

ECONOMETRICS LETTERS¹

ISSN = 2148-6212

Vol:1 Issue:2

Still Staying Away: Women and the Economics Major Evidence from Two Southern Liberal Arts Colleges

Fred H. Smith and Christina Zenker

The Stochastic Futures of the Natural Gas Prices: Russian Federation in Caspian Region

Narmin Mammadova

Profitability Effects of Owning a Group Affiliated Media Institution: An Emerging Market Case

Deniz Ilalan

Econometrics Letters Editorial Board

Editors:

Mubariz Hasanov

Okan University, Istanbul, Turkey

Tolga Omay

Cankaya University, Ankara, Turkey

Managing Editor:

Deniz Ilalan

Cankaya University, Ankara, Turkey

Advisory Editor:

Erdoğan Telatar

Okan University, Istanbul, Turkey

Haluk Erhat

Middle East Technical University (METU), Ankara, Turkey

Nadir Öcal

Middle East Technical University (METU), Ankara, Turkey

Nezir Köse

Gazi University, Ankara, Turkey

Nicholas Apergis

University of Piraeus, Piraeus, Greece

Nicola Spagnolo

Brunel University, London, UK

Micheal Berlemann,

University of Helmut Schimth, Germany

Peren Arin

Zayed University, Abu Dhabi

Yılmaz Akdi

Ankara University, Ankara

Associate Editors:

Arzu Uluc

Central Bank of England, London, UK

Perihan İren

Zayed University, Abu Dhabi

Furkan Emirmahmutoglu

Gazi University, Ankara, Turkey

¹ Scientific Letters Internet publishing Company

Address : Atac sok. 70/3 Kizilay, Ankara, Turkey. Post Code 06420

e-mail : scientificletters@scientificletters.com.

Econometrics Letters Editorial Board

Editors:

Mubariz Hasanov
Okan University, Istanbul, Turkey
Tolga Omay
Cankaya University, Ankara, Turkey

Managing Editor:

Deniz Ilalan
Cankaya University, Ankara, Turkey

Advisory Editor:

Erdoğan Telatar
Okan University, Istanbul, Turkey
Haluk Erhat
Middle East Technical University (METU), Ankara, Turkey
Nadir Öcal
Middle East Technical University (METU), Ankara, Turkey
Nezir Köse
Gazi University, Ankara, Turkey
Nicholas Apergis
University of Piraeus, Piraeus, Greece
Nicola Spagnolo
Brunel University, London, UK
Micheal Berlemann,
University of Helmut Schimth, Germany
Peren Arin
Zayed University, Abu Dhabi
Yılmaz Akdi
Ankara University, Ankara

Associate Editors:

Arzu Uluc
Central Bank of England, London, UK
Perihan İren
Zayed University, Abu Dhabi
Furkan Emirmahmutoglu
Gazi University, Ankara, Turkey

Scientific Letters Internet publishing Company

Address : Atac sok. 70/3 Kizilay, Ankara, Turkey. Post Code 06420

e-mail : scientificletters@scientificletters.com.

ISSN = 2148-6212

Econometrics Letters Table of Content for Vol(1) :Issue :2

Still Staying Away: Women and the Economics Major Evidence From Two Southern Liberal Arts Colleges

Fred H. Smith
Christina Zenker

Abstract

(1-6)

This article extends the literature that examines the underlying reasons for the gender imbalance in the field of economics. Previous research suggests that women are less likely to major in economics because of the lack of female role models in the subject (Ashworth and Evans 1999), math anxiety (Dyan and Rouse 1997), and the influence of parents' education levels (Leppel 2001) and career preferences (Turner and Bowen 1999). These papers have focused on data collected from nonsectarian, coeducational institutions located in the Northern United States. We focus our analysis on the choice of major at two Southern liberal arts colleges, Davidson College, which is affiliated with the Presbyterian Church, and Salem College, a women's college that is affiliated with the Moravian Church. We find that women are still less likely to major in economics than men, and that attending a women's college has no effect on this result. However, we find that the likelihood of majoring in economics rises if students have a female instructor for an economics course, if they have completed calculus in high school, or if they perceive that their job prospects are better after majoring in economics.

Keywords: Economics major; Undergraduate Economics; Gender; Liberal Arts Col..

JEL Codes: A22

The Stochastic Futures of the Natural Gas Prices: Russian Federation in Caspian Region

Narmin Mammadova

Abstract

(7-13)

This study examines the convergence hypothesis of natural gas price series of Russian Federation and USA using both linear and nonlinear time series techniques Russian Federation and USA during the period of 1991-2011. Although the linear Augmented Dickey Fuller (ADF), Philips Perron (PP), test provide evidence of the existence of a unit root, which means that the series are nonstationary, KPSS test result support the null hypothesis of existence of the stationary series. A nonlinear test as an alternative approach to investigate whether there are nonlinearities in the series is also taken into consideration. KSS, the nonlinear testing procedure provide some supportive evidence of a nonlinear price convergence among the Russian Federation and USA.

Keywords: Nonlinear Unit Root Test; Convergence Hypothesis; Natural Gas Price.

JEL Codes: C12; C22; O47.

Profitability Effects of Owning a Group Affiliated Media Institution: An Emerging Market Case

Deniz Ilalan

Abstract

(14-20)

This study focuses on the performance effects of having a group affiliated media institution under the group umbrella. Existence of a media institution is expected to increase the overall group performance. The econometric model is based on the annual data between 2000-2010 for an emerging market, Turkey. It is found that owning a media institution significantly has a positive impact on the performance of group firms.

Keywords: Panel Data; Emerging Market; Media Institution.

