselves has been sufficient to secure the conditions to allow for such expenses under situations as extreme as the inflation crisis of the 1980s, the currency crisis of the 1990s and the recession of 2015 and 2016, the most profound in Brazilian history.

The National Treasure and the crisis of 2015 and 2016

The largest recession in the country's history did not impose significant hardships on the National Treasury relative to the financing of public expenses. Contrary to common sense and the narrative of a fiscal crisis, indicators of public debt have shown sensible improvements in some aspects.

In fact, the Treasury Single Account has never faced, in this and in previous crisis since 1995, any restrictions in the availability of resources, as shown in Table 1. Decreases in the account's balance, far from being relevant or dramatic, usually result from debt management decisions and not because of restrictions to future loans. In general, the Treasury Single Account's balance has been growing systematically throughout the period and the recession of 2015- 2016 did not prevent an increase that amounts to R\$ 433,9 billion.

Table 1: Treasury Single Account Balance (R\$ mil)

Treasury Single Account Balance*

1994	12.094.252
1995	22.239.182
1996	25.143.391
1997	41.135.318
1998	50.402.341
1999	75.779.217
2000	88.380.288
2001	82.205.875
2002	88.526.786
2003	120.189.562
2004	158.231.716
2005	208.476.268
2006	226.047.319
2007	275.843.164
2008	255.216.723
2009	406.354.420
2010	404.516.398
2011	475.622.276
2012	620.401.291
2013	655.965.327
2014	605.920.552
2015	881.932.081
2016	1.039.821.680

Source: Banco Central do Brasil

The usual explanation of national orthodoxy to this phenomena centers on the transfers from the Central Bank to the National Treasury due to equity variations in foreign reserves. Given that reserves are priced according to the market, legislation mandates the Central Bank to deposit, in cash, any gains from exchange rates variations in the Treasury Single Account. Losses, on the other hand, are compensated by the Treasury through issuing bonds in benefit of the Central Bank. The analysis of the data shows beyond doubt how relevant this mechanism is in increasing the balances of

the Treasury Single Account, as can be seen on table 2.

Table 2: Transfers from Central Bank to National Treasury - R\$ milhões

	Foreign Exchange Gains	CB's Bottom Line	Transfers Central Bank to National Treasury
	a	b	c = a+b
2008	126.618	13.345	139.963
2009	-147.719	5.609	-142.110
2010	-48.530	15.730	-32.800
2011	44.041	23.471	67.512
2012	22.309	24.615	46.924
2013	31.685	31.956	63.641
2014	13.950	30.927	44.877
2015	157.345	76.706	234.051
2016	-240.320	-9.528	-249.847

Source: BCB

Restricting the Treasury's access to financing and limiting public expenses, as defended by orthodox economists, is counter intuitive, considering that the Treasury found no impediments issuing R\$ 857,4 billion worth of bonds in 2015, when the net balance reached R\$ 129,4 billion. Such a high net emission of bonds which stretched the debt profile, as well as an increase in SELIC noted by Pimentel and Serrano (2016), explain the elevation of the financing costs of public debt in the period.

Table 3: Treasury Net Issuances– R\$ million

Net Issuances	
2007	-37.774
2008	-132.201
2009	-13.956
2010	27.548
2011	-39.201
2012	-66.353
2013	-103.197
2014	-70.229
2015	129.433
2016	-10.792

Source: Secretaria do Tesouro Nacional

For some of the years observed, the net issuance of bonds was negative, a fact that should not be overstated. As the balance of the Treasury Single Account remained at high levels and varies

according to SELIC, the National Treasury is able to pursue an aggressive strategy of buying back bonds in order to improve the profile of public debt. It is clear, however, that high levels of liquidity are necessary for the Treasury to stretch and price debt according to its goals of managing public debt. The issuance of bonds was indeed successful in increasing the overall term of internal federal debt (DPFD) from 4,28 to 4,44 years in the comparison between December 2014 and the same month in 2016.

