

Tymoigne, Éric

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Modern money theory on fiscal and monetary policies: empirics, theory, and praxis

Eric Tymoigne

Associate Professor of Economics, Lewis & Clark College, Portland, OR, USA

Drumetz/Pfister (2021) make several claims about the inadequacy and fallacy of modern money theory (MMT) and conclude that MMT is nothing more than a political manifesto; there is no theoretical and empirical foundation beneath it. The present paper addresses this last point by focusing on the fiscal and monetary policy aspects of their criticisms. Contrary to what they claim, MMT is backed by a large body of empirical evidence, a rich institutional analysis, and a well-developed theoretical framework (including mathematical models). MMT provides a detailed analysis of the coordination between the fiscal and monetary branches of government, emphasizes that fiscal deficits are a stylized fact, and uses theoretical tools grounded in institutional realities to explain this stylized fact.

Keywords: *modern money theory, monetary policy, fiscal policy, policy coordination, public debt sustainability*

JEL codes: *E12, E58, E61, H62, H63*

1 INTRODUCTION

According to Drumetz/Pfister (2021), modern money theory (MMT) views of monetary systems are odd, its theoretical claims are unsubstantiated, underdeveloped, or non-existent, and the implementation of its policy recommendations would generate massive instability by monetizing the public debt, hiring people in useless activities, and neglecting external constraints. It is not possible to provide a detailed reply to most of these (now standard) criticisms of MMT, which is done elsewhere (Tymoigne 2023). For example, the claims regarding MMT and monetary systems (MMT considers monetary instruments to be pure assets, neglects the unit of account function, does not have a theory of value of money, lacks historical evidence, and downplays the role of private issuers of monetary instruments) are all incorrect.

This reply focuses on the claims Drumetz/Pfister (hereafter DP) make about the theory and praxis of monetary and fiscal policies promoted by MMT. In terms of the interaction between the monetary and fiscal branches of national government, they argue MMT never explains what that entails. They associate MMT with monetization of the public debt, quantitative easing, radical changes in the interaction between the central bank and the Treasury, and rapid increases in government spending. They argue that MMT pushes for fiscal dominance, which will trigger inflation expectations, raise interest rates, generate financial instability, and slow economic growth. In terms of monetary policy, they argue that MMT does not explain the transmission mechanisms of monetary policy. MMT also does not provide any prescriptions beyond a zero-rate policy, which will lead to financial instability. In terms of fiscal policy, they argue that fiscal policy is difficult to use to

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stabilize the business cycle; especially so given the type of fiscal policy MMT is supposed to promote (public-debt monetization, limitless fiscal space). Finally, in terms of public-debt sustainability, they argue MMT overstates its case because it is implausible to assume that interest rates can be permanently below the growth rate of the economy and that a Treasury will never default because of monetary sovereignty. They conclude that MMT does not provide any theoretical or empirical evidence for its claims about monetary and fiscal policies.

This paper shows that there is a large body of empirical evidence, institutional analyses, and theoretical results that backs MMT's views on fiscal and monetary policies. This research has been developed by a wide range of researchers, some of whom adhere to MMT, others of whom do not. In addition, MMT does not aim at monetizing the public debt and does not require any changes to monetary and fiscal interactions; but it does demand a change in the policymaking praxis in order to improve government's ability to fulfill the public purpose.

2 MACROECONOMIC STYLIZED FACTS AND EMPIRICAL EVIDENCE

In most countries, the government sector runs a deficit and the domestic private sector runs a surplus, while the foreign-sector balance varies depending on the country and the time (Tymoigne 2023). While government deficits are an empirical regularity throughout the business cycle, they are not inherently conducive to financial instability and depressed economies. Fiscal deficits do not generate higher interest rates, higher tax rates, economic stagnation or recession, government bankruptcy, or other negative consequences. There is ample evidence that there is a weak relationship between the fiscal balance and interest rates. Instead, interest rates are heavily influenced by monetary policy (Atesoglu 2003; 2005; Sharpe 2013; Akram/Li 2017; Borio et al. 2017; Akram 2021; Akram/Al-Helal Uddin 2021). When a national Treasury runs large deficits, it usually does so during a recession when tax revenues plummet. During a recession, the central bank also lowers its policy rates and all other interest rates tend to follow.

While DP (2021: 358) argue that 'longer-term interest rates [rise] if financial markets expect high future inflation,' another empirical regularity is that the Fisher effect does not hold on its own (for example, Cooray 2002; Ghazali/Ramlee 2003) but rather is conditional to the reaction of the central bank (Tymoigne 2009). In addition, DP (2021: 358) 'question ... the plausibility of interest rates permanently below the growth rate of the economy,' but MMT does not make such an assumption but rather states that $g > i$ is conditional to monetary policy. Treasury rates tend to stay below economic growth because monetary policymakers usually aim at promoting economic stability (a major exception being the failed US Monetarist experience that generated two recessions and contributed to the savings and loan crisis). Blanchard (2019) received a lot of attention for emphasizing this empirical regularity, but this was recognized long before him and linked to monetary sovereignty (Fullwiler 2006; Aspromourgos et al. 2009; Wray 2015).

