The Fiscal Theory of the Price Level: A Comment on Tutino and Zarazaga

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In their essay, "Inflation Is Not Always and Everywhere a Monetary Phenomenon" (*Economic Letter*, Federal Reserve Bank of Dallas, June 2014), Antonella Tutino and Carlos E. J. M. Zarazaga question Milton Friedman's famous dictum that "inflation is always and everywhere a monetary phenomenon" (Friedman 1970: 11). In doing so, they rely on the strong version of the fiscal theory of the price level (FTPL) as proposed by Christopher Sims (1994), which holds that "fiscal policy affects the price level and the path of inflation *independent* of monetary policy" (Carlstrom and Fuerst 2000: 23; emphasis added).

Tutino and Zarazaga (2014: 3) note that, given the strong assumptions of some FTPL models, hyperinflation can emerge when it is expected *"even if the money supply is kept constant."* That expectation results in an explosive rise in the velocity of money without any change in the money supply (see McCallum and Nelson 2005). The strong version of FTPL contradicts Phillip Cagan's monetary theory of hyperinflation, which holds that "variations in real cash balances mainly depend on variations in the expected rate of change in prices"—which, in turn, depends on "a dynamic process in which

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current price movements reflect past and current changes in the quantity of money" (Cagan 1956: 27).

Current price movements also reflect expected future changes in the quantity of money (rational expectations). If individuals, from past experience or knowledge of past inflations, think monetary authorities will print money in the future to pay for government deficits, and lower the real value of public debt, they will increase their rate of spending today—before the inflation tax decreases the real value of their cash balances. Doing so will increase monetary velocity and cause inflation to exceed the current rate of growth of the money supply. This scenario is fully consistent with the quantity theory of money, even though Tutino and Zarazaga (p. 1) claim that the German hyperinflation of 1921–23, in which the rise in the general level of prices outpaced money growth, suggests that "something is wrong" with Friedman's dictum.

In this article, I examine the strong version of FTPL and contrast it with the weak version, which holds that fiscal policy drives monetary policy, which is assumed to be passive. The fiscal authority's deficit spending, however, cannot by itself cause a sustained rise in the price level unless accompanied by expansionary monetary policy—that is, monetization of the debt.

The key point that Tutino and Zarazaga (hereafter, TZ) make is that "hyperinflation is fiscal in nature because it can only happen if the fiscal authority—the central government—remains on the sidelines" (p. 3). They turn to the German hyperinflation in the 1920s for support of their argument, holding that the government ended runaway inflation by implementing "an active fiscal policy." In particular, TZ argue that it was the backing of the rentenmark by real estate revenues that ended the hyperinflation. The crux of their argument is that it was "the government's ability to raise revenues from the real estate market . . . [that] successfully broke the link between mutually reinforcing lower fiscal revenues—implying higher fiscal deficits—and rising price levels" (pp. 3–4). I examine this argument by taking a close look at the German hyperinflation and stabilization. Evidence does not support the strong version of FTPL: fiscal policy cannot explain either the hyperinflation or the stabilization of the German currency. Passive fiscal policy did not usher in the hyperinflation, and activist fiscal policy did not end it. The article concludes by noting the importance of a proper understanding of monetary history in evaluating macroeconomic models such as FTPL.

Fiscal Theory of the Price Level

As noted, there are two versions of the fiscal theory of the price level: the weak version and the strong version.[1] The weak version holds that if the fiscal authority dominates the policy space, then fiscal deficits could be monetized by the central bank. This version is consistent with the quantity theory of money because inflation is ultimately determined by excess growth in the money supply. The second version of FTPL, the so-called strong version, holds that *even if the money supply is held constant*, inflation can occur if the fiscal authority is passive. All that is needed is for the public to expect prices to rise. People will then spend their given money balances at a faster rate—increasing the velocity of money—and prices will rise until expectations change.

