

Internet Appendix (Not For Publication) to
“Government Intervention and Arbitrage”

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In this Internet Appendix to Pasquariello (forthcoming), I describe a three-asset extension of my model (in Section 1 below), consider alternative interpretations of that model’s two traded assets (in Section 2), discuss alternative measures of LOP violations in the ADR market (in Section 3), as well as report the results of additional theoretical and empirical analysis mentioned therein (in the attached Tables and Figures).

1 A Three-Asset Extension

I note in Section 2.1 of Pasquariello (forthcoming) that exchange rates and U.S. cross-listings (“ADRs”) are fundamentally linked by an arbitrage parity such that the unit price of an ADR i , $P_{i,t}$, should at any time t be equal to the dollar (USD) price of the corresponding amount (bundling ratio) q_i of foreign shares, $P_{i,t}^{LOP}$:

$$P_{i,t}^{LOP} = S_{t,USD/FOR} \times q_i \times P_{i,t}^{FOR}, \quad (11)$$

where $P_{i,t}^{FOR}$ is the unit foreign stock price denominated in a foreign currency FOR, and $S_{t,USD/FOR}$ is the exchange rate between USD and FOR. I then interpret the fundamental commonality in the terminal payoffs of assets 1 and 2 in the model of Section 1 (v_1 and v_2) as a stylized representation of the LOP relation of Equation (11) above. In particular, one can think of asset 1 as the exchange rate—with payoff $v_1 = v$ —traded in the foreign exchange (“forex”) market at a price $p_{1,1}$ (i.e., $S_{t,USD/FOR}$); and of asset 2 as an ADR—whose payoff v_2 is a linear function of the exchange rate: $v_2 = a_2 + b_2 v$, where $a_2 = 0$ and $b_2 = q_i \times P_{i,t}^{FOR} > 0$, that is, ceteris paribus for the corresponding foreign stock price—traded in the U.S. stock market at a tilded price $\tilde{p}_{1,2} = b_2 p_{1,1}$ (i.e., $P_{i,t}$). Not explicitly modeling the market for an ADR’s underlying foreign shares is for simplicity only and without loss of generality. I show below that extending the model to a third such asset requires more involved analysis but yields identical implications: Government intervention affects deviations from the LOP.

To that end, let us consider a three-asset economy in which—in order to maintain consistency

of notation relative to Pasquariello (forthcoming)—I label asset 1 as the forex market, asset 2 as the ADR market, and asset 3 as the market for the underlying foreign stock. The fundamental payoffs of these assets are given by: $v_1 \sim N(0, \sigma_v^2)$, $v_3 \sim N(0, \sigma_v^2)$, and

$$v_2 = v_1 + v_3 \sim N(0, 2\sigma_v^2), \quad (\text{IA1})$$

where, for simplicity, I assume that $\text{var}(v_1) = \text{var}(v_3)$ and $\text{cov}(v_1, v_3) = 0$. One can think of Equation (IA1) as the fundamental relation between the (log-linearized) payoff of an ADR and the (log-linearized) payoffs of its underlying assets of Equation (11)—that is, $v_2 = a_2 + v_1 + v_3$, where $a_2 = \ln(q_i)$ is ignored for economy of notation—such that the LOP implies that P_2 should be equal to:

$$P_2^{LOP} = P_1 + P_3. \quad (\text{IA2})$$

As in Section 1 of Pasquariello (forthcoming), LOP violations in this setting would arise if $P_2 \neq P_2^{LOP}$ such that $\text{corr}(P_2, P_2^{LOP}) < 1$.

Three types of risk-neutral traders populate the economy: one ($M = 1$, for simplicity) informed trader (labeled speculator) in the three assets, as well as liquidity traders and competitive market makers (MMs) in each asset. All market participants know the structure of the economy and the decision-making process leading to order flow and prices. At date $t = 0$, there is neither information asymmetry about v nor trading. Sometime between $t = 0$ and $t = 1$, the speculator receives *two* private and noisy signals, one for v_1 (S_{v_1}) and one for v_3 (S_{v_3}). I assume that each signal S_{v_i} is drawn from a normal distribution with mean 0, variance $\sigma_s^2 = \frac{1}{\rho}\sigma_v^2$, and $\text{cov}[S_{v_1}, S_{v_2}] = 0$; I then define each speculator's information endowment about v_i as $\delta_{v_i} \equiv E(v_i|S_{v_i}) = \rho S_{v_i}$. At date $t = 1$, the speculator and liquidity traders submit their orders in assets 1, 2, and 3 to the MMs before their equilibrium prices P_1 , P_2 , and P_3 have been set. Liquidity traders generate random, normally distributed demands z_1 , z_2 , and z_3 with mean zero, variance $\sigma_{z_i}^2$, and covariances $\sigma_{z_i z_j}$. Once again for simplicity, I assume that z_i are independent from all other random variables. Competitive MMs in each asset i do not receive

any information about its terminal payoff v_i , and observe *only* that asset's aggregate order flow $\omega_i = x_i + z_i$ before setting the market-clearing price $P_i = P_i(\omega_i) = E(v_i|\omega_i)$. Hence, as in Section 1 of Pasquariello (forthcoming), market segmentation is crucial as it allows for the possibility that $E(v_1|\omega_1) \neq E(v_1|\omega_2)$ and $E(v_3|\omega_3) \neq E(v_3|\omega_2)$, i.e., that realizations of $P_2 \neq P_1 + P_3$ in equilibrium.

Solving for the equilibrium of this economy—along the lines of the proof of Proposition 1 in Pasquariello (forthcoming)—yields the following expression for the measure of LOP violations in equilibrium, namely the unconditional equilibrium correlation between the *actual* (P_2) and *synthetic* (P_2^{LOP}) ADR prices:

$$\text{corr}(P_2, P_2^{LOP}) = \frac{\sqrt{2} + \left(\frac{\sigma_{z_1 z_2}}{\sigma_{z_1} \sigma_{z_2}} + \frac{\sigma_{z_2 z_3}}{\sigma_{z_2} \sigma_{z_3}} \right)}{2\sqrt{2 + \frac{\sigma_{z_1 z_3}}{\sigma_{z_1} \sigma_{z_3}}}} \leq 1. \quad (\text{IA3})$$

I then use the following parametrization (p) of noise trading intensity: $\sigma_{z_1}^2 = \sigma_{z_3}^2 = \sigma_z^2$, $\sigma_{z_1 z_2} = \sigma_{z_2 z_3} = \sigma_{zz} \in (0, \sigma_z^2]$, and $\sigma_{z_1 z_3} = 0$ such that $\sigma_{z_2}^2 = 2\sigma_z^2$. This parametrization is for simplicity only, and is meant both to be consistent with the asset payoff structure described above, as well as to mimic the benchmark no-LOP violation case in Section 1.1 of Pasquariello (forthcoming): No LOP violations under perfectly correlated noise trading ($\sigma_{zz} = \sigma_z^2$). It then ensues that:

$$\text{corr}(P_2, P_2^{LOP}) \stackrel{p}{=} 1 - \frac{\sigma_z^2 - \sigma_{zz}}{\sigma_z^2} \leq 1, \quad (\text{IA4})$$

as in Equation (3) of Pasquariello (forthcoming) for $M = 1$. The analysis that follows is unaffected by alternative parametrizations of noise trading intensity (e.g., such that $\sigma_{z_1 z_3} = \sigma_{zz}$).

I plot $\text{corr}(P_2, P_2^{LOP})$ of Equation (IA4) in the attached Figure IA-2 (solid line) as a function of σ_{zz} using the same calibration in Pasquariello (forthcoming)— $\sigma_v^2 = 1$, $\sigma_z^2 = 1$, $\sigma_{zz} = 0.5$, $\rho = 0.5$, as in Figure 1A, but $M = 1$. As discussed in Section 1.1.2 of Pasquariello (forthcoming), LOP violations are larger the less correlated is noise trading in the three ADR-relevant markets (lower σ_{zz}), since liquidity demand and price differentials (i.e., $E(v_1|\omega_1) \neq E(v_1|\omega_2)$ and $E(v_3|\omega_3) \neq$

$E(v_3|\omega_2))$ are more likely to occur in equilibrium.

Next, I introduce a government trading only in asset 1 (the currency) in pursuit of a target P_1^T for its price according to its value function $L(gov)$ of Equation (4) in Pasquariello (forthcoming). In particular, as in Section 1.2 of Pasquariello (forthcoming), I assume that the government receives a private signal of asset 1's payoff, $S_{v_1}(gov)$, a normally distributed variable with mean 0, variance $\sigma_{gov}^2 = \frac{1}{\psi}\sigma_v^2$, and precision $\psi \in (0, 1)$; I further impose that $cov[S_{v_1}, S_{v_1}(gov)] = cov[v_1, S_{v_1}(gov)] = \sigma_v^2$, as for the speculator's private signal S_{v_1} . Accordingly, I define the government's information endowment about v_1 as $\delta_{v_1}(gov) \equiv E[v_1|S_{v_1}(gov)] = \psi S_{v_1}(gov)$. The non-public target P_1^T is also drawn from a normal distribution with mean 0 and variance σ_T^2 . The government's information endowment about P_1^T is then $\delta_T(gov) \equiv P_1^T$. This policy target is some unspecified function of $S_{v_1}(gov)$ such that $\sigma_T^2 = \frac{1}{\mu}\sigma_{gov}^2 = \frac{1}{\mu\psi}\sigma_v^2$, $cov[P_1^T, S_{v_1}(gov)] = \sigma_{gov}^2$, and $cov(S_{v_1}, P_1^T) = cov(v, P_1^T) = \sigma_v^2$, where $\mu \in (0, 1)$. Once again, competitive MMs in each asset i observe *only* that asset's aggregate order flow ω_i before setting the market-clearing price $P_i^* = P_i^*(\omega_i) = E(v_i|\omega_i)$. Hence, as in Pasquariello (forthcoming), government intervention in asset 1 may magnify extant LOP violations since, ceteris paribus for price formation in assets 2 and 3, $\omega_1 = x_1 + z_1 + x_1(gov)$ and $E(v_1|\omega_1) \neq E(v_1|\omega_2)$, which may yield even larger differentials between P_2^* and $P_1^* + P_3^*$ in equilibrium.

Solving for the equilibrium of this amended economy—along the lines of (but more involvedly than) the proof of Proposition 2 in Pasquariello (forthcoming)—yields the following expression for the measure of equilibrium LOP violations in the presence of government intervention in asset 1:

$$corr(P_2^*, P_2^{LOP*}) = \frac{1 + 2\lambda_1^* (B_{1,1}^* + \psi C_{1,1}^* + C_{2,1}^*) + \sqrt{2} \left[\frac{2\lambda_1^* \sigma_{z_1}}{\sigma_v \sqrt{\rho}} \left(\frac{\sigma_{z_1 z_2}}{\sigma_{z_1} \sigma_{z_2}} \right) + \frac{\sigma_{z_2 z_3}}{\sigma_{z_2} \sigma_{z_3}} \right]}{2\sqrt{2} \sqrt{1 + \frac{2\lambda_1^* \sigma_{z_1}}{\sigma_v \sqrt{\rho}} \left(\frac{\sigma_{z_1 z_3}}{\sigma_{z_1} \sigma_{z_3}} \right) + 2\lambda_1^{*2} \left[B_{1,1}^{*2} + \frac{1}{\rho} \left(D_1^* + E_1^* + \frac{\sigma_{z_1}^2}{\sigma_v^2} \right) \right]}}, \quad (\text{IA5})$$

where λ_1^* is the equilibrium market depth in asset 1 (the unique positive real root of a sextic polynomial similar to the one in Equation (A33) of Pasquariello 2017), $B_{1,1}^* = \frac{2-\psi}{\lambda_1^*[4(1+d\lambda_1^*)-\rho\psi(1+2d\lambda_1^*)]}$, $C_{1,1}^* = \frac{2(1+d\lambda_1^*)-\rho(1+2d\lambda_1^*)}{\lambda_1^*(1+d\lambda_1^*)[4(1+d\lambda_1^*)-\rho\psi(1+2d\lambda_1^*)]}$, $C_{2,1}^* = \frac{d}{1+d\lambda_1^*} > 0$, $D_1^* = 2B_{1,1}^*\rho(\psi C_{1,1}^* + C_{2,1}^*)$, and $E_1^* =$

