

## References

- Anand A. and A. Subrahmanyam. 2005. "Information and the Intermediary: Are Market Intermediaries Informed Traders in Electronic Markets?" Working paper.
- Anand A. and A. Subrahmanyam. 2008. "Information and the Intermediary: Are Market Intermediaries Informed Traders in Electronic Markets?" Journal of Financial and Quantitative Analysis 43: 1-28..
- Anand, A., and S. Chakravarty. 2004. "Stealth Trading in Options Markets," Working paper, Syracuse University.
- Angelidis T. and A. Benos. 2005. "The Components of the Bid-Ask Spread: The Case of the Athens Stock Exchange," Working Paper, University of Piraeus.
- Bailey, W., and J. Jagtiani. 1994. "Foreign Ownership Restrictions and Stock Prices in the Thai Capital Market," Journal of Financial Economics 36: 57-87.
- Baillie, R.T., G.G. Booth, Y. Tse and T. Zobotina. 2002. "Price Discovery and Common Factor Models," Journal of Financial Markets 5: 309-321.
- Banerjee, A., J. Dolado, J. W. Galbraith, and D. F. Hendry. 1994. Co-integration, error-correction, and the Econometric Analysis of Non-stationary Data Oxford University Press, London.
- Barclay, M., T. Hendershott and T. McCormick. 2003. "Competition Among Trading Venues: Information and Trading on Electronic Communications Networks," Journal of Finance 58: 2637-2666.

- Biais, B., Hillion, P., Spatt, C. 1999. "Price Discovery and Learning during the pre-opening period in the Paris bourse," Journal of Political Economy 107: 1218–1248.
- Blume, M. and Goldstein M. A. 1992. "Displayed and Effective Spreads by Market," Working paper no 27-92.
- Booth, G.G., R. So, and Y. Tse. 1999. "Price Discovery in the German Equity Derivatives Markets," Journal of Futures Markets 19: 619–643.
- Brennan, M. and H. Cao. 1997. "International Portfolio Investment Flows," Journal of Finance, 52: 1851-1880.
- Cao, C., H. Choe, and F. Hatheway. 1997. "Does the Specialist Matter? Differential Execution Costs and Inter-Security Subsidization on the New York Stock Exchange?" Journal of Finance 52: 1615-1640.
- Campbell, J. Y., and R. J. Shiller. 1988. "Interpreting Cointegrated Models." Journal of Economic Dynamics and Control 12: 505-522.
- Campbell, J. Y., and R. J. Shiller. 1987. "Cointegration and Tests of Present Value Models," Journal of Political Economy 95: 1062-1088.
- Cao, C., E. Ghysels, F. Hatheway. 2000. "Price Discovery without Trading: Evidence from the Nasdaq Preopening," Journal of Finance 55: 1339– 1365.
- Chiyachantana C., P. Jain, C. Jiang and R. Wood R. 2004. "International Evidence on Institutional Trading Behavior and Price Impact," Journal of Finance 59: 869-898.

- Chakravarty, S., Gulen, H. and Mayhew, S. 2004. "Informed Trading in Stock and Options Markets," Journal of Finance 59: 1235-1257
- Chakravarty, S., and K. Li. 2003. "An Examination of Own Account Trading by Dual Traders in Futures Markets," Journal of Financial Economics 69: 375-397.
- Choe, H., Kho C.B. and Stulz R. 2001. "Do Domestic Investor Have More Valuable Information about Individual Stocks than Foreign Investors?" NBER working paper no. 8073.
- Chu, Q.C., W.G. Hsieh, Y. Tse. 1999. "Price Discovery on the S&P 500 Index Markets: an Analysis of Spot Index, Index Futures and SPDRs," International Review of Financial Analysis 8: 21-34.
- Corwin S., and M. Lipson. 2005. "Order Flow, Trader Type, and the Determinants of Commonality in Prices and Liquidity," University of Notre Dame working paper.
- De Jong, F. 2002. "Measures of Contributions to Price Discovery: A Comparison," Journal of Financial Markets 5: 323-328.
- Dennis P.J. and D. Strickland. 2002. "Who Blinks in Volatile Markets, Individuals or Institutions?" Journal of Finance 57: 1923-1949.
- Dennis, P.J., and J. Weston. 2001. "Who's Informed? An Analysis of Stock Ownership and Informed Trading," Working paper, University of Virginia
- Ding, D. K., and C. Charoenwong. 2003. "Bid-Ask Spreads, Volatility, Quote Revisions, and Trades of Thinly Traded Futures Contracts," Journal of Futures Market 23: 455-486.

