

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

This chapter explores all the analysis of the research study, the implicated result of this research from the managerial perspective, and gives the implications of this study and the development for further research. The purpose of this research is to investigate forecasting stock price index using by Bayesian Combinations applies in Indonesia Stock Exchange (IDX) from July 1<sup>st</sup>, 1997 until February 29<sup>th</sup>, 2012.

#### A. Conclusions

The purpose of this research wants to forecast stock price index in IDX index, which we use Bayesian combinations to predict future of stock price. The helped approach to mitigate concerns about JKSE data that taken into account model selection issues, we can imply Bayesian model averaging techniques to combine the information content of variable in this predictor set. The BMA forecasts of future stock price index are generally statistically indistinguishable from the forecasts obtained from a direct autoregression. Furthermore, the provided maps in the BMA are determined forecast. BMA is designed to produce probabilistic forecasts. Forecasts can be conjoined that using linear regression to make generally combination approach with several predictive densities. In this fashion, we also make some improvements with GARCH models in BMA to allow for focus variables on theoretical and other grounds. The estimated GARCH models from Bayesian viewpoint is moderately current and can be reflected very hopeful due to advantage of Bayesian approach compared to classical technique. Consequently, the specific Bayesian framework makes possible sample results, robust estimation, and probabilistic statements on nonlinear functions of models parameters and model discrimination.

This research estimates that BMA additionally presents developments to forecast when we calculate GARCH effects. It also shows the existed methods for the Bayesian estimation of GARCH models. In this manner, the estimation process is a primary importance for automated trading systems for case in point, where models are approximated frequency and for numerous dataset. We have exemplified six estimated GARCH models that can be implied and combined in order to forecast the next-day ahead log-returns distribution. Indeed, the significant coefficients of GARCH models do necessarily imply the capability of GARCH specifications in modeling volatility. The result indicates the capability of GARCH models to pick up unevenness and let down narrowing feature in residual distribution in addition to the squared return autocorrelation in JKSE data. These analyzed models give us more information about specific of transaction in stock price had increased. Thus, GARCH models can summarize the non-normality feature of return to some extent, the surplus skewness and kurtosis statistics are statically available.

From the result of this research study on forecasting stock price index using by Bayesian Combination applies in IDX, the conclusion that can be pointed out is following:

1. Data of Jakarta Composite Index (JCI) in the period July 1<sup>st</sup>, 1997 through February 29<sup>th</sup>, 2012 is data time series, but they are not stationary. The result of stationary shows the different ways of analyzing on JKSE and  $D\log(JKSE)$ ,  $D\log(JKSE)$  is more effective for the Bayesian estimation of GARCH models. It has significant which we can use to considerate in determination of forecasting models. Thus, the processed stationary in both mean and variance is good transformation, which carried out difference and log transformation in GARCH models to achieve future forecasting JKSE data.
2. This research uses diagnostic test to find and select the best model from the Bayesian estimation of GARCH models. It has inferred in

autocorrelogram test, homoskedasticity test, normality test and ARCH LM-test. As the result, we can get GARCH(2,1) as the best model in this test. It can be fulfilled and more efficient in this research.

3. The result of this research from GARCH(2,1), we can get 1.914% in forecasting JKSE data. It means that this forecasting has little error in this data. Moreover, we can take more detail from RMSE, MAE and MAPE which has employed various error statistics to forecast the Bayesian estimation of GARCH(2,1) model.

As the result above, we can conclude that the paradigmatic Bayesian estimation of GARCH models performs importance sampling with an adaptive mixture of Student- $t$  distribution as the significant distribution. Therefore, this research is not high assurance in investment performance.

## **B. Managerial Implications**

From the results in this research, investor can take some points in decision-making when they have to deal with stock investment, especially related to forecasting stock price index.

1. Investors who invest their money in stock price index can use GARCH models in forecasting in IDX index for short term especially for own understanding stock.
2. Investors need more time in observation for historical information of IDX index because its data can be effective in forecasting future value of stock shares. Because of global financial crisis, it could be affect criteria stock price index. As experience in 1998 and 2008, IDX index were more volatile which means higher risk, although Indonesia's economic fundamentals were considered more powerful.

3. Investors can find how to forecast their patient IDX index value for this research, as undervalued stocks often remain undervalued for significant periods of time.
4. As the result our research, investors can compare stock prices in IDX index to other factors to assess value. To get a sense of whether a stock is over- or undervalued, investors compare its price to revenue, earnings, cash flow, and other fundamental criteria. Comparing a company's performance expectations to those of its industry is also common – firms operating in slow-growth industries are judged differently than those whose sectors are more robust.
5. As the result our research, investors can make decisions on fundamental analysis of the markets, technical analysis of individual companies, personal intuition, or all of the above, the ultimate reason for their success involves making the right trades at the right time. In most cases, those decisions involve extended periods of time and are based on buy-and-hold investment strategies.

### **C. Limitations and Further Research**

In this research study, the GARCH technique is used to analyze correspond stock price index volatility for the Indonesia stock exchange (IDX). The variable is used only one, JKSE. If we use difference data and period, it may be different result. Thus, it cannot recognize. Moreover, we have plan to investigate the performance of the Bayesian model averaging approach when forecasting standard measures such as Vector Autoregressive that used for estimation and forecasting of daily stock return data. It may be useful to average over include specifications with nonlinear terms and fat-tailed innovations in next research. Therefore, we can modify of other variables to be analyzed in the same roof. Another wider research is also possible to be conducted by using this research as a benchmark.

## REFERENCE

- Aiolfi, Marco and Allan Timmermann, 2004, Structural Breaks and the performance of forecast combinations. *Journal of Bocconi University*, October 28, 2004, p.1-32.
- Ait-Sahalia, Yacine and Kimmel, Robert, 2006, Maximum likelihood estimation of stochastic volatility models. *Journal of Financial Economics* 83 (2007), p.413-452.
- Amendola, Alessandra and Giuseppe Storti, 2009, Combination of multivariate Volatility Forecasts. *SFB 649 Economic Risk Berlin*, Discussion paper 2009-007, p.1-14.
- Andersen, Torben G. and Bollerslev, Tim, 1998, Answering the Skeptics: Yes, Standard Volatility Models Do Provide Accurate Forecasts. *International Economic Review*, Symposium on Forecasting and Empirical Methods in Macroeconomics and Finance, Vol.39, No.4, p.885-905.
- Antonello D'Agostino, Kieran Mc Quinn and Karl Whelan, 2011, Are Some Forecasts Really Better than other? *Munich Personal RePEc Archive (MPRA)* paper No. 32938, posted 22, 12:29.p.1-20.
- Ardhian Novianto, 2011, Hot Money. *The Jakarta Globe*, website: <http://www.thejakartaglobe.com/investment/hot-money/450384>. 2/7/2012 1:26 PM
- Ardia, David and Hoogerheide, Lennart F., 2010, Efficient Bayesian Estimation and Combination of GARCH-type Models. *Tinbergen Institute Discussion Paper*, TI 2010-046/4, p.1-25.
- Armstrong, J. Scoth, 2001, Combining Forecasts. *Principle of Forecasting: A Handbook for Researchers and Practitioners*. Reprinted permission of Kluwer/Springer. p.1-19.
- Barberis, Nicholas, 2000, Investing for the long run when returns are predictable. *The journal of finance*, vol. 55, p. 225-264.
- Beitollah Akbari Moghaddam, Hassan Haleh, and Saeed Ebrahimijam, 2011, Forecasting Trend and Stock Price with Adaptive Extended Kalman Filter Data Fusion. *International conference on Economics and Finance Research*, IPEDR vol.4, IACSIT Press, Singapore. p.119-123.
- Bierens, Herman J., 2006, Information Criteria and Model Selection. From *Wikipedia, the free encyclopedia*, External links: [econ.la.psu.edu/~hbierens/INFORMATIONCRIT.PDF](http://econ.la.psu.edu/~hbierens/INFORMATIONCRIT.PDF), p.1-5.
- Bera, Anil K. and Higgins, Matthew L., 1993, ARCH Models: Properties, Estimation and Testing. *Journal of Economic Surveys*, Vol. 7, No. 4, p.305-366.
- Billio, M., Casarin, R., Ravazzolo, F. and Dijk, H. K., 2011a, Bayesian Combination of Stock Price Predictions with an Application to the Amsterdam Exchange Index. *Tinbergen institute*, 082/4, p.1-16.
- Billio, M., Casarin, R., Ravazzolo, F. and Dijk, H. K., 2011b, Combining Prediction Densities using Bayesian Filtering with Applications to US. Economic Data, Norges Bank, p.1-50.

- Billio, M., Casarin, R., Ravazzolo, F. and Dijk, H. K., 2010, Combining Prediction Densities using Bayesian Filtering with Applications to US. *Economic Data, Norges Bank working paper No. 2010/29*, p.1-39.
- Black, Fischer, 1986, Noise. *Journal of Finance*. Vol. 41, No.3, p.529-543.
- Bollerslev, Tim, 1986, Generalized Autoregressive Conditional Heteroskedasticity. *Journal of Econometrics*, North-Holland, Vol. 31, p.307-327.
- Bollerslev, Tim, Engle, R. F. and Nelson, D. B., 1994, ARCH Models. *Handbook of Econometrics*, Elsevier Science B.V., Vol. IV, p.2961-3038.
- Bollerslev, Tim, Uta Kretschmer, Christian Pigorsch and George Tauchen, 2007, A Discrete-Time Model for Daily S&P500 Returns and Realized Variations: Jumps and Leverage Effects. Center for Research in Econometric Analysis of Time Series (CREATS), *CREATES Research Paper 2007-22*, p.1-47.
- Caiado, Jorge, 2004, Modelling and forecasting the volatility of the Portuguese stock index PSI-20. *MPRA Paper No. 2304*, posted 07, p.1-25.
- Changzheng He and Xiaozhan Xu, 2005, Combination of Forecasts Using Self-Organizing Algorithms. *Journal Forecasting*. Vol. 24, p.269-278.
- Cheng Hsiao and Shui Ki Wan, 2010, Is there an Optimal Forecast Combination? *Web site: www.apecweb.org/confer/hk10/papers/wan\_sk.pdf*, p.1-19.
- Chih-Fong Tsai and Wang S.-P., 2009, Stock Price Forecasting by Hybrid Machine Learning Techniques. *Proceedings of the International MultiConference of Engineers and Computer Scientists*, IMECS 2009, Hong Kong, Vol.1.
- Clark, Todd E. and Kenneth D. West, 2007, Approximately normal tests for equal predictive accuracy in nested models. *Journal of Econometrics*, vol. 138, No. 1, p. 291-311.
- Clark, Todd E. and McCracken, Michael W., 2000, Tests of Equal Forecast Accuracy and Encompassing for Nested Models. Research Division Federal Reserve Bank of Kansas City. *Working paper*, website: [citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.202.3369.pdf](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.202.3369.pdf), p.1-30.
- Clark, Todd E. and McCracken, Michael W., 2010, Reality Checks and Nested Forecast Model Comparisons. *Working Paper 2010-032A*, website: <http://research.stlouisfed.org/wp/2010/2010-032.pdf>, p.1-41.
- Clemen, Robert T., 1989, Combining Forecasts: A review and Annotated Bibliography. *International Journal of Forecasting*, Vol. 5, p.559-583.
- Dawood, Mamoon, 2007, Macro Economic Uncertainty of 1990s and Volatility at Karachi Stock Exchange. *MPRA Paper No. 3219*, posted 07, p.1-27.
- Diebold, Francis X. and Jose A. Lopez, 1996, Forecast Evaluation and Combination. *Handbook of Statistics*. PA 19104-6297, p.1-46.
- Diebold, Francis X., and Roberto S. Mariano, 1995, Comparing Predictive Accuracy. *Journal of Business and Economic Statistics*, 13, p.253-265.
- Donoho, David and Jin, Jiashun, 2004, Higher Criticism for Detecting Sparse Heterogeneous Mixtures. *The Annals of Statistics*, Vol. 32, No. 3, p.1-34.
- Dopke, Jorg; Daniel Hartmann and Christian Pierdzioch, 2006, Forecasting Stock Market Volatility with Macroeconomic Variables in Real Time. *Deutsche*

- Bundesbank, Discussion paper series 2: Banking and Financial Studies*, No. 01/2006, p.1-35.
- Ebrahim Abbasi and Amir Abouee, 2008, Stock Price Forecast by Using Neuro-Fuzzy Interence System. *World Academy of Science, Engineering and Technology* 46, p. 320-323.
- Eicher, Theo S., Papageorgiou, Chris, and Roehn, Oliver, 2007, Unraveling the fortunes of the fortunate: an Iterative Bayesian Model Averaging (IBMA) approach. *CESifo Working Paper No. 1907*. p.1-30.
- Eklud, Jana, George Kapetanios and Simon Price, 2010, Forecasting in the presence of recent structural change. *Bank of England, working paper No. 406*, p.1-48.
- Engle, Robert F., 1982, Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation. *Econometrica*, Vol.50, p.987-1008.
- Fama, Eugene F., 1991, Efficient capital markets: II. *The journal of finance*, Vol. XLVI, No.5, p.1575-1617.
- Faust, J., Gilchrist, S., Wright, J.H., and Zakrajsek, E., 2011, Credit Spreads as Predictors of Real-Time Economic Activity: A Bayesian Model-Averaging Approach. *Website: www.econ2.jhu.edu/people/wright/fgwz.pdf*. p.1-40
- Fernandez, C., Ley, E., Steel, M.F.J., 2001, Benchmarks priors for Bayesian model averaging. *Journal of Econometrics* 100, p.381-427.
- Fleming, Jeff; Chris Kirby and Barbara Ostiek, 2001, The economic value of volatility timing. *The journal of finance*, vol. 56, No. 1, p. 329-352.
- Fortune, Peter, 1998, A primer on U.S. stock price indices. *New England Economic Review*. p.25-40.
- Franses, Philip Hans, 2008, Model Selection for Forecast Combination. *Econometric Institute Report 2008-11*, p.1-21
- Fundamental analysis - Wikipedia, the free encyclopedia, [http://en.wikipedia.org/wiki/Fundamental\\_analysis](http://en.wikipedia.org/wiki/Fundamental_analysis), 11/5/2011 10:49 PM.
- Gary Koop and Dimitris Korobilis, 2009, Forecasting Inflation Using Dynamic Model Averaging. *Strathclyde Discussion Papers in Economics*, No. 11-19, p.1-32.
- Goncalves, Silvia and Perron, Benoit, 2011, Bootstrapping factor-augmented regression models. *Website: econweb.tamu.edu/.../2012\_1\_26\_Silvia\_Goncalves.pdf - United States*. p.1-53.
- Goyal, Amit, 2000, Predictability of Stock Return Volatility from GARCH Models. *Preliminary and Tentative-Comments Solicited*. *Website: www.bus.emory.edu/agoyal/docs/garch.pdf - United States*, p.1-43.
- Grossman, Sanford J. and Stiglitz, Joseph E., 1980, On the impossibility of informationally efficient market. *The American Economic Review*, Vol. 70, Issue 3, p.393-408.
- Grunwald, Gary K., Adrian Raftery and Peter Guttorp, 1993, Time series of continuous proportions. *Journal of the Royal statistical society. Series B*, vol. 55, p. 103-116.

- Gujarati, Damodar N., 2004, *Basic Econometrics*, 4<sup>th</sup> Edition, McGraw Hill, Inc.
- Hassab Haleh, Beitollah Akbari Moghaddam, and Saeed Ebrahimijiam, 2011, A New Approach to Forecasting Stock Price with EKF Data Fusion. *International Journal of Trade, Economics and Finance*, vol. 2, No. 2, p. 109-114.
- Hedibert F. Lopes and Ruey S. Tsay, 2010, Particle Filters and Bayesian Inference in Financial Econometrics. *Journal of Forecasting*, Vol.30, p.168-209.
- Heston, Steven L., 1993, A Closed-Form Solution for Options with Stochastic Volatility with Applications to Bond and Currency Options. *The Review of Financial Studies*, Vol. 6 No. 2, p.327-343.
- Hoeting, J. A., David Madigan, Adrian E. Raftery and Chris T. Volinsky, 1999, Bayesian Model Averaging: A Tutorial. *Statistical Science*, Vol. 14, No. 4, p.382-417.
- Hoogerheide, Lennart; Richard Kleijn; Francesco Ravazzolo; Herman K. van Dijk and Marno Verbeek, 2010, Forecast Accuracy and Economic Gains from Bayesian Model Averaging using time Varying Weight. *Norges Bank Working Paper 2009/10*, p.1-26.  
<http://finance.yahoo.com>
- Huerta, G., Wenxin Jiang, and Martin A. Tanner, 2003, Time Series Modeling via Hierarchical Mixtures. *Statistica Sinica*, 13:1097-1118.
- Huong N. Higgins, (non-year), Forecasting Stock Price with the Residual Income Model. *Worcester Polytechnic Institute*, MA 01609, p.1-31.
- IMF (International Monetary Fund), 1998, World Economic Outlook. *World Economic and Financial Surveys*, ISBN 1-55775-773-9, p.83-87.
- Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, Vol. 76, No. 2, p.323-329.
- Jorndan, Micheal I. and Robert A. Jacobs, 1993, Hierarchical Mixtures of Experts and the EM Algorithm. *Massachusetts Institute of Technology. A. I. Memo No. 1440*, C. B. C. L. Memo No. 83, p.1-29.
- Kascha, Christian and Francesco Ravazzolo, 2008, Combining inflation density forecasts. *Norges Bank, Research department, working paper 22, 2008/22*, p.1-39.
- Komara Djaja, - , Impact of the Global Financial and Economic Crisis on Indonesia A Rapid Assessment. *ILO Regional Office for Asia and the Pacific, Bangkok ILO Policy Integration and Statistics Department, Geneva*. p.1-18.
- Lacerda, Filipe and Pedro Santa-Clara, 2010, Forecasting dividend growth to better predict returns. *Review of financial studies 21*, p.1-34.
- Lerbin R. Aritonang R., 2009, Peramalan Bisnis. *Second Edition, Galalia Indonesia*, p. 1-145.
- Lillie Lam, Laurence Fung and Ip-wing Yu, 2008, Comparing Forecast Performance of Exchange Rate Models. *Hong Kong Monetary Authority, working paper 08/2008*, p.1-23.



- Liu, Chun and Maheu, John M., 2008, Forecasting Realized Volatility: A Bayesian Model Averaging Approach. *Working paper*, website: [www.soegw.org/files/program/25-Liu%20maheu.pdf](http://www.soegw.org/files/program/25-Liu%20maheu.pdf). p.1-32
- Liu, Hung-Chun, Yen-Hsien Lee and Ming-Chih Lee, 2009, Forecasting China Stock Markets Volatility via GARCH Models Under Skewed-GED Distribution. *Journal of Money, Investment and Banking*. ISSN 1450-288X Issue 7 (2009), p.5-15.
- Liu, J. and Mike West, 2001, Combined Parameter and State Estimation in Simulation Base Filtering. In A. Doucet, N. de Freitas, and N. Gordon, editors, *Sequential Monte Carlo Methods in Practice*. Springer-Verlag, p.1-28.
- Lopez, Jose A., 1999, Evaluating the Predictive Accuracy of Volatility Models. Website: [www.frbsf.org/econsrch/workingp/wpj199-01a.pdf](http://www.frbsf.org/econsrch/workingp/wpj199-01a.pdf), p.1-44.
- Magnus, Jan R., Powell, Owen, and Prufer, Patricia, 2008, A comparison of two averaging techniques with an application to growth empirics. Website: [ftp://ftp.cemfi.es/pdf/papers/Seminar/JanMagnuspaper.pdf](http://ftp.cemfi.es/pdf/papers/Seminar/JanMagnuspaper.pdf), p. 1-40.
- Mahdi Salehi, Vali Khodadai, and Hakim Abdolkhani, 2011, Forecasting Stock Price Using Artificial Neural Networks: A Multi-Layer Perception Model-Iranian Evidence. *Scientific Research and Essays*, Vol.6(19), p.4029-4038.
- McClave, James and Sincich, Terry, 2000, Statistics. *Eight Edition, printed by Prentice Hall, Inc.*
- Mina Mahbub Hossain, Mehdi Rajeb and Mahendran Shitan, 2011, Time Series Analysis of the General Index of Dhaka Stock Exchange in Bangladesh: A Comparative study of GARCH and ARIMA Models. *International Conference on Business and Economic Research Proceeding*, 2<sup>nd</sup> ICBER, p.2756-2769.
- Mitchell, J. and S.G. Hall, 2005, Evaluating comparing and combining density forecasts using the KLIC with and application to the Bank of England and NIESR “fan” charts of inflation. *Oxford Bulletin of Economics and statistics*, 67:995-1033.
- Mohsen Mehrara, Ali Moeini, Mehdi Ahrari, and Alireza Ghafari, 2010, Using Technical Analysis with Neural Network for Forecasting Stock Price Index in Tehran Stock Exchange. *Middle Eastern Finance and Economics*, ISSN: 1450-2889, Issue 6, p.50-61.
- Montgomery, Jacob and Brendan Nyhan, 2010, Bayesian Model Averaging: Theoretical Developments and Practical Applications. *Forthcoming, Political Analysis*, p.1-28.
- Montgomery, Jacob M., Florian Hollenbach, and Micheal D. Ward, 2011, Improving Predictions Using Ensemble Bayesian Model Averaging. *Ensemble BMA*, p.1-23.
- Monticini, Andrea and Francesco Ravazzolo, 2011, Forecasting the intraday market price of money. *Norges Bank, working paper 06, 2011/06*, p.1-26.
- Muradogu, Gulnur; Asad Zaman and Mehmet Orhan, 2003, Measuring the Systematic Risk of IPO's Using Empirical Bayes Estimates in the Thinly

