Can BET-Fi be considered a leading index for Bucharest Stock Exchange?

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Adina Calugaru
Bucharest Stock Exchange

- Opened up for trading in November 1995
- For almost 2 years, reduced number of trading days/week
- 4th place by market capitalization among eastern European exchanges
- 6 indices: BET, BET–C, BET–Fi, BET–XT, BET–NG, ROTX
SPO of OMV Petrom, rolled by Ministry of Economy through the Office of State Ownership and Privatization in Industry

Market Capitalization

Exchange segment: BSE
115,377,882,103 LEI
10,882,666,444 LEI
26,378,062,811 EUR
2,550,556,859 EUR
37,561,901,375 USD
3,620,300,477 USD

Exchange segment: RASDAQ
1 USD = 2.9953 LEI
1 EUR = 4.2544 LEI

Exchange Rates

Indices

BET
5,956.80
5.24 0.16%

BET-1
3,250.41
1.68 0.06%

BET-2
11,641.54
103.77 0.46%

BET-3
11,179.34
36.64 0.33%

BET-4
494.97
0.62 0.13%

BET-NI
764.85
-1.10 -0.15%

Values as of 7/21/2011

TOP 6 Companies BSE

by volume

Symbol Price Volume
--- --- ---
BSE 0.1580 44,332,103
AMO 0.0147 3,346,500
OFC 0.3060 3,067,600
SNP 0.0303 1,253,000
SIF 1.5400 919,500
SIF 1.3000 1,001,000

by price - Gainers

Symbol Price Var (%)
--- --- ---
EQD 0.1098 7.77
TML 0.1960 6.55
TMB 0.0734 2.85
SIP 0.3600 2.80
CLC 0.2298 2.85

by price - Losers

Symbol Price Var (%)
--- --- ---
EQL 0.1572 -14.25
CBL 0.1400 -4.97
FLG 0.0500 -2.73
HNC 0.0500 -2.26
CMC 0.1151 -1.84

Announcements

6/24/2011 BVB shareholders and potential investors can subscribe as of today at no charge for news regarding General Shareholders Meetings, financial statements, dividends and corporate actions of the issuer. (Bucharest Stock Exchange, BVB symbol [more info])

Quick Links

Transactions
Market News BSE
Market News RASDAQ
Trading Statistics
Citizens Public Criteria
Creditors Public Criteria
Financial Instruments
Trading Calendar
SIFs

- 5 Romanian Financial Investment Companies
- Created on November 1\textsuperscript{st} 1996
- Former 5 Private Property Funds – part of the privatization process in Romania, in the ‘90s
- Largest Romanian Closed-end funds (equity funds)
- Listed on BVB since November 1\textsuperscript{st} 1999
SIFs position at BSE

SIF’s capitalization

![Graph showing SIF's capitalization and percentage of BSE capitalization from 1999 to 2011 (March).]
## SIFs position at BSE (contd.)

<table>
<thead>
<tr>
<th></th>
<th>SIFs’ POSITION IN TOTAL BSE AND 1st CATEGORY TRANSACTIONS (AVERAGE FIGURES FOR NOV.1999-DEC.2010)</th>
<th>SIFs DAILY ACTIVITY COMPARED WITH BSE (NOV.1999-DEC.2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of total BSE</td>
<td>% of 1st category</td>
</tr>
<tr>
<td>Number of trades</td>
<td>49.04%</td>
<td>61.45%</td>
</tr>
<tr>
<td>Volume</td>
<td>29.75%</td>
<td>45.23%</td>
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<tr>
<td>Value</td>
<td>40.88%</td>
<td>49.18%</td>
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</tbody>
</table>
SIFs position at BSE (contd.)

