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## Firm performance and privatization in Ukraine

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Zentrum für Europäische Integrationsforschung  
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Galyna Grygorenko and Stefan Lutz

**Firm Performance and  
Privatization in Ukraine**

**Working Paper**

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# FIRM PERFORMANCE AND PRIVATIZATION IN UKRAINE\*

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*Investigating the effects of privatization in transition countries is the focus of a large body of current research. Generally, privatization stimulates private sector development, attracts foreign direct investment, fosters competition and contributes to the formation of stock markets. In addition, privatization may improve individual enterprises' performance. This paper investigates the impact of privatization on Ukrainian firms' productivity. The empirical research is based on a sample of 466 Ukrainian joint-stock enterprises for the period of 1997 – 1999. Estimation results indicate that privatization positively influences labor productivity, but also that these effects diminish over time.*

JEL classification: L22, L60, M10

Keywords: Ukraine, manufacturing firms, ownership, profitability

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## 1. Introduction

During the last decade, governments in countries of Eastern and Central Europe, as well as in CIS countries, have launched large-scale privatization programs. Privatization policy implies reducing the government's role in regulation of economic processes, and decline in the share of state property in the country's national wealth. This policy is considered to be one of the most important elements of transition from state to market economy (Sheshinski and Lopez-Calva, 1999; Megginson and Netter, 2000). Most policy advisors and academic economists suggest that privatization is the corner stone of the structural reforms, because it stimulates private sector development in the country, attracts FDI inflows, fosters competition, promotes liberalization of trade, favors the development of capital and product markets, and contributes to the development of stock markets and corporate governance systems. Specifically, it is also argued that privatization significantly affects operating and financial performance of enterprises (Vickers and Yarrow, 1991; Megginson and Netter, 2000; Djankov and Murrel, 2000).

However, the empirical evidence on privatization in transition countries is quite contradictory. While some research presents positive results of privatization (mainly in countries of Central Europe and the Baltic States), there exist other studies reporting weak correlation between privatization and improvements in firm performance.<sup>1</sup> For Ukraine, a large transitional country, the evidence on the effects of privatization so far is rather mixed. Along with the launching of the stabilization program in the country in the early 1990s, the Ukrainian government has made

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<sup>1</sup> Studies finding beneficial effects of privatization in transition countries include Claessens and Djankov (1998, 1999) and Megginson et. al. (1994). Studies that find no clear evidence for positive effects include Nellis (1999), Frydman, et. al. (1998), Black, et. al. (2000). Megginson and Netter (2000) present a review of both theoretical and empirical literature.

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great efforts towards privatization (Paskhaver, 2000; Chechetov, 2000). Despite the fact that the relevant legislation<sup>2</sup> was adopted with ambitious privatization goals, the privatization process has not been as speedy and successful as it was expected by many policy makers (IMF, 1999; EBRD, 1999). The reasons for that are quite common in transitional countries of the former USSR (World Bank, 1999). Complicated implementation procedures, inherited non-efficient structure of industries, enterprises accustomed to a state order system, weak incentives for profit maximizing behavior, non-transparency of the legal and business environment, and excessive bureaucracy in the highest bodies of power have all contributed to continued blockage of progress in privatization. Nevertheless, there is some evidence for positive effects of privatization.<sup>3</sup>

Therefore, we would like to further investigate the impact of ownership, specifically privatization, on operating efficiency of Ukrainian enterprises. Our data consists of a sample of 466 joint-stock companies over a three-year period starting from 1997. The research focuses on joint-stock companies only, but we believe that this will not distort our results in a significant way, since the vast majority of privatized firms in Ukraine are collectively owned enterprises<sup>4</sup>.

The remainder of the paper is organized as follows. Section 2 gives an overview of the Ukrainian privatization process. In Section 3, the data and model specification are presented. Section 4 contains the regression results and concludes.

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<sup>2</sup> The Law of Ukraine “On Privatization of the State Property”, No. 2613-12, 4 March 1992, the Law of Ukraine “On Privatization Certificates”, No. 2713-12, 6 March 1992. Presidential Decree “On Expedient Measures to Accelerate Privatization in Ukraine”, No. 1626; December, 29, 1999.

