Corrigendum to "Who Profits from Patents?"

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Page 1397 of our article (Kline et al. 2019) contains an error in converting a reduced form retention elasticity to a structural parameter η governing the shape of the wage offer distribution. We are very grateful to Mauricio Caceres Bravo of Brown University for bringing this error to our attention. In what follows, we correct this error and discuss its implications for the calibration exercise in Section IX of our paper.

The error

As described on page 1396 of the paper, the relation between the retention elasticity and η can be written:

$$\underbrace{\frac{d\ln G\left(w_j^I\right)}{d\ln w_j^I}}_{\text{retention elasticity}} = \eta\frac{w_j^I/w_j^m}{w_j^I/w_j^m-1},$$

where w_j^I/w_j^m is the incumbent wage premium. Based on the estimates in Table IX of our paper we set $\frac{d\ln G\left(w_j^I\right)}{d\ln w_j^I} = 1.22$. The ratio w_j^I/w_j^m was calibrated to 1.81 based on the means reported in Table II. Hence, we should have inferred that $\eta = 1.22 \times \frac{0.81}{1.81} \approx 0.55$. Instead, page 1397 erroneously computes η as $1.22 \times \frac{1.81}{0.81} \approx 2.7$. This same error was made in the sensitivity analysis described in Table D.10 of the paper's Online Appendix.

Downstream implications

Correcting the error in our calculations implies that workers capture a fraction $\theta = \frac{.53}{1+.53} \approx 0.35$ of their replacement costs in wages rather than the 73% figure reported in the paper. Conversely, the marginal worker's replacement costs become $\frac{c'(N_j/I_j)}{w_j^m} = \frac{w_j^I/w_j^m-1}{\theta} = \frac{.80}{.35} \approx 2.29$ times the annual earnings of a new hire, which is more than twice the 1.1 figure reported in the paper. Finally, using the reduced form pass-through estimate of $\pi = 0.61$ reported in Table VIII of the paper, the implied product demand elasticity becomes $\varepsilon = \frac{\theta}{\theta-\pi} \approx -1.37$, which is outside the logically admissible range. Logical inconsistencies of this nature also arose in the sensitivity analysis of our original calibration exercise, which led us to note that "our model can be used to rule out some configurations of parameters falling within our confidence intervals" (Kline et al. 2019, p. 1397).

Alternative calibrations

Though correcting our error yields a logically inadmissible product demand elasticity, several plausible calibrations of the model remain consistent with our reduced form parameter estimates. Table 1 reports the implications of fixing the retention elasticity and the reduced form pass-through share to different values lying within the estimated confidence intervals for those parameters. As in the sensitivity analysis of Online Appendix Table D.10, the parameters we consider lie within a standard error of their point estimates.

The second column of Table 1 reveals that lowering π by a standard error restores the logical validity of the downstream parameter values. As discussed in the paper, our estimates of π were higher than those found in much of the recent literature reviewed by Card et al. (2018). Moreover, we found lower values of passthrough for non-inventors and workers who were not top earners. Consequently, we find it quite plausible that the relevant value of π lies in the lower half of our confidence interval. The third column of Table 1 shows that additionally raising the retention elasticity by a standard error lowers the implied marginal replacement costs while also reducing the elasticity of product demand. Notably, a retention elasticity of 1.80 is very close to the midpoint of our Anderson-Rubin confidence interval for this parameter (reported in column 1 of Table IX), which has a long right tail. Finally, one might be concerned that the earnings differences reported in Table II of the paper overstate the true incumbent wage premium, as less skilled workers may be more likely to separate from the firm. In the fourth column of Table 1 we fix the elasticity of demand to 6 (which was the value discussed in the paper and considered in our original sensitivity analysis). Fixing $\varepsilon = 6$ implies an incumbent wage premium of only 49%, while the marginal replacement cost of an incumbent falls to 1.32, which is quite near the 1.1 figure originally reported in the paper.

Table 1: Alternative Calibrations

Parameter	Baseline	+ Lower pass-through share	+ Higher retention elasticity	+ Calibrated demand elasticity
	(1)	(2)	(3)	(4)
$\frac{d \ln G\left(w_j^I\right)}{d \ln w_j^I}$	**1.22**	**1.22**	**1.80**	**1.80**
w_j^I / w_j^m	**1.81**	**1.81**	**1.81**	1.49
π	**0.61**	**0.31**	**0.31**	**0.31**
η	0.55	0.55	0.81	0.59
θ	0.35	0.35	0.45	0.37
$c'\left(H_j / I_j\right) / w_j^m$	2.29	2.29	1.82	1.32
ε	-1.37	8.18	3.28	**6.00**

Note: Externally calibrated parameter values (highlighted in bold) are used to determine the remaining parameters of the system. "Lower pass-through share" reduces our pass-through parameter π by a standard deviation relative to the point estimate in Table VIII of the paper. "Higher retention elasticity" raises our retention elasticity parameter $\frac{d \ln G\left(w_j^I\right)}{d \ln w_j^I}$ by a standard error relative to the point estimate in Table IX. "Calibrated demand elasticity" calibrates the elasticity of demand to 6 as in panel B of Table D.10 of the paper's Online Appendix.

References

Card, David, Ana Rute Cardoso, Joerg Heining, and Patrick Kline (Dec. 2018). "Firms and Labor Market Inequality: Evidence and Some Theory". In: *Journal of Labor Economics* 36.S1, S13–S70. ISSN: 0734-306X. DOI: 10.1086/694153.

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