SIF’s and BSE – P/E evolution
SIF’s and BSE – DIV evolution

SIFs position at BSE (contd.)
### Annual Rates Comparison

<table>
<thead>
<tr>
<th>Year</th>
<th>Average interest rate for bank deposits (%)</th>
<th>BET annual return (%)</th>
<th>BET–C annual return (%)</th>
<th>BET–FI annual return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
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<td>2009</td>
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<td>2010</td>
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</tbody>
</table>
# Do SIFs influence BSE?

**DESCRIPTIVE STATISTICS FOR BET, BET–C, BET–Fi AND SIFs DAILY RETURNS (Nov.2000 – March 2011)**

<table>
<thead>
<tr>
<th></th>
<th>BET</th>
<th>BET-C</th>
<th>BET-Fi</th>
<th>SIF1</th>
<th>SIF2</th>
<th>SIF3</th>
<th>SIF4</th>
<th>SIF5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.093</td>
<td>0.074</td>
<td>0.127</td>
<td>0.124</td>
<td>0.146</td>
<td>0.120</td>
<td>0.113</td>
<td>0.142</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1.807</td>
<td>1.656</td>
<td>2.704</td>
<td>3.025</td>
<td>3.155</td>
<td>2.977</td>
<td>2.943</td>
<td>3.050</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.305</td>
<td>-0.577</td>
<td>-0.101</td>
<td>-0.279</td>
<td>-0.263</td>
<td>-0.202</td>
<td>-0.228</td>
<td>-0.238</td>
</tr>
</tbody>
</table>

Number of observations: 2590
Do SIFs influence BSE? (contd.)

CORRELATION BETWEEN BET AND BET-Fi BASED ON DAILY RETURNS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.670</td>
<td>0.196</td>
<td>0.281</td>
<td>0.414</td>
<td>0.535</td>
<td>0.218</td>
<td>0.645</td>
<td>0.580</td>
<td>0.675</td>
<td>0.874</td>
<td>0.769</td>
<td>0.846</td>
</tr>
</tbody>
</table>

CORRELATION BETWEEN BET-C AND BET-Fi BASED ON DAILY RETURNS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.674</td>
<td>0.186</td>
<td>0.210</td>
<td>0.472</td>
<td>0.548</td>
<td>0.265</td>
<td>0.637</td>
<td>0.626</td>
<td>0.682</td>
<td>0.874</td>
<td>0.777</td>
<td>0.845</td>
</tr>
</tbody>
</table>
Regression BET/BET–Fi

\[ R_{BET} = 0.000364 + 0.447812 \cdot R_{RET-Fi} \]
Regression BET−C/BET−Fi

\[ R_{BET} = 0.000241 + 0.412779 \cdot R_{RET-Fi} \]
Bivariate Granger Causality Test

- Evaluates whether the past values of BET–FI are useful in predicting BET (or BET–C)

\[
R_{BET}(t) = a_0 + a_1 R_{BET}(t-1) + \cdots + a_m R_{BET}(t-m) + \varepsilon_t
\]

\[
R_{BET}(t) = a_0 + a_1 R_{BET}(t-1) + \cdots + a_m R_{BET}(t-m) + b_1 R_{BET–FI}(t-1) + \cdots + b_m R_{BET–FI}(t-m) + \varepsilon_t
\]

- Null Hypothesis: BET–FI does not Granger–cause BET
  - p–values of F–test are reported
- Using: granger.test function in R
### Granger Causality test p-values for BET/BET-Fi

<table>
<thead>
<tr>
<th>Period</th>
<th>BET-Fi Granger causality on BET</th>
<th>BET Granger causality on BET-Fi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2011</td>
<td><img src="image1.png" alt="Graph 1" /></td>
<td><img src="image2.png" alt="Graph 2" /></td>
</tr>
<tr>
<td>2000-2004</td>
<td><img src="image3.png" alt="Graph 3" /></td>
<td><img src="image4.png" alt="Graph 4" /></td>
</tr>
<tr>
<td>2005-2011</td>
<td><img src="image5.png" alt="Graph 5" /></td>
<td><img src="image6.png" alt="Graph 6" /></td>
</tr>
</tbody>
</table>
## Granger Causality test p-values for BET-C/BET-Fi

