Margin Regulation and Volatility

Johannes Brumm\textsuperscript{1}       Michael Grill\textsuperscript{2}
Felix Kubler\textsuperscript{3}       Karl Schmedders\textsuperscript{3}

\textsuperscript{1}University of Zurich       \textsuperscript{2}European Central Bank
\textsuperscript{3}University of Zurich and Swiss Finance Institute

Macroeconomic Financial Modeling (MFM) and Macroeconomic Fragility Conference
Cambridge, MA – October 12, 2013

\texttt{swiss:finance:institute}
Stock Prices and Brokers Loans 1926–31 (White, 1990)

Figure 4
Stock Prices and Brokers' Loans

Source: Board of Governors of the Federal Reserve system (1943) and the New York Stock Exchange Year Book (1931).
Securities Exchange Act of 1934

Securities Exchange Act had three purposes (Kupiec, 1998)

- reduction of “excessive” credit in securities transactions
- protection of buyers from too much leverage
- reduction of stock market volatility

Securities Exchange Act of 1934 granted the Federal Reserve Board (FRB) the power to set initial margin requirements on national exchanges

FRB established Regulation T to set minimum equity positions on partially loan-financed transactions of exchange-traded securities

FRB pursued active margin policy between 1947 and 1974
U.S. Regulation T

Fortune (2000)

Regulation T Initial Margin Requirement (Long Equity Position)
January 1940 to July 2000

Source: Federal Reserve System.
Effects of Regulation T

Kupiec (1988) quotes from an internal 1984 FRB study

*Margin requirements were ineffective as selective credit controls, inappropriate as rules for investor protection, and were unlikely to be useful in controlling stock price volatility.*

Fortune (2001)

*The literature evaluating the effects of Regulation T does provide some evidence that margin requirements affect stock price performance, but the evidence is mixed and it is not clear that the statistical significance found translates to an economically significant case for an active margin policy.*
Shifting Debt


*If an investor views margin debt as a close substitute for other forms of debt, changes in margin requirements will shift the type of debt used to finance stock purchases without changing the investors total debt. The investors leverage will be unchanged but altered in form. The risks faced, and the risk exposure of creditors, will be unchanged. Little will be changed but the name of the paper.*
This Paper

Calibrated general equilibrium infinite-horizon economy with heterogeneous agents and collateral constraints

- Collateralized borrowing increases return volatility of long-lived assets
- Changes of margin requirements (as under Regulation T) have little effect if other long-lived assets are not regulated
- Spillover effects: If margins on one asset are increased, the volatility of other assets decreases
- Changes of margin requirements may have strong effects when all markets are regulated
This Paper

Calibrated general equilibrium infinite-horizon economy with heterogeneous agents and collateral constraints

- Collateralized borrowing increases return volatility of long-lived assets
- Changes of margin requirements (as under Regulation T) have little effect if other long-lived assets are not regulated
- Spillover effects: If margins on one asset are increased, the volatility of other assets decreases
- Changes of margin requirements may have strong effects when all markets are regulated
Outline

Introduction
  Motivation and Summary

The Economic Model
  Infinite-horizon Economy

Model Specification
  Parameter Values

Margin Requirements and Volatility
  Basic Observations
  Regulation of Margin Requirements

Conclusion
  Summary
Model: Physical Economy

Infinite-horizon exchange economy in discrete time, \( t = 0, 1, 2, \ldots \)

Finite number \( S \) of i.i.d. shocks, \( s = 1, 2, \ldots, S \)

History of shocks \( s^t = (s_0, s_1, \ldots, s_t) \), called date-event

Single perishable consumption good

\( H = 2 \) types of agents, \( h = 1, 2 \), with Epstein-Zin recursive utility

Agent \( h \) receives individual endowment \( e^h(s^t) \) at date-event \( s^t \)

\( A = 2 \) long-lived assets ("Lucas trees"), \( a = 1, 2 \), dividends \( d_a(s^t) \), in unit net supply

