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Technical Appendix to

INFORMATION CASCADES AND REVOLUTIONARY REGIME TRANSITIONS

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Appendix

Proof of Lemma 1. (*a*) $[\partial v(y_r,\tau)]/\partial\tau<0$. We have $v(y_r,\tau) = (1-\tau)y_r+[\tau-C(\tau)]y$, so differentiating with respect to τ, we get $[\partial v(y_r,\tau)]/\partial\tau = [1-C'(\tau)]y-y_r$. Now $C'(\tau) > 0$ and $y < y_r$ and the result follows as required. (*b*) $[\partial v(y_p,\tau)]/\partial\tau \lesseqgtr 0$ as $\tau \lesseqgtr \tau^d$. Now differentiating $v(y_p,\tau) = (1-\tau)y_p+[\tau-C(\tau)]y$ gives $[\partial v(y_r,\tau)]/\partial\tau = [1-C'(\tau)]y-y_p$. Since $C'(0) = 0$ and $y > y_p$, this is positive for $\tau = 0$. Also, $C'(1) = 1$, so the derivative is negative for $\tau = 1$. Since the derivative is decreasing in τ and continuous there must be a value of $\tau(\tau^d)$ such that $[1-C'(\tau^d)]y-y_p = 0$.

Proof of Proposition 3. Suppose contrary to the proposition that taxes were fully revealing of the state, then the rich set taxes that satisfy the no-revolution conditions $(1-\tau_r^j)y_p + [\tau_r^j - C(\tau_r^j)]y = y(1-\mu^j)(N/P)j = h, l$, but since $\mu^h\neq\mu^l$ then $\tau_r^h \neq \tau_r^l$, and by Lemma 1, the rich set the lower tax rate for all μ^j contradicting taxes being revealing.

Proof of Corollary 4. Follows immediately from Proposition 3.

Proof of Lemma 5. This follows immediately from noting that:

$$\rho_k(\mu^h \mid s_k^h \cap S_{-k}^h) = \frac{\rho(s_k^h \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h)}{\rho(s_k^h \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h) + \rho(s_k^h \mid \mu^l)\rho(s^h \mid \mu^l)^{k-1}\rho(\mu^l)},$$

is monotonically increasing in k hence if $\rho_1(\mu^h \mid s_1^h \cap S_{-1}^h) > \rho^*$ so too must $\rho_k(\mu^h \mid s_k^h \cap S_{-k}^h) > \rho^* \forall k > 1$.

Proof of Proposition 6. We wish to show $\exists$ an $\overline{p}$ such that if all $p \leq \overline{p}$ chose $a = a^v$, then all $p > \overline{p}$ will choose $a = a^v$ irrespective of their idiosyncratic signals. Consider any $\rho^* \in [0, 1)$ if we can show $\lim_{k\to\infty} \rho_k(\mu_k^h \mid s_k^l \cap S_{-k}^h) \to 1$, then $\exists$ a k such that $\rho_k(\mu_k^h \mid s_k^l \cap S_{-k}^h) > \rho^*$ any $\rho^* \in [0, 1)$ and by Lemma 5 $\exists$ a $\overline{p}$ such that $\rho_{\overline{p}+1}(\mu^h_{\overline{p}+1} \mid s^l_{\overline{p}+1} \cap S^h_{-\overline{p}+1}) \geq \rho^*$. We have:

$$\begin{aligned}\rho_k(\mu^h \mid s_k^l \cap S_{-k}^h) &= \frac{\rho(s_k^l \cap S_{-k}^h \mid \mu^h)\rho(\mu^h)}{\rho(s_k^l \cap S_{-k}^h \mid \mu^h)\rho(\mu^h) + \rho(s_k^l \cap S_{-k}^h \mid \mu^l)\rho(\mu^l)}\\ &= \frac{\rho(s_k^l \mid \mu^h)\rho(S_{-k}^h \mid \mu^h)\rho(\mu^h)}{\rho(s_k^l \mid \mu^h)\rho(S_{-k}^h \mid \mu^h)\rho(\mu^h) + \rho(s_k^l \mid \mu^l)\rho(S_{-k}^h \mid \mu^l)\rho(\mu^l)},\\ &= \frac{\rho(s_k^l \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h)}{\rho(s_k^l \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h) + \rho(s_k^l \mid \mu^l)\rho(s^h \mid \mu^l)^{k-1}\rho(\mu^l)}\end{aligned}$$