- Traded Istanbul Stock Exchange. *International Journal of Business*, 8(3), by MPRA paper No. 13879, posted 09, p.315-334.
- Naser Seifollahi, Mohammad Esmail Fadai Nejad, Mohammad Reza Hamidzadeh, and Akbar Alam Tabriz, 2011, Designing and Identifying the Model to Investigate the Effect of Credit and Exchange Risk on Price Stock Returns of Banks (GARCH Approach). *Australian Journal of Basic and Applied Sciences*, 5(11), p.1519-1532.
- Palm, Franz C. and Arnold Zellner, 1992, To Combine or not to Combine? *Issues of Combining Forecasts. Journal of Forecasting, Issue of Combining Forecasts*; 11, 8, ABI/INFORM Global, p.687-701.
- Pereira, Ricardo, 2004, Forecasting Portuguese Stock Market Volatility. *Working paper of Moderna University of Porto*, website: [www.efmaefm.org/efma2005/papers/197-pereira\\_paper.pdf](http://www.efmaefm.org/efma2005/papers/197-pereira_paper.pdf), p.1-26.
- Poncela, Pilar and Eva Senra, 2007, Forecast Combination Through Factor Models: Assessing Consensus and Disagreement. *Dept. Analisis Economico: Economia Cuantitativa*. p.1-32.
- Poon, Ser-Huang, 2008, Stochastic Volatility. Website: [phps.portals.mbs.ac.uk/Portals/49/docs/spoon/SV\\_TS.pdf](http://phps.portals.mbs.ac.uk/Portals/49/docs/spoon/SV_TS.pdf), p.1-8.
- Popova, Ivilia, Elmira Popova, and Edward I. George, 2008, Bayesian forecasting of prepayment rate for individual pools of mortgages. *International society for Bayesian Analysis*, DOI:10.1214/08-BA315, vol. 3, No.2, p.393-426.
- Rachev, Svetlozor T., John S. J. HSU, Biliiana S. Bagasheva, and Frank J. Fanbozzi, 2008, Bayesian Methods in Finance. *John Wiley and Sons, Inc.*, Hoboken, New Jersey. p.185-228.
- Rafter, A. E., Gneiting, T., Balabdaoui, F., and Polakowski, M., 2004, Using Bayesian Model Averaging to Calibrate Forecast Ensembles. *American Meteorological Society, Monthly Weather Review*, vol. 133, 1155-1174.
- Raftery, Adrian E., David Madigan, and Jennifer A. Hoeting, 1997, Bayesian Model Averaging for Linear Regression Models. *Journal of the American Statistical Association*, Vol. 92, No. 437, p.179-191.
- Rahnamay Roodposhti F., Falah Shams M., and Kordlouie II., 2011, Forecasting Stock Price Manipulation in Capital Market. *World Academy of Science, Engineering and Technology* 80, p.151-161.
- Rahman, Atta ur, 2012, Forecasting of time series data using multivariate models. *International journal of Academic Research*, vol.4, No.1, p.18-23.
- Ray, KoustubhKanti and Ajaya Kumar Panda, 2011, The Impact of Derivative Trading on Spot Market Volatility: Evidence for Indian Derivative Market. *Interdisciplinary Journal of Research in Business*, Vol. 1, Issue. 7, p.117-131.
- Rogatianus Maryatmo, 2010, The Short Run and Long Run Impact of Changes in Interest Rate and Exchange Rate on Stock Price: Empirical Evidence in Indonesia (2000:1 – 2010:4). *MPRA paper No. 25532, posted 29, 05:01*, p.1-12.

- Shah, Anup, 2010, Global Financial Crisis. *Website: <http://www.globalissues.org/article/768/global-financial-crisis#Acrisissoseveretheworldfinancialsystemisaffected>*, 2/7/2012 1:08 PM
- Smith, Jeremy and Kenneth F. Wallis, 2009, A Simple Explanation of the Forecast Combination Puzzle. *Oxford Bulletin of Economics and Statistics*, 71:3, 0305-9049, p.331-355
- Stock, James H. and Watson, Mark W., 2006, Why has U.S. Inflation Become Harder to Forecast. SBR-0214131, p.1-53.
- Stock, James H. and Watson, Mark W., 2003a, Combination Forecasts of Output Growth in a Seven-Country Data Set. SBR-0214131, p.1-45.
- Stock, James H. and Watson, Mark W., 2003b, How Did Leading Indicator Forecasts Perform During the 2001 Recession? *Federal Reserve Bank of Richmond Economic Quarterly Volume* 89/3, p.71-90.
- Sewell, Martin, 2008, Technical Analysis. *Department of Computer Science*, April 2007 (revised August 2008), p. 1-8.
- Thomas, Susan, 1995, Heteroskedasticity Models on the Bombay Stock Exchange. *Working paper*, University of Southern California, Department of Economics, website: 129.3.20.41/eps/fin/papers/9507/9507007.pdf, p.1-24.
- Timmermann, Allan, 2005, Forecast Combinations. *UCSD, NSF grant*, SES0111238, p.1-72.
- Timmermann, A. and Granger, Clive W.J., 2004, Efficient market hypothesis and forecasting. *International journal of forecasting*, vol. 20, p.15-27.
- TSay, Ruey S., 2005, Analysis of Financial Time Series. *Second Edition, Published by John Wiley & Sons, Inc., Hoboken, New Jersey*.
- Vrontos, I. D., Dellaportas, P. and Politis, D. N., 2003, A full-factor multivariate GARCH model. *Econometrics Journal*, volume 6, p. 311–333.
- Wallis, Kenneth F., 2010, Combining Forecasts – Forty Years Later. *6<sup>th</sup> Eurostat Colloquium on Modern Tools for Business Cycle Analysis 26-29 September 2010*, p.1-17.
- Wallis, Kenneth F., 2005, Combining Density and Interval Forecasts: A Modest Proposal. *Oxford Bulletin of Economics and Statistics*, 67, Supplement 0305-9049, p.983-994.
- Welch, Ivo and Amit Goyal, 2008, A comprehensive look at the empirical performance of equity premium prediction. *The review of financial studies*, Vol. 21, No. 4, p.1455-1508.
- Willner, Marco, 2008, Novel Stories about Forecasting International Stock Market Returns: Structural Breaks and Theory-Induced Restrictions. *Journal of Finance and Monetary Economics*, Mertonstrasse 17-21, Uni-PF 77; p. 1-26.
- Wilmington, Del., 2011, Wilmington Trust's Long-Term Capital Markets Forecast Sees Muted Economic Growth, Below-Normal Investment Returns. *Website: <http://www.businesswire.com/news/home/20110125005273/en/Wilmington-Trust%E2%80%99s-Long-Term-Capital-Markets-Forecast-Sees>*, January 25, 2011 02:00 PM Eastern Time.

- Xiaoqiao Wei, 2009, Regression-Based Forecast Combination Methods. *Romanian Journal of Economic Forecasting*-4/2009, p.5-18.
- Zhang , Z., Jordan, M.I. and Yeung, D.Y., 2008, Posterior Consistency of the Silverman g-prior in Bayesian Model Choice. *Website: www.cs.berkeley.edu/~jordan/papers/zhang-jordan-nips08.pdf*. p.1-8.
- Zhang, Xibin and King, Maxwell L., 2011, Bayesian Semiparametric GARCH models. *Working Paper 24/11*, ISSN 1440-771X, p.1-38.
- Zivot, Eric, 2008 , Practical Issues in the Analysis of Univariate GARCH Models. *Working paper*, website: [faculty.washington.edu/ezivot/research/practical\\_garchfinal.pdf](http://faculty.washington.edu/ezivot/research/practical_garchfinal.pdf), p.1-41.

#### WEBSITE

- Bapepam (BAPEPAMLK—Badan Pengawas Pasar Modal and Lembaga Keuangan),  
website: <http://www.bapepam.go.id/>. *Annual Report 2010*.
- Indonesia Stock Exchange (IDX)'s web site, [www.idx.co.id](http://www.idx.co.id)
- Indonesia Stock Exchange (IDX)'s annual report:
- Annual report IDX 2004:9*
  - Annual report IDX 2005:14*
  - Annual report IDX 2006:51*
  - Annual report IDX 2007:27*
  - Annual report IDX 2008:27-28*
  - Annual report IDX 2009:21-22*
  - Annual report IDX 2010:27*

## APPENDICES

### Appendix 1: Sequential Monte Carlo (SMC)

As an example of the filtering procedure applied in our analysis, we give in the following the pseudo-code of a simple sequential Monte Carlo procedure adapted to the basic time-varying weights (TVW) model. Let  $\mathbf{x}_t$  be the vector of transformed weights and assume, to simplify the exposition, that the parameters are known. Then at time  $t$  with  $t = 1, 2, \dots, T$ , the SMC algorithm performs the following steps:

Given  $\{\Xi_j^i\}_{j=1}^M$ , with  $\Xi_j^i = \{\mathbf{x}_t^{i,j}, \omega_t^{i,j}\}_{i=1}^N$  and for  $j = 1, 2, \dots, M$

- Generate  $\tilde{\mathbf{y}}_{t+1}^j$  from  $p(\tilde{\mathbf{y}}_{t+1}^j | \mathbf{y}_{1:t})$
- For  $i = 1, 2, \dots, N$ 
  - 1) Generate  $\mathbf{x}_{t+1}^{i,j}$  from  $\mathcal{N}_K(\mathbf{x}_t^{i,j}, \sigma_\eta I_K)$
  - 2) Generate  $\mathbf{y}_{t+1}^{i,j}$  from  $p(\mathbf{y}_{t+1} | \mathbf{x}_{t+1}^{i,j}, \tilde{\mathbf{y}}_{t+1}^1, \dots, \tilde{\mathbf{y}}_{t+1}^M)$
  - 3) Update the weights

$$\omega_{t+1}^{i,j} \propto \omega_t^{i,j} \exp \left\{ -0.5 \sigma^{-2} \left( \mathbf{y}_{t+1} - \sum_{k=1}^K \omega_{k,t}^{i,j} \mathbf{y}_{k,t}^j \right)^2 \right\}$$

Where  $\omega_{k,t}^{i,j} = \exp(x_{k,t}^{i,j}) / \sum_{k=1}^K \exp\{x_{k,t}^{i,j}\}$

- Evaluate the Effective Sample Size ( $ESS_t^j$ )
- Normalize the weights  $\omega_{k,t}^{i,j} = \bar{\omega}_{k,t}^{i,j} / \sum_{i=1}^N \bar{\omega}_{k,t}^{i,j}$  for  $i = 1, 2, \dots, N$
- If  $ESS_t^j \leq k$  then resample from  $\Xi_t^j$

We notice that for the application in the present paper we use a regularized version of the SMC algorithm given above. More specifically, we include the unknown parameters of the weighting scheme into the state vector and consider the regularized particle filter proposed in Liu and West (2001).

**2: Daily Stock Price Index In JKSE Index data from July 1<sup>st</sup>, 1997 to February 17<sup>th</sup>,**

Date	JKSE				
7/1/1997	731.62	8/25/1997	540.93	10/17/1997	520.68
7/2/1997	730.16	8/26/1997	554.24	10/20/1997	514.17
7/3/1997	735.49	8/27/1997	555.46	10/21/1997	514.97
7/4/1997	736.60	8/28/1997	530.37	10/22/1997	505.23
7/7/1997	738.01	8/29/1997	493.96	10/23/1997	494.14
7/8/1997	740.83	9/1/1997	485.97	10/24/1997	490.40
7/9/1997	738.14	9/2/1997	479.01	10/27/1997	490.12
7/10/1997	729.15	9/3/1997	512.39	10/28/1997	448.00
7/11/1997	723.42	9/4/1997	533.87	10/29/1997	472.05
7/14/1997	722.50	9/5/1997	594.11	10/30/1997	502.87
7/15/1997	722.21	9/8/1997	600.31	10/31/1997	500.42
7/16/1997	723.50	9/9/1997	598.00	11/3/1997	501.71
7/18/1997	724.00	9/10/1997	575.02	11/4/1997	494.85
7/21/1997	712.40	9/11/1997	556.14	11/5/1997	490.85
7/22/1997	711.44	9/12/1997	546.64	11/6/1997	478.92
7/23/1997	718.19	9/15/1997	550.76	11/7/1997	466.12
7/24/1997	712.05	9/16/1997	534.83	11/10/1997	462.69
7/25/1997	710.06	9/17/1997	526.74	11/11/1997	448.15
7/28/1997	710.82	9/18/1997	524.27	11/12/1997	449.64
7/29/1997	716.35	9/19/1997	531.08	11/13/1997	437.95
7/30/1997	721.98	9/22/1997	535.60	11/14/1997	436.84
7/31/1997	721.27	9/23/1997	539.48	11/17/1997	439.54
8/1/1997	721.77	9/24/1997	553.65	11/18/1997	434.21
8/4/1997	718.71	9/25/1997	559.22	11/19/1997	415.65
8/5/1997	713.88	9/26/1997	549.92	11/20/1997	396.13
8/6/1997	699.86	9/29/1997	546.24	11/21/1997	391.26
8/7/1997	677.84	9/30/1997	546.69	11/24/1997	410.21
8/8/1997	675.44	10/1/1997	536.99	11/25/1997	395.68
8/11/1997	658.17	10/2/1997	536.92	11/26/1997	398.54
8/12/1997	662.95	10/3/1997	515.48	11/27/1997	401.71
8/13/1997	658.60	10/6/1997	512.89	11/28/1997	401.71
8/14/1997	643.01	10/7/1997	513.95	12/2/1997	394.28
8/15/1997	617.71	10/8/1997	518.94	12/3/1997	389.68
8/18/1997	599.64	10/9/1997	521.11	12/4/1997	401.93
8/19/1997	590.53	10/10/1997	534.75	12/5/1997	414.78
8/20/1997	593.17	10/13/1997	534.83	12/8/1997	423.61
8/21/1997	603.06	10/14/1997	528.92	12/9/1997	425.50
8/22/1997	574.40	10/15/1997	518.91	12/10/1997	415.94
		10/16/1997	517.09	12/11/1997	396.11

12/12/1997	365.85
12/15/1997	339.54
12/16/1997	356.39
12/17/1997	368.68
12/18/1997	378.39
12/19/1997	378.80
12/22/1997	385.85
12/23/1997	397.03
12/24/1997	396.53
12/29/1997	398.01
12/30/1997	401.71
1/2/1998	410.01
1/5/1998	410.83
1/6/1998	402.27
1/7/1998	394.24
1/8/1998	347.11
1/9/1998	342.97
1/12/1998	350.24
1/13/1998	382.14
1/14/1998	403.98
1/15/1998	387.24
1/16/1998	413.92
1/19/1998	439.03
1/20/1998	448.04
1/21/1998	466.00
1/22/1998	443.53
1/23/1998	450.98
1/26/1998	473.69
1/27/1998	476.31
1/28/1998	485.94
2/2/1998	554.11
2/3/1998	536.79
2/4/1998	519.93
2/5/1998	513.49
2/6/1998	535.43
2/9/1998	529.26
2/10/1998	517.70
2/11/1998	487.61

2/12/1998	442.29
2/13/1998	448.16
2/16/1998	457.71
2/17/1998	472.21
2/18/1998	472.68
2/19/1998	496.25
2/20/1998	495.23
2/23/1998	505.04
2/24/1998	494.89
2/25/1998	483.41
2/26/1998	483.81
2/27/1998	482.38
3/2/1998	496.73
3/3/1998	518.69
3/4/1998	502.91
3/5/1998	516.49
3/6/1998	512.23
3/9/1998	495.81
3/10/1998	490.48
3/11/1998	491.87
3/12/1998	498.18
3/13/1998	506.73
3/16/1998	510.79
3/17/1998	512.14
3/18/1998	504.00
3/19/1998	504.15
3/20/1998	516.73
3/23/1998	516.32
3/24/1998	501.66
3/25/1998	504.10
3/26/1998	532.81
3/27/1998	542.10
3/30/1998	541.42
4/1/1998	523.95
4/2/1998	516.40
4/3/1998	533.30
4/6/1998	526.14
4/8/1998	530.04

4/9/1998	527.59
4/13/1998	524.06
4/14/1998	516.10
4/15/1998	513.45
4/16/1998	510.07
4/17/1998	507.90
4/20/1998	508.16
4/21/1998	497.71
4/22/1998	500.64
4/23/1998	491.86
4/24/1998	490.48
4/27/1998	485.64
4/28/1998	485.64
4/29/1998	465.25
4/30/1998	460.14
5/1/1998	448.52
5/4/1998	445.99
5/5/1998	435.16
5/6/1998	414.62
5/7/1998	436.78
5/8/1998	434.65
5/12/1998	430.53
5/13/1998	402.06
5/14/1998	403.70
5/15/1998	405.94
5/18/1998	388.92
5/19/1998	413.82
5/20/1998	424.01
5/22/1998	445.14
5/25/1998	439.55
5/26/1998	434.06
5/27/1998	416.97
5/28/1998	414.22
5/29/1998	420.46
6/1/1998	414.08
6/2/1998	399.60
6/3/1998	392.61
6/4/1998	406.33

6/5/1998	409.52
6/8/1998	409.42
6/9/1998	411.07
6/10/1998	408.08
6/11/1998	411.54
6/12/1998	408.37
6/15/1998	406.50
6/16/1998	399.51
6/17/1998	419.44
6/18/1998	440.09
6/19/1998	425.45
6/22/1998	420.66
6/23/1998	423.08
6/24/1998	430.96
6/25/1998	428.81
6/26/1998	430.87
6/29/1998	431.23
6/30/1998	445.92
7/1/1998	456.54
7/2/1998	466.37
7/3/1998	470.55
7/7/1998	483.95
7/8/1998	472.98
7/9/1998	470.32
7/10/1998	463.58
7/13/1998	459.67
7/14/1998	463.87
7/15/1998	467.34
7/16/1998	473.77
7/17/1998	486.23
7/20/1998	486.23
7/21/1998	488.24
7/22/1998	483.05
7/23/1998	473.80
7/24/1998	479.56
7/27/1998	482.98
7/28/1998	483.53
7/29/1998	485.10

7/30/1998	482.69
7/31/1998	481.72
8/3/1998	475.26
8/4/1998	461.35
8/5/1998	441.78
8/6/1998	433.83
8/7/1998	423.61
8/10/1998	421.17
8/11/1998	407.06
8/12/1998	408.64
8/13/1998	402.94
8/14/1998	414.63
8/17/1998	414.63
8/18/1998	403.86
8/19/1998	405.89
8/20/1998	399.33
8/21/1998	388.35
8/24/1998	370.55
8/25/1998	367.14
8/26/1998	360.93
8/27/1998	354.95
8/28/1998	339.02
8/31/1998	342.44
9/1/1998	325.85
9/2/1998	329.62
9/3/1998	334.79
9/4/1998	325.56
9/7/1998	335.81
9/8/1998	330.41
9/9/1998	325.76
9/10/1998	327.27
9/11/1998	324.04
9/14/1998	320.60
9/15/1998	292.15
9/16/1998	290.92
9/17/1998	285.48
9/18/1998	271.67
9/21/1998	256.83

9/22/1998	260.88
9/23/1998	262.25
9/24/1998	282.16
9/25/1998	275.22
9/28/1998	275.00
9/29/1998	274.01
9/30/1998	276.15
10/1/1998	273.87
10/2/1998	263.23
10/5/1998	261.31
10/6/1998	258.11
10/7/1998	266.17
10/8/1998	288.55
10/9/1998	304.84
10/12/1998	307.42
10/13/1998	313.99
10/14/1998	303.19
10/15/1998	304.85
10/16/1998	337.59
10/19/1998	336.42
10/20/1998	336.58
10/21/1998	322.32
10/22/1998	316.80
10/23/1998	313.42
10/26/1998	315.31
10/27/1998	318.10
10/28/1998	312.29
10/29/1998	309.41
10/30/1998	300.77
11/2/1998	307.20
11/3/1998	317.18
11/4/1998	330.46
11/5/1998	355.53
11/6/1998	353.98
11/9/1998	364.39
11/10/1998	357.30
11/11/1998	363.01
11/12/1998	357.98



11/13/1998	355.54
11/16/1998	356.23
11/18/1998	369.99
11/19/1998	379.12
11/20/1998	403.65
11/23/1998	424.99
11/24/1998	420.08
11/25/1998	387.38
11/26/1998	394.68
11/27/1998	392.32
11/30/1998	386.27
12/1/1998	387.73
12/2/1998	396.96
12/3/1998	393.80
12/4/1998	390.39
12/7/1998	399.46
12/8/1998	398.90
12/9/1998	398.78
12/10/1998	403.67
12/11/1998	405.60
12/14/1998	404.70
12/15/1998	400.77
12/16/1998	412.69
12/17/1998	405.58
12/18/1998	403.96
12/21/1998	404.50
12/22/1998	406.46
12/23/1998	400.52
12/24/1998	401.86
12/28/1998	400.18
12/29/1998	396.73
12/30/1998	398.04
1/4/1999	394.46
1/5/1999	408.70
1/6/1999	427.08
1/7/1999	457.94
1/8/1999	439.49
1/11/1999	437.30

1/12/1999	436.19
1/13/1999	419.10
1/14/1999	408.55
1/15/1999	402.40
1/25/1999	382.48
1/26/1999	398.15
1/27/1999	410.25
1/28/1999	407.27
1/29/1999	411.93
2/1/1999	409.11
2/2/1999	405.16
2/3/1999	410.56
2/4/1999	409.02
2/5/1999	405.55
2/8/1999	399.69
2/9/1999	402.83
2/10/1999	398.68
2/11/1999	402.65
2/12/1999	400.55
2/15/1999	396.92
2/16/1999	398.85
2/17/1999	397.98
2/18/1999	403.41
2/19/1999	404.02
2/22/1999	398.67
2/23/1999	397.93
2/24/1999	402.00
2/25/1999	397.80
2/26/1999	396.09
3/1/1999	396.33
3/2/1999	394.97
3/3/1999	395.81
3/4/1999	394.15
3/5/1999	388.68
3/8/1999	384.57
3/9/1999	379.42
3/10/1999	373.80
3/11/1999	378.64