If the public debt is denominated in the national currency and the government is the monopoly supplier of that non-convertible currency and taxes in that currency, a government cannot default for financial reasons. This does not mean that MMT overstates that a government 'will not default on a debt issued in its currency' (DP 2021: 358). Cantor/Parker (1995: 3) provide some rare examples of such defaults and note that 'domestic currency defaults have usually been the result of an overthrow of an old political order – as in Russia and Vietnam – or the byproduct of dramatic economic adjustment programs aimed at curbing hyperinflation – as in Argentina and Brazil.' Involuntary defaults have occurred for technical reasons but are

analytically irrelevant. Venezuela is counted by Moody's as having defaulted because 'the person who was supposed to sign the checks was unavailable at the time' (Cantor et al. 2008: 17). The US also defaulted in 1979 due to 'unanticipated failure of word processing equipment used to prepare check schedules' (Zivney/Marcus 1989). If one had to estimate a default probability for debts issued by monetarily sovereign governments, it would be much lower than the 0.02 percent five-year median default probability used for AAA corporate bonds. A good first approximation for analytical purposes is to assume a default rate of zero on the public debt denominated in the domestic currency.

Another empirical fact is that active fiscal policy, especially through automatic stabilizers, has significantly stabilized the economy. While DP (2021: 358) argue that 'fiscal policy is difficult to use to stabilize the business cycle,' the stabilizing effects of fiscal policy can be observed in the dramatic changes in the behavior of the economy in the United States (Table 1). Since the end of the 1930s, contractions in the United States have been milder, shorter, and less frequent. By letting the fiscal balance accommodate the needs of the economic system (sustained deficits and more variability in the fiscal balance) and by sextupling its share of spending in the economy compared to the 1880–1939 period, the US government has contributed to the stabilization of the economy post-World War II (Minsky 1986; Cohen/Follette 2000; Taylor et al. 2012). Similar trends are observed throughout the developed world, and a typical result of the early-warning-system literature is that fiscal surpluses are a leading indicator of currency crises (Bussière/Fratzscher 2002: 27). At the same time, the return of 'free-market' thinking over the past 50 years has increased financial instability (Bordo et al. 2001; Tymoigne/Wray 2014). DP (2021: 359) then qualify their critique by saying that 'fiscal policy, as envisaged by MMT, would have trouble fine-tuning the economy'; however, their understanding of MMT fiscal policymaking praxis is incorrect, as explained in the last section.

Finally, a casual look at the evidence for the United States shows that the automatic association of fiscal deficits with inflation is unwarranted (Tymoigne 2020). Large fiscal deficits (such as those of World War II or the COVID-19 pandemic) are not associated with high inflation, and regular fiscal deficits of less than 5 percent of GDP are associated with a wide range of price dynamics. A fiscal deficit might be inflationary but not merely because it is a deficit; it depends on how tight the resource constraint is and it depends on the effectiveness of the measures taken to control inflation if resource supply tightens. A fiscal deficit may also be associated with inflation but may have nothing to do with it if inflation comes from other sources than a shrinking output gap (rising energy costs, rising interest rates, supply-chain issues, rising mark-up, among others) (Rowthorn 1977; Minsky 1986; Lavoie 2014).

3 EXPLAINING THE STYLIZED FACTS

3.1 Endogenous fiscal balance and recessionary austerity

In order to explain the empirics, MMT does not rely on the mainstream theoretical work of the past 50 years, most of which is a step backward to the pre-1940s microeconomics/markets/imperfections way of analysing national issues. Instead, MMT-ers rely on the theoretical work and models developed by Keynes, post-Keynesian economists, 'old' institutional economists, among others, as well as their own (for example, Fullwiler 2007; Godley/Lavoie 2007a; Hein 2018; Wray et al. 2018). A central conclusion is that the fiscal balance is not under the control of policymakers but, rather, adapts to the needs of the economic system. Most government spending is not discretionary and tax revenues are heavily influenced by the state of the economy. While policymakers do set some spending

Table 1 The US business cycle (base: 2012)

	Federal expenditures (% GNP)*	Size of fiscal balance (% GNP) ^a	Std dev. of fiscal balance (% GNP) ^a	Contractions		Growth rate of real GNP	Std dev. of real GNP
				Number	Frequency (year)	Length (month)	
1880–1939	3.6	-0.3	1.7	17	3.5	21.8	7.47%
1947–2021	21.3	-2.4	2.8	12	6.3	11.1	2.71%

Note: a. Excludes the period from 1917Q3 to 1919Q4 that reflects WWI fiscal dynamics.
Source: National Bureau of Economic Research; Bureau of Economic Analysis; Gordon (1986).