which may be rewritten as:

$$\frac{1}{\rho_k(\mu^h \mid s_k^l \cap S_{-k}^h)} = 1 + \frac{\rho(s_k^l \mid \mu^l)\rho(s^h \mid \mu^l)^{k-1}\rho(\mu^l)}{\rho(s_k^l \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h)},$$

now

$$\lim_{k\to\infty}\left[\frac{1}{\rho_k(\mu^h \mid s_k^l \cap S_{-k}^h)}\right] = \lim_{k\to\infty}\left[1 + \frac{\rho(s_k^l \mid \mu^l)\rho(s^h \mid \mu^l)^{k-1}\rho(\mu^l)}{\rho(s_k^l \mid \mu^h)\rho(s^h \mid \mu^h)^{k-1}\rho(\mu^h)}\right] = 1,$$

as required. Now, to find $\overline{p}$ let $\rho^* = \rho_{\overline{p}+1}(\mu^h_{\overline{p}+1} \mid s^l_{\overline{p}+1} \cap S^h_{-\overline{p}+1})$ solve and rearrange to give:

$$\left(\frac{1-\rho^*}{\rho^*}\right)\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right] = \left[\frac{\rho(s^h \mid \mu^l)}{\rho(s^h \mid \mu^h)}\right]^{\overline{p}},$$

taking logs and rearranging gives:

$$\overline{p} = \frac{\ln\left\{\left(\frac{1-\rho^*}{\rho^*}\right)\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\right]\left[\frac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]\right\}}{\ln\left[\frac{\rho(s^h \mid \mu^l)}{\rho(s^h \mid \mu^h)}\right]}.$$

$\overline{p}$ is then the integer part and is as in the text.

Proof of Proposition 7. The proof of Proposition 7 involves demonstrating that Figure 4 is an accurate representation of the equilibrium determination of ρ^* and $\overline{p}$. We need to derive the properties of the 'political protest' and 'cascade conditions'. For algebraic convenience we show this for the case $\mu^l = 1$, the proof for the general case $\mu^l \leq 1$ is available on request.

$$\rho^* = \frac{\frac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h)\rho(s^h \mid \mu^h)^{\overline{p}}}{1 - \delta\sum_{j=h,l}\rho(\mu^j)\left[1 - \rho(s^h \mid \mu^j)^{\overline{p}}\right]},$$

and

$$\rho^* = \frac{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]}{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right] + \left[\frac{\rho(s^h \mid \mu^l)}{\rho(s^h \mid \mu^h)}\right]^{\overline{p}}}.$$

The political protest condition given above is expression (17) from the text rewritten using the details provided in footnote (13), then applying $\mu^l = 1$.

Taking limits of these expressions as $\overline{p}\to 0$ and $\overline{p}\to\infty$, we get:

$$\lim_{\overline{p}\to 0}\left\{\frac{\frac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h)\rho(s^h \mid \mu^h)^{\overline{p}}}{1 - \delta\sum_{k=h,l}\rho(\mu^k)\left[1 - \rho(s^h \mid \mu^k)^{\overline{p}}\right]}\right\} \to \frac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h),$$

$$\lim_{\overline{p}\to \infty}\left\{\frac{\frac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h)\rho(s^h \mid \mu^h)^{\overline{p}}}{1 - \delta\sum_{k=h,l}\rho(\mu^k)\left[1 - \rho(s^h \mid \mu^k)^{\overline{p}}\right]}\right\} \to \frac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)(1-\delta)},$$

and

$$\lim_{\bar{p}\to 0}\left\{\frac{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]}{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]+\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]^{\bar{p}}}\right\}\to\frac{\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}}{1+\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}},$$

$$\lim_{\bar{p}\to \infty}\left\{\frac{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]}{\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]+\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]^{\bar{p}}}\right\}\to 1.$$