- Dvorak T. 2005. "Do Domestic Investors Have an Information Advantage? Evidence from Indonesia," Journal of Finance 60: 817-839.
- Easley, D., and O'Hara, M. 1987. "Price, Trade Size and Information in Securities Markets," Journal of Financial Economics 19: 69-90.
- Engle, R. F., C. W. J. Granger. 1987. "Co-integration and Error Correction Representation, Estimation, and Testing," Econometrica 55: 251-276.
- Fishman, M. J., and F.A. Longstaff. 1992. "Dual Trading in Futures Markets," Journal of Finance, 47: 643-671.
- Fong K. and R. Zurbruegg. 2003. "How Much do Locals Contribute to the Price Discovery Process?" Journal of Empirical Finance 10: 305-320.
- Froot, K., P.G. O'Connell and M.S. Seasholes. 2001. "The Portfolio Flow of International Investors," Journal of Financial Economics 59.
- Froot, K. and T. Ramadorai. 2001. "The Information Content of International Portfolio Flows," NBER working paper no 8472.
- Gonzalo, J., C. Granger. 1995. "Estimation of Common Long-Memory Components in Cointegrated Systems," Journal of Business and Economic Statistics 13: 27- 35.
- Grinblatt, M., and M. Keloharju. 2000. "The Investment Behavior and Performance of Various Investor Types: A Study of Finland's Unique Data Set," Journal of Financial Economics 55: 43-67.
- Grossman S.J. and J. E. Stiglitz. 1980. "On the Impossibility of Informationally Efficient Markets," American Economic Review 70: 393-408.

- Harris, F.B., T.H. McNish and R.A. Wood. 2002. "Security Price Adjustments across Exchanges: An Investigation of Common Factor Components for Dow stocks," Journal of Financial Markets 5: 277-308.
- Harris, F.B., T.H. McNish and R.A. Wood. 1995. "Cointegration, Error Correction, and Price Discovery on Informationally Linked Security Markets," Journal of Financial and Quantitative Analysis 30: 563– 579.
- Hasbrouck, J. 1988. "Trades, Quotes, Inventories and Information," Journal of Financial Economics 22: 229-252.
- Hasbrouck, J. 1991a. "Measuring the Information Content of Stock Trades," Journal of Finance 46: 179-207.
- Hasbrouck, J. 1991b. "The Summary Informativeness of Stock Trades: An Econometric Analysis," Review of Financial Studies 4: 571-595.
- Hasbrouck, J. 1995. "One Security, Many Markets: Determining the Contributions to Price Discovery," Journal of Finance 50: 1175-1199.
- Hasbrouck, J. 2002. "Stalking the Efficient Price in Empirical Microstructure Specifications," Journal of Financial Markets 5: 329-339
- Hasbrouck, J. 2003. "Intraday Price Formation in U.S. Equity Index Markets," Journal of Finance, 58: 2375-2399.
- Hau H. 2001a. "Location Matters: An Examination of Trading Profits," Journal of Finance 56: 1951-1983.

- Heflin, F. and K. Shaw. 2000. "Blockholder Ownership and Market Liquidity." Journal of Financial and Quantitative Analysis 35: 621-633
- Johansen, S. 1991. "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models," Econometrica 59: 1551– 1580.
- Kang, J.K. and R. Stulz. 1997. "Why is There Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan," Journal of Financial Economics 46: 3-28.
- Kothare, M., and Laux, P. 1995. "Trading Costs and the Trading Systems for NASDAQ Stocks," Financial Analysts Journal 42-53.
- Kurov, A., and D. Lasser. 2004. "Price Dynamics in the Regular and E-Mini Futures Markets," Journal of Financial and Quantitative Analysis 39: 365-384.
- Kraus A. and H. Stoll. 1972. "Price Impacts of Block Trading on the New York Stock Exchange," Journal of Finance 27: 569-88.
- Lee, Charles M. C. 1992. "Earnings News and Small Traders: An Intraday Analysis," Journal of Accounting and Economics 15: 265-302.
- Lee Y.T., Y.J. Liu, R. Roll and A Subrahmanyam. 2001. "Order Imbalances and Market Efficiency: Evidence from the Taiwan Stock Exchange," Working paper.
- Lee, C., and Ready, M. 1991. "Inferring Trade Direction from Intraday Data," Journal of Finance 41: 733-746.
- Madhavan, A. and Panchapagesan V. 2000. "Price Discovery in Auction Markets: a Look Inside the Black Box," Review of Financial Studies 13: 627-658

- Saar, G. 2001. "Investor Uncertainty and Order Flow Information," Working paper, New York University.
- Saar, G. 2001. "Price Impact Asymmetry and Block Trades: An Institutional Trading Explanation," Review of Financial Studies 14: 1153-1181.
- Sarin, A., K. Shastri, and K. Shastri. 2000. "Ownership Structure and Stock Market Liquidity," Working paper, University of Pittsburgh.
- Seasholes, M.S. 2000. "Smart Foreign Traders in Emerging Markets," Working paper, University of California at Berkeley.
- Stahel C. 2002. "Are Foreign Investors Better Informed? Evidence from the Return - Volume Relationship," Working paper.
- Stock, J., Watson, M.W. 1988. "Testing for Common Trends," Journal of the American Statistical Association 83: 1097-1107.
- Tse, Y. 1999. "Price Discovery and Volatility Spillovers in the DJIA Index and Futures Markets," Journal of Futures Markets 19: 911-930.
- Tse, Y., P. Bandyopadhyay and Y. Shen. 2006. "Intraday Price discovery in the DJIA Index Markets," Working paper.
- Watson, M. W. 1994. Vector Autoregressions and Cointegration, in R. F. Engle and D. L. McFadden, Eds.: Handbook of Econometrics, Volume N (Elsevier Science, Amsterdam).

Wood, R., T. McNish, and J. Ord. 1985. "An Investigation of Transaction Data for NYSE Stocks," Journal of Finance 40: 723-741.

