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Believe but Verify?
Russian Views and the Market

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Abstract:
Prominent analysts have argued that the Russian reform process has gone badly because Russian attitudes towards the market mechanism fundamentally differ from those in the West. Others strenuously dispute this. We combine surveys and a classroom double auction experiment to investigate Russian beliefs about how the market mechanism works. Beliefs about how well economic theory predicts outcomes were elicited before ('ex ante') and after ('ex post') the double auction. Women, graduates of general secondary schools, children of Orthodox parents and children of entrepreneurs are more skeptical ex ante. Having observed the trading results women, children of Orthodox parents and children of entrepreneurs become ***less*** skeptical. However, graduates of general secondary schools remain relatively skeptical ex post. Two measures of political orientation are only weakly associated with beliefs, and sociodemographic characteristics, such as occupation, income and parents' education, have no detectable effect on beliefs about the predictive value of economic theory.

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I. Introduction

What citizens believe about how markets work is important, as market-oriented policy is unsustainable without some popular belief that market outcomes are efficient and market processes are systematic rather than random. If citizens doubt that markets are efficient or that economic theory can predict market outcomes then implementing reforms based on standard economic theory becomes difficult. Marshall Goldman argues that Russians, because of a long history with authoritarian and communitarian institutions, are not "economic men," and treating them as such could only lead to poorly designed economic policy (Goldman 2000). Goldman traces the shaky performance of Russian privatization and economic reform in large part to a historic mistrust among Russians of market institutions. By contrast, Shiller, Boycko and Korobov (1991, 1992) claim "Soviet and American respondents were basically similar in some very important dimensions" including "their understanding of the working of markets." For example, 90% of Russians and 86% of New Yorkers surveyed agreed that "people work better if their pay is directly tied to the quantity and quality of their work." Other surveys in the early transition period found attitudes towards markets were largely unformed: 40% of subjects asked to complete the sentence "A market economy would produce . . . " had no answer (Kosmarskii 1991).

This paper addresses one critical component of this debate: whether Russians believe markets work as economists say they work, or for reasons of culture, history or communist legacy, doubt that the market mechanism functions according to economic theory. We investigated attitudes of Russian students towards the market mechanism using a classroom market experiment and a set of survey instruments. Young Russians were asked about their views about a specific market institution, the double auction, rather than about hypothetical situations. The double-auction (DA) is a simplified version of trading rules used by "open-outcry" trading pits such as the Chicago Mercantile Exchange (Holt, 1999). A large body of research describes the properties of the DA and its features are well understood (Kagel 1995).

This project extends a similar project of Austin and Wilcox (2004) which analyzed US college students' attitudes towards the market. The US project found that political ideology, gender and family background affected the extent to which students believed that economic theory would predict the outcome of a double auction experiment. Instruments and the experimental protocol were adapted for a Russian environment. A few technical improvements were added as well. Still, the set-up and the content of the survey instruments in both projects remained substantially similar. While these projects cannot provide exact cross-cultural comparisons, they can say something about whether political ideology, gender and family background have similar effects on Russian and American students.

The experimental protocol is simple. After a brief introduction a sociodemographic survey is distributed. The rules of the DA are then explained to students and a "no-money" practice round is played. A second survey is distributed, asking students to predict how well the results of the DA's last round in terms of price, quantity and total trading profits will conform to the predictions generated by a supply and demand model, listed in a sealed envelope held by one student. The DA ends after four rounds of trading, and then the experimenter opens the envelope, and compares the three supply and demand predictions to the trading results of the final round. Students then evaluate how well the supply and model predicted the DA results in a final survey.

Because students were asked about a specific market institution, questions can focus on positive issues such as market efficiency and whether the market mechanism can "find" the equilibrium price. This differentiates this study from the mass of Russian survey research

which focuses on normative issues such as attitudes towards fairness and inequality. Of course, eliciting views on positive matters would be difficult to frame in a traditional survey research approach.

This experiment elicits subjects' beliefs about economic theory's predictive value and how those expectations are revised in the face of experimental evidence. This protocol asks students directly whether they believe standard economic theory actually describes the outcome of a specific, simplified market structure. We believe this provides a cleaner measure of attitudes towards the functioning of markets than anonymous telephone surveys with questions about hypothetical situations, because subjects are asked clear and direct questions about how a specific market mechanism in which they have participated or have observed. Our approach measures to what extent subjects believe markets "work." Whether these students believe, as do economists, that supply and demand describes real behavior and how students update their views having seen market data will be an important indicator of how markets are perceived in Russia, and to what extent young people are receptive to evidence on the positive workings of the economy.

We then analyze the determinants on subjects' beliefs about the predictive power of economic theory using the sociodemographic and attitudinal data collected. These data provide us with a rich set of controls. Our survey instruments include items relating to political and social attitudes which are used to develop two scales measuring political orientation. We also develop scales to control for possibly confounds, which will be described below.

The degree to which people believe markets "work," regardless of their fairness characteristics or how people view corporations or businesspeople, is crucial to creating conditions for sustainable economic reforms. The basic argument for any economic reform is that allowing market forces to play a wider role (or correcting market failures) will generate higher total gains, which could be used to compensate losers or at least to generate a rising standard of living on average. If average citizens do not believe markets are efficient, then economic reform becomes a hard sell. In several transition countries, such as Poland and Bulgaria, communist or post-communist won elections after the perception that the gains of economic transformation were not fairly distributed. In this way and well in others, the sustainability of economic reform is linked both to views of fairness and to views of how markets work.

II. Research on Russian Political and Economic Attitudes

The young Russians who participated in our experiments and surveys have lived through a tumultuous period. In the last two decades unprecedented political, economic and social changes have altered every aspect of Russian life, though as in any society, old institutions, habits and attitudes exert an important, if less easily observed, influence. A large research literature based on small and large-scale surveys developed, driven by a belief that these values and attitudes would determine the success of the reforms of Russian political and economic life, and in particular the creation of a democratic society and market economy. Understanding the values that could underpin or undermine democracy and market economy in Russia became the central focus of many Russian and Western social scientists.[1]

[1] For example, this issue is perennially on the agenda of the prominent annual interdisciplinary symposium "*Whither Russia*?" which has been organized by Tatyana

Public opinion polling in the USSR began on a limited scale under Khrushchev experiment with openness, but was suppressed under Brezhnev (Wikipedia 2005a). With the introduction of Gorbachev's Glasnost policy public opinion research resumed. The All-Union Center for the Study of Public Opinion (VTsIOM/%O3?;) was created in December 1987 and soon pioneered the use of surveys using representative national samples. This institution was renamed first as the All-Russia Center for the Study of Public Opinion and then as the Levada Center. In 1988 Russia opened up to public-opinion surveys, and Western and Russian scholars began to measure Russians' views on market reforms. Since then Russia developed a strong survey research program, which continues to monitor public opinion and social attitudes (Zdravomyslov 2000, 2001, Diligenskiy 1996, 2000, 2001, Lapin 2003). For example, VTsIOM had conducted more than a thousand surveys with over two million respondents by 2003 (Kostyukov 2003).

Initially, Russian scholars focused their attention on the most obvious and fundamental poles of opinion and identity: democratic vs. authoritarian, market (private) vs. non-market (state), national vs. international (Soviet) [see Kliamkin (1993), Kapustin and Kliamkin (1994), Lapkin and Pantin (1994), and Lapin et al. (1996), among others.] Sociologists then turned their attention to studying variants of construction of democratic power preferred by the citizens, and the place that democratic values together with attitudes towards markets occupy in the citizens' hierarchy of values. Many authors consider the West as a set of images and values; research questions are often formulated in terms of attitudes towards Western values understood as market and democratic values (Lapkin V., Pantin V. 1998, Diligenskiy 2000).

Over time, one-shot studies have been transformed into regular monitoring and tracking of values (Lapin 2003). At the same time some researchers and research centers have moved to studies of sets of ideas related to concepts such as "reform," "property rights," "Liberal values," "Labor," etc.[2]

In the late 1980s and early 1990s Western researchers conducted many surveys using national samples to probe attitudes towards democracy and market reforms (Brym 1996, Duch 1993). Importantly for our study, by the mid-90s methodological discussions took place, such as Alexander (1997), who tried to analyze why "the findings of this body of research have been mixed, and often contradictory, and show little consistency." In particular, he claimed "the problems arise where post-Soviet conceptualizations do not coincide with Western conceptualizations of the researcher." Finifter (1996) describing the difficulties of conducting survey research on attitudes in Russia noted:

> "This duality between normative and practical concerns suggests yet another real terminological and measurement problem, for it means that expressed attitudes are highly dependent not only on the political and economic context of each survey and the specific questions that are asked but, in particular, on whether these questions refer to ideals or attitudes connected more closely to evaluation of daily life conditions."

Zaslavskaya starting in 1993.

[2] See FOM reports at http://bd.fom.ru/report/map/projects/lang/173_12911/pa0001, http://bd.fom.ru/report/map/projects/lang/184_12879/pa0009, and http://bd.fom.ru/report/map/projects/lang/201_12843/pa0018.

Differing ideas about the proper size and role of government form an important axis of political discussion. From the latter part of the perestroika era through the early post-Soviet period (1988-1994) many studies focused on government social guarantees (Duch 1993). Most Russians supported moves toward a market economy, but no obvious consensus on whether "market economy" meant something along Scandinavian lines or something with a smaller government sector.

In Russia much discussion has focused on the dominance of a "party of power," which has overshadowed differences in substantive political opinions. Even so, differences in political views may still be important. We find evidence, presented below, that differences in political views can be measured, and investigate whether these differences affect how Russians view the market mechanism.

Comparing behavior between citizens of market economies and former centrally-planned economies using experimental methods is an active area of research. The idea that civil society is weaker or the level of social capital in post-communist countries compared with long-standing democracies has motivated much of this work. Developing trust among strangers is said to lower contracting costs and to promote social cooperation. Healthy societies exhibit high levels of trust and social cooperation, despite the prediction of game theory that cooperation in one-shot prisoners' dilemma or ultimatum games will not occur. Of course, game theory predicts that cooperative behavior can occur in richer strategic environments. Researchers have investigated many modifications of simple one-shot games that can lead to cooperative outcomes, and how different subject pools react to these modifications. For example, Ockenfels and Weimann (1999) find east Germans act more selfishly than west Germans in public goods and solidarity game experiments. Roth et al. (1991) conduct two-person bargaining and multiperson markets in Jerusalem, Ljubljana, Pittsburgh, and Tokyo. While markets converged to equilibria in all venues, substantial differences in bargaining outcomes were observed. Hermann (2005) finds German and Dutch subjects react much differently than subjects in Russia or Byelorus in public goods games with costly punishment.

The present study has a different motivation and a different research design. We focus on beliefs about how market work and how those beliefs change. Subjects were not placed in situations in which social conditioning and rational self-interest provide conflicting cues, but were asked to trade in or observe a stylized market. Our focus is not whether subjects are altruistic or trusting or rationally self-interested, but whether subjects believe the central mechanism of a market economy works as economists say it works, and whether seeing a simple market institution at work affects subjects' beliefs. The protocol for our experiment is now described in detail.

III. Construction of the Survey Instrument and Pre-tests

This section describes the development of survey instruments and the experimental protocol. Creating valid measures using survey items structured as to appear as natural as possible to Russian subjects for family standards of living and political orientation, trust in authority comprised a major part of the work of this project. We also describe how the experimental protocol was adapted to the Russian university classroom.