Next, differentiating the two expressions with respect to ρ^* and $\bar{p}$, we get:

$$\begin{aligned}\left.\frac{\mathrm{d}\rho^*}{\mathrm{d}\bar{p}}\right|_{\text{protest}} &= \frac{\delta\rho(\mu^h)\rho(s^h\mid\mu^h)^{\bar{p}}\ln\rho(s^h\mid\mu^h)\left\{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\bar{p}}\right]\right\}}{\left\{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\bar{p}}\right]\right\}^2} \\ &\quad+\frac{\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\bar{p}}\right]\ln\rho(s^h\mid\mu^k)\left[\frac{v(y_p,\tau_r)}{V(y_p,0,\mu^h)}+\delta\rho(\mu^h)\rho(s^h\mid\mu^h)^{\bar{p}}\right]}{\left\{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\bar{p}}\right]\right\}^2} \\ &= \frac{(1-\rho^*)\delta\rho(\mu^h)\rho(s^h\mid\mu^h)^{\bar{p}}\ln\rho(s^h\mid\mu^h)-\rho^*\delta\rho(\mu^l)\rho(s^h\mid\mu^l)^{\bar{p}}\ln\rho(s^h\mid\mu^l)}{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\bar{p}}\right]}\gtrless 0,\end{aligned}$$

and

$$\left.\frac{\mathrm{d}\rho^*}{\mathrm{d}\bar{p}}\right|_{\text{cascade}}=\frac{-\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]^{\bar{p}}\ln\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]}{\left\{\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]^{\bar{p}}+\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]\right\}^2}>0.$$

Now, as $\bar{p}\to 0$ and $\bar{p}\to\infty$, we get:

$$\lim_{\bar{p}\to 0}\left(\left.\frac{\mathrm{d}\rho^*}{\mathrm{d}\bar{p}}\right|_{\text{protest}}\right)\to(1-\rho^*)\delta\rho(\mu^h)\ln\rho(s^h\mid\mu^h)-\rho^*\delta\rho(\mu^l)\ln\rho(s^h\mid\mu^l),$$

$$\lim_{\bar{p}\to \infty}\left(\left.\frac{\mathrm{d}\rho^*}{\mathrm{d}\bar{p}}\right|_{\text{protest}}\right)\to 0,$$

and

$$\lim_{\bar{p}\to 0}\left(\left.\frac{\mathrm{d}\rho^*}{\mathrm{d}\bar{p}}\right|_{\text{cascade}}\right)\to-\frac{\ln\left[\frac{\rho(s^h\mid\mu^l)}{\rho(s^h\mid\mu^h)}\right]\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]}{\left\{1+\left[\frac{\rho(\mu^h)}{\rho(\mu^l)}\frac{\rho(s^l\mid\mu^h)}{\rho(s^l\mid\mu^l)}\right]\right\}^2}>0,$$

$$\lim_{\overline{p}\to\infty}\left(\frac{\mathrm{d}\rho^*}{\mathrm{d}\overline{p}}\bigg|_{\text{cascade}}\right)\to 0.$$

Further note that the cascade condition is invariant with respect to $v(y_p,\tau_r), V(y_p,0,\mu^h)$ and δ, whereas the protest condition has the properties:

$$\frac{\mathrm{d}\rho^*}{\mathrm{d}v(y_p,\tau_r)}\bigg|_{\overline{p}}=\frac{\dfrac{1}{V(y_p,0,\mu^h)}}{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\overline{p}}\right]}>0,$$

$$\frac{\mathrm{d}\rho^*}{\mathrm{d}V(y_p,0,\mu^h)}\bigg|_{\overline{p}}=\frac{-\dfrac{v(y_p,\tau_r)}{\left[V(y_p,0,\mu^h)\right]^2}}{1-\delta\sum_{k=h,l}\rho(\mu^k)\left[1-\rho(s^h\mid\mu^k)^{\overline{p}}\right]}<0,$$

which immediately leads to the conclusions reported in Proposition 7 when $\mathrm{d}\rho^*/\mathrm{d}\overline{p}|_{\text{protest}}<0$ and also gives these results when $\mathrm{d}\rho^*/\mathrm{d}\overline{p}|_{\text{protest}}>\mathrm{d}\rho^*/\mathrm{d}\overline{p}|_{\text{cascade}}>0$ which are easily seen to be necessary conditions for stability of the equilibrium.

Proof of Proposition 8. To demonstrate this proposition, we need to show there exist parameter values such that $V(y_r,\tau_p^d)>\max\{V[y_r,\tau^*,\mu^h,\rho(\mu^h)],V(y_r,\overline{\tau},\mu^h,1)\}$, $V[y_r,\tau^*,\mu^h,\rho(\mu^h)]>\max[V(y_r,\tau_p^d),V(y_r,\overline{\tau},\mu^h,1)]$ and $V(y_r,\overline{\tau},\mu^h,1)>\max\{V(y_r,\tau_p^d),V[y_r,\tau^*,\mu^h,\rho(\mu^j)]\}$ can each hold. Note first that $\tau_p^d\geq\overline{\tau}>\tau^*\Rightarrow v(y_r,\tau^*)>v(y_r,\overline{\tau})\geq v(y_r,\tau_p^d)$.