Table I

## Summary of Securities in the Sample

The sample includes the fifty most liquid and largest stocks contained in the SET50 index as of December 31, 2003. The sample period covers between January 1, 2003 and December 31, 2003. Market capitalization is as of the end of 2003.

Industry	Name	Market Cap. Mill THB	Avg daily no of trade	Total No of trades	% of transaction by foreigners	% of volume by foreign	% of value by foreign	% of foreign holding
Agriculture	CPF	25,162	722	178,341	20.58%	27.88%	28.16%	23.67%
	TUF	26,632	207	51,097	31.09%	42.90%	41.78%	35.40%
Banking	BAY	40,218	1046	258,415	19.08%	24.60%	24.30%	25.98%
	BBL	208,064	875	216,185	30.86%	43.29%	40.41%	29.58%
	BOA	34,137	485	119,912	8.33%	9.09%	8.90%	80.77%
	BT	107,528	390	96,286	8.41%	10.31%	10.37%	3.42%
	DTDB	8,841	302	74,471	10.75%	12.57%	12.27%	65.52%
	IFCT	7,966	306	75,672	13.67%	18.04%	18.05%	14.91%
	KTB	70,275	1287	317,808	15.12%	22.05%	21.38%	6.39%
	SCB	173,968	679	167,684	22.85%	30.36%	29.61%	35.54%
	TFB	153,014	1187	293,189	20.78%	26.22%	25.08%	27.56%
	TMB	59,325	2265	559,411	5.60%	6.97%	6.74%	3.44%
Building Material	SCC	304,800	771	190,446	38.29%	48.32%	50.84%	13.88%
	SCCC	57,000	219	54,032	37.46%	48.61%	48.45%	74.68%
Chemical	TPI	107,530	2572	630,067	4.20%	5.15%	5.21%	10.29%
	TPIPL	23,345	634	154,102	3.57%	3.82%	3.79%	0.54%
	VNT	15,983	609	150,369	16.70%	21.43%	20.18%	51.53%
Electronics	CCET	10,066	86	21,176	37.20%	50.44%	50.49%	85.99%
	DELTA	31,485	359	88,717	37.07%	49.89%	49.79%	83.40%
	HANA	9,828	288	71,025	37.33%	50.45%	50.04%	75.16%
Energy	BANPU	34,595	475	117,352	29.56%	36.87%	38.31%	22.98%
	EGCOMP	47,382	374	92,386	23.67%	32.75%	28.93%	29.42%
	PTT	517,491	1367	337,643	26.58%	38.53%	34.16%	7.13%
	PTTEP	86,117	480	118,563	47.56%	62.26%	61.91%	14.68%
	RATCH	71,050	646	159,597	17.98%	25.39%	22.99%	2.18%
Entertainment	BEC	45,200	291	7,181	54.11%	65.93%	66.06%	17.55%
	GRAMMY	10,000	251	62,087	33.79%	42.17%	42.17%	15.01%
	MAJOR	9,403	316	78,065	17.47%	20.27%	22.62%	5.31%
	UBC	21,291	429	105,914	18.65%	25.20%	23.56%	40.80%
Finance & Security	ASL	3,460	1035	255,717	6.36%	5.83%	7.82%	0.54%
	AST	11,639	329	81,203	7.51%	9.67%	8.57%	43.21%
	CNS	5,054	291	71,918	9.64%	11.57%	10.59%	44.23%
	KGI	7,876	1879	464,201	5.18%	6.47%	5.96%	30.45%
	KK	15,889	749	184,888	17.67%	21.73%	21.75%	29.00%
	NFS	22,264	1141	281,746	14.62%	17.64%	17.00%	34.10%
	SPL	5,173	268	66,109	43.26%	55.62%	55.23%	1.85%
	TISCO	23,309	904	223,292	26.21%	34.00%	34.09%	50.89%
Property	GOLD	7,433	587	144,880	15.77%	18.88%	17.90%	44.44%
	ITD	51,568	1107	273,523	13.86%	18.17%	17.03%	10.88%
	LH	87,423	937	231,314	34.74%	47.53%	47.11%	31.71%
	QH	4,228	500	123,381	21.58%	29.24%	29.38%	15.29%
Telecommunication	ADVANC	249,774	450	111,163	41.92%	57.49%	57.98%	36.23%
	JASMIN	8,089	990	181,208	5.04%	6.11%	6.03%	0.88%
	SATTEL	14,656	1155	285,335	4.87%	5.10%	4.38%	4.88%
	SHIN	113,888	1439	355,519	14.59%	19.38%	18.40%	9.91%
	TA	26,970	801	197,845	15.79%	21.46%	21.05%	31.53%
	TT&T	14,190	1323	326,846	5.04%	5.74%	5.37%	18.22%
	UCOM	13,040	791	195,470	5.50%	6.32%	5.87%	32.51%
Transportation	BECL	19,250	564	139,388	19.82%	23.32%	22.11%	21.65%
	THAI	63,350	242	50,315	31.19%	43.68%	41.93%	8.29%
Mean		62,832	751	182,604	21.08%	27.51%	27.03%	27.73%
Median		26,632	634	154,102	18.65%	24.60%	22.99%	23.67%
Stdev		93,195	529	131,742	13.10%	17.52%	17.52%	23.40%
Max		517,491	2572	630,067	54.11%	65.93%	66.06%	85.99%
Min		3,460	86	7,181	3.57%	3.82%	3.79%	0.54%