The experimental design involves three surveys and a classroom experiment. The first survey contains standard sociodemographic items and items designed to measure

political orientation, trust in authority and tendencies towards "socially desirable responding." The second and third surveys elicit subjects views about the predictive power of economic theory as applied to a double auction experiment. The form and content of these surveys parallel are similar to those developed for the US study, though these forms evolved over time in response to experience, comments of colleagues and through incorporating current psychometric practices.

III. A. Ekaterinburg Pretest

A short Russian-language version of our sociodemographic survey was distributed to four classes in 2002 at Ural State University in Ekaterinburg and 228 responses were collected. This survey included questions on age, gender, race, primary language, university major, family size, father's and mother's profession, two income proxies (description and value of car and place of last summer's vacation) and 19 questions taken and translated from the Capitalist Values Scale. Responses were double-entered to prevent errors. We ran a basic analysis of the pretest results, which were used to select or modify several questions. We added about a dozen new questions developed to address specifically Russian attitudes which may affect subjects' degree of belief in the predictive power of economic theory.

Other survey research and sociological analysis suggest that Russians hold different attitudes regarding "fairness" than Westerners, and that Russians have very different ideas about the proper role of government, given the extensive role of the state in providing health care, housing, transportation among other services. We added three questions similar to those used in other Russian sociological surveys asking whether the government should provide health care, education and employment. However, the vast majority of subjects agreed or strongly agreed that government should provide these services, leaving little useful statistical variation. We also added a question about where profits come from and made several editorial changes in other questions.

We made several technical changes in the survey instrument. First, we changed the response scale to a 6-point Likert scale. Many scale design experts prefer a response scale without a middle alternative and thus recommend 4-point or 6-point Likert scales. We also standard survey design practice by rearranging the order of the questions to place "easier" questions higher in the questionnaire "harder" questions later.

III. B. Second Pretest in Novosibirsk and Other Pretest Activity

We ran a second pretest in September 2004 using a short version of the instrument with students from the New Siberian University (NSU) in Novosibirsk to investigate the performance of new questions, to try out some minor differences in presentation, and to provide information from a wider geographic range of respondents. We collected 98 useful responses. After analyzing these responses we made minor changes to the instruments.

We had colleagues in Tomsk, Slaviansk-na-Kubani (Krasnodar) and Ekaterinburg gather data from a similar short form. These responses, along with the NSU data and the first instrument data from the experimental rounds, were used to calibrate scales for political orientation, trust in authority and socially desirable responding.

In August 2002 we ran two experimental sessions in which subjects could choose either a Russian-language or an English-language instrument. We ran two more sessions, one with English-speaking students in July 2004 and one with Russian-speaking students in September 2004, to ensure the smooth operation of the protocol.

IV. Survey Instruments and Scaling

IV.A. The Initial Survey

The initial survey is attached as an Appendix and descriptive statistics are presented in Table 1. We incorporate changes made in this instrument following the second pretest. We follow the strategy of the US version of the experiment and emphasize collection of information that subjects probably know well. In the construction of these items we followed accepted practices where precedents existed in the Russian or American survey literature. Where precedents were lacking we relied on extensive pretesting.

We also took care to gather data on factors that subjects knew well but were not subject to their control. For example, parents' occupation and religion are beyond the control of subjects and so are exogenous. Variables chosen by subjects, such as employment and religion, may be influenced by the same attitudes we seek to measure. Including responses which reflect these choices would introduce endogeneity bias, which biases parameter estimates downwards. Such variables are therefore excluded from these regressions.

IV.B. Sociodemographic Data

Table 1 summarizes basic sociodemographic data for subjects and their parents for the survey data gathered from Novosibirsk, Tomsk, Slaviansk-na-Kubani and experimental rounds in Novosibirsk and St. Petersburg. Table 2 summarizes data gathered from subjects in experimental rounds. Details on how these items were constructed follow below.

- **Subjects' Education**

Subjects were asked about their secondary education, with options 'general public school,' 'public school with some specialization,' 'special language school,' 'lyceum,' 'gymnasium' and 'other.' Entry into special language schools, lyceums and gymnasia is often highly competitive. Many of these schools now charge tuition and pay higher teacher salaries. General public schools are often perceived to have become weaker since the breakup of the Soviet Union, though there is considerable local variation. **Attended Gen 2ndary School** reflects differences resulting from the secondary school selection process, such as student ability and diligence and parental income or involvement. Also, general public schools may provide a different menu of courses which could affect subject responses.

- **Parents' Education**

Subjects were asked about the educational level of each parent. The options and their coding (in parentheses) were 'higher education (7),' 'didn't finish higher education (6),' 'technical education (Technikum) (5),' 'trade school (**AGI**) (4),' 'completed secondary education (3)' and 'didn't finish secondary education (2)' and 'Other (0).'[3] Educational standards vary widely across Russia, so we also ask subjects to name the specific education institution, so graduates of elite institutions can be identified. Nearly 65% of subjects have a

[3] In Russian the choices were '**%ZFT,,**,' '**=,@8@>R,>>@,&ZFT,,**,' '**G,N>48J<**,' '**AGI**,' '**ED,*>,,**,' '**=,@8@>R,>>@,FD,*>,,**' and '**)DJ(@,**.'

parent who completed a course of higher education, and 6% entered but did not finish. About 24% of subjects had a parent who attended a technikum, which is similar to a German technical university.[4]

The variable **Some Higher Education** is one for students who have at least one parent who either finished or did not finish higher education, meaning a university or institute. The variable **Technical** indicates which students have at least one parent who attended a technikum.

- **Parents' Occupation**

The survey included the open-ended questions "What does your mother do?" and "What does your father do?" Responses were coded by a research assistant into International Labor Organization occupational categories. In pretests this approach worked better than having students choose occupational categories themselves. The 2000 Russian census used International Standard Classification of Occupations (ISCO-88) which has ten basic categories:[5]

100: Legislators, senior official and managers
200: Professionals
300: Technicians and associate professionals
400: Clerks
500: Service workers and shop and market sales workers
600: Skilled agricultural and fishery workers
700: Craft and related trades workers
800: Plant and machine operators and assemblers
900: Elementary occupations
000: Armed forces.

We created two variables that measure the 'best' parental occupation. **Sr. Official** indicates the parent with the best occupation belongs to the category 'Legislators, senior official and managers' and **Professional** indicates the parent with the best occupation status belongs to the category 'Professionals.' Nearly 70% of subjects had a parent in one of these two categories. By comparison the Russian Federation's Statistical Service estimated that in 2004, 5% of men and 3% belonged to the category 'Legislators, senior official and managers' and 11% of men and 20% of women belonged to the category 'Professionals.'[6] This would suggest that subjects from high occupational status families are overrepresented, although parents of subjects will be older than the average workers and therefore are more likely to occupy more senior positions. We could not find occupational classification by age categories, which would provide a better comparison.

- **Standard of Living**

A question about car ownership and place of last vacation is also included as a proxy for income or wealth: previous experience suggests that students' estimates of family income

[4] Gerhart (2001, ch. 12) describes the Russian educational system in detail.

[5] Details for these codes are available on the Goskomstat official website at http://www.gmcgks.ru/new_page_79.htm.

[6] Data obtained from website http://www.gks.ru/wps/portal, Table 6.4. '**Q4F:,>>@FH\ 1">bHZN%]8@>@<48, A@ A@:J 3 1">bH4b<%** 2004 **(**.'

are unreliable. In previous research in the US car ownership appears a more useful measure than reported family income. An informal survey of Russian students suggested vacations differentiate Russians, so differences in the type of vacation provide useful information about differences in the standard of living. Almost all Russian respondents were willing to provide specific data on last vacation and car ownership.

The car and vacation questions were in the first pretest, and data analysis provides weak evidence that the car and car value questions have some, possibly weak, association with political orientation. The car question was modified by providing a list of the most common car makes in Russia and space for subjects to list specific models. This information was then used to estimate a market value of the car using car market internet sites. Car values were checked using websites such as <www.avtorinok.ru>. Wherever possible, prices were taken for the average of cars with similar age and make in the Moscow area. Where subjects did not give a model, the most popular model was chosen. Where subjects did not give a year, a year from 1995-2000 was chosen. Presumably subjects are more likely to recall the year of a car less than five years old, and cars before 1995 are less common.

The vacation question uses a mutually exclusive set categories of the most popular vacation destinations. Categories are 'Home,' 'Backpacking,' 'Visiting relatives in Russia,' 'Visiting relatives elsewhere,' 'on the Black Sea,' 'Turkey,' 'Central Europe,' 'Western Europe,' 'Asia,' 'America' and 'Other destinations.' Another item asks about means of transport, with categories: Plane, Train, Bus, Auto, Ship, Other, None.

The vacation categories were grouped to form an ordinal variable '**Best Vacation**.' Vacation types were ordered as 0 for 'None,' 1 for 'Home,' 2 for 'Backpacking' or 'Visiting relatives in Russia' or elsewhere, 3 for the Black Sea, 4 for Turkey and 5 for America, Asia or other destinations. The "best" vacation of either parent was then chosen.

We also included a self-assessment of the household's economic situation. This item was taken from existing Russian sociological surveys. Subjects were asked to choose one of the following statements:

> We barely make ends meet; there isn't enough money for daily necessities.
> ; Z ,*&" F&@*4< 8@>PZ F 8@>P"<4; *,>,(>, N&"H",H *"0, >" BD@*J8HZ.
>
> There is enough money for daily necessities, but buying clothes is difficult.
> =" BD@*J8HZ *,>,(N&"H",H, >@ B@8JB8" @*,0*Z &Z2Z&",H F,D\,2>Z, 2"HDJ*>,>4b.
>
> There is enough money for daily necessities and clothes, but buying durable goods is difficult.
>),>,(N&"H",H >" BD@*J8HZ 4 @*,0*J, >@ B@8JB8" &,V,6 *:4H,:\>@(@ B@:\2@&">4b *:b >"F 2"HDJ*>4H,:\>".
>
> We can buy durable goods without difficulty, but we can't afford really expensive goods.
> ; Z <@0,< $,2 HDJ*" BD4@$D,H"H\ &,V4 *:4H,:\>@(@ B@:\2@&">4b, >@ >, *,6FH&4H,:\>@ *@D@(4, &,V4.
>
> We can buy really expensive goods: apartments, dachas, SUVs, etc.
> ; Z <@0,< B@2&@:4H\ F,$, *@FH"H@R>@ *@D@(4, B@8JB84 - 8&"DH4DJ, *"RJ, *@D@(J` <"T4>J 4 H.*.

None of the subjects chose the "We barely make ends meet" option. The **HH Economic Report=2** variable indicates subjects who choose the second statement, and **HH Economic Report=3** indicates subjects who choose the third statement.

- **Entrepreneurship and Political Participation**

We ask questions on whether each parent is self-employed or owns a firm, belongs to a political party, or is a follower of some political leader. The variables **>1 Parent Owns Firm**, **>1 Parent Orthodox** and **>1 Parent Party Member** were created from these responses. Political scientists often use similar measures of political involvement to measure support for democratic values, and economists often stress the importance of entrepreneurial values in promoting economic development.

- **Religion**

In the last US version of this project the initial survey includes a question on each parent's religion. This variable had a statistically significant effect in several regressions in the US version. Separate questions are included for each parent. The categories used are: Orthodox, 'Other Christian confession,' Judaism, Islam, Buddhism, 'Other religion,' Atheist and 'Haven't thought much about this.' In the data analysis these are used to construct '>1 parent is Orthodox' and '>1 parent is religious but not Orthodox' variables.

