



The role of fiscal policy in Britain's Great Inflation[☆]



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ABSTRACT

We investigate whether the Fiscal Theory of the Price Level (FTPL) can explain UK inflation in the 1970s. We confront the identification problem involved by setting up the FTPL as a structural model for the episode and pitting it against an alternative Orthodox model; the models have a reduced form that is common in form but, because each model is over-identified, numerically distinct. We use indirect inference to test which model could be generating the VECM approximation to the reduced form that we estimate on the data for the episode. Neither model is rejected, though the FTPL model substantially outperforms the Orthodox. But by far the best account of the period assumes that expectations were a probability-weighted combination of the two regimes. Fiscal policy has a substantial role in this weighted model in determining inflation. A similar model accounts for the 1980s but this role of fiscal policy is much diminished.

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1. Introduction

In 1972 the UK government floated the pound while pursuing highly expansionary fiscal policies whose aim was to reduce rising unemployment. To control inflation the government introduced statutory wage and price controls. Monetary policy was given no targets for either the money supply or inflation; interest rates were held at rates that would accommodate growth and falling unemployment. Since wage and price controls would inevitably break down faced with the inflationary effects of such policies, this period appears to fit rather well with the policy requirements of the Fiscal Theory of the Price Level: fiscal policy appears to have been non-Ricardian (not limited by concerns with solvency) and monetary policy accommodative to inflation - in the language of Leeper (1991) fiscal policy was 'active' and monetary policy was 'passive'. Furthermore, there was no reason to believe that this policy regime would come to an end: both Conservative and Labour parties won elections in the 1970s and both pursued essentially the same

policies. While Margaret Thatcher won the Conservative leadership in 1975 and also the election in 1979, during the period we study here it was not assumed that the monetarist policies she advocated would ever occur, since they were opposed by the two other parties, by a powerful group in her own party, as well as by the senior civil service. Only after her election and her actual implementation of them was this a reasonable assumption. So it appears that in the period from 1972 to 1979 there was a prevailing policy regime which was expected to continue. These are key assumptions about the policy environment; besides this narrative background we also check them empirically below. Besides investigating behaviour in the 1970s, we go on to investigate the behaviour of the Thatcher regime in the 1980s, to test the popular assumption that this regime greatly changed the conduct of macroeconomic policy. According to this assumption there was a shift of regime towards 'monetarist' policy, in which monetary policy became 'active' and fiscal policy became 'passive' (or 'Ricardian'). Thus we broaden our analysis to put the 1970s episode into the context of the evolution of macroeconomic policy over this whole dramatic period of UK history.

Under FTPL the price level or inflation is determined by the need to impose fiscal solvency; thus it is set so that the market value of outstanding debt equals the expected present value of future primary surpluses. The FTPL has been set out and developed in Leeper (1991); Sims (1994); Woodford (1998a, 2001) and Cochrane (2001, 2005) - see also comments by McCallum (2001, 2003) and Buiter (1999, 2002), and for

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Table 1
Summary of the FTPL and Orthodox models.

Common equations		
IS curve		$y_t - y_t^* = E_t(y_{t+1} - y_{t+1}^*) - \frac{1}{\sigma}(R_t^e - E_t\pi_{t+1}) + err_t^{IS}$
Phillips curve		$\pi_t = \theta(y_t - y_t^*) + \beta E_t\pi_{t+1} + err_t^{PP}$
Productivity		$y_t^* - y_{t-1}^* = c^{y^*} + \gamma(y_{t-1}^* - y_{t-2}^*) + err_t^{y^*}$
Distinctive equations		
	FTPL	Orthodox
Fiscal policy	$\Delta(g_t - t_t) = err_t^{g-t}$	$\Delta(g_t - t_t) = -\delta(g - t)_{t-1} - c^{g-t} + err_t^{g-t}$
Inflation determination	$\pi_t = \kappa(g_t - t_t) + c^\pi + err_t^{pi}$	$R_t^e = (1 - \rho)[i^{ss} + \phi_\pi\pi_t + \phi_{xgap}(y_t - y_t^*)] + \rho R_{t-1}^e + err_t^{R^e}$

Note: all equation errors are assumed to follow an AR(1) process.

surveys Kocherlakota and Phelan (1999); Carlstrom and Fuerst (2000) and Christiano and Fitzgerald (2000). Empirical tests have been proposed by Bohn (1998); Canzoneri et al. (2001) and Bajo-Rubio et al. (2014). Loyo (2000) for example argues that Brazilian policy in the late 1970s and early 1980s was non-Ricardian and that the FTPL provides a persuasive explanation for Brazil's high inflation during that time. The work of Tanner and Ramos (2003) also finds evidence of fiscal dominance for the case of Brazil for some important periods. Cochrane (1999, 2005) argues that the FTPL with a statistically exogenous surplus process explains the dynamics of U.S. inflation in the 1970s. This appears to be similar to what we see in the UK during the 1970s. In addition, there has been extensive work on FTPL in monetary unions¹ and specifically on European economies.²