Aggregate endowments \( \bar{e}(s^t) = e^1(s^t) + e^2(s^t) + d_1(s^t) + d_2(s^t) \)
Model: Financial Markets

Agent $h$ can buy shares $\theta^h_a(s^t) \geq 0$ of asset $a$ at price $q_a(s^t)$

$J = 2$ short-lived bonds, $j = 1, 2$ also available for trade

Agent $h$ can buy $\phi^h_j(s^t)$ of security $j$ at price $p_j(s^t)$

Short position in bond $j$ must be **collateralized** by long position in long-lived asset $a = j$

Borrowing funds by short-selling a bond, $p_j(s^t)\phi^h_j(s^t) < 0$, requires sufficient long position $q_j(s^t)\theta^h_j(s^t) > 0$

Margin requirement $m_j(s^t)$ imposes lower bound on 'equity' relative to value of collateral

$$m_j(s^t) \left( q_j(s^t)\theta^h_j(s^t) \right) \leq q_j(s^t)\theta^h_j(s^t) + p_j(s^t)\phi^h_j(s^t)$$
Default possible without personal bankruptcy

Agent who defaults incurs no penalty or utility loss

Default at date-event $s^{t+1}$ whenever debt exceeds current value of collateral

$$-\phi_j^h(s^t) > \theta^h(s^t) (q_j(s^{t+1}) + d_j(s_{t+1}))$$

Rules for margin requirements sufficiently large so that no default in equilibrium
**Margin Requirements**

Market-determined (endogenous) margin requirements

Lowest possible margin $m_j(s^t)$ such that no default in subsequent period

$$m_j(s^t) = 1 - \frac{p_j(s^t) \cdot \min_{s_{t+1}} \{q_j(s_{t+1}) + d_j(s_{t+1})\}}{q_j(s^t)}$$

Stochastic version of Kiyotaki and Moore (1997) constraint

$$-\phi_j^h(s^t) \geq \theta^h(s^t) \min_{s_{t+1}} \{q_j(s_{t+1}) + d_j(s_{t+1})\}$$

Regulated (exogenous) margin requirements

Regulating agency (not further modeled) imposes margin restriction $m_j(s^t)$

No collateralized borrowing: $m_j(s^t) = 1$
Endogenous State Variables

Endogenous state variables: agents’ beginning-of-period financial wealth as a fraction of total wealth in the economy

\[
\omega_h(s^t) = \frac{\sum_{j \in J} \phi_j^h(s^{t-1}) + \theta^h(s^{t-1}) \cdot (q(s^t) + d(s^t))}{\sum_{a \in A} (q_a(s^t) + d_a(s^t))}
\]

Wealth share \( \omega_h(s^t) \in [0, 1] \)

Agents “survive” in the long run due to collateral and short-sale constraints
Exogenous Growth Rate

Aggregate endowments grow at a stochastic rate

\[ \bar{e}(s_{t+1}) = \bar{e}(s^t)g(s_{t+1}) \]

\( S = 6 \) exogenous i.i.d. shocks, calibrated to match the distribution of disasters in Barro and Jin (2011)

**Table**: Growth rates and probabilities of exogenous shocks

<table>
<thead>
<tr>
<th>Shock s</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>( g(s) )</td>
<td>0.565</td>
<td>0.717</td>
<td>0.867</td>
<td>0.968</td>
<td>1.028</td>
<td>1.088</td>
</tr>
<tr>
<td>( \pi(s) )</td>
<td>0.005</td>
<td>0.005</td>
<td>0.024</td>
<td>0.0533</td>
<td>0.8594</td>
<td>0.0533</td>
</tr>
</tbody>
</table>

Average growth rate 2%, standard deviation 2% for states 4, 5, 6
Dividends and Endowments

Two long-lived assets with dividends $d_a(s^t) = \delta_a \bar{e}(s^t)$, $a = 1, 2$