<sup>3</sup> See, for example, Grygorenko (2001).

<sup>4</sup> According to UEPLAC (2001) definition, ‘enterprises of “collective” ownership are enterprises (earlier leased with the right of buy-out) bought by workers or classical joint-stock companies (closed or open)’. Firms of this group generated about 70 percent of total output of Ukraine in the year 2000 (Derzhkomstat, 2000).

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## 2. Ukrainian Background

The process of privatization in Ukraine has begun in 1992, when the Ukrainian Parliament approved the relevant legislation and the first State Privatization Program<sup>5</sup>. At that time, privatization was the major item on the agenda of Ukrainian reformers — the first step in the process of transition to a market economy (Yekhanurov, 2000). Political reasons were the primary determinants shaping privatization strategy. Low popularity of reforms among Ukrainians, the dominance of communist bureaucracy in the highest bodies of power, lack of private capital — all these seemed to contribute to the impossibility of “big-bang” reforms. A mass privatization approach was chosen in order to provide the fastest transfer of ownership from public to private hands, and to guarantee the irreversibility of transition reforms (Roland, 2000).

The Ukrainian voucher privatization was carried out with substantial distortions, which caused some negative impacts for the whole privatization process. The idea of a “fair” distribution of property rights among all citizens of Ukraine obviously could not help in implementing one of the primary goals of privatization — improvement of enterprise efficiency. A diluted ownership structure which was formed as a result of mass privatization (Akimova and Schwödiauer, 2000; Yekhanurov, 2000) led to deteriorative effects on monitoring and incentives of managers. Employees and managers of enterprises were granted advantages in the privatization process, and this distortion led to the emergence of so-called “insider”-controlled firms<sup>6</sup> (Yekhanurov, 2000). Consequently, managers have little incentive to launch efficiency enhancing restructuring programs, fearing that this process will

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<sup>5</sup> Verkhovna Rada. The State Privatization Program for 1992. No. 2545-XII, July, 7, 1992

<sup>6</sup> According to the survey of Institute of Reform and London Business School, insiders (employees, former employees, and managers) still own 55% of statutory funds of Ukrainian joint-stock companies, while outsiders own 35%. Remaining 10% belong to the state. (*Ukrainska Investytsiyna Gazeta*, September, 13, 2000 ).

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lead to lay-offs of workers (also shareholders). Furthermore, the free circulation of privatization certificates was prohibited. Illegal forms of circulation have contributed to the enlargement of the unofficial sector of the economy (Paskhaver, 2000). Finally, overall bureaucratization of the mass privatization process and lack of transparency also blocked successful reforms.

The goals of the next stage of privatization (cash sales or “privatization for money“), as declared in the State Privatization Program for 1999<sup>7</sup>, were also quite contradictory. On the one hand, the State Property Fund of Ukraine (SPFU) should follow a policy of case-by-case privatization, i.e. an individual approach to each enterprise’s privatization plan. In other words, when choosing the method of privatization and determining the price of an object, the SPFU should take into account regional and sectoral peculiarities of the enterprise in question, market conditions in which it operates, its financial standing, etc. At the same time, the Program declared the generation of additional income for the state budget as one of the main purposes for selling state enterprises.

Volatility of the general political situation additionally hinders this privatization progress. Since the start of privatization, the government changed seven times while the composition of the Parliament – the Verkhovna Rada - changed three times. After the parliament elections of 1994, when communists won a considerable number of seats in the Verkhovna Rada, the privatization process slowed down significantly. A moratorium on privatization was imposed starting from July 1994 and lasting until May 1995. Initial plans to privatize about 30,000 enterprises in 1994 were fulfilled by only a quarter (Yekhanurov, 2000). In addition, the Parliament issued a list of enterprises prohibited from privatization (and the number of

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<sup>7</sup> Verkhovna Rada. The State Privatization Program for 1999. No. 209/99, February, 24, 1999

enterprises in this list constantly grew)<sup>8</sup>. The process of selection of these enterprises was non-transparent and initiated primarily by the branch ministries which had these enterprises under jurisdiction. Besides, managers of enterprises often resisted privatization, because staying a state-owned enterprise offered a lot of privileges and benefits: fixed level of wages, stable employment, soft-budget constraints and state orders providing stable demand on output.