1. Conditions for the case $V[y_r,\tau^*,\mu^h,\rho(\mu^h)]>\max[V(y_r,\tau_p^d),V(y_r,\overline{\tau},\mu^h,1)]$. Note first that $V(y_r,\overline{\tau},\mu^h,1)>V(y_r,\tau_p^d)$ since the latter involves maximal transfers from rich to poor. Hence, the case can be established if $V(y_r\mid\tau^*,\ \mu^h,\ \rho(\mu^h)>V(y_r,\ \overline{\tau},\ \mu^h,\ 1)$. We have $V(y_r,\ \overline{\tau},\ \mu^h,\ 1)=$ [2] $[v(y_r,\ \overline{\tau})]/1-\delta$ and $\overline{\tau}$ satisfies:

$$\frac{(1-\overline{\tau})y_p+[\overline{\tau}-C(\overline{\tau})]y}{1-\delta}=\frac{y(1-\mu^h)N}{(1-\delta)P}.$$

Now,

$$\begin{aligned}
&V[y_r,\tau^*,\mu^h,\rho(\mu^h)]\\
&\quad=[1-\rho(s^h\mid\mu^h)^{\overline{p}}]\big(v(y_r,\tau^*)+\delta\{\rho(\mu^h)V[y_r,\tau^*,\mu^h,\rho(\mu^h)]+\rho(\mu^l)V[y_r\mid\tau^*,\mu^l,\rho(\mu^h)]\}\big)\\
&\quad=\frac{[1-\rho(s^h\mid\mu^h)^{\overline{p}}]\big(v(y_r,\tau^*)+\delta\{\rho(\mu^l)V[y_r\mid\tau^*,\mu^l,\rho(\mu^h)]\}\big)}{1-\left[1-\rho(s^h\mid\mu^h)^{\overline{p}}\right]\delta\rho(\mu^h)},
\end{aligned}$$

and similarly,

$$V[y_r,\tau^*,\mu^l,\rho(\mu^h)]=\frac{[1-\rho(s^h\mid\mu^l)^{\overline{p}}]\big(v(y_r,\tau^*)+\delta\{\rho(\mu^h)V[y_r,\tau^*,\mu^h,\rho(\mu^h)]\}\big)}{1-[1-\rho(s^h\mid\mu^l)^{\overline{p}}]\delta\rho(\mu^l)}$$

$$=\frac{\left[1-\rho(s^h\mid\mu^h)^{\overline{p}-1}\right]\left\{v(y_r,\tau^*)+\delta\left[\rho(\mu^l)\dfrac{\left[1-\rho(s^h\mid\mu^l)^{\overline{p}}\right]\big(v(y_r,\tau^*)+\delta\{\rho(\mu^h)V[y_r,\tau^*,\mu^h,\rho(\mu^h)]\}\big)}{1-\left[1-\rho(s^h\mid\mu^l)^{\overline{p}}\right]\delta\rho(\mu^l)}\right]\right\}}{1-\left[1-\rho(s^h\mid\mu^h)^{\overline{p}}\right]\delta\rho(\mu^h)},$$

substituting in and rearranging gives:

$$
\begin{aligned}
&V[y_r, \tau^*, \mu^h, \rho(\mu^h)] \\
&= \left[\frac{\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\left(1+\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h \mid \mu^{l\overline{p}}\right]}{1-\left[1-\rho(s^h \mid \mu^l)^{\overline{p}-1}\right]\delta\rho(\mu^l)}\right\}\right)}{1-\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\delta\rho(\mu^h)-\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\delta\rho(\mu^h)}{1-\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\delta\rho(\mu^l)}\right\}} \right] v(y_r, \tau^*).
\end{aligned}
$$

Hence, since $v(y_r,\tau^*)>v(y_r,\overline{\tau})$ the condition holds if:

$$
\left[\frac{\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\left(1+\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]}{1-\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\delta\rho(\mu^l)}\right\}\right)}{1-\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\delta\rho(\mu^h)-\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\delta\rho(\mu^h)}{1-\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\delta\rho(\mu^l)}\right\}} \right] \to \frac{1}{1-\delta},
$$

which is clearly satisfied if $\overline{p} \to \infty$. To show that this is possible, take the 'political protest' and 'cascade conditions'.