Tutino and Zarazaga (2014: 3) note that the strong models of the FTPL can "give rise to hyperinflation quite easily, *even if [the] money supply is kept constant*," because "nothing in the internal logic of these models anchors the evolution of inflation." Rather, "the dynamics of inflation are entirely determined by household expectations." Thus, "if households anticipate ever-rising inflation, they will try to get rid of their money balances and exchange them for goods. The resulting increase in demand for goods accelerates inflation even further." The authors conclude: "This hyperinflationary process cannot be categorized as 'monetary' in the usual sense, because that would have required an equally explosive expansion of [the] money supply, which was kept constant."

This analysis ignores the reality that if the quantity of money is constant and people spend more of it on some goods, there will be less of it to spend on other goods, so the overall price level can't spiral upward. However, it is possible that if households expect the fiscal authority to cooperate with the monetary authority, and thus expect future deficits to be funded by printing money, then prices in general could begin to rise *before* the actual increases in future money growth. But as Tutino and Zarazaga (2014: 4, n. 4) point out, the assumption of a constant money stock "rules out the possibility of inflation arising from monetization of fiscal deficits."

[1]For a more formal discussion of the weak and strong versions of the FTPL, see Carlstrom and Fuerst (2000).

The strong version of FTPL also implies that fiscal action—not monetary reform—is the primary tool for ending a hyperinflation. Yet historical evidence shows that the determining factor in generating hyperinflation is explosive growth in the money supply (or the *expectation* that such growth will occur), and that stabilization primarily stems from *credible monetary reform*. One notable example is the German hyperinflation of 1921–23 and the rapid stabilization that ended runaway inflation. We shall see that it was not fiscal policy—but rather monetary policy—that enabled the rapid rise in the price level and abruptly ended it.

The German Hyperinflation

The problem with TZ's argument that the German hyperinflation was ended by fiscal measures (namely, backing the rentenmark by real estate revenues) is that it ignores the fact that the mortgage-backing of the rentenmark was not sufficient to change expectations of further inflation, although it did help the public accept the new currency. Expectations changed because the public knew there was a *legal limit* on the total value of rentenmarks that could be issued by the Rentenbank, which was under the jurisdiction of the Reichsbank (the central bank). The backing of the currency by real estate was not relevant for stabilizing prices. There was no official convertibility between the inflated paper marks and the rentenmark, and the latter was not legal tender. The rentenmark was a parallel currency, added to the circulation of existing paper marks (see Bresciani-Turroni [1931] 1953: 334–37).

It is true that 500 rentenmarks could be converted into a bond with a nominal value of 500 gold marks, "which was guaranteed by a legal mortgage on German property and which yielded a rate of interest at 5 percent *in gold* (actually payable in paper at the exchange rate of the gold mark)," but as Bresciani-Turroni (p. 340) points out, "the stability of the value of the rentenmark could not be due to the possibility of converting the latter into mortgage securities." The reason is simple:

> The market value of the mortgage bonds was lower than the nominal value. The market rate of interest was then much higher than 5 percent. . . . Besides, the increase of the issues of rentenmarks would continually add to the Government's burden on interest on mortgage bonds, for which the public

> would exchange increasing quantities of rentenmarks; and therefore, in a precarious financial position, the uncertainty of the Government being able to continue the payment of interest would increase [ibid.]

Confidence in the rentenmark stemmed, in part, from the fact that it was a new currency and the public "believed in the efficacy of the mortgage guarantee." But, according to Bresciani-Turroni (p. 348), that confidence "would have been quickly dissipated if the public had been led to expect that, despite the obligation imposed on the rentenbank by decree, the Government would exceed the pre-arranged limit to the issues." There was an attempt to circumvent the legal limit on the issuance of rentenmarks in December 1923. However, as Bresciani-Turroni observes, that attempt "was confronted by a determined refusal by the management of the Rentenbank," which "helped to strengthen confidence in the new money. The limitation of the quantity was then of primary and fundamental importance" (ibid.) Thus, in contrast to TZ, Bresciani-Turroni emphasizes the importance of monetary policy—not fiscal policy (the expected revenue from mortgage securities)—in ending the German hyperinflation.

