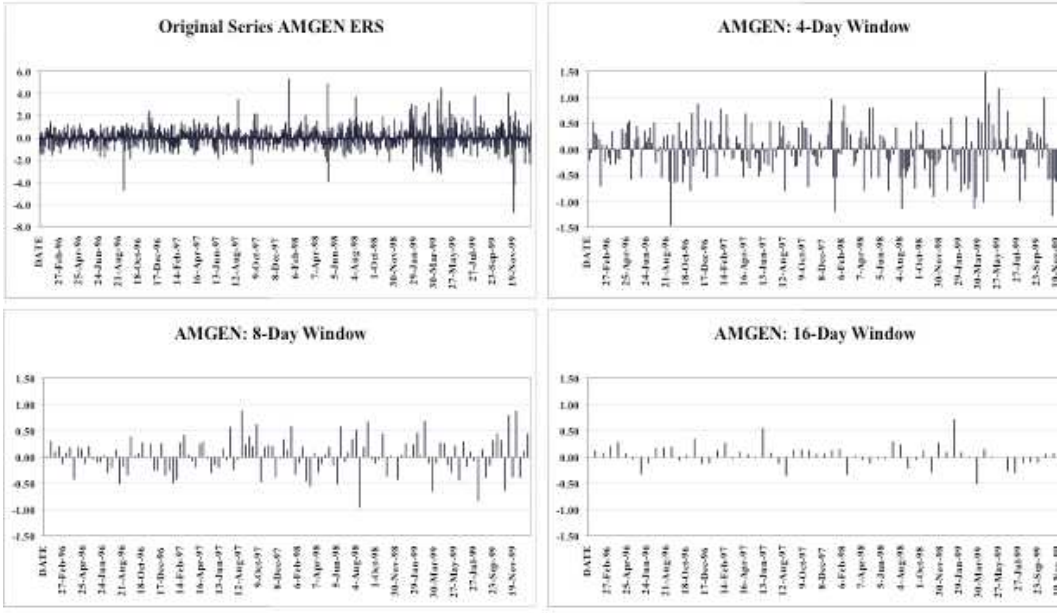
tests following the model for cumulative abnormal returns in Campbell, Lo and MacKinlay (1997) may be constructed based on the size of the wavelets window chosen.

Figure 5. Wavelets Filter Applied to Amgen Returns



The last panel in Figure 5 shows the events that correspond to the spikes in twice-filtered returns. These descriptions of events were culled from the financial press after the significant event periods were determined from the filtering process.

The charts in the Appendix show the original returns after filtering by the 4-State Model, and the first three down-sampling operations, corresponding to windows of two, four, and eight days. There are nine additional companies that are analyzed by the dual filter process. We have not varied the start dates to search for more dominant windows, although this could readily be done. For each of the nine companies, the appendix charts show the effects of concentrating the returns information by successive down samples into lower frequency movements, which substantially improve the definition of short term trends. The removal of market-related effects at the outset, by applying the 4-State filter, increases the focus of the results on company-specific movements.

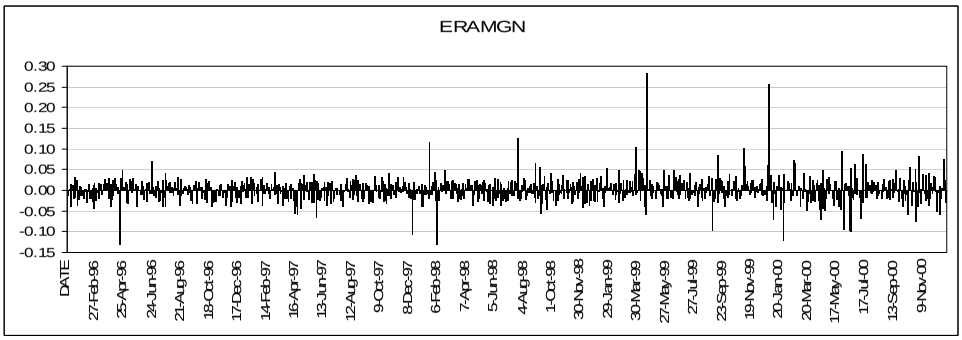
While the conventional wavelet down sampling pattern proceeds by powers of two, and thus omits windows of intermediate sizes, the decomposition may be modified to look at windows of all sizes, e.g., 2,3,4,5,6,7,8… trading days rather than 2,4,8… This modification increases the scope of the wavelets transform and thus its data analysis potential.