Figure 1: DFPD Average Maturity – Held by the Public (Yerars)



DPF bonds expiring within 12 months also showed an improvement during the crisis, the share of bonds in that category falling from 24,03% in December 2014 to 16,8% in 2016.

Figure 2: DFPD Held by the Public due within 12 months



The tendency of improvement on debt profile was not seen across all indicators. The proportion of bonds indexed to the SELIC raised from 19,62% to 29,43% between 2015 and 2016, which constitutes a problem in that a significant share of indexed bonds reduces the efficacy of

monetary policy, adds to uncertainty in the management of public debt and makes it difficult for long term private credit markets to establish a benchmark rate.

The single most important issue regarding Brazilian public debt, the high average cost of internal public federal debt (DPMFi), has worsened during the two-year recession, following a trend that started with the tightening of monetary policy, in 2013, and became more intense since 2015. By the end of 2016, with the loosening of monetary policy, the average cost of DPMFi begins to fall. Costly as it was, the recent hike in interest rates was far from those observed in the 1990s, when rates reached close to 50%, in large part because of differences in monetary policy. There is no evidence supporting the notions that the so-called "fiscal crisis" and the lost of "investment grade" credentials have had any persistent raise in the cost of debt beyond those already explained by the effects of monetary policy.

Most noticeable is the fact that the National Treasury registered a sustained increase in the Single Account balance, which was never a hindrance to the expansion of public expenses. Regardless of Central Bank transfers, the fiscal authority refinanced its debt with ease, allowing for the improvement of debt profile in more than one aspect. Debt costs fluctuated in the period showing little volatility, in spite of the country's largest recession and the lost of rating agencies "investment grade" status.

Conclusion

This article showed that the recession of 2015 and 2016 did not lead to difficulties in financing public debt. The notorious "fiscal crisis" coincided with a strong expansion of the Treasury Single Account balance. Other aspects of debt, like average term and short term expiration have also shown positive indicators throughout the recession the the average cost of debt behaved quite differently from the 1990, when it went through the roof.

Data shows the fallacy of the fiscal crisis narrative and the inevitability of fiscal consolidation. The balance of the Treasury Single Account reached the impressive figure of R\$ 1,05 trillion in December 2016, an amount R\$ 434 billions above that registered two years before. In 2015, net issuance by the Treasury amounted to R\$ 129 billion. While the Treasury was able to easily access financial resources, debt profile improved in many aspects during the period. The share of bonds to expire within 12 months fell from 24,03 in December 2014 to 16,80% in December 2016 and the average term of DFPD increased from 4,28 to 4,44 years.

These issues can be better understood from the MMT and functional finances perspective, which shows public expenses to be essentially analogous to monetary issuance, creating therefore the demand for its own financing, put forth in this study as the Say's Law for the Financing of Public Expenses.

Financial limitations to public expenses are indeed illusions. The central issue, it appears, is to put in place financial conditions that allows for the private market to establish a long-term interest rate benchmark, for greater efficacy of monetary policy and a more foreseeable management of public debt. Public Expenses should, finally, be understood as essential tools in order to achieve macroeconomic goals such as adequate levels of employment and inflation.