(discretionary spending represents about 30 percent of the budget in the United States), do determine tax rates, and can make some predictions about total spending and tax revenues at the end of the year, they have no control over budgetary dynamics during the year. Like private aggregate saving, the fiscal balance is a residual outcome of the economic process and any attempt by the federal/national government to proactively influence the balance will most likely fail because the non-federal sector (state and local governments, the domestic private sector, and the foreign sector) desires to record a surplus. If the national government has a fiscal balance that is not consistent with the desire of the non-federal sector, national income will adjust upward or downward as sub-sets of the non-federal sector change their spending level. Automatic stabilizers will move the fiscal balance to the level desired by the non-federal sector. Reinhart/Rogoff (2009) argue that high public debt slows economic growth; instead, the business cycle drives public-debt dynamics (Nersisyan/Wray 2010).

The previous dynamics are complicated by the fact that policymakers may also want to reach a fiscal surplus (or a fiscal deficit that is less than the desired surplus of the non-federal sector) in order to show that the government is ‘fiscally responsible.’ Such austerity policy is recessionary and amplifies the business cycle, unless at least one sub-set of the non-federal sector is willing to deficit spend enough to counter the economic drag generated by fiscal austerity. However, deficit spending by the non-federal sector is prone to financial instability because its sub-sets lack monetary sovereignty and so are revenue constrained (Minsky 1986; Tymoigne/Wray 2014). As such, fiscal surpluses tend to be destabilizing. The self-defeating nature of fiscal austerity has gained some attention outside MMT following the 2008 Great Recession (DeLong/Summers 2012; Agnello et al. 2013; Fatás/Summers 2018).

On the contrary, fiscal deficits are sustainable because a monetarily sovereign government has the financial flexibility to meet the demands of such deficits. Monetary sovereignty gives one degree of freedom in the tight rules of national accounting. It allows the fiscal balance to accommodate the needs of the economy. Fiscal deficits help other sectors through three channels (Minsky 1983; 1986). First, fiscal deficits sustain national income by injecting more income into the economy than they remove through taxes. Fiscal deficits sustain private investment by stabilizing expected sales and capacity utilization – the main drivers of business investment – while having a negligible impact on interest rates. Second, they generate positive cash flows for other economic units. Third, they also have beneficial portfolio effects, because Treasuries are credit-risk free (the nominal debt service can always be paid on time in full), and liquid financial instruments that are a core staple of the financial system.

Thus, fiscal deficits tame financial crises, they do not lead to financial crises when monetary sovereignty prevails, because such government is always solvent in its own currency and because the liquidity and solvency of other sectors is improved. More broadly, governments have been a core element of economic strength as aggregate demand plays a central role for economic growth over time (Lavoie 2014; Tavani/Zamparelli 2017). Steindl (1952), Walker/Vatter (1989), and Vatter et al. (1995) show that fiscal policy has a crucial role to play to put the economy onto a higher growth path (Wray 2008). Government is also a major source of innovations that stimulates both public and private investments (Mazzucato 2015).

3.2 Monetary policy and transmission mechanisms

DP argue that MMT does not provide a monetary policy strategy, does not explain the transmission mechanics of monetary policy, and argue that a zero-rate policy is

destabilizing. Once again, some models have been developed by MMT-ers and post-Keynesians to study the impact of a zero policy rate. For example, Tymoigne (2009) builds a stock–flow model to analyse the impact of different types of monetary policies and concludes that leaving the policy rate at zero is the most stabilizing policy. Rochon/Setterfield (2011: 132) study the impact of different monetary policy rules and show that a permanent zero central-bank rate ‘always yields the highest rate of growth and the lowest rate of inflation.’ More broadly, MMT rejects the relative price mechanics that are at the core of at least some mainstream models (Lavoie 2008).

MMT argues that monetary policy is not a reliable tool to manage inflation and economic growth because of its weak and potentially perverse effects (Papadimitriou/Wray 1994; 1996; 2021; Mitchell/Muysken 2008: 146ff). While some sectors are more sensitive to changes in interest rates, overall interest rates do not play a major role in determining aggregate spending, especially business investment (Fazzari et al. 1988; Fazzari 1993; Glyn 1997). This sensitivity declines as an economic expansion progresses, and gradualism and transparency have made it much easier to anticipate adverse changes in interest rates and to hedge against them. In addition, in a leveraged economy, economic units have to meet their financial commitments regardless of the level of interest rates. Higher interest rates mean higher financial commitments, which creates a potential need to ask for more credit to meet these commitments (Kregel 1992; Wray 1993; Mason/Jayadev 2014). Finally, interest rates may have a perverse effect on inflation through cost and demand channels. Higher interest rates raise operating costs and businesses may pass the additional costs onto their customers. Higher policy rates also boost the income of rentiers and raise their consumption (Lavoie 1995; Kelton/Wray 2006; Tauheed/Wray 2006; Tillmann 2008). Chairman Greenspan (Federal Open Market Committee 2000: 85), among others at the FOMC, recognized this possibility: ‘There is deterioration in the inflation rate stemming from interest costs and energy costs, and those are not trivial sources of deterioration. At the end of the day it doesn’t have to be labor costs that are causing the overall inflation deterioration.’