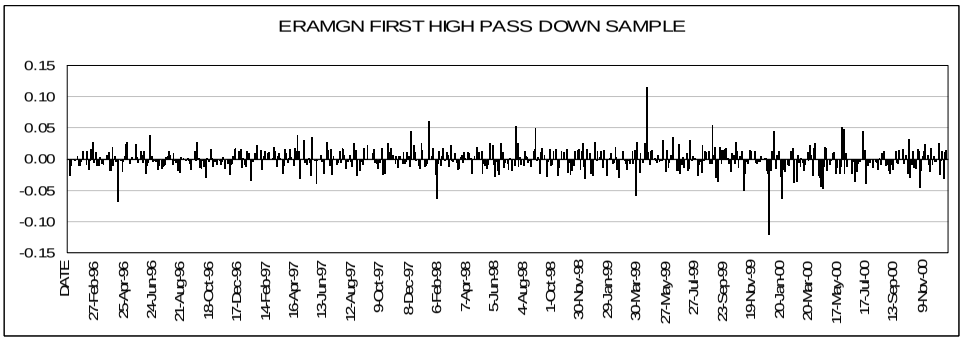
CONCLUSION

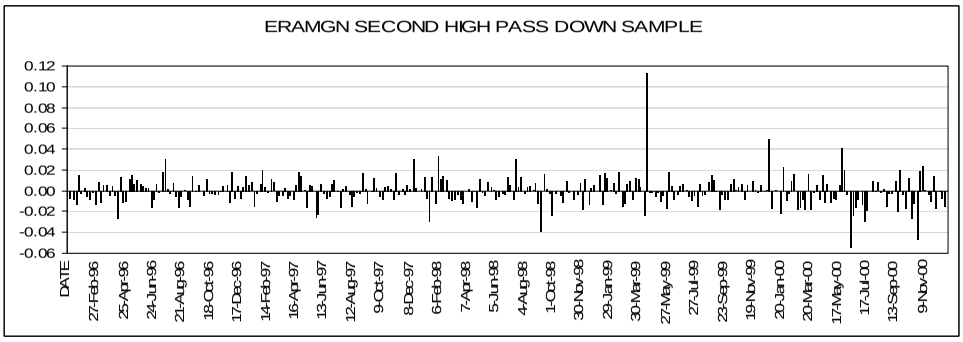
The demonstrations here show that the inverted event study approach, based on financial and wavelets filters, has potential as a data analysis tool for identifying significant financial events. Moreover, it represents an ideal fusion of finance and signal processing techniques that carries analysis well beyond the present scopes of either science. Finally, the approach has potential as a tool for identifying investment opportunities in small domestic and foreign companies that are publicly traded.

APPENDIX

Chart 1: Wavelet Filter Bank Decomposition of AMGN







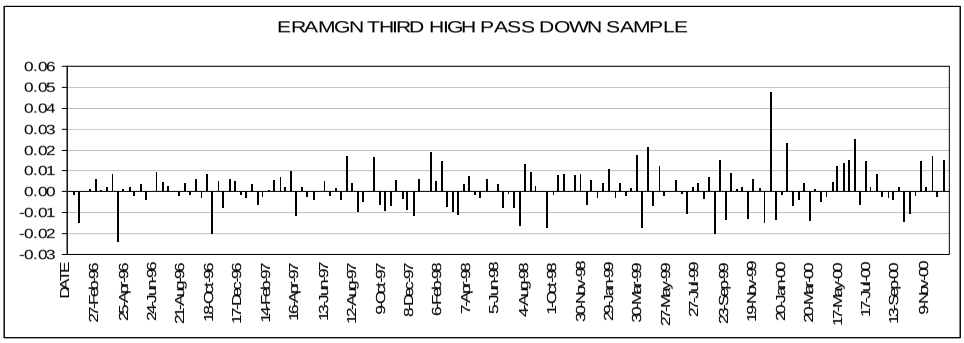


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Chart 2: Wavelet Filter Bank Decomposition of GENZ