References

- Aggio, G. (2008). *Moeda, Convenção, Contratos e Impostos: Uma Contribuição para a Teoria da Aceitabilidade da Moeda*. Campinas: Dissertação de Mestrado.
- Ando, A., & Modigliani, F. (1963). The life cycle hypothesis of savings: Aggregate implications. *American Economic Review*, 53, pp. 55-84.
- Bell, S. (2000). Do Taxes and Bonds Finance Government Spending? *Journal of Economic Issues*, pp.603-620.
- Bell, S., & Wray, L. (2002). Fiscal Effects on Reserves and the Independence of the Fed. *Journal of Post Keynesian Economics*, pp. 263-271.
- Bernanke, B., & Gertler, M. (Outono de 1995). Inside de Black Box: The Credit Channel of Monetary Transmission. *Journal of Economic Perspectives*, 9 , pp. 27-48.
- Bindseil, U. (2014). *Monetary Policy Operations and the Financial System*. Oxford: Oxford University Press.
- Carneiro, D. D. (2006). Letras Financeiras do Tesouro e a normalidade financeira: haverá um "peso problem"? Em E. Bacha, & L. Oliveira Filho, *Mercado de capitais e dívida pública: tributação, indexação e alongamento* (pp. 197-218). Rio de Janeiro : Contra Capa Livraria - ANBID .
- Cysne, R. (1990). Depósitos do Tesouro: no Banco Central ou em bancos comerciais? *EPGE - Ensaios Econômicos* .
- Davidson, P. (2005). *The Post Keynesian School* (Vol. Modern Macroeconomics). (B. Snowdon , & V. Howard, Eds.) Cheltenham, UK: Edward Elgar.
- De Soto, H. (2000). *The Mystery of Capital*. Londres: Bantam Press.
- Domar, E. (Dez de 1944). The "Burden of the Debt" and the National Income. *American Economic Review*, pp. 798-827.
- Dos Santos, G. (2005). *Uma Releitura das Finanças Funcionais*. Rio de Janeiro: Tese de Doutorado.
- Federal Reserve . (2017). *Interest on Required Reserve Balances and Excess Balances*. Fonte: Federal Reserve: <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm>

Federal Reserve . (s.d.). *FOMC Communications related to Policy Normalization*. Fonte: Federal Reserve: <https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm>

Federal Reserve. (2005). *Purposes and Functions*. Washington, DC.

Federal Reserve. (21 de 02 de 2017). *Overnight Reverse Repurchase Agreement Facility*. Fonte: Federal Reserve: <https://www.federalreserve.gov/monetarypolicy/overnight-reverse-repurchase-agreements.html>

Figueiredo, L. F., & Megale, C. (2006). O processo de alongamento da dívida pública mobiliária federal. Em E. Bacha, & L. C. Oliveira Filho, *Mercado de capitais e dívida pública: tributação, indexação e alongamento* (pp. 155-175). Rio de Janeiro: Contra Capa Livraria/ ANBID.

Friedman, M. (1956). The Quantity Theory of Money: A Restatement. Em M. Friedman, *Studies in the Quantity Theory of Money*. Chicago: Chicago Press.

Fullwiler, S. (3 de 2006). Setting Interest Rates in the Modern Money Era. *Journal of Post Keynesian Economics*, pp. 495–525.

Gagnon, J., & Sack, B. (2014). Monetary Policy with Abundant Liquidity: A New Operating Framework for the Federal Reserve. *Policy Brief: Peterson Institute for International Economics* .

Garcia, M., & Salomão, J. (2007). Alongamento dos Títulos de Renda Fixa no Brasil. Em E. Bacha, & L. Oliveira Filho, *Mercado de Capitais e Dívida Pública: Tributação, Indexação e Alongamento* (pp. 93-144). Rio de Janeiro: ANBID.

Heinsohn, G., & Steiger, O. (1983). Private property, debts and interest or: the origin of money and the rise and fall of monetary economics. *Studi Economici*, 21, pp. 5-55.

Holt, R. (. (s.d.).

Keynes, J. M. (2010). “*A teoria ex ante da taxa de juros*” (Vol. In: Clássicos da literatura econômica.). Brasília: IPEA/INPES.

Keynes, J. M. (2012). *Teoria Geral do Emprego, do Juro e da Moeda* . São Paulo: Saraiva . Knapp,

G. (1973 (1924)). *The State Theory of Money*. Clifton, New York : Augustus M. Kelley.

Kydland , F., & Prescott, E. (Junho de 1977). Rules Rather Than Discretion: The Inconsistency of Optimal Plans. *Journal of Political Economy*.