Our aim in this paper is to test the Fiscal Theory of the Price Level (FTPL) as applied to the UK in the 1970s episode we described above; and to contrast it with the apparently very different policy in the 1980s. Cochrane (1999, 2001, 2005) has noted that there is a basic identification problem affecting the FTPL: in the FTPL fiscal policy is exogenous and forces inflation to produce fiscal solvency. But similar economic behaviour can be consistent with an exogenous monetary policy determining inflation in the 'orthodox' way, with Ricardian fiscal policy endogenously responding to the government budget constraint to ensure solvency given that inflation path - what we will call the Orthodox model. Thus there is a besetting problem in the empirical literature we have cited above, that equations that appear to reflect the FTPL and are used to 'test' it, could also be implied by the Orthodox set-up. To put it more formally the reduced form or solved representation of an FTPL model may *in form* be indistinguishable from that of an orthodox model; this is true of both single-equation implications of the model and complete solutions of it.

As Bajo-Rubio et al. (2014) note, the tests are focused on the government's intertemporal budget constraint. In the 'backward-looking' version (Bohn, 1998) for the government to be Ricardian the government primary surplus should react positively to lagged debt; this can be tested for by checking the cointegration of revenue and spending with a unit coefficient. In the 'forward-looking' version due to Canzoneri et al. (2001), the future level of debt should react negatively to the current primary surplus. Here the test is of the impulse response function of debt to the surplus, but Bajo-Rubio et al. point out that if a primary surplus today causes a lower primary surplus tomorrow the test would not hold. This version too requires cointegration to hold.

The cointegration test needs in principle to include inflation-tax revenues. But these revenues include the reduction in value of the debt due to inflation which are precisely those generated by FTPL to ensure solvency. As solvency is always assured in equilibrium in either Ricardian or FTPL conditions, so cointegration must hold in either condition; and

¹ See for example Sims (1997); Woodford (1998b); Bergin (2000); Canzoneri et al. (2001), and Bajo-Rubio et al. (2009).

² See Mèlitz (2000); Afonso (2000); Ballabriga and Martinez-Mongay (2003) and Bajo-Rubio et al. (2014).

so, while interpretation is possible, there is strictly speaking no way of distinguishing which condition is causing this to happen.

As a result of this critique, some authors - for example Bianchi (2012); Bianchi and Melosi (2013) - have abandoned the idea of testing whether the FTPL was or was not prevailing in an episode. Instead they have assumed that various possible combinations of fiscal and monetary policy were operating at different times, with switching between them occurring according to some Markov process. They have then estimated, usually by Bayesian methods, what combinations were operating and when. In the context of the US, to which most of this work is devoted and where the constitution divides power between three branches of government, this idea that at any one time there is not necessarily a definite 'regime' operating but rather a constant process of flux between transitory regimes may well seem plausible. However, our paper investigates a specific episode in UK history; and the UK is a unitary state where there is no separation of executive powers and where an elected government is - until the next election - the sole setter of policy. Our brief description of the history of the 1970s above suggests that during this period FTPL may well have been the sole operating regime; it is the aim of this paper to test this hypothesis in a convincing way. The episode gives us the unusual opportunity to do this. If we could succeed in this objective, we would have answered an important empirical question: could FTPL ever have actually happened and therefore is it more than a theoretical curiosity?

We meet the identification critique head on in this paper by setting up specific versions of both the two models, FTPL and Orthodox, and testing each against the data. We first establish that, even though these two models may produce similar reduced forms, they are identifiable by the detailed differences within these reduced forms and cannot therefore be confused with each other. Secondly, we follow a comprehensive testing procedure; we use Bayesian estimation, and rank the two models using various priors. We find that we cannot unambiguously rank these models regardless of the priors we use. We also try to rank them using the widely-used Likelihood Ratio test, using flat priors; but these rankings are unstable, apparently reflecting a rather flat likelihood function. Our principal test is to examine the models' ability to reproduce the data behaviour, which can be represented by impulse response functions or moments and cross-moments but which we represent parsimoniously here by the features of a VECM; this is the little-known method of 'indirect inference', whose power is high as a test, even in the rather small sample we have here.

Thus the contribution of this paper is to use full information econometric methods to test two rival structural models of the economy, one according to the FTPL approach and one according to the Orthodox

Table 2
Identification check: FTPL vs Orthodox Taylor.

When the true model is	Rejection rate (at 95% confidence level) of the false model
FTPL	24.5% (Orthodox)
Orthodox	22.2% (FTPL)

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