The Dynamic Theory of Money

The assumption in the strong version of FTPL that the money supply is constant, abstracts from the reality of what actually occurred to bring about Germany's hyperinflation (from June 1921 until January 1924) and the rapid stabilization of the currency. In doing so, it also ignores the dynamics of the quantity theory of money.

The dynamic theory of money—also known as "the theory of monetary disequilibrium"—holds that large increases in the quantity of money relative to the trend rate of real output depreciate the value of money and lead to a subsequent rise in the velocity of money, which accentuates the rise in prices, further reducing the real money stock (Warburton 1966: 4–5; also see Dorn 1987 and Yeager 1997). This inflationary spiral will continue until the monetary authority changes expectations by adopting fundamental monetary reform that ends excessive money creation. That is what happened during the German hyperinflation.[2]

[2]See Humphrey (1980: 4) for a summary of the dynamic theory of money as it operated in the Weimar Republic.

It is important to recognize that the rentenmark did not begin to circulate until November 16, 1923, and was added to the existing stock of paper marks, which were still the only legal tender. At the same time, the Reichsbank stopped monetizing government debt by ending the discounting of Treasury bills. Bresciani-Turroni (p. 337) calls that monetary reform "a fact of fundamental importance"—yet it is ignored by TZ.

Even though newly created paper marks could not be used to finance government profligacy, the central bank continued to supply marks for commercial uses. Between November 16, 1923, and November 30, 1923, the amount of paper marks in circulation increased from 93 trillion to more than 400 trillion, and reached 1,211 trillion by July 31, 1924. Meanwhile, the quantity of rentenmarks went from 501 million on November 30, 1923, to 1,803 million on July 31, 1924. Consequently, "the stabilization of the German exchange was not obtained by means of contraction, or even by a stoppage of the expansion of the circulation of *legal* currency" (ibid.).

Most notably, and in contrast to the FTPL as stated by TZ, "The exchange was stabilized before there existed the conditions (above all the equilibrium of the Reich Budget) which alone could assure a *lasting* recovery of the monetary situation" (Bresciani-Turroni, p. 355).

The Weimar Republic faced hyperinflation because it chose to finance postwar reparation payments by money creation, and once the printing presses started rolling, it was hard to stop them. The Reichsbank was under the influence of the real bills doctrine and met all demands for credit with newly minted paper marks, believing that inflation was unlikely if the bank only discounted short-term bills that reflected real output. The problem is that bank credit is expressed in *nominal* terms. Thus, as prices rose because of rapid money growth, the demand for credit increased and businesses repaid debts in depreciated currency. As Ragnar Nurkse (1946: 16–17) stated in a League of Nations report,

> German economic thought failed to apprehend that the expansion in the money supply was at least an essential *condition* without which the general rise in prices could not have gone far. And this intellectual failure accounts in great part for the weakness of the defences which the spring tide of inflation encountered in Germany [cited in Yeager 1976: 314].

That intellectual error is also apparent in the TZ account. If they had read the account of the German hyperinflation by Thomas M. Humphrey (1980), who had a long career as a monetary economist/historian at the Federal Reserve Bank of Richmond, they would have seen that the strong version of the FTPL has "feet of clay," as Willem Buiter (2002) vividly noted. There is no doubt that monetary expansion was the fuel that fed the inflationary fire, although fiscal latitude instigated that expansion.

Major Fallacies That Misguided German Monetary Policy

Humphrey (1980: 3) carefully lays out the major fallacies that misguided monetary policymakers, blindsiding them to the dangers of excess money growth, and points to the significance of monetary reform in quickly stabilizing the value of the currency.