Collateralizable income from NIPA: $\delta_1 + \delta_2 = 0.11$

Regulated asset 1 are stock dividends, $\delta_1 = 0.04$

Unregulated asset 2 are interest and rental income, $\delta_2 = 0.07$

Two agents with total endowment $e^1(s^t) + e^2(s^t) = 0.89\bar{e}(s^t)$

Agent $h$ receives fixed share $\eta^h$ of aggregate endowment as individual endowment, $e^h(s^t) = \eta^h \bar{e}(s^t)$

Small agent 1 with $\eta^1 = 0.089$ (10% of labor endowments)

Large agent 2 with $\eta^2 = 0.801$ (90% of labor endowments)
Dividends and Endowments

Two long-lived assets with dividends \( d_a(s^t) = \delta_a \bar{e}(s^t) \), \( a = 1, 2 \)

Collateralizable income from NIPA: \( \delta_1 + \delta_2 = 0.11 \)

Regulated asset 1 are stock dividends, \( \delta_1 = 0.04 \)

Unregulated asset 2 are interest and rental income, \( \delta_2 = 0.07 \)

Two agents with total endowment \( e^1(s^t) + e^2(s^t) = 0.89\bar{e}(s^t) \)

Agent \( h \) receives fixed share \( \eta^h \) of aggregate endowment as individual endowment, \( e^h(s^t) = \eta^h \bar{e}(s^t) \)

Small agent 1 with \( \eta^1 = 0.089 \) (10% of labor endowments)

Large agent 2 with \( \eta^2 = 0.801 \) (90% of labor endowments)
Utility Parameters

Agents have identical IES of 2

Small agent 1 has low risk aversion of 0.5

Large agent 2 has high risk aversion of 7

Discount factor $\beta^h = 0.942$ calibrated to match annual risk-free rate of 1% with a regulated margin of 60%
Collateral Constraints Increase Volatility

Margin requirement on first asset $m_j(s^t) \equiv 1$, so this asset is non-marginable

Aggregated STD of long-lived asset returns: 7.4%
(without borrowing: 5.3%)

Aggregated excess return: 5.0%

Table: Asset returns with marginable and non-marginable asset

<table>
<thead>
<tr>
<th>Asset</th>
<th>STD</th>
<th>ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-marginable ($\delta_1 = 0.04$)</td>
<td>8.5</td>
<td>6.8</td>
</tr>
<tr>
<td>Marginable ($\delta_2 = 0.07$)</td>
<td>7.1</td>
<td>4.4</td>
</tr>
</tbody>
</table>
Collateral Value

Non-marginable asset 1, marginable asset 2

Table: Average holdings and trading volume in long simulations

<table>
<thead>
<tr>
<th>$\theta_1^1$</th>
<th>$\theta_1^2$</th>
<th>$\phi_2^1$</th>
<th>$\Delta \theta_1^1$</th>
<th>$\Delta \theta_2^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.942</td>
<td>0.997</td>
<td>-1.11</td>
<td>0.030</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Collateral feature of the marginable asset is valuable

Relative collateral premium

$$CP(s^t) = \frac{q_2(s^t) - q_1(s^t) \frac{d_2(s^t)}{d_1(s^t)}}{q_1(s^t) + q_2(s^t)}$$

Long-run average in baseline economy: $CP = 34.6\%$
Collateral Value

Non-marginable asset 1, marginable asset 2

Table: Average holdings and trading volume in long simulations

<table>
<thead>
<tr>
<th>$\theta_1$</th>
<th>$\theta_2$</th>
<th>$\phi_2$</th>
<th>$\Delta \theta_1$</th>
<th>$\Delta \theta_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.942</td>
<td>0.997</td>
<td>-1.11</td>
<td>0.030</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Collateral feature of the marginable asset is valuable

Relative collateral premium

$$CP(s^t) = \frac{q_2(s^t) - q_1(s^t) \frac{d_2(s^t)}{d_1(s^t)}}{q_1(s^t) + q_2(s^t)}$$

Long-run average in baseline economy: $CP = 34.6\%$
Basic Economic Mechanism

In ‘normal’ times, small low-RA agent 1 holds both risky assets and is highly leveraged.