Furthermore, an additional list of “strategic enterprises” was set up<sup>9</sup>. Enterprises in this group are monopolists (or hold at least 35% of their product market<sup>10</sup>). Since 1994, legislation concerning the status of these entities was changed several times. Nowadays they are subject to privatization, but the state retains either a blocking minority (>25%) or a controlling share (>50%) in these enterprises. In the year 2000, the Ukrainian state still held substantial ownership shares in more than 2,500 joint-stock companies (Chechetov, 2000).<sup>11</sup>

Ukraine still has a relatively high level of state interference in the economy. Despite the proclaimed statements about privatizing the economy (State Privatization Programs<sup>12</sup>), the Ukrainian government, in fact, does not move quickly with effective reforms. In summary, we can outline the following major features of the Ukrainian privatization process so far. Mass privatization resulted in a widely dispersed ownership, which negatively influenced quality of

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<sup>8</sup> Resolution of Verkhovna Rada “List of Enterprises Prohibited from Privatization”. No. 847-XIV, July, 7, 1999. Earlier versions: No. 334a/95, May, 1995; No. 542-96, November, 96; No. 203-98, March 98.

<sup>9</sup> Resolution of Verkhovna Rada “List of Enterprises that Have Strategic Importance for the Economy and State Security”. No. 1346, August, 29, 2000. Earlier versions: No. 911, August, 21, 1997; No. 1151, July, 27, 1998; No. 801, May, 10, 1999; No. 1157, June, 29, 1999; No. 317, February, 16, 2000.

<sup>10</sup> Antimonopoly Committee Instruction “On Criteria for Defining an Enterprises as a Monopolist”, No. 1-p, March, 10, 1994

<sup>11</sup>

<sup>12</sup> Such Privatization Programs were adopted for following periods: 1992, 1994, 1997, 1999, 2000-2002. In 1998 such Program were rejected by the Parliament.



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monitoring, and consequently, incentives of managers. Preferential buy-outs by workers' collectives led to insider-dominated ownership. The state still owns large stakes in partially privatized enterprises. The whole privatization process can be characterized as non-transparent and bureaucratized.

Information on decomposition of Ukraine's industrial output, employment and number of enterprises by ownership type is given in Table 1 in the appendix. There are four different types of ownership: state-owned enterprises, collectively-owned companies, private firms, and other forms of ownership. The first group, state-owned enterprises, mainly comprises those enterprises which are prohibited from privatization according to Ukrainian legislation. Their exclusion from the sample should not distort the results since our aim is to analyze privatization effects. Private firms are mostly *de-novo* created private entities, and are also excluded from our sample. The only group which is of interest to us is that of collectively-owned companies. It consists mainly of joint-stock companies (JSC) — a group of which our sample is representative. JSCs may be separated into two categories: privatized companies, and state-owned enterprises which were incorporated but not privatized (SOE). Both categories are represented in the sample. This sample structure allows us to compare the performance of privatized and state-owned enterprises, and analyze the impact of privatization on enterprise performance.

### **3. Data and Model Description**

The empirical analysis is based on a sample of 466 Ukrainian industrial open joint-stock companies. Annual reports of enterprises for the period of 1997–1999 include balance sheets, income statements, and information on ownership structure and number of employees. Data for estimation came from two sources. The first part of it, namely annual reports of

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enterprises for 1997 – 1998, is taken from the database provided by the Institute for Economic Research and Policy Consulting (IERPC). This dataset includes 1694 firms. The second part (namely, reports for 1999) comes from reports of the Securities and Stock Market State Commission (SSMSC)<sup>13</sup>. While more than five thousand enterprise reports are available, our sample consists only of industrial enterprises which provided their annual reports for all three years. The total number of observations in the panel is 1398. In the appendix (Table 3), the decomposition of the sample by industries and ownership types is presented.