3/12/1999	375.94
3/15/1999	372.32
3/16/1999	379.45
3/17/1999	387.88
3/19/1999	394.22
3/22/1999	392.28
3/23/1999	394.81
3/24/1999	391.35
3/25/1999	395.83
3/26/1999	392.95
3/29/1999	392.86
3/30/1999	393.62
4/1/1999	394.43
4/5/1999	395.34
4/6/1999	395.51
4/7/1999	395.91
4/8/1999	400.00
4/9/1999	421.21
4/12/1999	421.15
4/13/1999	432.52
4/14/1999	435.56
4/15/1999	447.48
4/16/1999	479.53
4/19/1999	508.15
4/20/1999	485.97
4/21/1999	480.62
4/22/1999	479.24
4/23/1999	473.59
4/26/1999	470.41
4/27/1999	469.20
4/28/1999	481.34
4/29/1999	490.99
4/30/1999	495.22
5/3/1999	523.36
5/4/1999	548.24
5/5/1999	563.84
5/6/1999	580.91
5/7/1999	575.12

5/10/1999	574.35
5/11/1999	573.23
5/12/1999	576.50
5/14/1999	591.63
5/17/1999	590.80
5/18/1999	577.89
5/19/1999	593.60
5/20/1999	594.05
5/21/1999	591.66
5/24/1999	613.64
5/25/1999	619.88
5/26/1999	605.79
5/27/1999	603.12
5/28/1999	583.65
5/31/1999	585.24
6/1/1999	583.26
6/2/1999	574.32
6/3/1999	587.57
6/4/1999	612.38
6/7/1999	612.38
6/8/1999	686.95
6/9/1999	678.97
6/10/1999	664.57
6/11/1999	668.28
6/14/1999	679.45
6/15/1999	670.16
6/16/1999	661.85
6/17/1999	681.04
6/18/1999	707.88
6/21/1999	716.46
6/22/1999	710.68
6/23/1999	700.67
6/24/1999	682.12
6/25/1999	673.16
6/28/1999	672.13
6/29/1999	680.56
6/30/1999	662.03
7/1/1999	673.04

7/2/1999	670.54
7/5/1999	665.14
7/6/1999	681.59
7/7/1999	665.77
7/8/1999	660.25
7/9/1999	656.64
7/12/1999	663.12
7/13/1999	656.19
7/14/1999	664.88
7/15/1999	660.54
7/16/1999	662.37
7/19/1999	658.27
7/20/1999	649.86
7/21/1999	641.11
7/22/1999	642.66
7/23/1999	625.83
7/26/1999	592.72
7/27/1999	573.22
7/28/1999	599.26
7/29/1999	616.43
7/30/1999	597.87
8/2/1999	596.51
8/3/1999	618.99
8/4/1999	614.40
8/5/1999	606.27
8/6/1999	607.84
8/9/1999	594.11
8/10/1999	576.34
8/11/1999	554.26
8/12/1999	565.22
8/13/1999	557.71
8/16/1999	560.48
8/18/1999	561.36
8/19/1999	581.75
8/20/1999	576.17
8/23/1999	584.80
8/24/1999	586.24
8/25/1999	585.26

8/26/1999	581.51
8/27/1999	572.67
8/30/1999	566.67
8/31/1999	567.03
9/1/1999	571.78
9/2/1999	571.11
9/3/1999	565.20
9/6/1999	540.43
9/7/1999	545.35
9/8/1999	520.62
9/9/1999	538.02
9/10/1999	562.78
9/13/1999	569.65
9/14/1999	562.06
9/15/1999	548.61
9/16/1999	548.76
9/17/1999	547.02
9/20/1999	543.33
9/21/1999	547.26
9/22/1999	545.45
9/23/1999	528.17
9/24/1999	517.54
9/27/1999	515.07
9/28/1999	529.22
9/29/1999	526.47
9/30/1999	547.94
10/1/1999	566.04
10/4/1999	555.30
10/5/1999	566.25
10/6/1999	588.75
10/7/1999	585.34
10/8/1999	588.24
10/11/1999	584.06
10/12/1999	571.38
10/13/1999	571.95
10/14/1999	567.78
10/15/1999	567.92
10/18/1999	553.21

10/19/1999	583.65
10/20/1999	584.42
10/21/1999	616.49
10/22/1999	604.18
10/25/1999	597.07
10/26/1999	594.25
10/27/1999	576.52
10/28/1999	577.93
10/29/1999	593.87
11/1/1999	595.08
11/2/1999	594.41
11/3/1999	603.59
11/4/1999	618.51
11/5/1999	626.04
11/8/1999	628.31
11/9/1999	638.82
11/10/1999	638.91
11/11/1999	638.49
11/12/1999	635.23
11/15/1999	635.80
11/16/1999	641.73
11/17/1999	641.47
11/18/1999	636.62
11/19/1999	633.31
11/22/1999	630.17
11/23/1999	618.45
11/24/1999	599.72
11/25/1999	588.66
11/26/1999	596.35
11/29/1999	582.82
11/30/1999	583.80
12/1/1999	597.54
12/2/1999	598.41
12/3/1999	613.48
12/6/1999	624.39
12/7/1999	621.65
12/8/1999	620.98
12/9/1999	631.55

12/10/1999	633.84
12/13/1999	630.55
12/14/1999	648.39
12/15/1999	652.38
12/16/1999	646.51
12/17/1999	638.82
12/20/1999	646.06
12/21/1999	656.89
12/22/1999	661.05
12/23/1999	666.13
12/27/1999	681.38
12/28/1999	677.22
12/29/1999	674.88
12/30/1999	676.92
1/4/2000	700.22
1/5/2000	678.09
1/6/2000	688.52
1/11/2000	696.00
1/12/2000	690.16
1/13/2000	691.61
1/14/2000	690.89
1/17/2000	703.48
1/18/2000	685.72
1/19/2000	655.99
1/20/2000	670.15
1/21/2000	664.69
1/24/2000	656.72
1/25/2000	649.86
1/26/2000	643.39
1/27/2000	644.65
1/28/2000	634.67
1/31/2000	636.37
2/1/2000	616.86
2/2/2000	603.58
2/3/2000	614.31
2/4/2000	635.00
2/7/2000	636.43
2/8/2000	629.90

2/9/2000	632.45
2/10/2000	639.25
2/11/2000	635.08
2/14/2000	633.72
2/15/2000	636.90
2/16/2000	621.90
2/17/2000	600.17
2/18/2000	599.57
2/21/2000	592.99
2/22/2000	583.42
2/23/2000	584.43
2/24/2000	573.49
2/25/2000	568.55
2/28/2000	576.54
3/1/2000	565.48
3/2/2000	546.53
3/3/2000	548.55
3/6/2000	566.71
3/7/2000	562.76
3/8/2000	570.05
3/9/2000	585.18
3/10/2000	596.18
3/13/2000	587.58
3/14/2000	585.92
3/15/2000	586.87
3/17/2000	590.85
3/20/2000	584.88
3/21/2000	578.97
3/22/2000	586.86
3/23/2000	586.01
3/24/2000	581.47
3/27/2000	585.24
3/28/2000	588.73
3/29/2000	591.68
3/30/2000	583.28
4/3/2000	570.90
4/5/2000	564.18
4/7/2000	570.82

4/10/2000	569.62
4/11/2000	569.74
4/12/2000	564.74
4/13/2000	565.11
4/14/2000	556.79
4/17/2000	529.26
4/18/2000	528.26
4/19/2000	526.30
4/20/2000	526.40
4/24/2000	530.85
4/25/2000	519.04
4/26/2000	524.08
4/27/2000	521.62
4/28/2000	526.74
5/1/2000	524.61
5/2/2000	531.25
5/3/2000	535.31
5/4/2000	538.97
5/5/2000	545.61
5/8/2000	550.33
5/9/2000	547.67
5/10/2000	548.24
5/11/2000	529.20
5/12/2000	526.88
5/15/2000	516.43
5/16/2000	497.82
5/17/2000	514.85
5/19/2000	509.40
5/22/2000	499.77
5/23/2000	495.51
5/24/2000	493.20
5/25/2000	490.68
5/26/2000	482.07
5/29/2000	461.39
5/30/2000	468.71
5/31/2000	454.33
6/2/2000	444.45
6/5/2000	453.95

6/6/2000	452.76
6/7/2000	459.46
6/8/2000	478.21
6/9/2000	477.93
6/12/2000	476.03
6/13/2000	468.36
6/14/2000	475.93
6/16/2000	484.02
6/19/2000	490.69
6/20/2000	490.12
6/21/2000	494.49
6/22/2000	501.81
6/23/2000	503.14
6/26/2000	507.51
6/27/2000	502.05
6/28/2000	510.12
6/29/2000	512.60
6/30/2000	515.11
7/3/2000	503.86
7/4/2000	509.26
7/5/2000	512.47
7/6/2000	513.43
7/7/2000	508.11
7/10/2000	508.47
7/11/2000	512.62
7/12/2000	510.99
7/13/2000	505.92
7/14/2000	504.11
7/17/2000	506.80
7/18/2000	507.05
7/19/2000	513.78
7/20/2000	513.39
7/21/2000	508.79
7/24/2000	506.94
7/25/2000	499.68
7/26/2000	496.69
7/27/2000	499.18
7/28/2000	498.80

7/31/2000	492.19
8/1/2000	489.68
8/2/2000	490.44
8/3/2000	491.99
8/4/2000	494.16
8/7/2000	490.54
8/8/2000	485.08
8/9/2000	483.35
8/10/2000	488.62
8/11/2000	505.79
8/14/2000	504.07
8/15/2000	501.58
8/16/2000	496.40
8/18/2000	494.19
8/21/2000	497.39
8/22/2000	500.10
8/23/2000	503.40
8/24/2000	482.65
8/25/2000	486.91
8/28/2000	481.67
8/29/2000	470.84
8/30/2000	469.06
8/31/2000	466.38
9/1/2000	470.42
9/4/2000	475.36
9/5/2000	478.42
9/6/2000	475.55
9/7/2000	472.60
9/8/2000	470.92
9/11/2000	462.54
9/12/2000	451.05
9/13/2000	442.09
9/18/2000	411.03
9/19/2000	425.13
9/20/2000	419.35
9/21/2000	417.68
9/22/2000	406.92
9/25/2000	410.90

9/26/2000	411.85
9/27/2000	410.31
9/28/2000	415.52
9/29/2000	421.34
10/2/2000	432.24
10/3/2000	427.71
10/4/2000	418.83
10/5/2000	423.90
10/6/2000	422.00
10/9/2000	415.36
10/10/2000	412.92
10/11/2000	412.33
10/12/2000	408.42
10/13/2000	408.20
10/16/2000	411.75
10/17/2000	419.44
10/18/2000	416.95
10/19/2000	422.73
10/20/2000	420.33
10/23/2000	417.45
10/24/2000	418.64
10/26/2000	414.16
10/27/2000	411.84
10/30/2000	404.11
10/31/2000	405.35
11/1/2000	409.36
11/2/2000	407.96
11/3/2000	409.83
11/6/2000	415.27
11/7/2000	421.03
11/8/2000	426.08
11/9/2000	421.47
11/10/2000	426.97
11/13/2000	423.66
11/14/2000	425.61
11/15/2000	418.72
11/16/2000	416.98
11/17/2000	421.14

11/20/2000	426.29
11/21/2000	425.52
11/22/2000	431.70
11/23/2000	433.55
11/24/2000	434.21
11/27/2000	431.24
11/28/2000	426.94
11/29/2000	425.30
11/30/2000	429.21
12/1/2000	427.55
12/4/2000	429.90
12/5/2000	431.43
12/6/2000	433.72
12/7/2000	435.64
12/8/2000	431.81
12/11/2000	421.47
12/12/2000	415.18
12/13/2000	420.44
12/14/2000	419.20
12/15/2000	423.68
12/18/2000	418.55
12/19/2000	418.78
12/20/2000	414.87
12/21/2000	415.10
12/22/2000	416.32
1/2/2001	410.20
1/3/2001	405.83
1/4/2001	409.83
1/5/2001	418.82
1/8/2001	415.77
1/9/2001	415.27
1/10/2001	417.52
1/11/2001	410.38
1/12/2001	407.36
1/15/2001	411.98
1/16/2001	415.09
1/17/2001	414.67
1/18/2001	416.35

1/19/2001	411.56
1/22/2001	417.91
1/23/2001	415.74
1/24/2001	416.97
1/25/2001	417.13
1/26/2001	416.79
1/29/2001	413.05
1/30/2001	416.33
1/31/2001	425.61
2/1/2001	430.58
2/2/2001	451.98
2/5/2001	458.95
2/6/2001	450.11
2/7/2001	444.33
2/8/2001	440.78
2/9/2001	427.91
2/12/2001	424.46
2/13/2001	426.17
2/14/2001	423.21
2/15/2001	440.22
2/16/2001	432.08
2/19/2001	435.14
2/20/2001	433.68
2/21/2001	439.90
2/22/2001	437.03
2/23/2001	438.65
2/26/2001	432.15
2/27/2001	433.31
2/28/2001	428.30
3/1/2001	424.03
3/2/2001	426.13
3/6/2001	431.52
3/7/2001	430.55
3/8/2001	428.04
3/9/2001	414.11
3/12/2001	396.61
3/13/2001	385.91
3/14/2001	389.19

3/15/2001	386.86
3/16/2001	380.52
3/19/2001	367.14
3/20/2001	360.45
3/21/2001	369.08
3/22/2001	363.18
3/23/2001	371.47
3/27/2001	369.30
3/28/2001	375.18
3/29/2001	381.77
3/30/2001	381.05
4/2/2001	375.03
4/3/2001	372.65
4/4/2001	367.41
4/5/2001	362.47
4/6/2001	364.34
4/9/2001	362.28
4/10/2001	369.20
4/11/2001	367.16
4/12/2001	365.98
4/16/2001	363.21
4/17/2001	360.04
4/18/2001	356.23
4/19/2001	349.31
4/20/2001	342.86
4/23/2001	346.41
4/24/2001	348.10
4/25/2001	353.18
4/26/2001	351.34
4/27/2001	351.56
4/30/2001	358.23
5/1/2001	362.23
5/2/2001	362.72
5/3/2001	371.94
5/4/2001	375.56
5/8/2001	372.97
5/9/2001	372.11
5/10/2001	369.03

5/11/2001	370.36
5/14/2001	368.28
5/15/2001	370.88
5/16/2001	376.23
5/17/2001	376.70
5/18/2001	376.80
5/21/2001	380.38
5/22/2001	379.67
5/23/2001	380.68
5/25/2001	390.12
5/28/2001	392.79
5/29/2001	406.38
5/30/2001	408.93
5/31/2001	405.86
6/1/2001	396.51
6/5/2001	396.46
6/6/2001	397.60
6/7/2001	397.96
6/8/2001	398.81
6/11/2001	404.48
6/12/2001	417.05
6/13/2001	417.08
6/14/2001	416.74
6/15/2001	417.56
6/18/2001	421.47
6/19/2001	424.04
6/20/2001	432.32
6/21/2001	435.21
6/22/2001	437.60
6/25/2001	435.75
6/26/2001	438.41
6/27/2001	436.12
6/28/2001	428.47
6/29/2001	437.62
7/2/2001	431.34
7/3/2001	428.65
7/4/2001	429.01
7/5/2001	431.01

7/6/2001	432.88
7/9/2001	434.54
7/10/2001	435.60
7/11/2001	437.43
7/12/2001	441.47
7/13/2001	446.13
7/16/2001	443.32
7/17/2001	446.45
7/18/2001	453.30
7/19/2001	463.26
7/20/2001	460.91
7/23/2001	470.23
8/1/2001	443.19
9/4/2001	441.16
9/5/2001	442.23
9/6/2001	448.69
9/7/2001	443.81
9/10/2001	443.60
9/11/2001	445.48
9/12/2001	429.85
9/13/2001	432.57
9/14/2001	425.65
9/17/2001	407.25
9/19/2001	422.45
9/20/2001	422.35
9/21/2001	414.43
9/24/2001	410.39
9/25/2001	409.09
9/26/2001	401.02
9/27/2001	395.04
9/28/2001	392.48
10/1/2001	388.67
10/2/2001	377.23
10/3/2001	371.49
10/4/2001	381.24
10/5/2001	381.59
10/8/2001	367.07
10/9/2001	369.80

10/10/2001	368.30
10/11/2001	370.59
10/12/2001	378.60
10/16/2001	378.88
10/17/2001	381.37
10/18/2001	385.17
10/19/2001	387.85
10/22/2001	391.76
10/23/2001	391.79
10/24/2001	385.96
10/25/2001	390.43
10/26/2001	387.82
10/29/2001	384.33
10/30/2001	378.36
10/31/2001	383.73
11/1/2001	382.00
11/2/2001	380.65
11/5/2001	375.21
11/6/2001	375.43
11/7/2001	377.05
11/8/2001	381.84
11/9/2001	377.34
11/12/2001	371.36
11/13/2001	369.25
11/14/2001	372.79
11/15/2001	378.38
11/16/2001	378.67
11/19/2001	382.79
11/20/2001	381.84
11/21/2001	382.09
11/22/2001	380.83
11/23/2001	382.70
11/26/2001	381.43
11/27/2001	380.98
11/28/2001	382.90
11/29/2001	380.19
11/30/2001	380.31
12/3/2001	380.80

12/4/2001	377.56
12/5/2001	377.94
12/6/2001	379.36
12/7/2001	377.21
12/10/2001	373.86
12/11/2001	371.25
12/12/2001	372.85
12/13/2001	374.69
12/19/2001	375.07
12/20/2001	377.83
12/21/2001	378.25
12/26/2001	377.97
12/27/2001	379.97
12/28/2001	392.04
1/2/2002	383.46
1/3/2002	381.51
1/4/2002	385.20
1/7/2002	388.72
1/8/2002	387.69
1/9/2002	391.50
1/10/2002	402.07
1/11/2002	411.77
1/14/2002	415.84
1/15/2002	421.25
1/16/2002	423.58
1/17/2002	425.04
1/18/2002	426.41
1/21/2002	426.15
1/22/2002	428.47
1/23/2002	433.98
1/24/2002	445.86
1/25/2002	452.46
1/28/2002	441.57
1/29/2002	446.84
1/30/2002	444.42
1/31/2002	451.64
2/1/2002	454.28
2/4/2002	451.17

2/5/2002	450.49
2/6/2002	446.21
2/7/2002	433.17
2/8/2002	436.98
2/11/2002	438.85
2/13/2002	436.79
2/14/2002	439.40
2/15/2002	449.38
2/18/2002	462.35
2/19/2002	460.70
2/20/2002	458.46
2/21/2002	459.39
2/25/2002	449.32
2/26/2002	448.69
2/27/2002	454.50
2/28/2002	453.25
3/1/2002	452.16
3/4/2002	455.19
3/5/2002	459.27
3/6/2002	476.96
3/7/2002	472.39
3/8/2002	475.11
3/11/2002	474.03
3/12/2002	469.37
3/13/2002	474.00
3/14/2002	467.99
3/18/2002	469.68
3/19/2002	471.64
3/20/2002	477.29
3/21/2002	480.65
3/22/2002	484.73
3/25/2002	479.43
3/26/2002	481.86
3/27/2002	481.29
3/28/2002	481.77
4/1/2002	486.67
4/2/2002	489.09
4/3/2002	488.16

4/4/2002	502.50
4/5/2002	508.99
4/8/2002	515.08
4/9/2002	520.00
4/10/2002	533.81
4/11/2002	531.51
4/15/2002	549.84
4/16/2002	551.61
4/17/2002	542.27
4/18/2002	534.84
4/19/2002	532.78
4/22/2002	535.68
4/23/2002	543.06
4/24/2002	544.26
4/25/2002	544.59
4/26/2002	539.96
4/29/2002	525.86
4/30/2002	534.06
5/1/2002	534.72
5/2/2002	539.70
5/3/2002	544.08
5/6/2002	539.81
5/7/2002	544.89
5/8/2002	547.74
5/10/2002	543.91
5/13/2002	537.14
5/14/2002	538.63
5/15/2002	538.89
5/16/2002	529.74
5/17/2002	531.58
5/20/2002	526.93
5/21/2002	525.34
5/22/2002	511.63
5/23/2002	503.67
5/24/2002	506.95
5/27/2002	512.79
5/28/2002	513.58
5/29/2002	520.69

5/30/2002	522.55
5/31/2002	530.79
6/3/2002	523.87
6/4/2002	518.93
6/5/2002	520.47
6/6/2002	513.73
6/7/2002	514.03
6/10/2002	511.37
6/11/2002	516.82
6/12/2002	523.97
6/13/2002	540.08
6/14/2002	545.00
6/17/2002	544.51
6/18/2002	539.82
6/19/2002	534.52
6/20/2002	530.00
6/21/2002	525.86
6/24/2002	518.81
6/25/2002	516.96
6/26/2002	503.50
6/27/2002	506.87
6/28/2002	505.01
7/1/2002	492.27
7/2/2002	483.78
7/3/2002	478.53
7/4/2002	488.72
7/5/2002	492.78
7/8/2002	484.61
7/9/2002	480.31
7/10/2002	477.38
7/11/2002	470.82
7/12/2002	479.61
7/15/2002	480.90
7/16/2002	481.77
7/17/2002	479.38
7/18/2002	488.22
7/19/2002	484.85
7/22/2002	475.27