While a lot of credit is given to an improvement in monetary policy management for the price stability observed from the mid 1980s to the mid 2000s (Bernanke 2004), this credit is not warranted. Monetary policy played a minor role as Governor Teeters (Federal Open Market Committee 1981: 46) noted:

May I remind you that we shouldn’t take too much credit for the price easing? I never thought we were totally at fault for the price increases that we suffered from OPEC and food; and I don’t think the fact that OPEC and food have calmed down has a great deal to do with monetary policy per se, except in the very long run.

Most of the credit for price stability should be attributed to the taming of energy prices and the industrialization of China that flooded the world with cheap goods, together with a bit of luck (Stock/Watson 2002; 2005).

While DP (2021: 358) argue that ‘near-zero level would also foster macroeconomic instability,’ MMT changes the way the central bank intervenes in the economy. Instead of trying to fine-tune the business cycle, central banks should refocus their operations and goals on the purpose for which most were created (Capie et al. 1994), namely ensuring an elastic currency for the economy (that is, reliable financing and refinancing channels for banks and the national Treasury) together with proactive regulation and supervision of the financial industry (instead of mere reactive regulation *à la* Basel Accords). MMT proponents advocate financial regulation and supervision along the lines of Minsky’s theoretical framework; that means the promotion of safe underwriting, the establishment of a financial structure that promotes long-term recurring relationships between bankers and their clients, and

the regulation of financial innovations toward safe financial products (that is, those that promote hedge financing) (Tymoigne 2011; Tymoigne/Wray 2014). Bank credit should be limited to creditworthy clients but banks should be encouraged to look for them wherever they are and to avoid redlining (Minsky et al. 1993). Credit controls and the routine provision of reserves through selective acceptance of securities at the Discount Window (Kregel 1992) should be used to restrict the flow of credit toward speculative endeavors, and to move that flow toward financially sustainable economic activities that are defined as ‘good’ by the public purpose.

4 MMT AND NATIONAL POLICYMAKING: PROMOTING SOUNDER POLICYMAKING PRAXIS

4.1 Financial praxis: many governments already ‘do MMT’

MMT is a theory grounded in a detailed institutional analysis of monetary and fiscal operations of national governments. It describes what goes on behind the curtain in terms of the financial operations of national governments. Throughout the world, national governments routinely rely on a heavy coordination of their fiscal and monetary branches to ensure smooth government financial operations. DP (2021: 356) argue incorrectly that ‘MMT never explains what “coordination” entails’; there is a large body of work on the topic (Sundararajan et al. 1997; Wray 1998; Bell 2000; Mitchell/Mosler 2002; Silva/Richard 2010; Tymoigne 2014; Vajs 2014; Allen 2019; Lavoie 2019). The financial operations of the Treasury and the central bank of monetarily sovereign governments are so intertwined that both of them are constantly in contact to make fiscal and monetary policies run smoothly. The Treasury routinely helps in monetary policy operations. The central bank routinely helps finance the Treasury. There is nothing inflationary about that, it just ensures that the Treasury has enough funds to implement the budget passed by Congress. The pace and composition of spending set in the budget are what could be inflationary, not the fact that the bank accounts of the Treasury are well provisioned nor that the provisioning of such accounts is done through keystrokes.

This institutional analysis leads to three main points, one theoretical, one practical, and one institutional. The theoretical point that MMT extracts from the institutional analysis of monetarily sovereign governments is that government finance is not scarce, as long as a national government spends on goods and services priced in the domestic currency (which may be broader or narrower than the goods and services produced domestically). There is no such thing as a fixed supply of saving against which the government must compete with the private sector. In addition, household, business, state, and local government finances are incorrect reference points to understand national public finances when monetary sovereignty prevails. A monetarily sovereign government is the issuer of the domestic currency, whereas others are users of such currency. Finally, the effects of the complex interactions between the central bank and the Treasury can be captured by merging these two government entities into one (a national government that issues the domestic currency, and taxes and issues securities to destroy the currency). This common theoretical (and rhetorical) tool is a good first approximation of the financial praxis of monetarily sovereign governments.

