

Monetary policy and the gender pay gap: Evidence from UK households

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ABSTRACT

This paper studies how monetary policy decisions affect the gender pay gap across UK households through a survey database. The results signify the impact of monetary policy shocks on the gap; monetary authorities' decisions carry welfare effects for households through their pay income.

Keywords: monetary policy; gender pay gap; UK

JEL Classification: E52; J30; C33

1. Introduction

Monetary policymakers have recently discussed the potential distributional effects of monetary policy (MP) (Bernanke, 2015). The literature emphasizes potential distributional effects of MP on economic inequality, while no attention has been given on their impact on gender pay gaps. This paper focuses on the dynamic responses of the gender pay gap to MP shocks in the UK. Gender pay gaps come from household-level data from the British Household Panel Survey, available from 1991 to 2008, and the Understanding Society (USoc) Microdata database available from 2009. The full panel sequence, which began in 1991, is maintained for researchers. Gender pay gaps in the UK remain substantial and reducing these differences is high on the economic policy agenda (Olsen et al., 2018). Understanding these differences is important for

how best to address low pay and a lack of wage progression. Poverty is increasingly a problem of low pay rather than lack of employment. Understanding this gap is important in cases that so many families are left in poverty as a result of low wages. The literature has not paid any attention on the potential distributional effects of MP decisions reached by the Bank of England on those gaps.

2. Data and analysis

The analysis uses 23,909 individuals from both databases, along with observations for the official Bank Rate. Data span the period 1991-2015 and along with the consumer price index and the unemployment rate are obtained from the National Statistics Office. Gender pay gaps are measured as the average hourly earnings of the interviewed individuals. Measures for earnings are gross per hour, while hourly gross wages are calculated as the employee's cash and non-cash incomes per year divided by the number of hours usually worked per year (including overtime). Table 1 presents correlations between gender pay gaps and inflation, unemployment and the official Bank Rate. All series are Hodrick-Prescott (HP)-filtered. Correlations of the gap with inflation and interest rates are relatively high and negative. These findings point toward strong links between business cycles and gender pay gap patterns.

Table 1

Correlations between gender pay gaps and inflation and policy interest rates.

Correlations with:	Inflation rate	Unemployment rate	Bank Rate
Gender pay gap	-0.46	0.57	-0.52

The analysis follows Romer and Romer (2004) to identify shocks to MP purged of anticipatory effects related to economic conditions. They construct a measure of such shocks from the component of policy changes at each monetary policy committee (MPC) meeting that is orthogonal to the Fed's information set. They generate a

sequence of MP shocks at the frequency of MPC meetings by estimating the following regression:

$$\Delta br_m = \alpha + \beta brb_m + \sum_{i=-1}^{p_1} \gamma_i F_m \Delta y_{m,i} + \sum_{i=-1}^{p_2} \lambda_i (F_m \Delta y_{m,i} - F_{m-1} \Delta y_{m,i}) + \sum_{i=-1}^{p_3} \phi_i F_m \pi_{m,i} + \sum_{i=-1}^{p_4} \theta_i (F_m \pi_{m,i} - F_{m-1} \pi_{m,i}) + \mu_i F_m un_{m,i} + \delta_1 DUM2008 + \delta_2 DUM1992 + \delta_3 DUM1997 + \varepsilon_m \quad (1)$$

where m denotes the MPC meeting, br_m is the bank rate from the MPC meeting, brb_m is the target of the policy rate going into the MPC meeting, $F_m \Delta y_{m,i}$ is the forecast from meeting m of real output growth around meeting m (-1 is previous quarter), $F_m \pi_{m,i}$ are inflation forecasts, and $F_m un_{m,i}$ are forecasts of the current meeting's unemployment rate. $DUM2008$ is a dummy that considers the 2008 global financial crisis, taking values of one in the third quarter in 2008, and zero otherwise, $DUM1992$ is a dummy that considers the adoption by the Bank of England (BoE) of an inflation targeting strategy, taking values of one in the third quarter in 1992, and zero otherwise, while $DUM1997$ is a dummy associated with the fact that in May 1997 the full control of interest rates was left to the BoE, taking values of one in the second quarter in 1997, and zero otherwise (Adam et al., 2005). Within one quarter, there are four MPC meetings (one per month), therefore, for the quarterly estimates, the average of the economic variables included in Equation (1) are obtained. Estimates are reported in Table 2. The estimated residuals are then defined as the MP shocks.

Table 2

Estimates of the MP shocks (Equation (1)).

Variables	coefficient	p-value
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Constant	0.4628**	0.04
brb _m	0.0058***	0.00
F _m Δy _{m,i} (-1)	0.0047**	0.05
F _m Δy _{m,i} (0)	0.0096***	0.00
F _m Δy _{m,i} (1)	0.0063***	0.01
F _m Δy _{m,i} - F _{m-1} Δy _{m,i} (-1)	0.0038*	0.06
F _m Δy _{m,i} - F _{m-1} Δy _{m,i} (0)	0.0084***	0.00
F _m π _{m,i} (-1)	0.0041**	0.03
F _m π _{m,i} (0)	0.0079***	0.01
F _m π _{m,i} (1)	0.0058**	0.03
F _m π _{m,i} - F _{m-1} π _{m,i} (-1)	0.0035*	0.06
F _m π _{m,i} - F _{m-1} π _{m,i} (0)	0.0089***	0.00
F _m un _{m,i}	0.0057**	0.03
DUM2008	-0.026***	0.00
DUM1992	-0.049***	0.00
DUM1997	-0.038***	0.00
R ² -adjusted	0.52	
No. of observations	100	

Note: The lags were determined through the Akaike criterion. *: p≤0.10; **: p≤0.05; ***: p≤0.01.