7/23/2002	477.08
7/24/2002	460.03
7/25/2002	453.15
7/26/2002	441.88
7/29/2002	455.09
7/30/2002	462.82
7/31/2002	463.67
8/1/2002	461.28
8/2/2002	456.32
8/5/2002	449.87
8/6/2002	440.93
8/7/2002	447.06
8/8/2002	446.46
8/9/2002	450.24
8/12/2002	448.52
8/13/2002	450.97
8/14/2002	447.68
8/15/2002	448.73
8/16/2002	450.98
8/19/2002	451.45
8/20/2002	456.75
8/21/2002	457.22
8/22/2002	454.35
8/23/2002	458.27
8/26/2002	456.41
8/27/2002	452.06
8/28/2002	442.97
8/29/2002	438.92
8/30/2002	443.67
9/2/2002	439.99
9/3/2002	429.99
9/4/2002	420.44
9/5/2002	427.12
9/6/2002	427.80
9/9/2002	430.27
9/10/2002	429.34
9/11/2002	430.12
9/12/2002	428.18



9/13/2002	421.00
9/16/2002	420.22
9/17/2002	427.18
9/18/2002	419.12
9/19/2002	408.70
9/20/2002	408.80
9/23/2002	410.77
9/24/2002	408.30
9/25/2002	408.65
9/26/2002	411.94
9/27/2002	412.97
9/30/2002	419.31
10/1/2002	407.52
10/2/2002	409.50
10/3/2002	408.43
10/7/2002	401.84
10/8/2002	402.05
10/9/2002	391.84
10/10/2002	384.49
10/11/2002	376.47
10/14/2002	337.48
10/15/2002	342.20
10/16/2002	357.38
10/17/2002	355.11
10/18/2002	360.90
10/21/2002	361.87
10/22/2002	353.81
10/23/2002	354.85
10/24/2002	353.19
10/25/2002	353.65
10/28/2002	361.68
10/29/2002	361.92
10/30/2002	361.12
10/31/2002	369.04
11/1/2002	371.14
11/4/2002	383.87
11/5/2002	374.91
11/6/2002	369.40

11/7/2002	369.38
11/8/2002	365.70
11/11/2002	362.57
11/12/2002	371.09
11/13/2002	367.10
11/14/2002	371.25
11/15/2002	374.15
11/18/2002	367.88
11/19/2002	369.11
11/20/2002	371.59
11/21/2002	373.23
11/22/2002	381.45
11/25/2002	381.89
11/26/2002	381.95
11/27/2002	383.04
11/28/2002	389.98
11/29/2002	390.42
12/2/2002	389.27
12/3/2002	397.74
12/4/2002	397.08
12/11/2002	391.74
12/12/2002	393.86
12/13/2002	391.22
12/16/2002	395.30
12/17/2002	402.39
12/18/2002	406.39
12/19/2002	420.33
12/20/2002	425.12
12/23/2002	425.61
12/27/2002	424.95
1/2/2003	409.12
1/3/2003	407.51
1/6/2003	398.25
1/7/2003	394.52
1/8/2003	389.41
1/9/2003	396.03
1/10/2003	399.67
1/13/2003	396.23

1/14/2003	407.18
1/15/2003	405.60
1/16/2003	397.11
1/17/2003	401.65
1/20/2003	404.42
1/21/2003	405.16
1/22/2003	405.70
1/23/2003	406.77
1/24/2003	405.34
1/27/2003	393.56
1/28/2003	395.21
1/29/2003	391.53
1/30/2003	392.29
1/31/2003	388.44
2/3/2003	390.21
2/4/2003	394.15
2/5/2003	392.31
2/6/2003	394.45
2/7/2003	394.63
2/10/2003	397.22
2/11/2003	395.56
2/13/2003	395.47
2/14/2003	399.52
2/17/2003	404.40
2/18/2003	402.95
2/19/2003	401.95
2/20/2003	399.96
2/21/2003	402.24
2/24/2003	403.03
2/25/2003	399.11
2/26/2003	397.54
2/27/2003	398.95
2/28/2003	399.22
3/4/2003	395.37
3/5/2003	391.18
3/6/2003	393.98
3/7/2003	389.79
3/10/2003	382.67

3/11/2003	379.35
3/12/2003	387.25
3/13/2003	383.86
3/14/2003	387.88
3/17/2003	382.15
3/18/2003	384.64
3/19/2003	385.48
3/20/2003	394.64
3/21/2003	394.04
3/24/2003	395.09
3/25/2003	394.94
3/26/2003	401.04
3/27/2003	401.34
3/28/2003	404.43
3/31/2003	398.00
4/1/2003	398.05
4/2/2003	398.05
4/3/2003	400.76
4/4/2003	405.68
4/7/2003	423.81
4/8/2003	422.11
4/9/2003	430.28
4/10/2003	430.45
4/11/2003	438.55
4/14/2003	433.95
4/15/2003	437.72
4/16/2003	442.72
4/17/2003	443.86
4/21/2003	447.94
4/22/2003	442.74
4/23/2003	447.69
4/24/2003	445.15
4/25/2003	435.04
4/28/2003	430.92
4/29/2003	444.18
4/30/2003	450.86
5/1/2003	452.20
5/2/2003	447.82

5/5/2003	458.96
5/6/2003	463.61
5/7/2003	473.13
5/8/2003	471.12
5/9/2003	469.63
5/12/2003	473.93
5/13/2003	473.51
5/14/2003	467.94
5/19/2003	459.21
5/20/2003	466.14
5/21/2003	466.29
5/22/2003	465.13
5/23/2003	472.11
5/26/2003	478.41
5/27/2003	480.27
5/28/2003	492.82
5/29/2003	494.78
6/2/2003	505.72
6/3/2003	502.42
6/4/2003	504.53
6/5/2003	511.17
6/6/2003	510.69
6/9/2003	519.33
6/10/2003	519.54
6/11/2003	515.71
6/12/2003	501.81
6/13/2003	510.48
6/16/2003	512.69
6/17/2003	509.04
6/18/2003	503.23
6/19/2003	509.83
6/20/2003	511.45
6/23/2003	506.31
6/24/2003	500.19
6/25/2003	500.28
6/26/2003	497.81
6/27/2003	506.78
6/30/2003	505.50

7/1/2003	505.66
7/2/2003	506.07
7/3/2003	507.77
7/4/2003	504.10
7/7/2003	511.38
7/8/2003	518.53
7/9/2003	519.81
7/10/2003	518.25
7/11/2003	524.69
7/14/2003	534.96
7/15/2003	533.83
7/16/2003	524.26
7/17/2003	523.55
7/18/2003	525.50
7/21/2003	520.91
7/22/2003	516.78
7/23/2003	512.62
7/24/2003	505.04
7/25/2003	510.08
7/28/2003	512.79
7/29/2003	511.47
7/30/2003	508.22
7/31/2003	507.98
8/1/2003	508.70
8/4/2003	503.91
8/5/2003	488.53
8/6/2003	494.44
8/7/2003	508.27
8/8/2003	505.36
8/11/2003	504.84
8/12/2003	506.42
8/13/2003	511.23
8/14/2003	510.13
8/15/2003	516.65
8/19/2003	517.05
8/20/2003	518.78
8/21/2003	525.58
8/22/2003	528.94

8/25/2003	529.04
8/26/2003	528.76
8/27/2003	530.86
8/28/2003	530.24
8/29/2003	529.67
9/1/2003	534.34
9/2/2003	538.94
9/3/2003	558.25
9/4/2003	575.19
9/5/2003	582.32
9/8/2003	587.06
9/9/2003	585.29
9/10/2003	572.85
9/11/2003	565.64
9/12/2003	578.38
9/15/2003	574.80
9/16/2003	581.24
9/17/2003	585.91
9/18/2003	582.69
9/19/2003	585.67
9/23/2003	588.51
9/24/2003	605.62
9/25/2003	603.71
9/26/2003	599.84
9/29/2003	597.14
9/30/2003	597.65
10/1/2003	606.04
10/2/2003	619.59
10/3/2003	621.86
10/6/2003	615.87
10/7/2003	615.31
10/8/2003	624.33
10/9/2003	636.23
10/10/2003	644.82
10/13/2003	644.43
10/14/2003	648.72
10/15/2003	650.44
10/16/2003	649.30

10/17/2003	649.65
10/20/2003	652.76
10/21/2003	646.97
10/22/2003	646.16
10/23/2003	630.99
10/24/2003	634.57
10/27/2003	629.05
10/28/2003	626.86
10/29/2003	624.56
10/30/2003	627.83
10/31/2003	625.55
11/3/2003	617.26
11/4/2003	626.49
11/5/2003	635.82
11/6/2003	632.81
11/7/2003	626.74
11/10/2003	620.07
11/11/2003	617.72
11/12/2003	619.87
11/13/2003	614.64
11/14/2003	610.34
11/17/2003	607.79
11/18/2003	605.79
11/19/2003	601.94
11/20/2003	605.80
11/21/2003	617.08
12/1/2003	629.94
12/2/2003	633.73
12/3/2003	643.86
12/4/2003	641.15
12/5/2003	638.04
12/8/2003	647.77
12/9/2003	644.46
12/10/2003	645.96
12/11/2003	653.32
12/12/2003	656.74
12/15/2003	658.52
12/16/2003	656.91

12/17/2003	655.70
12/18/2003	664.88
12/19/2003	672.29
12/22/2003	674.40
12/23/2003	679.31
12/29/2003	693.03
12/30/2003	691.90
1/2/2004	704.50
1/5/2004	725.47
1/6/2004	723.99
1/7/2004	709.37
1/8/2004	730.82
1/9/2004	753.69
1/12/2004	742.51
1/13/2004	743.14
1/14/2004	756.56
1/15/2004	763.45
1/16/2004	770.33
1/19/2004	766.48
1/20/2004	773.12
1/21/2004	776.30
1/23/2004	785.88
1/26/2004	786.87
1/27/2004	772.49
1/28/2004	767.11
1/29/2004	759.64
1/30/2004	752.93
2/3/2004	730.32
2/4/2004	730.28
2/5/2004	736.47
2/6/2004	758.92
2/9/2004	767.26
2/10/2004	766.77
2/11/2004	769.79
2/12/2004	766.08
2/13/2004	773.14
2/16/2004	775.22
2/17/2004	777.00

2/18/2004	785.91
2/19/2004	789.43
2/20/2004	794.47
2/24/2004	780.75
2/25/2004	777.05
2/26/2004	776.02
2/27/2004	761.08
3/1/2004	759.01
3/2/2004	779.75
3/3/2004	776.83
3/4/2004	774.77
3/5/2004	778.01
3/8/2004	772.87
3/9/2004	771.08
3/10/2004	760.33
3/11/2004	741.20
3/12/2004	738.15
3/15/2004	724.15
3/16/2004	716.18
3/17/2004	730.59
3/18/2004	733.57
3/19/2004	742.91
3/23/2004	736.44
3/24/2004	738.79
3/25/2004	727.10
3/26/2004	714.13
3/29/2004	716.92
3/30/2004	730.06
3/31/2004	735.68
4/1/2004	737.65
4/2/2004	750.65
4/6/2004	771.55
4/7/2004	774.40
4/8/2004	779.62
4/12/2004	767.81
4/13/2004	771.74
4/14/2004	777.99
4/15/2004	772.99

4/16/2004	776.57
4/19/2004	784.84
4/20/2004	810.86
4/21/2004	814.20
4/22/2004	804.43
4/23/2004	815.44
4/26/2004	811.74
4/27/2004	818.16
4/28/2004	817.93
4/29/2004	801.97
4/30/2004	783.41
5/4/2004	779.60
5/5/2004	758.08
5/6/2004	746.12
5/7/2004	743.64
5/10/2004	707.22
5/11/2004	718.26
5/12/2004	744.29
5/13/2004	739.14
5/14/2004	722.71
5/17/2004	668.48
5/18/2004	676.15
5/19/2004	706.80
5/21/2004	724.93
5/24/2004	732.58
5/25/2004	717.14
5/26/2004	718.01
5/27/2004	728.31
5/28/2004	733.99
5/31/2004	732.52
6/1/2004	731.20
6/2/2004	719.04
6/4/2004	697.94
6/7/2004	700.78
6/8/2004	703.58
6/9/2004	709.75
6/10/2004	706.84
6/11/2004	704.12

6/14/2004	696.34
6/15/2004	707.41
6/16/2004	707.89
6/17/2004	700.14
6/18/2004	692.72
6/21/2004	689.61
6/22/2004	691.09
6/23/2004	699.76
6/24/2004	709.35
6/25/2004	720.23
6/28/2004	720.54
6/29/2004	722.29
6/30/2004	732.40
7/1/2004	729.81
7/2/2004	745.03
7/5/2004	745.03
7/6/2004	768.26
7/7/2004	771.66
7/8/2004	759.74
7/9/2004	761.14
7/12/2004	757.58
7/13/2004	756.58
7/14/2004	744.32
7/15/2004	745.34
7/16/2004	756.09
7/19/2004	754.27
7/20/2004	756.67
7/21/2004	761.24
7/22/2004	761.52
7/23/2004	766.37
7/26/2004	761.80
7/27/2004	759.28
7/28/2004	760.20
7/29/2004	760.97
7/30/2004	756.98
8/2/2004	749.46
8/3/2004	757.29
8/4/2004	758.30

8/5/2004	762.01
8/6/2004	753.93
8/9/2004	750.04
8/10/2004	752.44
8/11/2004	763.95
8/12/2004	758.18
8/13/2004	755.92
8/16/2004	751.95
8/17/2004	751.95
8/18/2004	754.25
8/19/2004	753.69
8/20/2004	750.47
8/23/2004	749.37
8/24/2004	738.87
8/25/2004	731.72
8/26/2004	735.25
8/27/2004	746.76
8/30/2004	753.03
8/31/2004	754.70
9/1/2004	775.10
9/2/2004	780.27
9/3/2004	786.49
9/6/2004	784.79
9/7/2004	786.69
9/8/2004	789.14
9/9/2004	782.65
9/10/2004	797.78
9/14/2004	809.02
9/15/2004	815.49
9/16/2004	813.06
9/17/2004	814.63
9/20/2004	814.63
9/21/2004	823.86
9/22/2004	818.23
9/23/2004	816.76
9/24/2004	819.82
9/27/2004	815.58
9/28/2004	812.13

9/29/2004	812.89
9/30/2004	820.13
10/1/2004	835.91
10/4/2004	856.45
10/5/2004	861.32
10/6/2004	856.06
10/7/2004	849.83
10/8/2004	855.72
10/11/2004	860.14
10/12/2004	849.19
10/13/2004	863.17
10/14/2004	859.66
10/15/2004	857.59
10/18/2004	854.39
10/19/2004	853.39
10/20/2004	840.79
10/21/2004	834.17
10/22/2004	850.77
10/25/2004	846.64
10/26/2004	841.35
10/27/2004	849.18
10/28/2004	862.12
10/29/2004	860.49
11/1/2004	863.59
11/2/2004	881.40
11/3/2004	890.36
11/4/2004	888.34
11/5/2004	893.64
11/8/2004	888.74
11/9/2004	901.38
11/10/2004	918.71
11/11/2004	925.18
11/12/2004	934.03
11/19/2004	934.03
11/22/2004	939.99
11/23/2004	959.02
11/24/2004	961.32
11/25/2004	955.68

11/26/2004	965.22
11/29/2004	964.09
11/30/2004	977.77
12/1/2004	986.20
12/2/2004	997.70
12/3/2004	981.41
12/6/2004	983.20
12/7/2004	986.41
12/8/2004	979.22
12/9/2004	963.80
12/10/2004	945.23
12/13/2004	935.78
12/14/2004	922.07
12/15/2004	939.15
12/16/2004	957.17
12/17/2004	973.35
12/20/2004	966.81
12/21/2004	976.32
12/22/2004	985.18
12/23/2004	986.51
12/27/2004	997.52
12/28/2004	1003.92
12/29/2004	1004.43
12/30/2004	1000.23
1/3/2005	1000.88
1/4/2005	1018.54
1/5/2005	1015.43
1/6/2005	1029.89
1/7/2005	1032.53
1/10/2005	1015.48
1/11/2005	1011.67
1/12/2005	1008.58
1/13/2005	1021.67
1/14/2005	1021.34
1/17/2005	1024.89
1/18/2005	1017.73
1/19/2005	1027.81
1/20/2005	1035.75

1/24/2005	1030.72
1/25/2005	1026.89
1/26/2005	1037.51
1/27/2005	1044.99
1/28/2005	1046.48
1/31/2005	1045.44
2/1/2005	1047.53
2/2/2005	1052.82
2/3/2005	1049.33
2/4/2005	1048.39
2/7/2005	1041.63
2/8/2005	1036.60
2/11/2005	1045.87
2/14/2005	1050.73
2/15/2005	1067.20
2/16/2005	1073.44
2/17/2005	1082.98
2/18/2005	1092.49
2/21/2005	1093.78
2/22/2005	1099.91
2/23/2005	1102.93
2/24/2005	1102.02
2/25/2005	1083.38
2/28/2005	1073.83
3/1/2005	1093.28
3/2/2005	1082.75
3/3/2005	1094.60
3/4/2005	1103.01
3/7/2005	1105.30
3/8/2005	1114.21
3/9/2005	1116.81
3/10/2005	1108.05
3/14/2005	1123.48
3/15/2005	1119.00
3/16/2005	1138.23
3/17/2005	1134.59
3/18/2005	1147.87
3/21/2005	1151.56

3/22/2005	1152.60
3/23/2005	1142.15
3/24/2005	1114.55
3/28/2005	1100.24
3/29/2005	1070.30
3/30/2005	1065.13
3/31/2005	1080.17
4/1/2005	1095.07
4/4/2005	1100.20
4/5/2005	1096.53
4/6/2005	1103.29
4/7/2005	1111.62
4/8/2005	1111.23
4/11/2005	1105.98
4/12/2005	1110.88
4/13/2005	1116.67
4/14/2005	1108.44
4/15/2005	1096.52
4/18/2005	1060.19
4/19/2005	1062.69
4/20/2005	1070.95
4/21/2005	1047.80
4/25/2005	1019.88
4/26/2005	1031.77
4/27/2005	1032.22
4/28/2005	1038.36
4/29/2005	1029.61
5/2/2005	1026.52
5/3/2005	1033.50
5/4/2005	1049.58
5/6/2005	1068.28
5/9/2005	1080.21
5/10/2005	1071.16
5/11/2005	1057.08
5/12/2005	1063.83
5/13/2005	1059.27
5/16/2005	1048.79
5/17/2005	1045.77

5/18/2005	1040.26
5/19/2005	1045.46
5/20/2005	1048.11
5/23/2005	1045.15
5/25/2005	1049.06
5/26/2005	1054.36
5/27/2005	1061.49
5/30/2005	1062.96
5/31/2005	1088.17
6/1/2005	1082.94
6/2/2005	1091.46
6/3/2005	1092.50
6/6/2005	1096.83
6/7/2005	1092.81
6/8/2005	1095.51
6/9/2005	1094.19
6/10/2005	1096.93
6/13/2005	1100.88
6/14/2005	1105.89
6/15/2005	1119.58
6/16/2005	1125.76
6/17/2005	1141.82
6/20/2005	1147.71
6/21/2005	1133.33
6/22/2005	1134.69
6/23/2005	1137.42
6/24/2005	1135.67
6/27/2005	1119.90
6/28/2005	1127.82
6/29/2005	1126.86
6/30/2005	1122.38
7/1/2005	1138.99
7/4/2005	1138.88
7/5/2005	1131.17
7/6/2005	1117.81
7/7/2005	1108.40
7/8/2005	1110.56
7/11/2005	1123.46

7/12/2005	1129.11
7/13/2005	1132.79
7/14/2005	1136.57
7/15/2005	1131.46
7/18/2005	1128.44
7/19/2005	1132.02
7/20/2005	1140.66
7/21/2005	1157.51
7/22/2005	1172.24
7/25/2005	1169.75
7/26/2005	1178.00
7/27/2005	1178.11
7/28/2005	1186.61
7/29/2005	1182.30
8/1/2005	1178.22
8/2/2005	1189.33
8/3/2005	1192.20
8/4/2005	1185.33
8/5/2005	1174.09
8/8/2005	1158.59
8/9/2005	1162.80
8/10/2005	1176.84
8/11/2005	1167.97
8/12/2005	1153.97
8/15/2005	1118.27
8/16/2005	1113.82
8/18/2005	1100.30
8/19/2005	1087.95
8/22/2005	1076.35
8/23/2005	1066.09
8/24/2005	1035.44
8/25/2005	1061.85
8/26/2005	1048.87
8/29/2005	994.77
8/30/2005	1039.82
8/31/2005	1050.09
9/1/2005	1039.23
9/5/2005	1035.89

9/6/2005	1051.59
9/7/2005	1059.38
9/8/2005	1080.45
9/9/2005	1098.46
9/12/2005	1105.66
9/13/2005	1085.74
9/14/2005	1058.63
9/15/2005	1050.91
9/16/2005	1056.73
9/19/2005	1066.59
9/20/2005	1055.59
9/21/2005	1044.06
9/22/2005	1016.76
9/23/2005	1012.85
9/26/2005	1034.58
9/27/2005	1037.63
9/28/2005	1027.89
9/29/2005	1048.30
9/30/2005	1079.28
10/3/2005	1083.41
10/4/2005	1101.17
10/5/2005	1104.06
10/6/2005	1096.38
10/7/2005	1094.65
10/10/2005	1102.78
10/11/2005	1105.63
10/12/2005	1102.98
10/13/2005	1090.54
10/14/2005	1096.70
10/17/2005	1090.09
10/18/2005	1095.87
10/19/2005	1075.91
10/20/2005	1075.40
10/21/2005	1075.96
10/24/2005	1073.08
10/25/2005	1062.17
10/26/2005	1062.18
10/27/2005	1063.70