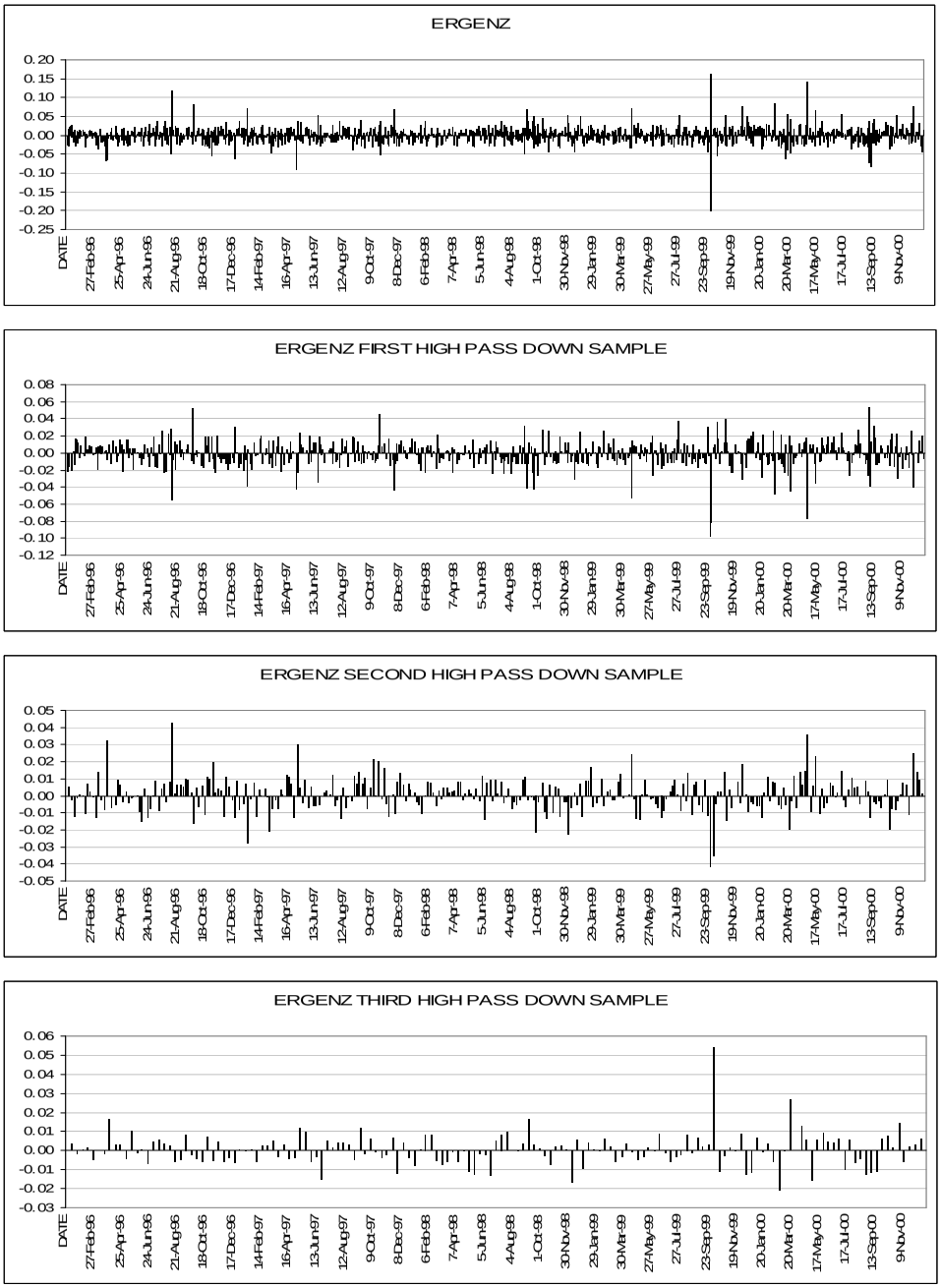

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Chart 3: Wavelet Filter Bank Decomposition of ONCS