JEL Codes: C31; G15 ; L82



Still staying away: Women and the economics major – evidence from two Southern liberal arts colleges

Fred H. Smith¹

Christina Zenker²

Abstract

This article extends the literature that examines the underlying reasons for the gender imbalance in the field of economics. Previous research suggests that women are less likely to major in economics because of the lack of female role models in the subject (Ashworth and Evans 1999), math anxiety (Dyner and Rouse 1997), and the influence of parents' education levels (Leppel 2001) and career preferences (Turner and Bowen 1999). These papers have focused on data collected from nonsectarian, coeducational institutions located in the Northern United States. We focus our analysis on the choice of major at two Southern liberal arts colleges, Davidson College, which is affiliated with the Presbyterian Church, and Salem College, a women's college that is affiliated with the Moravian Church. We find that women are still less likely to major in economics than men, and that attending a women's college has no effect on this result. However, we find that the likelihood of majoring in economics rises if students have a female instructor for an economics course, if they have completed calculus in high school, or if they perceive that their job prospects are better after majoring in economics.

Keywords: Economics major; Undergraduate Economics; Gender; Liberal Arts Col..
JEL Codes: A22

1 Davidson College, Davidson, NC, USA

2 (Corresponding Author) Zayed University, Abu Dhabi, UAE. E-mail: Christina.Zenker@zu.ac.ae

1. Introduction

Women continue to constitute a minority of the students who graduate from American colleges and universities with a degree in economics. In 1966, nine percent of all students graduating with an undergraduate degree in economics were female. In 2006, this figure had increased, but only to 31 percent. (National Science Foundation 2008) Understanding the reasons behind this gender gap is critical. Students who earn their degree in economics remain among the most sought after and most highly compensated in American labor markets. Thus, a persistent gender imbalance in the production of graduates with economics degrees contributes to pay gaps between men and women. Moreover, economists should be aware of, and potentially concerned with, the effects that a lack of female economists may have on the body of research produced by our profession.

Given the importance of attracting high quality female students to the economics major, economists have spent a good deal of effort to try to understand why women are shying away from economics in college. Seminal work in this area completed by Jensen and Owen (2000) is based off of a survey that was given to students enrolled in introductory economics courses at top ranked, co-educational liberal arts colleges. Our research adds to the existing literature in two ways. First, we obtained our data from a survey we sent out to the entire student populations attending two Southern liberal arts colleges – Davidson College and Salem College.³ Our decision to collect our data from the entire student populations at Davidson and Salem allowed us to hold key factors constant: We surveyed students from well respected liberal arts colleges with a church affiliation, located in the South.⁴ As a result, we are better able to focus on the key difference between the institutions - that Salem is a women's college. In the sections that follow, we begin by briefly reviewing the major contributions to the existing literature. Section three introduces our data set. Section four provides a discussion of our models and an analysis of the results from estimating the models. Finally, section five provides some concluding remarks as well as suggestions for possible directions for future research.

2. Literature Review

Previous research suggests that the economics curriculum includes topics of less interest to women and that the evaluation favors male learning styles (Anderson and Siegfried, 1997). Ashworth and Evans (2001) point out that the lack of female role models in economics leads to a lack of interest among women to study economics. This is confirmed by Rask and Bailey (2002) who find that if students have a faculty member "like them" - i.e. with the same gender, age, ethnicity – the probability of choosing the major in which the faculty member teaches increases. Jensen and Owen (2000) examined a large number of factors that influence the choice of major, including grade point average and expected grade, math SAT scores, and interest in economics careers and entrance into graduate school. Their results showed that student characteristics and attitudes are crucial determinants of the decision to continue to study economics. Dynan and Rouse (1997) found that a student's background in mathematics accounted for part of the gender difference in the decision to major in economics; and that, while women generally had a lower relative performance in economics, controlling for this factor diminishes the gender gap in the choice of economics as a major. Turner and Bowen (1999) find that SAT scores do not explain the gender preferences in choosing a major. They

³ Salem College accepts adult (23+) male undergraduate students, but only women are allowed to live in on-campus residence halls. Salem markets itself as a women's college.

⁴ Salem College is affiliated with the Moravian Church and Davidson College is affiliated with the Presbyterian Church (PC – U.S.A.) Both schools are located in North Carolina.

find that other factors like labor-market expectations or gender-specific effects of the college experience (coeducational one gender institution) provide a better explanation. They find that women at all female schools were more likely to switch to fields traditionally dominated by men than were women at coed institutions. Zafar (2009) finds that nonpecuniary factors are most important in the major decisions of females, while pecuniary outcomes (i.e. salary after graduation) explain a substantial part of the choice of major for males.

3. Data

We used Survey Monkey to send an electronic survey to the undergraduate populations of Salem and Davidson. We sent the survey on April 23, 2010 and gave students until May 2 to respond. The timing of the survey was intentional. We followed the lead of Jensen and Owen and selected dates that were quite close to the time that students were asked to sign up for courses for the following term, thereby making them more aware of the factors that influenced their choice of courses and major. The survey asked questions about the student's academic profile (major, reason for choice of major, GPA), socioeconomic background (parents' education and employment, religion), and their exposure to economics and math classes. We received 755 responses, which corresponded to response rates of 19% at Salem College and 33% at Davidson College. Of the students responding to the survey, 21.7% were enrolled at Salem, 71.6% were female, 7.6% had selected economics as their major, and 72.8% reported completing a high school calculus course.⁵ Additionally, 63.4% of the respondents attended a high school that offered an economics course, though only 37% of the respondents made use of this opportunity.

4. Estimation and Results

We estimate a probit model of the following general form:

Econ Major =	f (gender, student academic profile, socioeconomic background, exposure to math/economics)
--------------	--

Econ Major is the dependent variable in every specification of the model that we estimated, and it takes the value of 1 if a student reported that he or she had selected economics as a major. Table 1 presents results from four specifications of our model. Columns 1, 2, and 3 represent three different versions of our base specification. Columns 1 and 2 report results using our full data set, with the difference between the two specifications simply being the inclusion of a dummy variable to control for students who attended Salem College. Column 3 reports results using only observations from Davidson College. Several interesting patterns emerge. It appears that Salem and Davidson students do not choose economics because of interest in the subject or the perceived rigor of the major.⁶ Focusing on column 3, Davidson students who reported choosing their major because of their confidence in their ability in their chosen field were roughly 2 percentage points less likely to have chosen economics as their major. Also worth noting is the fact that parental influence isn't a statistically significant influence on Davidson students who selected economics as their major. Students at Davidson may also be less sensitive to teacher quality. Examining columns 1 and 2, we find that

⁵ We received responses from both male and female students enrolled at Salem.