10/28/2005	1058.26
10/31/2005	1066.22
11/1/2005	1064.95
11/9/2005	1052.82
11/10/2005	1043.70
11/11/2005	1028.98
11/14/2005	1017.73
11/15/2005	1022.08
11/16/2005	1025.83
11/17/2005	1033.28
11/18/2005	1054.98
11/21/2005	1062.46
11/22/2005	1066.29
11/23/2005	1061.08
11/24/2005	1078.18
11/25/2005	1074.40
11/28/2005	1081.06
11/29/2005	1082.28
11/30/2005	1096.64
12/1/2005	1096.37
12/2/2005	1119.42
12/5/2005	1120.58
12/6/2005	1123.44
12/7/2005	1151.36
12/8/2005	1158.32
12/9/2005	1160.07
12/12/2005	1175.01
12/13/2005	1182.03
12/14/2005	1173.72
12/15/2005	1155.96
12/16/2005	1143.43
12/19/2005	1162.33
12/20/2005	1163.03
12/21/2005	1160.56
12/22/2005	1164.02
12/23/2005	1158.34
12/27/2005	1161.71
12/28/2005	1164.14

12/29/2005	1162.64
1/2/2006	1171.71
1/3/2006	1184.69
1/4/2006	1211.70
1/5/2006	1211.00
1/6/2006	1222.25
1/9/2006	1245.05
1/11/2006	1261.28
1/12/2006	1256.25
1/13/2006	1250.43
1/16/2006	1235.26
1/17/2006	1212.87
1/18/2006	1193.20
1/19/2006	1230.06
1/20/2006	1222.89
1/23/2006	1200.13
1/24/2006	1207.22
1/25/2006	1230.12
1/26/2006	1226.65
1/27/2006	1229.71
1/30/2006	1232.32
2/1/2006	1240.69
2/2/2006	1243.39
2/3/2006	1244.13
2/6/2006	1245.65
2/7/2006	1259.36
2/8/2006	1238.17
2/9/2006	1246.64
2/10/2006	1253.10
2/13/2006	1252.40
2/14/2006	1230.38
2/15/2006	1236.94
2/16/2006	1237.87
2/17/2006	1243.47
2/20/2006	1247.41
2/21/2006	1236.09
2/22/2006	1231.25
2/23/2006	1224.16

2/24/2006	1216.14
2/27/2006	1235.42
2/28/2006	1230.66
3/1/2006	1239.27
3/2/2006	1249.68
3/3/2006	1261.27
3/6/2006	1262.69
3/7/2006	1246.25
3/8/2006	1233.60
3/9/2006	1239.58
3/10/2006	1247.42
3/13/2006	1243.66
3/14/2006	1245.38
3/15/2006	1244.44
3/16/2006	1273.80
3/17/2006	1305.18
3/20/2006	1330.11
3/21/2006	1327.14
3/22/2006	1302.33
3/23/2006	1305.62
3/24/2006	1311.37
3/27/2006	1311.95
3/28/2006	1325.22
3/29/2006	1322.97
3/31/2006	1322.97
4/3/2006	1329.31
4/4/2006	1326.45
4/5/2006	1344.60
4/6/2006	1355.01
4/7/2006	1363.30
4/11/2006	1360.13
4/12/2006	1372.39
4/13/2006	1382.12
4/17/2006	1386.79
4/18/2006	1417.38
4/19/2006	1453.23
4/20/2006	1464.53
4/21/2006	1459.29

4/24/2006	1442.86
4/25/2006	1458.78
4/26/2006	1481.72
4/27/2006	1474.61
4/28/2006	1464.41
5/1/2006	1476.45
5/2/2006	1475.89
5/3/2006	1499.07
5/4/2006	1484.33
5/5/2006	1483.06
5/8/2006	1507.93
5/9/2006	1532.62
5/10/2006	1539.40
5/11/2006	1553.06
5/12/2006	1525.78
5/15/2006	1429.54
5/16/2006	1427.81
5/17/2006	1462.16
5/18/2006	1400.85
5/19/2006	1392.99
5/22/2006	1309.05
5/23/2006	1326.26
5/24/2006	1323.15
5/29/2006	1333.88
5/30/2006	1366.17
5/31/2006	1330.00
6/1/2006	1321.56
6/2/2006	1347.69
6/5/2006	1349.04
6/6/2006	1316.94
6/7/2006	1287.18
6/8/2006	1241.33
6/9/2006	1274.75
6/12/2006	1273.11
6/13/2006	1236.57
6/14/2006	1234.20
6/15/2006	1241.65
6/16/2006	1309.53



6/19/2006	1295.05
6/20/2006	1294.97
6/21/2006	1293.29
6/22/2006	1303.45
6/23/2006	1290.16
6/26/2006	1283.85
6/27/2006	1285.63
6/28/2006	1272.05
6/29/2006	1274.74
6/30/2006	1310.26
7/3/2006	1327.76
7/4/2006	1337.87
7/5/2006	1338.32
7/6/2006	1340.02
7/7/2006	1347.91
7/10/2006	1339.83
7/11/2006	1343.94
7/12/2006	1345.87
7/13/2006	1334.03
7/14/2006	1303.58
7/17/2006	1283.95
7/18/2006	1286.05
7/19/2006	1280.50
7/20/2006	1315.59
7/21/2006	1314.58
7/24/2006	1303.15
7/25/2006	1307.78
7/26/2006	1312.83
7/27/2006	1330.59
7/28/2006	1337.41
7/31/2006	1351.65
8/1/2006	1371.69
8/2/2006	1394.36
8/3/2006	1379.71
8/4/2006	1389.35
8/7/2006	1403.49
8/8/2006	1396.08
8/9/2006	1413.10

8/10/2006	1384.86
8/11/2006	1402.19
8/14/2006	1415.22
8/15/2006	1424.24
8/16/2006	1437.77
8/22/2006	1435.03
8/23/2006	1438.63
8/24/2006	1429.48
8/25/2006	1416.93
8/28/2006	1418.00
8/29/2006	1432.93
8/30/2006	1425.22
8/31/2006	1431.26
9/1/2006	1444.49
9/4/2006	1469.56
9/5/2006	1468.24
9/6/2006	1472.56
9/7/2006	1470.47
9/8/2006	1466.58
9/11/2006	1447.25
9/12/2006	1435.21
9/13/2006	1451.08
9/14/2006	1461.29
9/15/2006	1465.70
9/18/2006	1474.26
9/19/2006	1485.35
9/20/2006	1479.31
9/21/2006	1507.36
9/22/2006	1510.82
9/25/2006	1506.76
9/26/2006	1500.10
9/27/2006	1523.06
9/28/2006	1533.80
9/29/2006	1534.61
10/2/2006	1528.91
10/3/2006	1537.71
10/4/2006	1537.08
10/5/2006	1544.98

10/6/2006	1549.63
10/9/2006	1543.42
10/10/2006	1554.92
10/11/2006	1553.12
10/12/2006	1549.54
10/13/2006	1572.20
10/16/2006	1561.79
10/17/2006	1566.82
10/18/2006	1564.55
10/19/2006	1568.59
10/20/2006	1572.85
10/27/2006	1572.85
10/30/2006	1580.19
10/31/2006	1582.63
11/1/2006	1589.87
11/2/2006	1607.70
11/3/2006	1612.92
11/6/2006	1640.85
11/7/2006	1654.15
11/8/2006	1646.07
11/9/2006	1660.26
11/10/2006	1664.84
11/13/2006	1639.27
11/14/2006	1672.07
11/15/2006	1670.11
11/16/2006	1668.82
11/17/2006	1672.11
11/20/2006	1684.01
11/21/2006	1681.34
11/22/2006	1705.44
11/23/2006	1704.13
11/24/2006	1717.73
11/27/2006	1728.93
11/28/2006	1691.08
11/29/2006	1713.40
11/30/2006	1718.96
12/1/2006	1734.75
12/4/2006	1731.23

12/5/2006	1776.76
12/6/2006	1784.43
12/7/2006	1782.12
12/8/2006	1775.29
12/11/2006	1759.67
12/12/2006	1754.58
12/13/2006	1753.80
12/14/2006	1767.80
12/15/2006	1792.16
12/18/2006	1787.62
12/19/2006	1736.67
12/20/2006	1766.80
12/21/2006	1789.09
12/22/2006	1785.76
12/26/2006	1783.98
12/27/2006	1803.26
12/28/2006	1805.52
12/29/2006	1805.52
1/2/2007	1836.52
1/3/2007	1834.71
1/4/2007	1824.10
1/5/2007	1832.55
1/8/2007	1813.39
1/9/2007	1780.88
1/10/2007	1710.37
1/11/2007	1703.84
1/12/2007	1678.04
1/15/2007	1730.47
1/16/2007	1754.29
1/17/2007	1758.48
1/18/2007	1777.71
1/19/2007	1795.56
1/22/2007	1817.41
1/23/2007	1808.57
1/24/2007	1805.69
1/25/2007	1773.96
1/26/2007	1759.21
1/29/2007	1764.99

1/30/2007	1765.52
1/31/2007	1757.26
2/1/2007	1771.33
2/2/2007	1780.38
2/5/2007	1768.54
2/6/2007	1761.29
2/7/2007	1764.91
2/8/2007	1751.32
2/9/2007	1740.32
2/12/2007	1734.46
2/13/2007	1727.36
2/14/2007	1750.99
2/15/2007	1790.41
2/16/2007	1794.36
2/19/2007	1799.29
2/20/2007	1806.48
2/21/2007	1816.57
2/22/2007	1808.44
2/23/2007	1791.55
2/26/2007	1783.95
2/27/2007	1764.01
2/28/2007	1740.97
3/1/2007	1759.49
3/2/2007	1760.02
3/5/2007	1698.82
3/6/2007	1732.44
3/7/2007	1743.19
3/8/2007	1771.56
3/9/2007	1764.58
3/12/2007	1794.52
3/13/2007	1797.40
3/14/2007	1762.28
3/15/2007	1776.36
3/16/2007	1777.89
3/20/2007	1775.42
3/21/2007	1779.24
3/22/2007	1809.07
3/23/2007	1805.96

3/26/2007	1813.72
3/27/2007	1819.66
3/28/2007	1800.39
3/29/2007	1817.72
3/30/2007	1830.92
4/2/2007	1849.38
4/3/2007	1894.58
4/4/2007	1922.05
4/5/2007	1895.61
4/9/2007	1913.73
4/10/2007	1925.47
4/11/2007	1931.04
4/12/2007	1930.40
4/13/2007	1941.15
4/16/2007	1963.82
4/17/2007	1965.44
4/18/2007	1959.68
4/19/2007	1918.35
4/20/2007	1968.73
4/23/2007	1986.73
4/24/2007	1981.57
4/25/2007	1986.67
4/26/2007	2016.03
4/27/2007	2019.68
4/30/2007	1999.17
5/1/2007	2001.18
5/2/2007	2008.56
5/3/2007	2025.64
5/4/2007	2033.37
5/7/2007	2037.04
5/8/2007	2022.79
5/9/2007	2037.98
5/10/2007	2047.03
5/11/2007	2022.30
5/14/2007	2044.21
5/15/2007	2037.78
5/16/2007	2063.76
5/18/2007	2063.76

5/21/2007	2071.27
5/22/2007	2078.75
5/23/2007	2104.25
5/24/2007	2078.60
5/25/2007	2060.43
5/28/2007	2076.76
5/29/2007	2058.74
5/30/2007	2055.40
5/31/2007	2084.32
6/4/2007	2111.75
6/5/2007	2093.11
6/6/2007	2102.44
6/7/2007	2093.81
6/8/2007	2054.45
6/11/2007	2084.03
6/12/2007	2108.58
6/13/2007	2088.60
6/14/2007	2108.41
6/15/2007	2120.64
6/18/2007	2126.49
6/19/2007	2142.19
6/20/2007	2161.07
6/21/2007	2152.34
6/22/2007	2152.32
6/25/2007	2152.20
6/26/2007	2153.54
6/27/2007	2125.34
6/28/2007	2112.85
6/29/2007	2139.28
7/2/2007	2167.82
7/3/2007	2189.12
7/4/2007	2196.10
7/5/2007	2220.93
7/6/2007	2227.05
7/9/2007	2271.34
7/10/2007	2282.38
7/11/2007	2273.42
7/12/2007	2284.92

7/13/2007	2301.60
7/16/2007	2286.22
7/17/2007	2301.34
7/18/2007	2294.59
7/19/2007	2333.68
7/20/2007	2366.40
7/23/2007	2380.21
7/24/2007	2401.14
7/25/2007	2394.56
7/26/2007	2365.26
7/27/2007	2298.41
7/30/2007	2301.55
7/31/2007	2348.67
8/1/2007	2256.31
8/2/2007	2270.85
8/3/2007	2269.79
8/6/2007	2189.11
8/7/2007	2174.07
8/8/2007	2262.64
8/9/2007	2241.40
8/10/2007	2207.40
8/13/2007	2211.46
8/14/2007	2168.64
8/15/2007	2029.08
8/16/2007	1908.64
8/20/2007	2041.58
8/21/2007	1993.01
8/22/2007	2062.99
8/23/2007	2117.66
8/24/2007	2143.11
8/27/2007	2175.35
8/28/2007	2159.61
8/29/2007	2134.88
8/30/2007	2150.72
8/31/2007	2194.34
9/3/2007	2213.57
9/4/2007	2215.12
9/5/2007	2214.62

9/6/2007	2220.78
9/7/2007	2239.90
9/10/2007	2209.64
9/11/2007	2211.41
9/12/2007	2209.93
9/13/2007	2222.75
9/14/2007	2225.61
9/17/2007	2223.22
9/18/2007	2239.86
9/19/2007	2313.34
9/20/2007	2304.63
9/21/2007	2335.49
9/24/2007	2353.63
9/25/2007	2330.36
9/26/2007	2361.01
9/27/2007	2378.83
9/28/2007	2359.21
10/1/2007	2399.46
10/2/2007	2464.94
10/3/2007	2451.59
10/4/2007	2473.16
10/5/2007	2500.58
10/8/2007	2523.70
10/9/2007	2546.61
10/10/2007	2591.48
10/11/2007	2638.21
10/12/2007	2638.21
10/17/2007	2641.59
10/18/2007	2616.74
10/19/2007	2563.75
10/22/2007	2453.21
10/23/2007	2553.80
10/24/2007	2524.98
10/25/2007	2596.66
10/26/2007	2624.43
10/29/2007	2667.53
10/30/2007	2662.92
10/31/2007	2643.49

11/1/2007	2704.66
11/2/2007	2710.62
11/5/2007	2652.48
11/6/2007	2681.90
11/7/2007	2713.98
11/8/2007	2678.22
11/9/2007	2707.67
11/12/2007	2671.90
11/13/2007	2654.21
11/14/2007	2691.87
11/15/2007	2705.82
11/16/2007	2668.70
11/19/2007	2646.81
11/20/2007	2624.86
11/21/2007	2563.62
11/22/2007	2569.51
11/23/2007	2584.35
11/26/2007	2648.04
11/27/2007	2627.95
11/28/2007	2671.90
11/29/2007	2699.82
11/30/2007	2688.33
12/3/2007	2726.93
12/4/2007	2752.94
12/5/2007	2768.06
12/6/2007	2795.40
12/7/2007	2778.95
12/10/2007	2790.26
12/11/2007	2810.96
12/12/2007	2795.84
12/13/2007	2755.73
12/14/2007	2740.06
12/17/2007	2664.92
12/18/2007	2646.23
12/19/2007	2657.98
12/21/2007	2657.98
12/24/2007	2657.98
12/26/2007	2714.55

12/27/2007	2739.70
12/28/2007	2745.83
1/2/2008	2731.51
1/3/2008	2715.06
1/4/2008	2765.19
1/7/2008	2776.41
1/8/2008	2785.62
1/9/2008	2830.26
1/14/2008	2810.37
1/15/2008	2730.03
1/16/2008	2592.31
1/17/2008	2649.28
1/18/2008	2611.13
1/21/2008	2485.88
1/22/2008	2294.52
1/23/2008	2476.28
1/24/2008	2516.70
1/25/2008	2620.49
1/28/2008	2582.05
1/29/2008	2607.84
1/30/2008	2610.36
1/31/2008	2627.25
2/1/2008	2646.82
2/4/2008	2701.63
2/5/2008	2704.25
2/6/2008	2639.09
2/11/2008	2589.38
2/12/2008	2592.07
2/13/2008	2610.78
2/14/2008	2675.65
2/15/2008	2688.19
2/19/2008	2711.87
2/20/2008	2689.26
2/21/2008	2734.21
2/22/2008	2741.18
2/25/2008	2751.86
2/26/2008	2738.87
2/27/2008	2740.14

2/28/2008	2756.31
2/29/2008	2721.94
3/3/2008	2652.31
3/4/2008	2634.75
3/5/2008	2639.65
3/6/2008	2656.46
3/7/2008	2656.46
3/10/2008	2527.87
3/11/2008	2523.53
3/12/2008	2556.24
3/13/2008	2440.59
3/14/2008	2383.42
3/17/2008	2312.32
3/18/2008	2339.79
3/19/2008	2323.57
3/24/2008	2339.29
3/25/2008	2419.62
3/26/2008	2440.64
3/27/2008	2451.35
3/28/2008	2477.59
3/31/2008	2447.30
4/1/2008	2393.25
4/2/2008	2342.19
4/3/2008	2237.97
4/4/2008	2277.08
4/7/2008	2286.80
4/8/2008	2249.77
4/9/2008	2180.09
4/10/2008	2235.93
4/11/2008	2303.93
4/14/2008	2272.48
4/15/2008	2294.26
4/16/2008	2337.92
4/17/2008	2341.78
4/18/2008	2349.27
4/21/2008	2335.89
4/22/2008	2289.10
4/23/2008	2314.30

4/24/2008	2269.98
4/25/2008	2240.58
4/28/2008	2254.31
4/29/2008	2303.53
4/30/2008	2304.52
5/2/2008	2342.76
5/5/2008	2387.99
5/6/2008	2371.83
5/7/2008	2382.70
5/8/2008	2376.93
5/9/2008	2375.03
5/12/2008	2378.00
5/13/2008	2418.90
5/14/2008	2449.34
5/15/2008	2449.81
5/16/2008	2468.84
5/19/2008	2510.96
5/21/2008	2494.71
5/22/2008	2503.95
5/23/2008	2465.96
5/26/2008	2419.73
5/27/2008	2397.00
5/28/2008	2433.77
5/29/2008	2446.95
5/30/2008	2444.35
6/2/2008	2427.77
6/3/2008	2403.81
6/4/2008	2362.59
6/5/2008	2399.68
6/6/2008	2402.24
6/9/2008	2410.08
6/10/2008	2373.82
6/11/2008	2374.78
6/12/2008	2409.01
6/13/2008	2398.42
6/16/2008	2398.04
6/17/2008	2377.98
6/18/2008	2364.58

6/19/2008	2373.06
6/20/2008	2371.78
6/23/2008	2362.74
6/24/2008	2365.38
6/25/2008	2341.36
6/26/2008	2350.89
6/27/2008	2332.11
6/30/2008	2349.10
7/1/2008	2378.81
7/2/2008	2378.47
7/3/2008	2286.61
7/4/2008	2314.75
7/7/2008	2303.82
7/8/2008	2278.97
7/9/2008	2286.03
7/10/2008	2276.23
7/11/2008	2276.85
7/14/2008	2259.54
7/15/2008	2214.85
7/16/2008	2218.12
7/17/2008	2167.71
7/18/2008	2141.14
7/21/2008	2195.07
7/22/2008	2212.75
7/23/2008	2225.84
7/24/2008	2257.05
7/25/2008	2245.34
7/28/2008	2275.68
7/29/2008	2278.68
7/30/2008	2278.68
7/31/2008	2304.51
8/1/2008	2248.75
8/4/2008	2227.68
8/5/2008	2185.62
8/6/2008	2187.20
8/7/2008	2199.01
8/8/2008	2195.93
8/11/2008	2133.92

8/12/2008	2057.58
8/13/2008	2063.52
8/14/2008	2106.64
8/15/2008	2085.15
8/19/2008	2042.50
8/20/2008	2069.70
8/21/2008	2088.25
8/22/2008	2120.49
8/25/2008	2127.22
8/26/2008	2107.55
8/27/2008	2131.06
8/28/2008	2144.85
8/29/2008	2165.94
9/1/2008	2164.62
9/2/2008	2159.05
9/3/2008	2116.00
9/4/2008	2075.23
9/5/2008	2022.56
9/8/2008	2038.00
9/9/2008	1958.75
9/10/2008	1885.04
9/11/2008	1870.13
9/12/2008	1804.06
9/15/2008	1719.25
9/16/2008	1735.64
9/17/2008	1769.89
9/18/2008	1787.67
9/19/2008	1891.73
9/22/2008	1897.34
9/23/2008	1873.10
9/24/2008	1883.55
9/25/2008	1870.06
9/26/2008	1846.09
9/29/2008	1832.51
10/6/2008	1648.74
10/7/2008	1619.72
10/8/2008	1451.67
10/10/2008	1451.67