$$
\rho^* = \frac{\dfrac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h)\rho(s^h \mid \mu^h)^{\overline{p}}}{1-\delta\sum_{k=h,l}\rho(\mu^k)[1-\rho(s^h \mid \mu^k)^{\overline{p}}]},
$$

and

$$
\rho^* = \frac{\left[\dfrac{\rho(\mu^h)}{\rho(\mu^l)}\dfrac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]}{\left[\dfrac{\rho(\mu^h)}{\rho(\mu^l)}\dfrac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]+\left[\dfrac{\rho(s^h \mid \mu^l)}{\rho(s^h \mid \mu^h)}\right]^{\overline{p}}},
$$

equate them to give:

$$
\frac{\left[\dfrac{\rho(\mu^h)}{\rho(\mu^l)}\dfrac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]}{\left[\dfrac{\rho(\mu^h)}{\rho(\mu^l)}\dfrac{\rho(s^l \mid \mu^h)}{\rho(s^l \mid \mu^l)}\right]+\left[\dfrac{\rho(s^h \mid \mu^l)}{\rho(s^h \mid \mu^h)}\right]^{\overline{p}}} = \frac{\dfrac{v(y_p, \tau_r)}{V(y_p, 0, \mu^h)} + \delta\rho(\mu^h)\rho(s^h \mid \mu^h)^{\overline{p}}}{1-\delta\left\{\rho(\mu^h)\left[1-\rho(s^h \mid \mu^h)^{\overline{p}}\right]+\rho(\mu^l)\left[1-\rho(s^h \mid \mu^l)^{\overline{p}}\right]\right\}}.
$$

Now, let $[v(y_p,\tau_r)]/1-\delta = V(y_p,0,\mu^h)$ and it can be verified that the solution to the condition is $\overline{p} = \infty$.

2. Conditions for the case $V(y_r, \overline{\tau}, \mu^h, 1) > \max\left\{V(y_r, \tau_p^d), V[y_r, \tau^*, \mu^h, \rho(\mu^h)]\right\}$.
We have:

$$
\begin{aligned}
&V[y_r,\tau^*,\mu^h,\rho(\mu^h)]\\
&=\left[\frac{[1-\rho(s^h\mid\mu^h)^{\bar{p}}]\left(1+\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h\mid\mu^l)^{\bar{p}}\right]}{1-[1-\rho(s^h\mid\mu^l)^{\bar{p}-1}]\delta\rho(\mu^l)}\right\}\right)}{1-[1-\rho(s^h\mid\mu^h)^{\bar{p}}]\delta\rho[\mu^h)-(1-\rho(s^h\mid\mu^h)^{\bar{p}}]\delta\left\{\rho(\mu^l)\dfrac{\left[1-\rho(s^h\mid\mu^l)^{\bar{p}}\right]\delta\rho(\mu^h)}{1-\left[1-\rho(s^h\mid\mu^l)^{\bar{p}}\right]\delta\rho(\mu^l)}\right\}}\right]v(y_r,\tau^*).
\end{aligned}
$$

Clearly, if $\rho(s^h \mid \mu^h)\to 1 \Rightarrow V[y_r, \tau^*, \mu^h, \rho(\mu^h)]\to 0$, now $V(y_r,\bar{\tau},\mu^h,1)\geq V(y_r,\tau_p^d)$ since τ_p^d involve the maximal transfer from rich to poor. Hence, if $V(y_r, \bar{\tau}, \mu^h, 1) > 0$, the result follows. We have $V(y_r,\bar{\tau},\mu^h,1)=v(y_r,\bar{\tau})/1-\delta$ and $\bar{\tau}$ satisfies:

$$\frac{F(y_p\mid\bar{\tau})}{1-\delta}=\frac{(1-\bar{\tau})y_p+[\bar{\tau}-C(\bar{\tau})]y}{1-\delta}=\frac{y(1-\mu^h)N}{(1-\delta)P}>0.$$

Now,

$$y_r>y_p\Rightarrow\frac{(1-\bar{\tau})y_r+[\bar{\tau}-C(\bar{\tau})]y}{1-\delta}>\frac{(1-\bar{\tau})y_p+[\bar{\tau}-C(\bar{\tau})]y}{1-\delta},$$

and the result follows.

