Responses to Referee #1.

The comments of referee #1 help to clarify our theoretical arguments on how the timing of FDI depends on the investor's information. For that we are grateful. Our responses to the referee's comments (in italic) are as follows.

1. *Is it reasonable to assume ρ to be normally distributed?*

The parameter ρ is the firm-specific factor that influences the expected return. It also depends on the state of the economy. When a crisis strikes, investors are not perfectly certain how each firm will be affected. This uncertainty is captured by their prior in ρ. When more data become available, the investor's posterior on ρ is updated and becomes more precise. We argue that in the absence of empirical evidence that suggests otherwise, it is plausible to model the prior of firm-specific ρ as normally distributed for an investor. The normality assumption on the prior and data makes Bayesian updating easy to model. Assuming prior takes a non-normal distribution will not qualitatively change the result of the model but will complicates the algebra.

2. *Explain why (2) is equivalent to (2)'.*

In (2) the expected value function $EV(s', x', \tilde{\varphi} \mid s, x, \varphi)/(1+r)\}$ is conditioning on the current state variables and prior distribution. The expectation is with respect to the posterior (hence the uncertainty in the parameters of the model) and uncertainty in the state variables (including the macro and firm-specific uncertainties). In (2)', these expectation calculations are made explicit by $\sum_{j=1}^{2} p_{i,j} \iint V(s_j, x_j', \overline{\rho}', \overline{\omega}^{2}{}') l(x_j' \mid \rho, s_j) \tilde{\varphi}(\rho \mid \overline{\rho}', \overline{\omega}^{2}{}') d\rho dx_j'/(1+r)\}$. Here the integration with respect to ρ over the posterior $\tilde{\varphi}(\rho \mid .)$ after observing data in current period yields expectation over parameter uncertainty, the integration with respect to x_j' over the likelihood function of data in macro regime j yields expectation over firm-specific uncertainty, and averaging with probability of macro regime change yields expectation over macro uncertainty.

3. *Show more details on derivation of result (5), which states that the uncertainty in the investor's predicted draw of signal of the next period is the sum of the uncertainty in*

data and the uncertainty of investor's assessment in the mean of the expected return (parameter ρ): $f(x'|s_i, x, \varphi) = \sum_{j=1}^{2} p_{i,j} N(\bar{\rho}' M_j, \sigma_j^2 + M_j^2 \bar{\omega}'^2)$.

The result (5) follows by integrating out parameter ρ in macro state j and completing terms for *x'*. The complete algebra is as follows (with the proportional constants omitted in the density function):

$$f(x'|s_i, x, \varphi) = \sum_{j=1}^{2} p_{i,j} \int l(x'|\rho_j, s_j) \tilde{\varphi}(\rho_j | \bar{\rho}', \bar{\omega}^{2}') d\rho_j$$

$$\propto \sum_{j=1}^{2} p_{i,j} \int \exp\{-\frac{(x' - \rho_j M_j)^2}{2\sigma_j^2}\} \exp\{-\frac{(\rho_j - \bar{\rho}')^2}{2\bar{\omega}'^2_j}\} d\rho_j$$

$$\propto \sum_{j=1}^{2} p_{i,j} \int \exp\{-\frac{1}{2}[\frac{x'^2}{\sigma_j^2} + (\frac{M_j^{\ 2}}{\sigma_j^2} + \frac{1}{\bar{\omega}'^2_j})(\rho_j - \frac{\frac{M_j x'}{\sigma_j^2} + \frac{\bar{\rho}'}{\bar{\omega}'^2_j}}{\frac{M_j^{\ 2}}{\sigma_j^2} + \frac{1}{\bar{\omega}'^2_j}})^2 - \frac{(\frac{M_j x'}{\sigma_j^2} + \frac{\bar{\rho}'}{\bar{\omega}'^2_j})^2}{\frac{M_j^{\ 2}}{\sigma_j^2} + \frac{1}{\bar{\omega}'^2_j}}]\} d\rho_j$$