The institutional point is that implementing MMT policymaking does not require radical changes in the way the Treasury and the central bank interact today. DP confuse a theoretical tool (consolidated government) with policy prescriptions they wrongly attribute to MMT (monetizing the public debt, quantitative easing, fiscal dominance). No change in existing government finances is necessary because national Treasuries and central banks

all over the world already routinely work together. While the central bank has independence of tools and goals, it must account for the needs of the Treasury in a monetarily sovereign government (MacLaury 1977; Wray 2007; 2014; Felipe et al. 2020). Central-bank involvement in public finances is an old and routine practice. While suspicion about such involvement has changed the way that involvement has happened over time, it has not eliminated such involvement (Tymoigne 2014; Garbade 2019). In addition, allowing direct financing of the Treasury is not a radical step, as it is already in place in some countries and is commonly used in Canada today (Jácome et al. 2012; Juniper et al. 2014; Lavoie 2019). MMT just points out that the layers of institutional complexity that hide this routine coordination are unnecessary and confuse the policymaking praxis. This coordination may as well be simplified but that is not a necessity and allowing direct financing (or implementing quantitative easing (Fullwiler/Wray 2010)) does not mean practicing MMT policymaking.

The practical point that MMT extracts from the institutional analysis is that, if monetary sovereignty prevails, policymaking must be reframed around the limits and opportunities that comes with monetary sovereignty. Fiscal deficits are not intrinsically worrisome; fiscal surpluses are not to be celebrated and do not give any ‘breathing room’ to spend. As long as government is operating within its domestic monetary system, government spending and tax policy ought to be set independently without regard for the impact on the fiscal position, but with regard to the impact on the domestic economy including inflation.

4.2 Policymaking praxis: monetarily sovereign governments do not ‘do MMT’

While the financial praxis of monetarily sovereign governments is integrated into the MMT framework, the policymaking praxis of these governments does not reflect MMT policymaking principles. Instead, policymaking is dominated by deficit hawks and deficit doves who want to have some form of austerity commitment by the national government. MMT-ers are deficit owls, they argue that austerity commitments are unnecessary and counter-productive; the fiscal balance self-corrects to an equilibrium position, usually a deficit. Instead of putting the national budget and public debt at the center of policymaking, MMT puts actual economic goals (full employment, price stability, environmental sustainability, etc.) there. In addition, MMT wants to rationalize the discussions about the national budget by dealing with two unproductive aspects of current budgetary procedures, the fearmongering about the ‘road to ruin’ and the absurdity of the ‘pay-for’ logic.

When monetary sovereignty is understood, it is pointless for policymakers to seek to put funds in a locked box for later use, to modify existing domestic programs, or to conceive new domestic programs to help save money in order to avoid insolvency. The funds needed are created quickly, as emergency spending to fight wars or deal with pandemics shows, and insolvency is not financially possible. The fact that finance is not scarce when monetary sovereignty exists does not imply that the government can, or should, spend a lot more, nor does it mean that policymakers will ramp up spending quickly in a chaotic manner as the experiences of most monetarily sovereign governments show. This does not mean that government mismanagements cannot occur or that MMT denies past cases of hyper-inflation. In line with its theory of inflation, MMT has a non-monetary explanation of hyper-inflation (Tymoigne 2023). In addition, policies to fight inflationary pressures ought not to be *ad hoc* (for example by raising tax rates in reaction to price instability), but, rather, should be established through structural programs that tackle different sources of potential inflation over the long term (strong automatic stabilizers, efficiency standards, energy policy, tax structure, job-guarantee programs, and price controls, among others).

The absence of financial constraints does not mean that creating a budget is unnecessary and that the fiscal space is 'limitless' (DP 2021: 357). MMT emphasizes that budgetary procedures are political in nature, and the point is to promote procedures that encourage rational discussions, accountability, and transparency in policymaking. While setting up a budget, policymakers must tackle two constraints. On the political side, a society must decide, hopefully as democratically as possible, what the public purpose is: What should the government do? And how should it do it? On the economic side, a policy proposal needs to be judged by its economic feasibility, not only in absolute terms but also relative to other proposals. Governmental bodies such as the Congressional Budget Office (CBO) should score projects based on what is possible given the available human, natural, and physical resources, and should determine the pace at which a proposal can be implemented realistically given the current and expected state of domestic resources. If resources are not available or cannot be made available, a proposal ought not to be approved even though it can easily be financed by keystroking numbers in accounts. This method of judging a policy proposal is far superior to the current way the CBO judges a proposal, which merely consists of checking whether it will add to the public debt or not. If the government is not monetarily sovereign, a financial constraint further limits what the government can do and an eye should be kept on balancing the government budget and limiting automatic stabilizers; however, that comes at the cost of more economic instability and less ability to tackle the major contemporary issues (Wray 2003; Godley/Lavoie 2007b).

