UNIVERSITY OF CALIFORNIA
SANTA CRUZ

# NOISY RATIONAL EXPECTATIONS WITH STOCHASTIC FUNDAMENTALS

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The dissertation of Carl Gaston Plat
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# Table of Contents

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**Abstract**

Chapter One derives a noisy rational expectations theoretical model of informed and uninformed trading where the price of a risky asset is based on a fundamental following a stochastic process. This work is based on Grossman & Stiglitz's original (1980) model with extensions by Blume, Easley, and O'Hara (1994). The innovation in the current work is the introduction of a stochastic fundamental. Informed and uninformed traders are given unique signals that are correlated with the movement of this underlying fundamental. The model shows that volume of trade is non degenerate only when prices are less than fully revealing.

In Chapter Two, a computerized double auction market with human traders is employed to examine the relation of price and volume in the presence of asymmetric information. In this market, the informed traders receive higher precision signals than the uninformed traders. The relation of price and volume has been suggested as an important factor in the process of information revelation whereby information held by informed traders is transferred to uninformed traders. While in contrast, the predictions of no-trade theorems suggest that trade should not occur at all between informed and uninformed traders. The results show trading volume within the informed group is positively correlated with signal precision. In situations of asymmetric information, uninformed trading activity as measured by volume/precision correlations declines significantly as the precision of the signals of informed traders increases. However, the presence of asymmetric information does not lead to a zero trade condition for either the informed or uninformed traders.

In Chapter Three, using the laboratory data set from Chapter Two under a zero intelligence (ZI) trader assumption, the mixture of distributions hypothesis is tested. It is shown how volume might reflect the number of price observations, and the trader’s ability to correctly identify the distributions from which prices are derived. It is concluded that for this data set, the application of the mixtures of distribution hypothesis along with the ZI assumption allows traders to better understand observed prices.

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