Country Transparency and the Global Transmission of Financial Shocks

Abstract

This paper considers the role of country-level opacity (the unavailability of information) in amplifying shocks emanating from financial centers. We provide a simple model where, in the presence of ambiguity (uncertainty about the probability distribution of returns), prices in emerging markets react more strongly to signals from the developed market, the more opaque the emerging market is. The second contribution is empirical evidence for bond and equity markets in line with this prediction. Increasing the availability of information about public policies, improving accounting standards, and enhancing legal frameworks can help reduce the unpleasant side effects of financial globalization.

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I. INTRODUCTION

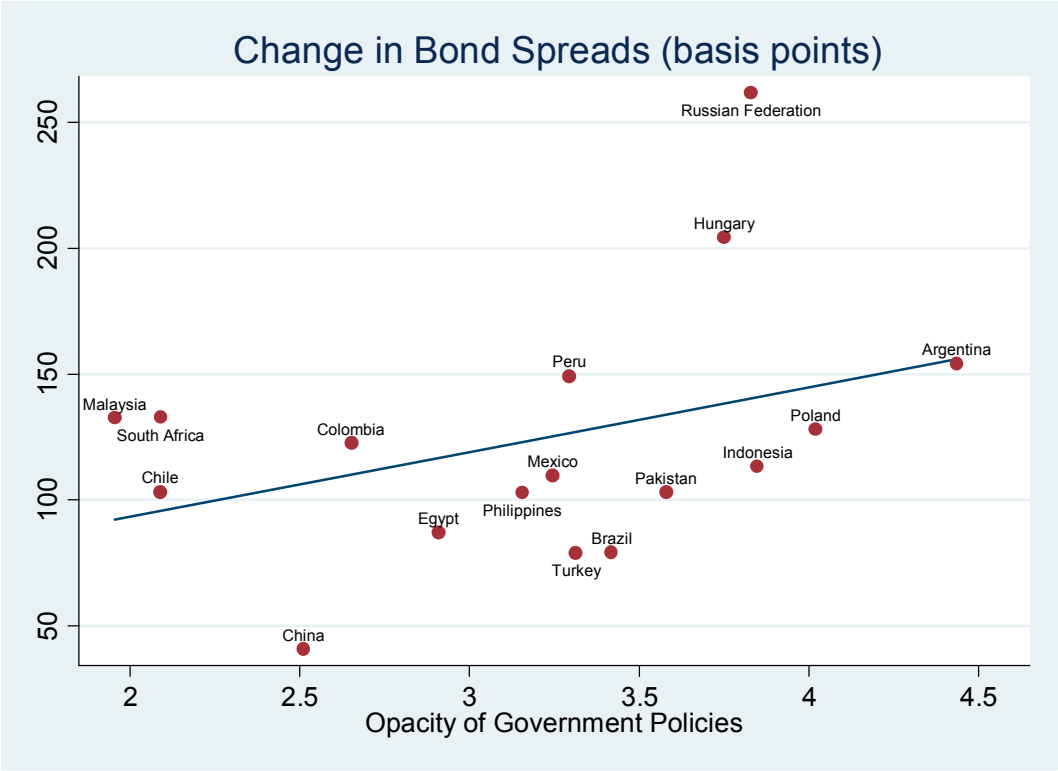
It has frequently been asserted that increasing transparency at the country level (defined as the availability and reliability of information about a country's public and private sectors) can be beneficial both in attracting investment while helping to avoid excessive capital flow volatility (see, for example, Goldstein, 1998, IMF 2001, Frenkel and Menkhoff, 2004, and Gai, 2003). The argument is that more transparency enhances the orderly and efficient functioning of financial markets, reducing the occurrence of phenomena such as herding, waves of sentiment-driven flows, and excessive investor reactions to news. Recent events seem to support this idea. The drop in equity prices and the increase in bond spreads in emerging markets during the most acute phase of the 2007-2009 financial crisis (fourth quarter of 2008) was sharpest for countries with higher levels of opacity (Figures 1 and 2). More generally, the global financial crisis has drawn renewed attention to episodes of flight-to-quality and the role of opacity in the financial system in exacerbating shocks (see Brunnermeier and Pedersen, 2009, Caballero and Krishnamurthy, 2008, and Claessens, 2009, to name a few).

On the other hand, Furman, Stiglitz, Bosworth, and Radelet (1998), Morris and Shin (2002), and Morris, Shin, and Tong (2006) argue that more transparency can actually be destabilizing, because it may yield excessive provision of information, possibly crowding out private information, reducing information efficiency, and increasing volatility. Empirically, the evidence remains ambiguous.[1]

[1] There is some evidence that more transparency reduces the volatility of capital flows. Gelos and Wei (2005) report that during crises, funds tend to retreat more from less transparent countries. Gande and Parsley (2006)

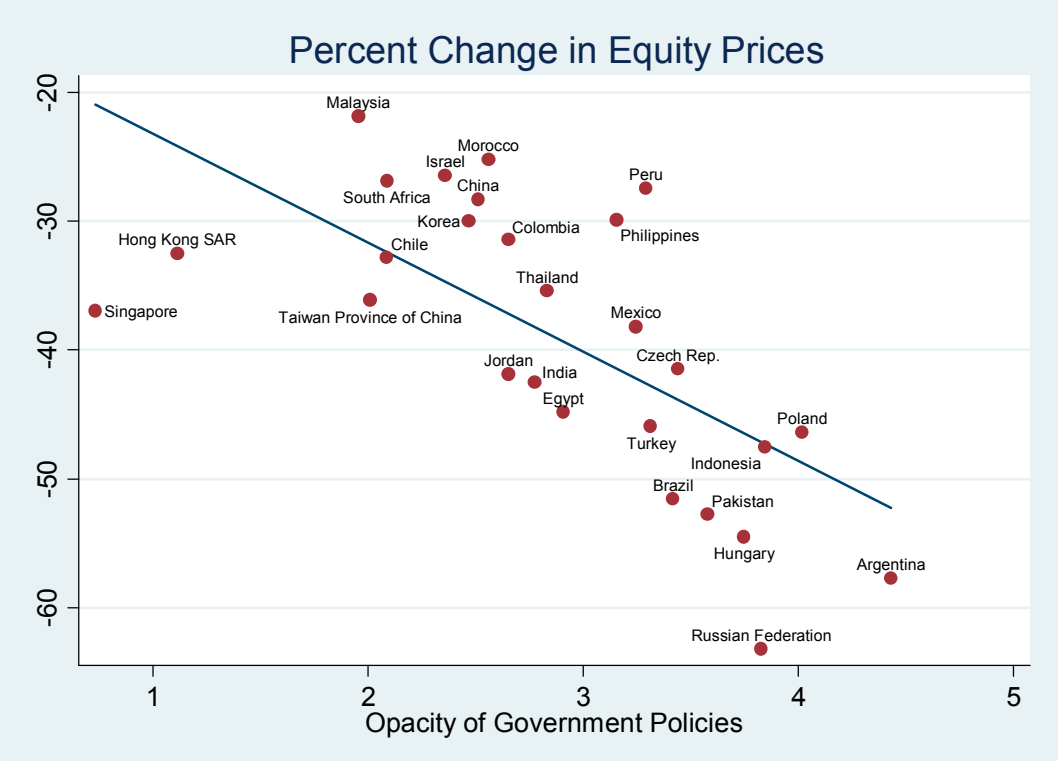
(continued…)

Figure 1 - Change in Bond Spreads during Global Financial Crisis (Sept-Dec 2008)



find that less corrupt countries are less vulnerable to downgrades by rating agencies, when vulnerability is measured by mutual fund outflows. Köhler (2006) finds that countries with a higher dispersion of macroeconomic forecasts experience more sudden stops. Johnson, and others (2000) report that countries with better governance suffered less during the Asian crisis. Wei and Yu (2002) find evidence that poor public governance is associated with a higher loan-to-FDI ratio, a composition of capital flows associated with a higher incidence of currency crises. On the other hand, Tong (2007), analyzing stock market analysts' forecasts for thirty developing countries, reports that the impact of transparency initiatives is limited because public disclosure crowds out private investments in information.

Figure 2 - Change in Stock Prices during Global Financial Crisis (Sept-Dec 2008)



In parallel, a substantial body of literature has been examining the role of disclosure at the firm level in influencing the cost of capital, stock return volatility, and liquidity. This research suggests that, among other things, transparency can enhance a stock's liquidity (see for example, Amihud, Mendelson and Pedersen, 2005, and Lang, Lins, and Maffett, 2012) and reduce liquidity volatility (Lang and Maffet, 2011). More generally, there is evidence linking better governance with lower stock price volatility (Claessens and Yurtoglu, 2012).[2]

However, little systematic research has so far been devoted to the role of country-level transparency in shaping the international transmission of financial shocks—a gap we

[2] The literature on firm-level effects suggests that the effects of transparency may not be unambiguously positive either. Easley and O'Hara (2009) argue that increasing disclosure requirements can increase the risk premium when investors face ambiguity since it increases the awareness of very bad outcomes and reduces market participation.

aim to start filling with this study. We examine how opacity at the country level can amplify the local impact of changes in global market conditions, examining the performance of emerging financial markets in response to shocks emanating from the financial centers. The basic hypothesis is the following. When global financial conditions are benign, international investors become more prone to invest in markets whose underlying distribution of risks they understand less well ("ambiguous" markets). This could happen for various reasons. One is that investors might become more comfortable with ambiguity when their other investments have performed well (analogous to a reduction in risk aversion in response to positive wealth shocks). Alternatively, it could be the outcome in a setting in which during difficult times, fund managers face more scrutiny and more pressure to justify the asset composition of their portfolios, reducing their exposure to assets whose risks are less well understood. Consequently, they will be more prone to hold more opaque assets during "good" times than during "bad times." As a result, more opaque markets experience larger booms when financial market conditions are favorable, while the opposite is true during bad times. Alternatively, ambiguity may makes it harder for investors to separate fundamental shocks from pure noise shocks, inducing them to associate benign signals in the financial centers with good fundamentals in the ambiguous markets.

We develop an intuition along the latter lines in a simple model with Knightian uncertainty (uncertainty about the underlying probability distribution of returns. Investors are based in a financial center (whose distribution of returns they know) but also invest in a class of assets (emerging markets) that displays varying degrees of opacity. In this stylized framework, we show that prices of more opaque assets react more strongly to shocks in the

financial center.[3] In essence, ambiguity in fundamentals leads investors to behave as if emerging markets were riskier than what they actually are and interpret any signal as more likely to reflect a fundamental shock. An interesting feature of the model is that the overreaction to developed market shocks in opaque markets is not due to noisier signals from these markets but rather related to incomplete information or ambiguity about risks and returns. Therefore, our simple setup helps to illustrate how different dimensions of "transparency" can have different implications for asset price volatility.