To quantify the effects of MP shocks on the gender pay gap, we estimate the following modeling regression:

$$\text{gap}_{it} = c + \sum_{j=1}^{p_1} \alpha_j \text{gap}_{t-j} + \sum_{j=0}^{p_2} \beta_j \varepsilon_{t-j}^{\text{br}} + \sum_{j=0}^{p_3} \gamma_j X_{t-j} + v_{it} \quad (2)$$

where i denotes the i th individual in the survey, t is for time, X represents a vector of other variables affecting the pay gap (mentioned below), ε^{br} proxies the MP shocks and v_t is the residual term. To match the (annual) number of individuals with (quarterly) interest-rate shocks, we obtained the annual average of the quarterly shocks. The results are presented in Table 3. They identify a negative effect from MP on the gender pay gap. In other words, MP shocks have discernable effects on the gender pay gap: contractionary (higher interest rates) shocks are followed by a rise in those gaps and vice versa. The findings are consistent with other evidence for the economic effects of monetary shocks. Romer and Romer (2004) find that the maximum effect of monetary shocks on GDP occurs two years after a shock and the effect remains significant after then. Gornemann et al. (2016) also document that MP is extremely persistent so that a monetary shock is propagated for a long time.

The analysis also ensures that the results are robust to factors, which could contribute to gender pay gaps, such as income tax rates (top marginal income tax rate for households-obtained from the UK Office of National Statistics), centralized collective bargaining (proxied by the Centralized Collective Bargaining-CCB index of the Economic Freedom Index compiled by the Fraser Institute and scores go onto a [0,10] interval), economic competition (proxied by the component of the Economic Freedom Index compiled by the Fraser Institute), the public/private employment ratio (measured as the civilian government employment as a percentage of the working age population 15-64-obtained from the UK Office of National Statistics), and a measure of overall earnings dispersion (the 90th percentile minus 10th percentile wage gap-wages data also come from the UK Office of National Statistics).

In terms of taxation, females' labor supply is more elastic, and therefore more sensitive to tax rates. Married women might find it advantageous to specialize in household activities when a large proportion of secondary earner income goes into paying taxes (Baffoe-Bonnie, 1995; Smith et al., 2003). Blau and Kahn (2003) argue that bargaining centralization reduces pay gaps across firms and sectors, because bargaining includes more firms and sectors into a common wage settlement.

Centralized bargaining equalizes sectoral differences and, as such, we expect the gender pay gap to be negatively associated with this labor market institution. Economic competition negatively affects the gender pay gap, because firms would eliminate discrimination against females to minimize costs in a highly competitive market (Weichselbaumer and Winter-Ebmer, 2002). Public employment is another indicator of wage compression, because public sectors are more inclined than private sectors to equalize wages for their employees (Kolberg, 1991). Finally, the analysis includes a direct measure of the 90th percentile minus 10th percentile wage gap for males and for females (Blau and Kohn, 2003).

The General Method of Moments (GMM), proposed by Arellano and Bond (1991), is used and the results are presented in Table 3 and denote again that MP shocks are positively associated with the gender pay gap. Moreover, a 100-base point (1%) increase in interest rate shocks, increases the gap by 0.8 points. In terms of the remaining variables, taxes and pay dispersion have a positive impact, while centralized bargaining, economic competition and the public to private employment exert a negative effect on the gap. It is evident that both the test for AR(2) of disturbances and the Hansen test fail to reject the validity of the instruments used. 24 instruments have been used in the estimation process.

Table 3

Estimates of the impact of monetary policy shocks on gender pay gap.

Variables	coefficient	p-value
Constant	0.123	0.19
Gender pay gap(-1)	0.586***	0.00
Monetary policy shocks	0.008***	0.00
Monetary policy shocks(-1)	0.003**	0.03
Taxes	0.039***	0.00
Taxes(-1)	0.015**	0.02

Taxes(-2)	0.007*	0.06
Centralized bargaining	-0.032***	0.01
Economic competition	-0.048***	0.00
Economic competition(-1)	-0.018**	0.05
Public employment	-0.055***	0.00
Public employment(-1)	-0.021**	0.04
Pay dispersion	0.038**	0.03
Pay dispersion(-1)	0.023*	0.06

Diagnostics

R ²	0.68
AR(1)	[0.00]
AR(2)	[0.38]
Hansen test	[0.55]

Note: AR(1)- the first-order test for residual autocorrelation. AR(2)- the test for autocorrelation of order 2. Hansen- the test for the validity of instruments. Estimations were performed under fixed effects and time dummies. Lags were determined through the Akaike criterion. *: $p \leq 0.10$; **: $p \leq 0.05$; ***: $p \leq 0.01$.

3. Conclusion

This paper explored the link between MP and the gender pay gap by assessing the role of them on the gap. MP shocks had positive effects on the gender pay gap across UK households. The findings carry important implications for MP modeling where the heterogeneity of households should be explicitly considered, while policymakers should be more cautious with their decisions as they carry welfare effects in terms of changing gender pay gaps. Finally, future venues could also explore the channels

through which MP shocks impact gender pay gaps, such as income and wealth composition, financial segmentation and redistributive inflation or portfolio holdings, savings redistribution, and earnings heterogeneity.

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