



Methodological and Ideological Options

Reconsidering Monetary Policy: An Empirical Examination of the Relationship Between Interest Rates and Nominal GDP Growth in the U.S., U.K., Germany and Japan

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ABSTRACT

The rate of interest – the price of money – is said to be a key policy tool. Economics has in general emphasised prices. This theoretical bias results from the axiomatic-deductive methodology centring on equilibrium. Without equilibrium, quantity constraints are more important than prices in determining market outcomes. In disequilibrium, interest rates should be far less useful as policy variable, and economics should be more concerned with quantities (including resource constraints). To investigate, we test the received belief that lower interest rates result in higher growth and higher rates result in lower growth. Examining the relationship between 3-month and 10-year benchmark rates and nominal GDP growth over half a century in four of the five largest economies we find that interest rates *follow* GDP growth and are consistently *positively* correlated with growth. If policy-makers really aimed at setting rates consistent with a recovery, they would need to *raise* them. We conclude that conventional monetary policy as operated by central banks for the past half-century is fundamentally flawed. Policy-makers had better focus on the quantity variables that cause growth.

1. Introduction

“What is it that monetary policy-makers do and how do they do it? The simple answer is that a central banker moves interest rates...”

Cecchetti (2000).

The policy tool emphasised over the past half-century by conventional economics and central bank publications is the interest rate, also known as the ‘price of money’. A vast literature declares the primacy of interest rates and interest policy in macroeconomics. Yet, many ecological economists argue that a debt and interest-based system may be responsible for an unsustainable bias of economies towards harmful growth (Soddy, 1926; Binswanger, 1982, 2012; Daly, 1991; Douthwaite, 2012). Soddy pointed out that debt growing at interest was a social construct pushing the economy towards the boundaries set by finite resources and the laws of physics. The work of such writers is often the basis for the call for a fundamental change of the monetary system, moving away from interest, as well as from a debt-based money supply, to ‘full reserve banking’ (see Fisher, 1935; Huber and Robertson, 2000; Benes and Kumhof, 2012), which has also been presented as a ‘green’ banking reform (Dittmer, 2015). However, others are

unconvinced, such as Dolenc Dalendina (1997); Horowitz (1996), who defends the focus on ‘prices’; Loehr (2012), who advocates negative rates based on Gesell (1916) and Jackson and Victor (2015). The literature review by Aspinall et al. (2015) concluded that there is a need for more empirical work on these and related issues to help us understand the interrelations between finance and sustainable growth.

While these questions are disputed, one related issue seems without debate: All major economic schools of thought, namely classical (e.g. Ricardo, 1817), neoclassical (e.g. Marshall, 1890), Keynesian (Keynes, 1936; Hicks, 1937; Tobin, 1969), monetarist (Brunner and Meltzer, 1971; Friedman, 1970), new classical (Lucas, 1975), ‘neo-Wicksellian’ (e.g. Woodford, 2003), as well as post-Keynesian (e.g. Lavoie, 1995), Austrian (e.g. Garrison, 1989) and some ecological economics (e.g. Horowitz, 1996; Baum, 2009) claim that *lower rates stimulate economic growth* and vice versa. The same claim is frequently made by central banks. However, there is a paucity of empirical evidence. The present paper for the first time systematically examines the empirical relationship between the *level* of nominal interest rates and economic growth. Knowledge of the empirical relationship between them provides a foundation for the debates in ecological economics and it is also necessary for an effective conduct of monetary and macroeconomic policy.

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2. Theoretical Foundations and Existing Empirical Evidence

Interest rates are the price of money. Since [Marshall \(1890\)](#) and [Walras \(1874\)](#), economics has emphasised prices over quantities. The former gave his name to the ‘Marshallian cross’ of upward-sloping supply and downward-sloping demand curves, and the latter had constructed the theory that markets are in equilibrium. Equilibrium and optimality are also the analytical framework for many researchers in resource economics (e.g. [Clark, 1976](#)).

In an equilibrium setting, prices are key: their movement is said to achieve the postulated equilibrium. Any problem (such as persistent large-scale unemployment) is interpreted as being due to price ‘rigidity’ that must be remedied. Due to this analytical emphasis on price variables, relatively little research has been produced on the role of quantities in the economy – including resource constraints. [Daly \(1991\)](#) identified the ‘microeconomic’ excessive focus on prices and lack of recognition of quantity constraints as major problems in standard economics.

The focus on equilibrium and prices is due to the hypothetico-axiomatic method, a.k.a. the *deductive methodology*. The axioms are postulated that people are individualistic and focus on maximising their own satisfaction (named ‘utility’, in honour of Jeremy Bentham, the first economist to argue for the legalisation of the then banned practice of charging interest; [Bentham, 1787](#)). Next, a number of assumptions are made: perfect and symmetric information, complete markets, perfect competition, zero transaction costs, no time constraints, fully flexible and instantaneously adjusting prices. [McCloskey \(1983\)](#) has argued that economics has been using mathematical rhetoric to enhance the impression of operating scientifically. Equilibrium will not obtain, if only one of the axioms and assumptions fails to hold. But their accuracy is not tested. Yet, one can estimate the probability of obtaining equilibrium.