Our main contribution is, however, empirical. Using data for both stock and bond markets over the period 1997-2011, we consistently find that emerging markets that score worse on various dimensions of opacity (ranging from the degree of corporate disclosure and transparency of government policies to broader measures of opacity such as corruption perceptions) react more strongly to global market conditions (measured by the VIX) than those that are more transparent. Importantly, this result holds even when controlling for a broad range of measures of risk, credit quality, and liquidity.[4] This mechanism—which so far

[3] Drees, Eckwert, and Vardy (2013) develop a very different model with somewhat related predictions. In their setting, when interest rates are high, investors choose transparent projects with high fundamental risk; but when interest rates are low, they choose opaque projects that are fundamentally safe. Hong and Sraer (2012) provide a model in which high-beta assets are more prone to speculative overpricing than low beta ones since they are more sensitive to disagreements about the common factor of cash flows. Morck, Yeung and Yu (2000) show that stock prices move more together in emerging markets than in advanced economies, attributing this to poorer protection of property rights, which reduces the incentives for informed arbitrage and the importance of firm-specific information.

[4] A separate issue from the one we analyze here is whether transparency affects country risk assessments as measured by sovereign spreads (Cady and Pelecchio, 2008, Glennerster and Shin, 2008) and ratings (Arbatli and Escolano, 2012). There is compelling evidence suggesting a beneficial effect of fiscal transparency on both measures. In addition, Arbatli, Hashimoto and Wacker (2012), and Gelos and Wei (2005) find a positive impact of transparency on foreign direct investment and mutual fund portfolio holdings, respectively.

has not been stressed in the literature on financial contagion—may therefore help explain the patterns of financial shock transmission across countries.[5]

The results imply that emerging markets are not helpless vis-à-vis the ups and downs of global markets. Countries wishing to benefit from financial globalization can reduce its unpleasant side effects by becoming more transparent – that is, by providing more and more timely data, improving corporate disclosure standards, and more generally by improving governance.

II. MODEL

In this section we present a simple model with uncertainty about the distribution of risks (ambiguity) and ambiguity aversion to provide a clear conceptual framework for our empirical analysis and derive testable hypotheses. In essence, ambiguity aversion implies that agents prefer known risks to unknown risks. We start with a pure exchange economy with a representative agent with preferences displaying smooth ambiguity aversion (see Klibanoff, Marinacci, and Mukerji, 2005), in a setting similar to Caskey's (2009).

There are two risky assets and a risk-free asset which earns zero interest and acts as numeraire. Investors receive one informative signal per asset and then trade. After trading, each risky asset (assets 1 and 2) pays a final dividend (d_1 and d_2) and the agent consumes all his/her wealth. The supply of the risky assets is exogenously given by $\boldsymbol{y} = [y_1\ y_2]'$.

The agent has a CARA utility function defined over final wealth $u(w)=-A^{-1}exp(-Aw)$ and constant relative ambiguity aversion preferences given by $h(E(u(w)))=-a^{-1}(-E(u(w)))^{a}$

[5] Information differentials play a role in some contagion models such as Calvo and Mendoza (2000) and Kodres and Pritsker (2002). See Forbes (2012) for a recent discussion of the contagion literature.

(Gollier, 2011), where A describes the degree of absolute risk aversion and $a \geq 1$ the degree of ambiguity aversion (a=1 means ambiguity-neutrality or Savage preferences).

The information structure is one of ambiguity in fundamentals, where investors are familiar with interpreting information but lack expertise to appropriately value the first asset (the emerging market asset), at least relatively to the second asset (the developed asset). Ambiguity in fundamentals (as opposed to ambiguity in information) aims at representing a situation where market participants are able to process the information provided to them (such as company annual reports or country macroeconomic analysis papers) but lack specific background knowledge about the economy, sector, or firm at hand to interpret it properly. For instance, in this setting, investors lack information about an emerging country's institutions, governance, or policies. In the empirical sections of this paper, Sections III and IV, we link this failure to understand the data generating processes of asset returns from emerging markets to country-level opacity.

Our agent receives one noisy signal for each asset, which can be decomposed into a fundamental (the dividend) and noise or a non fundamental shock. We assume that while the fundamentals can be correlated across markets, the noise shocks are not. Therefore, the agent receives the following signals:

$$s_1 = d_1 + \varepsilon_1$$

$$s_2 = d_2 + \varepsilon_2$$

where both noise terms, ε_1 and ε_2, are unambiguous and normal i.i.d., with mean zero and variance $\sigma_{\varepsilon 1}^2$ and $\sigma_{\varepsilon 2}^2$.

The dividend of asset 2 is known to be normal, with known mean μ_2 and variance σ_2^2, which implies $E(s_2)=\mu_2$ and $var(s_2)=\sigma_2^2+\sigma_{\varepsilon 2}^2$. The dividend for asset 1 is ambiguous, with mean μ_1+b, where b is unknown but for which the agent has prior beliefs given by $b \sim N(\mu_b,\sigma_b^2)$. This means we have $d_1=u_1+b$ where $u_1 \sim N(\mu_1,\sigma_{u1}^2)$ and $var(d_1)=\sigma_{u1}^2+\sigma_b^2 \equiv \tilde{\sigma}_1^2$, as in Caskey (2009). Therefore, we can decompose the unconditional variance of the dividend for asset 1 in two parts. The first part reflects the true fundamental volatility of this asset (σ_{u1}^2) and the second part, the ambiguity surrounding asset returns in the emerging market as given by the variance of prior beliefs (σ_b^2).

Solving the optimization problem for this consumer, given the joint and conditional distributions of signal and dividend processes derived in Appendix A, we obtain the following expression for the optimal asset allocation:

$$\theta^* = \frac{1}{A}(var(d\,|s)+(a-1)(var(d\,|s)-var(d\,|J)))^{-1}(E(d\,|s)-p), \quad (1)$$

where $\boldsymbol{p}=[p_1 \;\; p_2]'$ is the vector of prices for the two assets.

The market equilibrium condition gives us the price vector $\boldsymbol{p}^*$ such that $\boldsymbol{\theta}^*=\boldsymbol{y}$. By replacing $\boldsymbol{y}$ for $\boldsymbol{\theta}^*$ in (1) we can easily derive it to be:

$$p^* = E(d\,|\,s) - A(var(d\,|s)+(a-1)(var(d\,|s)-var(d\,|J)))y. \quad (2)$$

After some algebra, we can show that the variance matrices in (2) do not depend on s_1 or s_2 and that the only way through which prices depend directly on the signals is through $E(\boldsymbol{d}|\,s)$. Therefore, in this setting, the sensitivity of prices to signals does not depend on the

degree of ambiguity aversion.[6] Without loss of generality, we can set a=1 (ambiguity-neutrality) for the remainder of the section.

In what follows, we use comparative statics to show two key properties of the model. First, that if information in the emerging market is noisier, asset prices in this market react less to signals coming from the developed market. Second, if there is more ambiguity about the emerging market's fundamentals, asset prices in this market react more to signals coming from the developed market.

We have the following propositions.

Proposition 1*: If the fundamentals in the two markets are positively correlated ($\rho>0$), the sensitivity of the price of asset 1 (emerging market) to a shock in the developed market (signal 2) is decreasing in the variance of the non fundamental shock to asset 1. This means,*

$$\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_{\varepsilon 1}^2} < 0.$$

Proof.

See Appendix A.

The previous claim establishes that noisier information (or signals) in the emerging market leads to this market being less, not more, sensitive to shocks in the developed market. To understand the intuition, suppose there were no ambiguity. Agents know that the

[6] The model can be easily expanded to include heterogeneity with respect to the degree of aversion to ambiguity but with homogeneous information. In this setting, one can show that the sensitivity of prices to signals does not depend on the fraction of ambiguity-averse versus ambiguity-neutral investors either. The results are available from the authors upon request.

fundamentals in the two markets are positively correlated but they also know that the signals they get are noisy. Suppose agents receive a positive signal from the developed market, which, although unknown to them, stems from a positive shock to fundamentals in that market. Since earnings in the two markets are positively correlated, fundamentals in the emerging market also improve. This translates into a positive signal from the emerging market. If signals from this market are very noisy, agents will assign a lower probability to the possibility that the signal reflects improvements in fundamentals, so they tend not to believe that earnings are increasing in the emerging market as well. Therefore, when public information in emerging markets is very noisy, prices in those markets will react less to a signal coming from developed markets.[7] This means that, within our model, any overreaction to developed market shocks in more opaque emerging markets cannot be due to noisier information in these markets but rather related to incomplete information or ambiguity.

We are therefore interested in showing that the sensitivity of the price of asset 1 (emerging market) to a shock in the developed market (signal 2) is increasing in ambiguity (measured by the variance of the prior belief about *b*). That is,

$$\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_b^2} = \frac{\partial^2 p_1}{\partial s_2 \partial \sigma_1} \frac{\partial \sigma_1}{\partial \sigma_b^2} > 0.$$

[7] In fact, they react less to any signal, regardless of where it originates.

This happens as long as emerging market prices respond positively (negatively) to good (bad) news in the developed market, i.e., $\partial p_1/\partial s_2>0$ and for non degenerate noise terms ε_1 and ε_2. We show this in the following proposition derived from the model.

Proposition 2 *The sensitivity of the price of asset 1 (emerging market) to a shock in the developed market (signal 2) is increasing in ambiguity (measured by the variance of the prior belief about b) as long as $\rho>0$.*

Proof:

See Appendix A.

The intuition for this result is as follows. An increase in ambiguity is represented by an increase in the variance of the subjective prior belief for *b*. This translates into an increase in the unconditional variance of the emerging market fundamental, d_1.[8] Other things equal, this raises the signal-to-noise ratio in the emerging market. Since the two signals (s_1 and s_2) are correlated via the fundamentals, a positive (negative) signal in the developed market will tend to coincide with a positive (negative) signal in the emerging market. As the perceived signal-to-noise ratio increases with the level of ambiguity in the emerging market, prices will react more. Therefore, the introduction of ambiguity in fundamentals leads investors to behave as if emerging markets were riskier than what they actually are and to associate with a higher probability a given signal to a fundamental shock. This in turn leads to higher price sensitivity to market signals. Proposition 2 is the testable implication of our model.