3. Conditions for the case $V(y_r,\tau_p^d)>\max\left\{V[y_r,\tau^*,\mu^h,\rho(\mu^h]),V(y_r,\bar{\tau},\mu^h,1)\right\}$.

Again let $\rho(s^h \mid \mu^h)\to 1 \Rightarrow V[y_r, \tau^*, \mu^h, \rho(\mu^h)]\to 0$. $\rho(s^h \mid \mu^h)\to 1\Rightarrow V[y_r, \tau^*, \mu^h, \rho(\mu^h)]\to 0$. Now, note that

$$V(y_r,\tau_p^d)=\frac{(1-\tau_p^d)y_r+[\tau_p^d-C(\tau_p^d)]y}{1-\delta},$$

and that

$$V(y_p,\tau_p^d)=\frac{(1-\tau_p^d)y_p+[\tau_p^d-C(\tau_p^d)]y}{1-\delta},$$

now in democracy the poor set taxes to maximise $V(y_p,\tau_p^d)$ and note that evaluated at $\tau=0$ we have $V(y_p,0)=y_p/1-\delta>0$ hence, $V(y_p,\tau_p^d)>V(y_p,0)>0$, now

$$y_r>y_p\Rightarrow\frac{(1-\tau_p^d)y_r+[\tau_p^d-C(\tau_p^d)]y}{1-\delta}>\frac{(1-\tau_p^d)y_p+[\tau_p^d-C(\tau_p^d)]y}{1-\delta},$$

so $V(y_p,\tau_p^d)>V[y_r,\tau^*,\mu^h,\rho(\mu^h)]$. Finally, suppose

$$\frac{(1-\bar{\tau})y_p+[\bar{\tau}-C(\bar{\tau})]y}{1-\delta}<\frac{y(1-\mu^h)N}{(1-\delta)P},$$

then $\bar{\tau}$ cannot prevent revolution, and so democracy must occur.

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USING E-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

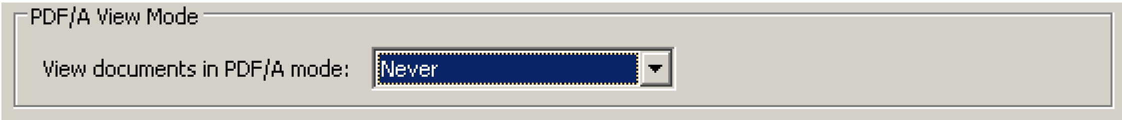
Required Software

Adobe Acrobat Professional or Acrobat Reader (version 7.0 or above) is required to e-annotate PDFs. Acrobat 8 Reader is a free download: http://www.adobe.com/products/acrobat/readstep2.html

Once you have Acrobat Reader 8 on your PC and open the proof, you will see the Commenting Toolbar (if it does not appear automatically go to Tools>Commenting>Commenting Toolbar). The Commenting Toolbar looks like this:

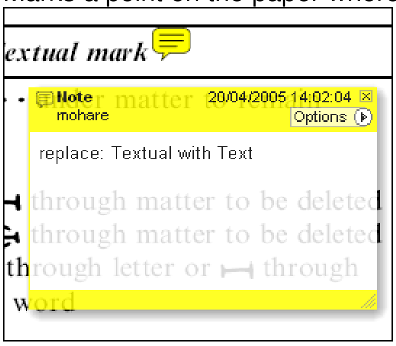
If you experience problems annotating files in Adobe Acrobat Reader 9 then you may need to change a preference setting in order to edit.

In the “Documents” category under “Edit – Preferences”, please select the category ‘Documents’ and change the setting “PDF/A mode:” to “Never”.



Note Tool — For making notes at specific points in the text

Marks a point on the paper where a note or question needs to be addressed.

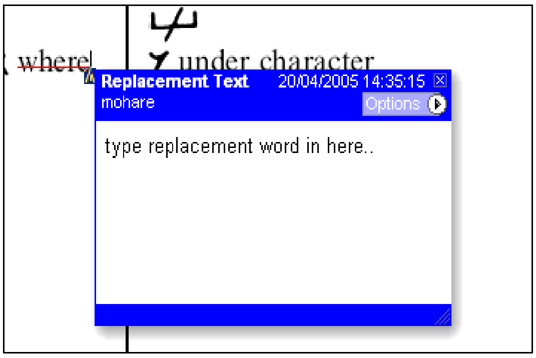


How to use it:

1. Right click into area of either inserted text or relevance to note
2. Select Add Note and a yellow speech bubble symbol and text box will appear
3. Type comment into the text box
4. Click the X in the top right hand corner of the note box to close.