Unfortunately, our sample may be subject to some selection bias for the following reasons. Firstly, only open joint-stock companies are required to make their annual reports publicly available. Data on closed JSCs and non-incorporated state-owned enterprises are inaccessible. Furthermore, the fact that some enterprises have been providing their reports only for one or two years (and therefore, are excluded from the sample) may lead to additional distortions. Therefore, the results of this study should be taken with caution; they should not be generalized to apply to the whole set of Ukrainian enterprises.

The sample only includes state-owned, partially privatized, and fully privatized industrial enterprises. *De-novo* created private firms are excluded from the sample in order to capture the particular effects of privatization on the activity of previously existing enterprises. Privatized enterprises in the sample (in which the state owns less than 50% shares) amount to 348 enterprises in 1997, 359 in 1998 and 396 in 1999 (74.68%, 77.04%, and 84.98% of the total number of firms in the sample, respectively).

As a measure of performance, we use growth in labor productivity (measured as the natural

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<sup>13</sup> <http://www.ssmc.gov.ua>

logarithm of net sales per employee,  $\ln(PROD)$ , deflated by the producer price index<sup>14</sup>). Our labor productivity measure is commonly used in similar empirical research.<sup>15</sup> As independent variables we used the regressors listed below:

*LAB* represents the number of employees. *CAP* is capital used in production.

We assume that each enterprise in our sample has a production function of the Cobb-Douglas type  $Q_i(K, L, A) = K_i^\alpha L_i^\beta A_i$ , (1)

where  $K$  — capital used;  $L$  — labor used;  $A$  — other factors specific to each firm;  $i$  — firm's index ( $i = 1 \dots 466$ ),  $\alpha + \beta \leq 1$ ;  $\alpha > 0$ ;  $\beta > 0$ .

As a measure of performance we use growth in net sales per employee:

$$\ln\left(\frac{Q_i}{L_i}\right) = \alpha \ln K_i + (1 - \beta) \ln L_i + \ln A_i. \quad (2)$$

Following this technique, the coefficient of the  $\ln(LAB)$  variable should have a negative sign and the coefficient of the  $\ln(CAP)$  variable should have positive sign. The variable  $\ln(A_i)$  in this case incorporates all other factors that influence the performance of enterprises described below.

*DEBT* is a leverage ratio which is included in the regression in order to capture some internal sources for performance variation. To some extent, it can reflect the quality of management, or the ability of managers to attract funds. This variable, however, may have a dual meaning. On the one hand, high debt to assets ratio testifies that a firm is successful in attracting external funding which then can be invested in some profitable projects, and, therefore, can have positive influence on performance. On the other hand, over-leverage of an enterprise

<sup>14</sup> Source: *Ukrainian Economic Trends*, UEPLAC, January 2001

<sup>15</sup> The logic behind this is intuitive — privatized enterprises use labor more efficiently, and thus have higher rates of productivity growth (Bevan, et. al., 1999).

can cause some ill-incentives for managers to invest in projects which are, in fact, deteriorating to enterprise performance. Besides, a high debt to assets ratio can lead to liquidity problems. So, the net impact on firm's productivity and profitability is ambiguous.

The dummy variable *SOE* is set to one for firms where the state owns more than 50 percent of the joint stock.

The *STATE* variable represents the percentage of shares which belong to the state.

The *COMP* dummy is used in order to control for the degree of competitiveness in the market environment. Higher competitiveness should improve firm productivity. As a proxy for the competitiveness of the environment, we calculated weighted Hirschman-Herfindahl concentration ratios using output data provided by Derzhkomstat, the Statistical Committee of Ukraine. They were derived as follows<sup>16</sup>:

$$COMP_{jt} = OShare_{jt} \times HHI_{jt}^R + (1 - OShare_{jt}) \times HHI_{jt}^N, \quad (3)$$

where  $j$  is an index for industries;  $t$  is a time index ( $t = 1997..1999$ );  $OShare_{jt}$  is a proportion of oblasts, in which there is at least one enterprise of the industry  $j$ ;  $HHI_{jt}^R$  is a concentration ratio at the regional level (oblasts level);  $HHI_{jt}^N$  is a concentration ratio at the national level (country level).