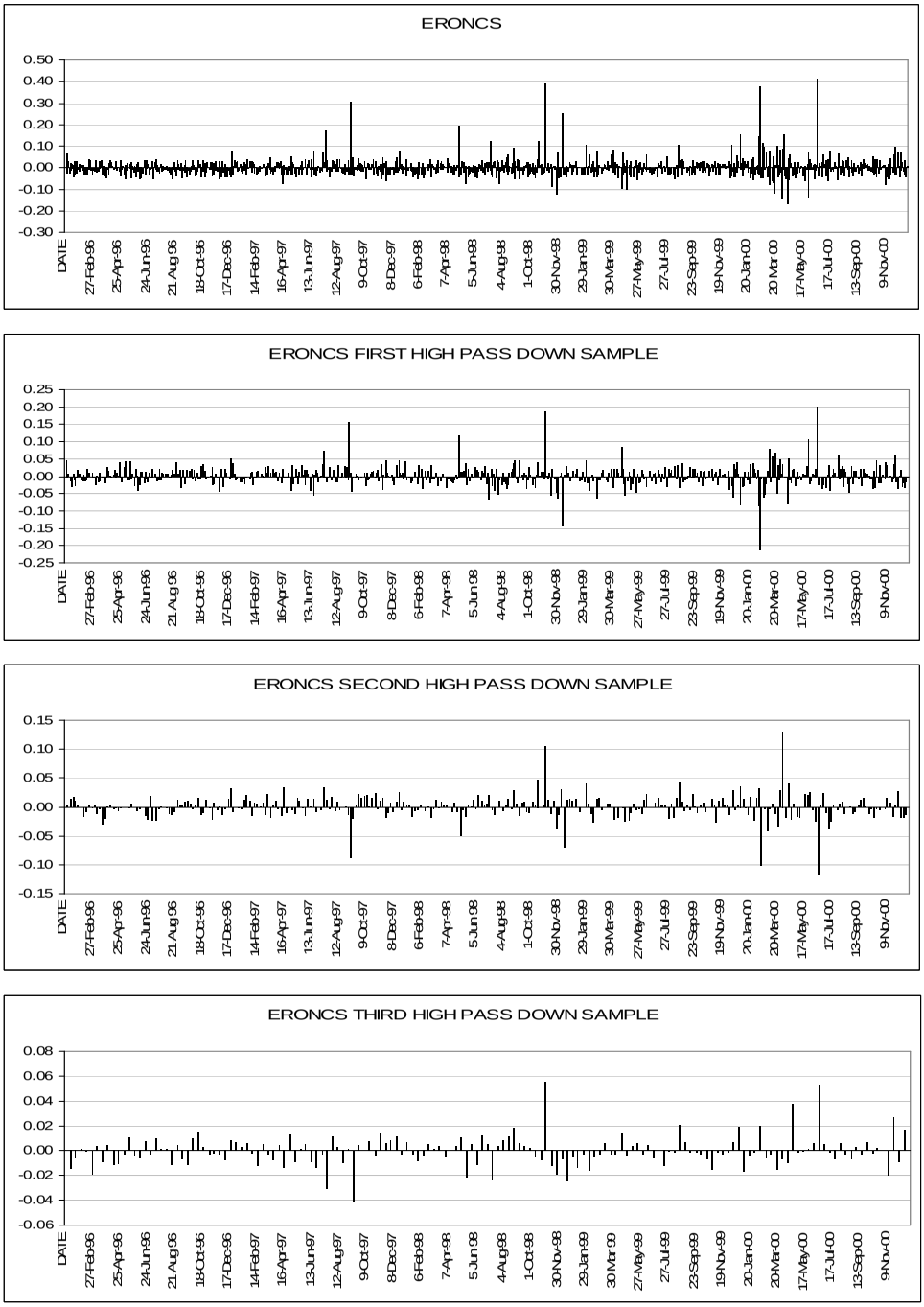

Chart 4: Wavelet Filter Bank Decomposition of AMD

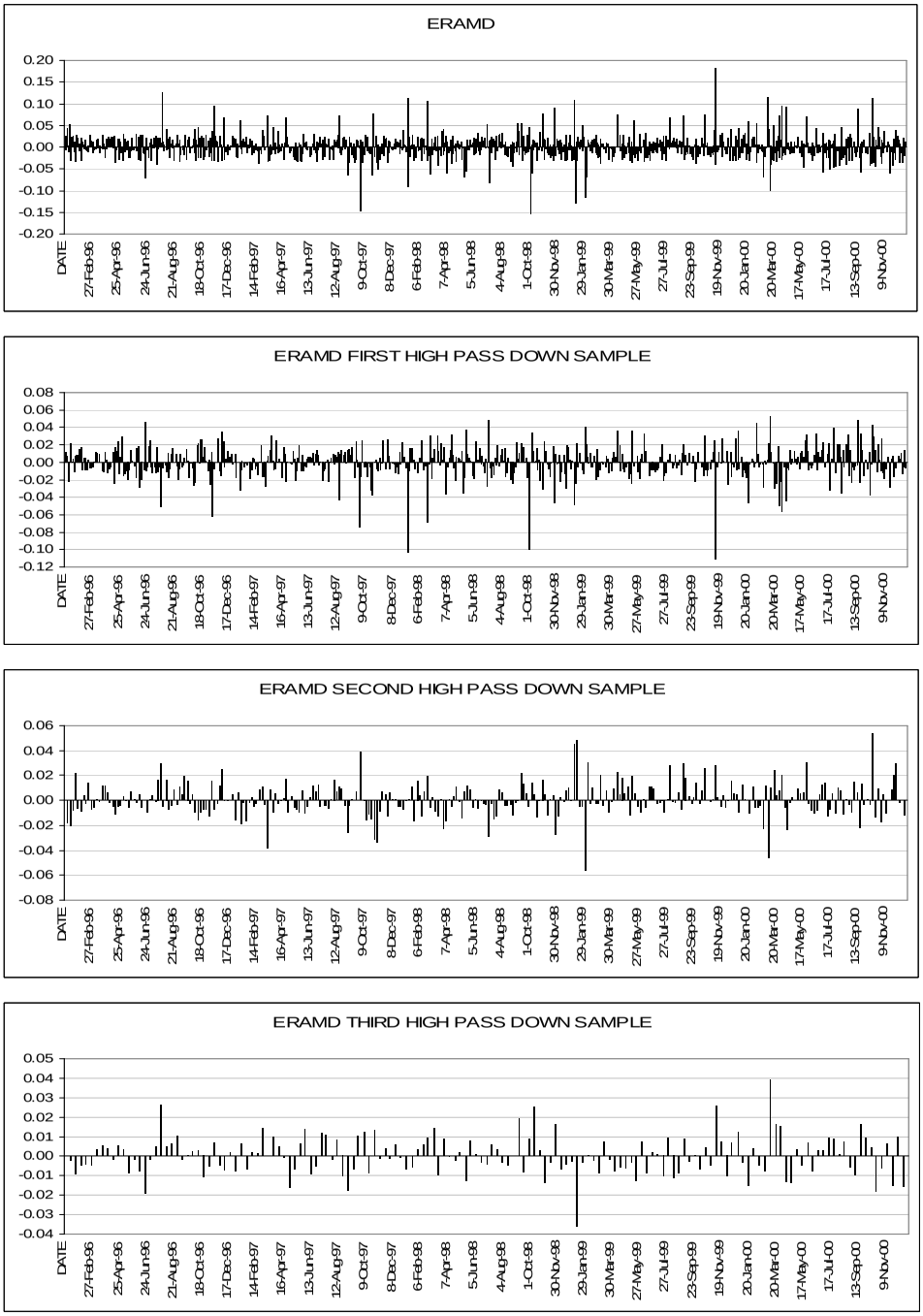

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