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## **EXPERIMENTAL RESEARCH WORK: EARNINGS MANAGEMENT (EM) AND FIRM-LEVEL DETERMINANTS**

**Abstract.** The experiment aims to establish major firm-level EM determinants with significant impact between state and private ownership structure companies. Sample includes 20 largest corporations by size and sales across different industries listed on KASE stock exchange operating during last 10 years period 2009-2018. (180 observations available). To estimate the discretionary accruals EM, the Modified Jones (1995) model is utilized. The residuals (discretionary accruals) are regressed on a set of explanatory variables (ownership structure, capital structure and dividend policy) that hypothesize to determine EM. We also examined the influence of ownership structure, capital structure and dividend policy decisions on EM between state and private companies. Overall, the extent of manipulations is significantly higher in companies with private ownership structure though factors that determine EM turned to be different compared to state-owned enterprises. The experimental study is considered the first to relate EM and firm-level determinants between different ownership structures (state vs private) in Kazakhstan. Due to issues with manual data collection and market results generalization based on small population of KASE listed companies, research literature on Kazakhstani data is scarce. So, our experiment definitely brings theoretical value and reduces literature gap. Empirical results believe to bring additional analysis to the market participants (investors, owners, regulators, standard-setters etc.) to improve decision-making and corporate reporting.

**Key words:** Earnings management, Kazakhstan, Experiment, Firm-level Determinants.

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### **Ғылыми-тәжірибелік зерттеу жұмысы: есептілікті бұрмалау және бұрмалану деңгейін анықтаушы факторлар**

**Аңдатпа.** Ғылыми тәжірибе мемлекеттік және жеке құрылымдық меншік түріндегі компанияларда ауқымды ықпал ететін негізгі EM детерминанттарын (корпоративтік есептілік деректермен айла-шарғы жасау деңгейін) анықтауға бағытталған. Іріктемеге 2009-2018 жылдар аралығындағы кезең ішінде соңғы 10 жылда жұмыс істеген, KASE қор биржасында бағасы белгіленетін, әртүрлі салалардағы сатылым мөлшері мен көлеміне қарай ең ірі 20 корпорация енді (180 бақылау қол жетімді). EM дискрециялық есептеуін бағалау үшін Джон Модифайед Jones үлгісі қолданылады (1995). Қалдықтар (дискрециялық есептеулер) EM белгілеуге тиісті ауыспалы мәндерді түсіндіретін жиынтыққа қарай ылдилайды (меншік құрылымы, капитал құрылымы және дивидендтік саясат). Біз сондай-ақ жеке-жеке мемлекеттік және жеке компаниялар арасында дивидендтік саясат бойынша шешімдердің, меншік құрылымының, капитал құрылымының EM-ге ықпалын зерттеп, оларды салыстырдық. Жалпы алғанда, айла-шарғы жасау деңгейі жеке меншік құрылымдағы компанияларда айтарлықтай жоғары, дегенмен, EM белгілейтін факторлар мемлекеттік кәсіпорындармен салыстырғанда әртүрлі болып шықты. Ғылыми тәжірибелік зерттеуді Қазақстанда алғашқылардың бірі деп сенімді айтуға болады. Деректерді қолмен жинауға және KASE-та тіркелген компаниялардың шағын ғана көлемі негізінде нарықтық нәтижелерді жалпылауға қатысты қиындықтардың туындауына байланысты қазақстандық деректер бойынша зерттеу әдебиеті шектеулі болып табылады. Осылайша, біздің ғылыми тәжірибеміздің нақты теориялық құндылығы зор және зерттеу әдебиетіндегі олқылықтарды азайтады. Эмпириялық нәтижелер нарыққа қатысушыларға қосымша талдауды ұсынады (инвесторларға, иегерлерге, реттеуші органдарға, стандарттарды

әзірлеушілерге және т.б.), бұл шешім қабылдауға және корпоративтік есептілік үдерісін жақсартуға бағытталуы мүмкін.

**Түйін сөздер:** деректермен айла-шарғы жасау, Қазақстан, эксперимент, детерминанттар.

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**Экспериментальная научно-исследовательская работа:  
искажение отчетности (через управление доходами) и факторы,  
определяющие уровень искажения**