⁶ MS represents a "Major Selection" variable. In other words, the "MS" variables indicate that the student responded that she chose her major for the reason indicated – interest in the subject, confidence in her ability in the subject, rigor of the subject, the quality of the instructors in the subject, career opportunities for majors from this subject, and parental influence.

students who listed teacher quality as a factor in choosing their major were approximately 2 percentage points less likely to have selected economics as their major. The magnitude of this effect remains the same in column 3, yet it is no longer statistically significant. It is necessary to use caution when interpreting this result. This may mean that Davidson students who chose economics were determined to choose economics regardless of whether the department has “high quality” teachers relative to the other departments. It may also mean that Davidson students don’t perceive significant differences in the quality of teaching among the college’s departments.

Table 1. Results

<i>Dependent variable is Econ Major/ Variable</i>	<i>Model (1)</i>	<i>Model (2)</i>	<i>Model (3)</i>	<i>Model (4)</i>
Gender	-0.037***	-0.044***	-0.042***	-0.033**
Salem Student	-0.017			-0.014
MS Interest	-0.016	-0.001	-0.004	-0.020
MS Confidence	-0.012	-0.013	-0.023*	-0.011
MS Rigor	0.011	0.013	0.012	0.012
MS Instructor Quality	-0.023*	-0.023*	-0.021	-0.024**
MS Career	0.039***	0.038***	0.051***	0.036***
MS Parental Influence	0.062**	0.059**	0.049	0.065**
HS Calculus	0.043***	0.048***	0.053***	0.038***
HS Econ	0.036***	0.035***	0.056***	0.037***
Female Instructor Econ	0.137***	0.133***	0.115***	0.131***
High SAT				0.029**
Mom College				-0.0162
Dad College				-0.012
Pseudo R2				
Observations	755	755	591	755

Note: Table 1 reports marginal effects. *** Significant at the .01 level, ** .05 level, and * .10 level.

Regardless of the specification, a student’s decision to take calculus or economics in high school led to a 3 to 5 percentage point increase in the likelihood that they would report economics as their chosen major. This result isn’t surprising, but what is surprising – indeed encouraging – is that students (at both colleges) who completed at least one economics course with a female instructor were at least 10 percentage points more likely to choose economics as their major. We estimated additional specifications of this base model interacting gender with the other independent variables. We found no statistically significant evidence of a differential effect for women, though taking calculus in high school dampens women’s tendency to stay away from economics.⁷

Column 4 reports results from one additional specification of our model. This specification is representative of our efforts to fully explore the factors that influence students’ selection of major at Davidson and Salem. We estimated several different versions of the model that included information we collected in the survey about students’ religious affiliation, how often they attended church, whether their parent(s) was employed full time, etc. Because these factors did not have a statistically significant influence on students’ choice of major, and because our decision to omit these factors did not materially change the size or statistical significance of the effects of interest, we haven’t reported these results. However, the results from column 4 provide two findings of interest. Student who excel on the SAT are 3 percentage points more likely to report that they’ve selected economics as a major. Finally, students who reported that either their mom or their dad graduated from college were

⁷ We will gladly provide the results from these regressions upon request.

approximately 1 percentage point less likely to report economics as their chosen major. (However, the effects are not statistically significant.)

5. Conclusion

As with Jensen and Owen (2000), our results are interesting as much for what we did not find as for what we did. Our results are consistent with Jensen and Owen's in that perceived career opportunities have a positive effect on a student's likelihood of choosing economics as her major. We did not, however, find that students at Davidson and Salem selected economics as their major because of their interest in the subject. This result is surprising, and it warrants further study. What is perhaps most surprising of all, though, is that women at Salem are still less likely to major in economics than other subjects. We had anticipated that women might be more willing to major in a subject that is perceived as being "male-dominated" if there were very few (or zero) men in the classroom. At Salem College, however, this isn't the case. Based on the results of our study, we believe that there remains a need for additional research in this area. Finally, we think there is an important policy implication to be taken from our findings. Given that women who are exposed to calculus in high school are more likely to major in economics than women who aren't, we have discovered evidence of yet another reason that high school administrators should encourage women to continue their study of mathematics.

At Davidson, women routinely perform very well in economics courses and frequently earn departmental awards. At both Davidson and Salem, women are excellent undergraduate economists. Why more female students at these colleges don't choose economics as their major continues to be a mystery.

References

- Anderson, Kathryn and John Siegfried. (1997) Gender differences in rating the teaching of economics. *Eastern Economic Journal*, 23, 347-57.
- Ashworth, John and Lynne Evans. (2001) Modeling student subject choice at secondary and tertiary level: A cross section study. *Journal of Economic Education*, 32, 311-20.
- Dynan, Karen and Cecilia Rouse. (1997) The underrepresentation of women in economics: A study of undergraduate economics students. *Journal of Economic Education*, 28, 350-68.
- Jensen, Elizabeth and Ann Owen. (2000) Why are women such reluctant economists? Evidence from liberal arts colleges. *American Economic Review*, 90, 466-470.
- Jensen, Elizabeth and Ann Owen. (2001) Pedagogy, gender, and interest in economics. *Journal of Economic Education*, 32, 323-43.
- National Science Foundation (2008). Economics degrees awarded, by degree level and sex of recipient: 1966 – 2006. www.nsf.gov/statistics/nsf08321/pdf/tab43.pdf
- Rask, Kevin and Elizabeth Bailey. Are faculty role models? Evidence from major choice in an undergraduate institution. *Journal of Economic Education*, 33, 99-124.

Still staying away: Women and the economics major evidence from two Southern liberal arts colleges

Turner, Sarah and William Bowen. (1999) Choice of major: The changing (unchanging) gender gap. *Industrial and Labor Relations Review*, 52, 289-313.

Zafar, Basit. (2009) College Major Choice and the Gender Gap. Federal Reserve Bank of New York Staff Reports, 364.