$\psi C_{1,1}^{*2} + \frac{1}{\mu\psi} C_{2,1}^{*2} + 2C_{1,1}^* C_{2,1}^*$. Under the aforementioned parametrization (p) of noise trading intensity, Equation (IA5) reduces to:

$$\text{corr} [P_2^*, P_2^{LOP*}] \stackrel{p}{=} \frac{1 + 2\lambda_1^* (B_{1,1}^* + \psi C_{1,1}^* + C_{2,1}^*) + \frac{\sigma_{zz}}{\sigma_z^2} \left(1 + \frac{2\lambda_1^* \sigma_z}{\sigma_v \sqrt{\rho}}\right)}{2\sqrt{2} \sqrt{1 + 2\lambda_1^{*2} \left[B_{1,1}^{*2} + \frac{1}{\rho} \left(D_1^* + E_1^* + \frac{\sigma_z^2}{\sigma_v^2}\right)\right]}}. \quad (\text{IA6})$$

I plot $\text{corr} (P_2^*, P_2^{LOP*})$ of Equation (IA6) in Figure IA-2 (dashed line) as a function of σ_{zz} for the aforementioned baseline parameter calibration of the economy. Figure IA-2 indicates that, in this three-asset setting, once again government intervention in asset 1 (the exchange rate) magnifies extant LOP violations in asset 2 (i.e., the ADR market) such that $\text{corr} (P_2^*, P_2^{LOP*}) < \text{corr} (P_2, P_2^{LOP})$, even in absence of liquidity demand differentials ($\sigma_{zz} = \sigma_z^2$)—as in the two-asset example of Pasquariello (forthcoming); see Figure 1A and Conclusion 1. Thus, adding a third market for the underlying foreign stock (asset 3) and allowing speculators to trade in that market does *not* alter the nature of the effect of government intervention in asset 1 on LOP violations in ADR prices (asset 2): $P_2^* \neq P_2^{LOP*}$.

As noted earlier and in Pasquariello (forthcoming), the intuition for this result is that market segmentation allows for the possibility that government intervention in asset 1 may magnify the differential $E(v_1|\omega_1 = x_1 + z_1 + x_1(gov)) \neq E(v_1|\omega_2 = x_2 + z_2)$ —ceteris paribus for the process of price formation in each of the other markets, that is, for any $E(v_3|\omega_3 = x_3 + z_3) \neq E(v_3|\omega_2 = x_2 + z_2)$. Specifically, government intervention does not affect price formation in assets 2 and 3 (as it did not affect price formation in asset 2 in Pasquariello 2017)—that is, government intervention in asset 1 does not affect $\text{corr} (P_2^*, P_3^*)$:

$$\text{corr} (P_2^*, P_3^*) = \text{corr} (P_2, P_3) = \frac{1}{2} \left(\frac{1}{\sqrt{2}} + \frac{\sigma_{z_2 z_3}}{\sigma_{z_2} \sigma_{z_3}} \right) \stackrel{p}{=} \frac{1}{2} \left(\frac{1}{\sqrt{2}} + \frac{\sigma_{zz}}{\sigma_z^2} \right). \quad (\text{IA7})$$

However, government trading in asset 1 suffices to distort exchange rates (P_1^*), hence to distort the synthetic, LOP-implied ADR price ($P_2^{LOP*} = P_1^* + P_3^*$) further away from the actual ADR price (P_2^*)—that is, government intervention in asset 1 affects $\text{corr} (P_2^*, P_2^{LOP*})$ by affecting

$\text{corr}(P_1^*, P_2^*)$ and $\text{corr}(P_1^*, P_3^*)$ (unless $\sigma_{z_1 z_3} = 0$):

$$\text{corr}(P_1^*, P_2^*) = \frac{\sqrt{2}\sigma_{z_1 z_2} + \sigma_{z_2}\sigma_v\sqrt{\rho}(B_{1,1}^* + \psi C_{1,1}^* + C_{2,1}^*)}{2\sigma_{z_2}\sqrt{\sigma_{z_1}^2 + \sigma_v^2(\rho B_{1,1}^{*2} + D_1^* + E_1^*)}} \quad (\text{IA8})$$

$$\stackrel{p}{=} \frac{\sqrt{2}\sigma_{zz} + \sigma_z\sigma_v\sqrt{\rho}(B_{1,1}^* + \psi C_{1,1}^* + C_{2,1}^*)}{2\sigma_z\sqrt{\sigma_z^2 + \sigma_v^2(\rho B_{1,1}^{*2} + D_1^* + E_1^*)}},$$

$$\text{corr}(P_1^*, P_3^*) = \frac{\sigma_{z_1 z_3}}{\sqrt{2}\sigma_{z_3}\sqrt{\sigma_{z_1}^2 + \sigma_v^2(\rho B_{1,1}^{*2} + D_1^* + E_1^*)}} \stackrel{p}{=} 0. \quad (\text{IA9})$$

2 Alternative Model Interpretations

The implications of the model in Section 1 of Pasquariello (forthcoming) about the effects of government intervention in currency markets on LOP violations in the ADR market are qualitatively unaffected when considering alternative interpretations of that model's traded assets 1 and 2.

Specifically, it is straightforward to show that if those assets' terminal payoffs are $v_i \equiv a_i + b_i v$, their tilded equilibrium prices are then given by $\tilde{p}_{1,i} = a_i + b_i p_{1,i}$ and $\tilde{p}_{1,i}^* = a_i + b_i p_{1,i}^*$ —where $p_{1,i}$ and $p_{1,i}^*$ are from Propositions 1 and 2 in Pasquariello (forthcoming), respectively—such that

$$\text{corr}(\tilde{p}_{1,1}, \tilde{p}_{1,2}) = \text{sgn}(b_1 b_2) \text{corr}(p_{1,1}, p_{1,2}), \quad (\text{IA10})$$

$$\text{corr}(\tilde{p}_{1,1}^*, \tilde{p}_{1,2}^*) = \text{sgn}(b_1 b_2) \text{corr}(p_{1,1}^*, p_{1,2}^*), \quad (\text{IA11})$$

where $\text{sgn}(\cdot)$ is the sign function, and $\text{corr}(p_{1,1}, p_{1,2})$ and $\text{corr}(p_{1,1}^*, p_{1,2}^*)$ are from Corollaries 1 and 3 in Pasquariello (forthcoming), and

$$|\text{corr}(\tilde{p}_{1,1}^*, \tilde{p}_{1,2}^*)| < |\text{corr}(\tilde{p}_{1,1}, \tilde{p}_{1,2})|. \quad (\text{IA12})$$

Thus, one can also think of asset 1 as the actual exchange rate—with payoff $v_1 = v$ (i.e., $a_1 = 0$ and $b_1 = 1$)—traded in the forex markets at a price $\tilde{p}_{1,1} = p_{1,1}$ (i.e., $S_{t,USD/USD}$); and of asset 2 as

either: (1) an ADR-specific synthetic (or *shadow*) exchange rate implied by Equation (11)—with payoff $v_2 = v$ (i.e., $a_2 = 0$ and $b_2 = 1$)—*implicitly* traded in the ADR market at a price $\tilde{p}_{1,2} = p_{1,2}$ (i.e., $S_{t,USD/FOR}^{i,LOP} = P_{i,t} \times (q_i \times P_{i,t}^{FOR})^{-1}$; e.g., see Auguste et al. 2006; Eichler, Karmann, and Maltritz 2009) such that ADRP violations are captured by $corr(\tilde{p}_{1,1}, \tilde{p}_{1,2}) < 1$; or (2) an actual ADR—with payoff $v_2 = b_2 v$ (i.e., $a_2 = 0$ and $b_2 = q_i \times P_{i,t}^{FOR} > 0$)—traded in the U.S. stock market at a price $\tilde{p}_{1,2} = b_2 p_{1,2}$ (i.e., $P_{i,t}$) implying a synthetic exchange rate $\tilde{p}_{1,1}^{LOP} = \frac{1}{b_2} \tilde{p}_{1,2} = p_{1,2}$ (i.e., $S_{t,USD/FOR}^{i,LOP}$) such that ADRP violations are captured by $corr(\tilde{p}_{1,1}, \tilde{p}_{1,1}^{LOP}) < 1$.

While less common and intuitive, these representations of the LOP relation between currency and ADR markets within the model are conceptually and empirically equivalent to the one discussed in Section 2.1 of Pasquariello (forthcoming) since any violation of the ADR parity of Equation (11) yields both $P_{i,t} \neq P_{i,t}^{LOP}$ and $S_{t,USD/FOR} \neq S_{t,USD/FOR}^{i,LOP}$ —that is, not only the same $corr(\tilde{p}_{1,1}, \tilde{p}_{1,2}) = corr(\tilde{p}_{1,1}, \tilde{p}_{1,1}^{LOP}) = corr(p_{1,1}, p_{1,2}) < 1$ in equilibrium but also the same absolute percentage LOP violation $|\ln(P_{i,t}) - \ln(P_{i,t}^{LOP})| = |\ln(S_{t,USD/FOR}) - \ln(S_{t,USD/FOR}^{i,LOP})| > 0$ in $ADRP_{i,t}$ of Equation (12):

$$ADRP_{i,t} = |\ln(P_{i,t}) - \ln(P_{i,t}^{LOP})| \times 10,000. \quad (12)$$

3 Alternative Measures of ADRP Violations

The implications of the model in Section 1 of Pasquariello (forthcoming) about the effects of government intervention in currency markets on LOP violations in the ADR market are also qualitatively unaffected when considering alternative measures of LOP violations from their equilibrium prices.

To begin with, as also noted in Section 1.1.2 of Pasquariello (forthcoming), the notion of LOP violations in the ADR market as nonzero, unsigned, relative (i.e., log percentage) price differentials ($ADRP_{i,t} > 0$ of Equation (12)) is both common in the literature and conceptually equivalent to the notion of LOP violations in the model—an equilibrium unconditional price

correlation $\text{corr}(\tilde{p}_{1,2}, p_{1,2}^{LOP}) = \text{corr}(p_{1,1}, p_{1,2}) < 1$. For instance, Proposition 1, Corollary 1, and well-known properties of half-normal distributions (e.g., Vives 2008, 149) imply that the expected absolute differential between the equilibrium actual and synthetic ADR prices $\tilde{p}_{1,2}$ and $p_{1,2}^{LOP}$ described in Section 2.1 is a (ceteris paribus, decreasing) function of their unconditional correlation:

$$E(|\tilde{p}_{1,2} - p_{1,2}^{LOP}|) = b_2 E(|p_{1,1} - p_{1,2}|) = b_2 2\lambda \sqrt{\frac{1}{\Pi}(\sigma_z^2 - \sigma_{zz})} = H \sqrt{1 - \text{corr}(p_{1,1}, p_{1,2})}, \quad (\text{IA13})$$

where the scaling factor $H = \sqrt{\frac{4b_2^2 \sigma_v^2 M \rho}{\Pi[2+(M-1)\rho]}}$ depends on the *magnitude* of the ADR's fundamental payoff $b_2 v$ ($b_2^2 \sigma_v^2$), and $\Pi \equiv \arccos(-1)$. Given Proposition 2 and Corollary 3, it can be shown that $E(|\tilde{p}_{1,2}^* - p_{1,2}^{LOP*}|) = \sqrt{\frac{2}{\Pi} \text{var}(\tilde{p}_{1,2}^* - p_{1,2}^{LOP*})}$ displays similar properties.