IV.C. Scale Construction

In the US study political orientation had a statistically significant effect of both ex-post and ex-ante beliefs about economic theory's predictive value. To test whether similar effects exist for a Russian sample we constructed a scale of political orientation adapted to Russia. Factor analysis results suggested two subscales were needed to represent political orientation. This is not surprising given the less settled nature of Russian political opinion. We also constructed two scales to control for possible confounding factors.

IV.C.1. Political Orientation Scale

Understanding popular support for democratic attitudes was especially important during the early days of post-Soviet period. Some early empirical studies found that many Russians were baffled by concepts such as "democracy," "market economy" and "liberal values" (Diligentsky 2001). However, Gibson (1995, 2001) argued in a series of papers that Russian political attitudes form a coherent set of views. Gibson and coauthors measured attitudes toward democratic institutions and processes in five separate sub-dimensions: the relative value of social order and individual liberty; support for a free and pluralistic media; support for competitive elections and a multi-party system; support for dissent; and rights consciousness. He then used factor analysis to create a single index of support for democratic institutions from these five subscales.

As Russian democracy matures the question arises whether Russian political attitudes are beginning to resemble the structure of political attitudes in established democracies. In most highly developed countries political policies and candidates sort themselves out on a "left" and "right" spectrum. In particular, views towards markets play a central role in distinguishing political positions. Political orientation of respondents is important for this study because a correlation between political orientation and beliefs about markets was found in our US study. Political orientation is meant here to describe a set of views on the priorities and proper responsibilities of government, about the importance of fairness and redistribution, and about the relationship of important social groups, such as workers and

managers.[7] Political orientation, measured on a “left-right” or “liberal-conservative” scale is standard among political surveys in the US. A large literature of spatial political analysis finds that a high percentage of voting choices of American legislators can be explained by a one or two-dimensional model (Poole and Rosenthal 1997). Despite the diversity of interests and issues there is strong evidence that American politics takes place in a low-dimensional space.

Whether political orientation has the same effect on beliefs Russia as in the US is one research question addressed here. However, the categories of “left” vs. “right” or “liberal” vs. “conservative” do not map easily into the Russian context. The Russian party system is unstable: parties often appear and die, leaving voters without parties that have a long track record. Many parties appear more influenced by personalities or regional interests rather than by ideology or political principles. The system defies traditional Western labels: one cannot simply ask a respondent, "Are you conservative or liberal, right wing or left wing?" "Left" and "right" are all mixed up. “Pro-market” or “pro-authority” forces make conflicting claims over the meaning of the term “right-wing” as one pro-reform politician noted

> If we call clan-based, state capitalism, which is being formed in Russia, with added religiosity, orthodoxy, a little bit of market and idea of a large strong state, a 'right wing', then it is clear that conservatives (right) are Putin and United Russia … Historically, this term - 'right' - gets away from us. Authority takes it - and let it take it.[8]

Titkov (2004) provides analytic support for this argument with a study of participation and voting for parliamentary elections from 1993 to 2003. He examines voting data broken down by major parties and protest votes using factor analysis. Factor analyses were conducted for elections separately, but the two most important factors, explaining up to 50% of the result, were essentially the same for all elections. Thus the performance of all parties could be located in a two-dimensional space with very little loss of information, where one dimension represents a "reformist - conservative" axis and the other dimension represents a "conformist - protest" axis. For example, the pro-market and pro-democracy Union of Right Forces (SPS) and Yabloko (=Apple) are located at opposite ends of the "reformist - conservative" axis from the conservative, anti-reform agrarians and communists. However, this dimension is much less

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[7] “Political ideology” is sometimes used in a North American context to describe differences among Right and Left. In other contexts “ideology” is taken to mean “some political and cultural blueprint for a certain social order” (Wikipedia 2005b). As we are less interested in attitudes towards “Marxism,” Fascism,” “Corporatism” or other systems of beliefs described as “ideologies,” than in attitudes that are relevant to making smaller-scale changes in the direction and priorities of government, we use the more neutral term “political orientation.”. In particular, “ideology” has a charged connotation in post-Soviet Russia which we wish to avoid.

[8] This statement was made by I. Khakamada, former co-leader of the Union of Right-Wing Forces (SPS), the most steadfast pro-reform party in the 2003 parliamentary elections. On the other hand, United Russia positioned itself as a centrist force at these elections.

salient than the "conformist - protest" dimension, with the 'the party of power' on one side and protest parties such as Zhirinovsky's Liberal Democratic Party of Russia (LDPR) party.

In the first elections after the dissolution of the USSR parties had poorly defined identities. Given the newness of political changes, the continuation of reforms became the only issue of any salience. "Russian voters do not see liberals, conservatives, Social Democrats, Christian Democrats, or even Communists when entering the polling booth. Rather they see two choices – supporters and opponents of reform" (McFaul 1996: 94). In subsequent elections the situation changed. According to Titkov's results, the "reformism -conservatism" factor explained less than 20% of the variance in voting results in 1999 and 2003, while "conformism-protest" explained about 36%. Titkov predicts an increased significance of the "conformism - protest" dimension and a decreased significance of the "reformism - conservatism" dimension. Titkov also argues the current political landscape of Russian parties resembles that of Western Europe, though others strongly disagree (Wilson 2005).

We developed a measure of political orientation from a set of 18 items, mostly taken and translated from the "Capitalist Values Scale" and the General Social Survey along with a few new questions designed to capture specifically Russian political attitudes. Three items ask whether government should provide health care, education and employment respectively, were included on the instrument. However, because the vast majority of respondents indicated that the government should provide all of these services there was a top-coding issue which limited the usefulness of these responses.

Factor analysis indicated that ten items comprise the first two principal components. The component with the largest eigenvalue includes items reflecting less sympathy for workers than for managers, and a weaker concern for fairness and poverty prevention. We call this the "Scrooge Index" after the Dickens protagonist who exemplified an extreme case of such views. The component with the second largest eigenvalue we interpret as a "Pro-Business" index. Descriptive statistics and factor loadings are presented in Table 3. Calculations of Cronbach's alpha for each scale and their combination are presented in Table 4. The values for Cronbach's alpha suggest a reasonable degree of coherence among the items comprising these two scales. Using items selected by this factor analysis, a similar factor analysis was then run on the 2003 Ekaterinburg pretest data where some of those items were part of the pretest survey instrument. The results were roughly similar, thus providing at least some confirmation of the reliability of the index.

IV.C.2. Scales used to control for possible confounds

Our analysis depends on the assumption that subjects report their true beliefs about the likelihood of the predictions of economic theory being realized. However, subjects' responses may be influenced by two possible confounding factors, trust in authority and socially desirable responding. Scales were constructed for political orientation, trust in authority, economic well-being of the family, and socially desirable responding. First, factor analysis was run on each set of items to find a subset of items which load on a common dimension. Then these items were combined using an optimal scaling technique. Where possible, these results were compared to factor analysis and scaling results taken from the Ekaterinburg pretest.

- **Trust in Authority**

If some students are more willing to believe supply and demand theory can predict market outcomes in large part because this theory has been presented by teachers and professors, who are authority figures, and if other students are less trusting of authority are more skeptical of the predictive power of economic theory, and if trust in authority is correlated with political orientation (or some sociodemographic variable), then our results could show a spurious correlation between political orientation and belief in economic theory. To avoid this confound we create an independent measure of trust in authority. Note that the concept of "trust in authority" has nothing to do with the concept of "authoritarian personality" as defined by Adorno and others.

Almost all of the 'trust in authority' items refer to concrete situations familiar to Russian as well as American students, and so the translations were straightforward. In the final instrument we used four items, presented with their translations below:

People should pay special attention to the opinions of their parents, grandparents and other older adults.
9`*4*@:0>Z@$D"V"H\@F@$@,&>4<">4,>"<>,>4,F&@4ND@*4H,:,6,>"<>,>4,*,*JT,8 4$"$JT,8 4*DJ(4N$@:,,&2D@F:ZN:`*,6.

Medical doctors and scientists have lost of useful knowledge that goes well beyond what people learn from their own experiences.
;,*484 4JR,>Z,&:"*,`H 2>">4b<4,>"<>@(@$@:\T4<4R,<H@,RH@:`*4<@(JHJ2>"H\42F&@,(@F@$FH&,>>@(@@BZH".

Most "authorities" are just people with some credentials like a degree or a license, and that doesn't mean that they know anything special.
;>@(4,JR,>Z,BD@FH@:`*4,8@H@DZ,4<,`HJR,>J`FH,B,>\,^H@>,@2>"R",H,RH@@>4 2>"`HRH@-H@@F@$,>>@,.

Political scientists, sociologists and psychologists don`t know any more about real human behavior than what everyone knows from common sense.
A@:4H@:@(4,F@P4@:@(4 4BF4N@:@(4 2>"`H@D,":\>@<R,:@&,R,F8@<B@&,*,>44>,$@:\T,H@(@,RH@2>",H8"0*Z6,4FN@*b42 2*D"&@(@F<ZF:".

A factor analysis indicated that the first two and second two items load on different dimensions, suggesting that trust of parents and medical doctors is a different matter than trust of social scientists. Therefore the index of trust in authority is constructed using the last two questions.

- **Socially Desirable Responding**

Social psychologists have long known that some survey subjects provide responses that are meant to "please" the investigator, so responses do not reflect the true views of subjects. In other words, subjects may substitute "social desirable" answers for those that would reflect their own views and attitudes. Paulhus (1991) developed a scale reflecting "Socially Desirable Responding" (SDR), which in the survey literature is also known as a "Lie Scale." This scale is scored by adding up strong denials to common anti-social behaviors. Ten SDR items were included. Three typical items and their translations are:

I sometimes tell lies if I have to.
3>@(*" b (@&@D ` >,BD"&*J, ,F:4 b *@:0,> ^H@ *,:"Hl.

I never cover up my mistakes.
a >48@(*">, B@8DZ&" ` F&@4 @T4$84.

I have said something bad about a friend behind his or her back.
a (@&@D4: B:@N@, 2" FB4>@6 <@4N *DJ2,6.

We adjusted Paulus's scoring method for his 7-point Likert scale to our 6-point Likert scale. The strongest denial scored as one point, the next strongest denial scored half a point. Points were then added up for all SDR items to create what will be called the Lie Scale.

IV.D. Testing Content Validity for the Scales

One check of content validity, that is, whether scales reflect actually real differences in social attitudes, is to investigate the correlation of those measures with other variables which are commonly considered to be correlated with social attitudes. Therefore the two political orientation scales and the trust in authority scale were regressed on income proxies, parents' characteristics and subject characteristics to provide some evidence on the content validity of these measures. First, the scales are regressed on an inclusive list of independent variables. Then two information-theoretic criteria, the Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC), were used to select a reduced set of independent variables. Fortunately, in all three cases the two criteria select the same set of regressors. Table 5 shows results for the full set of regressors and Table 6 shows results for the reduced set.

In the full regression for the Scrooge Index female gender, more years in higher education, work experience and parental membership in a political party all have significantly negative coefficient estimates and support for continued economic reforms and parental ownership of a firm have a significant negative estimate. In the reduced-set regression all of those variables were selected, with very similar results. In addition, having an Orthodox parent is estimated to have a negative albeit insignificant effect on the Scrooge Index. Thus these indices correlate with other variables which are reasonably connected with attitudes towards fairness and redistribution. What we call the Scrooge scale is constructed from items which indicate opposition to egalitarian, pro-worker and anti-corporate attitudes. Evidence from these regressions shows that subjects with more highly educated parents and who are female are less likely to hold these types of attitudes.