Despite the claims to rigour, the pervasive equilibrium argument and focus on prices reveal a weak grasp of probability mathematics: Since for partial equilibrium in any market, at least the above eight conditions have to be met, if one generously assumed each condition is more likely to hold than not – corresponding to a probability higher than 50%, for instance, 55% – then the probability of equilibrium equals the joint probability of all conditions, which is 0.55 to the power of 8: less than 1%. As the probability of each of the eight conditions being an accurate representation of reality is likely significantly lower than 55% (most having a probability approaching zero themselves), it is apparent that the probability of partial equilibrium in any one market approaches zero ([Werner, 2014b](#)). For equilibrium in *all* markets, these very low probabilities have to be multiplied by each other many times. So we know a priori that partial, let alone general equilibrium cannot be expected in reality. Equilibrium is a theoretical construct unlikely to be observed in practice. This demonstrates that reality is instead characterised by rationed markets. These are not determined by prices, but quantities: In disequilibrium, the *short side principle* applies: whichever quantity of supply and demand is smaller can be transacted, and the short side has the power to pick and choose with whom to trade (not rarely abusing this market power by extracting ‘rents’, see [Werner, 2005](#)).¹

Without equilibrium, quantities become more important than prices. Whether this is also true in the crucial markets for money, with interest as its price, is a testable hypothesis we shall examine in this paper. Specifically, we are testing the oft-repeated claim that lower interest rates will stimulate economic growth, and higher rates will slow it. The number of researchers advocating the use of interest rates as the intermediate monetary policy instrument to move the economy is long (to name a few: [Bernanke and Blinder, 1992](#); [Taylor, 1993](#); [Judd and Motley, 1993](#); [Woodford, 2003](#)).

Should it be found empirically that interest rates are not in fact

related to economic growth as postulated, this would support the rationing argument, and monetary policy would have to be fundamentally altered. Negative interest rates, demanded by some ([Rogoff, 2016](#)), could not be justified.

[Werner \(1996, 2005\)](#) argued that interest rates follow economic growth and are positively correlated with it.² In ecological economics, [Tisdell \(2011\)](#) doubts the validity of the proclaimed relationship between the level of interest rates and economic growth and argues that “the market rate of interest can increase or decrease with a rise in aggregate investment and also with an increase in the level of aggregated economic activity.” Tisdell also concludes that instead of focusing on prices, greater emphasis should be placed on quantities: “It is the level of aggregate economic activity (particularly, the aggregate level of investment) that is of greatest significance for the depletion of natural resources” (p. 2515).

Concerning the empirical record, no systematic empirical study of the question of how the level of nominal interest rates is related to nominal economic growth exists. This is surprising, especially since researchers have over the years found grounds for doubt concerning the canonical central bank model of lower interest rates resulting in higher growth: [Werner \(1994\)](#) found that in a model of capital flows, price variables (interest rates and interest differentials) had little explanatory power, while quantity variables did (the quantity of credit creation). [Melvin \(1983\)](#) and [Leeper and Gordon \(1992\)](#) found little support for the so-called ‘liquidity effect’ of interest rates on the money supply. Many studies refer to an observed positive correlation between interest rates and inflation as the ‘price puzzle’ (first identified by [Sims, 1992](#), see also [Hanson, 2004](#)). [King and Levine \(1993\)](#) did not find evidence to support the hypothesized relationship between real interest rates and economic growth in a cross-section of countries. [Taylor \(1999\)](#) found that the link between real interest rates and macroeconomic aggregates such as consumption and investment is tenuous. [Kuttner and Mosser \(2002\)](#) found a positive correlation between real GDP growth and interest rates in the US between 1950 and 2000. [Dotsey et al. \(2003\)](#) examined the behaviour of real interest rates, finding that they are contemporaneously positively correlated with lagged cyclical output. The Department of Commerce has not included interest rates in its list of ‘Leading Indicators’ nor in its list of ‘Coincident Indicators’. Instead, it considers interest rates a *lagging* indicator of economic growth (a fact neglected by proponents of the interest paradigm).³ Finally, there is the experience of Japan, where interest rates have been falling for over two decades (since 1991, having recently fallen into negative territory), without a clearly identifiable positive effect on growth. This has posed a significant challenge to virtually all schools of thought in macroeconomics (see [Werner, 2003b, 2005, 2006](#)).⁴

Milton Friedman claimed already in the 1960s:

“As an empirical matter, low interest rates are a sign that monetary policy has been tight – in the sense that the quantity of money has grown slowly; high interest rates are a sign that monetary policy has been easy – in the sense that the quantity of money has grown rapidly. The broadest facts of experience run in precisely the opposite direction from that which the financial community and academic economists have all generally taken for granted”

([Friedman, 1968](#), p. 7).

Despite such sporadic indications that interest rates are not ‘well-

² Based on this approach, Werner proposed a focus on the quantity of credit creation for GDP and non-GDP transactions (credit for the ‘real economy’ determining nominal GDP and credit for financial transactions determining asset prices and financial fragility) for both macroeconomic analysis and policy, i.e. the Quantity Theory of Credit, see [Werner \(1997, 1992, 2012a, 2013a, 2013b\)](#).

³ An exception is [Stock and Watson \(1989\)](#).

⁴ This challenge is not explained by the so-called ‘liquidity trap’ argument, since this fails to address the question at hand (why interest rate *reductions* have failed to have the proclaimed positive effect on growth).

¹ Some economists have argued for market rationing in the 1960s and 1970s; see, for instance, [Malinvaud \(1977\)](#) and [Muellbauer and Portes \(1978\)](#).

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