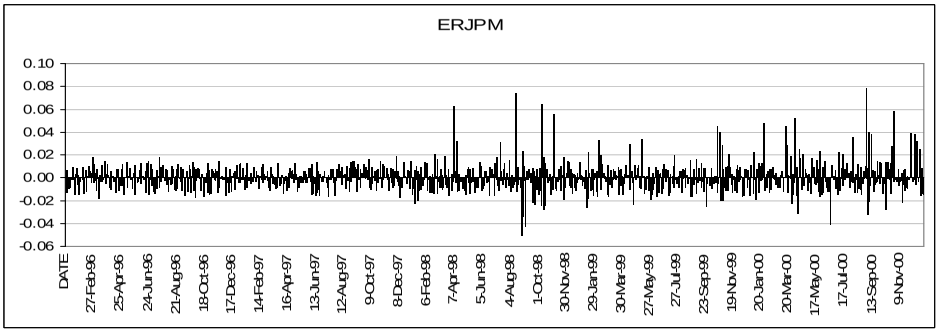
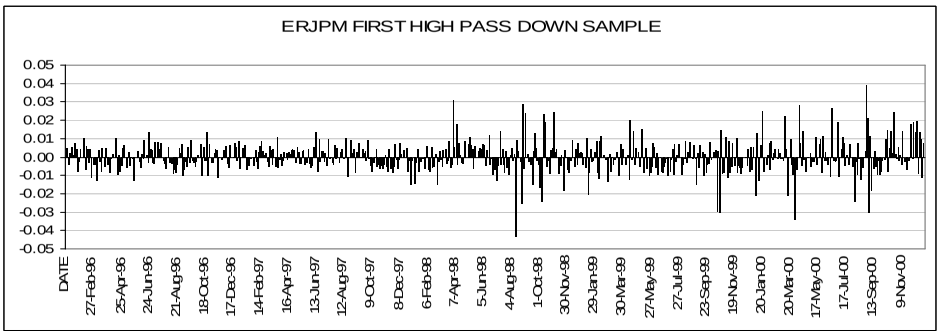
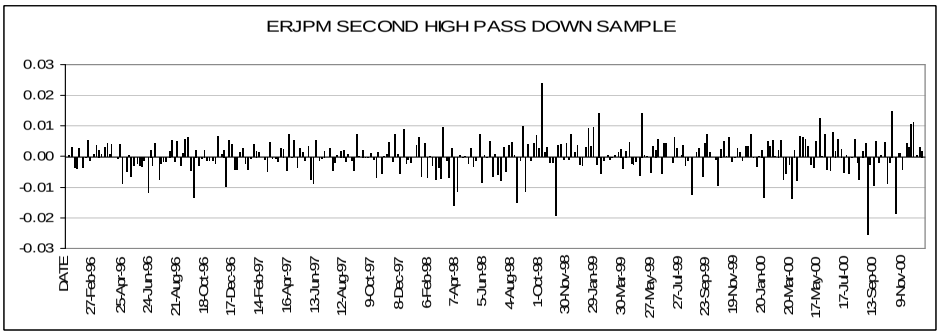
Chart 5: Wavelet Filter Bank Decomposition of JPM