The Stochastic Futures of the Natural Gas Prices: Russian Federation in Caspian Region

Narmin Mammadova¹

Abstract

This study examines the convergence hypothesis of natural gas price series of Russian Federation and USA using both linear and nonlinear time series techniques Russian Federation and USA during the period of 1991-2011. Although the linear Augmented Dickey Fuller (ADF), Philips Perron (PP), test provide evidence of the existence of a unit root, which means that the series are nonstationary, KPSS test result support the null hypothesis of existence of the stationary series. A nonlinear test as an alternative approach to investigate whether there are nonlinearities in the series is also taken into consideration. KSS, the nonlinear testing procedure provide some supportive evidence of a nonlinear price convergence among the Russian Federation and USA.

Keywords: Nonlinear Unit Root Test; Convergence Hypothesis; Natural Gas Price.
JEL Codes: C12; C22; O47.

¹ Çankaya Vocational Training School, Çankaya University, Ankara, Turkey, narmin@cankaya.edu.tr

1. Introduction

Natural gas, as the main raw material of various chemical products, satisfies a fundamental part of world's energy demand. Although natural gas was seen as an useless waste arising during the production process of oil in the past, nowadays it is extensively used as an valuable and strategic energy source around the world. Natural gas industry does not have a history as deep as oil industry, however, the consumption of this type of fossil fuel has unusually increased in recent years due to cheaper costs, efficiency, ecological cleanness, and availability in electricity production process. Indeed, natural gas is considered as a "transition fuel" in the transforming process of world energy sector transforms the traditional energy recourses to the renewable as nuclear power plants and hydrogen energy. Because of significant volume of oil and natural gas reserves and their export potential, the Caspian region have become a strong candidate for the world's energy storage of the 21st century. On the other hand, along with the collapse of the USSR in the early 1990s, new energy power conflicts started at the Caspian Basin and became the centre of conflicts of interest.

In the recent years, along with the transformation to one of the major natural gas suppliers in the world, the natural gas pricing policy of the Caspian region acquires currency. In this concept determining of the natural gas prices in Caspian countries as a member of former Soviet Union in market or non-computational circumstances has become an interesting research topic. The main objective of this study was to find out whether natural gas prices determined in this Russian Federation converge to the USA natural gas prices in sample period. For this purpose convergence hypothesis and nonlinear modeling approaches have been used.

The results of the study show that along with the collapse of USSR in 1991 and adopting the free market economic structure, the natural gas prices in Russian Federation converge to USA natural gas prices in 1991 - 2011 period. This finding which is compatible with the Law of One Price in the economics implies that the natural gas prices of the biggest natural gas supplier of the world – Russian Federation mirrors USA free market natural gas prices. Although short run natural gas prices of the former communist country seems to be designed by the state interference, in the long term, this effect has disappeared and the capitalist economic strategies predominated.

2. Geopolitics of Russia in Caspian Region

Five countries - Russian Federation, Iran, Azerbaijan, Kazakhstan and Turkmenistan – are located at the Caspian Basin. According to the Central Intelligence Agency (CIA Word Factbook, 2011), 85.2 trillion cubic feet of proved natural gas reserves are at the Caspian region which provides 46% of the world total proved natural gas resources. In other words, this region contains nearly half of the world's reserves. Giving that the major source of the public and export revenues of these countries come from the transactions in the energy sector hydrocarbon resources also play a crucial role for related economies in terms of development and growth. However, consequently the natural gas transportation pipelines were based on principles of division of labor and dependency in USSR's planned economic system provokes a conflict between the countries in the region concerning how to maintain natural gas transporting to the word market.

Russian Federation is one of the major exporters of crude oil and natural gas in the Caspian region as well as in the world. According to the U.S. Energy Information Agency, this country has 80.00 billion barrels of proved crude oil reserves, which is correspond to 4.86 % of the world total proved crude oil reserves and 1,688.00 trillion cubic feet proved natural gas sources, which is equivalent to 24.66% of the world total proved natural gas reserves.

Since oil and gas account for more than 50% of the federal budget revenues, these hydrocarbon reserves play a crucial role in political and economic sustainability of Russian Federation. Accordingly, the loss of the control over crude oil and natural gas pipelines and transition system notably in Caspian region will affect Russian Federation negatively and destroy political and economic power. However, transporting of the energy resources to international markets by multinational oil and gas companies in some post-Soviet Caspian countries such as Azerbaijan, Kazakhstan and Turkmenistan might affect Russian Federation. Firstly, energy production sharing agreements of these countries with the large multinational companies could reduce significance of Russian Federation at exploration and production stage of the natural resources. Secondly, foreign direct investment in the oil and gas industry could accelerate liberalization process in these post-Soviet countries and also significant amount of revenue purchasing from international markets will diverge them from Russian Federation². Although influence of Russian Federation in production and cash flow phases decreased in comparison with Soviet period this country still powerful in transportation of Caspian energy resources to the international market.

3. Methodology and Data

3.1. Linear Unit Root Tests:

Nahar – Inder (2002), Augmented Dickey and Fuller (1979, 1981) Phillips and Perron (1988) techniques are used to examine whether price series are stationary or not. The Phillips-Perron (P-P) test has an advantage over the augmented Dickey-Fuller (ADF) test. The P-P test gives robust estimates when the series has serial correlation and time dependent heteroscedasticity, and the regime changes during the time period. Other test suggested by Kwiatkowski, Phillips, Schmidt, and Shin (1992) is a Lagrange Multiplier test (KPSS) of the null hypothesis of stationarity against the alternative of a unit root, unlike the most unit root tests that treat non-stationarity as the null hypothesis. Such characteristic of the KPSS is argued to enable a confirmatory analysis in unit root testing³.

3.2. Nonlinear Unit Root Tests: Kapetanios Shin and Snell Test (KSS) (2003) Unit Root Test

Let y_t follow a univariate exponential smooth transition autoregressive (ESTAR)⁴ model of order 1:

$$y_t = \beta y_{t-1} + \gamma y_{t-1} [1 - \exp(-\theta y_{t-d}^2)] + \varepsilon_t, \quad (1)$$

which after reparameterising can be written suitably as

$$\Delta y_t = \phi y_{t-1} + \gamma y_{t-1} [1 - \exp(-\theta y_{t-d}^2)] + \varepsilon_t, \quad (2)$$

where $\phi = \beta - 1$.