**Table II**  
**Characteristics of Securities in the Sample**

The table summarizes the characteristics of the sample used in the study. We use trade data from deal file of the stocks listed in the SET 50 index which represents the most liquid stocks as of December 31, 2003. The data covers the period between January 01, 2003 and December 31, 2003. The characteristic of the sample is presented and grouped by the number of transactions, the percentage of foreign turnover and the percentage of foreign holding. The table presents the number of stocks, total trading days, average daily number of trades, average share volume classified by retail customers and foreign investors, average price by trader type, proportion of number of trade and volume by foreign investors

Group	No of stocks	Total trading days	Average daily no of trade	Retail Customer	Foreign investor	Retail	Foreign	Retail customer		Foreign Investor	
				Average daily share volume	Average daily share volume	Customers	Investor	Proport. of no of trade	Proport. of volume	Proport. of no of trade	Proport. of volume
Grouped by number of transactions											
Overall	50	10,905	747.98	8,202,918	1,424,695	41	40	79%	73%	21%	27%
Low	17	3,276	290.95	1,179,829	385,345	57	55	73%	65%	27%	35%
Medium	17	3,896	636.37	3,887,386	1,185,545	45	45	78%	71%	22%	29%
High	16	3,733	1352.16	20,250,203	2,783,101	21	20	86%	82%	14%	18%
Grouped by number of percentage of foreign turnover											
Overall	50	10,905	747.98	8,202,918	1,424,695	41	40	79%	73%	21%	27%
Low	17	3,528	999.79	17,097,482	1,337,926	19	18	92%	91%	8%	9%
Medium	17	3,913	755.17	5,897,706	1,878,313	23	22	81%	75%	19%	25%
High	16	3,464	472.79	1,201,732	1,034,919	84	84	63%	51%	37%	49%
Grouped by number of percentage of foreign holding											
Overall	50	10,905	747.98	8,202,918	1,424,695	41	40	79%	73%	21%	27%
Low	17	3,685	997.9	11,975,327	1,428,116	43	43	82%	18%	77%	23%
Medium	17	3,844	768.94	9,485,890	2,008,005	37	35	78%	22%	72%	28%
High	16	3,376	470.17	2,831,576	801,294	44	43	77%	23%	69%	31%

Table III

## Average number of Transactions by trader type

The table presents average number of transactions per day traded by retail customer and foreign investor and the percentage of transaction by the foreign investors. It also provides number of trading days used in the study with more than 50 trades per trader type per day. The sample includes the stocks in the SET50 index as of December 31, 2003. The data covers the period between January 1, 2003 and December 31, 2003.

Industry	Name	Retail Customers	Foreign Investors	% of transaction by foreigners	Number of days more than 50 trades
Agriculture	CPF	538.07	139.46	20.58%	243
	TUF	122.67	55.34	31.09%	193
Banking	BAY	795.72	187.62	19.08%	244
	BBL	519.24	231.79	30.86%	243
	BOA	435.46	39.55	8.33%	216
	BT	337.94	31.03	8.41%	179
	DTDB	265.19	31.95	10.75%	195
	IFCT	254.79	40.35	13.67%	184
	KTB	1037.11	184.71	15.12%	238
	SCB	461.23	136.63	22.85%	242
	TFB	810.05	212.52	20.78%	245
	TMB	2093.20	124.21	5.60%	177
Building Material	SCC	397.13	246.37	38.29%	241
	SCCC	114.63	68.67	37.46%	198
Chemical	TPI	2427.80	106.51	4.20%	224
	TPIPL	601.28	22.25	3.57%	178
	VNT	460.63	92.35	16.70%	238
Electronics	CCET	49.37	29.25	37.20%	146
	DELTA	206.63	121.74	37.07%	222
	HANA	156.26	93.06	37.33%	225
Energy	BANPU	294.12	123.40	29.56%	230
	EGCOMP	240.96	74.71	23.67%	198
	PTT	913.82	330.86	26.58%	242
	PTTEP	217.72	197.43	47.56%	240
	RATCH	472.66	103.62	17.98%	220
Entertainment	BEC	119.87	141.37	54.11%	208
	GRAMMY	144.11	73.56	33.79%	205
	MAJOR	231.96	49.09	17.47%	172
	UBC	330.87	75.87	18.65%	219
Finance & Security	ASL	961.32	65.26	6.36%	240
	AST	280.86	22.82	7.51%	166
	CNS	252.64	26.97	9.64%	167
	KGI	1763.80	96.34	5.18%	239
	KK	580.43	124.57	17.67%	238
	NFS	908.21	155.56	14.62%	230
	SPL	134.63	102.65	43.26%	226
	TISCO	624.95	221.95	26.21%	246
Property	GOLD	483.82	90.60	15.77%	244
	ITD	907.81	146.10	13.86%	243
	LH	532.82	283.69	34.74%	243
	QH	364.77	100.36	21.58%	226
Telecommunication	ADVANC	205.51	148.30	41.92%	229
	JASMIN	926.56	49.15	5.04%	236
	SATTEL	1064.70	54.52	4.87%	219
	SHIN	1118.38	191.07	14.59%	237
	TA	656.58	123.12	15.79%	237
	TT&T	1230.15	65.23	5.04%	230
	UCOM	718.27	41.77	5.50%	205
Transportation	BECL	416.66	102.97	19.82%	226
	THAI	147.94	67.07	31.19%	173
Mean		586.63	112.91	21%	218.1
Median		460.93	101.51	18%	226
Max		2427.80	330.86	54%	246
Min		49.37	22.25	4%	146