A bad growth shock reduces wealth of agent 1; she must sell a portion of the risky assets.

Agent 1 sells first the non-marginable asset; only if her position in that asset is zero, she begins selling the marginable asset.

Only the large high-RA agent 2 can buy a risky asset; for that the (normalized) price must drop significantly.

As a result, the non-marginable asset exhibits both larger trading volume and higher price volatility.
Regulating the Stock Market

Regulation T had small (if any) quantitative impact on stock market volatility (Kupiec 1998, Fortune 2001)

Regulation of “stock market” in our model

- Asset 1 regulated with constant $m_1(s^t)$
- Asset 2 unregulated (endogenous margins)

How does asset return volatility react to changes in $m_1$?

Not much!
Return Volatility as a Function of $m_1$
Portfolio, Trading Volume and CP

<table>
<thead>
<tr>
<th>$m_1$</th>
<th>$\theta_1^1$</th>
<th>$\theta_2^1$</th>
<th>$\phi_1^1$</th>
<th>$\Delta \theta_1^1$</th>
<th>$\Delta \theta_2^1$</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>0.9462</td>
<td>0.9875</td>
<td>-1.277</td>
<td>0.0265</td>
<td>0.0084</td>
<td>3.20%</td>
</tr>
<tr>
<td>0.7</td>
<td>0.9462</td>
<td>0.9922</td>
<td>-1.236</td>
<td>0.0292</td>
<td>0.0063</td>
<td>10.08%</td>
</tr>
<tr>
<td>0.8</td>
<td>0.9490</td>
<td>0.9955</td>
<td>-1.184</td>
<td>0.0284</td>
<td>0.0044</td>
<td>18.67%</td>
</tr>
<tr>
<td>0.9</td>
<td>0.9466</td>
<td>0.9967</td>
<td>-1.144</td>
<td>0.0291</td>
<td>0.0034</td>
<td>27.40%</td>
</tr>
</tbody>
</table>

As $m_1$ increases,

- agent 1’s
  - holding of the regulated asset barely changes
  - holding of the unregulated asset increases monotonically
  - short position in the bond decreases

- the trading volume of the
  - regulated asset barely changes
  - unregulated asset decreases monotonically

- the collateral premium increases monotonically
Two Main Effects

As margin requirement $m_1$ increases, regulated asset 1 becomes less attractive as collateral agents’ ability to leverage decreases.

Both effects influence the small low-RA agent 1 after a bad shock. She sells regulated asset 1 sooner the higher $m_1$ de-leveraging episodes are less severe for her.

For the regulated asset 1 the
first effect raises return volatility
second effect reduces return volatility

For the unregulated asset 2
both effects reduce return volatility
Countercyclical Regulation

Committee on the Global Financial System (CGFS)

\[
\ldots \text{a countercyclical add-on to the supervisory haircuts should be used by macroprudential authorities as a discretionary tool to regulate the supply of secured funding, whenever this is deemed necessary.}
\]

State-dependent regulation in our model
Low margin \( m_1(s^t) = 0.5 \) in four negative-growth states
Higher margin \( m_1(s^t) > 0.5 \) in two positive-growth states
Asset 2 remains unregulated (endogenous margins)

Not much changes! (until \( m_1(s^t) \) gets very large)

And again: Strong spillover effects on the unregulated asset
Regulation in All Markets

Change of margin requirements for asset 1 has small impact on its return volatility

Agents have the opportunity to leverage against a large and unregulated second asset