<table>
<thead>
<tr>
<th>Period</th>
<th>BET-Fi Granger causality on BET-C</th>
<th>BET-C Granger causality on BET-Fi</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2011</td>
<td><img src="image1.png" alt="Graph" /></td>
<td><img src="image2.png" alt="Graph" /></td>
</tr>
<tr>
<td>2000-2004</td>
<td><img src="image3.png" alt="Graph" /></td>
<td><img src="image4.png" alt="Graph" /></td>
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<tr>
<td>2005-2011</td>
<td><img src="image5.png" alt="Graph" /></td>
<td><img src="image6.png" alt="Graph" /></td>
</tr>
</tbody>
</table>
# BET-Fi/BET – Granger causality probabilities for lags 1 to 15 (Nov 2000– March 2011)

<table>
<thead>
<tr>
<th>Lags</th>
<th>BET-Fi causes BET</th>
<th>BET causes BET-Fi</th>
<th>BET-Fi causes BET-C</th>
<th>BET-C causes BET-Fi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0068</td>
<td>0.3234</td>
<td>0.5668</td>
<td>0.0391</td>
</tr>
<tr>
<td>2</td>
<td>0.0006</td>
<td>0.3037</td>
<td>0.4833</td>
<td>0.1205</td>
</tr>
<tr>
<td>3</td>
<td>0.0016</td>
<td>0.4759</td>
<td>0.5790</td>
<td>0.1926</td>
</tr>
<tr>
<td>4</td>
<td>0.0036</td>
<td>0.6101</td>
<td>0.6623</td>
<td>0.1379</td>
</tr>
<tr>
<td>5</td>
<td>0.0106</td>
<td>0.0959</td>
<td>0.6195</td>
<td>0.0396</td>
</tr>
<tr>
<td>6</td>
<td>0.0181</td>
<td>0.1396</td>
<td>0.6803</td>
<td>0.0615</td>
</tr>
<tr>
<td>7</td>
<td>0.0054</td>
<td>0.2088</td>
<td>0.4451</td>
<td>0.1027</td>
</tr>
<tr>
<td>8</td>
<td>0.0077</td>
<td>0.1279</td>
<td>0.5759</td>
<td>0.0745</td>
</tr>
<tr>
<td>9</td>
<td>0.0135</td>
<td>0.0850</td>
<td>0.6708</td>
<td>0.0777</td>
</tr>
<tr>
<td>10</td>
<td>0.0199</td>
<td>0.0781</td>
<td>0.7372</td>
<td>0.0884</td>
</tr>
<tr>
<td>11</td>
<td>0.0241</td>
<td>0.0964</td>
<td>0.5331</td>
<td>0.0983</td>
</tr>
<tr>
<td>12</td>
<td>0.0349</td>
<td>0.1286</td>
<td>0.6024</td>
<td>0.1301</td>
</tr>
<tr>
<td>13</td>
<td>0.0429</td>
<td>0.1672</td>
<td>0.6657</td>
<td>0.1723</td>
</tr>
<tr>
<td>14</td>
<td>0.0613</td>
<td>0.2126</td>
<td>0.7247</td>
<td>0.2146</td>
</tr>
<tr>
<td>15</td>
<td>0.0867</td>
<td>0.1301</td>
<td>0.7877</td>
<td>0.1150</td>
</tr>
</tbody>
</table>
Conclusions

- Peculiar situation of the small emerging market of Romania – BSE
- 5 Investment Companies dominate the entire market
- BET–Fi is an index leader for BSE blue chips (BET)
- BET–Fi shows mixed results over BET–C
Future Work

- Analyze Granger Causality at the intraday level
- Monitor the evolution of BET–FI in 2011 due to structural changes