The variable *YEAR* represents the number of years since privatization. We consider an enterprise as privatized if more than 50% of its shares belong to private owners. Therefore, even if the privatization process could have begun earlier, *YEAR* is equal to one in the next year after the state sold more than 50% of shares. For enterprises which are not privatized *YEAR* takes a value of zero. This variable is expected to have positive influence on enterprise's performance. The intuition behind this is quite clear: restructuring of a firm

<sup>16</sup> A similar index was used by Brown and Earle (2001).

needs time to be implemented, for instance, change of manager, reduction in the staff, or replacement of fixed assets. Therefore, in measuring the overall impact of privatization on enterprise performance we should take into account the influence of this variable.

A decomposition of enterprises in the sample by industries is presented in Table 3 in the appendix. Descriptive statistics on some variables used in our model are presented in the appendix, Table 4.

Finally, the equation to be estimated takes the following form:

$$\ln(PROD_{it}) = \alpha_i + \beta_1 \ln(LAB_{it}) + \beta_2 (CAP_{it}) + \beta_3 SOE_{it} + \beta_4 STATE_{it} + \beta_5 DEBT_{it} + \beta_6 COMP_{it} + \beta_7 YEAR_{it} + \gamma_t + u_{it} \quad (4)$$

where  $i$  — index for  $i^{\text{th}}$  firm ( $i = 1, \dots, 466$ ),  $t$  — year index ( $t = 1997, 1998, 1999$ ).

#### 4. Results and Conclusions

Our final estimated fixed-effects model takes the form:

$$\begin{aligned} \ln(\text{prod})_{it} = & \alpha_I - 0.57 \ln(\text{LAB})_{it} + 0.12 \ln(\text{CAP})_{it} - 0.24 \text{SOE}_{it} + 0.003 \text{STATE}_{it} \\ & + 0.59 \text{DEBT}_{it} + 0.45 \text{COMP}_{it} - 0.13 \text{YEAR}_{it} + \gamma + u_{it} \end{aligned} \quad (5)$$

where the parameter estimate for  $\beta_6$  (COMP) is significant at the 6 percent level while all other estimates are significant at the 1 percent level. (See Table 5 in the appendix for details of this estimation.)

The influences of the production factors labor and capital on labor productivity are negative and positive, respectively, as expected. Similarly, labor productivity is positively influenced by increased competition. The positive sign of the parameter for the debt-to-asset ratio indicates that this variable may represent mostly positive effects of credit availability on firm

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performance. As expected, majority state ownership indicates significantly worse performance (see the parameter on SOE). Hence privatization, even if not to 100 percent, increases performance if it leads to majority private ownership. The negative sign for the effect of number of years since privatization may indicate that privatization benefits decrease over time.<sup>17</sup>

Interestingly enough, even though private firms perform better than state-owned firms, performance seems to increase with the percentage of state-ownership. This probably indicates that private firms will continue to benefit from state ties and may lose out if they cut those ties completely.

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<sup>17</sup> Grygorenko (2001), using a smaller data set, came to the conclusion that initial effects of privatization may be negative and later effects may be positive. Since this contradicts our subsequent findings, more research seems to be necessary in order to settle this point.