IV.E. Ex-Ante and Ex-Post Surveys

The ex-ante and ex-post surveys, or to use terms more familiar to Russians, the **"a priori" and "a posteriori**" surveys, ask subjects ***how likely*** (‘***>"F8@:l8@ &,D@bH>@***') is it that predictions of economic theory will match the outcome in the last round of the double auction. This elicitation

The exact statement of each prediction of economic theory was imbedded in the question to avoid any ambiguity. This double auction design induces "stair-step" market demand and

supply curves, so there is an exact prediction of the quantity and total profits, but possible competitive equilibrium prices form an interval of 30 units. The instructions asked students should provide their opinion of how well supply and demand theory would predict outcomes in the last round. In particular, the instructions stressed that this was not a test nor an examination. The instructions for the "a priori" instructions and the price question are below.

> **E,6R"F <Z F@$4D",<Fb BD@&,FH4 ^8FB,D4<,>H**, **8@H@DZ6 B@2&@:4H >"< J&4*,H**, **<@0,H :4 H,@D4b** «**8@>8JD,>H>@(@ DZ>8"**» (**4:4 H,@D4b** «**FBD@F" 4 BD,*:@0,>4b**») **BD,*F8"2"H\ FD,*>``P,>J H@D(@&**, **@$V,, 8@:4R,FH&@ BD@*">>ZN 4 8JB:,>>ZN ,*4>4P 4 @$V4, *@N@*Z JR"FH>48@& H@D(@&**, **BD@N@*bV4N B@ BD"&4:"< *&@6>@(@ "J8P4@>"** (double auction), **8@H@DZ, <Z @$FJ0*":4 D">\T,**. **Q,D,2>,8@H@D@, &D,<b *@$D@&@:\PZ 42 &"T,6 (DJBBZ $J*JH H@D(@&"H\ B@ ^H4< BD"&4:"< & H,R,>4, >,F8@:\84N D"J>*@&**. **E:,*J`V4, HD4 &@BD@F" 8"F"`HFb %"T4N @04*">46 @ B@F:,*>,< D"J>*, ^H@6 H@D(@&:4**. **]G? =+ G+EG 3 =+]71! ; +=**! **="< 4>H,D,F>@ 2>"H\%! S+ ; =+=3+ @ 8"R,FH&, BD@(>@2@& H,@D44 FBD@F" 4 BD,*:@0,>4b**. **A@0":J6FH"**, **@H&,H\H, 4F8D,>>,**, **8"8%Z *J<",H,**.
>
> 1) **7"8%Z FR4H",H,**, **>"F8@:\8@ &,D@bH>@**, **RH@ BD,*F8"2">4**e **H,@D44 FBD@F" 4 BD,*:@0,>4b** (**4>H,**p**&":**, **& 8@H@D@< $J*,H 42<,>bHFb FD,*>bb P,>"**, **$J*,H D"&,>** 30 p**J$:b<**) **@8"0,HFb &,D>Z< & B@F:,*>,< D"J>*, H@D(@&:4**?
>
> __100%
> __**F $@:\T@6 &,D@bH>@FH\`**
> __**&,D@bH>@**
> __**<":@&,D@bH>@**
> __**@R,>\ <":@&,D@bH>@**
> __0%
>
> We are about to do an experiment to see if the "competitive market" (or "supply and demand" theory) predicts the average trading price, the total number of units bought and sold, and the combined earnings of traders when trading takes place under the double auction rules we have discussed. Shortly, the volunteers from this class will actually trade for several trading periods under these rules. Please answer the following three questions about what you expect in the final trading period that these volunteers will trade in today. Please be as honest as you can. THIS IS NOT A TEST! We are interested in what YOU EXPECT of the predictive performance of the competitive market theory. Please give forthright answers of what you think.
>
> 1) How likely do you consider that the prediction of the theory of supply and demand will predict, within an interval of thirty rubles, the average trading price in the last trading round of trading?
>
> ___ 100%
> ___ Very Likely
> ___ Likely
> ___ Unlikely
> ___ Very Unlikely
> ___ 0%

The ex post or "a posteriori" survey question was posed in a parallel manner and asked ***how likely*** is it that economic theory's predictions would match outcomes in the last round of a hypothetical experiment conducted in the near future.

Many experimentalists advocate the use of proper scoring rules, monetary rewards for better predictions and cardinal measures of probability beliefs. This methodological approach

has some demonstrated advantages, such as reducing overconfidence in judgements and better calibration (Wright and Aboul-Ezz 1989), and aligns with the view of many economists that only self-interested responses matter.

On the other hand, phrasing belief elicitation in verbal descriptions of "likelihood" has important advantages. Personal judgements of the form of likelihood can form the basis for a well-specified theory of choice under uncertainty (Kreps 1988, Ch. 8). A large literature in psychology has explored how people use verbal expressions of likelihood (Mosteller and Yountz 1990). Ofir and Reddy (1996) found seven-point verbal probability scales based on the terms "likely" or "probable" to be as reliable as the subjective probability scale in which subjects named a number between zero and one hundred. Witteman and Renooij (2003) found that respondents give more accurate answers to drawing-balls-from-an-urn type questions when using an instrument with verbal labels combined with numerical "anchors," such as the 0% and 100% alternatives in our belief elicitation question, than with instruments with only verbal or numerical options. Furthermore, less mathematically sophisticated subjects have an easier time with instruments that combine verbal and numerical labels. In our own previous experience subjects are quick to grasp the meaning of questions framed in terms of likelihood and they respond in reasonable ways to such questions. Both ordinal qualitative responses and incentivized proper scoring rule approaches have minor advantages and disadvantages, though authorities who have investigated the matter conclude that for many applications neither approach is clearly better (Wallsten, Budescu and Zwick 1993).

A second issue concerns use of monetary incentives, which we use to reward traders but not in belief elicitation. Subjects who participate as buyers or sellers in the double auction can earn or lose money according to their actions. However, subjects who indicate that economic predictions are more likely do not receive a reward if those predictions are correct. In our research design providing monetary incentives for accurate "ex-post" prediction on the final survey would have meant abandoning subject anonymity. Moreover, tracking down large numbers of students to make small payments would be a logistical nightmare. While it would have been possible to reward students for more accurate predictions in the ex ante questionnaire, the ex ante elicitation would then have been different from the ex post elicitation, thus making comparisons between ex ante and ex post elicitations difficult. Our belief elicitation did not ask subjects to perform some cognitive difficult task, it did not ask them to state what they would do in a hypothetical situation, it did not ask them whether they would buy or accept a price for some good or lottery. Our belief elicitation item merely asks students a set of straightforward questions phrased in natural language terms about how likely they think specific economic predictions will be fulfilled. Read (2005) concludes that monetary incentives are neither "necessary nor sufficient for achieving our research goals" and that "using incentives can also commit us to complex and cumbersome research designs that get in the way of the questions we want to answer." Thus, our protocol uses monetary incentives in the double auction where research shows they are needed, but not where they could do more harm than good.

The final question asked whether the rules of the double auction were clear by the last round. Sixty four percent indicated they were "clear" and 18% indicated they were "sufficiently clear." Only 2% indicated the rules were "unclear" to them in the final round.

V. Experimental Rounds

In October 2004 we ran 10 experimental rounds in Novosibirsk, at the New Siberian University (NSU) and the Novosibirsk Institute of Railroad Technology (NIZT), and in St. Petersburg at the University of Culture and Arts (UCA). NIZT is a state-funded engineering institute. NSU and UCA are newly-founded post-Soviet private institutions which are largely supported by tuition fees. We collected 169 valid responses. Some subjects did not answer all items, reducing the usable sample size, though 143 subjects answered all questions.

We ran experiments in normal 90-minute class sessions. The instructor introduced the experimenters, and then asked students to fill in the first questionnaire with sociodemographic and attitudinal items. Rules of the double auction, in which traders on both sides of the market can propose prices, were then explained using a PowerPoint presentation. A brief overview of supply and demand theory was given to classes with students who had not had previous economics courses. A sealed envelope containing predictions for average contract price, quantity and total trading profits derived from supply and demand analysis was then given to one student.

Twelve student volunteers were solicited to play as six buyers and six sellers. In each trading round buyers could buy one unit and sellers could sell one unit. Each buyer had a distinct value and each seller had a distinct cost. Buyers or sellers, when recognized by the experimenter, could propose prices ('bids' and 'asks') which were written on a blackboard or could accept a previously proposed price and thus 'sign' a contract. Once two parties made a contract they no longer participated until the next trading round, and any price proposals they had made were erased. Proposed prices were governed by a 'bid improvement rule' so buyers had to offer a higher price than any existing valid bid, and seller had to offer a lower price than any existing valid ask. If a buyer and seller thus agreed on a price, the buyer earned a profit equal to his value minus the contract price and the seller earned a profit equal to the contract price minus her cost.

A "no-money" practice round was run at a slow pace, taking six minutes. Students were encouraged to ask questions during the practice round. After the practice round experimenters checked all trading forms to ensure they were filled in correctly. Students were then asked to fill in a second instrument which asked 'how likely' was it, in their opinion, that supply and demand theory would predict the outcomes of the last round of trading. Five rounds were then run in which traders could earn real money.

After the last trading round the experimenter asked the student holding the sealed envelope to read out the predictions. The experimenter then compared the predictions to the results of the last trading round, pointing out which predictions were fulfilled and which were not. The third survey, which asked about how well economic theory would predict outcomes in a hypothetical future experiment, was distributed and collected. Students who participated as buyers or sellers were then paid. Other students were paid 50 rubles for participation and for handing in completed forms. Fifty rubles are slightly more than the cost of a Big Mac at a Russian McDonald's in 2004. Maximum total payoffs to traders was 600 rubles (total possible profits per round 480 points x 5 rounds x 1:4 conversion between points and rubles).

VI. Data Analysis

The data analysis starts with an analysis of how subjects react to observing prediction

errors. The multivariate analysis requires scales measuring political orientation, trust in authority and economic well-being. The scale construction is described for various measures of interest and checking these scales for content validity. Then responses measuring belief in economic theory's predictive power are regressed on these scales, sociodemographic and other variables.

VI.A. Analysis of Elicited Beliefs

The three items in the second (ex-ante) survey, in which subjects indicate their beliefs about predictions of price, quantity and total trading profits are linked in economic theory and in the mechanics of the market. For example, an error in the quantity prediction necessarily will be accompanied by an error in the total profits prediction. To the extent that subjects understand this, their responses to the three items will vary together. On the other hand, the price prediction is stated in terms of an interval of possible equilibrium prices while the quantity and total profits predictions are of specific magnitudes, which might lead subjects to treat the likelihood of these predictions differently. Therefore a first question is whether there are statistically detectable differences among different ex ante belief measures. Table 7 presents results of tests of the hypothesis that each of the three pairs of ex ante and ex post belief measures are zero. In all three cases no statistically significant difference can be detected using parametric and non-parametric tests, suggesting that subjects do not treat these predictions in different ways. However, Cronbach's alpha for the three items is .58, implying that subjects do not treat these measures in a simple lockstep manner either. Similarly, none of the three ex-post belief measures were significantly different in pairwise comparison using t-tests and nonparametric tests. Cronbach's alpha for the three ex post items is .772 indicating the ex post beliefs are a more cohesive set of measures than are the ex ante beliefs.

In our previous US study which used a similar elicitation subjects responded differently to the price prediction, but no significant difference was seen between the quantity and total profits prediction. Thus US subjects made a statistically noticeable distinction among the predictions, whereas the Russian subjects did not.

