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Downward nominal wage rigidity and state-dependent government spending multipliers☆

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ABSTRACT

Despite much empirical evidence on business cycle-dependent government spending multipliers, the theoretical channels underlying such results are uncertain. In an environment with involuntary unemployment, this paper shows that downward nominal wage rigidity, which arises only in recessions, can generate business cycle-dependent government spending multipliers. In line with Keynesian views, a demand stimulus reduces unemployment in recessions and may not drive up inflation and wages as in expansions. Thus, the positive income effects from reduced unemployment and weaker crowding-out effects from a smaller increase in the real interest rate enhance the expansionary spending effects in recessions. The theoretical implications are largely consistent with existing empirical evidence on business cycle-dependent government spending effects on key macroeconomic variables.

1. Introduction

Do government spending multipliers differ between recessions and expansions? A burgeoning empirical literature generally indicates bigger multipliers in recessions than in expansions (e.g., Auerbach and Gorodnichenko, 2012; 2013; Bachmann and Sims, 2012; Baum et al., 2012; Caggiano et al., 2015; Fazzari et al., 2015; Furceri and Li, 2017).[1]

Despite largely consistent empirical support, the theoretical channels through which government spending has bigger multipliers in recessions than in expansions are uncertain.[2] Canzoneri et al. (2016) propose that countercyclical variation in bank intermediation costs can generate business cycle-dependent multipliers, as a government spending increase reduces

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[1] Caggiano et al. (2015) find significant differences in multipliers when comparing deep recessions to strong expansions, but little difference in multipliers between mild recessions and expansions.

[2] A competing view posits that multipliers may not differ much across business cycles states; see Ramey and Zubairy (2018) and Sims and Wolff (2018).

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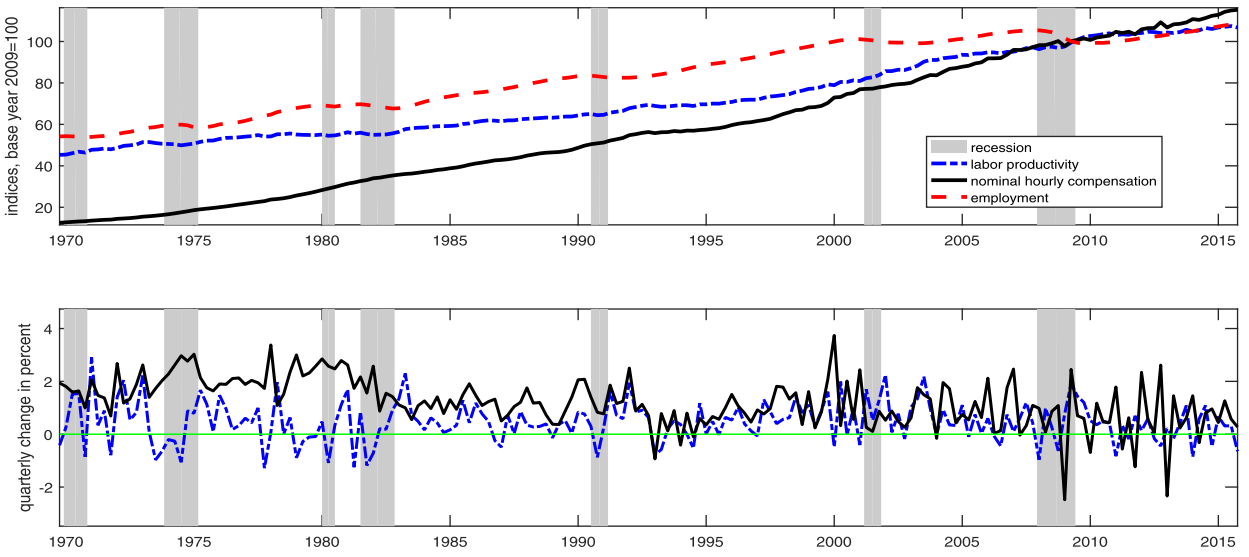

Fig. 1. Downward nominal wage rigidity in the U.S. See data description in footnote[4].

interest rate spreads, facilitating private borrowing in recessions. Also, Michaillat (2014) shows that increasing public employment in expansions raises labor costs, thus dampening its effectiveness to raise aggregate employment.

We propose an alternative theoretical channel through which downward nominal wage rigidity (DNWR) in recessions can contribute to the business cycle-dependent multipliers. Using a simplified New Keynesian (NK) model, we first examine its log-linearized equilibrium to illustrate the key mechanisms analytically. Next, we quantify the multipliers with an NK model that is solved fully nonlinearly. Consistent with most empirical evidence, we obtain robust simulation results that output multipliers are bigger in recessions than in expansions. Moreover, the theoretical implications for consumption, unemployment, real wages, and inflation are largely in line with existing empirical evidence on business cycle-dependent government spending effects (see Tagkalakis, 2008; Auerbach and Gorodnichenko, 2013; Fazzari et al., 2015).

DNWR is well documented and prevalent. Using micro-level data of U.S. and European countries, Dickens et al. (2007) estimate that, on average 28% of the wage cuts that would have taken place under flexible wage setting were averted by DNWR.[3] To see whether DNWR is discernible in macro-level data, we plot employment, nominal hourly compensation, and labor productivity for the U.S. from 1969Q4 to 2015Q4.[4] The top plot in Fig. 1 shows that except for the 1969 and 2001 recessions, labor productivity fell in each of the seven recessions, yet the nominal hourly compensation largely increased even for much of the Great Recession. The average productivity decline over these seven recessions is 1.2% from the beginning quarter to the quarter of the lowest productivity within a recession, yet the corresponding nominal wage rate grows by 3% and the real wage rate grows by 0.1%.[5] The bottom plot in Fig. 1 compares the quarterly growth rates of nominal hourly compensation and labor productivity. Despite negative labor productivity growth rates in most recessions, growth rates of hourly nominal compensation (solid line) are seldom negative; most incidents of negative growth rates occurred within the Great Recession (2007Q4-2009Q2) and in the subsequent slow recovery period.

Intuitively, business cycle-dependent multipliers arise because higher government spending in recessions reduces unemployment and does not drive up the real interest rate as much as in expansions. In expansions, a spending increase has the usual crowding out effect. Firms hire more labor in response to higher goods demand, increasing wages and inflation. Monetary authorities then raise the nominal interest rate and indirectly the real rate, crowding out private demand and partially offsetting the expansionary effects of government spending.

In recessions, if DNWR binds—resulting from a high nominal wage rate in the prior period combined with a severe enough recession, then DNWR prevents nominal wages from falling beyond the floor despite weak private demand. Under such circumstances, higher government spending (if not sufficiently large) does not increase nominal wages immediately, whereas inflation rises because of higher goods demand from more government spending. With higher inflation, the binding nominal wage floor translates into a lower real wage floor than otherwise without a spending increase. Thus, with DNWR,

[3] Other papers presenting evidence on DNWR include Nickell and Quintini (2003), Holden and Wulfsberg (2009), Messina et al. (2010), and Abbritti and Fahr (2013). See Kim and Ruge-Murcia (2009) for a survey of earlier evidence on DNWR.

[4] All the data come from the Bureau of Labor Statistics (BLS) and are seasonally adjusted: labor productivity (measured by output per hour) is series PRS85006093; nominal hourly compensation is series PRS85006103; employment is converted from total nonfarm employment (series CES0000000001) to an index series. Shading in Fig. 1 indicates the recession periods identified by the NBER.

[5] Real wage changes are computed by subtracting inflation from nominal wage growth rates, and inflation is calculated from the consumer price index published by the BLS.

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