Four Tables for paper by BHALOTRA on efficiency wages

Table 1
Production Functions Incorporating the Relative Wage
ALTERNATIVE ESTIMATORS

	(1) Levels-OLS	**(2) Within Groups**	**(3) First Differences-OLS**	**(4) Griliches-Hausman adjustment**	**(5) GMM: one step estimates**	**(6) GMM: two step estimates**
employment	0.98 (31.4)	0.61 (5.8)	0.71 (5.7)	0.50	**0.42 (2.4)**	0.45 (7.6)
capital stock	0.03 (3.1)	0.27 (6.1)	0.25 (4.5)	0.30	**0.43 (5.1)**	0.42 (19.6)
hours	0.81 (7.1)	0.48 (4.2)	0.44 (3.7)	0.67	**0.87 (2.9)**	0.81 (6.2)
relative wage	0.73 (10.3)	0.27 (3.7)	0.20 (2.6)	0.50	**0.54 (2.0)**	0.67 (7.1)
R^2	0.89					
NT	2381	2113	2113		**2113**	2113
Wald (θ_t)	99.7/8 (0.0)	42.9/8 (0.0)	43.9/8 (0.0)		**26.7/8 (0.0)**	85/8 (0.0)
Wald (RHS)	2318/4 (0.0)	226/4 (0.0)	106/3 (0.0)		**91.1/4 (0.0)**	4744/3 (0.0)
σ^2 (levels)	0.337	0.140	0.120		**0.133**	0.133
serial corr(1)			-6.63 (0.0)		**-6.70 (0.0)**	-7.02 (0.0)
serial corr(2)			0.35 (0.72)		**0.63 (0.53)**	0.66 (0.51)
Sargan (χ^2)					**92.7/87 (0.29)**	92.7/87 (0.29)

Notes: Dependent variable=log(real value added). θ_t are time dummies, σ^2 is an estimate of the variance of the levels equation error; ε_{ist} in FD and GMM, (ε_{ist}-ε_{is}) in WG and (ε_{ist}+μ_{is}) in the OLS equations. Fig. in parenthesis are absolute t-ratios except for the test statistics, where they are p-values. The figure following the slash (/) is the number of estimated coefficients for the Wald test and the degrees of freedom for the Sargan test. Instruments are $n_{ist}(2,4)$, $k_{ist}(2,4)$, $h_{ist}(2,4)$, the product wage $(w_{ist}-p_{it})(2,4)$ and the consumer price index, $p_{st}^c(2,4)$, where x(a,b) denotes x_{t-a}, x_{t-a-1}, .., x_{t-b}.

Table 2
GMM Estimates of the Production Function
INVESTIGATING RESTRICTIONS

	The Relative Wage			**The Consumer Wage**		
	(1) Unrestricted	**(2) Impose CRS and $\mu=\alpha$**	**(3) Impose CRS and $\mu=1$**	**(1) Unrestricted**	**(2) Impose CRS and $\mu=\alpha$**	**(3) Impose CRS and $\mu=1$**
employment	0.42 (2.4)	0.62 (8.2)	**0.57 (7.2)**	0.45 (2.6)	0.61 (7.4)	**0.58 (6.9)**
capital stock	0.43 (5.4)			0.42 (4.9)		
hours	0.84 (3.1)			0.82 (2.8)		
wage	0.55 (2.1)	0.54 (2.1)	**0.50 (2.0)**	0.52 (2.1)	0.48 (2.0)	**0.47 (2.0)**
Wald (θ_t)	26/8 (0.0)	27.7/8 (0.0)	**23.3/8 (0.0)**	22.9/8 (0.0)	21/8 (0.0)	**20.8/8 (0.0)**
Wald (RHS)	103/4 (0.0)	70.3/2 (0.0)	**52/2 (0.0)**	107/4 (0.0)	55/3 (0.0)	**47/2 (0.0)**
σ^2 (levels)	0.133	0.126	**0.135**	0.131	0.125	**0.133**
serial corr(1)	-6.70 (0.0)	-6.94 (0.0)	**-6.88 (0.0)**	-6.72 (0.0)	-7.00 (0.0)	**-6.91 (0.0)**
serial corr(2)	0.61 (0.54)	0.50 (0.62)	**0.79 (0.43)**	0.61 (0.54)	0.46 (0.65)	**0.80 (0.42)**
Sargan (χ^2)	105/99 (0.31)	106/101 (0.34)	**106/101 (0.36)**	91/86 (0.33)	92/88 (0.36)	**90/88 (0.43)**
$\lvert t \rvert$ ($\alpha=\gamma$)	**0.39**	**0.29**	**0.28**	**0.22**	**0.54**	**0.48**