VI.B. Evidence and Observed Errors

Many economists use the double auction to change minds of non-economists about the value of economic theory and its applicability. These experimental rounds were no exception. The difference in ex post and ex ante predictions was highly significant, showing that having observed the double auction makes people less skeptical of economic predictions.

While the double auction is a robust market mechanism that usually converges, occasionally it does not. In such cases subjects will observe prediction errors. Subjects in seven rounds saw no errors (N=131). One round had one error (N=9) and another had two (N=14) and one round had three errors (N=15).[9] Students who saw price, quantity or total surplus results in the final round of the double auction that differed from the predictions derived from supply and

[9] Errors occurred due to an experimenter error, not a failure of the market to converge.

demand theory may reasonably be expected to be more skeptical that supply and demand theory would predict outcomes in the future compared to students who saw no prediction errors. The first column of Table 8 shows the differences for all subjects and the second shows differences when subjects who saw three errors are excluded. In both cases the average response moves beliefs towards greater confidence in the predictions of economics, although the size of the effect is bigger when subjects saw no errors or saw one or two errors.

Chart 1 shows cumulative distributions for ex-post expectations for subjects who saw no errors, those who saw one or two errors and those who saw three. The cumulative distribution for those who saw no errors overlaps with the that for one or two errors overlap, but the cumulative distribution for those who saw three errors is shifted far to the right. Subjects do not appear to "punish" economic theory too much for a few errors, but do when economic theory fails to predict any of the items. Because of the size of this effect, observations from the round in which three errors were observed were dropped from the multivariate analysis.

VI.C. Multivariate Analysis of Changes in Attitudes

This section describes analysis of scales created from the ex ante and ex post belief measures, which are regressed on sociodemographic items and the "trust in authority," Prob-Business, Scrooge and Lie scales. These scales were created using principal components analysis in SPSS, which Meulman (1998) describes. As evidence presented in Table 7 shows, the hypotheses that the three individual ex ante items and that the three individual ex ante items do not differ cannot be rejected at the 10% level, we presume that both ex ante and ex post belief scales are unidimensional.

Using a scale to combine belief measures has several advantages. First, the ordinal properties of the original measures are respected. This approach imposes no cardinal assumptions about the "size" of the steps of the Likert scale on the same item nor does it assume the "size" of the steps is equal for different items. For example, the difference between "strongly agree" and "agree" is not constrained to equal the difference between "strongly disagree" and "disagree" on the same item, nor is it constrained to equal the difference between "strongly agree" and "agree" on another item. Second, combining information for three belief measures increases reliability for the same reason that a battery of aptitude questions provides a more reliable measure than a single question. Third, these scale measures can be used as independent variables in the classical linear model, rather than an ordered probit or logit, because they estimate a latent variable with a continuous distribution on the real line.

Table 9 presents OLS regression results for three specifications for the ex ante scale and for the ex post scale. Table 10 presents results of regressions of the ex post scale on the ex ante scale in addition to regressors used in Table 9. Coefficients are reported in terms of standard effects, which are computed by dividing the change in the index function, expressed in units of its own standard deviation, due to a change in one sample standard deviation of the relevant regressor. Thus these coefficients are based on data normalized in a standardized, or *z*-score form, increasing the comparability of estimates of the effects of different independent variables.

The first specification uses a full list of exogenous regressors: variables measuring work experience and attitudes towards economic reform are excluded because they are potentially endogenous. Only a minority of estimated coefficients is statistically significant. Measures or

proxies of income, occupation and education are often highly correlated, making estimates of the marginal effects of any one variable imprecise. Because estimates for occupation and education are not statistically significant for either ex ante or ex post regressions, they are dropped in the second specification to estimate the effects of the income proxies more precisely. Even still, the income proxies (**HH Econ Self Report** and **Best Auto**) have insignificant effects and are jointly insignificant according to conventional criteria. Furthermore, the set of statistically significant coefficients is exactly the same in the first two specifications.

Regressors for the third specification were chosen using the Akaike information criterion (AIC), a widely used model selection tool which based on information theory. Another common selection criterion, the Schwartz Bayesian Criterion (SBC) was also computed, but results are not reported. The SBC selected a similar set of regressors, except that SBC did not choose "**>1 Parent a Party Member**" in the ex ante regression and did not choose the Pro-Business Index in the ex post regression. Amemiya (1980) discusses the relative merits of these criteria.

The empirical results for the three specifications are very similar. Female subjects are initially more skeptical of economic theory than male subjects. After observing the double auction and the comparison of the last round results to the predictions of supply and demand, female subjects become slightly less skeptical of economic predictions, albeit not to a statistically significant degree. Subjects who attended general secondary schools start out more skeptical and appear to become even more skeptical after seeing the double auction. This effect is significant for all six specifications.

Subjects with at least one parent who owns a firm also start out with relatively more skepticism about economic predictions, but appear less skeptical according to the ex post scale. However, the statistical significance of this effect hovers around the 10% confidence level. The income proxies, such as the market value of the best family car and the economic self-report have small estimated effects which are never significant, either singly or jointly.

Parent's beliefs, manifested via religious identification or party membership, also play a role. Subjects with an Orthodox parent indicate a statistically significant degree of greater skepticism on the ex ante measure, and a statistically nonsignificant degree of lessened skepticism on the ex post measures. Caution is in order for the interpretation of this coefficient. First, a substantial overlap exists among subjects with an Orthodox parent and those identifying themselves as Russian. Out of 169 subjects, 124 are Russian and have at least one Orthodox parent. Second, having an Orthodox parent may proxy for differences among subjects that were not measured. Nonetheless, we find this an interesting result and worthy of further investigation.

Subjects with a parent belonging to a party are more skeptical, though this effect is not statistically significant. However, the parent Orthodox and party membership coefficients are jointly significant in two of the ex ante specifications. Furthermore, the AIC chose the parent party membership variable in both ex ante and ex post regressions. In the ex post regressions, parent party membership has a small, consistently negative and statistically insignificant effect.

The indexes created from multiple questions showed no significant effects. The AIC selected the Scrooge Index for the ex ante regression and the Pro-Business index for the ex post regression. The negative coefficients, indicating less skepticism towards economic predictions, seem reasonable given the content of these indices. The size of the effect is roughly half to two-thirds the size of other statistically significant effects, but is so imprecisely measured that the coefficients are not statistically significant.

The regressions presented in Table 10 can be interpreted as an analysis of which variables are associated with subjects "surprise," in that it gives a conditional expectation of ex post beliefs given ex ante beliefs and other controls. To use a Bayesian metaphor, these regressions show subjects "update" their beliefs about economic theory having observed the evidence in the form of the comparison of economic predictions and results of the double auction.

The ex ante scale's positive and strongly significant coefficient implies subjects who start more skeptically, controlling for other factors, end up more skeptically. Furthermore, the ex ante scale contains information about individual-specific differences, such as potentially different standards of likelihood. Thus it is unsurprising that these regressions explain a higher proportion of variance than those without the ex ante scale.[10]

The other results for other regressors are somewhat predictable, given that these regressions could be expressed as the difference of the ex ante and ex post regressions discussed above. Female gender associated with reduced skepticism while those who attended a general state secondary school become relatively more skeptical. Those with more years in higher education are more skeptical. Put differently, subjects who are newer to higher education revise their beliefs to a greater degree, suggesting students in their first years are more impressionable and students farther along in higher education are more resistant to evidence.

Subjects with a parent who owns a firm become significantly less skeptical, although none of the income proxies are significant. Apparently an entrepreneurial presence in the household is more influential than higher incomes via entrepreneurial success or other means. Those with an Orthodox parent also become significantly less skeptical. Finally, the AIC criterion selects the Pro-Business index, which is associated with reduced skepticism, although this effect does not reach statistical significance.

VII. Discussion

Several analysts, historians and commentators have expressed doubt that Russians will accept market institutions or adopt market-oriented attitudes. This project provides a partial test of this claim, in that we measure subjects' beliefs about how markets work and how those beliefs change in response to evidence. If Russians view market processes in fundamentally ways than their Westerners, this would presumably affect Russian subjects' survey responses to questions about how they believe markets work.

In broad terms, the reactions of subjects in Russian and American universities were similar. As Table 8 demonstrates, the average subject becomes more willing by a substantial degree to believe that markets work according to the predictions of supply and demand, just as American subjects did. The greater ex ante skepticism of women was observed in both U.S. and Russian rounds, and gender differences disappeared in the ex post beliefs in both studies. Russian and American responses differed in other ways that will be discussed below.

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[10] The t-statistic associated with ex-ante beliefs, which contains the same information as an F-statistic for the hypothesis that both specifications explain the same proportion of variance, is significant at the 1% level.

Perhaps the best available indicator of "Russian-ness" is identifying a parent as Orthodox. While four-fifths of the sample say at least one parent is Orthodox, the Russian Orthodox church estimates about two-fifths of Russians are Orthodox. The Interior Ministry estimated that 120,000 worshipers attended Easter services in Orthodox churches in Moscow in 1997 which is about 1% of the city's population (Elliott 1997). Since then the Orthodox church has made significant gains, but a vast discrepancy remains between identifying oneself or one's relatives as Orthodox and actual church attendance or other active religious participation. Kääriäinen and Furman (2002), discussing results of a 1999 survey, note that

> 50% of nonbelievers called themselves Orthodox and 42% of atheists did the same. That 82% of Russians consider themselves Orthodox certainly is a great achievement, but it is clear that such "ideological" Orthodoxy has only a very indirect relation to religious faith.

Obviously Orthodox identity is a complicated thing, only loosely tethered to actual religious practice. Nonetheless, subjects who identify a parent as Orthodox have statistically detectable different beliefs about market than others who do not.

Children of Orthodox parents express greater skepticism about economic theory in the ex ante survey, supporting the "Russians are different" view and contradicting the "Russians are just like Westerners" view. However, once subjects see evidence of economic theory's predictive ability in the form of double auction results, subjects with an Orthodox parent become significantly ***less*** skeptical. If growing up in an Orthodox household proxies a stronger identification with traditional Russian culture, then "Russian-ness" is associated with a stronger ex post belief that markets work as economists say they work. This result aligns with the"Russians are just like Westerners" view, at least after seeing external evidence of how markets work, and sharply contrasts to the "Russians are different" view. The difficulty in reconciling both the ex ante and ex post results with either view might stem from two sources.

First, when analysts speak of "the market" or "market forces" they may have in mind something more encompassing than the specific and simple example of a market institution used in these experiments. Views towards "the market" resemble the contents of a bulging suitcase packed with views towards fairness and redistribution, attitudes towards risk, how legal structures defining the bounds of permissible economic behavior are administered, the personalities and histories of economic leaders as well as the positive issue of how markets actually work. Our approach and results, which focus just on the positive issue, suggest any differences in attitudes towards markets between Russians and westerners probably stem from divergent views issues associated with markets, but not from divergent views about how the market works. Maintaining the "Russians are just like Westerners" or "Russians are the same" view would require evidence that Russian view issues connected to the functioning of the market mechanism differently, because the results show Russian attitudes on this core issue are inconsistent with both views.

Second, subjects may doubt that the mechanisms that lead an experimental market to converge to a competitive equilibrium resemble the mechanisms that govern real economies. The greater ex ante skepticism of subjects with entrepreneurial parents provides limited support for this view. Students with closer vantage points to real world economic behavior, in the form

of family businesses, start with greater skepticism about economic theories. However, these students become ***less*** skeptical once they observe the double auction. Thus the classroom experiment changed their views about the market mechanism, whether or not it changed their views of the real world or the probability that imperfections, distortions or manipulations prevent real markets from reaching competitive market outcomes.