- First, monetary authorities blamed the inflation on external factors, believing that exchange rate depreciation was the culprit rather than domestic monetary policy.
- Second, there was a general acceptance of "a reverse causation theory of the link between money and prices."
- Third, officials falsely thought that a decrease in the real money stock (M/P) was a sign of too little rather than too much money.[3] In other words, they failed to recognize how excessive increases in the *nominal* stock of money affect the velocity of money and the price level; they overlooked the dynamic theory of money.
- Fourth, policymakers and bankers blithely accepted "the real bills doctrine according to which the money supply should accommodate itself to the needs of trade."
- Fifth, officials were misled by thinking that "the central bank can stabilize nominal market interest rates simply by pegging its discount rate at some arbitrary level."

[3]Yeager (1976: 315) points out that "prices had risen so much faster than the money supply [as people desperately tried to get rid of their depreciated paper marks caused by the Reichsbank's irresponsible increases in the quantity of money] that complaints became common of an acute *shortage* of money, despite eventual issue of denominations as high as 100 million marks."

In his discussion of the monetary reforms that led to the stabilization of the currency, Humphrey (1980: 5–6) mentions the introduction of the rentenmark, the limitation on its quantity, and the end of debt monetization, as well as the importance of central bank credibility in changing the public's expectations. He also notes that fiscal policy was implemented to cut the size of government deficits by a combination of spending cuts and tax increases.

What the work of Bresciani-Turroni and Humphrey teaches us is that models like the strong version of FTPL are not sufficient to inform us of the forces that underlie hyperinflation and stabilization. A close study of the policy actions taken in Weimar Germany shows that inflationary expectations are grounded in the credibility of central banks as well as fiscal authorities. The competing theory that "explosive expectations" can generate runaway inflation *without any change in the money supply* cannot be supported by the experience of the German hyperinflation. Likewise, there is no evidence to support TZ's claim that the hyperinflation was ended by fiscal action—that is, backing the rentenmark by real estate revenues. Rather, it was ended by fundamental monetary reform and a credible commitment to return to price stability as well as fiscal fortitude.

Emergency Monies

There is another feature of the German hyperinflation and stabilization that needs more attention. In October 1923, before the introduction of the rentenmark, the public faced a rapidly depreciating legal paper mark and "demanded a means of payment with a *stable value*" (Bresciani-Turroni, p. 343). Consequently, "the Government authorized and even encouraged the issue of 'emergency monies with a constant value'" (ibid.). Those issues were backed by "Gold Loan securities or by a special type of Gold Treasury Bond," but that "guarantee . . . was purely fictitious" (p. 344). Nevertheless, the public preferred to hold the "stable-value" emergency monies and rejected the legal tender money (i.e., the paper mark).[4] That outcome "was evidence of the

[4]During the last stage of the hyperinflation, "legal money was rejected by the public" as people switched to foreign currencies, brought into circulation the old national metallic money, and used new monies supplied by private firms (Bresciani-Turroni 1953: 341).

spontaneous reaction of the economic organism against the depreciation of the legal currency" (p. 345).[5]

The introduction of the rentenmark and its quantity constraint helped relieve some of the "monetary chaos." Moreover, the public's confidence in the new currency was reinforced by the "constant-value clause," which obligated those who took out loans from the Rentenbank to repay their debts in the same quantity of *gold marks* as represented in the original loan. That clause was intended to prevent the speculation that occurred during the hyperinflation when businesses and others took out bank loans in nominal paper marks but repaid them using greatly depreciated marks, thus giving speculators a strong incentive to support runaway inflation (Bresciani-Turroni, p. 353).

The Monetary Law of 1924

German monetary experts, writing in the Dawes Report of 1924, which sought to restore monetary and economic stability in Weimar Germany, viewed the "liquid cover" for the rentenmark as "insufficient to guarantee a permanent [monetary] system." They argued for the removal of the rentenmark and the introduction of a convertible currency. Their proposal was accepted with the passage of the Monetary Law of August 30, 1924, which made the reichsmark the new legal tender (Bresciani-Turroni, p. 338).

