Empirical analysis of Vilnius Stock Exchange absolute return time series

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Universal statistical properties observed in various financial markets around the world helped to establish so-called stylized facts [1, 2]. Though in [1, 2] and other scientific literature one usually finds analysis of larger financial markets (such as New York Stock Exchange (further NYSE)), while smaller markets tend to be overlooked. Therefore it is interesting to know how statistical properties scale with decreasing market size.

Thus we have analyzed return time series of small financial market – Vilnius Stock Exchange (further VSE).

[1] Cont R. (2005): *Long range dependence in financial markets*. In: Fractals in Engineering V, p. 159 - 179, Springer, London.

[2] Engle R. F. (2000): *The Econometrics of Ultra High Frequency Data*. In: Econometrica 68, p. 1 - 22.

Rather different trading activity

Table 1: Mean inter-trade times, evaluated for different stocks traded on NYSE and VSE. NYSE stocks were traded for 27 months beginning with January, 2005 (recorded in the Trades and Quotes database). VSE stocks were traded for 50 months beginning with March, 2005 (provided for our research by NASDAQ OMX Vilnius).

Stock	τ, **s**	**Stock**	τ, **s**	**Stock**	τ, **s**	**Stock**	τ, **s**
APG1L	337	PTR1L	565	SRS1L	381	UKB1L	164
						VSE mean	**362**
ABT	4.09	ADM	4.22	BMY	3.27	C	1.79
CVX	2.34	DOW	3.9	FNM	5.4	GE	1.44
GM	2.34	HD	2.09	IBM	3.03	JNJ	2.64
JPM	2.41	KO	3.31	LLY	4.73	MMM	4.92
MO	3	MOT	1.66	MRK	2.47	PFE	1.24
SLE	6.58	T	2.34	WMT	1.84	XOM	1.44
						NYSE mean	**3.02**

Quite similar statistical properties of absolute return

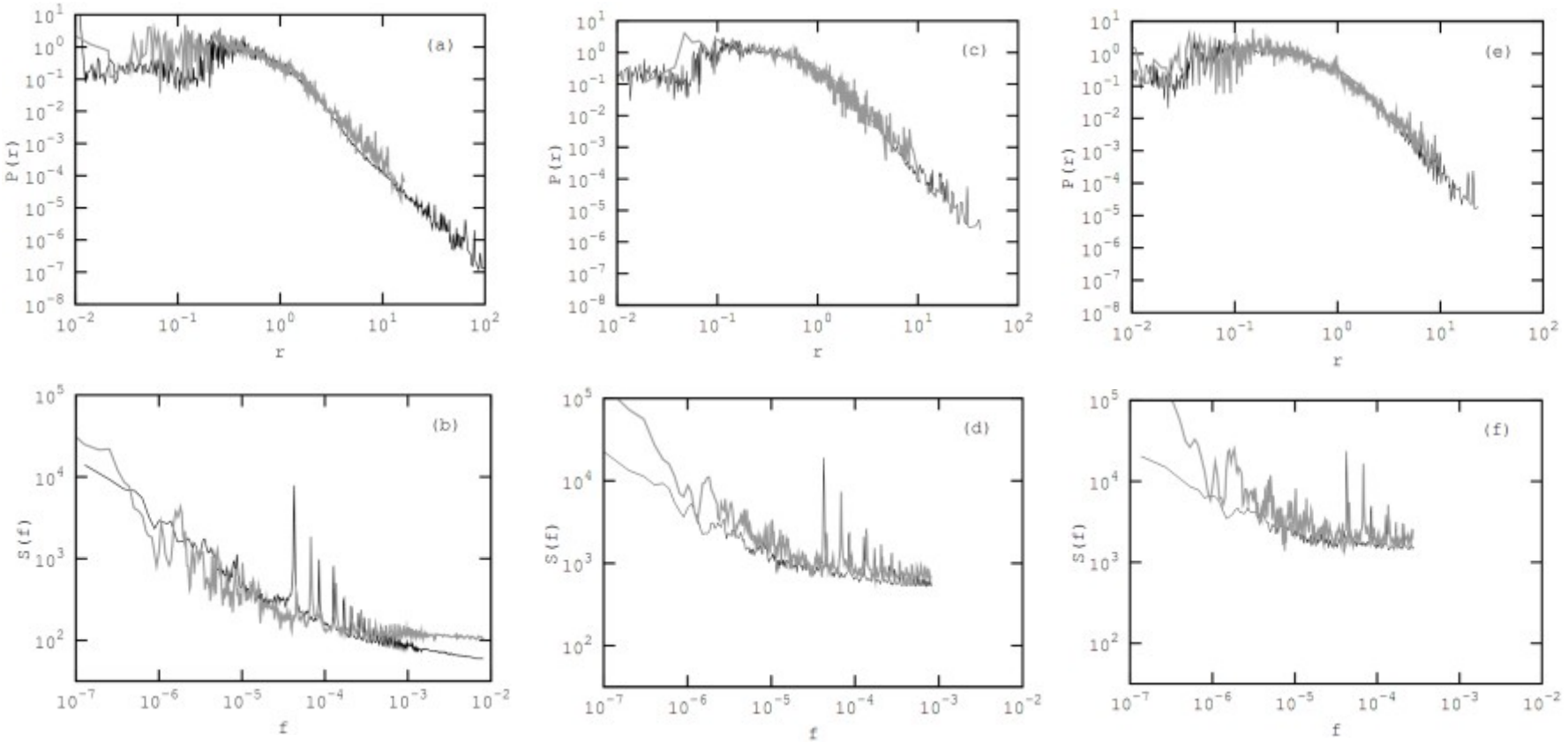

Figure 1: Comparison of empirical statistical properties of absolute returns time series of stocks traded on the NYSE (black thin curves) and VSE (gray curves). Probability density function of normalized absolute returns is given on (a),(c),(e) and powers spectral density on (b),(d),(f). (a) and (b) represents *T=60 s* return time scale case; (c) and (d) *T=600 s*; (e) and (f) *T=1800 s*. Empirical statistical properties from NYSE was averaged over 24 stocks and empirical data from VSE was averaged over 4 stocks.

Thank You for your attention!