**Table IV**  
**Summary Statistics of Deal File**

Trade statistics on the Stock Exchange of Thailand(SET) were computed from January 1,2003 through December 31, 2003, for 247 days for the fifty most active and largest stocks listed in the SET50 index as of December 31, 2003. The data covers the period between January 1, 2003 and December 31, 2003. Panel A presents the statistics which were tabulated for all stocks in SET and stocks listed in SET50 index. Panel B presents the statistics for each trader type including retail customers foreign investors. Means, medians and standard deviation are computed over the entire sample period.

Panel A: Deal file					
	Mean	Median	Stdev	Max	Min
Stocks in SET					
Deal volume	13,490	4,700	46,452	10,000,000	1
Deal price (baht)	28	12	67	1,412	0
Deal value	124,668	46,860	284,716	238,821,675	1
Number of deals	84,251,616				
Stocks in SET50 index					
Deal volume	13,228	5,000	35,905	5,000,000	100
Deal price (baht)	37	17	75	1,412	1
Deal value	195,624	71,050	430,868	92,766,800	2,140
Number of deals	9,134,891				
Panel B: Deal File Classified by Trader Type					
Stocks in SET50 index					
Retail Customers					
Deal volume	13,648	5,000	37,160	5,000,000	100
Deal price (baht)	30	15	54	1,412	1
Deal value	174,477	64,400	388,514	50,000,000	1,980
Number of deals	7,110,750				
Foreign Investors					
Deal volume	12,270	4,000	32,373	3,000,000	100
Deal price (baht)	61	29	120	1,406	1
Deal value	274,385	100,500	563,276	37,500,000	3,260
Number of deals	1,409,615				

## Information share by stocks

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of stocks listed on the SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data cover between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We include on the day in which the number of trades in each trade type exceed 50 trades. There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented for each stock

Name	No of days	Local retail investor		Foreign investor		Mean Difference
		Min	Max	Min	Max	
ADVANC	229	34.58%	34.99%	65.01%	65.42%	30.43%
ASL	240	54.84%	55.15%	44.85%	45.16%	-9.99%
AST	166	48.51%	48.74%	51.26%	51.49%	2.74%
BANPU	230	46.37%	47.26%	52.74%	53.63%	6.36%
BAY	244	42.34%	43.03%	56.97%	57.66%	14.63%
BBL	243	36.72%	37.60%	62.40%	63.28%	25.68%
BEC	208	34.37%	35.40%	64.60%	65.63%	30.23%
BECL	226	48.25%	48.85%	51.15%	51.75%	2.90%
BOA	216	38.17%	38.50%	61.50%	61.83%	23.33%
BT	179	36.67%	36.98%	63.02%	63.33%	26.34%
CCET	146	38.06%	38.80%	61.20%	61.94%	23.14%
CNS	167	48.26%	48.74%	51.26%	51.74%	2.99%
CPF	243	32.75%	33.48%	66.52%	67.25%	33.77%
DELTA	222	35.03%	35.41%	64.59%	64.97%	29.55%
DTDB	195	42.65%	43.11%	56.89%	57.35%	14.24%
EGCOMP	198	41.68%	42.17%	57.83%	58.32%	16.15%
GOLD	244	52.02%	52.57%	47.43%	47.98%	-4.59%
GRAMMY	205	44.96%	45.25%	54.75%	55.04%	9.79%
HANA	225	42.94%	43.76%	56.24%	57.06%	13.30%
IFCT	184	41.30%	41.77%	58.23%	58.70%	16.93%
ITD	243	70.36%	70.84%	29.16%	29.64%	-41.19%
JASMIN	236	54.47%	54.78%	45.22%	45.53%	-9.25%
KGI	239	50.77%	51.12%	48.88%	49.23%	-1.88%
KK	238	45.70%	46.24%	53.76%	54.30%	8.06%
KTB	238	35.37%	36.00%	64.00%	64.63%	28.63%
LH	243	39.74%	40.21%	59.79%	60.26%	20.05%
MAJOR	172	47.85%	48.35%	51.65%	52.15%	3.80%
NFS	230	41.28%	41.64%	58.36%	58.72%	17.08%
PTT	242	34.74%	35.53%	64.47%	65.26%	29.73%
PTTEP	240	36.68%	37.48%	62.52%	63.32%	25.84%
QH	226	45.86%	46.39%	53.61%	54.14%	7.75%
RATCH	220	36.59%	37.21%	62.79%	63.41%	26.20%
SATTEL	219	54.61%	55.31%	44.69%	45.39%	-9.92%
SCB	242	38.91%	39.72%	60.28%	61.09%	21.37%
SCC	241	39.04%	39.75%	60.25%	60.96%	21.21%
SCCC	198	39.73%	40.32%	59.68%	60.27%	19.95%
SHIN	237	41.69%	42.05%	57.95%	58.31%	16.26%
SPL	226	44.37%	44.83%	55.17%	55.63%	10.80%
TA	237	51.86%	52.60%	47.40%	48.14%	-4.46%
TFB	245	31.93%	32.71%	66.88%	67.67%	34.95%
THAI	173	38.95%	39.64%	60.36%	61.05%	21.41%
TISCO	246	46.93%	47.52%	51.67%	52.26%	4.74%
TMB	177	52.12%	52.40%	47.60%	47.88%	-4.52%
TPI	224	63.24%	63.70%	36.30%	36.76%	-26.94%
TPIPL	178	40.49%	40.73%	59.27%	59.51%	18.77%
TT&T	230	61.17%	61.60%	38.40%	38.83%	-22.78%
TUF	193	31.69%	32.30%	67.70%	68.31%	36.01%
UBC	219	54.83%	55.15%	44.85%	45.17%	-9.98%
UCOM	205	60.09%	60.84%	39.16%	39.91%	-20.93%
VNT	238	57.54%	57.76%	42.24%	42.46%	-15.30%