$$\propto \sum_{j=1}^{2} p_{i,j} \exp\{-\frac{1}{2}[\frac{x'^2}{\sigma_j^2} - \frac{(\frac{M_j x'}{\sigma_j^2} + \frac{\bar{\rho}'}{\bar{\omega}'^2_j})^2}{\frac{M_j^{\ 2}}{\sigma_j^2} + \frac{1}{\bar{\omega}'^2_j}}]\}$$

$$\propto \sum_{j=1}^{2} p_{i,j} \exp\{-\frac{1}{2}[\frac{x'^2}{\sigma_j^2} - \frac{(\frac{M_j x'}{\sigma_j^2} + \frac{\bar{\rho}'}{\bar{\omega}'^2_j})^2}{\frac{M_j^{\ 2}}{\sigma_j^2} + \frac{1}{\bar{\omega}'^2_j}}]\}$$

$$\propto \sum_{j=1}^{2} p_{i,j} \exp\{-\frac{1}{2}[\frac{(x' - \bar{\rho}' M_j)^2}{\bar{\omega}'^2 M_j^2 + \sigma_j^2}]\}$$

$$\sim \sum_{j=1}^{2} p_{i,j} N(\bar{\rho}' M_j, \bar{\omega}'^2 M_j^2 + \sigma_j^2).$$

For completeness, we also provide the details on Bayesian updating that lead to posterior of (3): $\bar{\omega}'^2 = (\bar{\omega}^{-2} + M^2 \sigma^{-2})^{-1}$ and (4): $\bar{\rho}' = (\bar{\omega}')^2 (\bar{\rho}\bar{\omega}^{-2} + xM\sigma^{-2})$. In (3) and (4) the subscripts for macro state is omitted. Suppose under macro-state *j*, the investor observes n periods of

signals from a host (or project) given in (1), $X = x_1,..x_n$. Then given the initial prior $N(\rho_0, \omega_0^2)$ the posterior $\pi(\rho_j \mid x_1,.., x_n, \rho_0, \omega_0) \propto \exp\{-\sum_{t=1}^{n} \frac{(x_t - \rho_j M_j)^2}{2\sigma_j^2}\} \exp\{-\frac{(\rho_j - \rho_0)^2}{2\omega_0^2}\} \propto N(\overline{\rho}_j, \overline{\omega}^2)$, here the variance of the posterior $\overline{\omega}^2 = \frac{1}{p^2}$. The precision of the posterior $p^2 = \frac{1}{\omega_0^2} + \sum_{t=1}^{n} \frac{M_j^2}{\sigma_t^2}$. The mean of posterior $\overline{\rho} = \overline{\omega}^2 \tau$, where $\tau = \frac{\rho_0}{\omega_0^2} + \sum_{t=1}^{n} \frac{x_t M_j}{\sigma_t^2}$. The update of the posterior after observing $x' = x_{n+1}$ and $\sigma' = \sigma_{n+1}$ is $(\overline{\omega}')^2 = \frac{1}{(p')^2}$, $(p')^2 = \frac{1}{\omega_0^2} + \sum_{t=1}^{n+1} \frac{M_j^2}{\sigma_t^2} = p^2 + \frac{M_j^2}{(\sigma')^2}$, this gives rise to (3).

$\overline{\rho}' = (\overline{\omega}')^2 (\frac{\rho_0}{\omega_0^2} + \sum_{t=1}^{n+1} \frac{x_t M_j}{\sigma_t^2}) = (\overline{\omega}')^2 \tau'$, and $\tau' = \frac{\rho_0}{\omega_0^2} + \sum_{t=1}^{n+1} \frac{x_t M_j}{\sigma_t^2} = \tau + \frac{x' M_j}{(\sigma')^2} = \frac{\overline{\rho}}{\overline{\omega}^2} + \frac{x' M_j}{(\sigma')^2}$, hence (4) is obtained.

4. Explain why the Poisson model of the count data shows over-dispersion.

The dispersion of the Poisson process of FDI counts means that over time the variance of the counts is larger than the mean of the counts. This is largely due to the substantial fluctuations of the FDI counts before, during, and after the crisis.

5, 6,7: The referee points out a number of errors in our writing.

We are grateful for the referee's careful proof-reading. The errors are fixed.