[8] As mentioned before, the unconditional variance of the fundamental d_1 is the sum of its conditional (relative to the ambiguous component *b*) variance and the variance of the prior belief for *b*.

III. Empirical Strategy and Variables

A. Empirical Models

Our aim is to estimate the impact of a global signal (the *s* in our model) on bond and stock returns in emerging markets. Specifically, we want to test whether economic and financial opacity, measured at the country level, affects the transmission of global shocks to local market returns. We are aware that many decisions concerning the disclosure of information relevant to assess assets' risks and returns are taken at the firm level. However, our focus on country-level effects and measures is supported by the existing literature on the greater importance of country-level institutions when determining firm-level governance quality (Doidge, Karolyi, and Stulz, 2007).

In light of the predominant role attributed in the literature to the VIX (a measure of the market volatility implicit in U.S. stock options) as a proxy for liquidity conditions and risk aversion in financial centers (see for example Fratzscher, 2012), we focus on this variable as our main global factor.[9]

To capture the differential effect of opacity on the transmission of global shocks, we interact changes in the VIX with various measures of country-level opacity (see description below) in specifications for stock and bond returns with standard controls. We use data at a weekly frequency.[10] To distinguish the role of opacity from credit quality and other risks, we

[9] The VIX is in fact a measure for the risk-neutral expected variance of global asset returns (see Bollerslev, Tauchen, and Zhou, 2009).
[10] We also used daily data (with somewhat fewer controls), obtaining very similar results to the ones reported below. These are available from the authors upon request.

also include interactions of VIX changes with proxies for these factors. To account for the trend increase in global market integration over the past 20 years (see Bekaert, Harvey, Lundblad, and Siegel, 2011), we also include interactions with a time trend.[11] Lastly, to control for other common shocks, we include year dummies.

Following the empirical literature on emerging market bond spreads, our baseline specification for bonds is as follows:

$$\Delta r_{it}^{b} = \alpha_i + \left(\beta_1 + \beta_2 \times t\right)\Delta f_t + \beta_3 Opacity_{it} + \beta_4 Opacity_{it} \times \Delta f_t + \gamma' \mathbf{x}_{it-1}^{b} + \sum_{j=1}^{M} \delta YEAR_{jt} + \varepsilon_{it}\,, \quad (3)$$

where r^b is a sovereign bond index return, f is a global risk factor, t is a time trend, $\mathbf{x}^b$ is a vector of lagged controls, and YEARj (j=1, ..., M) is a set of year dummies. We choose to model the change in spreads rather than the level because, for our sample period and for most countries, spreads exhibited a considerable amount of persistence or even a seemingly non stationary behavior.[12] We include as controls the weekly change in the United States' three-month T-bill rate, the on-the-run-off-the-run spread as a measure of global market liquidity, the percentage change in the exchange rate against the U.S. dollar, a series of dummies to capture periods of banking, currency, and debt crises, as well as a measure of country sovereign risk.[13] We also control for bond market restrictions by including a dummy which takes value one if there are measures in place which restrict the ability of foreign investors to buy bonds or equities.

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[11] Opacity itself can be regarded as a market barrier which prevents full integration (see Stulz, 1981, Errunza and Losq, 1985, Bekaert and Harvey, 1995, and Stulz, 1999). This potentially complicates the analysis of equity returns.

[12] This is probably due to regime switches and to the low power of unit root tests in this type of setting.

[13] See Comelli (2012), González-Rosada and Levy Yeyati (2008), Jaramillo and Tejada (2011), and Hartelius, Kashiwase, and Kodres (2008), among others.

Our specification for equities is:

$$r_{it}^{e} = \alpha_i + \left(\beta_{1w} + \beta_{2w} \times t\right) r_t^{w} + \left(\beta_1 + \beta_2 \times t\right) \Delta f_t + \beta_3 Opacity_{it} + \beta_4 Opacity_{it} \times \Delta f_t + \gamma' \mathbf{x}_{it-1}^{e} + \varepsilon_{it}, \quad (4)$$

where r^e is an equity index excess return (equity price index return in excess of the U.S. 3-month T-bill rate), r^w is the world excess return, and $\mathbf{x}^e$ is a vector of lagged controls.[14]

In addition to the U.S. market's excess stock return (as a proxy for the world market), we include the lagged dividend yield for the country as a measure of the expected excess return and to possibly capture information about future earnings and future interest rates (see Ang and Bekaert, 2007 and Bekaert, Ehrman, Fratzcher, and Mehl, 2011). As we did for bonds, we include dummies for financial crises, and a dummy variable for restrictions on purchases of equities by foreigners in the domestic market. We also include weekly currency returns against the U.S. dollar as a local control because exchange rate risk may be priced (see Dumas and Solnik, 1995). We are, however, not interested in testing a particular asset pricing model and include currency returns to control for a conditional (on world equity returns and other factors) or residual country-wide exposure to currency risk (Bodnar and Wong, 2003 and Dominguez and Tesar, 2006).

We also condition on the degree of market integration.[15] Specifically, we follow Bekaert, Ehrman, Fratzcher, and Mehl (2011) and use both trade openness and capital

[14] Our empirical model exclusively relies on factors based on public information (which is consistent with our model from Section II). However, Albuquerque, Bauer, and Schneider (2009) show that global private information is an important explanation of equity returns and cross-border trades. Combining global private information with country-level transparency would be an important extension of our work.

[15] See Bekaert, Harvey, and Ng, 2005 for a discussion of the importance of accounting for market integration/segmentation when studying the transmission of global financial shocks. In fact, our empirical model can be seen as a reduced form of their factor model approach. See also Fratzscher and Imbs (2009) for a discussion of the role of financial openness and institutions in attracting capital flows.

openness measures. These measures of market segmentation (one based on international trade and the other on capital flows) are then interacted with the global factor. [16]

For all regressions, report Driscoll-Kraay standard errors, which are robust to very general forms of spatial and temporal dependence as the time dimension becomes large (Driscoll and Kraay, 1998). This choice is supported by evidence provided by performing Breusch-Pagan's test of cross-sectional independence for each regression (also valid for large *T*). Unreported results clearly reject the null of cross-sectional independence at any conceivable significance level (available from the authors upon request).

B. Data

We collect data for a list of up to twenty-seven emerging countries (see list in Appendix B) starting in January 1997 and ending in December 2011. Next we provide a more detailed description of the variables used and their data sources.

Returns

For bond spread data, we use changes in the EMBI Global return index. To compute our equity return series, we use the MSCI stock market total return indices. For each country, we calculate weekly and daily returns and then subtract the 3-month T-bill interest rate for the U.S. to calculate excess returns. Using U.S. dollar returns is in line with the flavor of our model, which is based on a global investor. All return data are from DataStream.

[16] In addition to proxying for economic and financial integration, trade is in itself an important determinant of cross-country linkages between financial centers and peripheral markets (Forbes and Chinn, 2004).

Global Factors

The global factors are captured by changes in the VIX index, which we retrieve from DataStream.[17] This variable has been used in settings similar to ours to explain equity returns (Bekaert, Ehrman, Fratzcher, and Mehl, 2011), as well as market segmentation and capital flows (Bekaert, Harvey, Lundblad, and Siegel, 2011).

Transparency

Our description of how transparency may relate to asset prices has focused on "Knightian uncertainty," i.e. the imperfect knowledge of (ambiguity about) the probability distribution of events. We are therefore interested in indices of opacity that measure the availability of all relevant information allowing the investor to assess the probability of risks associated with investing in a given country. This suggests using relatively broad indices capturing the difficulty of assessing true risks for an investor in an economy. We therefore focus on indices measuring corruption, governance, corporate disclosure practices, and accounting standards. Specifically, we employ the following indicators of opacity at the country level:

Opacity Index (Opacit). In 2000, the accountancy and consulting company PricewaterhouseCoopers (PwC) conducted a survey of banks, firms, equity analysts, and in-country staff in 35 countries to generate measures of opacity in five areas (PricewaterhouseCoopers, 2001): Bureaucratic practices (corruption), the legal system, government macroeconomic policies, accounting standards and practices, and the regulatory regime. PricewaterhouseCoopers aimed at interviewing at least 20

[17] For equities, we also used the MSCI world return as a global factor without altering the main results (not shown).

CFOs, five bankers, five equity analysts, and five PricewaterhouseCoopers employees in each country. The scores for the five areas were aggregated to form a single index, the opacity index. Later, the index continued to be produced by the Milken Institute (Kurtzman, Phumiwasana, and Yago, 2004, and Kurtzman and Yago, 2008 and 2009).

Corruption Perceptions (Corrup). As another proxy for opacity, we use the Corruption Perceptions Index computed by Transparency International (see Transparency International, 2001). While corruption is not the same as a lack of opacity in the sense defined earlier, it captures hard-to-quantify risk of investing in a country, and is significantly correlated with measures of opacity (Table 1). It also has the advantage of being available in time-series format for a longer period and a larger number of countries.

Corporate Opacity (Corpop). The annual Global Competitiveness Report produced by the World Economic Forum includes results from surveys about the level of financial disclosure and availability of information about companies. The survey measures the perceptions of over 3,000 executives about the country in which they operate and covers 53 countries. The respondents were asked to assess the validity of the statement "The level of financial disclosure required is extensive and detailed" with a score from 1 (=strongly disagree) to 7 (strongly agree). Based on these results, we construct a summary variable called Corporate Opacity.

Transparency of Government Policies (TGP). This variable has the same source and methodology as the Corporate Opacity indicator. The respondents were asked to assess the validity of the statement "Firms in your country are usually informed

clearly and transparently by the government on changes in policies and regulations affecting your industry" with a score from 1 (=never informed) to 7 (always fully and clearly informed). We use as Transparency of Government Policies the mean score per country as reported by the Global Competitiveness Reports from 2002-2003 to 2011-2012.[18]

Wilshire Score (W_{as}). For several years, Wilshire Associates in cooperation with Oxford Analytica calculated on behalf of CalPERS the Wilshire Score Index Transparency Factor (Wilshire Associates, various years) to determine permissible equity markets for investment. We use the factor on accounting standards (W_{as}).

Disclosure. This variable is the "disclosure in periodic filings" component of Djankov, and others' (2008) anti-self-dealing index. See Table 1 (item 1.2) of Djankov, and others for details.

ROSC. This indicator is a dummy variable which switches from one to zero once the country first IMF Report on Standards and Codes (covering 12 areas identified as important by the IMF and the World Bank) has been published.