REFERENCES

- Agnello, L., Castro, V., Sousa, R.M. (2013): What determines the duration of a fiscal consolidation program?, in: *Journal of International Money and Finance*, 37(C), 113–134.
- Akram, T. (2021): A note concerning the dynamics of government bond yields, in: *The American Economist*, 66(2), 323–339.
- Akram, T., Al-Helal Uddin, S. (2021): Empirical analysis of long-term Brazilian interest rates, in: *PLOS ONE*, 16(9), No e0257313.
- Akram, T., Li, H. (2017): What keeps long-term U.S. interest rates so low?, in: *Economic Modelling*, 60, 380–390.
- Allen, W.A. (2019): *The Bank of England and the Government Debt*, Cambridge, UK: Cambridge University Press.
- Aspromourgos, T., Rees, G., White, G. (2009): Public debt sustainability and alternative theories of interest, in: *Cambridge Journal of Economics*, 34(3), 433–447.
- Atesoglu, H.S. (2003): Monetary transmission: federal funds rate and prime rate, in: *Journal of Post Keynesian Economics*, 26(2), 357–362.
- Atesoglu, H.S. (2005): Monetary policy and long-term interest rates, in: *Journal of Post Keynesian Economics*, 27(3), 533–539.
- Bell, S.A. (2000): Do taxes and bonds finance government spending?, in: *Journal of Economic Issues*, 34(3), 603–620.
- Bernanke, B.S. (2004): The Great Moderation, Remarks at the Meetings of the Eastern Economic Association, Washington, DC, 20 February.
- Blanchard, O. (2019): Public debt and low interest rates, in: *American Economic Review*, 109(4), 1197–1229.
- Bordo, M., Eichengreen, B., Klingebiel, D., Martinez-Peria, M. (2001): Is the crisis problem growing more severe?, in: *Economic Policy*, 16(32), 51–82.
- Borio, C., Disyatat, P., Juselius, M.I., Rungcharoenkitkul, P. (2017): Why so low for so long? A long-term view of real interest rates, BIS Working Paper, No 685.
- Bussière, M., Fratzscher, M. (2002): Toward a new early warning system of financial crises, European Central Bank Working Paper, No 145.

- Cantor, R., Parker, F. (1995): Sovereign credit ratings, in: Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, 1(3), 1–6.
- Cantor, R., Emery, K., Duggar, E., Cailleteau, P. (2008): Sovereign default and recovery rates, 1983–2007, in: *Moody's Global Credit Research*, March.
- Capie, F., Goodhart, C.A.E., Schnadt, N. (1994): The development of central banking, in: Capie, F., Goodhart, C.A.E., Fisher, S., Schnadt, N. (eds), *The Future of Central Banking*, Cambridge, UK: Cambridge University Press, 1–261.
- Cohen, D., Follette, G. (2000): The automatic fiscal stabilizers: quietly doing their thing, in: *FRBNY Economic Policy Review*, April, 35–68.
- Cooray, A. (2002): The Fisher effect: a review of the literature, Macquarie University–Sydney, Department of Economics Research Paper, No 6/2002.
- DeLong, J.B., Summers, L.H. (2012): Fiscal policy in a depressed economy, in: *Brookings Papers on Economic Activity*, Spring, 233–274.
- Drumetz, F., Pfister, C. (2021): Modern Monetary Theory: a wrong compass for decision-making, in: *Intereconomics: Review of European Economic Policy*, 56(6), 355–361.
- Fatás, A., Summers, L.H. (2018): The permanent effects of fiscal consolidations, in: *Journal of International Economics*, 112(May), 238–250.
- Fazzari, S. (1993): The investment–finance link, Levy Economics Institute Public Policy Brief, No 9/1993.
- Fazzari, S., Hubbard, R.G., Petersen, B. (1988): Financing constraints and corporate investment, in: *Brookings Papers on Economic Activity*, 1988(1), 141–195.
- Federal Open Market Committee (1981): Transcript of the July 6th–7th meeting, Board of Governors of the Federal Reserve System.
- Federal Open Market Committee (2000): Transcript of the November 15th meeting, Board of Governors of the Federal Reserve System.
- Felipe, J., Fullwiler, S.T., Estrada, G., Jaber, M.H., Magadia, M.A., Patagan, R. (2020): How monetization really works: examples from nations' policy responses to COVID-19, Asian Development Bank Economics Working Paper, No 627.
- Fullwiler, S.T. (2006): Interest rates and fiscal sustainability, Center for Full Employment and Price Stability Working Paper, No 53.
- Fullwiler, S.T. (2007): Macroeconomic stabilization through an Employer of Last Resort, in: *Journal of Economic Issues*, 41(1), 93–134.
- Fullwiler, S.T., Wray, L.R. (2010): Quantitative easing and proposals for reform of monetary policy operations, Levy Economics Institute Working Paper, No 645.
- Garbade, K. (2019): Federal Reserve participation in public Treasury offerings, Federal Reserve Bank of New York Staff Report, No 906.
- Ghazali, N.A., Ramlee, S. (2003): A long memory test of the long-run Fisher effect in the G7 countries, in: *Applied Financial Economics*, 13(10), 763–769.
- Glyn, A. (1997): Does aggregate profitability really matter?, in: *Cambridge Journal of Economics*, 21(5), 593–619.
- Godley, W., Lavoie, M. (2007a): *Monetary Economics*, New York: Palgrave Macmillan.
- Godley, W., Lavoie, M. (2007b): A simple model of three economies with two currencies: the Eurozone and the USA, in: *Cambridge Journal of Economics*, 31(1), 1–23.
- Gordon, R.J. (ed.) (1986): *The American Business Cycle*, Chicago: Chicago University Press.
- Hein, E. (2018): Autonomous government expenditure growth, deficits, debt, and distribution in a Neo-Kaleckian growth model, in: *Journal of Post Keynesian Economics*, 41(2), 316–338.
- Jácome, L.I., Townsend, S.B., Matamoros-Indorf, M., Sharma, M. (2012): Central bank credit to the government: what can we learn from international practices?, IMF Working Paper, No WP/12/16.
- Juniper, J., Sharpe, T.P., Watts, M.J. (2014): Modern Monetary Theory: contributions and critics, in: *Journal of Post Keynesian Economics*, 37(2), 281–307.
- Kelton, S.A., Wray, L.R. (2006): What a long, strange trip it's been: can we muddle through without fiscal policy?, in: Gnos, C., Rochon, L.-P. (eds), *Post-Keynesian Principles of Economic Policy*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 101–119.
- Kregel, J.A. (1992): Minsky's 'two price' theory of financial instability and monetary policy: discounting vs. open market intervention, in: Fazzari, S., Papadimitriou, D.B. (eds), *Financial Conditions and Macroeconomic Performance*, Armonk, NY: M.E. Sharpe, 85–103.