Lavoie, M. (Março de 2013). The Monetary and Fiscal Nexus of Neo-Chartalism: A Friendly Critique. *Journal of Economic Issues*, XLVII.

Lavoie, M. (2014). *Post-Keynesian Economics: New Foundations* . Northampton: Edward Elgar Publishing.

Leister, M. D., & Medeiros, O. L. (2016). Relacionamento entre autoridade fiscal e autoridade monetária: a experiência internacional e o caso brasileiro. Em E. Bacha, *A crise fiscal e monetária brasileira* (pp. 119-152). Rio de Janeiro: Civilização Brasileira.

Lerner, A. (Fev de 1943). Function Finance and Federal Debt. *Social Research*, pp. 38-51. Lopreato,

F. (2013). *Caminhos da Política Fiscal no Brasil*. São Paulo: Editora Unesp.

- Lopreato, F. (Junho de 2014). Crise econômica e política fiscal: os desdobramentos recentes da visão convencional. *Texto para Discussão - Instituto de Economia - Unicamp*.
- Lopreato, F. (Janeiro de 2015). Dívida pública: o limiar de mudanças? *Texto para Discussão - IPEA 2026*.
- Lopreato, F. L. (jan de 2008). Problemas de gestão da dívida pública brasileira. *Texto para Discussão -nº 139*.
- Lopreato, L. F. (Janeiro de 2015). Dívida pública: o limiar de mudanças? *Texto para Discussão*.
- Mendes, M. (2016). A Lei 11.803/2008 e a Relação Financeira Entre o Tesouro Nacional e Banco Central. Em E. Bacha, *A Crise Fiscal e Monetária Brasileira* (pp. 205-239). Rio de Janeiro: Civilização Brasileira.
- Mishkin, F. (Outono de 1995). Symposium on the Monetary Transmission Mechanism. *Journal of Economic Perspectives*, 9, pp. 3-10.
- Mishkin, F. (2002). Inflation Targeting. Em B. Snowdon, & H. Vane, *An Encyclopedia of Macroeconomics*. Cheltenham, UK: Edward elgar.
- Modigliani, F. (1944). Liquidity preference and the theory of interest and money. *Econometrica*, 12, pp.45-88.
- Modigliani, F. (1963). The monetary mechanism and its interaction with real phenomena. *Review of Economics and Statistics*, 45, pp. 79-107.
- Morais, J., & Carvalho, L. (2009). Mercado Primário de Dívida Pública Federal. Em A. Silva, L. Carvalho, & O. Medeiros, *Dívida Pública: A Experiência Brasileira* (pp. 359-376). Brasília: Secretaria do Tesouro Nacional.
- Mosler, W., & Forstater, M. (1999). A General Framework for the Analysis of Currencies and Commodities. Em P. Davidson, & J. Kregel, *Full Employment and Price Stability in a Global Economy* (pp. 166-177). Northampton: Edward Elgar.
- Muth, J. (Julho de 1961). Rational Expectations and the Theory of Price Movements . *Econometrica*.
- Nakano, Y. (13 de Março de 2012). Para reduzir juro, Selic precisa acabar. *Valor Econômico*. Acesso em 23 de Setembro de 2016, disponível em <http://www.valor.com.br/opiniao/2567382/para-reduzir-juro-selic-precisa-acabar>
- Pattanayak, S., & Fainboim, I. (Maio de 2010). Treasury Single Account: Concept, Design, and Implementation Issues. *IMF Working Paper*.
- Pedras, G., & Venceslau, H. (2009). Organização do Mercado Financeiro no Brasil. Em A. Silva, L. Carvalho, & O. Medeiros, *Dívida Pública: A Experiência Brasileira* (pp. 339-357). Brasília: Secretaria do Tesouro Nacional.
- Pigou, A. (1943). The classical stationary state. *Economic Journal*, 53, pp. 343-351.
- Pimentel, K., & Serrano, F. (2016). Financiamento do gasto público e taxas de juros em países de moeda soberana: aspectos teóricos e o caso do Brasil. *Anais do IX Encontro Internacional da AKB* .
- Resende, M. F. (Janeiro-Março de 2007). O circuito finance-investimento-poupança-funding. *Revista de Economia Política*, pp. pp. 136-154.
- Rezende, F. (1 de 2009). The Nature of Government Finance in Brazil. *International Journal of*

Political Economy, pp. 81-104.