For completeness, we use the same set of opacity variables for both bond and equity regressions. However, some opacity indices (such as corporate opacity or disclosure) should be more relevant for equity returns than for bond returns (where dimensions such as the

[18] We use the first year mentioned on each report's title to assign the scores on a yearly basis (i.e. we use data from the 2002-2003 report for 2002). The Global Competitiveness Report 2005-2006 does not report this question. For 2005, we linearly interpolate the values from the 2004-2005 and 2006-2007 reports. See World Economic Forum (various years).

transparency of government policies and the publication of standards and codes reports should matter more).

Controls

Our data for the U.S. 3-Month Treasury bills rate, the exchange rate against the U.S. dollar, and the dividend-yield (implicit in MSCI indices) come from DataStream. The on-the-run-off-the-run spread is calculated as in the Chicago Fed's National Financial Conditions Index (NFCI) and is the difference between the series FYCEPA and FCM10 from Haver Analytics. Sovereign risk is measured by the Standard & Poor's Rating and Outlook Index. The trade-based measure of market segmentation is the average for the previous twelve months of total merchandise trade of each country with the U.S. and comes from the Bureau of Economic Analysis. The capital flows-based measure of segmentation is the sum of purchases and sales of foreign equities to and from U.S. investors by nationals of each country in the previous twelve months, and is from the Treasury International Capital System (TIC) database maintained by the U.S. Treasury. The two measures of capital controls, for bonds and equities, are based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database (1999-2011).

We present, in Table 2, summary statistics for our main variables of interest: asset returns, VIX changes, and opacity indexes.

IV. RESULTS

A. Main Results

Bond Spreads

The results for bond spreads are generally in line with our hypothesis that price sensitivity is increasing in opacity (Proposition 2). In six of the seven specifications, the interaction of the opacity variable with changes in the VIX is positive and statistically significant. In particular, as expected, the Corruption, Transparency of Government Policies, and ROSC indices significantly amplify the reaction of bond yields to uncertainty shocks (although the interaction with the ROSC variable is only significant at the ten percent level.) In terms of economic significance, a country in the bottom 10 percentile of transparency (in terms of perceptions of corruption by TI) is expected to experience, over the period of one week, a 1.7 percentage point higher increase in spreads in response to a 10-percentage-point increase in the VIX, compared to a country in the highest 10 percentile.

The signs of the rest of the coefficients are mostly in line with our priors, although not always statistically significant. As expected, the occurrence of banking and debt crises significantly affects bond yields, but currency crisis do not. The interaction of VIX shocks with credit quality – as measured by the S&P credit ratings – is not significant in all but one case. This suggests that with our transparency measures we are capturing a different dimension beyond mere credit quality.[19]

[19] We also estimated a similar specification with daily data, including day-of-the week dummies, remove the crises dummies, and the lagged dependent variable (to account for time-zone differences in trading days) as controls. The size and significance of the effects are similar to the ones estimated for weekly data. The results (for bond and equity returns) are available from the authors.

Equity Returns

Similarly to the case of bond spreads, stock returns tend to react less strongly to VIX shocks in more transparent emerging markets (Table 5). Most interactions of VIX changes with country opacity are statistically significant at the one percent level (the interactions of VIX changes with the PWC Opacity index and ROSC publication date variable are not significant). This effect is also economically significant since the decline in equity returns induced by a 10 percent increase in the VIX, over the period of one week, is 0.29 percentage points higher for countries in the 90th percentile of Transparency of Government Policies index (i.e. the top 10 percent most opaque countries) than for those on the 10th percentile. This is about double the average weekly change in the MSCI for the countries included in our sample.

As expected, equity markets that are more integrated financially with the rest of the world indeed suffer more from VIX fluctuations. This is evident in the fact that the interaction terms with capital flows are negative and statistically significant.[20] The interaction of the VIX with trade openness turns out to be insignificant. These two findings are in line with the notion that the transmission of financial shocks to equity markets across the globe happens mostly through the financial channel and not through the trade channel (see Didier, Love, and Martinez-Peria, 2012, for a recent account). Except for the dividend yield and the

[20] We tried adding to the list of global integration variables the index constructed by Bekaert and others (2011) for *effective or de facto equity market segmentation*. The results (which can be made available) are very similar to those in Table 5. We thank Geert Bekaert and Stephan Siegel for sharing their data.

change in the exchange rate (which enter significantly), the other variables have the expected sign but are not statistically significant.

Our finding that the transmission of global volatility shocks within equity markets is stronger for more opaque countries is in line with Bekaert, Ehrman, Fratzscher, and Mehl (2011). These authors find that local factors (such as macroeconomic conditions, sovereign risk, and institutions) explain the relative exposure to the 2007-2009 financial crisis better than the depth and number of trade and financial linkages to global markets. They take this as confirmation of the "wake-up call" hypothesis of financial contagion. However, the results we present here and our stylized model from Section II provide an alternative explanation for the transmission of financial shocks (i.e. opacity or ambiguity surrounding asset returns) which also supports their empirical findings.

Robustness and Additional Tests

Opacity vs. generic country risk. Our results may be affected by the fact that some or all of our opacity measures may be capturing other, more generic country-specific risk; in other words, we may be attributing a special role to opacity whereas in fact the differential reaction we observe is due to some other idiosyncratic, country-level risk. Controlling for such risks is important because, in the model presented in Section II, we cannot distinguish the effect of an increase in ambiguity (increased variance of prior beliefs) from that of an increase in underlying fundamental volatility or risk. This is unlikely to be problematic for the specification with bond returns since we already include a widely used measure of sovereign risk as a control. Therefore, in exploring robustness we focus on equity returns and

add to the list of controls a measure of country risk and interact it with the change in the global factor as well. We use the ICRG Composite Country Risk Rating (published by the PRS Group) as a measure of political, economic, and financial country risk.[21] The inclusion of this additional interaction actually tends to increase the estimated effect of the opacity indices somewhat, while the patterns of statistical significance remain unchanged (Table 7).

Opacity vs. liquidity. An alternative possibility is that measures of opacity are correlated with market liquidity (particularly in the case of equities), and that less liquid emerging markets react more strongly to global signals. In principle, most of the literature suggests causation from transparency to liquidity (see, for example, Lang and Maffet, 2011), which would imply that controlling separately for liquidity in our regressions could result in underestimating the true impact of transparency. Nevertheless, when we include measures of market liquidity (lagged by one period) such as the one proposed by Amihud (2002), in our regressions for equity markets, the interaction terms with illiquidity do not enter significantly. The significance of our opacity variables drops in all but two cases, suggesting a problem of multicollinearity (Table 9).[22] Nevertheless, the interaction terms still enter significantly in four out of the seven cases, including for those indices most relevant for equity returns (corporate opacity, disclosure, and accounting standards).[23]

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[21] A higher Composite Country Risk Rating (CRR) means lower country risk. See Bekaert, and others (2012) for a description of considering political risk in international valuations and of the ICRG political risk indicator.
[22] Amihud (2002) proposes as a measure of illiquidity the absolute (percentage) price change per dollar of daily trading volume, or the daily price impact of the order flow. This measure compares well to alternative measures of illiquidity as a proxy for price impact (Goyenko, Holden, and Trzinka, 2009). We define the illiquidity variable as the weekly average ratio of the daily absolute return to the (dollar) trading volume on that day. The measure is constructed using data from Datastream.
[23] Calvo and Mendoza (2000) argue that, in the presence of fixed costs of gathering and processing country-specific information, increased market integration may exacerbate the international transmission of financial shocks by weakening incentives for acquiring such information and fostering herding. In such a setting, the cost

(continued…)

Asymmetric responses. We are also interested in checking whether our results are affected by the nature of the global shock. Specifically, we want to know if the strength with which global financial shocks are amplified into highly opaque countries relative to low-opacity ones is different depending on whether shocks are adverse (increases in VIX) or benign (drops in VIX). This results in a modification to our baseline specifications (3) and (4) as follows:

$$\Delta r_{it}^{b} = \alpha_i + \beta_{G1}\Delta f_t I\left(\Delta f_t < 0\right) + \beta_{B1}\Delta f_t I\left(\Delta f_t > 0\right)_t + \beta_2 \Delta f_t \times t + \beta_3 Opacity_{it} + \beta_{G4} Opacity_{it} \times \Delta f_t I\left(\Delta f_t < 0\right) + \beta_{B4} Opacity_{it} \times \Delta f_t I\left(\Delta f_t > 0\right) + \gamma' \mathbf{x}_{it-1}^{b} + \sum_{j=1}^{M} \delta YEAR_{jt} + \varepsilon_{it},$$

and

$$r_{it}^{e} = \alpha_i + \left(b_{1w} + b_{2w} \times t\right) r_{it}^{w} + \beta_{G1}\Delta f_t I\left(\Delta f_t < 0\right) + \beta_{B1}\Delta f_t I\left(\Delta f_t > 0\right)_t + \beta_2 \Delta f_t \times t + \beta_3 Opacity_{it} + \beta_{G4} Opacity_{it} \times \Delta f_t I\left(\Delta f_t < 0\right) + \beta_{B4} Opacity_{it} \times \Delta f_t I\left(\Delta f_t > 0\right) + \gamma' \mathbf{x}_{it-1}^{e} + \varepsilon_{it},$$

for bonds and equities, respectively. *I(.)* are indicator variables which take value one if the condition inside the parenthesis is met and zero otherwise. The results for bond (Table 4) and equity returns (Table 6) go in opposite directions. For bond returns, higher opacity has a greater price-amplification effect for good shocks than for bad shocks; except for the PWC Opacity index and the Transparency of Government Policies index (ROSC is now insignificant for both types of shocks). For equity returns, we find that for all opacity measures, except Wilshire Accounting Standards, opacity has a stronger and more significant

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of information gathering for small markets may exceed its benefits, so that smaller markets should be more responsive to global financial shocks. We explore this possibility by including an additional interaction of the VIX with local equity market capitalization, and our results regarding opacity do not change significantly. Results are available from the authors upon request.

amplification effect for adverse shocks (ROSC has a significant interaction with good shocks, at the 10 percent level, but with the wrong sign).

The result for the asymmetric response of equity returns is in line with Jin and Myers' (2006) finding that stocks in more opaque countries are more likely to crash and exhibit higher systematic risk. Our result also complements previous work by Bae, Lim, and Wei (2006) on the role of corporate governance as a determinant of return asymmetries. In their study, the higher prevalence of return skewness in emerging markets is explained by the asymmetric release of information by firms with poor corporate governance. They find that, in countries with poor corporate governance, firms delay the release of bad information, which leads to extremely negative rates of return when such news is eventually released. One way to conciliate our findings with theirs is think that firms from high-opacity countries tend to release bad news during periods of increased global market turbulence (i.e. at the same time as a bad shock to the VIX). This is, however, a different mechanism than the one we are proposing in this study and should be the focus of future research.

