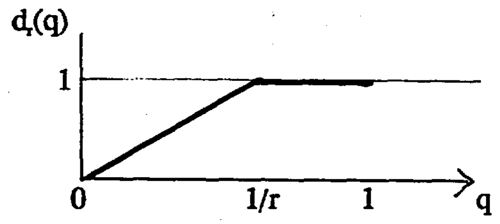

Figure A2: Detection probability function $d_r(q)$, when $r > 1$

If $r \leq 1$ then $d_r(q) = rq$ as before. If $r > 1$, than $d_r(q) = rq$ if $0 < q < 1/r$ and $d_r(q) = 1$ if $1/r < q < 1$. The iteration equation (A1) becomes

$$V_{n,k} = p\,[d_r(q)(-K) + (1-d_r(q))(q) + V_{n-1,k-1}] + (1-p)[q+V_{n-1,k}] \quad \text{(A4)}$$

As in the Theorem, the optimal cheating level $q = q^*$ must make the partial derivative of $V_{n,k}$ with respect to p vanish. But the partial derivative of $V_{n,k}$ with respect to p is

$$V_{n-1,k-1} - V_{n-1,k} - (K+q)d_r(q)$$

It follows that $q^* < 1$ if

$$\frac{V_{n-1,k-1} - V_{n-1,k}}{K + 1/r} < 1,$$

which is certainly true if $V_{n-1,k-1} - V_{n-1,k} < K$. In practice, this sufficient condition was found to be adequate; as long as the value of K was large enough that for all n and k, the expected value difference $V_{n-1,k-1} - V_{n-1,k}$ did not exceed K, then any value of r could be allowed without altering the interpretation of the model, because $q^* < 1/r$. It should be noted that this sufficient condition reflects that intuition that, for E to cheat at a level that makes detection certain (if there is inspection), the gain to E in seeing R use up an inspection must be very large.

As noted in the text, the basic model embodied in (A1) can be modified to include a variable, w, representing concealment effort. Concealment effort refers to activities of the inspectee, E, which reduce the detectability of violations but also reduce the value. Suppose that $w = 1$ is the standard level of concealment effort, and a value $w > 0$ is actually chosen by E, changing detectability from r to $\mathbf{r} = r/w$. Let $\alpha > 0$ be a parameter measuring the ratio of the relative rate of change (with respect to w) of the value q of undetected cheating at level q to the relative rate of change of $\mathbf{r}$ with respect to w. It follows that $\mathbf{q} = q/w^{\alpha}$. Denoting E's expected payoff by $\mathbf{V}$ when concealment effort is included in the model, the recursion equation (A1) must be replaced by

$$\mathbf{V}_{n,k} = p[rq(-K) + (1 - rq)\, q + \mathbf{V}_{n-1,k-1}] + (1-p)[q + \mathbf{V}_{n-1,k}] \qquad \text{(A5)}$$

To see how (A5) can be solved recursively, multiply each term by w^{α} to obtain

$$w^{\alpha}\mathbf{V}_{n,k} = p[rq(-Kw^{\alpha}) + (1-rq)q + w^{\alpha}\mathbf{V}_{n-1,k-1}] + (1-p)[q + w^{\alpha}\mathbf{V}_{n-1,k}] \qquad \text{(A6)}$$