**Table VI**  
**Summary of Information share**

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of stocks listed on SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data cover between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We include on days in which the number of trades in each trade type exceed 50 trades. There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented here. Results are summarized based on simple average, volume weighted average and average based on the number of transactions.

Panel A: Simple Average					
	Local retail investor		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	44.58%	45.13%	54.85%	55.39%	10.27% ***
Median	42.50%	43.07%	56.93%	57.50%	14.44%
Stdev	8.87%	8.81%	8.80%	8.87%	17.67%
Max	70.36%	70.84%	67.70%	68.31%	36.01%
Min	31.69%	32.30%	29.16%	29.64%	-41.19%

  

Panel B: Volume Weighted					
	Local retail investor		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	41.42%	42.02%	57.95%	58.55%	16.53%
Max	24.68%	24.93%	42.59%	43.27%	18.34%
Min	1.55%	1.56%	1.87%	1.89%	0.34%

  

Panel C: Transaction weighted					
	Local retail investor		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	41.60%	42.20%	57.77%	58.37%	16.17%
Max	19.20%	19.39%	34.96%	35.51%	16.12%
Min	1.44%	1.45%	1.53%	1.55%	0.09%

\*\*\*, \*\*, \* indicate that the Wilcoxon rank test statistic for the two sample test of difference of means of midpoint of upper and lower bounds of local retail investors and foreign investors is significant at the 1%, 5% and the 10% level respectively.

**Table VII****Information share: Controlling for proportion of number of transaction and volume traded**

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of the stocks listed on SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data covers between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We include on the day in which the number of trades in each trade type exceed 50 trades. There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented for each stock. Results are summarized based on simple average, volume weighted average and average based on the number of transactions. We follow the method by Anand and Subrahmanyam (2008) to divide each information share by the proportion of the transaction and volume traded. The results are presented below.

Panel A: Information share Divided by the proportion of transaction					
	Local retail investors		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	0.57	0.58	4.06	4.10	3.51 ***
Median	0.57	0.58	2.97	3.00	2.41
Stdev	0.10	0.10	3.08	3.10	2.99
Max	0.82	0.82	16.61	16.68	15.83
Min	0.40	0.40	1.19	1.21	0.80

  

Panel B: Information share Divided by the volume traded					
	Local retail investors		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	0.64	0.65	3.35	3.38	2.73 ***
Median	0.62	0.63	2.26	2.29	1.65
Stdev	0.15	0.15	2.84	2.86	2.71
Max	1.01	1.04	15.50	15.56	14.51
Min	0.41	0.41	0.98	1.00	0.58

\*\*\*, \*\*, \* indicate that the Wilcoxon rank test statistic for the two sample test of difference of means of midpoint of upper and lower bounds of local retail investors and foreign investors is significant at the 1%, 5% and the 10% level respectively.

**Table VIII**  
**Information shares Analysis**

Trade statistics on the Stock Exchange of Thailand (SET) were gathered and computed from January 1, 2003 through December 31, 2003, 247 days, for the fifty most active and largest stocks. The statistics were tabulated separately for retail customers (C) and foreign customers (F). Means are computed over the entire sample period. For each information share estimates, we group them based on each classification including market capitalization, foreign turnover, foreign ownership and the number of daily transactions. A stock is assigned into the group based on size of market capitalization, amount of foreign turnover, foreign ownership and number of daily transactions.