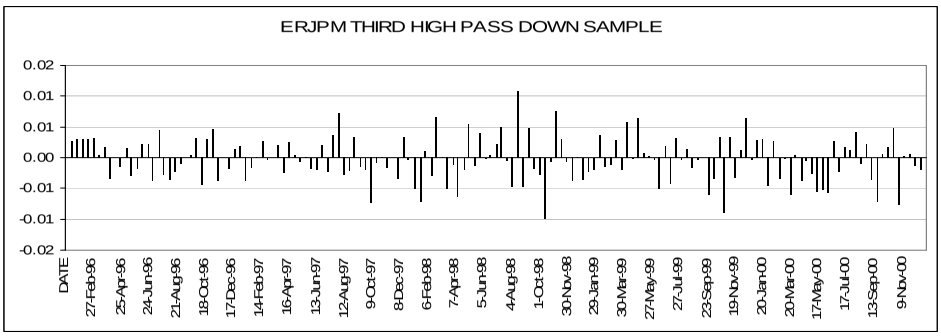


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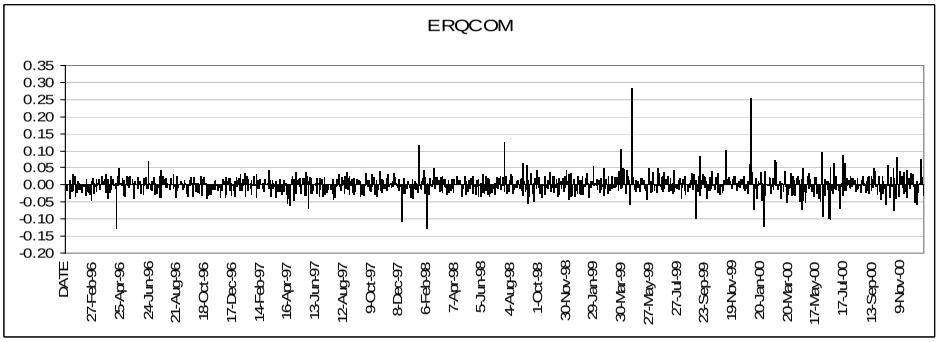
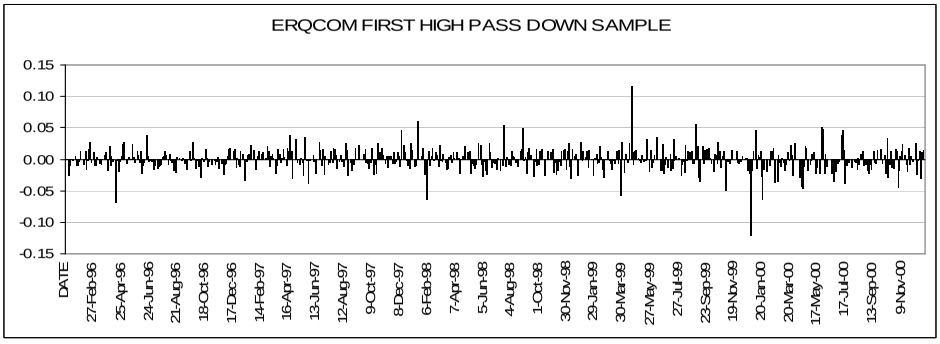
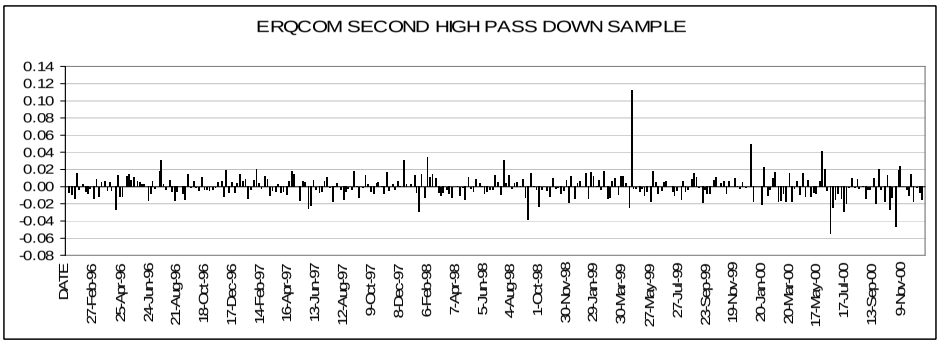
Chart 6: Wavelet Filter Bank Decomposition of QCOM