10/13/2008	1461.87
10/14/2008	1555.97
10/15/2008	1520.41
10/16/2008	1463.25
10/17/2008	1399.42
10/20/2008	1426.94
10/21/2008	1440.15
10/22/2008	1379.74
10/23/2008	1337.20
10/24/2008	1244.86
10/27/2008	1166.41
10/28/2008	1111.39
10/29/2008	1113.62
10/30/2008	1173.86
10/31/2008	1256.70
11/3/2008	1352.72
11/4/2008	1369.79
11/5/2008	1366.28
11/6/2008	1307.90
11/7/2008	1338.36
11/10/2008	1340.68
11/11/2008	1336.56
11/12/2008	1326.62
11/13/2008	1259.71
11/14/2008	1264.38
11/17/2008	1236.93
11/18/2008	1189.86
11/19/2008	1180.36
11/20/2008	1154.97
11/21/2008	1146.28
11/24/2008	1141.40
11/25/2008	1154.14
11/26/2008	1193.15
11/27/2008	1202.07
11/28/2008	1241.54
12/1/2008	1223.12
12/2/2008	1191.36
12/3/2008	1192.53

12/4/2008	1205.32
12/5/2008	1202.34
12/9/2008	1266.12
12/10/2008	1315.90
12/11/2008	1316.69
12/12/2008	1262.97
12/15/2008	1359.28
12/16/2008	1342.84
12/17/2008	1363.98
12/18/2008	1351.76
12/19/2008	1348.29
12/22/2008	1345.31
12/23/2008	1343.72
12/24/2008	1336.61
12/26/2008	1340.89
12/30/2008	1355.41
1/5/2009	1437.34
1/6/2009	1435.54
1/7/2009	1421.47
1/8/2009	1402.66
1/9/2009	1416.67
1/12/2009	1406.55
1/13/2009	1399.73
1/14/2009	1386.91
1/15/2009	1343.49
1/16/2009	1363.88
1/19/2009	1350.69
1/20/2009	1344.15
1/21/2009	1321.45
1/22/2009	1327.32
1/23/2009	1315.58
1/27/2009	1336.63
1/28/2009	1321.45
1/29/2009	1324.65
1/30/2009	1332.67
2/2/2009	1310.64
2/3/2009	1304.33
2/4/2009	1320.36

2/5/2009	1328.07
2/6/2009	1350.64
2/9/2009	1342.23
2/10/2009	1332.13
2/11/2009	1324.82
2/12/2009	1325.42
2/13/2009	1338.74
2/16/2009	1342.00
2/17/2009	1318.04
2/18/2009	1330.61
2/19/2009	1323.70
2/20/2009	1296.94
2/23/2009	1312.44
2/24/2009	1295.87
2/25/2009	1300.11
2/26/2009	1290.32
2/27/2009	1285.48
3/2/2009	1256.11
3/3/2009	1264.82
3/4/2009	1289.38
3/5/2009	1288.07
3/6/2009	1286.69
3/10/2009	1300.21
3/11/2009	1314.52
3/12/2009	1310.41
3/13/2009	1327.44
3/16/2009	1324.85
3/17/2009	1312.09
3/18/2009	1322.84
3/19/2009	1341.60
3/20/2009	1360.89
3/23/2009	1406.65
3/24/2009	1436.12
3/25/2009	1419.97
3/26/2009	1462.74
3/27/2009	1462.74
3/30/2009	1419.09
3/31/2009	1434.07

4/1/2009	1461.75
4/2/2009	1499.73
4/3/2009	1500.36
4/6/2009	1516.64
4/7/2009	1490.86
4/8/2009	1465.75
4/13/2009	1540.40
4/14/2009	1570.26
4/15/2009	1593.66
4/16/2009	1625.09
4/17/2009	1634.79
4/20/2009	1661.84
4/21/2009	1628.85
4/22/2009	1615.23
4/23/2009	1592.70
4/24/2009	1591.34
4/27/2009	1576.08
4/28/2009	1595.92
4/29/2009	1644.19
4/30/2009	1722.77
5/1/2009	1729.58
5/4/2009	1788.15
5/5/2009	1772.07
5/6/2009	1798.34
5/7/2009	1828.85
5/8/2009	1862.53
5/11/2009	1830.74
5/12/2009	1842.02
5/13/2009	1851.33
5/14/2009	1785.00
5/15/2009	1750.91
5/18/2009	1803.57
5/19/2009	1886.02
5/20/2009	1885.72
5/22/2009	1881.71
5/25/2009	1890.97
5/26/2009	1857.59
5/27/2009	1892.84

5/28/2009	1902.88
5/29/2009	1916.83
6/1/2009	1998.58
6/2/2009	1998.64
6/3/2009	2010.91
6/4/2009	2032.72
6/5/2009	2078.93
6/8/2009	2056.65
6/9/2009	2093.29
6/10/2009	2108.81
6/11/2009	2089.58
6/12/2009	2090.94
6/15/2009	2069.88
6/16/2009	2030.37
6/17/2009	2024.96
6/18/2009	1950.99
6/19/2009	1990.47
6/22/2009	1975.03
6/23/2009	1914.39
6/24/2009	1995.67
6/25/2009	2044.17
6/26/2009	2040.19
6/29/2009	2033.72
6/30/2009	2026.78
7/1/2009	2059.88
7/2/2009	2065.75
7/3/2009	2075.30
7/6/2009	2035.01
7/7/2009	2083.25
7/9/2009	2083.97
7/10/2009	2063.09
7/13/2009	2020.14
7/14/2009	2056.58
7/15/2009	2123.28
7/16/2009	2117.95
7/17/2009	2106.35
7/21/2009	2146.55
7/22/2009	2125.61

7/23/2009	2160.72
7/24/2009	2185.65
7/27/2009	2209.10
7/28/2009	2237.10
7/29/2009	2225.81
7/30/2009	2298.14
7/31/2009	2323.24
8/3/2009	2338.80
8/4/2009	2360.09
8/5/2009	2317.06
8/6/2009	2359.98
8/7/2009	2349.13
8/10/2009	2389.56
8/11/2009	2399.28
8/12/2009	2347.36
8/13/2009	2396.49
8/14/2009	2386.86
8/18/2009	2336.99
8/19/2009	2277.75
8/20/2009	2328.64
8/21/2009	2333.90
8/24/2009	2375.87
8/25/2009	2380.52
8/26/2009	2380.09
8/27/2009	2356.06
8/28/2009	2377.25
8/31/2009	2341.54
9/1/2009	2326.91
9/2/2009	2285.93
9/3/2009	2322.25
9/4/2009	2322.74
9/7/2009	2340.39
9/8/2009	2371.30
9/9/2009	2383.34
9/10/2009	2411.86
9/11/2009	2415.95
9/14/2009	2382.70
9/15/2009	2420.11

9/16/2009	2439.36
9/17/2009	2456.99
9/24/2009	2468.90
9/25/2009	2444.58
9/28/2009	2397.83
9/29/2009	2443.83
9/30/2009	2467.59
10/1/2009	2477.97
10/2/2009	2479.85
10/5/2009	2480.41
10/6/2009	2528.15
10/7/2009	2513.41
10/8/2009	2484.52
10/9/2009	2474.40
10/12/2009	2456.69
10/13/2009	2471.99
10/14/2009	2511.72
10/15/2009	2515.38
10/16/2009	2515.81
10/19/2009	2520.92
10/20/2009	2502.22
10/21/2009	2476.80
10/22/2009	2433.18
10/23/2009	2467.95
10/26/2009	2467.71
10/27/2009	2425.20
10/28/2009	2355.31
10/29/2009	2344.03
10/30/2009	2367.70
11/2/2009	2371.64
11/3/2009	2334.11
11/4/2009	2371.86
11/5/2009	2367.21
11/6/2009	2395.11
11/9/2009	2406.43
11/10/2009	2381.96
11/11/2009	2403.88
11/12/2009	2420.28

11/13/2009	2426.80
11/16/2009	2468.68
11/17/2009	2473.79
11/18/2009	2484.23
11/19/2009	2468.79
11/20/2009	2487.36
11/23/2009	2481.42
11/24/2009	2471.88
11/25/2009	2461.53
11/26/2009	2393.52
11/30/2009	2415.84
12/1/2009	2452.50
12/2/2009	2471.56
12/3/2009	2500.04
12/4/2009	2511.54
12/7/2009	2483.76
12/8/2009	2483.89
12/9/2009	2481.30
12/10/2009	2486.44
12/11/2009	2519.10
12/14/2009	2506.39
12/15/2009	2494.74
12/16/2009	2522.54
12/17/2009	2509.58
12/21/2009	2431.39
12/22/2009	2467.64
12/23/2009	2474.88
12/24/2009	2474.88
12/28/2009	2509.69
12/29/2009	2518.99
12/30/2009	2534.36
1/4/2010	2575.41
1/5/2010	2605.28
1/6/2010	2603.30
1/7/2010	2586.90
1/8/2010	2614.37
1/11/2010	2632.20
1/12/2010	2659.55

1/13/2010	2632.87
1/14/2010	2645.18
1/15/2010	2647.09
1/18/2010	2642.55
1/19/2010	2666.07
1/20/2010	2667.27
1/21/2010	2638.38
1/22/2010	2610.34
1/25/2010	2597.86
1/26/2010	2578.42
1/27/2010	2564.55
1/28/2010	2619.56
1/29/2010	2610.80
2/1/2010	2587.55
2/2/2010	2580.25
2/3/2010	2604.55
2/4/2010	2593.22
2/5/2010	2518.98
2/8/2010	2475.57
2/9/2010	2489.49
2/10/2010	2483.44
2/11/2010	2507.75
2/12/2010	2534.14
2/15/2010	2517.46
2/16/2010	2558.50
2/17/2010	2581.34
2/18/2010	2560.03
2/19/2010	2554.38
2/22/2010	2564.26
2/23/2010	2583.65
2/24/2010	2579.42
2/25/2010	2549.03
3/1/2010	2554.67
3/2/2010	2576.59
3/3/2010	2567.09
3/4/2010	2565.65
3/5/2010	2578.77
3/8/2010	2626.45



3/9/2010	2657.17
3/10/2010	2670.22
3/11/2010	2676.52
3/12/2010	2666.51
3/15/2010	2669.61
3/17/2010	2756.26
3/18/2010	2737.24
3/19/2010	2742.97
3/22/2010	2702.40
3/23/2010	2720.86
3/24/2010	2774.85
3/25/2010	2799.15
3/26/2010	2813.08
3/29/2010	2794.77
3/30/2010	2798.27
3/31/2010	2777.30
4/1/2010	2830.00
4/5/2010	2887.25
4/6/2010	2880.97
4/7/2010	2898.58
4/8/2010	2850.83
4/9/2010	2845.01
4/12/2010	2881.33
4/13/2010	2884.70
4/14/2010	2885.01
4/15/2010	2900.53
4/16/2010	2878.67
4/19/2010	2840.43
4/20/2010	2891.27
4/21/2010	2912.83
4/22/2010	2926.53
4/23/2010	2924.73
4/26/2010	2944.71
4/27/2010	2939.30
4/28/2010	2903.32
4/29/2010	2926.86
4/30/2010	2971.25
5/3/2010	2960.90

5/4/2010	2959.01
5/5/2010	2846.24
5/6/2010	2810.62
5/7/2010	2739.33
5/10/2010	2850.43
5/11/2010	2812.89
5/12/2010	2847.62
5/14/2010	2858.39
5/17/2010	2819.47
5/18/2010	2834.19
5/19/2010	2729.48
5/20/2010	2694.25
5/21/2010	2623.22
5/24/2010	2609.61
5/25/2010	2514.12
5/26/2010	2696.78
5/27/2010	2713.92
5/31/2010	2796.96
6/1/2010	2724.61
6/2/2010	2733.68
6/3/2010	2810.98
6/4/2010	2823.25
6/7/2010	2750.23
6/8/2010	2779.98
6/9/2010	2785.79
6/10/2010	2770.79
6/11/2010	2801.90
6/14/2010	2826.84
6/15/2010	2830.17
6/16/2010	2858.66
6/17/2010	2891.10
6/18/2010	2929.59
6/21/2010	2941.90
6/22/2010	2934.59
6/23/2010	2924.79
6/24/2010	2914.09
6/25/2010	2947.02
6/28/2010	2955.73

6/29/2010	2893.37
6/30/2010	2913.68
7/1/2010	2874.25
7/2/2010	2871.55
7/5/2010	2877.30
7/6/2010	2910.65
7/7/2010	2902.04
7/8/2010	2915.91
7/9/2010	2943.90
7/12/2010	2958.79
7/13/2010	2961.51
7/14/2010	2981.06
7/15/2010	2980.60
7/16/2010	2992.45
7/19/2010	2975.57
7/20/2010	2995.44
7/21/2010	3013.40
7/22/2010	3009.92
7/23/2010	3042.02
7/26/2010	3023.70
7/27/2010	3041.68
7/28/2010	3057.48
7/29/2010	3096.82
7/30/2010	3069.28
8/2/2010	3058.98
8/3/2010	2973.66
8/4/2010	2983.25
8/5/2010	3044.94
8/6/2010	3060.59
8/9/2010	3082.60
8/10/2010	3057.16
8/11/2010	3035.32
8/12/2010	3025.64
8/13/2010	3053.01
8/16/2010	3052.60
8/18/2010	3072.09
8/19/2010	3105.35
8/20/2010	3117.72

8/23/2010	3128.73
8/24/2010	3114.94
8/25/2010	3138.91
8/26/2010	3145.14
8/27/2010	3104.73
8/30/2010	3099.56
8/31/2010	3081.88
9/1/2010	3135.32
9/2/2010	3122.15
9/3/2010	3164.28
9/6/2010	3217.15
9/7/2010	3230.89
9/15/2010	3357.03
9/16/2010	3341.63
9/17/2010	3384.65
9/20/2010	3370.98
9/21/2010	3365.04
9/22/2010	3343.34
9/23/2010	3337.20
9/24/2010	3397.63
9/27/2010	3468.04
9/28/2010	3472.71
9/29/2010	3495.46
9/30/2010	3501.30
10/1/2010	3547.11
10/4/2010	3569.50
10/5/2010	3591.70
10/6/2010	3603.40
10/7/2010	3586.19
10/8/2010	3546.95
10/11/2010	3548.75
10/12/2010	3547.25
10/13/2010	3611.98
10/14/2010	3618.48
10/15/2010	3597.03
10/18/2010	3566.92
10/19/2010	3592.79
10/20/2010	3578.95

10/21/2010	3588.01
10/22/2010	3597.75
10/25/2010	3643.49
10/26/2010	3654.10
10/27/2010	3624.47
10/28/2010	3638.83
10/29/2010	3635.32
11/1/2010	3645.15
11/2/2010	3625.49
11/3/2010	3605.67
11/4/2010	3629.05
11/5/2010	3655.30
11/8/2010	3699.26
11/9/2010	3737.48
11/10/2010	3756.97
11/11/2010	3744.62
11/12/2010	3665.85
11/15/2010	3656.46
11/16/2010	3674.03
11/18/2010	3677.90
11/19/2010	3725.05
11/22/2010	3741.23
11/23/2010	3678.19
11/24/2010	3658.78
11/25/2010	3702.01
11/26/2010	3642.50
11/29/2010	3630.64
11/30/2010	3531.21
12/1/2010	3619.09
12/2/2010	3694.58
12/3/2010	3696.26
12/6/2010	3722.35
12/8/2010	3769.99
12/9/2010	3786.10
12/10/2010	3747.71
12/13/2010	3692.23
12/14/2010	3689.67
12/15/2010	3658.31

12/16/2010	3571.74
12/17/2010	3581.56
12/20/2010	3568.81
12/21/2010	3637.45
12/22/2010	3620.68
12/23/2010	3611.53
12/27/2010	3625.27
12/28/2010	3659.99
12/29/2010	3699.22
12/30/2010	3703.51
1/3/2011	3727.52
1/4/2011	3760.06
1/5/2011	3783.71
1/6/2011	3736.26
1/7/2011	3631.45
1/10/2011	3478.55
1/11/2011	3455.13
1/12/2011	3554.77
1/13/2011	3564.94
1/14/2011	3569.14
1/17/2011	3535.73
1/18/2011	3548.65
1/19/2011	3517.27
1/20/2011	3454.12
1/21/2011	3379.54
1/24/2011	3346.06
1/25/2011	3433.91
1/26/2011	3501.72
1/27/2011	3514.62
1/28/2011	3487.61
1/31/2011	3409.17
2/1/2011	3442.50
2/2/2011	3480.83
2/4/2011	3496.17
2/7/2011	3487.71
2/8/2011	3459.93
2/9/2011	3417.47
2/10/2011	3373.64

2/11/2011	3391.77
2/14/2011	3416.77
2/16/2011	3416.78
2/17/2011	3434.38
2/18/2011	3501.50
2/21/2011	3497.64
2/22/2011	3451.10
2/23/2011	3474.12
2/24/2011	3439.13
2/25/2011	3443.53
2/28/2011	3470.35
3/1/2011	3512.62
3/2/2011	3486.20
3/3/2011	3494.54
3/4/2011	3542.90
3/7/2011	3561.72
3/8/2011	3580.31
3/9/2011	3598.68
3/10/2011	3587.65
3/11/2011	3542.23
3/14/2011	3569.84
3/15/2011	3524.48
3/16/2011	3531.48
3/17/2011	3484.21
3/18/2011	3494.07
3/21/2011	3518.85
3/22/2011	3517.72
3/23/2011	3556.23
3/24/2011	3611.64
3/25/2011	3607.11
3/28/2011	3602.86
3/29/2011	3591.51
3/30/2011	3640.98
3/31/2011	3678.67
4/1/2011	3707.49
4/4/2011	3700.05
4/5/2011	3685.94
4/6/2011	3727.80

4/7/2011	3730.58
4/8/2011	3741.81
4/11/2011	3745.84
4/12/2011	3719.23
4/13/2011	3734.41
4/14/2011	3707.98
4/15/2011	3730.51
4/18/2011	3727.07
4/19/2011	3732.65
4/20/2011	3794.76
4/21/2011	3801.08
4/25/2011	3788.54
4/26/2011	3774.87
4/27/2011	3804.93
4/28/2011	3808.93
4/29/2011	3819.62
5/2/2011	3849.30
5/3/2011	3813.87
5/4/2011	3814.93
5/5/2011	3816.27
5/6/2011	3798.55
5/9/2011	3785.45
5/10/2011	3800.52
5/11/2011	3838.14
5/12/2011	3808.71
5/13/2011	3832.02
5/16/2011	3799.23
5/18/2011	3840.21
5/19/2011	3859.81
5/20/2011	3872.95
5/23/2011	3778.45
5/24/2011	3785.94
5/25/2011	3780.16
5/26/2011	3814.82
5/27/2011	3832.43
5/30/2011	3826.14
5/31/2011	3836.97
6/1/2011	3837.76

6/3/2011	3844.02
6/6/2011	3834.20
6/7/2011	3842.95
6/8/2011	3825.82
6/9/2011	3806.19
6/10/2011	3787.65
6/13/2011	3748.76
6/14/2011	3773.27
6/15/2011	3794.25
6/16/2011	3740.47
6/17/2011	3721.38
6/20/2011	3729.12
6/21/2011	3794.94
6/22/2011	3821.83
6/23/2011	3823.65
6/24/2011	3848.56
6/27/2011	3813.43
6/28/2011	3830.27
6/30/2011	3888.57
7/1/2011	3927.10
7/4/2011	3953.52
7/5/2011	3924.13
7/6/2011	3908.96
7/7/2011	3939.47
7/8/2011	4003.69
7/11/2011	3995.59
7/12/2011	3938.01
7/13/2011	3980.84
7/14/2011	3997.64
7/15/2011	4023.20
7/18/2011	4032.97
7/19/2011	4023.42
7/20/2011	4050.63
7/21/2011	4068.07
7/22/2011	4106.82
7/25/2011	4087.09
7/26/2011	4132.78
7/27/2011	4174.11

7/28/2011	4145.83
7/29/2011	4130.80
8/1/2011	4193.44
8/2/2011	4177.85
8/3/2011	4136.51
8/4/2011	4122.09
8/5/2011	3921.64
8/8/2011	3850.27
8/9/2011	3735.12
8/10/2011	3863.58
8/11/2011	3869.36
8/12/2011	3890.53
8/15/2011	3960.02
8/16/2011	3953.28
8/18/2011	4020.99
8/19/2011	3842.75
8/22/2011	3839.62
8/23/2011	3880.46
8/24/2011	3847.02
8/25/2011	3844.38
8/26/2011	3841.73
9/2/2011	3841.73
9/5/2011	3866.17
9/6/2011	3889.97
9/7/2011	4001.43
9/8/2011	4005.39
9/9/2011	3998.50
9/12/2011	3896.12
9/13/2011	3874.78
9/14/2011	3799.04
9/15/2011	3774.33
9/16/2011	3835.18
9/19/2011	3755.05
9/20/2011	3752.11
9/21/2011	3697.49
9/22/2011	3369.14
9/23/2011	3426.35
9/26/2011	3316.14