When the Monetary Law of August 30, 1924, became effective on October 11, the Reichsbank introduced the new currency, the "reichsmark," and abolished the constant-value clause, which was deemed unnecessary as the paper mark was now convertible into the reichsmark at an exchange rate of 1 reichsmark = 1 billion paper marks (1 billion = $1{,}000{,}000^2$), and the rentenmark was convertible into the new currency at a rate of 1 to 1. On June 5, 1925, the legal tender status of the old paper mark ended and it was taken out of circulation (Bresciani-Turroni, pp. 353–54).[6]

[5]Other types of emergency currencies, most of them illegal, already had appeared before the stable-value currencies. By October 1923, it is estimated that 2,000 types of emergency currencies were circulating in the Weimar Republic (Bresciani-Turroni 1953: 343).

[6]The reichsmark had a fixed gold content but was not convertible into gold until April 1930, at the discretion of the Reichsbank (Bresciani-Turroni 1953: 354).

Misdiagnosis of Fed Policy

In addition to misinterpreting the German hyperinflation and stabilization, TZ also misdiagnose recent Fed policy. They ignore the dynamic theory of money and use the crude quantity theory of money as a straw man to argue that since the U.S. monetary base (currency held by the public plus bank reserves) increased by 32.3 percent between November 2008 and September 2012, the price level should have increased by a similar amount. Yet, despite massive quantitative easing (QE) during that period, inflation remained tame. It did so, according to TZ, because the new base money created by the Fed's large-scale purchase of mortgage-backed securities was "backed by the returns from real estate investments." In short, "as long as the expected primary surpluses backing existing government liabilities haven't changed, there is no reason for the price level to change either" (Tutino and Zarazaga, p. 4).

What TZ ignore is the fact that *money growth*, in contrast to base growth, remained relatively slow because the Fed sterilized most of the new base money by selling Treasury bills, using reverse repos, and paying interest on reserves (IOR)—a policy that began in October 2008.[7] Macroprudential regulation also helped plug up the monetary transmission mechanism and keep the money multiplier historically low (see Dorn 2015).

All in all, one must agree with Buiter when he says the FTPL model, in its strong version, is "made of clay."[8] More telling, by arguing that "inflation is not always and everywhere a monetary phenomenon," Tutino and Zarazaga undermine the responsibility of central banks to maintain the long-run value of fiat money.

[7]For a detailed discussion of the impact of the Fed's IOR policy, see Selgin (2016).

[8]Carlstrom and Fuerst (2000: 31) conclude their analysis of the strong form of FTPL, "in which fiscal policy affects the price level independent of the money supply process," by noting that this version of FTPL "is little more than an intellectual curiosity." Paul Roemer would no doubt agree (see Roemer 2016). In a more recent paper delivered at the 2016 Jackson Hole Conference, Sims takes a more moderate approach to FTPL, arguing that it "does not . . . simply replace the notion that the quantity of money determines the price level with the idea that the quantity of government debt, or the sequence of nominal deficits, determines the price level. It implies that interest rate policy, tax policy, and expenditure policy, both now and as they are expected to evolve in the future, jointly determine the price level" (Sims 2016: 5).

Conclusion

The fiscal theory of the price level (in either its weak or strong form) does not overturn the idea that "inflation is always and everywhere a monetary phenomenon." This is not to say that that fiscal policy cannot influence monetary policy; no central bank has complete independence. History is replete with episodes of high inflation brought about by governments that used central banks to finance deficit spending. The FTPL must be examined in its various forms within the context of actual monetary history. Without a proper understanding of the sequence of events leading to inflation and deflation, theories of price-level determination risk being what Ronald Coase (1992: 714) called "blackboard economics."

Implementing a monetary rule to constrain the power of central banks would help depoliticize monetary policy. However, a more permanent separation of money and politics could occur if discretionary government fiat money were replaced by a free-market monetary system, in which private contracts, competition, and a convertible currency safeguarded the property right individuals have in a sound currency.

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