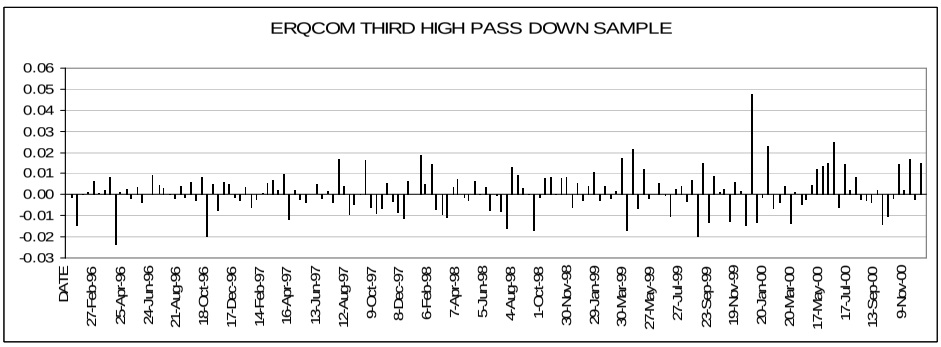


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Chart 7: Wavelet Filter Bank Decomposition of WMT

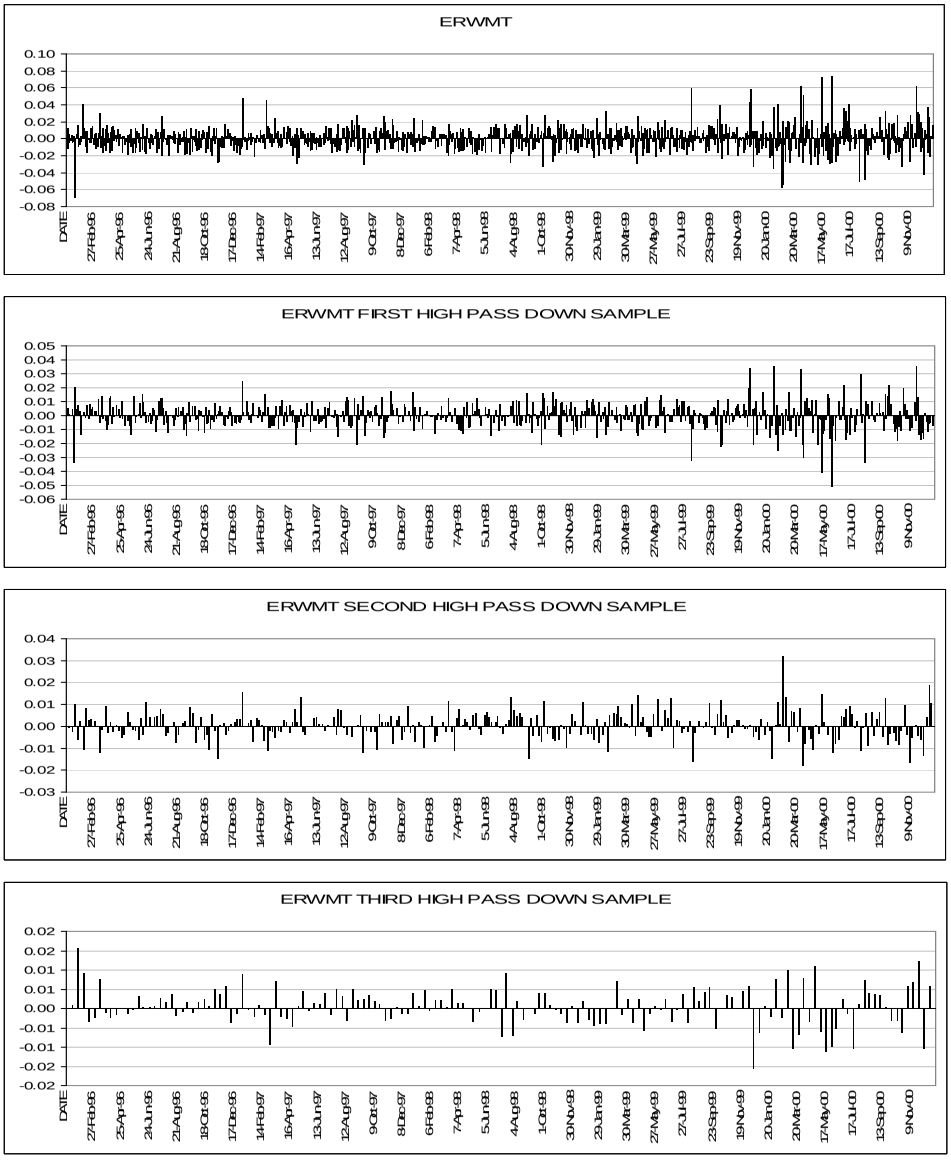