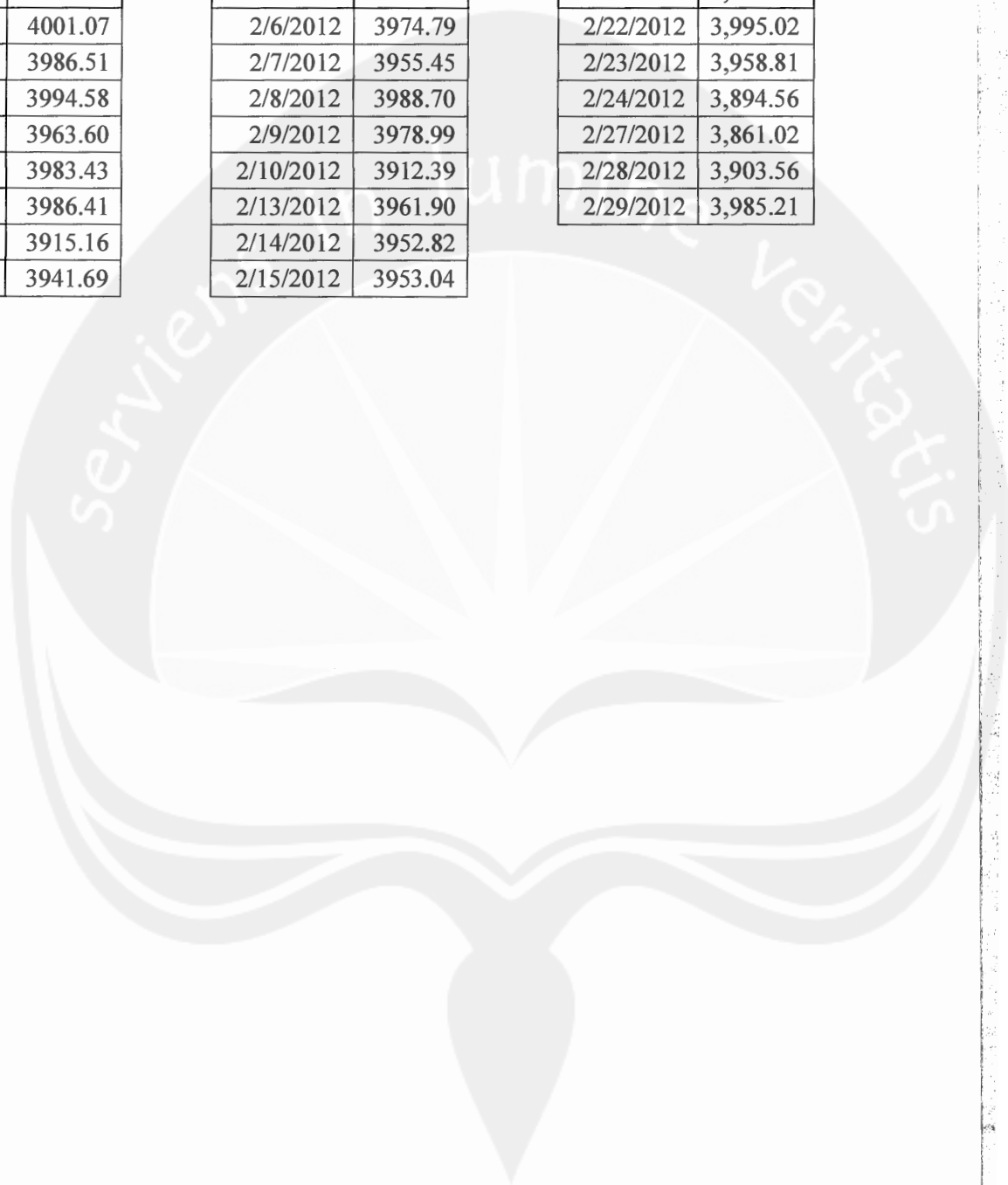
9/27/2011	3473.94
9/28/2011	3513.17
9/29/2011	3537.18
9/30/2011	3549.03
10/3/2011	3348.71
10/4/2011	3269.45
10/5/2011	3293.24
10/6/2011	3443.11
10/7/2011	3425.68
10/10/2011	3451.08
10/11/2011	3531.75
10/12/2011	3635.93
10/13/2011	3675.38
10/14/2011	3664.68
10/17/2011	3729.01
10/18/2011	3622.03
10/19/2011	3685.31
10/20/2011	3622.78
10/21/2011	3620.66
10/24/2011	3706.78
10/25/2011	3710.48
10/26/2011	3738.61
10/27/2011	3813.00
10/28/2011	3829.96
10/31/2011	3790.85
11/1/2011	3685.01
11/2/2011	3763.03
11/3/2011	3705.81
11/4/2011	3783.63
11/7/2011	3778.24
11/8/2011	3805.65
11/9/2011	3857.36
11/10/2011	3783.88
11/11/2011	3778.89
11/14/2011	3833.04
11/15/2011	3813.84
11/16/2011	3814.09
11/17/2011	3792.25

11/18/2011	3754.50
11/21/2011	3679.83
11/22/2011	3735.53
11/23/2011	3687.01
11/25/2011	3637.19
11/28/2011	3647.05
11/29/2011	3687.77
11/30/2011	3715.08
12/1/2011	3781.10
12/2/2011	3779.84
12/5/2011	3780.79
12/6/2011	3752.67
12/7/2011	3793.24
12/8/2011	3781.76
12/9/2011	3759.61
12/12/2011	3792.15
12/13/2011	3763.58
12/14/2011	3751.60
12/15/2011	3701.54
12/16/2011	3768.35
12/19/2011	3770.29
12/20/2011	3752.34
12/21/2011	3794.27
12/22/2011	3795.44
12/23/2011	3797.15
12/27/2011	3789.43
12/28/2011	3769.21
12/29/2011	3808.77
12/30/2011	3821.99
1/3/2012	3857.88
1/4/2012	3907.42
1/5/2012	3906.26
1/6/2012	3869.42
1/9/2012	3889.07
1/10/2012	3938.84
1/11/2012	3909.64
1/12/2012	3909.50
1/13/2012	3935.33

1/16/2012	3909.69
1/17/2012	3954.75
1/18/2012	3978.13
1/19/2012	4001.07
1/20/2012	3986.51
1/24/2012	3994.58
1/25/2012	3963.60
1/26/2012	3983.43
1/27/2012	3986.41
1/30/2012	3915.16
1/31/2012	3941.69

2/1/2012	3964.98
2/2/2012	4016.90
2/3/2012	4015.95
2/6/2012	3974.79
2/7/2012	3955.45
2/8/2012	3988.70
2/9/2012	3978.99
2/10/2012	3912.39
2/13/2012	3961.90
2/14/2012	3952.82
2/15/2012	3953.04

2/16/2012	3927.61
2/17/2012	3976.54
2/21/2012	4,002.95
2/22/2012	3,995.02
2/23/2012	3,958.81
2/24/2012	3,894.56
2/27/2012	3,861.02
2/28/2012	3,903.56
2/29/2012	3,985.21



### Appendix 3: Estimate Parameter of GARCH(p,q)

#### GARCH(1,0)

Dependent Variable: DLOG(JKSE)

Method: ML - ARCH (Marquardt) - Normal distribution

Included observations: 3566 after adjustments

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001100	0.000274	4.017561	0.0001
Variance Equation				
C	0.000205	3.35E-06	61.13957	0.0000
RESID(-1)^2	0.423915	0.019894	21.30906	0.0000
R-squared	-0.001223	Mean dependent var		0.000475
Adjusted R-squared	-0.001223	S.D. dependent var		0.017860
S.E. of regression	0.017871	Akaike info criterion		-5.330757
Sum squared resid	1.138603	Schwarz criterion		-5.325559
Log likelihood	9507.741	Hannan-Quinn criter.		-5.328904
Durbin-Watson stat	1.708239			

#### GARCH(1,1)

Dependent Variable: DLOG(JKSE)

Method: ML - ARCH (Marquardt) - Normal distribution

Included observations: 3566 after adjustments

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001181	0.000235	5.016941	0.0000
Variance Equation				
C	9.00E-06	8.42E-07	10.68980	0.0000
RESID(-1)^2	0.137180	0.007992	17.16401	0.0000
GARCH(-1)	0.840996	0.007499	112.1410	0.0000
R-squared	-0.001562	Mean dependent var		0.000475
Adjusted R-squared	-0.001562	S.D. dependent var		0.017860
S.E. of regression	0.017874	Akaike info criterion		-5.505214
Sum squared resid	1.138989	Schwarz criterion		-5.498282
Log likelihood	9819.796	Hannan-Quinn criter.		-5.502742
Durbin-Watson stat	1.707661			

## GARCH(1,2)

Dependent Variable: DLOG(JKSE)  
 Method: ML - ARCH (Marquardt) - Normal distribution  
 Included observations: 3566 after adjustments

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001218	0.000239	5.100662	0.0000
Variance Equation				
C	1.15E-05	1.16E-06	9.933514	0.0000
RESID(-1)^2	0.181413	0.012261	14.79546	0.0000
GARCH(-1)	0.425984	0.070754	6.020600	0.0000
GARCH(-2)	0.364933	0.063263	5.768482	0.0000
R-squared	-0.001729	Mean dependent var		0.000475
Adjusted R-squared	-0.001729	S.D. dependent var		0.017860
S.E. of regression	0.017876	Akaike info criterion		-5.507454
Sum squared resid	1.139179	Schwarz criterion		-5.498790
Log likelihood	9824.791	Hannan-Quinn criter.		-5.504365
Durbin-Watson stat	1.707376			

## GARCH(2,0)

Dependent Variable: DLOG(JKSE)  
 Method: ML - ARCH (Marquardt) - Normal distribution  
 Included observations: 3566 after adjustments

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001172	0.000236	4.973969	0.0000
Variance Equation				
C	0.000153	3.77E-06	40.61930	0.0000
RESID(-1)^2	0.393740	0.019554	20.13622	0.0000
RESID(-2)^2	0.223903	0.015294	14.63955	0.0000
R-squared	-0.001522	Mean dependent var		0.000475
Adjusted R-squared	-0.001522	S.D. dependent var		0.017860
S.E. of regression	0.017874	Akaike info criterion		-5.386748
Sum squared resid	1.138943	Schwarz criterion		-5.379817
Log likelihood	9608.572	Hannan-Quinn criter.		-5.384277
Durbin-Watson stat	1.707729			

## GARCH(2,1)

Dependent Variable: DLOG(JKSE)  
 Method: ML - ARCH (Marquardt) - Normal distribution  
 Convergence achieved after 20 iterations

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001247	0.000241	5.171446	0.0000
Variance Equation				
C	6.47E-06	7.31E-07	8.856186	0.0000
RESID(-1)^2	0.224045	0.019082	11.74097	0.0000
RESID(-2)^2	-0.116654	0.020175	-5.782088	0.0000
GARCH(-1)	0.877318	0.007941	110.4727	0.0000
R-squared	-0.001869	Mean dependent var		0.000475
Adjusted R-squared	-0.001869	S.D. dependent var		0.017860
S.E. of regression	0.017877	Akaike info criterion		-5.509584
Sum squared resid	1.139338	Schwarz criterion		-5.500920
Log likelihood	9828.589	Hannan-Quinn criter.		-5.506495
Durbin-Watson stat	1.707138			

## GARCH(2,2)

Dependent Variable: DLOG(JKSE)  
 Method: ML - ARCH (Marquardt) - Normal distribution  
 Included observations: 3566 after adjustments

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.001263	0.000240	5.255591	0.0000
Variance Equation				
C	2.26E-06	4.63E-07	4.891211	0.0000
RESID(-1)^2	0.229013	0.019222	11.91425	0.0000
RESID(-2)^2	-0.189757	0.017082	-11.10888	0.0000
GARCH(-1)	1.386425	0.066559	20.83017	0.0000
GARCH(-2)	-0.431047	0.059693	-7.221104	0.0000
R-squared	-0.001946	Mean dependent var		0.000475
Adjusted R-squared	-0.001946	S.D. dependent var		0.017860
S.E. of regression	0.017878	Akaike info criterion		-5.512817
Sum squared resid	1.139426	Schwarz criterion		-5.502420
Log likelihood	9835.353	Hannan-Quinn criter.		-5.509110
Durbin-Watson stat	1.707006			



### Appendix 4: Autocorrelogram Test or

### Correlogram of $Q$ -Standardized Residual GARCH(p,q)

GARCH(1,0)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.121	0.121	52.508	0.000
		2	0.034	0.020	56.750	0.000
		3	0.006	-0.001	56.870	0.000
		4	-0.008	-0.010	57.123	0.000
		5	-0.024	-0.022	59.124	0.000
		6	-0.015	-0.009	59.910	0.000
		7	-0.009	-0.005	60.217	0.000
		8	-0.016	-0.013	61.079	0.000
		9	0.013	0.017	61.696	0.000
		10	0.032	0.029	65.256	0.000
		11	0.049	0.041	73.692	0.000
		12	0.032	0.020	77.390	0.000
		13	0.065	0.057	92.452	0.000
		14	0.039	0.024	97.848	0.000
		15	0.004	-0.005	97.893	0.000
		16	0.030	0.032	101.13	0.000
		17	0.033	0.030	104.96	0.000
		18	0.002	-0.002	104.98	0.000
		19	-0.008	-0.007	105.23	0.000
		20	0.022	0.025	107.03	0.000
		21	-0.007	-0.011	107.18	0.000
		22	0.013	0.012	107.79	0.000
		23	-0.003	-0.011	107.82	0.000
		24	0.024	0.020	109.92	0.000
		25	0.034	0.026	114.10	0.000
		26	-0.013	-0.028	114.71	0.000
		27	0.015	0.011	115.50	0.000
		28	0.012	0.007	116.03	0.000
		29	0.005	-0.001	116.14	0.000
		30	-0.020	-0.026	117.60	0.000
		31	0.030	0.032	120.74	0.000
		32	0.015	0.011	121.59	0.000
		33	-0.043	-0.053	128.27	0.000
		34	-0.007	-0.001	128.46	0.000
		35	-0.007	-0.007	128.67	0.000
		36	-0.023	-0.024	130.59	0.000

GARCH(1,1)

			1	0.140	0.140	70.372	0.000
			2	0.030	0.010	73.525	0.000
			3	0.025	0.019	75.682	0.000
			4	0.012	0.006	76.209	0.000
			5	-0.009	-0.013	76.515	0.000
			6	-0.008	-0.006	76.749	0.000
			7	-0.004	-0.002	76.813	0.000
			8	-0.006	-0.004	76.934	0.000
			9	0.021	0.023	78.486	0.000
			10	0.032	0.027	82.148	0.000
			11	0.039	0.031	87.489	0.000
			12	0.016	0.005	88.420	0.000
			13	0.036	0.031	93.072	0.000
			14	0.037	0.026	97.902	0.000
			15	0.014	0.004	98.622	0.000
			16	0.021	0.017	100.15	0.000
			17	0.049	0.044	108.91	0.000
			18	0.014	0.001	109.60	0.000
			19	-0.000	-0.004	109.60	0.000
			20	0.026	0.024	112.07	0.000
			21	-0.004	-0.013	112.13	0.000
			22	0.001	0.002	112.13	0.000
			23	-0.022	-0.026	113.86	0.000
			24	0.004	0.007	113.93	0.000
			25	0.017	0.015	114.99	0.000
			26	-0.021	-0.030	116.65	0.000
			27	0.009	0.011	116.95	0.000
			28	0.017	0.009	117.95	0.000
			29	0.017	0.011	119.04	0.000
			30	-0.009	-0.018	119.36	0.000
			31	0.036	0.035	124.13	0.000
			32	0.011	0.001	124.53	0.000
			33	-0.039	-0.044	130.10	0.000
			34	0.000	0.008	130.10	0.000
			35	0.005	0.004	130.18	0.000
			36	-0.018	-0.017	131.35	0.000

GARCH(1,2)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.137	0.137	66.561	0.000
		2	0.030	0.012	69.819	0.000
		3	0.024	0.019	71.900	0.000
		4	0.012	0.006	72.385	0.000
		5	-0.009	-0.013	72.687	0.000
		6	-0.007	-0.005	72.857	0.000
		7	-0.003	-0.002	72.900	0.000
		8	-0.007	-0.006	73.097	0.000
		9	0.020	0.023	74.514	0.000
		10	0.032	0.027	78.071	0.000
		11	0.039	0.031	83.467	0.000
		12	0.016	0.005	84.358	0.000
		13	0.036	0.031	88.904	0.000
		14	0.036	0.026	93.577	0.000
		15	0.015	0.005	94.338	0.000
		16	0.019	0.015	95.575	0.000
		17	0.049	0.045	104.24	0.000
		18	0.014	0.001	104.90	0.000
		19	-0.000	-0.004	104.90	0.000
		20	0.025	0.023	107.21	0.000
		21	-0.003	-0.012	107.25	0.000
		22	0.001	0.002	107.25	0.000
		23	-0.022	-0.026	109.00	0.000
		24	0.005	0.007	109.08	0.000
		25	0.017	0.015	110.17	0.000
		26	-0.022	-0.031	111.98	0.000
		27	0.009	0.011	112.30	0.000
		28	0.016	0.009	113.24	0.000
		29	0.016	0.010	114.17	0.000
		30	-0.010	-0.019	114.57	0.000
		31	0.037	0.035	119.38	0.000
		32	0.011	0.002	119.83	0.000
		33	-0.040	-0.045	125.65	0.000
		34	-0.000	0.007	125.65	0.000
		35	0.004	0.004	125.72	0.000
		36	-0.017	-0.015	126.74	0.000

GARCH(2,0)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.130	0.130	60.134	0.000
		2	0.030	0.013	63.331	0.000
		3	0.016	0.010	64.204	0.000
		4	-0.006	-0.009	64.316	0.000
		5	-0.027	-0.026	66.851	0.000
		6	-0.024	-0.018	68.989	0.000
		7	-0.011	-0.004	69.402	0.000
		8	-0.011	-0.007	69.798	0.000
		9	0.025	0.028	71.965	0.000
		10	0.035	0.028	76.236	0.000
		11	0.047	0.038	84.043	0.000
		12	0.034	0.021	88.123	0.000
		13	0.060	0.052	101.11	0.000
		14	0.033	0.018	104.91	0.000
		15	0.006	-0.000	105.05	0.000
		16	0.028	0.030	107.94	0.000
		17	0.035	0.033	112.41	0.000
		18	0.001	-0.004	112.41	0.000
		19	-0.015	-0.013	113.18	0.000
		20	0.018	0.021	114.38	0.000
		21	-0.006	-0.011	114.52	0.000
		22	0.005	0.004	114.60	0.000
		23	-0.002	-0.008	114.61	0.000
		24	0.016	0.012	115.56	0.000
		25	0.025	0.017	117.81	0.000
		26	-0.012	-0.025	118.35	0.000
		27	0.019	0.016	119.68	0.000
		28	0.014	0.007	120.38	0.000
		29	0.010	0.004	120.78	0.000
		30	-0.016	-0.022	121.72	0.000
		31	0.030	0.033	124.95	0.000
		32	0.010	0.004	125.28	0.000
		33	-0.036	-0.042	129.90	0.000
		34	0.001	0.007	129.90	0.000
		35	-0.009	-0.009	130.20	0.000
		36	-0.028	-0.027	133.02	0.000

GARCH(2,1)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.134	0.134	63.817	0.000
		2	0.029	0.011	66.787	0.000
		3	0.025	0.020	69.010	0.000
		4	0.011	0.004	69.404	0.000
		5	-0.009	-0.012	69.702	0.000
		6	-0.007	-0.005	69.855	0.000
		7	-0.002	-0.000	69.866	0.000
		8	-0.009	-0.008	70.140	0.000
		9	0.020	0.023	71.559	0.000
		10	0.032	0.027	75.277	0.000
		11	0.039	0.031	80.732	0.000
		12	0.017	0.006	81.728	0.000
		13	0.036	0.030	86.262	0.000
		14	0.034	0.024	90.512	0.000
		15	0.014	0.006	91.242	0.000
		16	0.018	0.015	92.442	0.000
		17	0.048	0.044	100.81	0.000
		18	0.013	0.001	101.42	0.000
		19	-0.001	-0.005	101.42	0.000
		20	0.023	0.021	103.33	0.000
		21	-0.002	-0.010	103.35	0.000
		22	0.002	0.002	103.36	0.000
		23	-0.022	-0.026	105.09	0.000
		24	0.006	0.008	105.21	0.000
		25	0.017	0.015	106.29	0.000
		26	-0.023	-0.031	108.16	0.000
		27	0.009	0.010	108.47	0.000
		28	0.016	0.009	109.37	0.000
		29	0.015	0.009	110.19	0.000
		30	-0.012	-0.020	110.70	0.000
		31	0.036	0.034	115.24	0.000
		32	0.010	0.001	115.63	0.000
		33	-0.040	-0.044	121.35	0.000
		34	0.001	0.008	121.35	0.000
		35	0.004	0.003	121.40	0.000
		36	-0.016	-0.014	122.29	0.000

GARCH(2,2)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.137	0.137	66.919	0.000
		2	0.028	0.010	69.816	0.000
		3	0.025	0.021	72.120	0.000
		4	0.009	0.002	72.391	0.000
		5	-0.010	-0.013	72.759	0.000
		6	-0.008	-0.006	72.989	0.000
		7	-0.002	-0.000	73.005	0.000
		8	-0.010	-0.009	73.331	0.000
		9	0.021	0.025	74.940	0.000
		10	0.033	0.027	78.784	0.000
		11	0.040	0.032	84.488	0.000
		12	0.019	0.007	85.734	0.000
		13	0.037	0.031	90.675	0.000
		14	0.035	0.024	95.063	0.000
		15	0.013	0.004	95.703	0.000
		16	0.019	0.016	97.006	0.000
		17	0.048	0.043	105.11	0.000
		18	0.012	0.000	105.65	0.000
		19	-0.002	-0.005	105.66	0.000
		20	0.022	0.020	107.39	0.000
		21	-0.001	-0.008	107.39	0.000
		22	0.002	0.002	107.41	0.000
		23	-0.022	-0.026	109.12	0.000
		24	0.007	0.009	109.28	0.000
		25	0.020	0.017	110.74	0.000
		26	-0.021	-0.031	112.38	0.000
		27	0.009	0.010	112.67	0.000
		28	0.016	0.009	113.57	0.000
		29	0.015	0.009	114.38	0.000
		30	-0.012	-0.020	114.87	0.000
		31	0.034	0.033	119.15	0.000
		32	0.009	0.000	119.44	0.000
		33	-0.037	-0.040	124.25	0.000
		34	0.004	0.010	124.29	0.000
		35	0.003	0.002	124.33	0.000
		36	-0.016	-0.015	125.29	0.000