The global stationarity of the process y_t can be established by testing the null hypothesis $H_0 : \theta = 0$ against the alternative $H_1 : \theta > 0$. However, testing the null hypothesis directly is not feasible since the parameter γ is not identified under the null. In order to solve this problem, Kapetanios et al. (2003) use the method of Luukkonen et al. (1998) for

replacement the transition function by its suitable Taylor approximation to obtain a t-type test statistic. By using Taylor approximation the following auxiliary regression is obtained:

$$\Delta y_t = \delta y_{t-d}^3 + e_t, \quad (3)$$

where e_t comprises original shocks ε_t as well as the error term resulting from Taylor approximation. The test statistic for $\delta = 0$ against $\delta < 0$ is obtained as follows:

$$t_{NL} = \hat{\delta} / s.e.(\hat{\delta}),$$

where $\hat{\delta}$ is the OLS estimate and s.e. ($\hat{\delta}$) is the standard error of $\hat{\delta}$.

In the more general case when errors are serially correlated, the auxiliary regression augmented by p^{th} order lag of dependent variable. The extended model can be seen as follows:

$$\Delta y_t = \sum_{j=1}^p \rho_j \Delta y_{t-j} + \delta y_{t-d}^3 + e_t \quad (4)$$

3.3. Estimation Results

In this study, we use data on natural gas prices for Russian Federation and USA cover the period of 1991 to 2011. The data were obtained from www.indexmundi.com in 2011.

Table I: Descriptive Statistics

	<i>USA</i>	<i>RF</i>
Mean	4.953	4.812
Median	4.737	4.754
Maximum	6.357	6.196
Minimum	4.096	3.722
Std. Deviation	0.571	0.588
Skewness	0.726	0.205
Kurtosis	2.335	2.000
Jarque-Bera	26.021	11.92
Probability	0.000	0.003
Sum.	1213	1178
Observations	245	245

Before performing unit root tests, we took natural logarithms of the series. Table I provide some basic descriptive statistics of the considered series. The Jarque – Bera value in this table implies non normal distribution for both countries. As it can be seen from this table while USA price series distribution is moderately skewed², Russian Federation price series distribution is approximately symmetric³. Since natural gas price distributions of these countries are with kurtosis smaller than the normal distributions⁴, compared to a normal distribution, central peak of these distributions are lower and broader, and tails of these distributions are shorter and thinner.

² If skewness is between -1 and $-1/2$ or between $+1/2$ and $+1$, the distribution is moderately skewed.

³ If skewness is between $-1/2$ and $+1/2$, the distribution is approximately symmetric.

⁴ A normal distribution has kurtosis exactly 3 (excess kurtosis exactly 0).

In Figure 1 we provide plots of the data. As we can infer from the logarithmic value a preliminary information indicating that natural gas price series the countries converge to a common mean over the sample period.

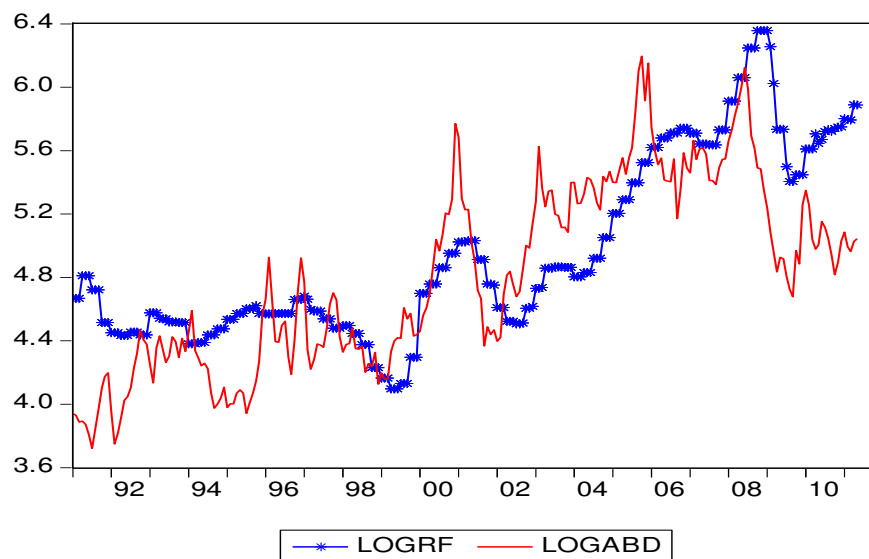


Figure 1: Log of Natural Gas Price Series for Russian Federation and USA

We first tested the stationarity of natural gas prices the Nahar – Inder stationarity test. We create a demeaned and difference of series of Russian Federation and USA natural gas prices series and then the equation (1) is used to test whether it converge to USA price series, which assumed to have a best performance.

$$w_{it} = \beta_0 + \beta_1 t + \beta_2 t^2 + \dots + \beta_{k-1} t^{k-1} + \beta_k t^k + u_{it}, \quad i = 1, \dots, N \quad (5)$$

Table 2. Nahar- Inder Test Results

	Coefficient	Stand. Error	t-Statistics	Prob.
Constant	0.598	0.068	8.791	0.000
Trend	-0.006	0.002	-2.373	0.018
(Trend) ²	-4.53E-05	2.31E-05	-1.965	0.050
(Trend) ³	3.14E-07	6.21E-08	5.051	0.000
R ²			0.592	
Adapted R ²			0.587	

Due to declining in standard deviation in the monthly price series of these countries as time goes on, we can conclude that these series have σ - convergence as defined by Sala-i Martin (1996)⁵.