B. Endogeneity

Potentially, our results could suffer from an endogeneity problem. For example, governments who have observed strong financial market volatility in their countries may (erroneously) believe that reducing transparency may help dampening large asset price swings. If this were the case, our inference – interpreting the causation as running from high opacity to volatility – would be invalid. While we do not consider this scenario to be very plausible, it is testable. For the opacity variables for which we have sufficient time variation,

we can assess whether in fact lagged volatility induces a decline in transparency.[24] For this effect, we perform a test of Granger causality using one measure of opacity with substantial time variation (the Corruption Perception Index by Transparency International) and the volatility of MSCI returns. We estimate a panel VAR with three lags, country and year fixed effects and these two variables, and test the joint hypothesis that, for the equation with opacity as the dependent variable, the coefficients of all three lags of volatility are zero.[25] The results in Table 9 show that both for equities and bonds one cannot reject the null of volatility not Granger-causing opacity. We conclude that, at least in our data, endogeneity of opacity does not seem to be a problem.

V. CONCLUSION

In this paper we presented some thoughts and evidence on the role of transparency in amplifying shocks across markets. We provided a simple model formalizing the intuition that more opaque assets react more strongly to signals in financial centers. The evidence for emerging bond and equity markets is consistent with this notion, and the effects are quantitatively important, lending support to the policy push for transparency.[26]

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[24] If governments react to high volatility by increasing transparency, this would induce a bias against finding any effect of opacity. See Bhattacharya, Daouk, and Welker (2003) and Gelos and Wei (2005) for an exploration of opacity endogeneity in a different setting.

[25] The VAR is estimated by LSDV, which is consistent for fixed *N*.

[26] Our theoretical model emphasizes the role of international investors without taking into account the role of domestic investors in emerging markets, for whom – in the presence of informational asymmetries – ambiguity about return distributions may be substantially lower (see Broner and others, 2012 for a recent discussion of informational asymmetries in the context of capital flows). The empirical results presented here suggest that any counteracting effect resulting from the behavior of domestic investors is outweighed by that of international ones. This seems consistent with the evidence (see, for example Calvo, Izquierdo, and Mejía, 2008).

Regarding further research, extending the analysis to other cross-border capital flows such as bank lending could also provide important new insights. Another avenue would be to study the implications of our findings for contagion channels across domestic assets and institutions. It would also be fruitful to consider theoretical settings with heterogeneous information, to explore the robustness of our predictions in more general and richer models.

APPENDIX A – MODEL DETAILS AND PROOFS

A.1 – Joint and conditional distributions of signal and dividend processes

Assuming the correlation ρ between dividends paid by assets 1 and 2 is known, we have $cov(d_1,d_2)= = \rho\sqrt{\sigma_{u1}^2+\sigma_b^2}\sigma_2 = \rho\tilde{\sigma}_1\sigma_2$, where $\tilde{\sigma}_1^2 \equiv \sqrt{\sigma_{u1}^2+\sigma_b^2}$. The joint distribution of the two dividend processes is given by $\boldsymbol{d}\sim N(M_d,V_d)$, where

$$M_d = \begin{bmatrix} \mu_1+\mu_b \\ \mu_2 \end{bmatrix}$$

and

$$V_d = \begin{bmatrix} \tilde{\sigma}_1^2 & \rho\tilde{\sigma}_1\sigma_2 \\ - & \sigma_2^2+\sigma_{\varepsilon 2}^2 \end{bmatrix},$$

while the joint distribution of the two signals is $\boldsymbol{s} \sim N(M_s,V_s)$, where $M_s=M_d$ and

$$V_s = \begin{bmatrix} \tilde{\sigma}_1^2+\sigma_{\varepsilon 1}^2 & \rho\tilde{\sigma}_1\sigma_2 \\ - & \sigma_2^2+\sigma_{\varepsilon 2}^2 \end{bmatrix}.$$

Given this and the joint distribution of **d** and **s**,

$$\begin{bmatrix} \mathbf{d} \\ \mathbf{s} \end{bmatrix} \sim N\left(\begin{bmatrix} M_d \\ M_s \end{bmatrix}, \begin{bmatrix} V_d & C_{ds} \\ C'_{ds} & V_s \end{bmatrix}\right)$$

and normal Bayesian updating, it follows that the conditional distribution of $\boldsymbol{d}$ given $\boldsymbol{s}$ is normal and given by $\mathbf{d}|\mathbf{s} \sim N(M_d+C_{ds}\, V_s^{-1}C_{ds}'(S-M_s),S_d-C_{ds}V_s^{-1}C_{ds}')$. Using the fact that the noise terms are orthogonal to the dividend processes, we can easily show that $C_{ds}=V_d$.

In the same fashion we can derive the distribution of **d**, conditional on $J=[s' \;\; b]'$, to be normal with mean $M_d+CB^{-1}C'(\mathrm{S}-\mathrm{M}_s)$ and variance $V_d-C\,B^{-1}\,C'$, where $\mathrm{S}-\mathrm{M}_s=[s_1-\mu_1-\mu_b,$ $s_2-\mu_2,\, b-\mu_b\,]'$, $B=\begin{bmatrix} V_s & \mathbf{x} \\ \mathbf{x}' & \sigma_b^2 \end{bmatrix}$, and $C=[V_d \vdots \boldsymbol{x}]$, with $\boldsymbol{x}=[\sigma_b^2\; 0]'$.

A.2 – Proofs

Consider

$$\frac{\partial \mathbf{p}}{\partial s_2}=\frac{\partial E(\mathbf{d}\mid \mathbf{s})}{\partial s_2},\; 0<\phi_1\equiv\; \tilde{\sigma}_1^{\,2}/\left(\tilde{\sigma}_1^{\,2}+\sigma_{\varepsilon\,1}^{\,2}\right)<1 \text{ and } 0<\phi_2\equiv\sigma_2^2/(\sigma_2^2+\sigma_{\varepsilon 2}^2)<1,$$

which holds as long as the noise terms are nondegenerate. ϕ_1 and ϕ_2 are the signal-to-noise ratios of assets 1 and 2, respectively.

Lemma 1 *Asset prices in the emerging market react positively (negatively) to positive (negative) news concerning the developed market if and only if the two dividend processes are positively correlated, i.e.,* $\partial\, p_1/\partial\, s_2>0$ if $\rho>0$.

Proof.

Using (2) and after taking derivatives with respect to s_2, we get (after some algebra):

$$\frac{\partial p_1}{\partial s_2}=\rho\tilde{\sigma}_1\sigma_2\frac{\phi_1+\phi_2-\left(1+\rho^2\right)\phi_1\phi_2}{1-\rho^2\phi_1\phi_2}>\rho\tilde{\sigma}_1\sigma_2\frac{\phi_1+\phi_2-2\phi_1\phi_2}{1-\rho^2\phi_1\phi_2},\text{ given } |\rho|<1. \tag{A.1}$$

It is clear that the numerator in the second fraction above is positive for $0<\phi_i<1$, $i\in\{1,2\}$ since $\phi_1>0>(\phi_1-1)\,\phi_2$. The denominator of said fraction is also positive for $0<\phi_i<1$. Therefore, the left-hand side of (A.1) is positive if $\rho>0$. ■

Proposition 1: If the fundamentals in the two markets are positively correlated (ρ>0), the sensitivity of the price of asset 1 (emerging market) to a shock in the developed market (signal 2) is decreasing in the variance of the non fundamental shock to asset 1. This means,

$$\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_{\varepsilon 1}^2} < 0.$$

Proof.

Using the equality in (A.1) and writing $\frac{\partial p_1}{\partial s_2} = \rho \tilde{\sigma}_1 \sigma_2 \chi$, with

$\chi \equiv \frac{\phi_1 + \phi_2 - (1+\rho^2)\phi_1\phi_2}{1-\rho^2\phi_1\phi_2}$, it is easy to see that

$$\frac{\partial \chi}{\partial \phi_1} = \frac{(1-(1+\rho^2)\phi_2)(1-\rho^2\phi_1\phi_2) - (\phi_1+\phi_2-(1+\rho^2)\phi_1\phi_2)(-\rho^2\phi_2)}{\left(1-\rho^2\phi_1\phi_2\right)^2} = \frac{\left(1-\phi_2\right)\left(1-\rho^2\phi_2\right)}{\left(1-\rho^2\phi_1\phi_2\right)^2} > 0. \quad \text{(A.2)}$$

Therefore,

$$\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_{\varepsilon 1}^2} = \frac{\partial^2 p_1}{\partial s_2 \partial \phi_1}\frac{\partial \phi_1}{\partial \sigma_{\varepsilon 1}^2} = \rho \tilde{\sigma}_1 \sigma_2 \frac{\partial \chi}{\partial \phi_1}\frac{\partial \phi_1}{\partial \sigma_{\varepsilon 1}^2} = \rho \tilde{\sigma}_1 \sigma_2 \frac{\left(1-\phi_2\right)\left(1-\rho^2\phi_2\right)}{\left(1-\rho^2\phi_1\phi_2\right)^2}\left(-\frac{1}{\left(\tilde{\sigma}_1^2+\sigma_{\varepsilon 1}^2\right)^2}\right) < 0$$

for ρ>0. ■

Proposition 2 *The sensitivity of the price of asset 1 (emerging market) to a shock in the developed market (signal 2) is increasing in ambiguity (measured by the variance of the prior belief about b) as long as ρ>0.*

Proof:

We want to show

$$\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_b^2} = \frac{\partial^2 p_1}{\partial s_2 \partial \tilde{\sigma}_1} \frac{\partial \tilde{\sigma}_1}{\sigma_b^2} > 0.$$

We start by noting that $\frac{\partial \tilde{\sigma}_1}{\sigma_b^2} = 2\sigma_{\varepsilon 1}^2 / \tilde{\sigma}_1 \phi_1 > 0.$ Thus it suffices that $\frac{\partial^2 p_1}{\partial s_2 \partial \tilde{\sigma}_1} > 0.$ Using the formula we derived above for $\partial p_1 / \partial s_2$, we have:

$$\frac{\partial^2 p_1}{\partial s_2 \partial \tilde{\sigma}_1} = \rho \sigma_2 \underbrace{\frac{\phi_1 + \phi_2 - \left(1+\rho^2\right)\phi_1 \phi_2}{1 - \rho^2 \phi_1 \phi_2}}_{\equiv \chi} + \rho \tilde{\sigma}_1 \sigma_2 \frac{\partial \chi}{\partial \tilde{\sigma}_1} \text{ and } \frac{\partial \chi}{\partial \tilde{\sigma}_1} = \frac{\partial \chi}{\partial \phi_1} \underbrace{\frac{\partial \phi_1}{\partial \tilde{\sigma}_1}}_{>0}.$$