The strength of the change in beliefs for subjects with Orthodox or entrepreneurial parents is interesting for other reasons. A subject faced with a new and unfamiliar task or mechanism might employ existing belief structures, such as religion, political orientation and values passed on by parents, to form some view or estimate. A Bayesian decisionmaker would combine this new information with prior beliefs to create a posterior distribution of beliefs. The Bayesian interpretation works well with the gender effects. In our case gender differences seen in ex ante measures disappear after subjects see how the double auction results compare with economic predictions. Other researchers (Casari, Ham and Kagel 2005, Ortmann and Tichy 1999) observe similar behavior, with strong initial gender effects that disappear later on. The disappearance of the gender effects in our experiment suggests that whatever clues or cues that initially differentiate men's view from women's views are overwhelmed once more specific and relevant information becomes available.

However, the Bayesian metaphor does not work for the changes in beliefs for those with Orthodox or entrepreneurial parents. In the US version of this study the same type of effect was observed for relatively leftist students who were more skeptical of economic theory relative to more conservative students, but were ***less*** skeptical on the ex post measures. A more productive approach, we think, is to consider a more sophisticated relation between "Russian-ness" and attitudes towards the market. Being raised in a more traditional Russian household, as proxied by the Orthodox parent variable, might make subjects more wary about economists' chalkboard claims, but more receptive to observable evidence.

Changing beliefs for these subsets of subjects is not a well-oiled hydraulic mechanism in which posteriors emerge smoothly from some combination of priors and new data. In other words the amount by which a subject updates her beliefs varies across the spectrum of political views in the US and varies by religion, or something strongly correlated with religion, and growing up with entrepreneurial parents. This "Saul on the road to Damascus" effect, in which the strongest disbelievers become the strongest believers, requires an explanation with a more complex or more structured cognitive mechanism.

A generation ago social psychologists rejected theories of persuasion and attitude change based on "a passive and rational listener" in favor of approaches presuming "more active, dogmatic and argumentative listeners . . . [who] may mentally dispute conclusions, present counterarguments or derogate the communicator" (Lepper 1981). Petty and Cacioppo's (1986) 'elaboration likelihood model' identifies a deliberative 'central route' in which a person evaluates relevant information and a 'peripheral route' in which factors other than active thinking influence attitudes and beliefs. Individuals with a stronger 'need for cognition,' with higher intelligence or who find the issue at hand more important or relevant are claimed to be more likely to employ the 'central' route. Individuals who are distracted, who find the issue at hand irrelevant or confusing, or who hold strong opposing beliefs are more likely to employ the 'peripheral' route. For example, how the market mechanism works may well be more relevant to subjects with entrepreneurial parents and subjects who attended more elite schools may be more

intelligent or may have better training in deliberative thinking. If these factors increase the likelihood that they will use the 'central' route, the degree of change of beliefs may be greater.

To test the hypothesis that changes in beliefs are different for those who are confused or unable to grasp new information quickly we run regress ex post beliefs on the independent variables selected by AIC and the variable **RulesClear** which indicates that a subject understood the rules of the double auction in the last round. A subject was considered to have understood the rules if she responded that the rules were "comprehensible" or "sufficiently comprehensible." As the results presented on the left side of Table 11 show, **RulesClear** is significant at the 5% level and has an effect larger than gender or general secondary school attendance, which become statistically insignificant. This suggests the school attendance and gender effects correlate with understanding of the experiment, which may be do to disinterest, low intelligence or other barriers to cognition. Because a subject's ability depends at least in part in her willingness to absorb new information or on level of interest, whether a subject understands the rules is endogenous. The probit regression of **RulesClear** on the right side of Table 11 clearly shows this. Therefore results of the ex post OLS regression that include **RulesClear** must be treated with caution. While this experiment was not designed to test hypotheses about individual differences in "routes" of persuasive influence, these regression results do suggest that cognitive differences matter in explaining how different subject change their beliefs to different degrees.

The variables and indices which did not play a statistically detectable role also deserve comment. In contrast to the results of the US study, political orientation (ideology) does plays no strong role, though some weak evidence suggests that subjects with pro-business views are less skeptical and subjects with more pro-worker and a stronger preference for redistribution are more skeptical. Given the short history of modern Russian democracy and the early stage of Russian political parties this might be unsurprising. In a younger democracy personalities are more important to voters than parties, which often suddenly appear and disappear (Wilson 2005). Moreover, the views of eastern European politicians and officials are disconnected from views of ordinary citizens (Miller and Duckett, 2005), so the labels and concepts used in elite and governmental circles carry little resonance for ordinary citizens. As Russian politics evolve and parties become stable institutions, political orientation may become more salient to voters.

Much has been written about winners and losers in the Russian economic transition, but sociodemographic controls such as occupation, education and income play little or no measurable role in affecting economic beliefs. Sociodemographic measures do correlate with political orientation: the best auto income proxy correlates with pro-business attitudes, and parental education correlates with pro-business attitudes as well as with trust in authority. Sociodemographic differences do matter in describing differences in social and political attitudes, but they do not seem to matter in how subjects view the market mechanism. Similarly, Miller and Duckett (2005, p.28) in a large scale survey and interview study of attitudes towards globalization in eastern Europe and east Asia find "a majority feel that the market economy is unfair but nonetheless that it increases national prosperity."

VIII. Conclusion

Our results show that when Russians see evidence of how economic theory can predict market outcomes changes their economic beliefs change and they become less skeptical of

economic predictions. Young Russians are willing to change their minds and that in many respects they change their minds in ways similar to young Americans. This is important to anyone who thinks public policy is affected by what the public believes. Both the "Russians are just like Westerners" and "Russians are different" camps agree that attitudes towards the market can affect policy, either because they can cause reforms to go awry according to the former view or because educating the population about basic market principles improves the chances of implementing economic reforms and making them irreversible. How reformers could best gather the popular support necessary to make economic reforms irreversible was a concern for both, though they differed sharply on the right approach.

Whether those changes in beliefs we observe persist and whether they transfer to beliefs about actual markets is beyond the scope of this work. Russian transition has been hindered by a weak legal system, nontransparent administrative and regulatory structures, episodes of monetary instability and a continued reliance on cronyism and connections instead of competition according to clear rules to allocate resources and opportunities. Some may doubt the value of markets when key players gain more from stealing than competing. Others may believe market forces will deliver growth and greater efficiency despite imperfections large or small. In either case, a clear understanding of how markets work in ideal situations would either generate support for a better legal and regulatory infrastructure among those judging the current situation inadequate or create pressure to expand competition into new areas of the economy among those who trust market forces to bring broad material gains even in imperfect surroundings.

Popular support for market reform is probably based on a complex set of views and judgements. Russian social attitudes play their own role. The Soviet-era catchphrase "he who doesn't steal from his employer steals from his family" reflected a rational response to the communism. However, the view that stealing from others for the benefit of oneself and one's friends and family is profoundly unhelpful in the development of well-functioning markets. Regardless of whether these attitudes stem from transition or the Soviet experience or from the pre-industrial past that Goldman stresses, mistrust or contempt of public institutions and the reliance on close friendship and family ties hinder the expansion of the role of markets. In addition, dysfunctional economic conditions and entrenched interests' success in slowing reform have kept "bizarre economic ideas alive (Aslund 2002, pp. 79)."

Both the "Russians are different" and "Russians are just like Westerners" camps should agree that deep and irreversible public support for market reforms must include a clearer understanding of how markets work. If the costs of public misunderstandings of the market were high, then so are the policy benefits of better public understanding. If Russians can be persuaded that markets work according to well-understood principles and deliver efficient outcomes, as our results suggest, then the potential exists for creating greater public support for a wider role for the market.

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Table 1: Descriptive Statistics for Experimental and Non-Experimental Sample

Item	N	Min.	Max.	Mean	Std. Dev.
Age	337	16	34	19.07	2.267
Gender	337	0	1	0.75	0.433
Years in Higher Ed	169	1	7	2.51	1.359
Family Size	168	2	7	3.77	.948
At least 1 parent self-employed	360	0	1	0.35	0.478
Father Self-Employed	274	0	1	0.32	0.466
Mother Self-Employed	296	0	1	0.23	0.424
At least 1 parent has own firm	360	0	1	0.12	0.321
At least one parent party member	360	0	1	0.04	0.206
At least one parent Orthodox	360	0	1	0.81	0.396
Ex-Ante Price (Likert)	162	1	5	3.07	0.853
Ex-Ante Quantity (Likert)	163	1	6	2.94	0.928
Ex-Ante Total Profits (Likert)	163	1	6	3	1.036
Ex-Post Price (Likert)	160	1	5	2.46	1.109
Ex-Post Quantity (Likert)	160	1	6	2.37	0.895
Ex-Post Total Profits (Likert)	160	1	6	2.42	0.961
Sum of Ex Ante Items	163	3	15	8.99	1.945
Sum of Ex Post Items	160	3	17	7.24	2.423
Diff in Ex Post and Ex Ante Sums	143	-12	11	-2.15	3.46
Total Observed Prediction Errors	169	0	3	0.49	0.977

Notes: For simple questions, 1=Yes and 0=No. For Likert scale items, 1=Strongly disagree, 2=Disagree, 3=More disagree than agree, 4=More agree than disagree, 5=Agree, 6=Strongly agree. Data are from Sept. 2004 Novosibirsk pre-test, Oct. 2004 experimental rounds, and 2004 surveys from Tomsk and Ekaterinburg.

Table 2: Characteristics of Experimental Subjects and their Parents

Subject Characterictics	Percent
Location	
St. Petersburg rounds	62.1
Novosibirsk rounds	37.9
Nationality	
Russian	86.4
Other	13.6
Female	68.6
Male	31.4
Year in College	
First	23.7
Second	40.2
Third	10.7
Fourth	14.2
More	11.2
Previous Economics Course	
Yes	56.2
No	43.8
Indicated Economic Reforms Should Continue	
Yes	76.9
No	2.4
No Response	19.5
Family has an Auto	49.7
No Auto	50.3
Type of Secondary School Attended	
General Public School	58
Specialized Public School	16
Special Language School	7.1
Lyceum	4.7
Gymnasium	12.4

Parents' Characteristics	Percent
Highest Level of Education Among Parents	
Completed Higher Education	64.9
Did not finish Higher Education	6.1
Technical (Technikum)	23.6
Trade School (**AGI**)	2.4
Other	3
At Least One Parent Owns Own Firm	
Yes	14.2
No	85.8
Self-Employment	
Father: Yes	32.8
Father: No	67.2
Mother: Yes	24.8
Mother: No	75.2
Member in a Political Party	
Father: Yes	7.4
Father: No	92.6
Mother: Yes	2.6
Mother: No	97.4
At Least One Parent Orthodox	
Yes	83.4
No	16.6
Highest Occupational Level Among Parents	
Legislators, sr. officials and managers	27.1
Professionals	39.8
Technicians and associate professionals	9
Clerks, Service and sales workers	18.7
Craft and related trades workers	4.2
Elementary occupations	1.2
Total Experimental Subjects	169

Household Economic Self-Report

We barely make ends meet; there isn't enough money for daily necessities.	0
There is enough money for daily necessities, but buying clothes is difficult.	4.73
There is enough money for daily necessities and clothes, but buying durable goods is difficult.	44.97
We can buy durable goods without difficulty, but we can't afford really expensive goods.	44.97
We can buy really expensive goods: apartments, dachas, SUVs, etc.	5.33