Final step of our analysis: Regulation of both assets
Regulation of Both Assets

The diagram shows the relationship between margin requirements and STD returns for both countercyclical and uniform regulations. The x-axis represents the margin requirement, while the y-axis represents the STD returns. The graph indicates that as the margin requirement increases, the STD returns decrease for both types of regulation.
## Constant vs. Countercyclical Regulation

Average holdings and trading volume under constant regulation

<table>
<thead>
<tr>
<th>$m$</th>
<th>$\theta^1$</th>
<th>$\phi^1$</th>
<th>$\Delta \theta^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>0.9617</td>
<td>-1.2031</td>
<td>0.0178</td>
</tr>
<tr>
<td>0.7</td>
<td>0.9765</td>
<td>-0.9342</td>
<td>0.0159</td>
</tr>
<tr>
<td>0.8</td>
<td>0.9915</td>
<td>-0.5697</td>
<td>0.0078</td>
</tr>
<tr>
<td>0.9</td>
<td>0.9979</td>
<td>-0.2490</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

and under countercyclical regulation

<table>
<thead>
<tr>
<th>$m$</th>
<th>$\theta^1$</th>
<th>$\phi^1$</th>
<th>$\Delta \theta^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>0.9650</td>
<td>-1.2188</td>
<td>0.0138</td>
</tr>
<tr>
<td>0.7</td>
<td>0.9827</td>
<td>-0.9685</td>
<td>0.0128</td>
</tr>
<tr>
<td>0.8</td>
<td>0.9899</td>
<td>-0.6051</td>
<td>0.0111</td>
</tr>
<tr>
<td>0.9</td>
<td>0.9900</td>
<td>-0.2593</td>
<td>0.0057</td>
</tr>
</tbody>
</table>
## Uniform Regulation

<table>
<thead>
<tr>
<th>$m$</th>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>$p$</td>
<td>2.1531</td>
<td>2.5214</td>
<td>2.9000</td>
<td>3.1860</td>
<td>3.3610</td>
<td>3.4391</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.0888</td>
<td>0.5876</td>
<td>0.8580</td>
<td>0.9684</td>
<td>0.9708</td>
<td>0.9722</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.0746</td>
<td>-0.5750</td>
<td>-0.9768</td>
<td>-1.2165</td>
<td>-1.2201</td>
<td>-1.1868</td>
</tr>
<tr>
<td>0.7</td>
<td>$p$</td>
<td>2.2244</td>
<td>2.4962</td>
<td>2.7772</td>
<td>3.0326</td>
<td>3.2297</td>
<td>3.3395</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.4287</td>
<td>0.7147</td>
<td>0.8780</td>
<td>0.9549</td>
<td>0.9847</td>
<td>0.9863</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.2761</td>
<td>-0.5188</td>
<td>-0.7130</td>
<td>-0.8503</td>
<td>-0.9517</td>
<td>-0.9383</td>
</tr>
<tr>
<td>0.8</td>
<td>$p$</td>
<td>2.2691</td>
<td>2.4501</td>
<td>2.6408</td>
<td>2.8065</td>
<td>2.9509</td>
<td>3.0735</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.7413</td>
<td>0.8715</td>
<td>0.9479</td>
<td>0.9826</td>
<td>0.9952</td>
<td>0.9963</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.3248</td>
<td>-0.4134</td>
<td>-0.4860</td>
<td>-0.5365</td>
<td>-0.5758</td>
<td>-0.5802</td>
</tr>
<tr>
<td>0.9</td>
<td>$p$</td>
<td>2.2106</td>
<td>2.3061</td>
<td>2.4052</td>
<td>2.4883</td>
<td>2.5720</td>
<td>2.6591</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.9156</td>
<td>0.9597</td>
<td>0.9851</td>
<td>0.9959</td>
<td>0.9990</td>
<td>0.9994</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.1949</td>
<td>-0.2133</td>
<td>-0.2286</td>
<td>-0.2393</td>
<td>-0.2501</td>
<td>-0.2576</td>
</tr>
</tbody>
</table>
## Countercyclical Regulation