Then ADF test is implemented in two ways fixed and fixed with trend. According to

⁵ Sala-i-Martin, X., 1996

the results of this test the null hypothesis of nonstationarity could not be rejected at the 5% significant level (Table: III). The PP test was applied in the same way and nevertheless null hypothesis of nonstationarity could not be rejected at the 5% significant level in both cases fixed and fixed with trend (Table: III). Finally KPSS is applied and according to this test results the null hypothesis of stationarity could not be rejected at the 5 % significant level which imply controversial result with Nahar – Inder, ADF and PP tests.

Table 3. Linear Unit Root Test Results

	<i>ADF</i>		<i>PP</i>		<i>KPSS</i>	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend
First Difference	-2.729	-2.724	-2.850	-2.808	0.402	0.403

Note : Critical Values for the 5% significant level; **ADF** Intercept: -2,8731 Intercept + Trend: -3,4283, **PP** Intercept: -2,8731, Intercept + Trend: -3,4283, **KPSS** Intercept: 0,4630 Intercept + Trend: 0,1460. Lag length determined by AIC.

In order to use, KSS, which takes into account asymmetric adjustment with smooth structural changes in the data generating process, the stationarity of ESTAR data production process is tested. The equation below is tested in two way mean-adjusted and trend- adjusted.

In both cases test statistics is obtained which are smaller than critic value at the 10 % significant level implying that this nonlinear series is stationary.

Table 4. Nonlinear Unit Root Test Result

	<i>KSS</i>	
	Demeaned	De-trended
First Difference	-2.921*	-3.392*

Note: Statistical significant for the % 6 significant level.

After demeaned and de trended series the results obtained from Table IV shows that considered series are stationary in the context of nonlinear framework.

4. Conclusion

This study examines the convergence hypothesis for natural gas price series of Russian Federation and USA during the period covered from 1991 to 2011. The paper employs both a linear and nonlinear time series techniques. Although on the whole estimation results of linear ADF, PP tests and nonlinear unit root test procedures are able to reject a unit root in series, the linear KPSS tests fails to do so, providing some controversial results. In conclusion the existence of possible structural changes and nonlinearities should be taken into account during the convergence hypothesis.

References

- Ceylan, R., Telatar, E., Telatar F. (2013) Reel Convergence in Selected OECD Countries. *Ege Akademik Bakış Dergisi*, Cilt 13, Sayı 2, 209-214
- Dickey, D.A., Fuller, W.A. (1979). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica* 49, 1057–72.
- Dickey, D.A., Fuller, W.A. (1981). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association* 74, 427–431
- Grenger, C.W.S., Terasvirta, T. (1993). *Modelling Nonlinear Economic Relationship*, Oxford University Press
- Kapetanios, G., Shin, Y., Snell, A. (2003). Testing For Unit Root in the Nonlinear STAR Framework. *Journal of Econometrics*, 112, 359-379.
- Kwiatkowski, D., P.C.B. Phillips, P. Schmidt, Y. Shin (1992). Testing the Null Hypothesis of Stationarity against the Alternative of a Unit Root. *Journal of Econometrics*, 54, 159-178.
- Locatelli, C. (1992). *Energie et Transition en Russie: les nouveaux acteurs industriels*. Paris: L'Harmattan.
- Nahar, S., Inder, B. (2002) Testing Convergence in Economic Growth for OECD Countries. *Applied Economics*, 34, 2011-2022.
- Phillips, P.C.B., P. Perron (1988). Testing for a Unit Root in Time Series Regression, *Biometrika*, 75, 335-346.
- Sala-i-Martin, X. (1996). The Classical Approach to Convergence Analysis. *The Economic Journal*, 106, 1019-1036.
- Terasvirta, T. (1994). Specification, Estimation and Evaluation of Smooth Transition Autoregressive Models. *Journal of the American Statistical Association*, 89, 208-218.



Profitability Effects of Owning a Group Affiliated Media Institution: An Emerging Market Case

Deniz Ilalan ¹

Abstract

This study focuses on the performance effects of having a group affiliated media institution under the group umbrella. Existence of a media institution is expected to increase the overall group performance. The econometric model is based on the annual data between 2000-2010 for an emerging market, Turkey. It is found that owning a media institution significantly has a positive impact on the performance of group firms.

Keywords: Panel Data; Emerging Market; Media Institution.

JEL Codes: C31; G15 ; L82

¹ Department of Financial Mathematics, Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey.

1. Introduction and Literature Survey

Diversified business groups dominate private sector activity in most emerging markets around the world (Khanna and Palepu 2000) including Turkey due to several well documented arguments. As proposed by the Transaction Cost Theory (Coase 1937; Williamson 1975; 1985; Teece 1980) the optimal structure of the firm depends on its institutional context and hence on the existence of the specialized intermediaries in the economy. In case that an economically beneficial transfer could not be realized as a result of the indirect costs outweighing the net benefit, a market failure will arise (Williamson 1975) and in developing economies, transactions may particularly be costly as a result of weak institutions for trade, contract enforcement, communication and information disclosure (Khanna and Palepu 1997). Considering that institutions affect economic outcomes (Aoki 1984; 1990) and the institutional context of a country consists the financial, the legal and the regulatory environment of the related economy (Fauver, Houston and Naranjo 2001) as well as the markets for product and labor (Khanna and Palepu 1997), an important aspect of the institutional context of an economy is the extent to which specialized intermediaries are present in that economy (Spulber 1996). While the institutional context of developed economies is characterized by well-functioning capital, labor and product markets, in the developing countries the intermediaries are either insufficient or non-existent (Khanna and Palepu 2000) and the external markets are typically observed to be underdeveloped in developing economies (Khanna and Rivkin 2001) which create a considerable opportunity for diversified corporate structures to create value.