Both $\text{corr}(p_{1,1}, p_{1,2})$ and $ADRP_{i,t}$ are instead *price-scale invariant*. Therefore, Equation (IA13) implies that the comparative statics of $E(|p_{1,1} - p_{1,2}|) = 2\lambda \sqrt{\frac{1}{\Pi}(\sigma_z^2 - \sigma_{zz})}$ under less-than-perfectly correlated noise trading ($\sigma_{zz} < \sigma_z^2$) are similar—but not identical—to those of $\text{corr}(p_{1,1}, p_{1,2})$ in Corollary 2 of Pasquariello (forthcoming), that is,

$$\frac{\partial E(|p_{1,1} - p_{1,2}|)}{\partial \sigma_{zz}} = -\frac{\sigma_v \sqrt{M \rho}}{\sigma_z [2 + (M-1)\rho] \sqrt{\Pi(\sigma_z^2 - \sigma_{zz})}} < 0, \quad (\text{IA14})$$

$$\frac{\partial E(|p_{1,1} - p_{1,2}|)}{\partial \sigma_z^2} = \frac{\sigma_v \sigma_{zz} \sqrt{M \rho}}{\sigma_z^3 [2 + (M-1)\rho] \sqrt{\Pi(\sigma_z^2 - \sigma_{zz})}} > 0, \quad (\text{IA15})$$

as in Corollary 2, while

$$\frac{\partial E(|p_{1,1} - p_{1,2}|)}{\partial M} = -\frac{\sigma_v \sqrt{\rho(\sigma_z^2 - \sigma_{zz})} [(M-1)\rho - 2]}{\sigma_z \sqrt{M \Pi} [2 + (M-1)\rho]^2} < 0, \quad (\text{IA16})$$

$$\frac{\partial E(|p_{1,1} - p_{1,2}|)}{\partial \rho} = -\frac{\sigma_v \sqrt{M(\sigma_z^2 - \sigma_{zz})} [(M-1)\rho - 2]}{\sigma_z \sqrt{\rho \Pi} [2 + (M-1)\rho]^2} < 0, \quad (\text{IA17})$$

again as in Corollary 2—except in the small region of $\{M, \rho\}$ where $\rho \leq \frac{2}{M-1}$ or $M \leq \frac{2}{\rho} - 1$, respectively, as noted for λ in Footnote 7 of Pasquariello (forthcoming).

In this class of models, λ has been shown to be nonmonotonically decreasing in M and

ρ (e.g., see Pasquariello and Vega 2007, 2009): $\frac{\partial \lambda}{\partial M} = -\frac{\sigma_v \rho [(M-1)\rho-2]}{2\sigma_z \sqrt{M\rho[2+(M-1)\rho]^2}} < 0$ and $\frac{\partial \lambda}{\partial \rho} = -\frac{\sigma_v M [(M-1)\rho-2]}{2\sigma_z \sqrt{M\rho[2+(M-1)\rho]^2}} < 0$, except in the small region of $\{M, \rho\}$ where $\rho \leq \frac{2}{M-1}$ or $M \leq \frac{2}{\rho} - 1$, respectively. The intuition for this property is that as M (ρ) increases, not only speculators are more competitive but also the amount of information collectively available to them increases (is more precise). Only at small ρ (M), the latter effect prevails upon the former worsening adverse selection risk for market makers. Accordingly, it can be shown that appropriately scaled measures of absolute price deviations—that is, similar in spirit to $ADRP_{i,t}$ of Equation (12)—more closely mimic $corr(p_{1,1}, p_{1,2})$ and its properties by eliminating the “small-region” effect of λ on those measures of LOP violations. For instance, under the further assumption that $p_0 = 0$, one may scale $E(|p_{1,1} - p_{1,2}|)$ by $E(|p_{1,2}|) = \lambda \sqrt{\frac{2}{\Pi} \sigma_z^2 [2 + (M-1)\rho]}$ (i.e., by a function of λ) such that so-scaled (i.e., percentage) expected absolute price differentials:

$$\frac{E(|\tilde{p}_{1,2} - p_{1,2}^{LOP}|)}{E(|\tilde{p}_{1,2}|)} = \frac{E(|p_{1,1} - p_{1,2}|)}{E(|p_{1,2}|)} = \sqrt{2} \sqrt{1 - corr(p_{1,1}, p_{1,2})}, \quad (\text{IA18})$$

by properties of half-normal distributions.

Notwithstanding the above discussion, I next estimate the main regression models of Sections 2.3 and 2.5 of Pasquariello (forthcoming)—Equations (13) and (14) and Tables 3 and 8, respectively—using two common measures of the correlation between actual and synthetic (log) ADR prices, $\ln(P_{i,t})$ and $\ln(P_{i,t}^{LOP}) = \ln(S_{t,USD/FOR}) + \ln(q_i) + \ln(P_{i,t}^{FOR})$: *Realized* correlation $corr_m^R[\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$ (e.g., Andersen et al. 2001; Barndorff-Nielsen and Shephard 2004) and *standard* correlation $corr_m^S[\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$.¹ The empirical analysis of these correlation measures is computationally less convenient than for $ADRP_{i,t}$ in Pasquariello (forthcoming), since not only either measure (and especially standard correlation $corr_m^S[\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$) requires a minimum number of daily non-stale prices to be plausibly estimated at the monthly frequency for each ADR before being aggregated across ADRs (as for $ADRP_m$) but also ei-

¹Auguste et al. (2006), Pasquariello (2008), and Gagnon and Karolyi (2010) also note that the stringent null hypothesis that the LOP holds in the ADR market *at each point in time* implies that both $\ln(P_{i,t}) = \ln(P_{i,t}^{LOP})$ and $r_{i,t} = r_{i,t}^{LOP}$, where $r_{i,t}^{LOP} \equiv r_{i,t}^{FOR} + r_{t,USD/FOR}$, $r_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1})$, $r_{i,t}^{FOR} = \ln(P_{i,t}^{FOR}) - \ln(P_{i,t-1}^{FOR})$, and $r_{t,USD/FOR} = \ln(S_{t,USD/FOR}) - \ln(S_{t-1,USD/FOR})$. However, the latter may not imply the former if price differentials—i.e., some of their underlying frictions—do not decay over time (e.g., Froot and Dabora 1999).

ther measure cannot be computed at the daily frequency in real time.² As for $ADRP_m$ and $ADRP_m^z$ in Pasquariello (forthcoming), I then compute an average of each monthly correlation measure across ADRs, $CORR_m^R$ and $CORR_m^S$. As discussed earlier, absolute LOP violations and actual-versus-LOP price correlations are negatively related (e.g., see Equations (IA13) and (IA18)). Thus, I define $ADRCORR_m^R \equiv 100 \times \sqrt{1 - CORR_m^R}$ and $ADRCORR_m^S \equiv 100 \times \sqrt{1 - CORR_m^S}$, while $ADRCORR_m^{R,z}$ and $ADRCORR_m^{S,z}$ are their historically normalized counterparts (as for $ADRP_m^z$). The ensuing estimates of Equations (13) and (14) for each of these measures are in the attached Tables IA-1 and IA-2, where $corr_m^R [\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$ and $corr_m^S [\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$ are based on a minimum of 15 observations per ADR-local stock pair per month; different data requirements yield similar results.

Figure IA-3 plots both pairs of measures $ADRCORR_m^R$ (Figure IA-3A; solid line, left axis) and $ADRCORR_m^{R,z}$ (Figure IA-3B; solid line, left axis) and $ADRCORR_m^S$ (Figure IA-3A; dashed gray line, right axis) and $ADRCORR_m^{S,z}$ (Figure IA-3B; dashed gray line, right axis). Realized and standard correlation measures differ in scale and persistence. In addition, especially the latter is noisier and more sensitive to outliers, stale prices, and measurement error in small samples. Nonetheless, these measures are largely positively correlated, in levels and changes, with the measures of actual and normalized absolute percentage ADR parity violations in Pasquariello (forthcoming)— $ADRP_m$ and $ADRP_m^z$ of Figure 2.

Accordingly, the evidence from the estimation of the amended Equation (13) in Table IA-1 yields qualitatively similar inference to the one from Table 3. For instance, estimates of these measures' cumulative impact coefficient β_1^{-1} (which corrects for any bias in the contemporaneous

²The estimated covariation between (log) actual and synthetic ADR price *levels* is closest in spirit to the notion of equilibrium price covariation in the model ($corr(p_{1,1}, p_{1,2})$), but may be distorted by their non-stationarity—an issue commonly addressed by prior simple differencing (e.g., Greene 1997). Yet, ceteris paribus, forex intervention may have both a short-lived impact on their *changes* (e.g., on $\Delta p_{1,1}$) and a more lasting impact on their levels (e.g., on $|p_{1,1} - p_{1,2}|$), as in Table 3—an issue well-known to the literature on absolute and relative purchasing power parity (APPP and RPPP, respectively; e.g., see Froot and Rogoff 1995; Croux, Pippenger, and Steigerwald 1996; Bekaert and Hodrick 2012; Engel 2014) and for which the static model provides no guidance. In addition, nonzero differentials or less-than-perfect correlation between $r_{i,t}$ and $r_{i,t}^{LOP}$ may indicate price convergence to the ADRP of Equation (11). Nonetheless, the (unreported) estimation of Equations (13) and (14) for actual and normalized aggregate measures of absolute differentials or covariation between $r_{i,t}$ and $r_{i,t}^{LOP}$ yields qualitatively similar inference.

coefficient β_0 due to staleness; see Dimson 1979) are positive, large, and statistically significant in correspondence with either measure of intervention intensity ($N_m(gov)$ and $N_m^z(gov)$)—for example, yielding an increase in so-defined ADRP violations (that is, a decrease in ADRP price correlations) amounting to between 21% and 29% of their samplewide standard deviation in response to a one standard deviation increase in ΔI_m . Estimates of forex intervention’s contemporaneous impact coefficient β_0 are also always positive, and always statistically and economically significant for $ADRCORR_m^R$ and $ADRCORR_m^{R,z}$ —the two most reliably estimated measures of correlation-based ADRP violations in small samples (e.g., Barndorff-Nielsen and Sheppard 2004). Consistently, the estimation of the amended regression model of Equation (14) in Table IA-2 yields qualitatively similar inference to the one from Table 8 of Pasquariello (forthcoming) for $ADRCORR_m^R$ and $ADRCORR_m^{R,z}$ —for example, forex intervention has a significantly greater impact on ADRP price correlations in correspondence with greater dispersion of beliefs among market participants: $\beta_0^{DSP} > 0$, as predicted by the model (H5 in Section 1.3)—but noisier so for $ADRCORR_m^S$ and $ADRCORR_m^{S,z}$.

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Table IA-1. Marketwide ADRP Violations as Correlations and Forex Intervention

This table reports OLS estimates of interest (and bracketed t -statistics) for the regression model in Equation (13):

$$\Delta LOP_m = \alpha + \beta_{-1}\Delta I_{m-1} + \beta_0\Delta I_m + \beta_1\Delta I_{m+1} + \varepsilon_m, \quad (13)$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ or $N_m^z(gov)$ defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $\beta_1^0 = \beta_1 + \beta_0$; and $\beta_1^{-1} = \beta_1 + \beta_0 + \beta_{-1}$. Equation (13) is estimated for (absolute and normalized) cross-ADR averages of monthly measures of the realized and standard correlation of each ADR's actual and synthetic log prices ($\ln(P_{i,t})$ and $\ln(P_{i,t}^{LOP})$), at the monthly frequency ($LOP_m = ADRCORR_m^R$ and $ADRCORR_m^S$, or $ADRCORR_m^{R,z}$ and $ADRCORR_m^{S,z}$, as defined in Section 3 above), over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination; t -statistics for the cumulative effects β_1^0 and β_1^{-1} are computed from the asymptotic covariance matrix of $\{\beta_1, \beta_0, \beta_{-1}\}$. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	$I_m = N_m(gov)$						$I_m = N_m^z(gov)$						R^2	N
	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}	R^2	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}			
$\Delta ADRCORR_m^R$	-0.002 (-0.64)	0.013*** (3.73)	0.005* (1.73)	0.011* (1.93)	0.016** (2.22)	5%	-0.003 (-0.55)	0.020*** (3.72)	0.008* (1.68)	0.017** (1.98)	0.025** (2.23)	5%	359	
$\Delta ADRCORR_m^S$	0.044 (0.15)	0.159 (0.48)	0.969*** (3.18)	0.203 (0.38)	1.172* (1.67)	3%	0.119 (0.25)	0.320 (0.63)	1.511*** (3.22)	0.440 (0.54)	1.951* (1.80)	3%	359	
$\Delta ADRCORR_m^{R,z}$	-0.008 (-0.56)	0.054*** (3.74)	0.022 (1.62)	0.046** (1.99)	0.068** (2.21)	5%	-0.010 (-0.47)	0.082*** (3.71)	0.033 (1.58)	0.073** (2.02)	0.105** (2.21)	5%	359	
$\Delta ADRCORR_m^{S,z}$	0.002 (0.07)	0.005 (0.18)	0.078*** (3.37)	0.006 (0.15)	0.084 (1.58)	4%	0.006 (0.17)	0.013 (0.35)	0.121*** (3.38)	0.019 (0.31)	0.140* (1.70)	3%	359	

Table IA-2. Marketwide ADRP Violations: Correlations

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where LOP_m is the (absolute and normalized) cross-ADR average of monthly measures of the realized and standard correlation of each ADR's actual and synthetic log prices ($\ln(P_{i,t})$ and $\ln(P_{i,t}^{LOP})$), at the monthly frequency ($LOP_m = ADRCORR_m^R$ and $ADRCORR_m^S$, or $ADRCORR_m^{R,z}$ and $ADRCORR_m^{S,z}$, as defined in Section 3 above); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (14) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
	A. $I_m = N_m(gov)$										
$\Delta ADRCORR_m^R$	0.014*** (3.51)								Yes	15%	360
$\Delta ADRCORR_m^S$	-0.297 (-0.75)								Yes	2%	360
$\Delta ADRCORR_m^{R,z}$	0.058*** (3.52)								Yes	15%	360
$\Delta ADRCORR_m^{S,z}$	-0.033 (-1.07)								Yes	3%	360
$\Delta ADRCORR_m^R$	0.014*** (3.70)	0.006 (1.48)	0.003 (0.99)	0.000 (0.07)	-0.03 (-0.66)	0.018*** (3.96)	0.002 (0.44)	0.001 (0.17)	Yes	20%	360
$\Delta ADRCORR_m^S$	-0.116 (-0.30)	1.510*** (3.87)	-0.041 (-0.16)	-0.111 (-0.27)	-0.206 (-0.51)	1.505*** (3.30)	-0.050 (-0.12)	0.400 (1.11)	Yes	10%	360
$\Delta ADRCORR_m^{R,z}$	0.063*** (3.78)	0.030* (1.83)	0.010 (0.93)	0.008 (0.47)	-0.011 (-0.67)	0.074*** (3.86)	0.004 (0.21)	-0.001 (-0.09)	Yes	19%	360
$\Delta ADRCORR_m^{S,z}$	-0.019 (-0.64)	0.120*** (4.02)	-0.002 (-0.11)	-0.005 (-0.15)	-0.016 (-0.52)	0.099*** (2.82)	0.003 (0.08)	0.034 (1.24)	Yes	10%	360

Table IA-2. (*Continued*)

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
	<i>B. $I_m = N_m^z(gov)$</i>										
$\Delta ADRCORR_m^R$	0.014*** (3.51)								Yes	15%	360
$\Delta ADRCORR_m^S$	-0.254 (-0.64)								Yes	2%	360
$\Delta ADRCORR_m^{R,z}$	0.057*** (3.48)								Yes	14%	360
$\Delta ADRCORR_m^{S,z}$	-0.029 (-0.94)								Yes	2%	360
$\Delta ADRCORR_m^R$	0.014*** (3.63)	0.006 (1.47)	0.002 (0.92)	0.000 (0.00)	-0.003 (-0.69)	0.017*** (3.93)	0.002 (0.44)	0.001 (0.36)	Yes	20%	360
$\Delta ADRCORR_m^S$	-0.159 (-0.40)	1.502*** (3.87)	-0.068 (-0.26)	-0.115 (-0.28)	-0.252 (-0.63)	1.478*** (3.44)	-0.321 (-0.80)	0.788** (2.20)	Yes	11%	360
$\Delta ADRCORR_m^{R,z}$	0.062*** (3.69)	0.030* (1.81)	0.010 (0.86)	0.007 (0.40)	-0.012 (-0.70)	0.069*** (3.77)	0.006 (0.35)	-0.000 (-0.01)	Yes	19%	360
$\Delta ADRCORR_m^{S,z}$	-0.021 (-0.71)	0.119*** (4.02)	-0.004 (-0.20)	-0.005 (-0.16)	-0.019 (-0.62)	0.098*** (2.98)	-0.015 (-0.49)	0.061** (2.21)	Yes	11%	360

Table IA-3. Marketwide ADRP Violations and Forex Intervention: USD Interventions Only

This table reports OLS estimates of interest, as well as t -statistics in parentheses, for the regression model in Equation (13):

$$\Delta LOP_m = \alpha + \beta_{-1}\Delta I_{m-1} + \beta_0\Delta I_m + \beta_1\Delta I_{m+1} + \varepsilon_m, \quad (13)$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention involving USD only, $N_m^{\$,z} (gov)$ or $N_m^{\$,z} (gov)$ defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $\beta_1^{-1} = \beta_1 + \beta_0$; and $\beta_1^{-1} = \beta_1 + \beta_0 + \beta_{-1}$. Equation (13) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination; t -statistics for the cumulative effects β_1^0 and β_1^{-1} are computed from the asymptotic covariance matrix of $\{\beta_1, \beta_0, \beta_{-1}\}$. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	$I_m = N_m^{\$,z} (gov)$					$I_m = N_m^{\$,z} (gov)$							
	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}	R^2	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}	R^2	N
$\Delta ADRP_m$	1.768* (1.87)	3.765*** (3.78)	1.850* (1.95)	5.553*** (3.41)	7.382*** (3.40)	4%	2.561** (2.08)	4.645*** (3.56)	2.717** (2.20)	7.206*** (3.40)	9.923*** (3.51)	4%	359
$\Delta ADRP_m^z$	0.002 (0.28)	0.027*** (3.76)	0.007 (1.05)	0.029** (2.48)	0.036** (2.31)	4%	0.004 (0.43)	0.032*** (3.43)	0.010 (1.17)	0.036** (2.36)	0.046** (2.28)	3%	359

Table IA-4. Marketwide ADRP Violations: USD Interventions Only

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention involving USD only, $N_m^{\$}(gov)$ (in panel A) or $N_m^{\$,z}(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, U.S. investor sentiment, and foreign equity holdings as a percentage of world GDP. Equation (14) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m^{\$}(gov)$											
$\Delta ADRP_m$	2.995*** (2.70)								Yes	8%	360
$\Delta ADRP_m^z$	0.028*** (3.57)								Yes	12%	360
$\Delta ADRP_m$	3.552*** (3.33)	3.398*** (3.22)	0.161 (0.23)	1.043 (0.89)	-1.000 (-0.92)	7.029*** (5.59)	2.800** (2.38)	-3.484*** (-3.24)	Yes	20%	360
$\Delta ADRP_m^z$	0.031*** (4.02)	0.016** (2.08)	0.001 (0.12)	0.005 (0.61)	-0.010 (-1.29)	0.029*** (3.18)	0.015* (1.74)	-0.020*** (-2.61)	Yes	17%	360
B. $I_m = N_m^{\$,z}(gov)$											
$\Delta ADRP_m$	2.511** (2.26)								Yes	7%	360
$\Delta ADRP_m^z$	0.024*** (3.07)								Yes	11%	360
$\Delta ADRP_m$	3.110*** (2.88)	3.356*** (3.16)	0.178 (0.25)	1.090 (0.93)	-0.970 (-0.89)	6.423*** (5.64)	2.682** (2.28)	-2.851*** (-2.78)	Yes	19%	360
$\Delta ADRP_m^z$	0.028*** (3.51)	0.016** (2.03)	0.001 (0.11)	0.006 (0.66)	-0.010 (-1.22)	0.024*** (2.91)	0.016* (1.92)	-0.016** (-2.18)	Yes	16%	360

Table IA-5. Marketwide ADRP Violations and Intervention Amounts Only

This table reports OLS estimates of interest, as well as t -statistics in parentheses, of the regression models of Equation (IA19):

$$\Delta LOP_m = \alpha + \beta_{-1}^a \Delta I_{m-1}^a + \beta_0^a \Delta I_m^a + \beta_1^a \Delta I_{m+1}^a + \varepsilon_m, \quad (\text{IA19})$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m^a is the measure of actual or normalized government intervention, $ABSAMT_m(gov)$ or $ABSAMT_m^z(gov)$ defined in Section 2.2.2 of Pasquariello (forthcoming) as the actual or normalized sum of the absolute aggregate amounts of currency traded in each of the interventions entering $N_m(gov)$, in millions of USD at the concurrent exchange rate; $\Delta I_m^a = I_m^a - I_{m-1}^a$; $\beta_1^{0,a} = \beta_1^a + \beta_0^a$; and $\beta_1^{-1,a} = \beta_1^a + \beta_0^a + \beta_{-1}^a$. Equation (IA19) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination; t -statistics for the cumulative effects $\beta_1^{0,a}$ and $\beta_1^{-1,a}$ are computed from the asymptotic covariance matrix of $\{\beta_1^a, \beta_0^a, \beta_{-1}^a\}$. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	$I_m^a = ABSAMT_m(gov)$			$I_m^a = ABSAMT_m^z(gov)$		
	β_1^a	β_{-1}^a	$\beta_1^{0,a}$	$\beta_1^{-1,a}$	R^2	
$\Delta ADRP_m$	0.158 (0.13)	-1.771 (-1.40)	1.776 (0.79)	0.005 (0.00)	2%	
			0.896 (0.70)	2.318* (1.67)	-1.849 (-1.46)	3.213 (1.41)
						1.364 (0.45)
$\Delta ADRP_m^z$	-0.004 (-0.39)	-0.018** (-2.00)	-0.001 (-0.07)	-0.019 (-0.90)	2%	
			-0.004 (-0.46)	0.006 (0.58)	-0.017* (-1.89)	0.002 (0.10)
						-0.016 (-0.72)
						2% 359

Table IA-6. Marketwide ADRP Violations: Intervention Amounts Only

This table reports *scaled* OLS estimates of interest (and bracketed *t*-statistics) of the regression models of Equation (IA20):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0^a \Delta I_m^a + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_{0,a}^{ILQ} \Delta I_m^a \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_{0,a}^{DSP} \Delta I_m^a \Delta DISP_m \\ & + \beta_{SDI}^a \Delta STD(I_m^a) + \beta_{SDI}^{0,a} \Delta I_m^a \Delta STD(I_m^a) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (IA20)$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m^a is the measure of actual or normalized government intervention, $ABSAMT_m(gov)$ (in panel A) or $ABSAMT_m^z(gov)$ (in panel B) defined in Section 2.2.2 of Pasquariello (forthcoming) as the actual or normalized sum of the absolute aggregate amounts of currency traded in each of the interventions entering $N_m(gov)$, in millions of USD at the concurrent exchange rate; $\Delta I_m^a = I_m^a - I_{m-1}^a$; $\beta_1^{0,a} = \beta_1^a + \beta_0^a$; $\beta_1^{-1,a} = \beta_1^a + \beta_0^a + \beta_{-1}^a$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m^a)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m^a over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA20) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0^a	β_{ILQ}	β_{ILQ}^2	$\beta_{0,a}^{ILQ}$	β_{DSP}	$\beta_{0,a}^{DSP}$	β_{SDI}^a	$\beta_{0,a}^{SDI}$	Controls	R^2	N
A. $I_m^a = ABSAMT_m(gov)$											
$\Delta ADRP_m$	1.737 (1.55)								Yes	7%	360
$\Delta ADRP_m^z$	0.006 (0.77)								Yes	9%	360
$\Delta ADRP_m$	2.313* (1.70)	2.987*** (2.69)	-0.339 (-0.44)	2.017* (1.75)	0.084 (0.07)	4.028** (2.08)	0.693 (0.43)	-0.595 (-1.60)	Yes	11%	360
$\Delta ADRP_m^z$	0.020** (2.15)	0.012 (1.56)	-0.002 (-0.39)	0.013 (1.63)	-0.005 (-0.58)	0.021 (1.543)	0.006 (0.49)	-0.008*** (-2.98)	Yes	14%	360
B. $I_m^a = ABSAMT_m^z(gov)$											
$\Delta ADRP_m$	1.999* (1.78)								Yes	7%	360
$\Delta ADRP_m^z$	0.008 (0.97)								Yes	9%	360
$\Delta ADRP_m$	2.963** (2.31)	2.999*** (2.71)	-0.299 (-0.39)	0.831 (1.39)	-0.040 (-0.04)	1.507 (0.98)	0.726 (0.46)	-1.025* (-1.96)	Yes	11%	360
$\Delta ADRP_m^z$	0.024*** (2.63)	0.012 (1.51)	-0.003 (-0.50)	0.009 (1.31)	-0.005 (-0.63)	-0.007 (-0.66)	0.008 (0.70)	-0.012*** (-3.37)	Yes	14%	360

Table IA-7. Marketwide ADRP Violations and Intervention Presence and Amounts

This table reports OLS estimates of interest, as well as t -statistics in parentheses, of the regression models of Equation (IA21):

$$\Delta LOP_m = \alpha + \beta_{-1}\Delta I_{m-1} + \beta_0\Delta I_m + \beta_1\Delta I_{m+1} + \beta_{-1}^a\Delta I_{m-1}^a + \beta_0^a\Delta I_m^a + \beta_1^a\Delta I_{m+1}^a + \varepsilon_m, \quad (\text{IA21})$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m and I_m^a are the measures of actual or normalized government intervention presence and unsigned aggregate amounts (in millions of USD at the concurrent exchange rate), $N_m(gov)$ and $ABSAMT_m(gov)$, or $N_m^z(gov)$ and $ABSAMT_m^z(gov)$, defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $\Delta I_m^a = I_m^a - I_{m-1}^a$; $\beta_1^0 = \beta_1 + \beta_0$; and $\beta_1^{-1} = \beta_1 + \beta_0 + \beta_{-1}$. Equation (IA21) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination; t -statistics for the cumulative effects β_1^0 and β_1^{-1} are computed from the asymptotic covariance matrix of $\{\beta_1, \beta_0, \beta_{-1}\}$. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	$I_m = N_m(gov), I_m^a = ABSAMT_m(gov)$						$I_m = N_m^z(gov), I_m^a = ABSAMT_m^z(gov)$							
	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}	R^2	β_1	β_0	β_{-1}	β_1^0	β_1^{-1}	R^2	R^2	N
$\Delta ADRP_m$	1.540*	3.604***	2.388***	5.144***	7.532***	6%	2.340	5.290***	4.418***	7.629***	12.048***	6%	6%	359
	(1.70)	(3.64)	(2.60)	(3.20)	(3.51)		(1.61)	(3.32)	(3.01)	(2.94)	(3.49)			
$\Delta ADRP_m^z$	0.004	0.028***	0.014**	0.032***	0.046***	6%	0.008	0.044***	0.026**	0.053***	0.078***	6%	6%	359
	(0.60)	(4.05)	(2.11)	(2.83)	(3.02)		(0.79)	(3.92)	(2.47)	(2.85)	(3.19)			

Table IA-8. Marketwide ADRP Violations: Intervention Presence and Amounts

This table reports *scaled* OLS estimates of interest (and bracketed *t*-statistics) of the regression models of Equation (IA22):

$$\begin{aligned}
\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_0^a \Delta I_m^a + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 \\
& + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m + \beta_{0,a}^{ILQ} \Delta I_m^a \Delta ILLIQ_m + \beta_{DSP} \Delta DISP_m \\
& + \beta_0^{DSP} \Delta I_m \Delta DISP_m + \beta_{0,a}^{DSP} \Delta I_m^a \Delta DISP_m + \beta_{SDI} \Delta STD(I_m) \quad (IA22) \\
& + \beta_{SDI}^a \Delta STD(I_m^a) + \beta_{SDI}^0 \Delta I_m \Delta STD(I_m) + \beta_{SDI}^{0,a} \Delta I_m^a \Delta STD(I_m^a) \\
& + \Gamma \Delta X_m + \varepsilon_m,
\end{aligned}$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m and I_m^a are the measures of actual or normalized government intervention presence and unsigned aggregate amounts (in millions of USD at the concurrent exchange rate), $N_m(gov)$ and $ABSAMT_m(gov)$ (panel A), or $N_m^z(gov)$ and $ABSAMT_m^z(gov)$ (panel B), defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $\Delta I_m^a = I_m^a - I_{m-1}^a$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ and $STD(I_m^a)$ are measures of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m and I_m^a , respectively, over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA22) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m(gov)$, $I_m^a = ABSAMT_m(gov)$											
$\Delta ADRP_m$	2.591** (2.26)								Yes	8%	360
$\Delta ADRP_m^z$	0.027*** (3.37)								Yes	12%	360
$\Delta ADRP_m$	3.451*** (3.07)	3.321*** (3.08)	-0.093 (-0.12)	0.433 (0.34)	-0.943 (-0.86)	6.230*** (4.80)	2.642** (2.36)	-3.215*** (-3.17)	Yes	21%	360
$\Delta ADRP_m^z$	0.028*** (3.49)	0.016** (2.01)	-0.001 (-0.21)	0.004 (0.46)	-0.009 (-1.16)	0.023** (2.50)	0.012 (1.43)	-0.014** (-1.97)	Yes	19%	360
B. $I_m = N_m^z(gov)$, $I_m^a = ABSAMT_m^z(gov)$											
$\Delta ADRP_m$	2.166* (1.83)								Yes	8%	360
$\Delta ADRP_m^z$	0.025*** (3.08)								Yes	12%	360
$\Delta ADRP_m$	3.561*** (3.08)	3.307*** (3.10)	-0.103 (-0.14)	0.024 (0.02)	-1.001 (-0.91)	6.563*** (5.28)	3.279*** (2.93)	-3.398*** (-3.38)	Yes	22%	360
$\Delta ADRP_m^z$	0.032*** (3.83)	0.015** (2.00)	-0.002 (-0.44)	-0.001 (-0.11)	-0.010 (-1.23)	0.028*** (3.16)	0.020** (2.44)	-0.019*** (-2.63)	Yes	20%	360

Table IA-9. Marketwide ADRP Violations: Intervention Amount Volatility Only

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (IA23):

$$\begin{aligned} \Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI}^a \Delta STD(I_m^a) + \beta_{SDI}^{0,a} \Delta I_m \Delta STD(I_m^a) + \Gamma \Delta X_m + \varepsilon_m, \end{aligned} \quad (IA23)$$

where LOP_m are LOP violations in month m ; $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m and I_m^a are the measures of actual or normalized government intervention presence and unsigned aggregate amounts (in millions of USD at the concurrent exchange rate), $N_m(gov)$ and $ABSAMT_m(gov)$ (panel A), or $N_m^z(gov)$ and $ABSAMT_m^z(gov)$ (panel B), defined in Section 2.2.2 of Pasquariello (forthcoming); $\Delta I_m = I_m - I_{m-1}$; $\Delta I_m^a = I_m^a - I_{m-1}^a$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m^a)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m^a over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA23) is estimated for (absolute and normalized) ADR parity violations at the monthly frequency ($LOP_m = ADRP_m$ or $ADRP_m^z$, as defined in Section 2.2.1) over the sample period 1980-2009. N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}^a	$\beta_{SDI}^{0,a}$	Controls	R^2	N
A. $I_m = N_m(gov)$, $I_m^a = ABSAMT_m(gov)$											
$\Delta ADRP_m$	2.681** (2.38)						0.761 (0.49)	0.851 (1.17)	Yes	8%	360
$\Delta ADRP_m^z$	0.025*** (3.17)						0.004 (0.40)	0.012** (2.34)	Yes	14%	360
$\Delta ADRP_m$	3.209*** (2.94)	3.335*** (3.09)	0.111 (0.15)	1.343 (1.20)	-1.202 (-1.08)	6.488*** (5.15)	0.172 (0.12)	0.731 (1.04)	Yes	17%	360
$\Delta ADRP_m^z$	0.027*** (3.48)	0.015** (1.99)	-0.000 (-0.04)	0.009 (1.07)	-0.011 (-1.36)	0.026*** (2.88)	0.001 (0.07)	0.011** (2.18)	Yes	17%	360
B. $I_m = N_m^z(gov)$, $I_m^a = ABSAMT_m^z(gov)$											
$\Delta ADRP_m$	2.564** (2.28)						-0.145 (-0.10)	0.434 (0.62)	Yes	8%	360
$\Delta ADRP_m^z$	0.024*** (3.12)						-0.001 (-0.11)	0.009* (1.88)	Yes	13%	360
$\Delta ADRP_m$	3.097*** (2.84)	3.349*** (3.10)	0.104 (0.14)	1.613 (1.30)	-1.328 (-1.19)	6.309*** (5.29)	-0.667 (-0.49)	0.272 (0.40)	Yes	17%	360
$\Delta ADRP_m^z$	0.027*** (3.43)	0.015** (1.99)	-0.000 (-0.05)	0.009 (1.17)	-0.011 (-1.40)	0.024*** (2.79)	-0.004 (-0.40)	0.008* (1.71)	Yes	16%	360

Table IA-10. Marketwide ADRP Violations: Financial Distress

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, U.S. investor sentiment, and financial distress—U.S. and world stock market returns, Chauvet and Piger’s (2008) real-time U.S. recession probability, slope of U.S. Treasury yield curve, U.S. Treasury bond yield volatility, and U.S. “default” spread (between Baa and Aaa corporate bond yields). Equation (14) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m(gov)$											
$\Delta ADRP_m$	2.886*** (2.60)								Yes	12%	360
$\Delta ADRP_m^z$	0.028*** (3.58)								Yes	17%	360
$\Delta ADRP_m$	3.757*** (3.50)	3.360*** (3.18)	0.179 (0.25)	1.164 (1.06)	-1.985* (-1.74)	5.991*** (4.72)	2.629** (2.40)	-2.972*** (-3.03)	Yes	23%	360
$\Delta ADRP_m^z$	0.032*** (4.19)	0.016** (2.15)	0.002 (0.38)	0.009 (1.11)	-0.021*** (-2.63)	0.023** (2.53)	0.011 (1.45)	-0.015** (-2.11)	Yes	22%	360
B. $I_m = N_m^z(gov)$											
$\Delta ADRP_m$	2.638** (2.37)								Yes	11%	360
$\Delta ADRP_m^z$	0.026*** (3.35)								Yes	16%	360
$\Delta ADRP_m$	3.649*** (3.39)	3.355*** (3.19)	0.210 (0.29)	1.158 (1.05)	-1.993* (-1.74)	5.897*** (4.92)	2.859*** (2.63)	-3.028*** (-3.08)	Yes	23%	360
$\Delta ADRP_m^z$	0.031*** (4.05)	0.016** (2.13)	0.002 (0.40)	0.009 (1.12)	-0.021*** (-2.59)	0.022** (2.56)	0.016** (2.01)	-0.016** (-2.26)	Yes	22%	360

Table IA-11. Marketwide ADRP Violations: Dislocations

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, U.S. investor sentiment, and dislocations—VIX, “TED” spread (between LIBOR and Treasury yields), and Federal Reserve Bank of St. Louis’ “financial stress” index. Equation (14) is estimated over the sub-sample period 1994-2009 when the latter measures of dislocations are all contemporaneously available; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m(gov)$											
$\Delta ADRP_m$	2.290*** (2.63)								Yes	52%	191
$\Delta ADRP_m^z$	0.018** (2.51)								Yes	56%	191
$\Delta ADRP_m$	1.946** (2.31)	3.679*** (4.52)	-0.611 (-0.93)	1.821** (2.14)	-1.023 (-0.98)	4.306*** (3.33)	0.178 (0.20)	0.823 (1.05)	Yes	61%	191
$\Delta ADRP_m^z$	0.014** (2.16)	0.034*** (5.26)	-0.011** (-2.04)	0.016** (2.39)	-0.010 (-1.26)	0.032*** (3.14)	-0.002 (-0.25)	0.009 (1.43)	Yes	66%	191
B. $I_m = N_m^z(gov)$											
$\Delta ADRP_m$	2.299*** (2.64)								Yes	52%	191
$\Delta ADRP_m^z$	0.018** (2.53)								Yes	56%	191
$\Delta ADRP_m$	1.949** (2.32)	3.676*** (4.52)	-0.618 (-0.94)	1.804** (2.13)	-1.027 (-0.98)	4.263*** (3.35)	0.217 (0.25)	0.790 (1.02)	Yes	61%	191
$\Delta ADRP_m^z$	0.014** (2.17)	0.034*** (5.26)	-0.011** (-2.05)	0.016** (2.39)	-0.010 (-1.27)	0.032*** (3.17)	-0.001 (-0.20)	0.009 (1.40)	Yes	66%	191

Table IA-12. Marketwide ADRP Violations: International Equity Flows

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, U.S. investor sentiment, and foreign equity holdings as a percentage of world GDP (as in Brusa, Ramadorai, and Verdelhan 2015). Equation (14) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
<i>A. $I_m = N_m(gov)$</i>											
$\Delta ADRP_m$	2.860** (2.57)								Yes	8%	360
$\Delta ADRP_m^z$	0.027*** (3.47)								Yes	12%	360
$\Delta ADRP_m$	3.720*** (3.46)	3.356*** (3.16)	0.172 (0.24)	1.375 (1.24)	-1.152 (-1.03)	6.170*** (4.96)	2.761** (2.51)	-3.237*** (-3.30)	Yes	20%	360
$\Delta ADRP_m^z$	0.031*** (4.00)	0.016** (2.07)	0.000 (0.08)	0.009 (1.08)	-0.011 (-1.40)	0.024*** (2.62)	0.014* (1.79)	-0.017** (-2.33)	Yes	17%	360
<i>B. $I_m = N_m^z(gov)$</i>											
$\Delta ADRP_m$	2.600** (2.33)								Yes	8%	360
$\Delta ADRP_m^z$	0.025*** (3.23)								Yes	12%	360
$\Delta ADRP_m$	3.632*** (3.37)	3.348*** (3.16)	0.208 (0.29)	1.355 (1.22)	-1.158 (-1.04)	6.037*** (5.14)	3.044*** (2.78)	-3.329*** (-3.40)	Yes	20%	360
$\Delta ADRP_m^z$	0.030*** (3.89)	0.016** (2.05)	0.001 (0.11)	0.009 (1.06)	-0.011 (-1.36)	0.022*** (2.59)	0.019** (2.35)	-0.019*** (-2.61)	Yes	17%	360

Table IA-13. Marketwide ADRP Violations: Capital Account Liberalizations

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (14):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (14)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, U.S. investor sentiment, and Edison and Warnock's (2003) proxy for the intensity of capital account liberalizations in emerging markets. Equation (14) is estimated over the sub-sample period 1989-2006 over which the latter variable is available; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m(gov)$											
$\Delta ADRP_m$	5.436*** (4.92)								Yes	15%	211
$\Delta ADRP_m^z$	0.041*** (5.32)								Yes	17%	211
$\Delta ADRP_m$	5.767*** (5.31)	3.144*** (2.92)	0.642 (0.75)	-0.646 (-0.64)	-2.090* (-1.90)	0.085 (0.06)	2.250** (2.03)	-2.651*** (-2.82)	Yes	24%	211
$\Delta ADRP_m^z$	0.044*** (5.75)	0.026*** (3.34)	0.005 (0.80)	-0.002 (-0.21)	-0.016** (-1.99)	-0.001 (-0.10)	0.004 (0.55)	-0.015** (-2.20)	Yes	25%	211
B. $I_m = N_m^z(gov)$											
$\Delta ADRP_m$	5.440*** (4.93)								Yes	15%	211
$\Delta ADRP_m^z$	0.041*** (5.32)								Yes	17%	211
$\Delta ADRP_m$	5.693*** (5.24)	3.138*** (2.92)	0.670 (0.79)	-0.661 (-0.65)	-2.073* (-1.89)	0.062 (0.04)	2.260** (2.04)	-2.643*** (-2.88)	Yes	24%	211
$\Delta ADRP_m^z$	0.044*** (5.69)	0.026*** (3.34)	0.005 (0.82)	-0.002 (-0.22)	-0.016** (-1.99)	-0.001 (-0.11)	0.005 (0.67)	-0.015** (-2.28)	Yes	26%	211

Table IA-14. Marketwide ADRP Violations: Further Nonmonotonicity

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (IA24):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_0^{ILQ,2} \Delta I_m (\Delta ILLIQ_m)^2 + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \quad (\text{IA24}) \\ & + \beta_{SDI} \Delta STD(I_m) + \beta_{SDI}^0 \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA24) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	$\beta_0^{ILQ,2}$	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	Controls	R^2	N
A. $I_m = N_m(gov)$												
$\Delta ADRP_m$	1.420 (1.11)	3.211*** (2.91)	-0.391 (-0.53)	-0.321 (-0.29)	1.979*** (3.02)					Yes	13%	360
$\Delta ADRP_m^z$	0.008 (0.90)	0.013* (1.74)	-0.002 (-0.46)	0.000 (0.03)	0.021*** (4.75)					Yes	18%	360
$\Delta ADRP_m$	1.941 (1.57)	3.081*** (2.92)	0.087 (0.12)	1.116 (1.02)	1.749*** (2.77)	-0.708 (-0.65)	6.081*** (4.95)	2.680** (2.46)	-3.009*** (-3.09)	Yes	22%	360
$\Delta ADRP_m^z$	0.011 (1.20)	0.013* (1.70)	-0.001 (-0.11)	0.006 (0.73)	0.020*** (4.50)	-0.006 (-0.80)	0.023** (2.58)	0.013* (1.72)	-0.014** (-2.01)	Yes	21%	360
B. $I_m = N_m^z(gov)$												
$\Delta ADRP_m$	1.212 (0.94)	3.242*** (2.93)	-0.416 (-0.56)	-0.294 (-0.26)	1.957*** (2.88)					Yes	12%	360
$\Delta ADRP_m^z$	0.006 (0.70)	0.014* (1.78)	-0.003 (-0.51)	0.001 (0.10)	0.022*** (4.63)					Yes	18%	360
$\Delta ADRP_m$	1.849 (1.48)	3.116*** (2.96)	0.109 (0.15)	1.137 (1.04)	1.759*** (2.71)	-0.750 (-0.69)	6.032*** (5.20)	2.928*** (2.70)	-3.083*** (-3.17)	Yes	22%	360
$\Delta ADRP_m^z$	0.010 (1.10)	0.013* (1.74)	-0.001 (-0.11)	0.006 (0.77)	0.020*** (4.38)	-0.006 (-0.81)	0.022*** (2.66)	0.017** (2.24)	-0.016** (-2.26)	Yes	22%	360

Table IA-15. Marketwide ADRP Violations: Decomposed ADRP Illiquidity

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (IA25):

$$\begin{aligned} \Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ}^{FOR} \Delta Z_m^{FOR} + \beta_{ILQ}^{FOR,2} (\Delta Z_m^{FOR})^2 + \beta_{FOR,0}^{ILQ} \Delta I_m \Delta Z_m^{FOR} + \beta_{ILQ}^{US} \Delta Z_m \\ & + \beta_{ILQ}^{US,2} (\Delta Z_m)^2 + \beta_{US,0}^{ILQ} \Delta I_m \Delta Z_m + \beta_{ILQ}^{FX} \Delta Z_m^{FX} + \beta_{ILQ}^{FX,2} (\Delta Z_m^{FX})^2 + \beta_{FX,0}^{ILQ} \Delta I_m \Delta Z_m^{FX} \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m + \beta_{SDI} \Delta STD(I_m) + \beta_0^{SDI} \Delta I_m \Delta STD(I_m) + \Gamma \Delta X_m + \varepsilon_m, \end{aligned} \quad (IA25)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; Z_m^{FOR} , Z_m , and Z_m^{FX} are measures of illiquidity, defined in Section 2.2.1 as the monthly averages (in percentage) of the daily fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns, respectively; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $STD(I_m)$ is a measure of forex intervention policy uncertainty, defined in Section 2.5 as the historical volatility of I_m over a three-year rolling window; and X_m is a matrix of control variables defined in Section 2.5. Equation (IA25) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}^{FOR}	$\beta_{ILQ}^{FOR,2}$	$\beta_{FOR,0}^{ILQ}$	β_{ILQ}^{US}	$\beta_{ILQ}^{US,2}$	$\beta_{US,0}^{ILQ}$	β_{ILQ}^{FX}	$\beta_{ILQ}^{FX,2}$	$\beta_{FX,0}^{ILQ}$	β_{DSP}	β_0^{DSP}	β_{SDI}	β_0^{SDI}	R^2	N
A. $I_m = N_m(gov)$																
$\Delta ADRP_m$	2.873*** (2.65)	0.129 (0.11)	-1.444* (-1.79)	-1.384 (-1.10)	4.492*** (3.87)	0.679 (1.08)	1.472 (1.44)	-0.361 (-0.33)	0.298 (0.52)	-4.263*** (-3.70)					19%	360
$\Delta ADRP_m^z$	0.029*** (3.72)	0.002 (0.29)	-0.012** (-2.14)	0.012 (1.28)	0.025*** (3.07)	0.008* (1.88)	-0.006 (-0.82)	-0.013* (-1.68)	-0.001 (-0.36)	-0.014* (-1.70)					19%	360
$\Delta ADRP_m$	3.455*** (3.27)	0.352 (0.31)	-1.204 (-1.55)	-1.254 (-1.03)	3.995*** (3.56)	1.172* (1.91)	1.926* (1.94)	-0.093 (-0.09)	-0.147 (-0.27)	-2.800** (-2.41)	-1.185 (-1.11)	5.144*** (4.00)	2.773*** (2.60)	-3.334*** (-3.49)	26%	360
$\Delta ADRP_m^z$	0.032*** (4.14)	0.004 (0.43)	-0.011** (-2.01)	0.012 (1.37)	0.024*** (2.88)	0.010** (2.35)	-0.004 (-0.60)	-0.012 (-1.61)	-0.003 (-0.75)	-0.009 (-1.06)	-0.009 (-1.15)	0.018* (1.94)	0.014* (1.82)	-0.019*** (-2.74)	23%	360
B. $I_m = N_m^z(gov)$																
$\Delta ADRP_m$	2.519** (2.31)	0.135 (0.11)	-1.415* (-1.75)	-1.110 (-0.90)	4.476*** (3.85)	0.670 (1.08)	1.493 (1.47)	-0.381 (-0.35)	0.300 (0.53)	-4.172*** (-3.75)					19%	360
$\Delta ADRP_m^z$	0.027*** (3.45)	0.002 (0.26)	-0.012** (-2.12)	0.013 (1.45)	0.025*** (3.07)	0.008* (1.85)	-0.006 (-0.82)	-0.014* (-1.73)	-0.001 (-0.33)	-0.013* (-1.69)					19%	360
$\Delta ADRP_m$	3.329*** (3.12)	0.272 (0.24)	-1.113 (-1.43)	-0.950 (-0.80)	4.067*** (3.62)	1.131* (1.86)	1.787* (1.82)	-0.126 (-0.12)	-0.179 (-0.32)	-2.485** (-2.18)	-1.157 (-1.09)	4.802*** (3.90)	3.064*** (2.87)	-3.339*** (-3.50)	26%	360
$\Delta ADRP_m^z$	0.031*** (4.01)	0.003 (0.32)	-0.011* (-1.91)	0.013 (1.53)	0.024*** (2.96)	0.010** (2.30)	-0.005 (-0.70)	-0.013* (-1.69)	-0.003 (-0.78)	-0.007 (-0.88)	-0.008 (-1.08)	0.017* (1.89)	0.019** (2.43)	-0.020*** (-2.94)	23%	360

Table IA-16. Marketwide ADRP Violations: APPP Violations as Policy Uncertainty

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (IA26):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{APPP} \Delta APPP_m + \beta_0^{APPP} \Delta I_m \Delta APPP_m + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (IA26)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $APPP_m$ (or $APPP_m^z$ when $I_m = N_m^z(gov)$) is a measure of forex intervention policy uncertainty, defined as the actual (or historically normalized) average of the observed absolute percentage APPP violations in the exchange rates targeted by government intervention in Table 2 (calculated using CPI inflation data from the OECD, and filtered at 5,000 bps to eliminate outliers); and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA26) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{APPP}	β_0^{APPP}	Controls	R^2	N
A. $I_m = N_m(gov)$											
$\Delta ADRP_m$	2.913** (2.59)						0.532 (0.47)	-0.629 (-0.59)	Yes	8%	360
$\Delta ADRP_m^z$	0.028*** (3.63)						0.003 (0.34)	-0.012 (-1.59)	Yes	13%	360
$\Delta ADRP_m$	3.479*** (3.19)	3.464*** (3.20)	0.140 (0.19)	1.285 (1.14)	-1.117 (-1.00)	6.442*** (5.10)	0.411 (0.37)	-1.011 (-0.98)	Yes	17%	360
$\Delta ADRP_m^z$	0.031*** (3.96)	0.017** (2.17)	0.000 (0.01)	0.008 (0.97)	-0.010 (-1.21)	0.025*** (2.79)	0.002 (0.29)	-0.012* (-1.76)	Yes	16%	360
B. $I_m = N_m^z(gov)$											
$\Delta ADRP_m$	2.653** (2.36)						0.489 (0.43)	-0.778 (-0.69)	Yes	8%	360
$\Delta ADRP_m^z$	0.026*** (3.37)						0.003 (0.42)	-0.013* (-1.67)	Yes	12%	360
$\Delta ADRP_m$	3.193*** (2.94)	3.412*** (3.16)	0.108 (0.15)	1.333 (1.18)	-1.212 (-1.09)	6.306*** (5.28)	0.433 (0.39)	-1.161 (-1.08)	Yes	17%	360
$\Delta ADRP_m^z$	0.029*** (3.69)	0.017** (2.13)	-0.000 (-0.02)	0.008 (0.96)	-0.010 (-1.25)	0.024*** (2.78)	0.003 (0.41)	-0.014* (-1.82)	Yes	16%	360

Table IA-17. Marketwide ADRP Violations: APPP Violation Volatility as Policy Uncertainty

This table reports *scaled* OLS estimates, as well as *t*-statistics in parentheses, for the regression model in Equation (IA27):

$$\begin{aligned}\Delta LOP_m = & \alpha + \beta_0 \Delta I_m + \beta_{ILQ} \Delta ILLIQ_m + \beta_{ILQ}^2 (\Delta ILLIQ_m)^2 + \beta_0^{ILQ} \Delta I_m \Delta ILLIQ_m \\ & + \beta_{DSP} \Delta DISP_m + \beta_0^{DSP} \Delta I_m \Delta DISP_m \\ & + \beta_{APPP} \Delta APPPVOL_m + \beta_0^{APPP} \Delta I_m \Delta APPPVOL_m + \Gamma \Delta X_m + \varepsilon_m,\end{aligned}\quad (IA27)$$

where $LOP_t = ADRP_m$ or $ADRP_m^z$ are the absolute or normalized ADR parity violations in month m (as defined in Section 2.2.1 of Pasquariello 2017); $\Delta LOP_m = LOP_m - LOP_{m-1}$; I_m is the measure of actual or normalized government intervention $N_m(gov)$ (in panel A) or $N_m^z(gov)$ (in panel B) defined in Section 2.2.2; $\Delta I_m = I_m - I_{m-1}$; $ILLIQ_m$ is a measure of ADRP illiquidity, defined in Section 2.2.1 as the simple average (in percentage) of the fractions of ADRs in LOP_m whose underlying foreign stock, ADR, or exchange rate experiences zero returns; $\Delta DISP_m = \Delta DISP_q$ for each month m within quarter q ; $DISP_q$ is a measure of information heterogeneity, defined in Section 2.5 as the simple average of the standardized dispersion of analyst forecasts of six U.S. macroeconomic variables; $APPPVOL_m$ (or $APPPVOL_m^z$ when $I_m = N_m^z(gov)$) is a measure of forex intervention policy uncertainty, defined as the three-year rolling volatility of the actual (or historically normalized) average of the observed absolute percentage APPP violations in the exchange rates targeted by government intervention in Table 2 (calculated using CPI inflation data from the OECD, and filtered at 5,000 bps to eliminate outliers); and X_m is a matrix of control variables (defined in Section 2.5) including U.S. and world stock market volatility, global exchange rate volatility, official NBER recession dummy, U.S. risk-free rate, U.S. equity market liquidity, U.S. funding liquidity, and U.S. investor sentiment. Equation (IA27) is estimated over the sample period 1980-2009; each estimate is then multiplied by the standard deviation of the corresponding original regressor(s). N is the number of observations; R^2 is the coefficient of determination. *, **, or *** indicates statistical significance at the 10%, 5%, or 1% level, respectively.

	β_0	β_{ILQ}	β_{ILQ}^2	β_0^{ILQ}	β_{DSP}	β_0^{DSP}	β_{APPP}	β_0^{APPP}	Controls	R^2	N
A. $I_m = N_m(gov)$											
$\Delta ADRP_m$	2.977*** (2.63)						0.134 (0.12)	0.498 (0.59)	Yes	8%	360
$\Delta ADRP_m^z$	0.029*** (3.72)						0.005 (0.58)	0.010* (1.71)	Yes	13%	360
$\Delta ADRP_m$	3.502*** (3.19)	3.381*** (3.13)	0.155 (0.21)	1.379 (1.22)	-1.231 (-1.11)	6.452*** (5.11)	0.035 (0.03)	0.616 (0.76)	Yes	17%	360
$\Delta ADRP_m^z$	0.032*** (4.04)	0.016** (2.08)	0.001 (0.11)	0.009 (1.10)	-0.011 (-1.39)	0.025*** (2.78)	0.004 (0.51)	0.011* (1.85)	Yes	16%	360
B. $I_m = N_m^z(gov)$											
$\Delta ADRP_m$	2.750** (2.41)						-0.342 (-0.30)	0.531 (0.61)	Yes	8%	360
$\Delta ADRP_m^z$	0.026*** (3.27)						0.007 (0.94)	0.004 (0.66)	Yes	12%	360
$\Delta ADRP_m$	3.266*** (2.96)	3.322*** (3.07)	0.087 (0.12)	1.519 (1.34)	-1.351 (-1.22)	6.334*** (5.30)	-0.578 (-0.53)	0.642 (0.77)	Yes	17%	360
$\Delta ADRP_m^z$	0.029*** (3.59)	0.016** (2.04)	0.001 (0.11)	0.009 (1.08)	-0.011 (-1.38)	0.023*** (2.71)	0.006 (0.81)	0.005 (0.78)	Yes	15%	360

Figure IA-1. Limiting Cases and Exceptions

This figure plots the unconditional correlation between the equilibrium prices of assets 1 and 2 in the absence ($\text{corr}(p_{1,1}, p_{1,2})$ of Equation (3), solid lines) and in the presence of government intervention ($\text{corr}(p_{1,1}^*, p_{1,2}^*)$ of Equation (10), dashed lines), as a function of σ_{zz} (the covariance of noise trading in those assets), including under the following limiting cases in Section 1.2.1 of Pasquariello (forthcoming): The government acting as an additional informed speculator ($\gamma = 0$ such that $\text{corr}(p_{1,1}^*, p_{1,2}^*) = \sqrt{\frac{M(2+M\rho)}{(M+1)[2+(M-1)\rho]}} - \frac{\sigma_z^2 \sqrt{\frac{M}{M+1}} - \sigma_{zz}}{\sigma_z^2 \sqrt{[2+(M-1)\rho](2+M\rho)}}$ when $\psi = \rho$; dashed green line, Figure IA-1A), the government pursuing an uninformative policy target ($\text{cov}(v, p_{1,1}^T) = 0$ such that $\text{corr}(p_{1,1}^*, p_{1,2}^*) = \frac{\sigma_{zz} + \sigma_z \sigma_v \sqrt{M\rho} \{B_{1,1}^* [1+(M-1)\rho] + \psi C_{1,1}^*\}}{\sigma_z \sqrt{[2+(M-1)\rho] \{ \sigma_z^2 + \sigma_v^2 \{ M\rho B_{1,1}^{*2} [1+(M-1)\rho] + D_1^* + E_1^* \} \}}}$, where λ^* is the equilibrium market depth in asset 1 (the unique positive real root of a sextic polynomial similar to the one in Equation (A33) of Pasquariello 2017), $B_{1,1}^* = \frac{2(1+d\lambda^*) - \psi}{\lambda^* \{ 2[2+(M-1)\rho](1+d\lambda^*) - M\rho\psi(1+2d\lambda^*) \}}$, $C_{1,1}^* = \frac{[2+(M-1)\rho] - M\rho(1+2d\lambda^*)}{\lambda^* \{ 2[2+(M-1)\rho](1+d\lambda^*) - M\rho\psi(1+2d\lambda^*) \}}$, $C_{2,1}^* = \frac{d}{1+d\lambda^*} > 0$, $D_1^* = 2M\rho B_{1,1}^* \psi C_{1,1}^*$ and $E_1^* = \psi C_{1,1}^{*2}$; dashed blue line, Figure IA-1B), and low or negative noise trading covariance (including when $\text{cov}(v, p_{1,1}^T) = 0$ and the government is uninformed; dashed red line, Figure IA-1C), when $\sigma_v^2 = 1$, $\sigma_z^2 = 1$, $\sigma_{zz} = 0.5$, $\rho = 0.5$, $\psi = 0.5$, $\gamma = 0.5$, $\mu = 0.5$, and $M = 10$.

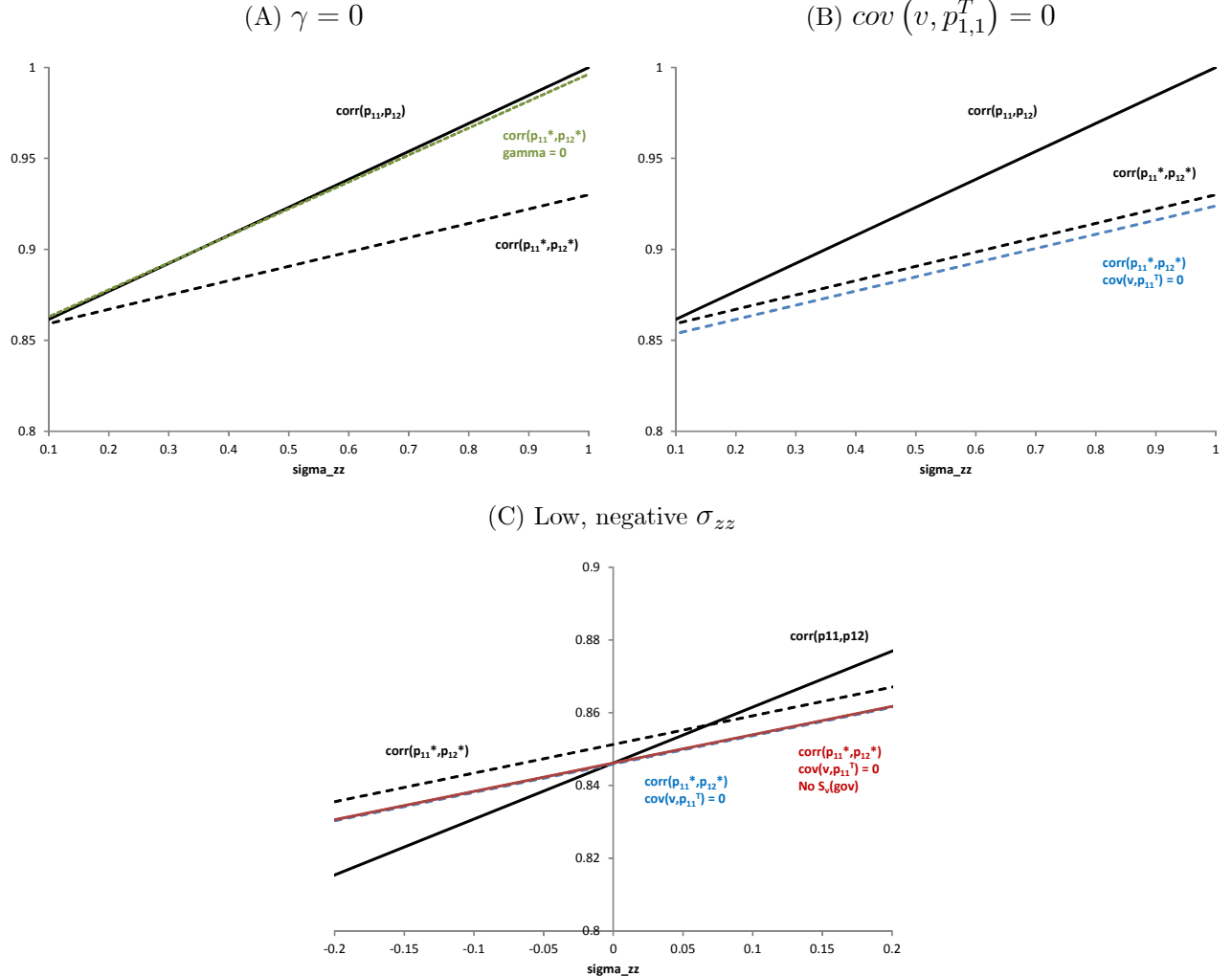


Figure IA-2. Law of One Price Violations In a Three-Asset Setting

This figure plots the unconditional correlation between equilibrium actual (P_2) and synthetic ADR prices (P_2^{LOP}) in the absence ($\text{corr}(P_2, P_2^{LOP})$ of Equation (IA3), solid lines) and in the presence of government intervention ($\text{corr}(P_2^*, P_2^{LOP*})$ of Equation (IA6), dashed lines), as a function of σ_{zz} (the covariance of noise trading in those assets), as in Figure 1A of Pasquariello (forthcoming), when $\sigma_v^2 = 1$, $\sigma_z^2 = 1$, $\sigma_{zz} = 0.5$, $\rho = 0.5$, $\psi = 0.5$, $\gamma = 0.5$, $\mu = 0.5$, and $M = 1$.

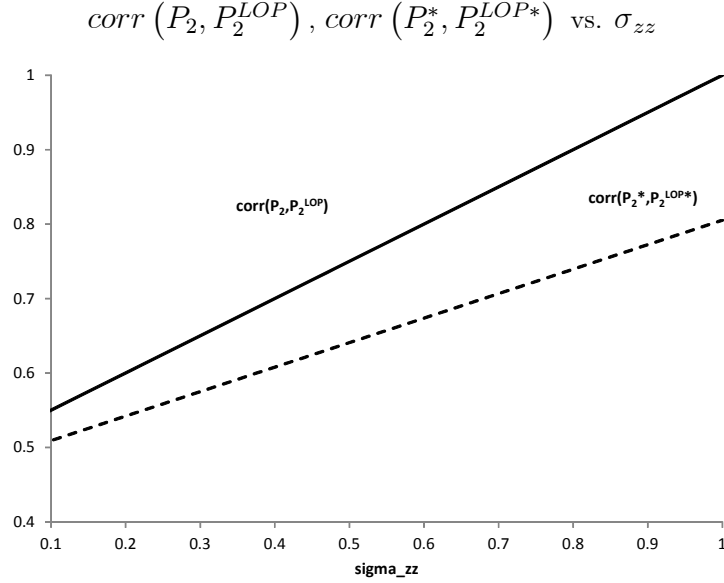
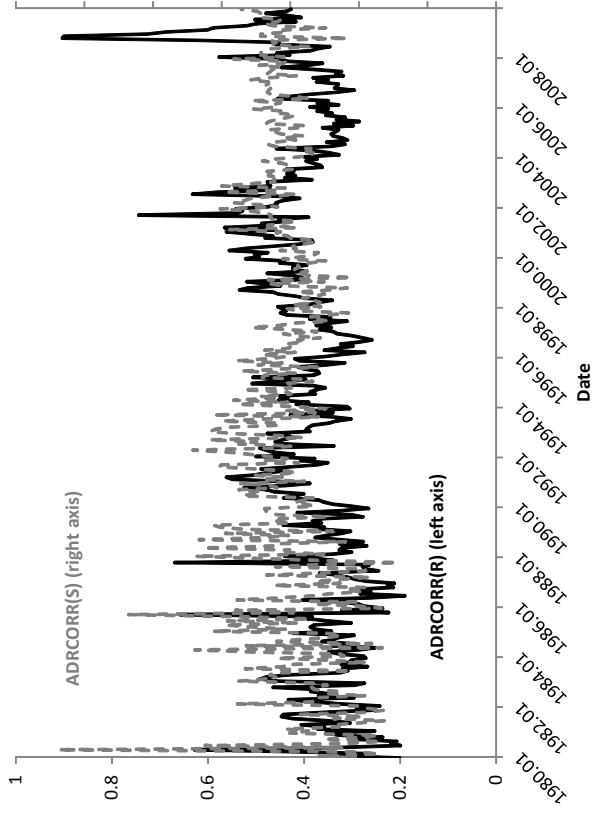


Figure IA-3. ADR Price Correlations

This figure plots two aggregate measures of LOP violations in the ADR market, $ADRCORR_m^R \equiv 100 \times \sqrt{1 - CORR_m^R}$ (Figure IA-3A, solid line, left axis) and $ADRCORR_m^S \equiv 100 \times \sqrt{1 - CORR_m^S}$ (Figure IA-3A, dashed gray line, right axis), where $CORR_m^R$ and $CORR_m^S$ are cross-ADR averages of monthly measures of the realized and standard correlation between $\ln(P_{i,t})$ and $\ln(P_{i,t}^{LOP})$, $corr_m^R[\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$ and $corr_m^S[\ln(P_{i,t}), \ln(P_{i,t}^{LOP})]$, respectively, based on a minimum of 15 observations per ADR-local stock pair per month, as well as their historically normalized counterparts $ADRCORR_m^{R,z}$ (Figure IA-3B, solid line, left axis) and $ADRCORR_m^{S,z}$ (Figure IA-3B, dashed gray line, right axis), over the sample period 1980-2009.

(A) $ADRCORR_m^R$, $ADRCORR_m^S$



(B) $ADRCORR_m^{R,z}$, $ADRCORR_m^{S,z}$

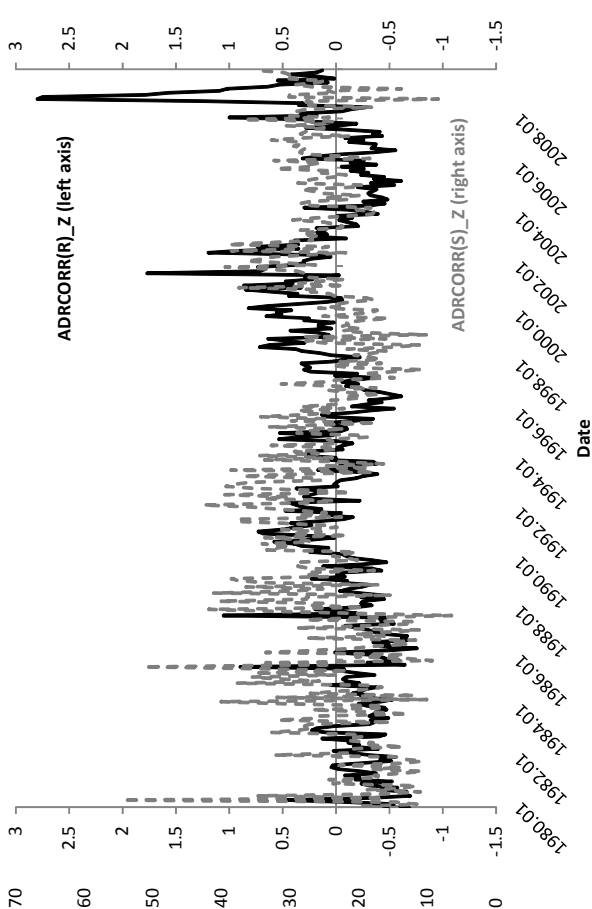


Figure IA-4. Forex Intervention Amounts

This figure plots the alternative measures of forex policy intensity and uncertainty discussed in Sections 2.1.2 and 2.5 of Pasquariello (forthcoming): $ABSAMT_m(gov)$ and $ABSAMT_m^z(gov)$, defined as the actual (Figure IA-4A, left axis, solid line) or historically normalized (Figure IA-4A, right axis, dashed line) sums of the unsigned and unscaled observed government trades behind $N_m(gov)$ (in millions of USD at concurrent exchange rates) and their corresponding three-year rolling volatility $STD[ABSAMT_m(gov)]$ (Figure IA-4B, left axis, solid line) and $STD[ABSAMT_m^z(gov)]$ (Figure IA-4B, right axis, dashed line)—over the sample period 1980-2009.

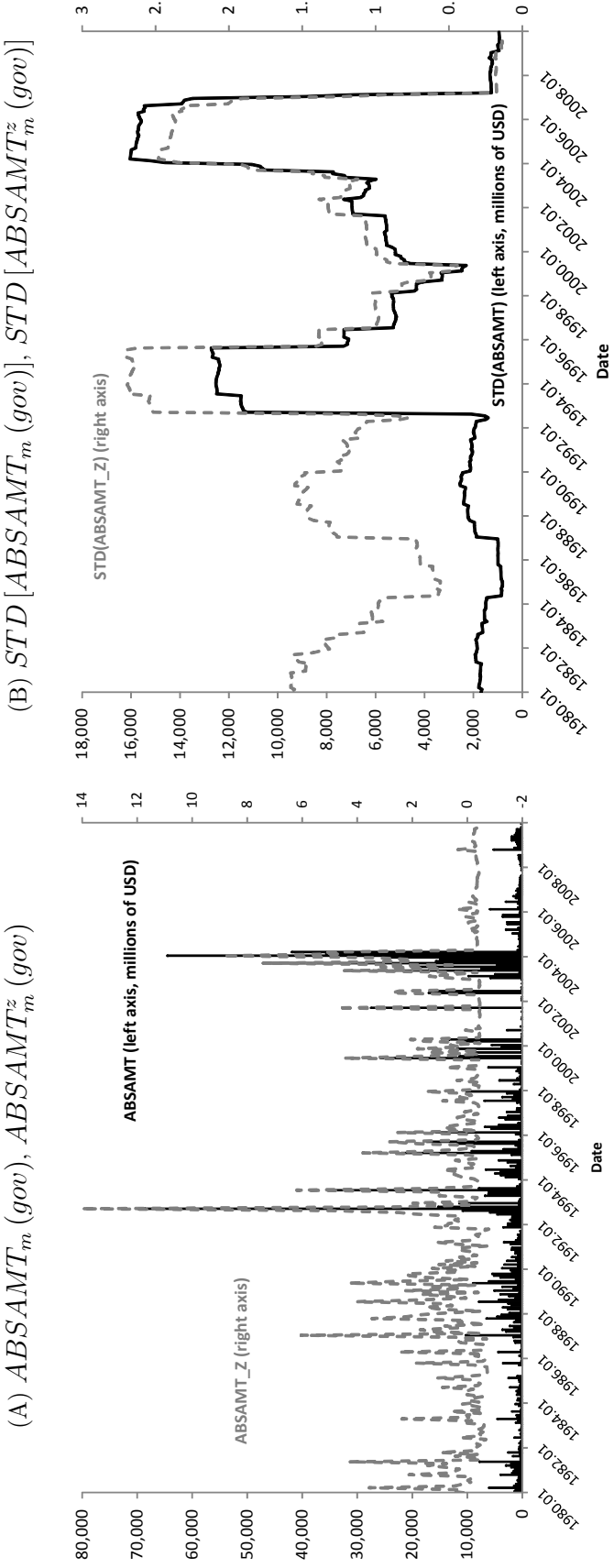


Figure IA-5. APPP Violations and Violation Volatility as Policy Uncertainty

This figure plots the alternative measures of forex policy uncertainty discussed in Section 2.5 of Pasquariello (forthcoming): $APPP_m$ and $APPP^z_m$, defined as the (actual [Figure IA-5A, left axis, solid line] or historically normalized [Figure IA-5A, right axis, dashed line]) average intensity or three-year rolling volatility of absolute percentage APPP violations in the exchange rates targeted by government intervention in Table 2 (filtered at 5,000 bps to eliminate outliers); $APPPVOL_m$ and $APPPVOL^z_m$, defined as the three-year rolling volatility of those (actual [Figure IA-5B, left axis, solid line] or historically normalized [Figure IA-5B, right axis, dashed line]) absolute percentage APPP violations—over the sample period 1980–2009.