	Market Capitalization				Foreign Turnover				Foreign Ownership				Number of avg daily transaction			
	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall
Number of stock	17	17	16	50	17	17	16	50	17	17	16	50	17	17	16	50
Number of trading days	3,276	3,896	3,733	10,950	3,528	3,913	3,464	10,905	3,685	3,844	3,376	10,905	3,276	3,896	3,733	10,905
Information share for Retail Customers																
Min	49%	45%	40%	45%	39%	51%	44%	45%	46%	44%	43%	45%	42%	44%	48%	45%
Max	49%	45%	40%	45%	51%	45%	39%	45%	47%	45%	44%	45%	42%	44%	49%	45%
Information share for Foreign Investors																
Min	51%	55%	60%	55%	49%	55%	61%	55%	53%	55%	56%	55%	58%	56%	51%	55%
Max	51%	55%	60%	55%	49%	56%	61%	55%	54%	56%	57%	55%	58%	56%	51%	55%

### Analysis of Information shares Divided by Proportion of number of transaction and volume traded

Trade statistics on the Stock Exchange of Thailand (SET) were gathered and computed from January 1, 2003 through December 31, 2003, 247 days, for the fifty most active and largest stocks. The statistics were tabulated separately for retail customers (C) and foreign customers (F), Means are computed over the entire sample period. For each information share estimates, we group them based on each classification including market capitalization, foreign turnover, foreign ownership and the number of daily transactions. A stock is assigned into the group based on size of market capitalization, amount of foreign turnover, foreign ownership and number of daily transactions. Then information shares are divided by the proportion of number of transaction and volume traded as done in Anand and Subrahmanyam (2008)

	Market Capitalization				Foreign Turnover				Foreign Ownership				Number of avg daily transaction			
	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall	Low	Medium	High	Overall
Number of stock	17	17	16	50	17	17	16	50	17	17	16	50	17	17	16	50
Number of trading days	3,276	3,896	3,733	10,950	3,528	3,913	3,464	10,905	3685	3844	3376	10905	3276	3896	3733	10905
Information shares controlled by the porportion of number of trade																
Retail Customers																
Min	0.594	0.577	0.538	0.571	0.548	0.547	0.620	0.571	0.569	0.574	0.569	0.571	0.584	0.566	0.561	0.571
Max	0.600	0.585	0.547	0.578	0.552	0.554	0.631	0.578	0.575	0.583	0.575	0.578	0.592	0.574	0.567	0.578
Foreign Investors																
Min	5.034	3.599	3.520	4.061	7.400	2.953	1.693	4.061	5.396	3.516	3.223	4.061	3.039	3.846	5.377	4.061
Max	5.084	3.628	3.553	4.099	7.463	2.983	1.711	4.099	5.442	3.557	3.249	4.099	3.064	3.883	5.429	4.099
Information shares controlled by the porportion of volume traded																
Retail Customers																
Min	0.644	0.640	0.629	0.638	0.558	0.590	0.774	0.638	0.629	0.638	0.646	0.638	0.681	0.635	0.595	0.638
Max	0.651	0.649	0.639	0.646	0.562	0.598	0.787	0.646	0.637	0.648	0.654	0.646	0.690	0.645	0.601	0.646
Foreign Investors																
Min	4.311	3.004	2.704	3.353	6.409	2.259	1.267	3.353	4.598	2.812	2.604	3.353	2.398	3.221	4.506	3.353
Max	4.355	3.028	2.729	3.383	6.463	2.283	1.280	3.383	4.637	2.845	2.624	3.383	2.417	3.251	4.550	3.383

### Information share by stocks for transaction data for every five minutes

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of stocks listed on the SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data cover between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We use average transaction price within each five minutes range (54 samples per day). There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented for each stock

Name	No of days	Local retail investor		Foreign investor		Mean Difference
		Min	Max	Min	Max	
ADVANC	229	30.98%	56.74%	43.25%	69.01%	12.27%
ASL	240	45.14%	69.33%	30.66%	54.85%	-14.48%
AST	166	35.54%	55.44%	44.55%	64.45%	9.01%
BANPU	230	28.39%	59.55%	40.44%	71.60%	12.05%
BAY	244	23.85%	41.93%	58.06%	76.14%	34.21%
BBL	243	31.19%	61.44%	38.55%	68.81%	7.36%
BEC	208	33.06%	58.58%	41.42%	66.94%	8.36%
BECL	226	26.77%	55.52%	44.48%	73.23%	17.71%
BOA	216	34.47%	55.88%	44.12%	65.53%	9.65%
BT	179	35.98%	55.88%	44.12%	64.02%	8.14%
CCET	146	39.21%	63.63%	36.37%	60.79%	-2.84%
CNS	167	30.73%	51.55%	48.45%	69.27%	17.72%
CPF	243	29.56%	56.25%	43.75%	70.44%	14.19%
DELTA	222	35.50%	59.42%	40.58%	64.50%	5.08%
DTDB	195	34.67%	55.55%	44.45%	65.33%	9.78%
EGCOMP	198	30.87%	55.81%	44.19%	69.13%	13.32%
GOLD	244	41.31%	70.03%	29.97%	58.69%	-11.34%
GRAMMY	205	31.31%	55.97%	44.03%	68.69%	12.72%
HANA	225	36.95%	61.84%	38.16%	63.05%	1.21%
IFCT	184	38.66%	61.00%	39.00%	61.34%	0.34%
ITD	243	38.62%	75.16%	24.84%	61.38%	-13.78%
JASMIN	236	45.95%	70.69%	29.31%	54.05%	-16.64%
KGI	239	46.28%	73.31%	26.69%	53.72%	-19.59%
KK	238	29.43%	54.91%	45.09%	70.57%	15.66%
KTB	238	32.83%	57.50%	42.50%	67.17%	9.67%
LH	243	33.70%	64.16%	36.69%	67.15%	2.99%
MAJOR	172	34.96%	58.30%	41.70%	65.04%	6.74%
NFS	230	30.54%	57.75%	42.25%	69.46%	11.71%
PTT	242	29.90%	59.61%	40.39%	70.10%	10.49%
PTTEP	240	31.70%	57.09%	38.21%	63.60%	6.51%
QH	226	29.90%	56.82%	43.18%	70.10%	13.28%
RATCH	220	28.41%	54.20%	46.82%	72.61%	18.41%
SATTEL	219	37.55%	70.94%	29.06%	62.45%	-8.49%
SCB	242	30.87%	56.36%	43.64%	69.13%	12.77%
SCC	241	28.82%	59.78%	40.22%	71.18%	11.40%
SCCC	198	32.34%	55.84%	44.16%	67.66%	11.82%
SHIN	237	33.59%	61.83%	38.17%	66.41%	4.58%
SPL	226	32.38%	61.02%	38.98%	67.62%	6.60%
TA	237	40.42%	71.44%	28.56%	59.58%	-11.86%
TFB	245	27.17%	51.91%	47.09%	72.83%	19.92%
THAI	173	26.44%	53.33%	46.67%	73.56%	20.23%
TISCO	246	27.39%	59.86%	40.14%	72.61%	12.75%
TMB	177	48.33%	74.13%	25.87%	51.67%	-22.46%
TPI	224	43.01%	74.39%	25.61%	56.99%	-17.40%
TPIPL	178	31.22%	57.98%	42.02%	68.78%	10.80%
TT&T	230	42.69%	68.05%	31.95%	57.31%	-10.74%
TUF	193	38.33%	58.63%	41.37%	61.67%	3.04%
UBC	219	38.42%	69.19%	30.81%	61.58%	-7.61%
UCOM	205	36.79%	65.64%	34.36%	63.21%	-2.43%
VNT	238	41.30%	72.13%	27.87%	58.70%	-13.43%