In the developing economies there are a variety of market failures due to information and agency problems (Khanna and Palepu 2000), and because of the market imperfections caused by the institutional voids, firms usually need to perform some of the basic functions by themselves (Khanna and Palepu 1997). Taking into account the institutional voids which in turn cause market imperfections and the transfer costs, Khanna and Rivkin (2001) argue that group firms through coordinating their activities that may reflect in sharing a brand name, raising capital jointly, lobbying bureaucrats and politicians together, recruiting managers as a group, pooling resources to invest in new ventures etc. can derive important advantages. It is argued (Lins and Servaes 2002; Khanna and Rivkin 2001; Khanna 2000; Khanna and Yafeh 2000; Chang and Choi 1988; Khanna and Palepu 1997; 1999; Ghemawat and Khanna 1998) that business groups can create extra value for shareholders through using the available funds and management talent from existing operations to start new ventures, creating an internal capital market, substituting for labor market institutions, investing in a common group brand name, reputation and customer service, internalizing the transactions, resolving failures in the cross-border transfers of capital and technology, enabling risk sharing by reallocating the funds during the times of financial distress and smoothing income flow, having an organizational structure that enables rent-seeking behavior, enabling the exchange of information in informal clubs and family gatherings² as well as at formal group meetings, creating economies of scale and scope. Khanna and Palepu (1997; 1999; 2000) argue that the scale and scope of groups enable business groups to create greater value relative to more focused, unaffiliated firms, by imitating the market institutions. Hence, highly diversified business groups are found to be particularly well suited to the institutional context in most developing countries. Not surprisingly, the firm performance affects of group affiliation is

²In developing economies group firms mostly operate under the control of a single family and as mentioned by Kim, Kandemir and Cavusgil (2002), the informal organizational forms of the group firms enable fast decision making which is a very important feature for the economies those grow rapidly and fluctuate frequently.

highly researched in the literature³. However, the performance effects of owning a group affiliated media institution under the group umbrella is highly untouched. So one of the most distinctive feature of this study is its focus on the effects of having a group affiliated media institution on the profitability of the other affiliated firms under the same group.

One of the major functions of the media is to provide news and information to the masses on which people shape their opinions and base their decisions. The media have a natural power in manipulating the existing views of the people and help to redesign people's attitudes. For example, as claimed by Van Dijk (1995), topics or quotation patterns in news reports may reflect modes of access of various news actors or sources to the news media, whereas the content and form of a headline in the press may subtly influence the interpretation and hence the persuasive effects of news reports among the readers.

According to Dyck and Zingales (2002), since people are mostly informed through media, the basic factor for the creation of pride and giving a shape to its accumulation is by this means. Since media is regarded as the basic source for human knowledge, it is a powerful weapon to affect public opinion and influence the society. News appearing in media, even commercials can determine the agenda and as a main factor indicating the approaches of people, it can have an enforcement power to effect the decisions and actions of actors inside the corporate system within and even outside the country. Grullon et. al (2004) provided empirical evidence that a firm's overall visibility with investors, as measured by its products market advertising, has important consequences for the stock market. Results of the studies by Dyck and Zingales (2002) indicate the confidence associated to media and shows that the direction of its net impact is bounded by the social values. They also interpret the importance of media in formation of the enterprise policies all the time. If media can affect enterprise policies, influence government, then having a group affiliated media institution can ease the achievement of goals such as creation of public opinion for the beneficiary of group firms, gaining sympathy, strengthening view and increase dignity. Moreover, at some point, this also renders the controlling of the communication of group with enterprise and economic environment and reduces the asymmetric information problem via informing the public. On the other hand, other than the influential characteristic of affecting the public opinion and guiding the society, creation of a general sympathy to the related group and the firms in the organization and fortification of the pride, media can be used for the purpose of favorable treatment from the government. For instance, the public support created by media, directly or indirectly can put pressure to the government, especially parties that are in power and these can be reflected to government policies. So, we can say that having a media institution can be an unearned income opportunity for the group. In summary, although reliability is questionable especially when directly approached, having a media institution has an important impact when the group and the group firms benefits are considered. Within this perspective, a group having a media institution, not only has power in conveying information and even influencing public regarding the investments, future and management policies but can also confront less trouble in gaining supporters in case of a dispute. Moreover, the presence of a media institution can play an important role in achieving and protecting dignity. By these arguments, one can expect the existence of a media institution to affect the group firms' performances positively.

This paper aims to investigate the profitability effects of group affiliated firms when a media institution owned by the group is at stage. The model focuses on emerging markets, therefore uses Turkey's data. Turkey provides an ideal setting to analyze the profitability effects of owning a group affiliated media institution as there are no legal barriers to diversify into the media sector and business groups dominate the private sector activities in Turkey.

³An excellent discussion and review of literature on group affiliation and firm performance is provided by Gonenc et al. (2007) and Carney et al. (2011).

2. Data and Methodology

The majority of the large scale firms in Turkey are operating under a group affiliation and the business groups are mostly organized around a holding company and are the outcome of investments by a single family or a small number of allied families (Yurtoglu 1999). However, there is no readily available group affiliation information in Turkey. So first of all the model needed to determine the group affiliated firms and to assess the affiliation structures of the groups by addressing the determination of the bundles of affiliated firms within a specific group. Then a dummy code of “1” for those affiliated firms under which the group owns a media institution and “0” otherwise is assigned. For this purpose, the ownership structures derived from the balance sheet notes, which are obtained from the BIST are considered. Besides, in order not to miss the implicit ties among the firms, the internet sites of the holding companies, groups and firms are examined. In determining the ownership structures of the firms, first the amount of the shares held by private and/or judicial person are recorded with a bundling process which renders the specification of the implicit ties among the firms as well.

Considering that, the objective of the firm is to maximize its value to its shareholders where value is represented by the market price of the company's common stock (Van Horne, 1974), the stock returns are used as a proxy for firm profitability. Firm size, financial leverage, cash conversion cycle and stock index return are used as control variables. To control for firm size, natural logarithm of total assets is used. Financial debt ratio is calculated by dividing the sum of short and long term financial debt to total assets $[(\text{Short Term Borrowing} + \text{Long Term Borrowing}) / \text{Total Assets}]$ and is used as a proxy for financial leverage. Cash Conversion Cycle (CCC) which refers to the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with the sale of the product (Besley and Brigham, 2005) is calculated by adding the average collection period with inventory turnover in days and subtracting the average payment period $[(\text{Accounts Receivable} * 365 / \text{Sales}) + (\text{Inventory} * 365 / \text{Cost of Goods Sold}) + (\text{Accounts Payable} * 365 / \text{Cost of Goods Sold})]$ and used to account for working capital management efficiency. Stock index return is used to control the market fluctuations.

$$R_{i,t} = \beta_0 + \beta_1 CCC_{i,t} + \beta_2 Size_{i,t} + \beta_3 FinLev_{i,t} + \beta_4 Rm_{i,t} + \beta_5 Dmedia + \varepsilon_{i,t} \quad (1)$$

The financial table data of the companies along with the stock price data which later are used to compute the stock returns are obtained from Bloomberg. The research covers the period 2000-2010 with annual data. First of all the estimator is identified by using the Hausmann Test which selects fixed effect estimator. According to this test, fixed effect panel estimation is applied.