Notes: See notes to Table 2. *NT*=2113. The *dependent variable* is y_{ist} in col.1 & 4, $(y_{ist}-k_{ist})$ in col.2 & 5, and $(y_{ist}-k_{ist}-h_{ist})$ in col.3 & 6. *Wald tests of the restrictions* are as follows. In the relative wage model, CRS (1.0), $\mu=\alpha$ (1.68) and $\mu=1$ (0.04). In the consumer wage model, CRS (0.94), $\mu=\alpha$ (1.36) and $\mu=1$ (0.22). *Instruments* common to every column are $n_{ist}(2,4)$, $k_{ist}(2,4)$, $h_{ist}(2,4)$, $p_{st}^{c}(2,4)$, and time dummies. Additional instruments are $(w_{ist}-p_{it})(2,4)$ and $(w_{st}-p_{it})(2,4)$ in col. 1-3, and $(w_{ist}-p^{c}_{st})(2,4)$ in col. 4-6.

Table 3

Profit Loss Incurred by the Wage Deviating from the Efficiency Wage

(1) **Curvature of Effort Function [δ]**	(2) **Wage Deviation=1%**	(3) **Wage Deviation=2%**	(4) **Wage Deviation=5%**	(5) **Wage Deviation=10%**
0.1	0.006	0.024	0.149	0.597
0.2	0.005	0.021	0.133	0.530
0.3	0.005	0.019	0.116	0.464
0.4	0.004	0.016	0.099	0.398
0.5	0.003	0.013	0.083	0.331
0.6	0.003	0.011	0.066	0.265
0.7	0.002	0.008	0.050	0.199

Notes: Columns 2-5 (in %) are derived using $\Box\Box/(\Box(\Box^{*}))= -[\alpha(\delta - 1)/2(1 - \alpha)](\Delta\omega/\omega^{*})^{2}$, where $\alpha=0.57$, $0<\delta<(\gamma/\alpha)$, and $(\Delta\omega/\omega^{*})^{2}$ is assumed to take the values 1%, 2%, 5% and 10% respectively. These data are plotted in Figure 1.

Table 4

Profit Loss Incurred by the Wage Deviating from the Efficiency Wage

	The Case of the Relative Wage		**The Case of the Consumer Wage**	
(1)	(2)	(3)	(4)	(5)
Curvature of Effort Function [δ]	**Wage Deviation [$\Delta\omega/\omega^*$]**	**Profit Loss [□□/□(□*)]**	**Wage Deviation [$\Delta\omega/\omega^*$]**	**Profit Loss [□□/□(□*)]**
0.10	15.8	1.49	26.7	4.43
0.20	18.1	1.74	31.1	5.33
0.30	21.3	2.10	37.2	6.67
0.40	25.7	2.63	46.2	8.85
0.50	32.6	3.51	61.1	12.9
0.55	37.5	4.20	73.3	16.7
0.60	44.3	5.20	90.2	22.5
0.65	54.1	6.78	118.3	33.8

Notes: In columns 2-3, [α=0.57, γ=0.50], in columns 4-5, [α=0.58, γ=0.47]. Figures 2a and 2b plot the data in columns 2-3 and 4-5 respectively. In column 1, $0<\delta<(\gamma/\alpha)$. Columns 2-5 are derived using $\Delta\omega/\omega^* \approx (\alpha - \gamma)/(\gamma - \alpha\delta)$ and □□/□(□*) $= - [\alpha (\delta - 1) / 2(1 - \alpha)] (\Delta\omega/\omega^*)^2$. These are presented in percentages. Refer to Section 9 for details. Note that, for alternative values of δ, the wage deviation is *implied* by our estimates of α and γ.