**Table XI****Summary of Information share for transaction data for every five minutes**

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of stocks listed on SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data covers between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We use average transaction price within each five minutes range (54 samples per day). There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented here. Results are summarized based on simple average, volume weighted average and average based on the number of transactions.

	Simple Average				Difference
	Local retail investor		Foreign investor		
	Min	Max	Min	Max	
Mean	34.47%	60.87%	39.06%	65.47%	4.61% ***
Median	33.33%	59.03%	40.51%	66.68%	7.65%
Stdev	5.75%	7.13%	7.10%	5.77%	-1.36%
Max	48.33%	75.16%	58.06%	76.14%	0.98%
Min	23.85%	41.93%	24.84%	51.67%	9.74%

\*\*\*, \*\*, \* indicate that the Wilcoxon rank test statistic for the two sample test of difference of means of midpoint of upper and lower bounds of local retail investors and foreign investors is significant at the 1%, 5% and the 10% level respectively.

**Table XII****Information share: Controlling for proportion of number of transaction and volume traded**

The table summarizes the result of the information share estimates using Hasbrouck (1995). We use the trades of the stocks listed on SET 50 index on the Stock Exchange of Thailand (SET) as of December 31, 2003. The data covers between January 01, 2003 and December 31, 2003. Information shares are calculated for each stock each trading day included in the sample. We use average transaction price within each five minutes range (54 samples per day). There are 10,950 trading days in the sample. The estimates are averaged across stock days and presented for each stock. Results are summarized based on simple average, volume weighted average and average based on the number of transactions. We follow the method by Anand and Subrahmanyam (2008) to divide each information share by the proportion of the transaction and volume traded. The results are presented below.

Panel A: Information share Divided by the proportion of transaction					
	Local retail investors		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	0.44	0.79	2.90	5.00	3.34***
Median	0.44	0.76	2.06	3.71	2.29
Stdev	0.09	0.15	2.18	3.89	2.92
Max	0.72	1.28	11.78	19.28	14.53
Min	0.29	0.52	0.77	1.24	0.59

  

Panel B: Information share Divided by the volume traded					
	Local retail investors		Foreign investor		Difference
	Min	Max	Min	Max	
Mean	0.50	0.89	2.40	4.14	2.58***
Median	0.46	0.80	1.58	2.82	1.57
Stdev	0.14	0.26	2.01	3.59	2.60
Max	0.97	1.72	10.99	17.99	13.14
Min	0.32	0.56	0.61	1.02	0.38

\*\*\*, \*\*, \* indicate that the Wilcoxon rank test statistic for the two sample test of difference of means of midpoint of upper and lower bounds of local retail investors and foreign investors is significant at the 1%, 5% and the 10% level respectively.

## **Biography**

Mr. Worapong Janyangyuen was born on July 13, 1974 in Bangkok, Thailand. He graduates from the Faculty of Business Administration majoring in Finance with Magna Cum laude in 1994 from the Assumption University. He further his study and graduates with the Master Degree in Business Administration and Master of Science in Finance with First class honor from the University of Denver, Colorado USA. Currently, he is serving as the faculty member at the College of Management, Mahidol University, CMMU for more than 10 years. He also serves as the part time lecturer at Thammasat University, Mahidol University International College, University of Thai Chamber of Commerce and Ratchamongkol Technology Institute in Ayudhaya. He worked as the consultant, education trainer, chief financial officer, investment banker, financial analyst and stock broker, etc.