Replacement text tool — For deleting one word/section of text and replacing it

Strikes red line through text and opens up a replacement text box.

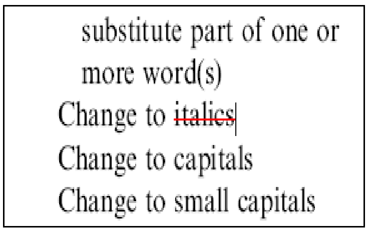


How to use it:

1. Select cursor from toolbar
2. Highlight word or sentence
3. Right click
4. Select Replace Text (Comment) option
5. Type replacement text in blue box
6. Click outside of the blue box to close

Cross out text tool — For deleting text when there is nothing to replace selection

Strikes through text in a red line.



How to use it:

1. Select cursor from toolbar
2. Highlight word or sentence
3. Right click
4. Select Cross Out Text

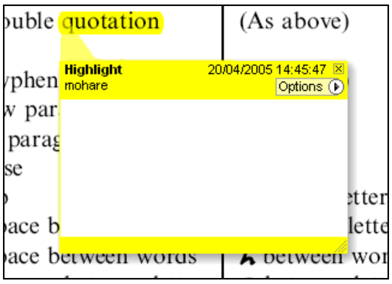
Approved tool — For approving a proof and that no corrections at all are required.

How to use it:

1. Click on the Stamp Tool in the toolbar
2. Select the Approved rubber stamp from the 'standard business' selection
3. Click on the text where you want to rubber stamp to appear (usually first page)

Highlight tool — For highlighting selection that should be changed to bold or italic.

Highlights text in yellow and opens up a text box.

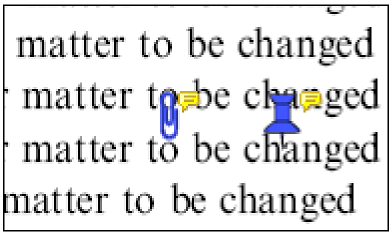


How to use it:

1. Select Highlighter Tool from the commenting toolbar
2. Highlight the desired text
3. Add a note detailing the required change

Attach File Tool — For inserting large amounts of text or replacement figures as a files.

Inserts symbol and speech bubble where a file has been inserted.

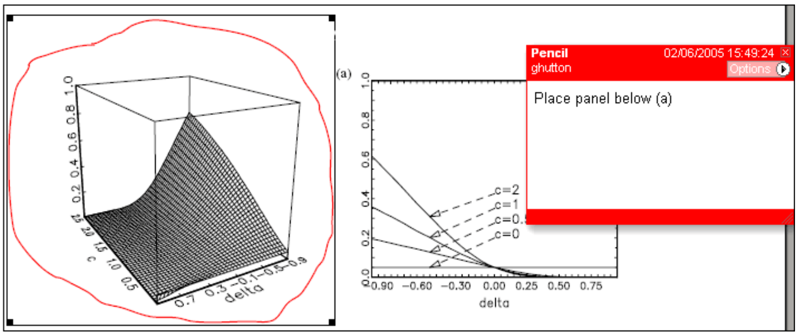


How to use it:

1. Click on paperclip icon in the commenting toolbar
2. Click where you want to insert the attachment
3. Select the saved file from your PC/network
4. Select appearance of icon (paperclip, graph, attachment or tag) and close

Pencil tool — For circling parts of figures or making freeform marks

Creates freeform shapes with a pencil tool. Particularly with graphics within the proof it may be useful to use the Drawing Markups toolbar. These tools allow you to draw circles, lines and comment on these marks.



How to use it:

1. Select Tools > Drawing Markups > Pencil Tool
2. Draw with the cursor
3. Multiple pieces of pencil annotation can be grouped together
4. Once finished, move the cursor over the shape until an arrowhead appears and right click
5. Select Open Pop-Up Note and type in a details of required change
6. Click the X in the top right hand corner of the note box to close.

Help

For further information on how to annotate proofs click on the Help button to activate a list of instructions: