Web Appendix

Global versus Local Asset Pricing: A Speculation-Based Test of Market Integration

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Web Appendix: Theoretical Part

The theoretical part of the Web Appendix provides a more detailed derivation of the propositions in the paper. It also explores the implications of an alternative formulation for the liquidity supply.

Alternative Liquidity Supply Formulations

A critical part of the model is the structure of the liquidity supply characterized by the assumptions A and B1 (or B2).

> **A:** Liquidity suppliers are informed about the index change only with a delay at time t_L, compared to the speculators, who are informed earlier at time $t_A < t_L$.

The analysis needs to distinguish expectations which incorporate knowledge of the demand shock (denoted $\widetilde{\mathcal{E}}_t(.)$) from expectations which do not (denoted by $\overline{\mathcal{E}}_t(.)$).

> **B1:** Assumption 2 of the model states that the liquidity supply is linear and independent for each stock. Formally, the total liquidity supply is given by
>
> $$(1-\lambda)\gamma\mathcal{E}_t^L(p_{t+\Delta t}-p_t).$$

This liquidity supply corresponds to a setting in which of investors (with low risk aversion) have heterogenous valuations for the each individual stock. As the current price p_t moves below (above) the value $\mathcal{E}_t^L(p_{t+\Delta t})$, more (less) investors are willing to own the asset. Note that neither a risk aversion parameter nor covariance risk enters this liquidity supply formulation. A shorter interval Δt for the price change is also irrelevant to the liquidity supply function. Under assumptions A and B1, both the premium change Σu as well as the hedging term $\Sigma\Sigma u$ influence equilibrium prices.

> **B2:** Alternatively, I assume that the liquidity supply does not occur 'stock by stock' (as in B1), but depends on the covariance risk across assets captured by the term

$\rho^L\Sigma$, where the parameter ρ^Ldenotes the risk aversion of the liquidity providers. The aggregate liquidity supply is given by

$$(1-\lambda)\left(\rho^L\Sigma\right)^{-1}\mathcal{E}_t^L(p_{t+\Delta t}-p_t).$$

Under assumptions A and B2, only the premium change Σu, but **not** the hedging term $\Sigma\Sigma u$, is price relevant as is shown in on the following pages.

Both liquidity formulations share the general form $(1-\lambda)\,(V)^{-1}\,\mathcal{E}_t^L(p_{t+\Delta t}-p_t)$, where assumption B1 corresponds to $V=\gamma^{-1}I$ and B2 to $V=\rho^L\Sigma$. The research paper focuses on the case B1 as the empirically relevant one. In this Web Appendix, I also provide a solution for the case in which assumption A is combined with B2. I will generally assume that the mass of liquidity providers is small so that $\lambda\approx 1$.

Market Clearing Conditions

For a mass λ of speculators and a mass $1-\lambda$ of liquidity suppliers, the market clearing conditions follow as

$$\begin{aligned}
&\lambda(\rho\Sigma\Delta t)^{-1}\overline{\mathcal{E}}_t(p^*_{t+\Delta t}-p_t)+(1-\lambda)(V)^{-1}\overline{\mathcal{E}}_t(p_{t+\Delta t}-p_t)=\widetilde{S}^o && \text{for}\quad 0\le t<t_A,\\
&\lambda(\rho\Sigma\Delta t)^{-1}\widetilde{\mathcal{E}}_t(p_{t+\Delta t}-p_t)+(1-\lambda)(V)^{-1}\overline{\mathcal{E}}_t(p_{t+\Delta t}-p_t)=\widetilde{S}^o && \text{for}\quad t_A\le t<t_L,\\
&\lambda(\rho\Sigma\Delta t)^{-1}\widetilde{\mathcal{E}}_t(p_{t+\Delta t}-p_t)+(1-\lambda)(V)^{-1}\widetilde{\mathcal{E}}_t(p_{t+\Delta t}-p_t)=\widetilde{S}^o && \text{for}\quad t_L\le t<t_u,\\
&\lambda(\rho\Sigma\Delta t)^{-1}\widetilde{\mathcal{E}}_t(p_{t+\Delta t}-p_t)+(1-\lambda)(V)^{-1}\widetilde{\mathcal{E}}_t(p_{t+\Delta t}-p_t)=\widetilde{S}^o-u && \text{for}\quad t_u\le t<T,
\end{aligned}\tag{1}$$

where the LHS terms in (1) represent the respective asset demand of the speculators and the liquidity suppliers; $\widetilde{S}$ denotes the total asset supply (net of index capital) and $u=\vartheta(w^n-w^o)$ the demand shock of index capital at time t_u. By assumption, arbitrageurs learn about the index change at time $t_A<t_u$, whereas liquidity suppliers do so only at time t_L with $t_A<t_L<t_u$. The expected terminal asset price is identical for both groups and is given by

$$\mathcal{E}_{t=k\Delta t}(p_T)=\mathbf{1}+\sum_{t=\Delta t}^{k\Delta t}\Delta\varepsilon_t.$$

Equilibrium under Assumptions A and B1

In this case we have $V = \gamma^{-1} I$. The expected equilibrium return $r_4 \Delta t = \widetilde{\mathcal{E}}_t(p_{t+\Delta t} - p_t)$ from t to $t + \Delta t$ for $t_u \leq t < T$ follows directly from equation (1) as

$$\begin{aligned} r_4 \Delta t &= \widetilde{\mathcal{E}}_t(p_{t+\Delta t} - p_t) = \left[\lambda(\rho \Sigma \Delta t)^{-1} + (1-\lambda)\gamma I\right]^{-1} \left(\widetilde{S}^o - u\right) \\ &= \left[I + (1-\lambda)\gamma \frac{\rho}{\lambda} \Sigma \Delta t\right]^{-1} \frac{\rho}{\lambda} \Sigma \left(\widetilde{S}^o - u\right) \Delta t \\ &\approx \left[I - (1-\lambda)\gamma \frac{\rho}{\lambda} \Sigma \Delta t\right] \frac{\rho}{\lambda} \Sigma \left(\widetilde{S}^o - u\right) \Delta t \\ &\approx \frac{\rho}{\lambda} \Sigma \left(\widetilde{S}^o - u\right) \Delta t, \end{aligned}$$

where I use the approximation $[I + k\Sigma\Delta t]^{-1} \approx I - k\Sigma\Delta t$ for small $k\Delta t$ and ignore terms of order $(\Delta t)^2$. The approximation also becomes accurate if ρ/λ becomes small.

For the period $t_L \leq t < t_u$, the supply change u is not yet effective; hence the expected return simplifies to

$$r_3 \Delta t \approx \frac{\rho}{\lambda} \Sigma \widetilde{S}^o \Delta t.$$

The asset price follows (by recursive substitution) as

$$p_t \approx \begin{cases} \mathcal{E}_t(p_T) - (T - t_u) r_4 - (t_u - t) r_3 & \text{for} \quad t_L \leq t < t_u, \\ \mathcal{E}_t(p_T) - (T - t) r_4 & \text{for} \quad t_u \leq t < T. \end{cases} \tag{2}$$

For the period $t_A \leq t < t_L$, expectations about the correct equilibrium price differ between arbitrageurs, who know about the demand shock u, and liquidity suppliers, who do not. Hence, expectations are given by

$$\begin{aligned} \widetilde{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) &= \mathcal{E}_{t_L - \Delta t}(p_T) - (T - t_u) r_4 - (t_u - t_L) r_3, \\ \overline{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) &= \mathcal{E}_{t_L - \Delta t}(p_T) - (T - t_u) r_3 - (t_u - t_L) r_3, \end{aligned}$$

and the valuation difference between liquidity suppliers and arbitrageurs follows as

$$\overline{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) - \widetilde{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) = (T - t_u)(r_4 - r_3) = -\frac{\rho}{\lambda} \Sigma u (T - t_u). \tag{3}$$

The market-clearing condition in equation (1) for $t = t_L - \Delta t$ implies (under substitution of equation (3)) that

$$\begin{aligned}
p_{t_L-\Delta t} &= \left[\lambda(\rho\Sigma\Delta t)^{-1}+(1-\lambda)\gamma I\right]^{-1}\left[-\widetilde{S}^o+\lambda(\rho\Sigma\Delta t)^{-1}\widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})+(1-\lambda)\gamma\overline{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})\right]\\
&= \left[\lambda(\rho\Sigma\Delta t)^{-1}+(1-\lambda)\gamma I\right]^{-1}\\
&\quad\times\left[-\widetilde{S}^o+\left[\lambda(\rho\Sigma\Delta t)^{-1}+(1-\lambda)\gamma I\right]\widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})+(1-\lambda)\gamma(T-t_u)(r_4-r_3)\right]\\
&= \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})+\left[\lambda(\rho\Sigma\Delta t)^{-1}+(1-\lambda)\gamma I\right]^{-1}\left[-\widetilde{S}^o+(1-\lambda)\gamma(T-t_u)(r_4-r_3)\right]\\
&= \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})-\frac{\rho}{\lambda}\Sigma\Delta t\left[I+(1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\Delta t\right]^{-1}\left[\widetilde{S}^o-(1-\lambda)\gamma(T-t_u)(r_4-r_3)\right].
\end{aligned}$$

Using the approximation $\left[I+(1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\Delta t\right]^{-1}\approx I-(1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\Delta t$ and ignoring terms of order $(\Delta t)^2$ yields

$$\begin{aligned}
p_{t_L-\Delta t} &\approx \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})-\frac{\rho}{\lambda}\Sigma\Delta t\left[I-(1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\Delta t\right]\left[\widetilde{S}^o-(1-\lambda)\gamma(T-t_u)(r_4-r_3)\right]\\
&\approx \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})-\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t-(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)\Delta t.
\end{aligned}$$

The equilibrium return for $t=t_L-\Delta t$ then follows as

$$r_2\Delta t=\widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})-p_{t_L-\Delta t}\approx\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t+(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)\Delta t.$$

Similarly, for $t=t_L-2\Delta t$ I obtain the expressions

$$\overline{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t})-\widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t})=(T-t_u)(r_4-r_3)+(r_2-r_3)\Delta t$$

and

$$\begin{aligned}
p_{t_L-2\Delta t} &\approx \widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t})-\frac{\rho}{\lambda}\Sigma\Delta t\left[I-(1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\Delta t\right]\\
&\quad\times\left[\widetilde{S}^o-(1-\lambda)\gamma(T-t_u)(r_4-r_3)-(1-\lambda)\gamma(r_2-r_3)\Delta t\right]\\
&\approx \widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t})-\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t-(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)\Delta t+\Lambda_{\Delta t}\\
&\approx \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L-\Delta t})-\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t-(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)\Delta t,
\end{aligned}$$

where the cubic term $\Lambda_{\Delta t}=(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^3\Sigma\Sigma\Sigma u(T-t_u)(\Delta t)^2\approx 0$ is ignored. Selling of hedging positions over the period $t_A\le t<t_L$ produces return effects, which again generates additional higher-order hedging demands. By ignoring such higher-order hedging effects, I find again

$$r_2\Delta t=\widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t})-p_{t_L-2\Delta t}\approx\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t+(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)\Delta t.$$

Repeated substitution (while ignoring the cubic hedging terms) implies for the equilibrium price

$$p_t \approx \mathcal{E}_t(p_T) - (T - t_u)r_4 - (t_u - t_L)r_3 - (t_L - t)r_2. \tag{4}$$

The sum of the approximation errors coming from $k = 1, 2, 3, ..., K = (t_L - t_A)/\Delta t$ cubic terms with $\Lambda_{k\Delta t} = (1-\lambda)\gamma \left(\frac{\rho}{\lambda}\right)^3 \Sigma\Sigma\Sigma u(T - t_u)k(\Delta t)^2$ is given by

$$\sum_{k=1}^{K} \Lambda_{k\Delta t} = (1-\lambda)\gamma \left(\frac{\rho}{\lambda}\right)^3 \Sigma\Sigma\Sigma u(T - t_u)\frac{1}{2}(t_L - t_A) = \beta_\Lambda \Sigma\Sigma\Sigma(w^n - w^o),$$

where I define $\beta_\Lambda = (1-\lambda)\gamma \left(\frac{\rho}{\lambda}\right)^3 (T - t_u)\frac{1}{2}(t_L - t_A)$. The sum of the (cubic) approximation errors is small relative to the quadratic hedging term $\beta_1 \Sigma\Sigma(w^n - w^o)$ in proposition 1 if $-\beta_\Lambda/\beta_1 = \frac{1}{2}\left(\frac{\rho}{\lambda}\right)$ is small.

It is instructive to characterize the speculative positions of the arbitrageurs, which can be stated as

$$x_t^A = \widetilde{S}^o - x_t^L = \widetilde{S}^o - (1-\lambda)\gamma\overline{\mathcal{E}}_t(p_{t+\Delta t} - p_t). \tag{5}$$

Substituting the expectations of the liquidity suppliers, given by $\overline{\mathcal{E}}_t(p_{t+\Delta t}) = \mathcal{E}_t(p_T) - (T - t - \Delta t)r_3$, into equation (5) and then using equation (4) implies that

$$\begin{aligned}
x_t^A &= \widetilde{S}^o - (1-\lambda)\gamma\left[\overline{\mathcal{E}}_t(p_{t+\Delta t}) - p_t)\right] \\
&\approx \widetilde{S}^o - (1-\lambda)\gamma r_3\Delta t - (1-\lambda)\gamma\left[-(T-t)r_3 + (T - t_u)r_4 + (t_u - t_L)r_3 + (t_L - t)r_2\right] \\
&\approx \widetilde{S}^o - (1-\lambda)\gamma r_3\Delta t - (1-\lambda)\gamma\left[(T - t_u)(r_4 - r_3) + (t_L - t)(r_2 - r_3)\right] \\
&\approx \widetilde{S}^o - (1-\lambda)\gamma r_3\Delta t + (1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma u(T - t_u) - (1-\lambda)^2\gamma^2\left(\frac{\rho}{\lambda}\right)^2 \Sigma\Sigma u(T - t_u)(t_L - t).
\end{aligned}$$

Speculative positions are therefore positively proportional to Σu and negatively proportionally to $\Sigma\Sigma u$. The latter term represents the hedging position, which decrease linearly as t_L comes closer.

Finally, the price process for the initial period follows as

$$p_t \approx \mathcal{E}_t(p_T) - (T - t)r_3 \qquad \text{for} \quad 0 \le t < t_A. \tag{6}$$

The entire price path (adjusted for the expected liquidation value $\mathcal{E}_t(p_T)$) is plotted in Figure 1.

Proof of Proposition 1

I determine the price reaction when the speculators learn about the demand shock $u = \vartheta(w^n - w^o)$ at time $t = t_A$. This price effect may be written as

$$\begin{aligned}
p_{t_A} - p_{t_A-\Delta t} &\approx \mathcal{E}_{t_A-\Delta t}(p_T) + \Delta\varepsilon_{t_A-\Delta t} - (T-t_u)r_4 - (t_u - t_L)r_3 - (t_L - t_A)r_2 \\
&\quad - [\mathcal{E}_{t_A-\Delta t}(p_T) - (T - t_A + \Delta t)r_3] \\
&= r_3\Delta t - (T-t_u)(r_4 - r_3) - (t_L - t_A)(r_2 - r_3) + \Delta\varepsilon_{t_A-\Delta t} \\
&= \frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t + \frac{\rho}{\lambda}\Sigma u(T-t_u) - (1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma u(T-t_u)(t_L - t_A) + \Delta\varepsilon_{t_A-\Delta t} \\
&= \frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t + \alpha_1\Sigma(w^n - w^o) + \beta_1\Sigma\Sigma(w^n - w^o) + \Delta\varepsilon_{t_A-\Delta t}.
\end{aligned}$$

After subtracting the expected return $\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t$ for the interval Δt, the excess return is given by

$$\Delta r_{t=t_A} = p_{t_A} - p_{t_A-\Delta t} - \frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t \approx \alpha_1\Sigma(w^n - w^o) + \beta_1\Sigma\Sigma(w^n - w^o) + \Delta\varepsilon_{t_A-\Delta t}$$

with

$$\alpha_1 = \frac{\rho}{\lambda}\vartheta(T-t_u) \qquad \text{and} \qquad \beta_1 = -(1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\vartheta(T-t_u)(t_L - t_A).$$

The term $\alpha_1\Sigma(w^n - w^o)$ represents the return seeking component and the term $\beta_1\Sigma\Sigma(w^n - w^o)$ represents the risk hedging component. The latter is proportional to the duration of the arbitrage position given by $t_L - t_A$.

Proof of Proposition 2

Consider the equilibrium price sequence derived in the proof of Proposition 1. For the trading period $t_A \leq t < t_L$, the expected return between t and $t + \Delta t$ is approximated by

$$\mathcal{E}_t p_{t+\Delta t} - p_t \approx \frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t + (1-\lambda)\gamma\left(\frac{\rho}{\lambda}\right)^2\Sigma\Sigma(T-t_u)u\Delta t.$$

The expected excess return over the interval $[t_A, t_L]$ then follows as

$$r_{[t_A,t_L]} = \sum_{t\in[t_A,t_L]} p_t - p_{t-\Delta t} - \frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t \approx \beta_2\Sigma\Sigma(w^n - w^o),$$

where $\beta_2 = -\beta_1$.

Approximation Quality

The solutions given in Propositions 1 and 2 represent approximations in which terms of order $(\Delta t)^2$ and higher are neglected. An exact solution can be obtained in the limit case of $\Delta t \to 0$. The price process is then characterized by a system of stochastic equations. Let p_t be the price process, and denote by $\overline{p}_t$ the beliefs of a market participant who is uninformed about the demand shock u. The market-clearing conditions translate into the following stochastic system:

$$dp_t = \begin{cases} \frac{\rho}{\lambda}\Sigma(\widetilde{S}^o - u)dt + d\varepsilon_t & \text{for} \quad t_u \leq t < T, \\ \frac{\rho}{\lambda}\Sigma\widetilde{S}^o dt + d\varepsilon_t & \text{for} \quad t_L \leq t < t_u, \\ \frac{\rho}{\lambda}\Sigma\widetilde{S}^o dt - (1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma(p_t - \overline{p}_t)dt + d\varepsilon_t & \text{for} \quad t_A \leq t < t_L, \\ d\overline{p}_t & \text{for} \quad 0 \leq t < t_A; \end{cases}$$

$$d\overline{p}_t = \frac{\rho}{\lambda}\Sigma\widetilde{S}^o dt + d\varepsilon_t \qquad \text{for} \quad 0 \leq t < T.$$

Here $\Phi_t = \int_{s=0}^{t} d\varepsilon_t$ and the boundary condition $p_T = \overline{p}_T = 1 + \Phi_T$ holds. The term $\overline{p}_t - p_t$ captures the asset valuation gap between liquidity providers and speculators for $t_A \leq t < t_L$. The corresponding equation is obtained by substituting

$$\begin{aligned} \widetilde{\mathcal{E}}_{t-dt}(p_t) &= p_t - d\varepsilon_t \\ \overline{\mathcal{E}}_{t-dt}(p_t) &= \overline{p}_t - d\varepsilon_t \end{aligned}$$

into the market clearing condition, which gives

$$\begin{aligned} p_{t-dt} &= \left[\lambda(\rho\Sigma dt)^{-1} + (1-\lambda)\gamma I\right]^{-1}\left[-\widetilde{S}^o + \lambda(\rho\Sigma dt)^{-1}\widetilde{\mathcal{E}}_{t-dt}(p_t) + (1-\lambda)\gamma\overline{\mathcal{E}}_{t-dt}(p_t)\right] \\ &= \left[\lambda(\rho\Sigma dt)^{-1} + (1-\lambda)\gamma I\right]^{-1}\left[-\widetilde{S}^o + \lambda(\rho\Sigma dt)^{-1}p_t + (1-\lambda)\gamma\overline{p}_t\right] - d\varepsilon_t \\ &= \left[\lambda(\rho\Sigma dt)^{-1} + (1-\lambda)\gamma I\right]^{-1} \times \left[-\widetilde{S}^o + \left[\lambda(\rho\Sigma dt)^{-1} + (1-\lambda)\gamma I\right]p_t + (1-\lambda)\gamma\left(\overline{p}_t - p_t\right)\right] - d\varepsilon_t \\ &= p_t - \frac{\rho}{\lambda}\Sigma dt\left[I + (1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma dt\right]^{-1}\left[\widetilde{S}^o - (1-\lambda)\gamma\left(\overline{p}_t - p_t\right)\right] - d\varepsilon_t \\ &\approx p_t - \frac{\rho}{\lambda}\Sigma dt\left[I - (1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma dt\right]\left[\widetilde{S}^o - (1-\lambda)\gamma\left(\overline{p}_t - p_t\right)\right] - d\varepsilon_t. \end{aligned}$$

Ignoring terms of order dt^2 implies

$$dp_t = \frac{\rho}{\lambda}\Sigma\widetilde{S}^o dt^o - (1-\lambda)\gamma\frac{\rho}{\lambda}\Sigma\left(\overline{p}_t - p_t\right)dt + d\varepsilon_t.$$

The price system no longer follows a linear function in $t - T$ as it did in equations (2),(4) and (6); instead, the expected price path evolves as a combination of exponential terms $e^{r_i(t-T)}$

$(i = 1, 2, 3, 4)$. Ignoring terms of order $(\Delta t)^2$ and higher implies an approximation error equal to the difference between an exponential growth path and its linear approximation at $t = T$. The approximation is relatively accurate for modest equity return levels r_i and when the time interval under consideration is relatively short.

Equilibrium under Assumptions A and B2

Here I consider the case $V = \rho^L \Sigma$. Expected equilibrium returns are now denoted as $r' \Delta t$. For the last period $t_u \le t < T$, the market-clearing condition (1) implies

$$\begin{aligned} r_4' \Delta t &= \widetilde{\mathcal{E}}_t (p_{t+\Delta t} - p_t) = \left[\lambda(\rho \Sigma \Delta t)^{-1} + (1-\lambda)(\rho^L \Sigma)^{-1}\right]^{-1} \left(\widetilde{S}^o - u\right) \\ &= \left[I + \frac{(1-\lambda)\rho}{\lambda \rho^L} I \Delta t\right]^{-1} \frac{\rho}{\lambda} \Sigma \left(\widetilde{S}^o - u\right) \Delta t \\ &= \tau \frac{\rho}{\lambda} \Sigma \left(\widetilde{S}^o - u\right) \Delta t \end{aligned}$$

where I define $\tau = \left(1 + \frac{(1-\lambda)\rho}{\lambda \rho^L} \Delta t\right)^{-1}$. If the mass of the liquidity suppliers is small ($\lambda \approx 1$) or their risk aversion large relative to the arbitrageurs ($\rho / \rho^L \approx 0$), then $(1-\lambda)\rho / \lambda \rho^L \approx 0$ and $\tau \approx 1$.

For the period $t_L \le t < t_u$, the supply change u is not yet effective; hence the expected return simplifies to

$$r_3' \Delta t \approx \tau \frac{\rho}{\lambda} \Sigma \widetilde{S}^o \Delta t.$$

The asset price follows (by recursive substitution) as

$$p_t \approx \begin{cases} \mathcal{E}_t(p_T) - (T - t_u) r_4' - (t_u - t) r_3' & \text{for} \quad t_L \le t < t_u, \\ \mathcal{E}_t(p_T) - (T - t) r_4' & \text{for} \quad t_u \le t < T. \end{cases} \tag{7}$$

For the period $t_A \le t < t_L$, expectations about the correct equilibrium price differ between arbitrageurs, who know about the demand shock u, and liquidity suppliers, who do not. Hence, expectations are given by

$$\begin{aligned} \widetilde{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) &= \mathcal{E}_{t_L - \Delta t}(p_T) - (T - t_u) r_4' - (t_u - t_L) r_3', \\ \overline{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) &= \mathcal{E}_{t_L - \Delta t}(p_T) - (T - t_u) r_3' - (t_u - t_L) r_3', \end{aligned}$$

and the valuation difference between liquidity suppliers and arbitrageurs follows as

$$\overline{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) - \widetilde{\mathcal{E}}_{t_L - \Delta t}(p_{t_L}) = (T - t_u)(r_4' - r_3') = -\tau \frac{\rho}{\lambda} \Sigma u (T - t_u). \tag{8}$$

The market-clearing condition in equation (1) for $t = t_L - \Delta t$ implies (under substitution of equation (3)) that

$$\begin{aligned}
p_{t_L-\Delta t} &= \left[\lambda(\rho\Sigma\Delta t)^{-1} + (1-\lambda)(\rho^L\Sigma)^{-1}\right]^{-1} \\
&\quad \times \left[-\widetilde{S}^o + \lambda(\rho\Sigma\Delta t)^{-1}\widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) + (1-\lambda)(\rho^L\Sigma)^{-1}\overline{\mathcal{E}}_{t_L-\Delta t}(p_{t_L})\right] \\
&= \left[\lambda(\rho\Sigma\Delta t)^{-1} + (1-\lambda)(\rho^L\Sigma)^{-1}\right]^{-1} \\
&\quad \times \left[-\widetilde{S}^o + \left[\lambda(\rho\Sigma\Delta t)^{-1} + (1-\lambda)(\rho^L\Sigma)^{-1}\right]\widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) + (1-\lambda)(\rho^L\Sigma)^{-1}(T-t_u)(r_4'-r_3')\right] \\
&= \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) + \left[\lambda(\rho\Sigma\Delta t)^{-1} + (1-\lambda)(\rho^L\Sigma)^{-1}\right]^{-1}\left[-\widetilde{S}^o + (1-\lambda)(\rho^L\Sigma)^{-1}(T-t_u)(r_4'-r_3')\right] \\
&= \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) - \tau\frac{\rho}{\lambda}\Sigma\Delta t\left[\widetilde{S}^o - (1-\lambda)(\rho^L\Sigma)^{-1}(T-t_u)(r_4-r_3)\right] \\
&= \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) - \tau\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t + \tau\frac{(1-\lambda)\rho}{\lambda\rho^L}\Delta t(T-t_u)(r_4-r_3) \\
&\approx \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) - \tau\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t,
\end{aligned}$$

where I use the approximation $(1-\lambda)\rho/\lambda\rho^L \approx 0$. The equilibrium return for $t = t_L - \Delta t$ then follows as

$$r_2'\Delta t = \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L}) - p_{t_L-\Delta t} \approx \tau\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t = r_3'\Delta t.$$

Similarly, for $t = t_L - 2\Delta t$ I obtain the expressions

$$\overline{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t}) - \widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t}) = (T-t_u)(r_4'-r_3')$$

and

$$\begin{aligned}
p_{t_L-2\Delta t} &\approx \widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t}) - \tau\frac{\rho}{\lambda}\Sigma\Delta t \\
&\quad \times \left[\widetilde{S}^o - (1-\lambda)(\rho^L\Sigma)^{-1}(T-t_u)(r_4-r_3)\right] \\
&= \widetilde{\mathcal{E}}_{t_L-2\Delta t}(p_{t_L-\Delta t}) - \tau\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t + \tau\frac{(1-\lambda)\rho}{\lambda\rho^L}\Delta t(T-t_u)(r_4-r_3) \\
&\approx \widetilde{\mathcal{E}}_{t_L-\Delta t}(p_{t_L-\Delta t}) - \tau\frac{\rho}{\lambda}\Sigma\widetilde{S}^o\Delta t
\end{aligned}$$

where I use again $(1-\lambda)\rho/\lambda\rho^L \approx 0$. Repeated substitution implies for the equilibrium price

$$p_t \approx \mathcal{E}_t(p_T) - (T-t_u)r_4' - (t_u-t_L)r_3' - (t_L-t)r_3'. \tag{9}$$

Finally, the price process for the initial period is found to be

$$p_t = \mathcal{E}_t(p_T) - (T-t)r_3' \qquad \text{for} \quad 0 \le t < t_A. \tag{10}$$

The entire price path (adjusted for the expected liquidation) is plotted in Figure 2 of the Web Appendix. For the case with $(1-\lambda)\rho/\lambda\rho^L \approx 0$, the entire price adjustment (consisting only of the return chasing effect $\alpha_1 \left[\Sigma(w^n - w^o)\right]_j$) occurs at time t_A. **Hedging terms $\Sigma\Sigma u$ do not play any role in the price dynamics.**

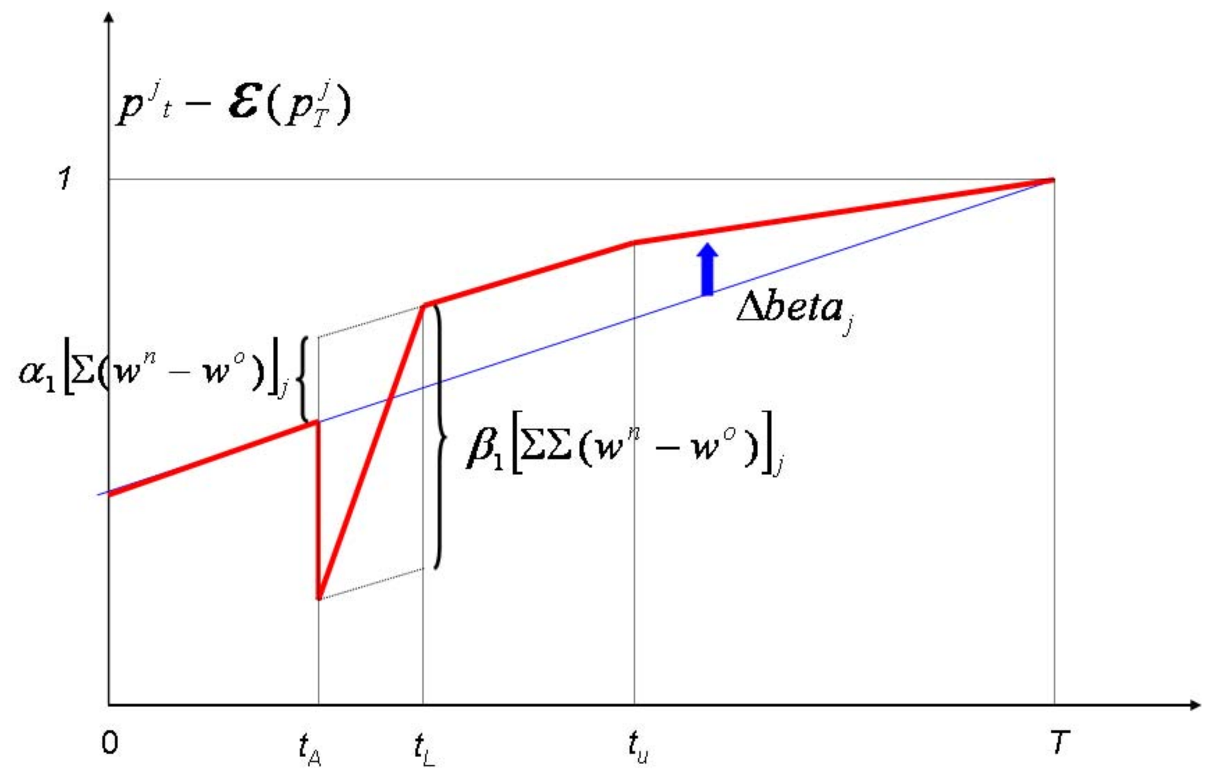

Figure 1: The price dynamics under assumptions A and B1 for asset j are depicted (net of the expected liquidation value $\mathcal{E}(p_T)$) for the case $\alpha_1\left[\Sigma(w^n - w^o)\right]_j > 0$ and $\beta_1\left[\Sigma\Sigma(w^n - w^o)\right]_j < 0$. At time t_A risk arbitrageurs learn about the demand shock $w^n - w^o$, that occurs at time t_u. Liquidity suppliers learn about the demand shock only at time $t_L > t_A$.

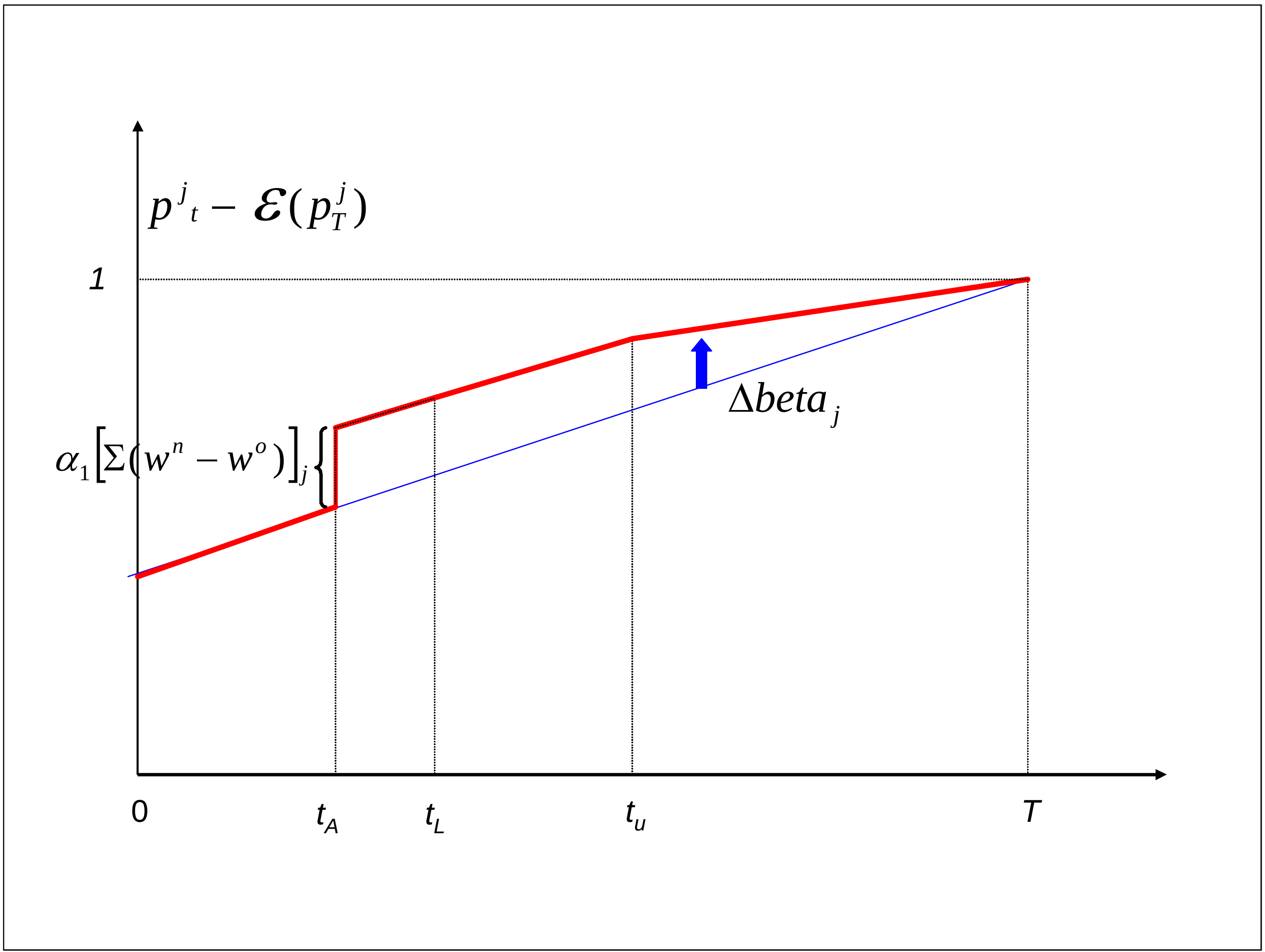

Figure 2: The price dynamics under assumptions A and B2 for asset j are depicted (net of the expected liquidation value $\mathcal{E}(p_T)$) for the case $\alpha_1\left[\Sigma(w^n - w^o)\right]_j > 0$ and $(1-\lambda)\rho/\lambda\rho^L \approx 0$. At time t_A risk arbitrageurs learn about the demand shock $w^n - w^o$, that occurs at time t_u. Liquidity suppliers learn about the demand shock only at time $t_L > t_A$.

Web Appendix: Empirical Part

The empirical part of the Web Appendix provides additional robustness tests. Table A1 provides correlation statistics for the independent variables across different data samples. The market integration test in Table 5 is reproduced in Table A2 for these two extended samples. Table A3 examines robustness of the inference with respect to various factor models of the covariance matrix. Table A4 reexamines the direct price pressure hypothesis using the un-scaled weight change $w^n - w^o$ as a control variable. Table A5 reports average stock returns for 25 stock groups double sorted by un-scaled weight changes and the optimal portfolio weights according to the model.

Table A1: Correlation Statistics for the Indpendent Variables Across Different Samples

The correlation of four independent variable is calculated across three different samples of $N_1 = 2,191$, $N_2 = 2,349$ and $N_3 = 2,414$ observations. The independent variables are the local risk premium change $\Sigma^L(w^n - w^o)]_j$, the complementary international risk premium change $\Sigma^{Int}(w^n - w^o)]_j$, the marginal local arbitrage risk $\Sigma^L\Sigma^L(w^n - w^o)]_j$, and the marginal international arbitrage risk $\Sigma\Sigma^{Int}(w^n - w^o)]_j$. The correlation is calculated for the 2,191 common observations in the baseline sample. The baseline sample ($N_1 = 2,191$) comprises all stocks with at least 80 weekly dollar return observations for the period of July 1, 1998, to July 1, 2000, and excludes stocks from the crisis countries Argentina and Turkey. The second sample ($N_2 = 2,349$) includes Argentine and Turkish stocks. The third sample ($N_3 = 2,414$) reduces the inclusion threshold from 80 to 40 available weekly return observations, and the covariance elements are calculated pairwise using all available return observations of any stock pair; Argentine and Turkish stocks are again included.

$Corr\{[\Sigma^L_{N_k}(w^n - w^o)]_j, [\Sigma^L_{N_l}(w^n - w^o)]_j\}$	$N_1 = 2,191$	$N_2 = 2,349$	$N_3 = 2,414$
$N_1 = 2,191$	1		
$N_2 = 2,349$	0.9915	1	
$N_3 = 2,414$	0.9875	0.9774	1

$Corr\{[\Sigma^{Int}_{N_k}(w^n - w^o)]_j, [\Sigma^{Int}_{N_l}(w^n - w^o)]_j\}$	$N_1 = 2,191$	$N_2 = 2,349$	$N_3 = 2,414$
$N_1 = 2,191$	1		
$N_2 = 2,349$	0.8851	1	
$N_3 = 2,414$	0.8755	0.7970	1

$Corr\{[\Sigma^L_{N_k}\Sigma^L_{N_k}(w^n - w^o)]_j, [\Sigma^L_{N_l}\Sigma^L_{N_l}(w^n - w^o)]_j\}$	$N_1 = 2,191$	$N_2 = 2,349$	$N_3 = 2,414$
$N_1 = 2,191$	1		
$N_2 = 2,349$	0.9943	1	
$N_3 = 2,414$	0.9902	0.9834	1

$Corr\{[\Sigma\Sigma^{Int}_{N_k}(w^n - w^o)]_j, [\Sigma\Sigma^{Int}_{N_l}(w^n - w^o)]_j\}$	$N_1 = 2,191$	$N_2 = 2,349$	$N_3 = 2,414$
$N_1 = 2,191$	1		
$N_2 = 2,349$	0.9102	1	
$N_3 = 2,414$	0.9184	0.8434	1

Table A2: Sample Robustness of Market Integration Test

The regressions in Table 5 are repeated using two extended samples. In panel A, I use a sample of 2,349 stocks which includes stocks from Argentina and Turkey. A stock is included if it features at least 80 weekly dollar return observations for the period of July 1, 1998, to July 1, 2000. The covariance matrix Σ^G is calculated based on all common weekly return observations. Panel B extends the sample further to 2,414 stocks by requiring only 40 weekly dollar return observation for sample inclusion. In this case the covariance matrix elements are estimated based on all available common return observations for each stock pair. For both samples, the cumulative equity returns $\Delta r^j_{t_A}$ in stock j (denominated in dollars and expressed in percentage points) for different event windows (WS = window size) are regressed on a constant, the change in the local risk premium $[\Sigma^L(w^n - w^o)]_j$, the difference between the global and local risk premium change $[\Sigma^{Int}(w^n - w^o)]_j$, the arbitrage risks for the local arbitrage portfolio $[\Sigma^L\Sigma^L(w^n - w^o)]_j$, and the incremental international arbitrage risk to the global arbitrage risk $[\Sigma\Sigma^{Int}(w^n - w^o)]_j$. Formally,

$$\Delta r^j_{t_A} = c + \alpha^L_1[\Sigma^L(w^n - w^o)]_j + \alpha^{Int}_1[\Sigma^{Int}(w^n - w^o)]_j + \beta^L_1[\Sigma^L\Sigma^L(w^n - w^o)]_j + \beta^{Int}_1[\Sigma\Sigma^{Int}(w^n - w^o)]_j + \mu_j.$$

The matrix Σ^L is obtained by setting to zero all stock covariances across countries to capture only within country arbitrage. Also $\Sigma^{Int} = \Sigma^G - \Sigma^L$ and $\Sigma\Sigma^{Int} = \Sigma^G\Sigma^G - \Sigma^L\Sigma^L$. The event window size is chosen in turn to start WS $= 5, 10, 15, 20$ trading days prior to December 1, 2000. Robust t-values are reported in brackets. The last two columns report the significance level at which equality of the respective coefficients can be rejected.

WS	c	[t]	α^L_1	[t]	α^{Int}_1	[t]	β^L_1	[t]	β^{Int}_1	[t]	R^2	F-Test $\alpha^L_1 = \alpha^{Int}_1$	F-Test $\beta^L_1 = \beta^{Int}_1$
Panel A: Position Buildup Event (Extended Sample with Argentine and Turkish Stocks, N=2,349)													
5	0.90	[4.18]	6.7	[0.30]	62.7	[6.21]	−0.020	[−0.94]	−0.062	[−8.83]	0.064	0.013	0.050
10	−1.32	[−4.37]	54.4	[1.88]	103.8	[4.01]	−0.057	[−2.05]	−0.094	[−9.31]	0.053	0.089	0.194
15	−3.06	[−8.25]	152.2	[4.49]	107.5	[6.76]	−0.137	[−4.18]	−0.093	[−7.05]	0.051	0.189	0.187
20	−3.13	[−7.55]	181.2	[4.45]	137.2	[7.24]	−0.194	[−4.93]	−0.137	[−8.28]	0.076	0.291	0.166
Panel B: Position Buildup Event (Extended Sample with Lower Inclusion Threshold, N=2,414)													
5	1.02	[4.94]	27.2	[1.29]	66.3	[6.79]	−0.039	[−1.98]	−0.063	[−9.25]	0.071	0.073	0.235
10	−0.96	[−2.85]	118.3	[2.52]	111.4	[8.02]	−0.118	[−2.68]	−0.097	[−9.67]	0.066	0.878	0.630
15	−2.62	[−6.14]	233.3	[3.78]	120.8	[7.41]	−0.214	[−3.69]	−0.100	[−7.62]	0.052	0.052	0.044
20	−2.56	[−5.26]	283.5	[3.89]	154.4	[7.94]	−0.292	[−4.26]	−0.147	[−8.91]	0.102	0.060	0.032

Table A3: Market Integration Test under a Factor Structure for the Covariance Matrix

The regressions in Table 5, panel A are repeated using a factor model for the global covariance matrices Σ^G. A factor based covariance matrix $\widetilde{\Sigma}^G$ is estimated using alternatively the first 20, 40 or 60 principle components of Σ^G.The cumulative equity returns $\Delta r^j_{t_A}$ in stock j (denominated in dollars and expressed in percentage points) for different event windows (WS = window size) are regressed on a constant, the change in the risk local premium $[\widetilde{\Sigma}^L(w^n - w^o)]_j$, the difference between the global and local risk premium change $[\widetilde{\Sigma}^{Int}(w^n - w^o)]_j$, the arbitrage risks for the local arbitrage portfolio $[\widetilde{\Sigma}^L\widetilde{\Sigma}^L(w^n - w^o)]_j$, and the incremental international arbitrage risk to the global arbitrage risk $[\widetilde{\Sigma}\widetilde{\Sigma}^{Int}(w^n - w^o)]_j$. Formally,

$$\Delta r^j_{t_A} = c + \alpha^L_1[\widetilde{\Sigma}^L(w^n - w^o)]_j + \alpha^{Int}_1[\widetilde{\Sigma}^{Int}(w^n - w^o)]_j + \beta^L_1[\widetilde{\Sigma}^L\widetilde{\Sigma}^L(w^n - w^o)]_j + \beta^{Int}_1[\widetilde{\Sigma}\widetilde{\Sigma}^{Int}(w^n - w^o)]_j + \mu_j.$$

The covariance matrix $\widetilde{\Sigma}^G$ is estimated for two years of weekly dollar stock returns for the period of July 1, 1998, to July 1, 2000. The matrix $\widetilde{\Sigma}^L$ is obtained from $\widetilde{\Sigma}^G$ by setting to zero all stock covariances across countries to capture only within country arbitrage. Also $\widetilde{\Sigma}^{Int} = \widetilde{\Sigma}^G - \widetilde{\Sigma}^L$ and $\widetilde{\Sigma}\widetilde{\Sigma}^{Int} = \widetilde{\Sigma}^G\widetilde{\Sigma}^G - \widetilde{\Sigma}^L\widetilde{\Sigma}^L$. The event window size is chosen in turn to start WS $= 5, 10, 15, 20$ trading days prior to December 1, 2000. Panels A, B, and C report the regression coefficients under a fitted covariance structure with 20, 40, and 60 factors, respectively. Robust and country-clustered adjusted t-values are reported in brackets. The last two columns report the significance level at which equality of the respective coefficients can be rejected.

WS	c	[t]	α^L_1	[t]	α^{Int}_1	[t]	β^L_1	[t]	β^{Int}_1	[t]	R^2	F-Test $\alpha^L_1 = \alpha^{Int}_1$	F-Test $\beta^L_1 = \beta^{Int}_1$
Panel A: Position Buildup Event, 20 Factor Model for the Covariance Matrix (All Stocks, N=2,291)													
5	1.82	[3.53]	42.4	[0.70]	65.7	[2.97]	−0.055	[−1.01]	−0.068	[−4.72]	0.105	0.701	0.819
10	0.11	[0.12]	86.0	[0.93]	109.3	[3.34]	−0.089	[−1.09]	−0.104	[−5.16]	0.098	0.759	0.838
15	−1.47	[−1.01]	164.1	[1.34]	130.4	[3.30]	−0.148	[−1.33]	−0.114	[−4.15]	0.061	0.758	0.743
20	−1.03	[−0.59]	245.5	[2.18]	166.4	[3.01]	−0.254	[−2.53]	−0.162	[−4.14]	0.132	0.374	0.272
Panel B: Position Buildup Event, 40 Factor Model for the Covariance Matrix (All Stocks, N=2,291)													
5	1.57	[3.22]	10.4	[0.23]	51.4	[3.31]	−0.029	[−0.66]	−0.059	[−4.99]	0.100	0.444	0.525
10	−0.27	[−0.33]	43.4	[1.06]	84.4	[3.72]	−0.056	[−1.56]	−0.090	[−6.07]	0.090	0.269	0.318
15	−1.88	[−1.45]	140.3	[1.92]	95.8	[3.41]	−0.133	[−2.02]	−0.094	[−4.47]	0.053	0.502	0.519
20	−1.68	[−1.11]	182.2	[3.19]	121.6	[3.15]	−0.205	[−3.94]	−0.136	[−4.44]	0.122	0.254	0.144
Panel C: Position Buildup Event, 60 Factor Model for the Covariance Matrix (All Stocks, N=2,291)													
5	1.48	[3.16]	−8.7	[−0.19]	49.7	[3.28]	−0.012	[−0.26]	−0.058	[−5.06]	0.101	0.292	0.349
10	−0.34	[−0.42]	25.7	[0.70]	83.6	[3.95]	−0.040	[−1.25]	−0.089	[−6.44]	0.091	0.099	0.120
15	−1.97	[−1.52]	123.4	[1.93]	92.2	[3.48]	−0.119	[−2.06]	−0.091	[−4.54]	0.052	0.597	0.613
20	−1.82	[−1.24]	147.6	[3.00]	118.2	[3.23]	−0.174	[−3.84]	−0.133	[−4.53]	0.120	0.571	0.369

Table A4: Robustness Test on Price Pressure Effects for the Speculative Position Build-Up

Panels A and B repeat the regression in Table 9 using only re-weighted stocks (i.e., excluding all added and deleted stocks). A price pressure proxy is defined as a stock's percentage weight change $PP^j = 2(w^n - w^o)_j/(w^n + w^o)_j,$. Panel B adds the absolute weight change $(w^n - w^o)_j$ as an additional (unscaled) measure of price pressure. Panels C and E report regressions using only the absolute weight change as a proxy for price pressure. The baseline regression results are added as Panel D for comparision. The cumulative event returns $\Delta r^j_{t_A}$ (denominated in dollars and expressed in percentage points) over different even windows (WS = window size) is regressed on a constant, the change in the risk premium $\left[\Sigma^G(w^n - w^o)\right]_j$ and the arbitrage risk $\left[\Sigma^G\Sigma^G(w^n - w^o)\right]_j$ of each stock j. Formally,

$$\Delta r^j_{t_A} = c + \gamma_1 PP^j + \gamma_2(w^n - w^o)_j + \alpha_1[\Sigma^G(w^n - w^o)]_j + \beta_1[\Sigma^G\Sigma^G(w^n - w^o)]_j + \mu_j.$$

The covariance matrix Σ^G is estimated for two years of weekly dollar stock returns for the period of July 1, 1998, to July 1, 2000. The event window size is chosen alternatively to start WS = 5, 10, 15, 20 trading days prior to December 1, 2000. Robust and country-clustered adjusted t-values are reported in parenthesis.

WS	c	$[t]$	γ_1	$[t]$	γ_2	$[t]$	α_1	$[t]$	β_1	$[t]$	R^2
Panel A: Position Buildup Event with Price Pressure Controls (All Reweighted Stocks, N=1,630)											
5	2.43	[4.63]	2.13	[2.11]			39.1	[2.40]	−0.058	[−4.57]	0.081
10	0.62	[0.86]	1.75	[1.22]			86.0	[3.85]	−0.098	[−6.42]	0.075
15	−1.00	[−0.90]	2.29	[1.06]			102.4	[3.64]	−0.100	[−4.54]	0.048
20	−1.23	[−0.87]	2.13	[0.97]			130.9	[4.06]	−0.154	[−5.43]	0.093
Panel B: Position Buildup Event with Two Price Pressure Controls (All Reweigthed Stocks, N=1,630)											
5	2.46	[4.81]	2.38	[2.23]	−1,852	[−3.09]	42.9	[2.61]	−0.062	[−4.97]	0.086
10	0.63	[0.89]	1.87	[1.24]	−844	[0.80]	87.7	[3.83]	−0.099	[−6.60]	0.076
15	−0.97	[−0.87]	2.52	[1.10]	−1,694	[1.04]	105.9	[3.70]	−0.103	[−4.65]	0.049
20	−1.23	[−0.87]	2.18	[0.95]	−307	[−0.17]	131.5	[3.90]	−0.155	[−5.22]	0.093
Panel C: Position Buildup Event and Absolute Weight Change Variable (All Stocks, N=2,291)											
5	0.12	[0.18]			−1,152	[−2.21]					0.003
10	−2.35	[3.37]			−755	[−2.14]					0.001
15	−4.19	[−4.83]			−229	[−0.46]					0.000
20	−5.46	[−6.53]			−905	[−0.63]					0.001
Panel D: Position Buildup Event with Baseline Specification (All Stocks, N=2,291)											
5	1.54	[3.15]					41.8	[3.42]	−0.064	[−4.97]	0.095
10	−0.25	[0.32]					80.6	[4.01]	−0.099	[−6.43]	0.089
15	−2.04	[−1.58]					101.7	[3.71]	−0.105	[−4.45]	0.051
20	−1.99	[−1.34]					124.5	[3.47]	−0.161	[−4.58]	0.119
Panel E: Position Buildup Event with Absolute Weight Change Control (All Stocks, N=2,291)											
5	1.56	[3.20]			−840	[−2.55]	44.6	[3.56]	−0.066	[−6.72]	0.096
10	−0.23	[0.30]			−657	[−1.92]	82.8	[4.03]	−0.100	[−6.49]	0.089
15	−2.03	[−1.56]			−525	[−1.10]	103.5	[3.66]	−0.106	[−4.43]	0.052
20	−1.98	[−1.31]			−538	[−0.65]	126.3	[3.33]	−0.162	[−4.47]	0.119

Table A5: Mean Returns Double Sorted on Absolute Weight Changes and Optimal Arbitrage Portfolio Weights

Panels A and B report mean event returns for the 10 day and 20 day position buildup event window, respectively, under double sorting of all 2,291 stocks into 25 equally large stocks groups. The first sort occurs based on the absolute weight change of a stocks, $w^n - w^o$, and a second sort is undertaken based optimal portfolio weights given by linear combination $[\Sigma^G(w^n - w^o)]_j - 0.001 \times [\Sigma^G \Sigma^G (w^n - w^o)]_j$ of the the return seeking and risk hedging portfolios. The t-test given behind (below) each row (column) provides the t-statistics at which the hypothesis of equal means of qunatiles $Q1$ and $Q5$ can be rejected.

Panel A: Mean 10-Day Event Return for Double Sorted Quantiles (WS=10)

		Optimal Portfolio Weights (Model)					T-Test
		$Q1$	$Q2$	$Q3$	$Q4$	$Q5$	Mean($Q5$) =Mean($Q1$)
Absolute Weight Change		low				high	
$Q1$	low	−8.35	−2.86	−1.02	−0.52	−0.43	5.02
$Q2$		−8.34	−1.29	−0.15	1.76	1.34	5.54
$Q3$		−6.77	−3.10	−3.06	−0.91	−3.04	2.46
$Q4$		−5.73	−0.08	−1.62	−0.37	−0.74	3.31
$Q5$	high	−9.73	−1.37	−0.30	−0.72	−1.15	6.02
T-Test Mean($Q5$) =Mean($Q1$)		−0.79	1.30	0.63	−0.17	−0.60	

Panel B: Mean 20-Day Event Return for Double Sorted Quantiles (WS=20)

		Optimal Portfolio Weights (Model)					
		$Q1$	$Q2$	$Q3$	$Q4$	$Q5$	T-Test
Absolute Weight Change		low				high	Mean($Q5$) =Mean($Q1$)
$Q1$	low	−15.14	−7.18	−3.55	−3.44	−3.30	4.97
$Q2$		−12.99	−3.13	−2.47	−1.32	−1.38	4.77
$Q3$		−11.55	−5.45	−6.94	−1.99	−6.41	2.30
$Q4$		−10.06	−5.58	−3.25	−2.03	−1.06	4.10
$Q5$	high	−19.43	−3.25	−2.31	−1.36	−1.76	7.35
T-Test Mean($Q5$) =Mean($Q1$)		−1.57	2.29	0.67	−0.92	0.77	