

Issues in predictability in financial and macroeconomic markets

(Abbreviated Title: Issues in predictability)

NES Research Project Proposal for 2006-2007

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The aim of this project is to explore some issues related to making predictions, verifying and testing their properties, and applying prediction tools to data from financial and macro markets.

Students with an interest in empirical finance and time series econometrics are invited to participate in this project. Both those who would like to do empirical research with real financial data and who are more interested in theory are welcome. The target is producing high-quality research publishable in good international journals. Several articles authored by the leader and students in previous years' projects have been already published; two examples are Anatolyev and Gerko (2005) and Anatolyev and Shakin (2006).

Below are some possible topics for students' work. Each topic may be more applied or more theoretical, to a student's taste. Some of them are wide enough to allow several students to work on them.

- (1) Empirical finance practice reveals that it is quite hard to predict financial returns at intermediate horizons. However, the direction of returns (up/down) are predictable even when returns themselves are not, merely due to volatility clustering (Christoffersen and Diebold, 2006). The interest to directional forecasting has increased in recent years (e.g., Hong and Chung, 2003; Pagan, 2005). It would be interesting to verify if usual tendencies also prevail in financial markets of former communist countries, and investigate dependencies between different markets as pertains to directional forecasting.
- (2) In Anatolyev (2005), a sequel to Anatolyev and Gerko (2005), a unified approach to testing for predictability is given, together with caveats of application of predictability tests. There is a need for empirical examples illustrating that not following such

caveats may make a difference and lead to wrongful testing results. Here one may use macro data used for forecasts by forecasting agencies (OECD, Fed, IMF, EC, etc.).

- (3) We have a database of transactions data at the Moscow Interbank Currency Exchange, as well as some data on tradings of IBM (at the NYSE) and Alcatel (at the Paris Bourse) stocks; other data (e.g., for the Russian Trading System) may also be obtained. There has appeared literature on parametric analysis of such ultra-high frequency data (e.g., Engle, 2000; Anatolyev and Shakin, 2006). Very little work is though related to forecasting in such environment. It is interesting to explore usual predictability issues (directional forecastability, predictability testing, testing for predictive ability) in such models.
- (4) There is an important and heavily cited theory of testing for predictive ability, see West and McCracken (2002). In simulations, however, some of tests have bad size properties, especially when the rolling scheme is used. The task here is to derive analytic asymptotic corrections for test statistics in hope of improving properties of the tests in actual applications. (This topic is more theoretical than others)
- (5) Recently, there has been a burst of interest to developing sequential tools for practitioners who make decisions in real time. These tools called *monitoring* allow a researcher to see if the newly arriving data obey the same relationship as previous data. *Retrospection* refers to similar tools applied to a historical sample, without additional data arriving. Different approaches to retrospective and monitoring tests for time-series predictability is given in Inoue and Rossi (2005) and Anatolyev (2006), but they represent special classes of tests. It is interesting to adapt the retrospective and monitoring tools to nonparametric models, to tests for predictive ability, and some other contexts. The spheres of application may be various financial series.
- (6) The issue of prediction in usual short panel data models is non-central in the panel data analysis. Still, it is interesting to adapt usual forecasting tools to panel data. The analysis will of course be very different from answers issued by the conventional time series analysis. The spheres of application may be various micro and financial series.

Of course, a student may approach the project leader with own ideas.

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