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**Appendix****Table 1. Relative Importance of Different Ownership Types.**

	Ukraine (total)	Including:			
		State-owned enterprises	Collectively owned companies	Private firms	Other forms of ownership
Number of enterprises	10,527	1,495	8,837	145	50
%	100%	14.2%	83.9%	1.4%	0.5%
Employment (workers)	4,622,144	1,440,070	3,160,892	12,460	8,722
%	100%	31.1%	68.4%	0.03%	0.02%
Output (UAH million)	103,783.6	31,547.9	71,435.4	274.7	525.6
%	100%	30.4%	68.8%	0.3%	0.5%

Source: Derzhkomstat. 2000. Statistics bulletin

**Table 2. List of Regressors.**

REGRESSORS	MEASUREMENT
<i>LAB</i>	labor used (number of employees)
<i>CAP</i>	capital used (UAH thousand)
<i>DEBT</i>	debt to asset ratio
<i>SOE</i>	Joint-stock enterprises with more than 50% state holdings
<i>STATE</i>	ownership variable (% of shares which belong to the state)
<i>COMP</i>	competition variable (measured as concentration ratio of the corresponding market)
<i>YEAR</i>	years since privatization (equal to zero if an enterprise is not privatized)

**Table 3. Decomposition of the sample by sectors and ownership type**

Industries / Ownership type	SOE			PARTIALLY PRIVATIZED			FULLY PRIVATIZED			Total number of firms
	1997	1998	1999	1997	1998	1999	1997	1998	1999	
Fuel industry	7	7	5	2	2	3	0	0	1	27
Power industry	16	16	14	5	5	7	3	3	3	72
Ferrous metallurgy	16	14	12	6	6	7	13	15	16	105
Non-ferrous metallurgy	1	1	1	1	1	1	2	2	2	12
Chemical and petrol-chemical industry	9	9	8	4	4	3	16	16	18	87
Machine-building	31	29	18	29	30	29	71	72	84	393
Wood, Pulp and Paper industries	4	4	1	2	2	3	10	10	12	48
Construction materials industry	10	9	6	4	5	3	42	42	47	168
Light industry	1	1	0	4	4	3	15	15	17	60
Food industry	23	17	5	24	27	26	85	88	101	396
Other	0	0	0	3	3	4	7	7	6	30
<b>Total</b>	118	107	70	84	89	89	264	270	307	466

**Table 4. Descriptive statistics of some variables**

	Mean	Median	Maximum	Minimum	Standard Deviation
PROD	20.3656	10.1425	1187.216	0	54.32348
LAB	1596.27	420.5	26059	4	3346.507
CAP	70119.8	7417.8	1936739	0	187870.9
STATE	21.8772	0	100	0	32.97962
DEBT	0.25071	0.18245	1.467	0.00276	0.214386
COMP	0.39676	0.38072	1	0	0.236592
YEAR	2.06871	2	6	0	1.444294

**Table 5. Estimation Results. Eviews Output**

Dependent Variable: LOG(PROD?)  
 Method: Pooled Least Squares  
 Date: 10/24/04 Time: 13:34  
 Sample: 1997 1999  
 Included observations: 3  
 Cross-sections included: 466  
 Total pool (unbalanced) observations: 1354  
 White cross-section standard errors & covariance (d.f. corrected)  
 Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.502680	0.569834	7.901747	0.0000
LOG(LAB?)	-0.577019	0.062274	-9.265756	0.0000
LOG(CAP?)	0.127751	0.028537	4.476666	0.0000
STATE?	0.003391	0.000259	13.08655	0.0000
SOE?	-0.236028	0.029210	-8.080501	0.0000
DEBT?	0.585358	0.067614	8.657396	0.0000
COMP?	0.454846	0.239180	1.901690	0.0575
YEAR?	-0.126657	0.024157	-5.242978	0.0000
Fixed Effects (Period)				
1997--C	0.108755			
1998--C	0.058956			
1999--C	-0.167711			

## Effects Specification

Cross-section fixed (dummy variables)

Period fixed (dummy variables)

R-squared	0.889880	Mean dependent var	2.203093
Adjusted R-squared	0.830498	S.D. dependent var	1.319156
S.E. of regression	0.543104	Akaike info criterion	1.886560
Sum squared resid	259.2717	Schwarz criterion	3.714580
Log likelihood	-802.2012	F-statistic	14.98571
Durbin-Watson stat	2.207071	Prob(F-statistic)	0.000000

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