Social Value of Public Information: Morris and Shin (2002) Is Actually Pro-Transparency, Not Con: Reply

By Stephen Morris, Hyun Song Shin, and Hui Tong*

The comment by Lars Svensson (2006) is an important contribution to the debate on the welfare effects of public information. Morris and Shin (2002) had shown that the provision of more precise public information can, in principle, be detrimental to welfare, but Svensson's note opens the debate on the *quantitative* significance of the result.

Svensson (2006) makes two observations. First, the result that welfare is *locally decreasing* in the precision of public information holds only with restrictions on information parameters that are empirically implausible. Second, even on a global analysis, when the public signal has precision no lower than the precision of the private signal, welfare is higher *with* the public signal than without.

Both observations are of value, but the second would be more relevant for welfare analyses that inform the binary choice of whether a public disclosure should be made or not. Following the notation in Svensson (2006), the expression for ex ante welfare in the presence of the public signal, when the precision of the public signal is α, is given by

$$V(\alpha) = -\frac{\alpha + \beta(1-r)^2}{(\alpha + \beta(1-r))^2}. \tag{1}$$

On the assumption that the withholding of the public signal is equivalent to setting $\alpha = 0$, the ex ante welfare in the absence of the public signal is thus

$$V(0) = -\frac{1}{\beta}. \tag{2}$$

There is a hurdle rate $\bar{\alpha}$ for the precision of the public signal such that welfare *with* the public signal is lower than welfare without, if and only if $\alpha < \bar{\alpha}$. The hurdle rate is the value of α that solves $V(\alpha) = V(0)$, and is given by

$$\bar{\alpha} = \beta(2r - 1). \tag{3}$$

Since $0 < r < 1$, the hurdle rate is lower than the precision β of the private information. Thus, for the benchmark case where the precision of public information is no lower than the precision of private information (i.e., where $\alpha \geq \beta$), welfare is higher *with* the public signal than without.

We accept the conclusions in Svensson (2006). It is interesting to note, however, that the hurdle rate can be quite high when the coordination parameter r in the beauty-contest game is close to 1. The debate thus moves on to the question of whether the public signal is *sufficiently* precise to justify disclosure. The issues are then empirical, and the answer depends on the context.

For monetary policy, the debate on central bank transparency revolves around the extent to which the central bank must actively shape and influence the market's expectations. Alan S. Blinder (1998, p. 70) notes that "central banks generally control only the overnight interest rate, an interest rate that is relevant to virtually no economically interesting transactions. Monetary policy has important macroeconomic effects only to the extent that it moves financial market prices that really matter—like long-term interest rates, stock market values and exchange rates." The links from the direct lever of monetary policy (the overnight rate) to the prices that matter depend almost entirely upon market expectations. Monetary policy is effective only to the extent that the central bank can shape the

* Morris: Department of Economics, Princeton University, Fisher Hall, Princeton, NJ 08544-1021 (e-mail: smorris@princeton.edu); Shin: Department of Economics, Princeton University, Fisher Hall, Princeton, NJ 08544 (e-mail: hsshin@princeton.edu); Tong: Bank of England, Threadneedle Street, London EC2R 8AH, United Kingdom (e-mail: hui.tong@bankofengland.co.uk). We are grateful to Lars Svensson for initiating the stimulating debate, and to the co-editor, Douglas Bernheim, for guidance. The views expressed here reflect those of the authors alone, and do not represent the views of the Bank of England.

beliefs of the market participants. In a recent policy speech, Ben S. Bernanke (2004) put the matter thus: "The value of more open communication is that it clarifies the central bank's views and intentions, thereby increasing the likelihood that financial market participants' rate expectations will be similar to those of the policymakers themselves."

In addition to its role as the active *shaper* of events, however, the central bank must also play the role of a vigilant *observer* of events, in order to obtain its cues for future action. This enables it to be more effective in its role as the shaper of outcomes. The worry is that the emphasis on the active shaping of events detracts from the central bank's role as a vigilant observer of events. The central bank holds a mirror to the economy for cues for its future actions, but the more effective it has been in manipulating the beliefs of the market, the more the central bank will see merely its own reflection.

The model presented in Morris and Shin (2002) deals with the benchmark case where all the signals (both private and public) are conditionally independent, given the true state. If a strong conventional wisdom has taken hold, but that conventional wisdom is flawed, then the conditional independence assumption would not be appropriate. The Appendix to Morris and Shin (2002), available on the American Economic Review Web site (http://www.e-aer.org/data/dec02_app_morris.pdf), dealt with a more general case that allows for correlated signals, even conditional on θ. Hui Tong (2004) has examined in more detail the consequences of correlated signals. We outline an example of this more general case that captures better the spirit of the problem in applications to monetary policy.