We know $\rho \sigma_2 \chi > 0$ by (A.1) in Lemma 1's proof and $\frac{\partial \chi}{\partial \phi_1} > 0$ from (A.2) in Proposition 2's proof. Therefore, $\frac{\partial^2 p_1}{\partial s_2 \partial \sigma_b^2} > 0$. ■

APPENDIX B – LIST OF COUNTRIES USED IN THE SAMPLE

Argentina

Brazil

Chile

China

Colombia

Czech Republic

Egypt

Hong Kong SAR

Hungary

India

Indonesia

Israel

Jordan

Korea

Malaysia

Mexico

Morocco

Pakistan

Peru

Philippines

Poland

Russian Federation

Singapore

South Africa

Taiwan Province of China

Thailand

Turkey

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Table 1 - Correlations between Measures of Opacity, Risk, and Liquidity

Table shows linear correlations between different measures of opacity, country risk, and liquidity. PWC Opacity Index is PricewaterhouseCoopers' Opacity Index. Corruption Perceptions is Transparency International's Country Transparency index. Corporate Opacity is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). Wilshire Score (Accounting Standards) is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure is Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. Government Policies is the Transparency of Government Policies Index from the Global Competitiveness Report (World Economic Forum). ROSC Publication takes value one if the country has never published a ROSC report and zero otherwise. SNP is Standard & Poor's Rating and Outlook. ICRG Country Risk Rating is the Composite Risk Rating from ICRG. Illiquidity is Amihud's (2002) measure of market illiquidity. If needed, indices were multiplied by -1 so as to reflect increasing level of opacity.

VI.	PWC Opacity Index	Corruption Perceptions	Corporate Opacity	Wilshire Score (Accounting Standards)	Disclosure	Government Policies	ROSC Publication	Standard & Poor's Rating and Outlook	ICRG Country Risk Rating	Amihud's (2002) Illiquidity
PWC Opacity Index	1									
Corruption Perceptions	0.58	1								
Corporate Opacity	0.43	0.71	1							
Wilshire Score (Accounting Standards)	-0.06	0.03	0.02	1						
Disclosure	0.15	0.43	0.38	-0.02	1					
Government Policies	0.46	0.52	0.44	0.00	0.53	1				
ROSC Publication	0.22	0.27	0.21	-0.24	0.05	-0.04	1			
Standard & Poor's Rating and Outlook	0.51	0.60	0.13	0.08	0.29	0.53	0.11	1		
ICRG Country Risk Rating	-0.35	-0.42	-0.01	-0.20	-0.23	-0.25	-0.15	-0.71	1	
Illiquidity	0.24	0.09	0.02	-0.09	-0.06	0.24	0.02	0.26	-0.14	1

Table 2 - Summary Statistics

Table shows summary statistics for bond and equity returns (EMBIG and MSCI), VIX changes, and opacity indices. PWC Opacity Index is PricewaterhouseCoopers' Opacity Index. Corruption Perceptions is Transparency International's Country Transparency index. Corporate Opacity is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). Wilshire Score (Accounting Standards) is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure is Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. Government Policies is the Transparency of Government Policies Index from the Global Competitiveness Report (World Economic Forum). ROSC Publication takes value one if the country has never published a ROSC report and zero otherwise. P10%, P50%, and P90% are the 10th, 50th, and 90th percentiles.

Variables	Mean	S.D.	P10%	P50%	P90%
ΔEMBIG	0.37%	8.85%	-8.45%	-0.22%	9.40%
ΔMSCI	0.14%	4.56%	-5.00%	0.21%	5.19%
ΔVIX	0.80%	12.77%	-12.97%	-0.45%	15.83%
PWC Opacity Index	46.72	15.59	29.00	45.00	67.00
Corruption Perceptions	5.66	1.75	2.72	6.20	7.50
Corporate Opacity	3.20	0.63	2.05	3.25	3.95
Wilshire Score (Accounting Standards)	2.36	0.62	1.00	2.50	3.00
Disclosure	0.41	0.33	0.00	0.40	0.80
Government Policies	2.86	0.85	1.79	2.90	3.90
ROSC Publication	0.45	0.50	0.00	0.00	1.00

Table 3 - Global Shocks, Bond Returns and Transparency: Linear Effects

The dependent variable is **weekly** change in the bond spread implicit on each country EMBIG index, winsorized at the top and bottom 0.5 percentile. Table shows the baseline linear effects specification with country and year fixed effects and Driscoll-Kraay standard errors. SNP is Standard & Poor's Rating and Outlook (transformed to index and orthogonalized with respect to opacity variable). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure is Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. If needed, indices were normalized so as to reflect increasing level of opacity. p-value in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: $\Delta EMBIG_{i,t}$

Variables	(1) Opacit	(2) Corrup	(3) Corpop	(4) W_{as}	(5) Disclosure	(6) TGP	(7) ROSC
Δon-off spread	0.0398**	0.0388**	0.0396**	0.0390**	0.0392**	0.0453**	0.0393**
	(0.014)	(0.013)	(0.015)	(0.012)	(0.012)	(0.039)	(0.012)
$\Delta iUS3mo_t$	-0.0030	-0.0029	-0.0031	-0.0029	-0.0029	-0.0024	-0.0029
	(0.244)	(0.254)	(0.254)	(0.253)	(0.256)	(0.338)	(0.255)
Bond Restrictions	-0.0014	-0.0011	-0.0002	-0.0007	-0.0008	-0.0024	-0.0006
	(0.389)	(0.485)	(0.903)	(0.675)	(0.644)	(0.272)	(0.726)
Banking Crisis	0.0081	0.0058	0.0061	0.0056	0.0059		0.0059
	(0.309)	(0.460)	(0.436)	(0.478)	(0.457)		(0.449)
Currency Crisis	-0.0001	0.0000	-0.0005	-0.0002	0.0001	-0.0006	-0.0003
	(0.989)	(0.991)	(0.903)	(0.966)	(0.990)	(0.950)	(0.948)
Debt Crisis	0.0400*	0.0419**	0.0426**	0.0425**	0.0421**		0.0419**
	(0.059)	(0.045)	(0.045)	(0.044)	(0.046)		(0.047)
ΔXRATE	0.3279***	0.3332***	0.3251***	0.3265***	0.3180***	0.2749***	0.3270***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔVIX	-0.1091	-0.0855	-0.1031	0.0229	0.0193	-0.1585**	0.0152
	(0.192)	(0.133)	(0.117)	(0.717)	(0.716)	(0.043)	(0.786)
ΔVIX× t	0.0004***	0.0003***	0.0004***	0.0003***	0.0003***	0.0005***	0.0004***
	(0.001)	(0.006)	(0.002)	(0.003)	(0.004)	(0.000)	(0.001)
Opacity	-0.0002*	-0.0008	-0.0018	-0.0005		0.0012	-0.0012
	(0.065)	(0.596)	(0.400)	(0.683)		(0.563)	(0.580)
ΔVIX×Opacity	0.0028***	0.0352***	0.0336***	-0.0096	0.1033***	0.0323**	0.0308*
	(0.010)	(0.000)	(0.008)	(0.453)	(0.000)	(0.015)	(0.061)
SNP	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0002	-0.0001
	(0.503)	(0.334)	(0.270)	(0.311)	(0.274)	(0.191)	(0.286)
ΔVIX×SNP	-0.0005	-0.0020*	0.0013	0.0005	-0.0002	-0.0001	0.0005
	(0.541)	(0.052)	(0.137)	(0.518)	(0.776)	(0.936)	(0.521)
Observations	11,214	11,879	11,040	11,931	11,931	9,155	11,931
Number of countries	19	21	19	21	21	21	21

Table 4 - Global Shocks, Bond Returns and Transparency: Asymmetric Effects

The dependent variable is **weekly** change in the bond spread implicit on each country EMBIG index, winsorized at the top and bottom 0.5 percentile. Table shows the asymmetric effects specification with country and year fixed effects and Driscoll-Kraay standard errors. ΔVIX_G and ΔVIX_B stand for good (decrease) and bad (increase) volatility shocks (measured by VIX). SNP is Standard & Poor's Rating and Outlook (transformed to index and orthogonalized with respect to opacity variable). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure is Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. If needed, indices were normalized so as to reflect increasing level of opacity. If needed, indices were normalized so as to reflect increasing level of opacity. *P-value* in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: $\Delta EMBIG_{i,t}$

Variables	(1) Opacit	(2) Corrup	(3) Corpop	(4) W_{as}	(5) Disclosure	(6) TGP	(7) ROSC
Δon-off spread	0.0398**	0.0388**	0.0395**	0.0390**	0.0391**	0.0457**	0.0392**
	(0.014)	(0.013)	(0.015)	(0.012)	(0.012)	(0.039)	(0.012)
$\Delta iUS3mo_t$	-0.0030	-0.0029	-0.0031	-0.0029	-0.0029	-0.0024	-0.0029
	(0.244)	(0.254)	(0.254)	(0.252)	(0.255)	(0.338)	(0.255)
Bond Restrictions	-0.0014	-0.0011	-0.0002	-0.0007	-0.0008	-0.0024	-0.0006
	(0.378)	(0.491)	(0.886)	(0.703)	(0.635)	(0.267)	(0.749)
Banking Crisis	0.0081	0.0059	0.0061	0.0056	0.0059		0.0059
	(0.310)	(0.456)	(0.436)	(0.482)	(0.455)		(0.452)
Currency Crisis	-0.0001	0.0001	-0.0005	-0.0002	0.0001	-0.0009	-0.0002
	(0.988)	(0.976)	(0.909)	(0.968)	(0.989)	(0.920)	(0.958)
Debt Crisis	0.0401*	0.0418**	0.0426**	0.0426**	0.0421**		0.0419**
	(0.058)	(0.045)	(0.045)	(0.044)	(0.046)		(0.046)
ΔXRATE	0.3277***	0.3322***	0.3245***	0.3266***	0.3182***	0.2762***	0.3256***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\Delta VIX \times t$	0.0004***	0.0003***	0.0004***	0.0003***	0.0003***	0.0005***	0.0004***
	(0.001)	(0.006)	(0.002)	(0.003)	(0.004)	(0.000)	(0.001)
SNP	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0002	-0.0001
	(0.537)	(0.319)	(0.267)	(0.303)	(0.268)	(0.210)	(0.274)
ΔVIX×SNP	-0.0005	-0.0020*	0.0013	0.0005	-0.0002	-0.0001	0.0005
	(0.538)	(0.051)	(0.138)	(0.522)	(0.769)	(0.946)	(0.525)
Opacity	-0.0003*	0.0000	-0.0019	0.0013			-0.0031
	(0.085)	(0.988)	(0.398)	(0.533)			(0.405)
ΔVIX_G	-0.0418	-0.1595**	-0.1442*	0.0615	-0.0041	-0.0897	0.0221
	(0.739)	(0.048)	(0.083)	(0.506)	(0.942)	(0.425)	(0.730)
$\Delta VIX_G \times$Opacity	0.0012	0.0469***	0.0444**	0.0167	0.1441***	0.0123	0.0029
	(0.533)	(0.000)	(0.023)	(0.609)	(0.002)	(0.612)	(0.940)
ΔVIX_B	-0.1456	-0.0443	-0.0794	0.0014	0.0333	-0.1968**	0.0126
	(0.108)	(0.478)	(0.313)	(0.984)	(0.567)	(0.033)	(0.832)
$\Delta VIX_B \times$Opacity	0.0037**	0.0289***	0.0276	-0.0249	0.0805***	0.0429**	0.0465
	(0.016)	(0.000)	(0.105)	(0.169)	(0.006)	(0.037)	(0.175)
Observations	11,214	11,879	11,040	11,931	11,931	9,155	11,931
Number of countries	19	21	19	21	21	21	21