- Lavoie, M. (1995): Interest rates in Post-Keynesian models of growth and distribution, in: *Cambridge Journal of Economics*, 46(2), 146–177.
- Lavoie, M. (2008): Neoclassical empirical evidence on employment and production laws as artefact, in: *Economía Informa*, (351), 9–36.
- Lavoie, M. (2014): *Post-Keynesian Economics*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Lavoie, M. (2019): A system with zero reserves and with clearing outside of the central bank: the Canadian case, in: *Review of Political Economy*, 31(2), 145–158.
- MacLaury, B.K. (1977): Perspectives on Federal Reserve independence: a changing structure for changing times, in: Federal Reserve Bank of Minneapolis, *1976 Annual Report*, 1–16.
- Mason, J.W., Jayadev, A. (2014): Fisher dynamics in household debt: the case of the United States, 1929–2011, in: *American Economic Journal: Macroeconomics*, 6(3), 214–234.
- Mazzucato, M. (2015): *The Entrepreneurial State*, New York: PublicAffairs.
- Minsky, H.P. (1983): Institutional roots of American inflation, in: Schmukler, N., Marcus, E. (eds), *Inflation Through the Ages*, New York: Brooklyn College Press, 266–277.
- Minsky, H.P. (1986): *Stabilizing an Unstable Economy*, New Haven, CT: Yale University Press.
- Minsky, H.P., Papadimitriou, D.B., Phillips, R.J., Wray, L.R. (1993): Community development banking: a proposal to establish a nationwide system of community development banks, Levy Economics Institute Public Policy Brief, No 3/1993.
- Mitchell, W., Mosler, W. (2002): Public debt management and Australia's macroeconomic priorities, Center for Full Employment and Equity Working Paper, No 02-13.
- Mitchell, W.F., Muysken, J. (2008): *Full Employment Abandoned*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.
- Nersisyan, Y., Wray, L.R. (2010): Does excessive sovereign debt really hurt growth? A critique of *This Time Is Different*, by Reinhart and Rogoff, Levy Economics Institute, Working Paper No 603.
- Papadimitriou, D.B., Wray, L.R. (1994): Monetary policy uncovered, Levy Economics Institute Public Policy Brief, No 15/1994.
- Papadimitriou, D.B., Wray, L.R. (1996): Targeting inflation, Levy Economics Institute Public Policy Brief, No 27/1996.
- Papadimitriou, D.B., Wray, L.R. (2021): Still flying blind after all these years, Levy Economics Institute Public Policy Brief, No 156.
- Reinhart, C., Rogoff, K. (2009): *This Time is Different*, Princeton, NJ: Princeton University Press.
- Rochon, L.-P., Setterfield, M. (2011): Post-Keynesian interest rate rules and macroeconomic performance: a comparative evaluation, in: Gnos, C., Rochon, L.-P. (eds), *Credit, Money and Macroeconomic Policy*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 116–141.
- Rowthorn, R.E. (1977): Conflict, inflation and money, in: *Cambridge Journal of Economics*, 1(3), 215–239.
- Sharpe, T.P. (2013): A Modern Money perspective on financial crowding-out, in: *Review of Political Economy*, 25(4), 586–606.
- Silva, A.C., Richard, B.J.P.G. (2010): *Primary Dealer Systems: Draft Background Note*, Washington, DC: World Bank Group.
- Steindl, J. (1952): *Maturity and Stagnation in American Capitalism*, New York: Monthly Review Press.
- Stock, J.H., Watson, M.W. (2002): Has the business cycle changed and why?, in: *NBER Macroeconomics*, 17, 159–218.
- Stock, J.H., Watson, M.W. (2005): Understanding changes in international business cycle dynamics, in: *Journal of the European Economic Association*, 3(5), 968–1006.
- Sundararajan, V., Dattels, P., Bloomstein, H.J. (eds) (1997): *Coordinating Public Debt and Monetary Management*, Washington, DC: International Monetary Fund.
- Tauheed, L., Wray, L.R. (2006): System dynamics of interest rate effects on aggregate demand, in: Wray, L.R., Forstater, M. (eds), *Money, Financial Instability, and Stabilization Policy*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 37–57.
- Tavani, D., Zamparelli, L. (2017): Endogenous technical change in alternative theories of growth and distribution, in: *Journal of Economic Surveys*, 31(5), 1272–1303.
- Taylor, L., Proaño, C.R., Carvalho, L., Barbosa-Filho, N.H. (2012): Fiscal deficits, economic growth and government debt in the USA, in: *Cambridge Journal of Economics*, 36(1), 189–204.