Rocha, K. (2009). Estrutura Institucional e Eventos Recentes na Administração da Dívida Pública Federal. Em A. Silva, L. Carvalho, & O. Medeiros, *Dívida Pública: A Experiência Brasileira* (pp. 131-148). Brasília: Secretaria do Tesouro Nacional.

Sargent, T. (1979). *Macroeconomic Theory*. Nova Iorque: Academic Press.

Sargent, T., & Wallace, N. (1981). Some Unpleasant Monetarist Arithmetic. *Federal Reserve of Minneapolis Quarterly Review*.

Snowdon, B., & Vane, H. (2005). *Modern Macroeconomics*. Northampton: Edward Elgar.

Solow, R. (Fev de 1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, pp. 65-94.

Stigum, M., & Crescenzi, A. (2007). *Stigum's Money Market: The Investment Classic*. Nova York: McGraw-Hill.

Svensson, L. (Março de 1997). Optimal Inflation Targets, "Conservative" Central Banks and Linear Inflation Contracts. *American Economic Review*.

Svensson, L. (Junho de 1997b). Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets. *European Economic Review*.

Tavares, M. (1972). *Da Substituição de Importações ao Capitalismo Financeiro*. Rio de Janeiro: Zahar.

Tavares, M. (1998). *Ciclo e Crise: O Movimento Recente da Industrialização Brasileira*. Campinas: IE/Unicamp.

Tcherneva, P. (2013). Reorienting Fiscal Policy. Working Paper nº772. New York: Levy Institute

Tcherneva, P. (2016). Money, Power, and Monetary Regimes. Working Paper nº 861. New York: Levy Institute

Teixeira, L. (2015). Crescimento liderado pela demanda na economia norte-americana nos anos 2000: uma análise a partir do supermultiplicador sraffiano com inflação de ativos. *Tese de Doutorado - IE/UFRJ*.

Torres Filho, E. (2012). Por que ainda não temos crédito privado de longo prazo no Brasil? Em L. Prado, *Desenvolvimento Econômico e Crise: Ensaio em Comemoração aos 80 anos de Maria da Conceição Tavares* (pp. 91-116). Rio de Janeiro: Contraponto: Centro Celso Furtado.

Torres, M. (1999). *Operacionalidade da Política Monetária*. Campinas: Dissertação de Mestrado apresentada ao IE/Unicamp.

Torres, M. (1999). *Operacionalidade da Política Monetária no Brasil*. Campinas: Tese de Doutorado defendida no IE/Unicamp.

Tymoigne, E. (Março de 2014). Modern Money Theory and interrelations between the Treasury and the Central Bank: The Case of United States. *Working Paper - Levy Economics Institute at Bard College*.

Wray, L. (jul./dez de 2002). Senhoriagem ou soberania. *Economia e Sociedade*, pp. 193-211.

Wray, L. (2003). *Trabalho e Moeda Hoje*. Rio de Janeiro: Editora UFRJ / Contraponto Editora.

Wray, L. (2003a). Functional finance and US government budget surpluses in the new millennium. Em E. Nell, & M. Forstater, *Reinventing Functional Finance: Transformational Growth and Full Employment* (pp. 141–159). Northampton: Edward Elgar.

Wray, L. (2015). *Modern Money Theory: A Primer on Macroeconomics for Sovereign Monetary Systems* (2ª Edição ed.). Nova Iorque: Palgrave.

Wray, L., & Tymoigne, É. (Novembro de 2013). Modern Money Theory 101: A Reply to Critics. *Working Paper No. 778 - Levy Economics Institute*.