Table 5 - Global Shocks, Stock Returns and Transparency: Linear Effects

The dependent variable is **weekly** returns of country MSCI index, winsorized at the top and bottom 0.5 percentile. Table shows the baseline nonlinear effects specification with country and year fixed effects and Driscoll-Kraay standard errors. Capital Flows is the previous three months' average of total flows (purchases plus sales) of foreign securities between U.S. investors and domestic investors (TIC data). Trade is previous twelve months' average of total trade (imports plus exports) originating in each country in the sample (World Bank). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. If needed, indices were normalized so as to reflect increasing level of opacity. If needed, indices were normalized so as to reflect increasing level of opacity. *p-value* in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: $\Delta MSCI_{i,t}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables	Opacit	Corrup	Corpop	W_{as}	Disclosure	TGP	ROSC
$D/Y_{I,t-1}$	0.0011**	0.0010**	0.0007	0.0010**	0.0010**	0.0010	0.0010**
	(0.013)	(0.017)	(0.124)	(0.018)	(0.017)	(0.106)	(0.016)
Equity Restrictions	-0.0013	-0.0012	-0.0009	-0.0013	-0.0013	-0.0015	-0.0012
	(0.302)	(0.350)	(0.532)	(0.307)	(0.305)	(0.286)	(0.320)
Banking Crisis	-0.0204	-0.0191	-0.0182	-0.0201	-0.0202		-0.0203
	(0.196)	(0.222)	(0.243)	(0.199)	(0.196)		(0.192)
Currency Crisis	0.0016	0.0019	0.0025	0.0016	0.0017	-0.0116	0.0019
	(0.805)	(0.765)	(0.694)	(0.805)	(0.791)	(0.243)	(0.760)
Debt Crisis	0.0077	0.0069	0.0068	0.0074	0.0075		0.0077
	(0.521)	(0.571)	(0.578)	(0.546)	(0.544)		(0.522)
Capital Flows	0.0001	0.0001	-0.0002	0.0005	0.0001	0.0017	0.0001
	(0.964)	(0.962)	(0.890)	(0.819)	(0.952)	(0.476)	(0.967)
Trade	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000*	0.0000
	(0.685)	(0.440)	(0.502)	(0.386)	(0.455)	(0.097)	(0.402)
ΔVIX×Capital Flows	-0.0126**	-0.0297***	-0.0236***	-0.0620***	-0.0378***	-0.0282***	-0.0236***
	(0.026)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔVIX×Trade	-0.0000	-0.0000	0.0000	-0.0000	-0.0000**	-0.0000	-0.0000
	(0.148)	(0.224)	(0.706)	(0.269)	(0.014)	(0.172)	(0.212)
ΔXRATE	-0.2707***	-0.2756***	-0.2754***	-0.2657***	-0.2708***	-0.2604***	-0.2754***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMSCI_US	0.2076	0.1999	0.2059	0.1683	0.1892	0.0409	0.1891
	(0.191)	(0.177)	(0.188)	(0.250)	(0.195)	(0.853)	(0.195)
ΔMSCI_US× t	0.0008**	0.0008**	0.0008**	0.0008**	0.0008**	0.0010**	0.0008**
	(0.025)	(0.030)	(0.027)	(0.022)	(0.026)	(0.026)	(0.026)
ΔVIX	0.0160	0.0196	0.0360	-0.0364	0.0365	0.0745**	-0.0032
	(0.618)	(0.489)	(0.253)	(0.301)	(0.221)	(0.034)	(0.912)
ΔVIX× t	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0001	-0.0000
	(0.611)	(0.723)	(0.763)	(0.980)	(0.687)	(0.345)	(0.782)
Opacity	-0.0000	0.0007	0.0001	0.0005		0.0028**	-0.0004
	(0.979)	(0.437)	(0.939)	(0.589)		(0.028)	(0.821)
ΔVIX× Opacity	-0.0004	-0.0030**	-0.0129***	-0.0211***	-0.0625***	-0.0162***	0.0033
	(0.189)	(0.023)	(0.003)	(0.007)	(0.000)	(0.000)	(0.679)
Observations	15,242	16,746	15,502	15,502	16,850	12,846	16,850
Number of countries	23	25	23	23	25	25	25

Table 6 - Global Shocks, Stock Returns, and Transparency: Asymmetric Effects

The dependent variable is **weekly** returns of country MSCI index, winsorized at the top and bottom 0.5 percentile. Table shows the asymmetric effects specification with country and year fixed effects and Driscoll-Kraay standard errors. ΔVIX_G and ΔVIX_B stand for good (decrease) and bad (increase) volatility shocks (measured by VIX). Capital Flows is the previous three months' average of total flows (purchases plus sales) of foreign securities between U.S. investors and domestic investors (TIC data). Trade is previous twelve months' average of total trade (imports plus exports) originating in each country in the sample (World Bank). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure is Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. If needed, indices were normalized so as to reflect increasing level of opacity. If needed, indices were normalized so as to reflect increasing level of opacity. *p-value* in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: $\Delta MSCI_{i,t}$

Variables	(1) Opacit	(2) Corrup	(3) Corpop	(4) W_{as}	(5) Disclosure	(6) TGP	(7) ROSC
$D/Y_{I,t-1}$	0.0011**	0.0010**	0.0007	0.0010**	0.0010**	0.0010*	0.0010**
	(0.013)	(0.016)	(0.113)	(0.015)	(0.015)	(0.099)	(0.015)
Equity Restrictions	-0.0012	-0.0009	-0.0006	-0.0010	-0.0010	-0.0012	-0.0010
	(0.356)	(0.469)	(0.656)	(0.418)	(0.422)	(0.393)	(0.418)
Banking Crisis	-0.0201	-0.0189	-0.0180	-0.0198	-0.0200		-0.0202
	(0.195)	(0.220)	(0.243)	(0.200)	(0.195)		(0.189)
Currency Crisis	0.0014	0.0017	0.0023	0.0014	0.0014	-0.0111	0.0017
	(0.819)	(0.787)	(0.720)	(0.828)	(0.821)	(0.272)	(0.786)
Debt Crisis	0.0075	0.0067	0.0066	0.0073	0.0073		0.0076
	(0.530)	(0.579)	(0.587)	(0.554)	(0.551)		(0.522)
Capital Flows	0.0002	0.0002	-0.0001	0.0006	0.0003	0.0021	0.0003
	(0.899)	(0.909)	(0.972)	(0.776)	(0.864)	(0.371)	(0.867)
Trade	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.828)	(0.615)	(0.678)	(0.525)	(0.607)	(0.165)	(0.581)
ΔVIX×Capital Flows	-0.0127**	-0.0296***	-0.0234***	-0.0618***	-0.0376***	-0.0283***	-0.0233***
	(0.024)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔVIX×Trade	-0.0000	-0.0000	0.0000	-0.0000	-0.0000**	-0.0000	-0.0000
	(0.146)	(0.210)	(0.720)	(0.254)	(0.012)	(0.166)	(0.189)
ΔXRATE	-0.2642***	-0.2689***	-0.2685***	-0.2589***	-0.2637***	-0.2567***	-0.2674***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMSCI_US	0.2365	0.2059	0.2123	0.1756	0.1954	0.0510	0.2042
	(0.127)	(0.158)	(0.169)	(0.221)	(0.174)	(0.809)	(0.156)
ΔMSCI_US× t	0.0008**	0.0008**	0.0009**	0.0008**	0.0008**	0.0011**	0.0008**
	(0.024)	(0.022)	(0.020)	(0.016)	(0.019)	(0.020)	(0.021)
ΔVIX× t	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000
	(0.705)	(0.918)	(0.952)	(0.801)	(0.883)	(0.473)	(0.944)
Opacity	0.0001	0.0011	0.0011	0.0006		0.0035***	0.0015
	(0.304)	(0.241)	(0.147)	(0.629)		(0.007)	(0.533)
ΔVIX_G	-0.0094	0.0188	0.0401	0.0011	0.0704**	0.0675	0.0299
	(0.852)	(0.551)	(0.269)	(0.978)	(0.029)	(0.124)	(0.351)
ΔVIX_G×Opacity	0.0013	0.0043*	-0.0013	-0.0238*	-0.0457***	-0.0016	0.0354*
	(0.128)	(0.063)	(0.831)	(0.083)	(0.007)	(0.845)	(0.069)
ΔVIX_B	0.0315	0.0158	0.0290	-0.0605	0.0135	0.0742**	-0.0243
	(0.378)	(0.593)	(0.367)	(0.111)	(0.664)	(0.041)	(0.436)
ΔVIX_B×Opacity	-0.0013**	-0.0071***	-0.0192***	-0.0193*	-0.0719***	-0.0244***	-0.0140
	(0.014)	(0.000)	(0.000)	(0.050)	(0.000)	(0.000)	(0.303)
Observations	15,242	16,746	15,502	15,502	16,850	12,846	16,850
Number of countries	23	25	23	23	25	25	25