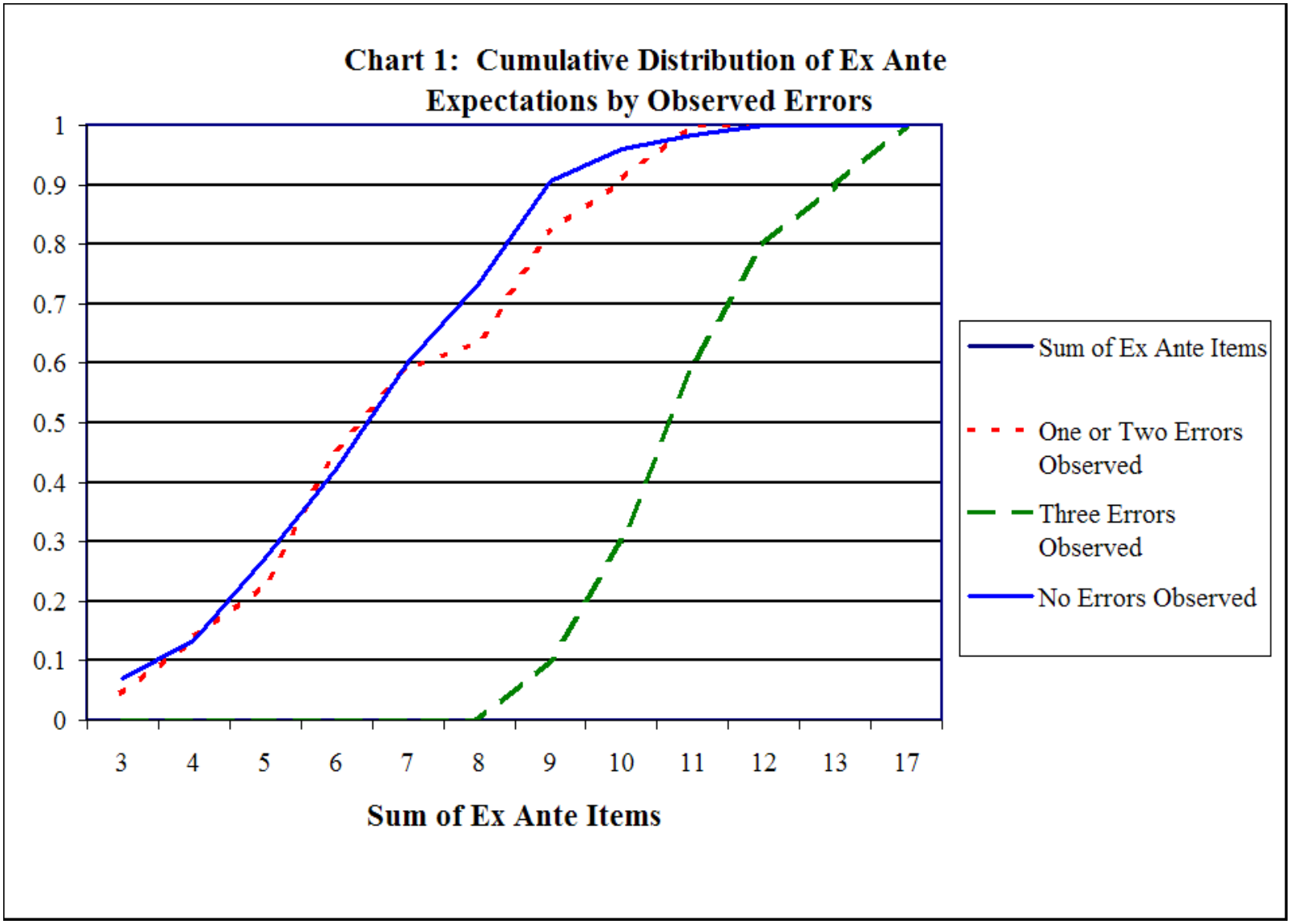
Chart 1: Cumulative Distribution of Ex Ante Expectations by Observed Errors
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
3
4
5
6
7
8
9
10
11
12
13
17
Sum of Ex Ante Items
Sum of Ex Ante Items
One or Two Errors Observed
Three Errors Observed
No Errors Observed

Table 3: Political Orientation Items used in Scale Construction

Item and Translation	Mean	Std. Dev.	Pro-Business Factor Loadings	Scrooge Index Factor Loadings
The way most companies work, the only thing management cares about is profits. EJ*b B@ H@<J, 8"8 D"$@H",H $@:\T4>FH&@ 8@<B">46 <@0>@ F8"2"H\, RH@ ,*4>FH&,>>@, @ R,< $,FB@8@bHFb DJ8@&@*4H,:4 - ^H@ BD4$Z:\, 4N >, &@:>J,H H@, R,(@ N@HbH D"$@H>484 4 RH@ 4< >J0>@.	4.11	1.27		.725
Workers and managers have conflicting interests and are essentially enemies. C"$@H>484 4 DJ8@&@*4H,:4 4<, ` H BD@H4&@B@:@0>Z, 4>H,D,FZ 4 b&:b ` HFb ,FH,FH&,>>Z<4 BD@H4&>48"<4.	3.05	1.30		.700
When firms make decisions concerning employment, production level and etc, workers should have a stronger voice than they have now. 7@(*" >" BD,*BD4bH44 *,:@ 8"F",HFb BD4>bH4b D,T,>46, D"$@R4, *@:0>Z 4<,H\ $@:,, &,F@<@, BD"&@ (@:@F", R,< @>4 4<, ` H F,6R"F.	4.37	1.09		.641
A market economy will increase the number of poor people. CZ>@R>"b ^8@>@<48" &Z04&",H 2" FR,H ,V, $@:\T,(@ @$>4V">4b $,*>ZN.	3.43	1.40		.622
People in your country do not receive a fair share of what they produce. 9 ` *4, D"$@H" ` V4, & >"T,6 FHD">, >, B@:JR" ` H FBD"&,*:4&J ` *@: ` @H H@(@, RH@ @>4 BD@42&@*bH.	4.75	1.08		.560
In a fair economic system all people would earn approximately equal wages. % JF:@&4bN FBD"&,*:4&@6 ^8@>@<4R,F8@6 F4FH,<Z &F, : ` *4 2"D"$"HZ&":4 $Z BD4<,D>@ @*4>"8@&@.	2.94	1.33		.522
Most businessmen do important work and therefore, deserve high payment for it. #@:\T4>FH&@ BD,*BD4>4<"H,:,6 *,:" ` H &"0>J ` D"$@HJ 4 2"F:J04&" ` H &ZF@84N 2"D"$@H8@&.	3.87	1.21	.660	
Businessmen earn profits because they take risks and manage better than their competitors. AD,*BD4>4<"H,:4 B@:JR" ` H BD4$Z:\, B@H@<J RH@ @>4 $,DJH >" F,$b D4F84, 4 4<, ` H $@:\T4, JBD"&:,>R,F84, FB@F@$>@FH4, R,< 4N 8@>8JD,>HZ.	4.32	1.16	.606	
Getting ahead is basically a consequence of a person`s abilities and diligence. AD@*&40,>4, &B,D,* - & @F>@&>@< F:,*FH&4, FB@F@$>@FH,6 4 HDJ*@: ` $4b.	4.59	1.16	.590	
The system of private property in production in general is a fair and effective system. E4FH,<" R"FH>@6 F@$FH&,>>@FH4 & BD@42&@*FH&,, & @$V,<, b&:b,HFb FBD"&,*:4&@6 4 ^LL,8H4&>@6 F4FH,<@6.	3.94	1.18	.544	
Competition at school, at work or in business stimulates people to do their best. 7@>8JD,>P4b & T8@:,, >" D"$@H, 4:4 & $42>,F, &,*,H 8 H@<J, RH@ R,:@&,8 FH"D",HFb &F, F*,:"H\ 8"8 <@0>@ :JRT,.	4.64	1.22	.464	
What a person receives in life doesn't depend on what he has inherited, but on his personality and education. G@, R,(@ R,:@&,8 *@FH4(",H & 042>4, 2"&4F4H >, @H ,(@ BD@4FN@0*,>4b, " @H ,(@ FB@F@$>@FH,6 4 B@:JR,>>@(@ @$D"2@&">4b.	4.81	1.23	.412	

Notes: N=301. Data taken from Sept. 2004 Novosibirsk pretest, October 2004 experimental rounds, and 2004 data from Tomsk and Ekaterinburg. Factors below .35 suppressed. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Table 4: Cronbach's Alpha for Political Orientation Scales

Dimension	Cronbach's Alpha	Variance Accounted For	
		Total (Eigenvalue)	% of Variance
"Scrooge Index"	.724	2.975	24.790
"Pro-Business Index"	.525	1.926	16.048
Total	.868[a]	4.901	40.838

a Total Cronbach's Alpha is based on the total Eigenvalue.

Table 5: Three Scale Measures Regressed on Full Set of Independent Variables

	Scrooge Scale		Pro-Business Index		Trust in Authority	
Variable	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**
Intercept	0.00	0.17	0.00	0.26	0.00	0.82
St. Petersburg Indicator	-0.07	0.47	-0.10	0.29	0.08	0.43
Female Gender	**-0.18**	0.024	-0.10	0.25	-0.14	0.12
Attended General Second. Educ.	-0.02	0.77	-0.00	0.96	0.09	0.28
Years in Higher Ed.	**-0.23**	0.01	-0.02	0.80	**0.20**	0.040
Previous Econ Course	-0.01	0.94	0.09	0.30	-0.04	0.64
Supports Continued Econ Reform	**0.20**	0.010	**0.17**	0.04	-0.09	0.29
Has Work Experience	**-0.15**	0.06	0.06	0.50	-0.05	0.60
>1 Parent Owns Firms	**0.30**	0.001	**0.23**	0.01	0.04	0.68
>1 Parent Orthodox	-0.05	0.53	0.04	0.66	-0.03	0.71
>1 Parent Christian,Not Orthodox	0.13	0.106	0.07	0.40	**-0.16**	0.076
>1 Parent Member of Political Party	**-0.18**	0.02	0.01	0.91	0.07	0.39
Best Educated Parent - Higher Ed.	-0.11	0.46	-0.12	0.44	0.02	0.91
Best Educated Parent - Technical	-0.10	0.47	0.03	0.86	0.15	0.33
Sr. Official	-0.10	0.30	0.08	0.40	0.09	0.38
Professional	-0.06	0.54	0.06	0.51	-0.08	0.44
Market Value of Best Auto	0.029	0.73	**0.15**	0.09	-0.12	0.21
Best Vacation Type	0.037	0.68	0.09	0.32	0.02	0.85
HH Econ SR = 2	0.025	0.76	-0.03	0.69	0.03	0.77
HH Econ SR = 3	0.062	0.45	0.09	0.30	0.02	0.84
R-Square	0.276		0.227		0.138	
Adj R-Sq	0.176		0.121		0.019	
F Value	2.77		2.14		1.16	

Notes: "Standard effect" is the change in the index function expressed in units of its own standard deviation due to a change in one sample standard deviation of the indicated explanatory variable. See text for other notes.