<table>
<thead>
<tr>
<th>$m$</th>
<th>$s$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>$p$</td>
<td>2.1616</td>
<td>2.5554</td>
<td>2.9403</td>
<td>3.2043</td>
<td>3.3798</td>
<td>3.4584</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.0970</td>
<td>0.7115</td>
<td>0.9235</td>
<td>0.9757</td>
<td>0.9716</td>
<td>0.9728</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.1019</td>
<td>-0.8877</td>
<td>-1.1765</td>
<td>-1.2434</td>
<td>-1.2287</td>
<td>-1.1941</td>
</tr>
<tr>
<td>0.7</td>
<td>$p$</td>
<td>2.2876</td>
<td>2.6280</td>
<td>3.0601</td>
<td>3.2283</td>
<td>3.2810</td>
<td>3.4068</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.5972</td>
<td>0.9604</td>
<td>0.9944</td>
<td>0.9962</td>
<td>0.9836</td>
<td>0.9873</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.6662</td>
<td>-1.1664</td>
<td>-1.1241</td>
<td>-1.0494</td>
<td>-0.9605</td>
<td>-0.9582</td>
</tr>
<tr>
<td>0.8</td>
<td>$p$</td>
<td>2.7285</td>
<td>2.8737</td>
<td>2.9971</td>
<td>3.0842</td>
<td>3.0563</td>
<td>3.1735</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>0.9943</td>
<td>0.9990</td>
<td>0.9999</td>
<td>0.9999</td>
<td>0.9886</td>
<td>0.9935</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-1.0325</td>
<td>-0.8473</td>
<td>-0.7298</td>
<td>-0.6755</td>
<td>-0.5931</td>
<td>-0.6076</td>
</tr>
<tr>
<td>0.9</td>
<td>$p$</td>
<td>2.7045</td>
<td>2.7338</td>
<td>2.7569</td>
<td>2.7716</td>
<td>2.6208</td>
<td>2.6935</td>
</tr>
<tr>
<td></td>
<td>$\theta$</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.9888</td>
<td>0.9919</td>
</tr>
<tr>
<td></td>
<td>$\phi$</td>
<td>-0.4965</td>
<td>-0.4113</td>
<td>-0.3546</td>
<td>-0.3275</td>
<td>-0.2501</td>
<td>-0.2607</td>
</tr>
</tbody>
</table>
Simplified Description of Main Effects

Sufficiently large margins $m$ in the good states

In response to a good shock

- agent 1 must reduce her leverage
- she must sell a small portion of long-lived asset and decrease her short position in the bond
- these trades dampen increase in normalized price
- dampening effect on asset price reduces asset return volatility

Conversely, in response to a bad shock

- agent 1 can increase her leverage
- she buys a small portion of long-lived asset and increases her short position in the bond
- these trades buffer decrease in normalized price
- buffer effect on asset price reduces asset return volatility
Assumptions and Limitations

General equilibrium model ignores institutional details

Technical limitations require
  • short-sale constraints on long-lived assets
  • two types of agents

Countercyclical margins depend on exogenous shock but should depend on price levels instead

Model provides transparent insights into general equilibrium effects of margin regulation
Assumptions and Limitations

General equilibrium model ignores institutional details

Technical limitations require
- short-sale constraints on long-lived assets
- two types of agents

Countercyclical margins depend on exogenous shock but should depend on price levels instead

Model provides transparent insights into general equilibrium effects of margin regulation
Summary

Calibrated general equilibrium infinite-horizon economy with heterogeneous agents and collateral constraints

- Collateralized borrowing increases return volatility of long-lived assets
- Changes of margin requirements (as under Regulation T) have little effect if other long-lived assets are not regulated
- Spillover effects: If margins on one asset are increased, the volatility of other assets decreases
- Changes of margin requirements may have strong effects when all markets are regulated