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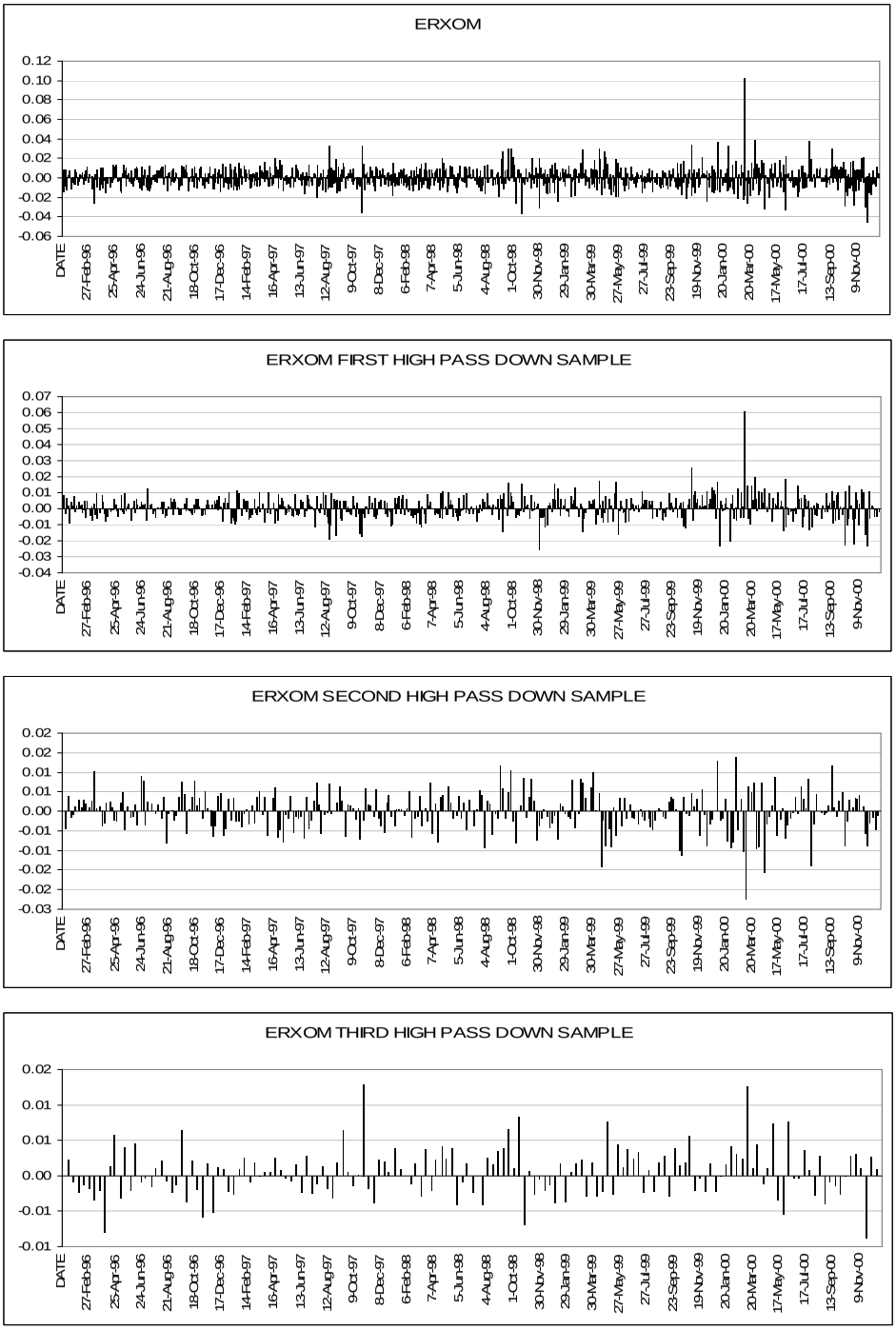
Chart 8: Wavelet Filter Bank Decomposition of XOM



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