Table 6: Scale Measures Regressed on Selected Set of Independent Variables

	Scrooge Scale		Pro-Business Index		Trust in Authority	
Variable	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**
Female Gender	**-0.17**	0.03	-0.12	0.11	**-0.16**	0.04
Years in Higher Ed.	**-0.26**	0.00			**0.21**	0.01
Previous Econ Course			0.11	0.13		
Supports Continued Econ Reform	**0.19**	0.01	**0.18**	0.02		
Has Work Experience	**-0.16**	0.03				
>1 Parent Owns Firms	**0.27**	0.00	**0.26**	0.00		
>1 Parent Orthodox	-0.10	0.17				
>1 Parent Christian, Not Orthodox					**-0.15**	0.05
>1 Parent Member of Political Party	**-0.16**	0.03				
Best Educated Parent - Higher Ed.			**-0.14**	0.07		
Professional					**-0.14**	0.09
Market Value of Best Auto			**0.15**	0.07		
Best Vacation Type			0.11	0.18		
HH Econ SR = 3			0.09	0.26		
R-Square	0.239		0.208		0.088	
Adj R-Sq	0.203		0.166		0.064	
F Value	6.72		4.90		3.67	

Notes: Independent variables besides constant selected by AIC and Schwarz Bayesian criterion, which agreed in all three cases. Intercept not reported.
"Standard effect" is the change in the index function expressed in units of its own standard deviation due to a change in one sample standard deviation of the indicated explanatory variable. This makes for an easier comparison of the effects among rows.

Table 7: Relationship Between Pairs of Ex Ante and Ex Post Belief Measures

Pair of Ex Ante Measures	**P-values for tests of hypothesis that difference is zero**
price minus quantity	mean difference: .136 (N=162) t-test: p= 0.124 Sign: p=0.228 Signed Rank: p=0.1979
price minus total profits	mean difference: .0802 (N=162) t-test: p=0.425 Sign: p=0.305 Signed Rank: p=0.211
quantity minus total profits	mean difference: -.0613 (N=163) t-test: p= 0.500 Sign: p=0.762 Signed Rank: p=0.598
Pairs of Ex Post Measures	
price minus quantity	mean difference: .0875 (N=160) t-test: p=0.300 Sign: p=0.741 Signed Rank: p= 0.506
price minus total profits	mean difference: .0375 (N=160) t-test: p=0.651 Sign: p=0.679 Signed Rank: p =0.637
quantity minus total profits	mean difference: -.050 (N=160) t-test: p=0.478 Sign: p=1.00 Signed Rank: p=0.784

Notes: One-sample tests based on within-subject differences. Negative sign for differences indicate decreased skepticism of economic theory's predictive ability.

Table 8: Relationship Between Ex Ante and Ex Post Belief Measures

Predictions: Ex Post - Ex Ante	**P-values for tests of hypothesis that difference is zero: All Data**	**P-values for tests of hypothesis that difference is zero: Exclude subjects who saw 3 errors**
price	mean difference: -.605 (N=157) t-test: p=0.0000 (t=5.86) Signed Rank: p=0.0000 (z=5.34)	mean difference: -.676 (N=148) t-test: p=0.0000 (t=6.40) Signed Rank: p=0.0000 (z=5.77)
quantity	mean difference: -.570 (N=158) t-test: p=0.0000 (t=5.86) Signed Rank: p=0.0000 (z=5.64)	mean difference: -.651 (N=149) t-test: p=0.000 (t=6.77) Signed Rank: p=0.0000 (z=6.28)
total profits	mean difference: -.563 (N=158) t-test: p= 0.0000 (t= 5.72) Signed Rank: p=0.0000 (z=5.45)	mean difference: -.638 (N=149) t-test: p= 0.0000 (t= 6.50) Signed Rank: p= 0.000 (z=5.903)

Notes: One-sample tests based on within-subject differences. Negative sign for differences indicate decreased skepticism of economic theory's predictive ability.

Table 9: Scale Measures Regressed on Full Set of Independent Variables

	Ex Ante Beliefs Scale						Ex Post Beliefs Scale					
	Full Set		Reduced Set		AIC Selection		Full Set		Reduced Set		AIC Selection	
Variable	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**
St. Petersburg	0.024	0.81	0.025	0.78			0.089	0.44	0.084	0.45		
Female Gender	**0.220**	0.01	**0.197**	0.02	**0.190**	0.02	-0.086	0.35	-0.083	0.35		
Attended Gen 2ndary School	**0.179**	0.04	**0.188**	0.02	**0.178**	0.02	**0.209**	0.02	**0.221**	0.01	**0.189**	0.02
Years in Univ.	0.016	0.86	0.019	0.83			**0.198**	0.050	**0.184**	0.06	**0.189**	0.02
Previous Econ Course	-0.084	0.37	-0.075	0.41			0.009	0.93	0.016	0.88		
Market Value of Best Auto	0.015	0.86	0.005	0.95			0.015	0.87	0.031	0.72		
>1 Parent Owns Firm	**0.166**	0.09	0.130	0.14	0.127	0.12	-0.168	0.104	**-0.159**	0.09	**-0.153**	0.08
HH Econ Self Report=2	-0.007	0.94					-0.086	0.34				
HH Econ Self Report=3	0.064	0.46					-0.009	0.92				
Joint Significance	F=0.57	0.68	F=1.16	0.35			F=0.88	0.48	F=1.45	0.24		
>1 Parent Orthodox	**0.150**	0.08	**0.150**	0.07	**0.160**	0.04	-0.116	0.20	-0.121	0.17	-0.119	0.14
>1 Parent Party Member	0.104	0.20	0.110	0.17	0.113	0.14	0.054	0.53	0.056	0.50	0.064	0.43
Joint Significance	F=1.97	0.14	F=2.43	0.09	F=3.04	0.05	F=1.13	0.33	F=1.32	0.27	F=1.57	0.21
Sr. Official	-0.021	0.83					0.002	0.98				
Professional	0.042	0.67					-0.054	0.61				
Joint Significance	F=0.09	0.91					F=0.2	0.82				
POSTGRAD	-0.026	0.87					-0.042	0.79				
TECHNIC_ED	-0.109	0.46					-0.052	0.73				
Joint Significance	F=0.54	0.58					F=0.06	0.94				
Scrooge Index	-0.104	0.25	-0.108	0.22	-0.124	0.12	-0.032	0.73	-0.033	0.72		
Pro-Business Index	0.008	0.92	-0.026	0.76			-0.109	0.25	-0.105	0.25	-0.108	0.20
Trust in Authority Index	0.077	0.36	0.051	0.53			-0.012	0.89	-0.005	0.95		
Lie Index	0.057	0.51	0.023	0.78			-0.044	0.62	-0.057	0.51		
Joint Significance	F=1.71	0.17	F=0.79	0.50			F=0.31	0.82	F=0.4	0.76		
# Errors Observed							-0.140	0.16	-0.134	0.16		
R-Square	0.187		0.1414		0.1305		0.173		0.162		0.1393	
Adj R-Sq	0.068		0.655		0.0966		0.042		0.074		0.1027	
F Value	1.57		1.86		3.85		1.32		1.83		3.80	
N	155		160		160		147		147		147	

Notes: "Standard effect" is the change in the index function expressed in units of its own standard deviation due to a change in one sample standard deviation of the indicated explanatory variable. Intercept coefficients not reported. Positive coefficients indicate changes in variable associated with greater skepticism of economic predictions. See text for other notes.

Table 10: Ex Post Beliefs Regressed on Ex Ante Beliefs and Other Independent Variables

	Ex Post Beliefs Scale					
	Full Set		Reduced Set		AIC Selection	
Variable	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**	**Std. Effect**	**Pr > |t|**
Ex Ante Beliefs Scale	**0.326**	0.00	**0.319**	0.00	**0.320**	<.0001
St. Petersburg	0.098	0.37	0.088	0.41		
Female Gender	**-0.163**	0.07	**-0.158**	0.07	**-0.138**	0.09
Attended Gen 2ndary School	**0.152**	0.08	**0.159**	0.06	**0.128**	0.09
Years in Univ.	**0.182**	0.06	**0.166**	0.08	**0.176**	0.02
Previous Econ Course	0.050	0.62	0.054	0.59		
Market Value of Best Auto	0.005	0.96	0.006	0.94		
>1 Parent Owns Firm	**-0.212**	0.03	**-0.210**	0.03	**-0.190**	0.02
HH Econ Self Report=2	-0.094	0.28	-0.099	0.24		
HH Econ Self Report=3	-0.046	0.61	-0.043	0.62		
Joint Significance	*F=1.35*	*0.25*	*F=1.54*	*0.19*		
>1 Parent Orthodox	**-0.159**	0.07	**-0.153**	0.08	**-0.174**	0.03
>1 Parent Party Member	0.013	0.87	0.012	0.88		
Joint Significance	F=1.74	0.18	F=1.68	0.19		
Sr. Official	-0.010	0.93				
Professional	-0.071	0.49				
Joint Significance	*F=0.31*	*0.73*				
POSTGRAD	-0.028	0.86				
TECHNIC_ED	-0.007	0.96				
Joint Significance	*F=0.03*	*0.97*				
Scrooge Index	0.012	0.90	0.019	0.83		
Pro-Business Index	-0.127	0.16	-0.128	0.14	-0.116	0.15
Trust in Authority Index	-0.045	0.59	-0.040	0.62		
Lie Index	-0.043	0.61	-0.043	0.60		
Joint Significance	*F=0.40*	*0.75*	*F=0.46*	*0.71*		
# Errors Observed	-0.130	0.17	-0.135	0.14		
R-Square	0.258		0.253		0.229	
Adj R-Sq	0.133		0.154		0.190	
F Value	2.07		2.57		5.88	
N	146		146		146	

Notes: "Standard effect" is the change in the index function expressed in units of its own standard deviation due to a change in one sample standard deviation of the indicated explanatory variable. Intercept coefficients not reported. Positive coefficients indicate changes in variable associated with greater skepticism of economic predictions. See text for other notes.

Table 11: OLS Regression of Ex Post Beliefs on RulesClear and Probit of RulesClear on Full Set of Regressors

	Ex Post Beliefs Scale (OLS)			Rules Not Understood in Last Round (Ordered Probit)	
Variable	**Std. Effect**	**Pr > |t|**		**Std. Effect**	**Pr > |t|**
Ex Ante Beliefs Scale	**0.337**	<.0001			
St. Petersburg				0.10	0.515
Female Gender	-0.121	0.14		0.02	0.901
Attended Gen 2ndary School	0.105	0.17		**0.40**	0.003
Years in Univ.	**0.181**	0.02		-0.18	0.246
Previous Econ Course				0.04	0.804
Market Value of Best Auto				0.04	0.733
>1 Parent Owns Firm	**-0.217**	0.01		0.21	0.147
HH Econ Self Report=2				-0.07	0.611
HH Econ Self Report=3				-0.02	0.893
>1 Parent Orthodox	**-0.162**	0.04		**-0.26**	0.032
>1 Parent Party Member				-0.04	0.776
OccupCode1				0.15	0.345
OccupCode2				0.21	0.181
POSTGRAD				**-0.53**	0.012
TECHNIC_ED				-0.35	0.067
Trust in Authority Index				-0.10	0.395
Scrooge Index				0.19	0.147
Pro-Business Index	-0.110	0.17		-0.08	0.553
Lie Index				-0.15	0.255
RulesClear	**-0.159**	0.04			
# Errors Observed					
R-Square	0.252		Chi-Sq.(19)	28.818	
Adj R-Sq	0.208				
F Value	5.8				
N	146			130	

Notes: "Standard effect" is the change in the index function expressed in units of its own standard deviation due to a change in one sample standard deviation of the indicated explanatory variable. Intercept coefficients not reported. Positive coefficients in first regression indicate changes in variable associated with greater skepticism of economic predictions. Positive coefficient in second regression indicates greater probability that subject was not clear on rules in last round of the double auction. Categories "Not understood" and "Insufficiently understood" combined. Chi-sq. test for second equation is LR test that all coefficients besides intercepts are zero. See text for other notes.