As in Morris and Shin (2002), a state θ is drawn from the real line with a uniform density. Each agent $i \in \{1, 2\}$ observes his private signal

$$x_i = \theta + \tfrac{1}{2} z + \tfrac{1}{2} \varepsilon_i$$

where z, ε_1, ε_2 are mutually independent normal random variables (all independent of θ itself) with variance of 1. The central bank is capable (if it chose to do so) of gathering two noisy signals $\{\theta + \omega z, \theta + \varepsilon_c\}$ of θ, where ω is a positive constant, and ε_c is a standard normal that is independent of all other random variables. It can choose from two disclosure policies. Under policy 1, the public signal is

$$y_1 = \theta + \frac{1}{1 + \omega^2} \omega z + \frac{\omega^2}{1 + \omega^2} \varepsilon_c.$$

Under policy 1, the central bank's policy is to gather information about θ from both signals and disclose its best estimate of θ, commensurate with the relative precisions of the two noisy signals. Under policy 2, the public signal is

$$y_2 = \theta + \varepsilon_c.$$

Under policy 2, the central bank ignores one of the noisy signals (in effect choosing ω to be infinite). The public signal y_1 is more precise than y_2, but the drawback is that y_1 is correlated with the private signals $\{x_1, x_2\}$, even conditional on θ. For this reason, welfare may be lower under policy 1, as the following calculations show. Conditional on θ, the covariance matrix for (y_1, x_1, x_2) is given by

$$\begin{pmatrix} \dfrac{\omega^2}{1 + \omega^2} & \dfrac{1}{2}\dfrac{\omega}{1 + \omega^2} & \dfrac{1}{2}\dfrac{\omega}{1 + \omega^2} \\ \dfrac{1}{2}\dfrac{\omega}{1 + \omega^2} & \dfrac{1}{2} & \dfrac{1}{4} \\ \dfrac{1}{2}\dfrac{\omega}{1 + \omega^2} & \dfrac{1}{4} & \dfrac{1}{2} \end{pmatrix}.$$

The equilibrium strategy for i is $a_i = (1 - r)E_i(\theta) + rE_i(\bar{a})$. Letting $r = 0.5$, and solving for the equilibrium in linear strategies $a_i = kx_i + (1 - k)y_1$, we can follow the solution method in Morris and Shin (2002) to obtain $k = [2\omega(2\omega - 1)/(7\omega^2 - 4\omega + 3)]$. Welfare, as given by $-Var(a_i|\theta)$, is

$$-\frac{\omega^2(17\omega^4 - 8\omega^3 + 18\omega^2 - 4\omega + 5)}{(7\omega^2 - 4\omega + 3)^2(1 + \omega^2)}.$$

By choosing policy 2 (by setting ω to be infinite), the central bank can achieve welfare of $-17/49 \approx -0.347$. Welfare for values of ω around 1 are plotted in Figure 1. The horizontal line indicates welfare when $\omega = \infty$. We see that even when $\omega < 1$ (so that the central bank is less affected by noise z) welfare cannot be guaranteed to be higher under policy 1.

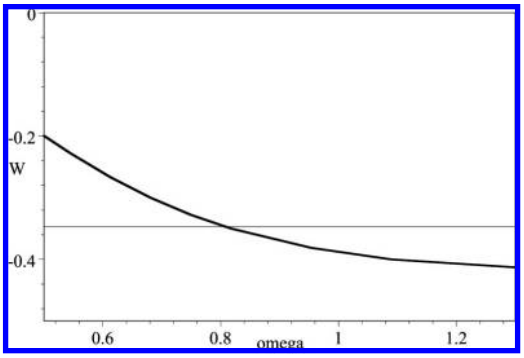

FIGURE 1. WELFARE AS A FUNCTION OF ω

What value of ω can be considered reasonable is open to debate. Also, the welfare properties of the general case have still to be investigated more fully. We urge a more systematic investigation.

Finally, the welfare criterion itself will be sensitive to the economic context, and any conclusions on the desirability of disclosures will need to take into consideration the competing forces at work. George-Marios Angeletos and Alessandro Pavan (2004) and Christian Hellwig (2004) offer motivation for alternative welfare criteria that give weight to the dispersion of actions, and these papers reach different conclusions from those in Morris and Shin (2002). As with the issue of more general information structures, a more systematic study of alternative welfare criteria (and their motivations) would yield important insights into the desirability of public disclosures.

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