3. Research Results

The results obtained from fixed effect panel estimation of the above model are provided in Table 1 below:

Table 1. Panel Fixed Effect Results

	Coefficients
Cash Conversion Cycle (CCC)	0.003*** (4.773)
Firm Size (Size)	-1.348*** (-5.159)
Financial Leverage (FinLev)	-0.286 (-0.512)
Stock Index Return (Rm)	7.041*** (28.374)
Media Dummy (Dmedia)	0.012* (1.711)

Notes: t-statistics are presented in parentheses.

***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

As the analysis results provided in Table 1 reveals, the existence of a media institution within the group improves the performances of other affiliated firms within the same group at 10% significance level.

In addition, the results also indicate that the cash conversion cycle and the stock index returns positively affect stock returns at 1% significance level while firm size is found to deteriorate the stock returns at 1% significance level. The test results do not report any significant effect for financial leverage.

4. Concluding Remarks

This paper examines the impact of owning a group affiliated media institution on the profitability of the group firms in an emerging market setting, Turkey. It is found that group performance is positively affected when a media institution is owned by the group. The media considered in this paper does not include social media which was not widely used during the period of the analyzed data. Nowadays, we witness the importance of social media which not only has a major social influence but also has the ability to alleviate the impact of printed media, television and etc. Therefore, social media should also be taken into consideration and treated separately for similar future studies.

References

- Aoki, M., 1984. The Contingent Governance of Teams. Analysis of Institutional Complementarity. *International Economic Review*, 35, 657-676.
- Aoki, M, 1990. Toward An Economic Model of The Japanese Firm. *Journal of Economic Literature*, 28, 1-27.
- Besley, S., Eugene F.B., 2005. *Essentials of Managerial Finance*, 13th ed., Thomson South-Western, USA.
- Carney, M., Gedajlovic, E. R., Heugens, P. P., Van Essen, M., Van Oosterhout, J. H. 2011. Business group affiliation, performance, context, and strategy: A meta-analysis. *Academy of Management Journal*, 54(3), 437-460.
- Chang, S. J., Choi, U., 1998. Strategy, Structure and Performance of Korean Business Groups: A Transaction Cost Approach. *Journal of Industrial Economics*, 37, 141-158.
- Coase, R. 1937. The Nature of The Firm. *Economica*, 4, 386-405.
- Dyck, A., Zingales L., 2002. The Corporate Governance Role of The Media. Working Paper 9309, NBER, Cambridge, MA.
- Fauver, L., J. Houston J. and Naranjo A., 2001. Capital Market Development, Legal Systems and The Value of Corporate Diversification: A Cross-Country Analysis. Working Paper, University of Florida.
- Ghemawat, P., Khanna T., 1998. The Nature of Diversified Groups: A Reasearch Design and Two Case Studies. *Journal of Industrial Economics*, 46, 35-62.
- Gonenc, H., Kan, O. B., Karadagli, E. C., 2007. Business groups and internal capital markets. *Emerging markets finance and trade*, 43(2), 63-81.
- Grullon G., Kanatas G., Weston J.P., 2004. Advestising, Breadth of Ownership, and Liquidity. *The Review of Financial Studies*. 17, 439-461.
- Khanna, T., 2000. Business Groups and Social Welfare in Emerging Markets: Existing Evidence and Unanswered Questions. *Eurpoean Economic Review*, 44, 748-761.
- Khanna T., Palepu K., 1997. Why Focused Strategies may be Wrong for Emerging Markets. *Harvard Business Review*, July/Aug., 41-51.
- Khanna T. Palepu K., 1999. The Right Way to Restructure Conglomerates in Emerging Markets. *Harvard Business Review*, July/Aug., 125-134.
- Khanna T. Palepu K., 2000. Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups. *Journal of Finance*, 55, 867-891.

Khanna T. and Rivkin J.W., 2001. Estimating the Performance Effects of Business Groups in Emerging Markets. *Strategic Management Journal*, 22, 45-74.

Khanna T. Yafeh Y., 2000. Business Groups and Risk Sharing Around The World. Harvard Business School Competition and Strategy Working Paper Series: 01-041.

Kim, D., Kandemir D., Cavusgil S.T., 2002. The Role of Family Conglomerates in Emerging Markets: What Western Companies Should Know. *Thunderbird International Business Review*, 2002.

Lins, K., Servaes. H., 2002. Is Corporate Diversification Beneficial in Emerging Markets? *Financial Management*, 31, 5-31.

Spulber, D. F., 1996. Market Microstructure and Intermediation. *Journal of Economic Perspective*, 10, 135-152.

Teece, D. J., 1980. Economies of Scope and the Scope of the Enterprise. *Journal of Economic Behavior and Organization*, 1, 223-247.

Van Dijk, T. A., 1995. Power and The News Media. In D. Paletz (Ed.), *Political Communication and Action*. pp. 9-36. Cresskill, NJ, Hampton Press.

Van Horne, J. J., 1974. *Financial Management and Policy*, New Jersey, Prentice-Hall.

Williamson, O.E., 1975. *Market and Hierarchies: Analysis and Antitrust Implications: A Study in The Economics of Internal Organization*. Free Press, New York.

Williamson, O.E., 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. Free Press, New York.

Yurtoglu, B.B., 1999. Ownership Structure, Cash Flow; and Investment: Evidence from Turkish Business Groups. Working Paper, University of Vienna.