Table 7 - Global Shocks, Stock Returns, Transparency, and Country Risk Ratings

The dependent variable is **weekly** returns of country MSCI index, winsorized at the top and bottom 0.5 percentile. Table shows the baseline nonlinear effects specification with country and year fixed effects and Driscoll-Kraay standard errors. Capital Flows is the previous three months' average of total flows (purchases plus sales) of foreign securities between U.S. investors and domestic investors (TIC data). Trade is previous twelve months' average of total trade (imports plus exports) originating in each country in the sample (World Bank). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. CRR is ICRG's Composite Country Risk. If needed, indices were normalized so as to reflect increasing level of opacity. If needed, indices were normalized so as to reflect increasing level of opacity. *p-value* in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Dependent variable: $\Delta MSCI_{i,t}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables	Opacit	Corrup	Corpop	W_{as}	Disclosure	TGP	ROSC
$D/Y_{I,t-1}$	0.0011**	0.0010**	0.0007	0.0011**	0.0010**	0.0011*	0.0010**
	(0.011)	(0.014)	(0.132)	(0.014)	(0.015)	(0.065)	(0.014)
Equity Restrictions	-0.0013	-0.0011	-0.0007	-0.0012	-0.0012	-0.0014	-0.0011
	(0.302)	(0.378)	(0.604)	(0.342)	(0.342)	(0.305)	(0.363)
Banking Crisis	-0.0192	-0.0187	-0.0169	-0.0203	-0.0197		-0.0195
	(0.217)	(0.221)	(0.266)	(0.186)	(0.199)		(0.205)
Currency Crisis	0.0003	0.0011	0.0014	0.0013	0.0010	-0.0120	0.0010
	(0.961)	(0.853)	(0.824)	(0.831)	(0.874)	(0.245)	(0.876)
Debt Crisis	0.0066	0.0063	0.0055	0.0075	0.0069		0.0067
	(0.582)	(0.587)	(0.635)	(0.526)	(0.558)		(0.563)
Capital Flows	-0.0001	-0.0001	-0.0005	0.0004	-0.0001	0.0015	-0.0001
	(0.933)	(0.970)	(0.781)	(0.831)	(0.950)	(0.546)	(0.931)
Trade	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.628)	(0.469)	(0.547)	(0.388)	(0.481)	(0.116)	(0.443)
ΔVIX×Capital Flows	-0.0041	-0.0280***	-0.0216***	-0.0637***	-0.0284***	-0.0156***	-0.0169***
	(0.474)	(0.000)	(0.001)	(0.000)	(0.000)	(0.006)	(0.006)
ΔVIX×Trade	-0.0000	-0.0000	0.0000	0.0000	-0.0000*	-0.0000	-0.0000
	(0.284)	(0.538)	(0.637)	(0.873)	(0.059)	(0.148)	(0.460)
ΔXRATE	-0.2731***	-0.2782***	-0.2762***	-0.2669***	-0.2725***	-0.2612***	-0.2768***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMSCI_US	0.2085	0.2046	0.2076	0.1746	0.1926	0.0636	0.1915
	(0.189)	(0.169)	(0.186)	(0.235)	(0.189)	(0.773)	(0.191)
ΔMSCI_US× t	0.0008**	0.0008**	0.0008**	0.0008**	0.0008**	0.0010**	0.0008**
	(0.024)	(0.030)	(0.027)	(0.022)	(0.026)	(0.030)	(0.026)
ΔVIX	0.2292***	0.2408***	0.0847	0.1584***	0.1674***	0.3818***	0.0819*
	(0.001)	(0.001)	(0.107)	(0.005)	(0.002)	(0.000)	(0.075)
ΔVIX× t	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0001	-0.0000
	(0.426)	(0.886)	(0.796)	(0.688)	(0.818)	(0.203)	(0.820)
CCR	-0.0001	-0.0000	-0.0001	0.0000	-0.0000	0.0000	-0.0001
	(0.603)	(0.870)	(0.633)	(0.917)	(0.859)	(0.788)	(0.646)
ΔVIX× CCR	-0.0025***	-0.0026***	-0.0006	-0.0030***	-0.0019***	-0.0036***	-0.0012**
	(0.001)	(0.002)	(0.227)	(0.000)	(0.001)	(0.000)	(0.018)
Opacity	-0.0000	0.0007	0.0020	0.0006		0.0027**	-0.0007
	(0.847)	(0.469)	(0.614)	(0.560)		(0.032)	(0.699)
ΔVIX× Opacity	-0.0011***	-0.0097***	-0.0147***	-0.0257***	-0.0697***	-0.0289***	0.0005
	(0.007)	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)	(0.948)
Observations	15,196	16,696	15,456	15,456	16,800	12,796	16,800
Number of countries	23	25	23	23	25	25	25

Table 8 - Global Shocks, Stock Returns, Transparency, and Market Liquidity

The dependent variable is **weekly** returns of country MSCI index, winsorized at the top and bottom 0.5 percentile. Table shows the baseline nonlinear effects specification with country and year fixed effects and Driscoll-Kraay standard errors. Capital Flows is the previous three months' average of total flows (purchases plus sales) of foreign securities between U.S. investors and domestic investors (TIC data). Trade is previous twelve months' average of total trade (imports plus exports) originating in each country in the sample (World Bank). Opacit is PWC Opacity Index. Corrup is Transparency International's Country Transparency index. Corpop is the Corporate Opacity Index from the Global Competitiveness Report (World Economic Forum). W_{as} is the Accounting Standards factor in the Wilshire Score from Wilshire Associates. Disclosure Djankov, and others' (2008) index of disclosure in periodic filings' component of its Anti-self-dealing index. TGP is the Transparency of Government Policies index by the World Economic Forum. ROSC is a dummy for the publication of a country's first ROSC report. Illiquidity is Amihud's (2002) measure of market illiquidity. If needed, indices were normalized so as to reflect increasing level of opacity. If needed, indices were normalized so as to reflect increasing level of opacity. *p-value* in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

	Dependent variable: $\Delta MSCI_{i,t}$						
Variables	(1) Opacit	(2) Corrup	(3) Corpop	(4) W_{sr}	(5) Disclosure	(6) TGP	(7) ROSC
$D/Y_{I,t-1}$	0.0011**	0.0011**	0.0008	0.0011**	0.0011**	0.0010*	0.0011**
	(0.013)	(0.014)	(0.109)	(0.015)	(0.015)	(0.092)	(0.013)
Equity Restrictions	-0.0012	-0.0011	-0.0008	-0.0013	-0.0013	-0.0015	-0.0012
	(0.334)	(0.372)	(0.539)	(0.317)	(0.310)	(0.278)	(0.325)
Banking Crisis	-0.0202	-0.0187	-0.0185	-0.0202	-0.0203		-0.0203
	(0.200)	(0.230)	(0.234)	(0.197)	(0.194)		(0.192)
Currency Crisis	0.0021	0.0024	0.0027	0.0020	0.0021	-0.0115	0.0023
	(0.740)	(0.713)	(0.675)	(0.754)	(0.743)	(0.248)	(0.719)
Debt Crisis	0.0078	0.0072	0.0072	0.0079	0.0079		0.0080
	(0.516)	(0.559)	(0.557)	(0.525)	(0.523)		(0.507)
Capital Flows	0.0003	0.0003	0.0000	0.0008	0.0004	0.0017	0.0003
	(0.843)	(0.832)	(0.996)	(0.698)	(0.818)	(0.474)	(0.847)
Trade	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.774)	(0.653)	(0.715)	(0.590)	(0.686)	(0.177)	(0.620)
ΔVIX×Capital Flows	-0.0118**	-0.0173***	-0.0096*	-0.0494***	-0.0311***	-0.0215***	-0.0151***
	(0.037)	(0.003)	(0.092)	(0.000)	(0.000)	(0.001)	(0.003)
ΔVIX×Trade	-0.0000	-0.0000	0.0000	-0.0000	-0.0000***	-0.0000	-0.0000
	(0.183)	(0.230)	(0.635)	(0.226)	(0.004)	(0.173)	(0.162)
ΔXRATE	-0.2718***	-0.2735***	-0.2721***	-0.2648***	-0.2672***	-0.2572***	-0.2732***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMSCI_US	0.2141	0.2117	0.2175	0.1781	0.2000	0.0500	0.2002
	(0.178)	(0.165)	(0.178)	(0.238)	(0.182)	(0.823)	(0.182)
ΔMSCI_US× t	0.0008**	0.0008**	0.0008**	0.0008**	0.0008**	0.0011**	0.0008**
	(0.027)	(0.030)	(0.026)	(0.022)	(0.026)	(0.024)	(0.026)
ΔVIX	0.0146	0.0018	0.0133	-0.0335	0.0400	0.0687*	-0.0089
	(0.652)	(0.951)	(0.683)	(0.345)	(0.196)	(0.053)	(0.772)
ΔVIX× t	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000
	(0.594)	(0.713)	(0.727)	(0.951)	(0.660)	(0.375)	(0.796)
Illiquidity	-5.3325	-5.0212	-0.2091	-5.6733	-5.2589	-3.5732	-5.1209
	(0.353)	(0.378)	(0.980)	(0.305)	(0.339)	(0.507)	(0.349)
ΔVIX× Illiquidity	12.6808	12.9639	-31.9403	23.0048	20.0424	217.1118***	12.1788
	(0.761)	(0.757)	(0.201)	(0.590)	(0.603)	(0.000)	(0.771)
Opacity	0.0000	0.0011	0.0002	0.0004		0.0027**	-0.0002
	(0.948)	(0.252)	(0.827)	(0.718)		(0.039)	(0.913)
ΔVIX× Opacity	-0.0004	-0.0010	-0.0077*	-0.0176**	-0.0774***	-0.0164***	0.0057
	(0.216)	(0.447)	(0.052)	(0.017)	(0.000)	(0.000)	(0.505)
Observations	15,194	16,024	14,782	14,780	16,128	12,293	16,128
Number of countries	23	24	22	22	24	24	24

Table 9 – Granger Causality between Opacity and Volatility

Granger causality test using a panel VAR(3) of opacity (measured by Corrup - Transparency International's Country Transparency index) and measured market volatility with annual data. Volatility is the standard deviation of equity (MSCI) or bond (EMBIG) daily returns over the period of one year. Corrup is measured annually. The VAR is estimated by OLS using country and year fixed effects. Reported below are the value of the χ^2 statistic and corresponding *p-value* for the joint hypothesis that all the coefficients of lagged volatility in the opacity equation are jointly zero. Non rejection signifies we cannot reject the hypothesis that volatility does not Granger-cause opacity.

	$\chi^2(3)$	*p-value*
MSCI	4.55	0.2083
EMBIG	5.05	0.1685