- Tillmann, P. (2008): Do interest rates drive inflation dynamics? An analysis of the cost channel of monetary transmission, in: *Journal of Economics Dynamics and Control*, 32(9), 2723–2744.
- Tymoigne, E. (2009): *Central Banking, Asset Prices and Financial Fragility*, New York: Routledge.
- Tymoigne, E. (2011): Financial stability, regulatory buffers, and economic growth after the great recession: some regulatory implications, in: Whalen, C.J. (ed.), *Financial Instability and Economic Security After the Great Recession*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, 114–140.
- Tymoigne, E. (2014): Modern Money Theory and the interrelation between the Treasury and the Central Bank: the case of the United States, in: *Journal of Economic Issues*, 48(3), 641–662.
- Tymoigne, E. (2020): Monetary sovereignty: nature, implementation, implications, in: *Public Budgeting and Finance*, 40(3), 49–71.
- Tymoigne, E. (2023): MMT policymaking praxis and financial and economic stability: a response to critiques; MMT policymaking praxis: a response to critiques; MMT and economic theory: a reply to critiques; MMT and the monetary system: a reply to critiques, in: Nersysian, Y., Wray, L.R. (eds), *The Elgar Companion to Modern Money Theory*, Cheltenham, UK and Northampton, MA: Edward Elgar Publishing, forthcoming.
- Tymoigne, E., Wray, L.R. (2014): *The Rise and Fall of Money Manager Capitalism*, London: Routledge.
- Vajs, S. (2014): Government debt issuance: issues for central banks, in: Mohanty, M.S. (ed.), *The Role of Central Banks in Macroeconomic and Financial Stability*, BIS Papers No 76, Basel: Bank for International Settlements, 29–46.
- Vatter, H., Walker, J., Alperovitz, G. (1995): The onset and persistence of secular stagnation in the U.S. economy: 1910–1990, in: *Journal of Economic Issues*, 29(2), 591–600.
- Walker, J.F., Vatter, H.G. (1989): Why has the United States operated below potential since World War II?, in: *Journal of Post Keynesian Economics*, 11(3), 327–346.
- Wray, L.R. (1993): Money, interest rates, and Monetarist policy: some more unpleasant Monetarist arithmetic?, in: *Journal of Post Keynesian Economics*, 15(4), 541–569.
- Wray, L.R. (1998): *Understanding Modern Money: The Key to Full Employment and Price Stability*, Cheltenham, UK and Lyme, NH: Edward Elgar Publishing.
- Wray, L.R. (2003): Is Euroland the next Argentina? Center for Full Employment and Price Stability Working Paper, No 23.
- Wray, L.R. (2007): A Post Keynesian view of central bank independence, policy targets, and the rules versus discretion debate, in: *Journal of Post Keynesian Economics*, 30(1), 119–141.
- Wray, L.R. (2008): Demand constraints and big government, in: *Journal of Economic Issues*, 42(1), 153–173.
- Wray, L.R. (2014): Central bank independence: myth and misunderstanding, Levy Economics Institute of Bard College Working Paper, No 791.
- Wray, L.R. (2015): *Modern Money Theory*, 2nd edn, New York: Palgrave.
- Wray, L.R., Dantas, F., Fullwiler, S.T., Tcherneva, P.R., Kelton, S.A. (2018): *Public Service Employment: A Path to Full Employment*, Levy Economics Institute Research Project Report, April.
- Zivney, T.L., Marcus, R.D. (1989): The day the United States defaulted on Treasury bills, in: *Financial Review*, 24(3), 475–489.