**Appendix 5: Homoskedasticity Test on GARCH( $p,q$ ) Models or  
Correlogram of Standardized Residual Squared on GARCH( $p,q$ ) Models**

GARCH(1,0)

	Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1	-0.024	-0.024	2.1251	0.145		
2	0.109	0.108	44.186	0.000		
3	0.132	0.139	106.51	0.000		
4	0.044	0.041	113.38	0.000		
5	0.076	0.051	134.04	0.000		
6	0.048	0.027	142.37	0.000		
7	0.107	0.088	183.05	0.000		
8	0.036	0.019	187.60	0.000		
9	0.064	0.034	202.23	0.000		
10	0.065	0.035	217.38	0.000		
11	0.053	0.032	227.39	0.000		
12	0.080	0.051	250.37	0.000		
13	0.067	0.043	266.30	0.000		
14	0.033	-0.001	270.31	0.000		
15	0.113	0.079	316.12	0.000		
16	0.080	0.059	338.95	0.000		
17	0.096	0.066	371.69	0.000		
18	0.006	-0.041	371.81	0.000		
19	0.049	-0.006	380.50	0.000		
20	0.056	0.017	391.76	0.000		
21	0.013	-0.009	392.34	0.000		
22	0.043	-0.004	398.84	0.000		
23	0.068	0.038	415.60	0.000		
24	0.019	-0.009	416.97	0.000		
25	0.066	0.035	432.44	0.000		
26	0.005	-0.029	432.53	0.000		
27	0.074	0.037	452.32	0.000		
28	0.034	0.006	456.54	0.000		
29	0.023	-0.005	458.48	0.000		
30	0.052	0.009	468.14	0.000		
31	0.035	0.014	472.66	0.000		
32	0.026	-0.017	475.04	0.000		
33	0.037	0.014	479.97	0.000		
34	0.048	0.022	488.21	0.000		
35	0.025	0.006	490.50	0.000		
36	0.057	0.030	502.09	0.000		

GARCH(1,1)

	Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1	0.013	0.013	0.6194	0.431		
2	0.010	0.010	0.9921	0.609		
3	0.010	0.010	1.3799	0.710		
4	-0.020	-0.020	2.7840	0.595		
5	0.001	0.002	2.7896	0.732		
6	-0.025	-0.025	5.1110	0.530		
7	-0.015	-0.014	5.9008	0.551		
8	-0.005	-0.005	5.9947	0.648		
9	-0.019	-0.018	7.2284	0.613		
10	-0.015	-0.015	8.0234	0.627		
11	-0.013	-0.012	8.6079	0.858		
12	-0.007	-0.007	8.7888	0.721		
13	0.001	-0.000	8.7898	0.789		
14	-0.008	-0.009	9.0167	0.830		
15	0.035	0.034	13.412	0.571		
16	0.012	0.010	13.938	0.603		
17	0.027	0.025	16.549	0.485		
18	-0.018	-0.021	17.651	0.479		
19	-0.007	-0.007	17.829	0.534		
20	0.019	0.018	19.084	0.516		
21	-0.007	-0.005	19.249	0.569		
22	-0.023	-0.023	21.140	0.512		
23	-0.002	-0.000	21.149	0.572		
24	-0.032	-0.030	24.821	0.416		
25	-0.001	0.001	24.824	0.472		
26	-0.017	-0.015	25.829	0.473		
27	-0.001	0.001	25.832	0.528		
28	0.004	0.002	25.889	0.579		
29	0.034	0.035	29.994	0.414		
30	0.009	0.005	30.282	0.451		
31	0.010	0.008	30.643	0.484		
32	0.001	-0.004	30.644	0.535		
33	-0.002	-0.002	30.653	0.584		
34	0.027	0.027	33.286	0.502		
35	0.002	0.002	33.299	0.550		
36	0.021	0.021	34.907	0.520		



GARCH(1,2)

	Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1	-0.003	-0.003	0.0226	0.881		
2	0.027	0.027	2.7015	0.259		
3	0.010	0.010	3.0441	0.385		
4	-0.018	-0.018	4.1733	0.383		
5	0.002	0.001	4.1826	0.523		
6	-0.025	-0.024	6.3974	0.380		
7	-0.013	-0.012	6.9614	0.433		
8	-0.006	-0.005	7.0890	0.527		
9	-0.016	-0.014	7.9573	0.538		
10	-0.014	-0.015	8.6937	0.561		
11	-0.013	-0.013	9.3172	0.593		
12	-0.007	-0.007	9.5182	0.658		
13	-0.001	-0.001	9.5201	0.733		
14	-0.011	-0.011	9.9199	0.768		
15	0.035	0.034	14.262	0.506		
16	0.010	0.010	14.635	0.552		
17	0.026	0.024	17.143	0.445		
18	-0.019	-0.022	18.467	0.425		
19	-0.007	-0.008	18.626	0.481		
20	0.018	0.018	19.768	0.473		
21	-0.008	-0.005	19.991	0.522		
22	-0.025	-0.026	22.170	0.450		
23	0.000	0.001	22.170	0.510		
24	-0.032	-0.030	25.946	0.356		
25	0.001	0.002	25.951	0.410		
26	-0.018	-0.015	27.102	0.404		
27	-0.001	0.001	27.105	0.458		
28	0.002	0.000	27.119	0.512		
29	0.032	0.033	30.861	0.372		
30	0.006	0.003	30.978	0.416		
31	0.009	0.006	31.254	0.453		
32	-0.001	-0.005	31.255	0.504		
33	-0.003	-0.003	31.284	0.553		
34	0.025	0.025	33.594	0.487		
35	0.001	0.002	33.598	0.536		
36	0.023	0.021	35.503	0.492		

GARCH(2,0)

	Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1	-0.027	-0.027	2.6324	0.105		
2	-0.016	-0.017	3.5839	0.167		
3	0.098	0.097	38.074	0.000		
4	0.037	0.042	42.858	0.000		
5	0.073	0.079	61.737	0.000		
6	0.026	0.022	64.084	0.000		
7	0.114	0.113	110.93	0.000		
8	0.039	0.033	116.48	0.000		
9	0.037	0.036	121.47	0.000		
10	0.042	0.019	127.88	0.000		
11	0.037	0.024	132.65	0.000		
12	0.082	0.061	156.55	0.000		
13	0.055	0.046	167.25	0.000		
14	0.020	0.002	168.64	0.000		
15	0.099	0.078	203.68	0.000		
16	0.058	0.042	215.85	0.000		
17	0.073	0.063	234.85	0.000		
18	0.010	-0.014	235.24	0.000		
19	0.048	0.019	243.38	0.000		
20	0.044	0.005	250.32	0.000		
21	0.010	-0.008	250.68	0.000		
22	0.055	0.016	261.48	0.000		
23	0.044	0.020	268.58	0.000		
24	0.010	-0.020	268.93	0.000		
25	0.031	0.007	272.42	0.000		
26	0.007	-0.021	272.61	0.000		
27	0.038	0.011	277.87	0.000		
28	0.014	-0.014	278.59	0.000		
29	0.024	0.002	280.61	0.000		
30	0.051	0.022	289.91	0.000		
31	0.040	0.029	295.63	0.000		
32	0.015	-0.010	296.42	0.000		
33	0.020	0.006	297.81	0.000		
34	0.044	0.017	304.63	0.000		
35	0.016	0.001	305.61	0.000		
36	0.044	0.029	312.45	0.000		

GARCH(2,1)

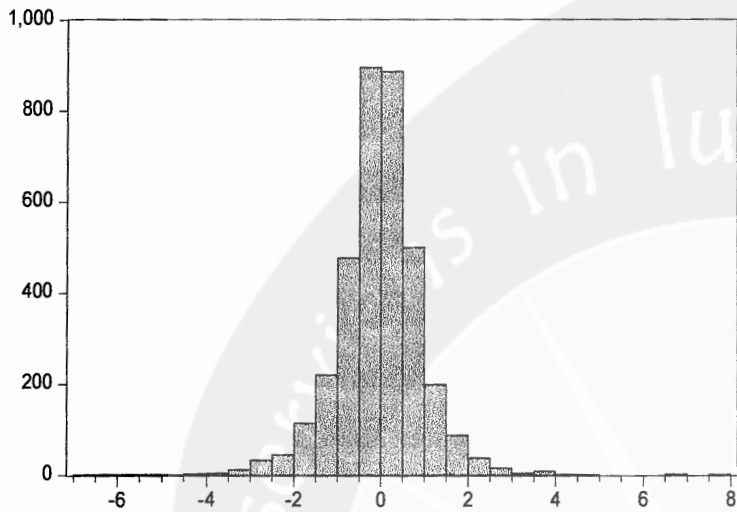
Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
		1 -0.015	-0.015	0.7518	0.386
		2 0.023	0.022	2.5892	0.274
		3 0.022	0.023	4.3345	0.228
		4 -0.016	-0.016	5.2564	0.262
		5 0.008	0.007	5.4975	0.358
		6 -0.022	-0.022	7.2958	0.294
		7 -0.006	-0.006	7.4210	0.386
		8 -0.003	-0.003	7.4536	0.489
		9 -0.012	-0.011	7.9665	0.538
		10 -0.011	-0.012	8.3983	0.590
		11 -0.011	-0.011	8.8566	0.635
		12 -0.005	-0.005	8.9462	0.708
		13 -0.001	-0.001	8.9497	0.777
		14 -0.013	-0.013	9.5389	0.795
		15 0.033	0.032	13.353	0.575
		16 0.007	0.008	13.548	0.632
		17 0.025	0.024	15.835	0.536
		18 -0.020	-0.022	17.250	0.506
		19 -0.006	-0.007	17.363	0.565
		20 0.019	0.017	18.628	0.546
		21 -0.011	-0.008	19.057	0.581
		22 -0.025	-0.027	21.312	0.502
		23 0.000	0.000	21.313	0.562
		24 -0.033	-0.031	25.145	0.398
		25 0.001	0.001	25.153	0.454
		26 -0.019	-0.017	26.454	0.438
		27 -0.002	-0.000	26.469	0.493
		28 0.000	-0.002	26.469	0.547
		29 0.030	0.032	29.664	0.431
		30 0.002	-0.000	29.673	0.482
		31 0.005	0.004	29.778	0.529
		32 -0.002	-0.007	29.789	0.579
		33 -0.006	-0.006	29.909	0.622
		34 0.023	0.022	31.790	0.576
		35 -0.000	0.001	31.791	0.624
		36 0.022	0.020	33.536	0.586

GARCH(2,2)

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	-0.015	-0.015	0.8534	0.356
		2	-0.001	-0.002	0.8594	0.651
		3	0.015	0.015	1.6293	0.653
		4	-0.017	-0.016	2.6287	0.622
		5	0.013	0.012	3.2098	0.668
		6	-0.017	-0.017	4.2844	0.638
		7	0.008	0.008	4.5073	0.720
		8	0.004	0.004	4.5722	0.802
		9	-0.007	-0.006	4.7692	0.854
		10	-0.004	-0.005	4.8294	0.902
		11	-0.005	-0.004	4.9022	0.936
		12	0.001	0.001	4.9046	0.961
		13	0.005	0.006	5.0092	0.975
		14	-0.011	-0.010	5.4192	0.979
		15	0.037	0.036	10.216	0.806
		16	0.010	0.011	10.600	0.833
		17	0.027	0.028	13.214	0.722
		18	-0.015	-0.016	14.043	0.726
		19	-0.004	-0.004	14.114	0.777
		20	0.022	0.020	15.833	0.727
		21	-0.011	-0.008	16.259	0.755
		22	-0.023	-0.024	18.115	0.699
		23	0.002	0.002	18.134	0.750
		24	-0.031	-0.031	21.620	0.602
		25	0.001	0.000	21.624	0.657
		26	-0.020	-0.019	23.049	0.630
		27	-0.001	-0.000	23.050	0.682
		28	-0.001	-0.003	23.051	0.730
		29	0.030	0.033	26.260	0.612
		30	0.002	0.000	26.280	0.661
		31	0.002	0.004	26.302	0.707
		32	-0.006	-0.011	26.454	0.743
		33	-0.011	-0.010	26.858	0.766
		34	0.019	0.019	28.219	0.746
		35	0.000	0.001	28.220	0.785
		36	0.018	0.017	29.358	0.775

**Appendix 6: Normality Test or  
Histogram-Normality Test GARCH(p,q)**

**GARCH(1,0)**

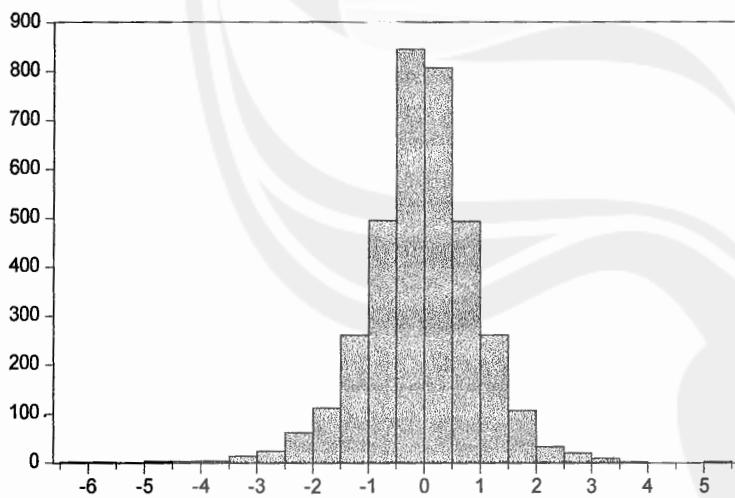


Series: Standardized Residuals  
Sample 7/02/1997 3/02/2011  
Observations 3566

Mean -0.040611  
Median -0.013961  
Maximum 7.942644  
Minimum -6.960674  
Std. Dev. 0.999353  
Skewness -0.193725  
Kurtosis 9.326522

Jarque-Bera 5969.335  
Probability 0.000000

**GARCH(1,1)**

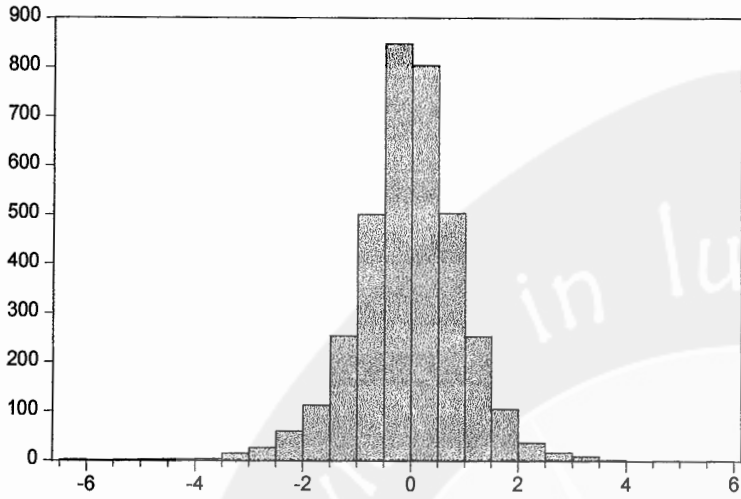


Series: Standardized Residuals  
Sample 7/02/1997 3/02/2011  
Observations 3566

Mean -0.045954  
Median -0.019303  
Maximum 5.257274  
Minimum -6.120630  
Std. Dev. 0.998943  
Skewness -0.421398  
Kurtosis 6.001051

Jarque-Bera 1443.727  
Probability 0.000000

## GARCH(1,2)

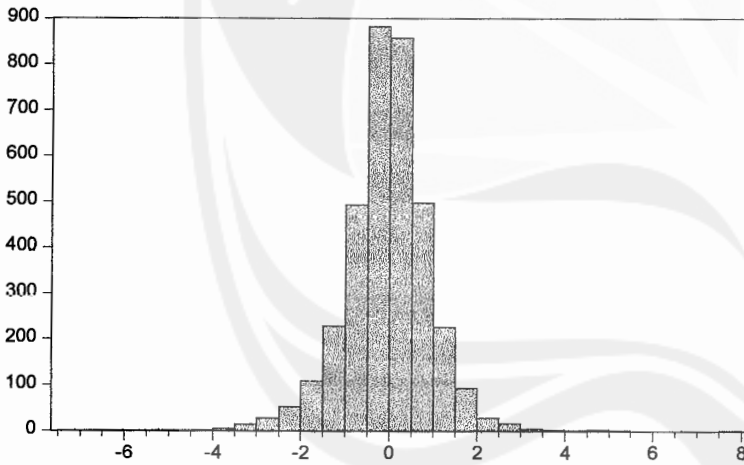


Series: Standardized Residuals  
 Sample 7/02/1997 3/02/2011  
 Observations 3566

Mean -0.048003  
 Median -0.021540  
 Maximum 5.615291  
 Minimum -6.048383  
 Std. Dev. 0.998851  
 Skewness -0.400636  
 Kurtosis 5.964623

Jarque-Bera 1401.294  
 Probability 0.000000

## GARCH(2,0)

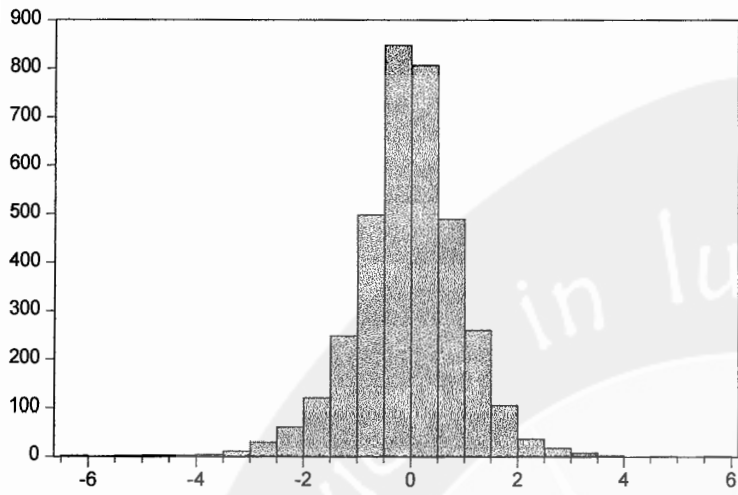


Series: Standardized Residuals  
 Sample 7/02/1997 3/02/2011  
 Observations 3566

Mean -0.049746  
 Median -0.017943  
 Maximum 7.547329  
 Minimum -7.102841  
 Std. Dev. 0.998901  
 Skewness -0.358309  
 Kurtosis 8.268210

Jarque-Bera 4200.091  
 Probability 0.000000

## GARCH(2,1)

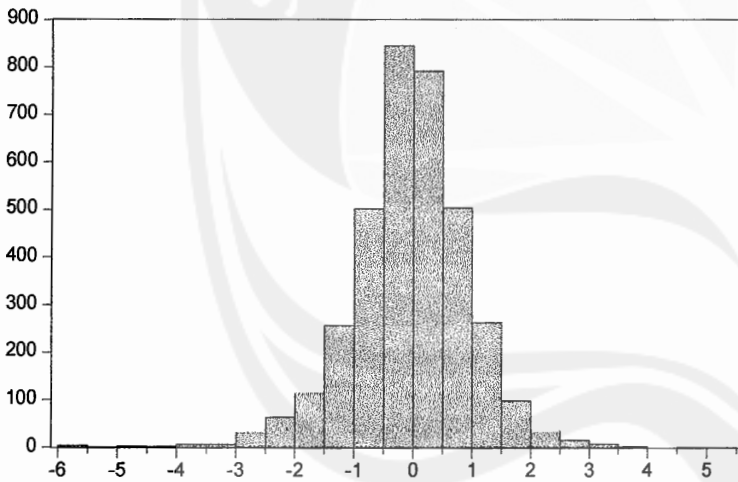


Series: Standardized Residuals  
 Sample 7/02/1997 3/02/2011  
 Observations 3566

Mean -0.050304  
 Median -0.023570  
 Maximum 5.638451  
 Minimum -6.111472  
 Std. Dev. 0.998731  
 Skewness -0.404773  
 Kurtosis 5.933511

Jarque-Bera 1376.008  
 Probability 0.000000

## GARCH(2,2)



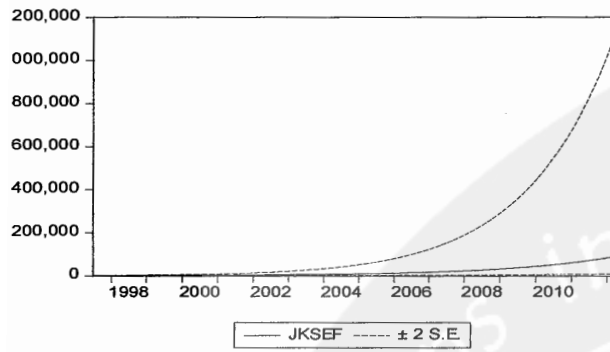
Series: Standardized Residuals  
 Sample 7/02/1997 3/02/2011  
 Observations 3566

Mean -0.051916  
 Median -0.024839  
 Maximum 5.196188  
 Minimum -5.938597  
 Std. Dev. 0.998749  
 Skewness -0.419984  
 Kurtosis 5.846551

Jarque-Bera 1308.781  
 Probability 0.000000

### Appendix 8: Forecast on GARCH( $p,q$ )

#### GARCH(2,1)



Forecast: JKSEF  
 Actual: JKSE  
 Forecast sample: 7/01/1997 2/29/2012  
 Adjusted sample: 7/02/1997 2/29/2012  
 Included observations: 3566  
 Root Mean Squared Error 19289.30  
 Mean Absolute Error 12522.01  
 Mean Abs. Percent Error 692.3264  
 Theil Inequality Coefficient 0.848417  
 Bias Proportion 0.421420  
 Variance Proportion 0.573934  
 Covariance Proportion 0.004647