**Аннотация.** Эксперимент направлен на установление основных детерминантов EM (уровень манипуляций данных корпоративной отчетности), которые оказывают существенное влияние в компаниях с государственной и частной структурами собственности. В выборку включены 20 крупнейших корпораций по размеру и объемам продаж в различных отраслях, котирующихся на фондовой бирже KASE, которые работали в течение последних 10 лет в период 2009-2018 гг. (Доступно 180 наблюдений). Для оценки дискреционного начисления EM используется модель Джона Modified Jones (1995). Остатки (дискреционные начисления) регрессируются на набор объясняющих переменных (структура собственности, структура капитала и дивидендная политика), которые должны определять EM. Мы также изучили влияние структуры собственности, структуры капитала и решений по дивидендной политике на EM между государственными и частными компаниями по отдельности и сравнили их. В целом, степень манипуляций значительно выше в компаниях с частной структурой собственности, хотя факторы, определяющие EM, оказались разными по сравнению с государственными предприятиями. Экспериментальное исследование можно по праву считать одним из первых в Казахстане. Из-за проблем с ручным сбором данных и обобщением рыночных результатов на основе небольшого числа компаний, зарегистрированных на KASE, исследовательская литература по казахстанским данным является ограниченной. Таким образом, наш эксперимент определенно приносит теоретическую ценность и уменьшает пробелы в исследовательской литературе. Эмпирические результаты дают дополнительный анализ участникам рынка (инвесторам, владельцам, регулирующим органам, разработчикам стандартов и т.д.), который может быть направлен для улучшения процесса принятия решений и корпоративной отчетности.

**Ключевые слова:** манипуляции данных, Казахстан, эксперимент, детерминанты.

## Introduction

### Research Background and Problem

Proper functioning of capital markets highly depend on transparency and quality of financial information. Despite regulatory efforts to protect investors, even nowadays accounting fraud in stock markets is taking place – what in turn again makes financial scandals become debatable and relevant in light of business ethics failure. Different groups, including academia and regulators, are paying significant attention to the issue of quality of corporate reporting.

Interest to EM and its determinants has been accentuated with the increasing number of financial scandals, which have reduced investors trust on information published on capital market (Fernandez and Garcia, 2007).

Annual financial statements should give a true and fair view of an undertaking's assets and liabilities, financial position and profit and loss. Audit opinion should state whether financial statements

give a true and fair view in accordance with the relevant financial reporting framework. When the results of firm's performance are unfavorable or less favorable, the management may depart from the "true and fair" view to report more favorable financial results. This opportunistic use of financial reporting strategy usually leads to accounting manipulations.

### Research Objective and Questions

The experiment seeks to prove the existence of accruals' EM practice and set up its major determinants in context of Kazakhstan during last 10 years.

Referring to the general research objective of the study we formulate the following specific research questions, which in turn transformed into more detailed conceptual hypotheses:

RQ1. Can we establish the association between Capital structure and EM practices?

RQ2. How Ownership structure may influence EM activity?

RQ3. Is there any implications of Dividend policy for EM level manipulation?

Context Analysis and Contributions to the literature

The study of EM and its determinants in Kazakhstani context is interesting because Kazakhstan is a developing country with an emerging capital market, whose structure is consistent with international standards. The majority of Kazakhstani firms are family owned or controlled.

Improvement of corporate reporting through EM moderation are more likely appreciated by all market participants in the region. It's expected to diminish information asymmetry, promote foreign capital inflow through investor confidence increase.

The experimental study is considered the first to relate EM and firm-level determinants between different ownership structures (state vs private) in Kazakhstan.

Due to issues with manual data collection and market results generalization based on small population of KASE listed companies, research literature on Kazakhstani data is scarce. So, our experiment definitely brings theoretical value and reduces literature gap.

The rest of the paper is organized as follows. In Literature Review section, we develop the research hypothesis on the basis of literature review. In Research Design section, we describe our empirical methodology. Then, we present our results in Empirical Findings section. Finally, we conclude.

## Literature Review

Framework: Theories of EM and Conceptualization

EM influences decision-making; therefore is regarded as a strategic tool by market participants. In academia world there are several theories attempting to explain reasons behind EM utilization. For the purpose of current experiment, we base analysis with reference to positive accounting theory and entrenchment theory.

Politico-contractual theory or positive accounting theory (Watts and Zimmerman, 1986) suggests debt, size and compensation as 3 major determinants of EM. Contractual clauses prevent wealth transfers between shareholders and various creditors by means of dividend rate limitation and restrictions of debt levels. Larger companies are assumed to be monitored more in order to avoid law violations. (Compensation of executives is out of scope for this experiment)

Entrenchment theory proposes the inevitable impact of managerial leadership in the companies because the replacement of leaders become too ex-

pensive and bear operational costs. In Kazakhstani companies, this is an important issue, because very often President or General Director is at the same time on the board list as well as among the major shareholders.

Although the term "earnings management" is widely used in the literature, there is no consensus on its definition.

Healy & Wahlen (1999) define EM as follows: "earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers".

Beneish & Vargus (2002) state that there are two perspectives of EM: opportunistic EM and informative EM. While opportunistic EM seeks either to mislead investors or to secure managers' jobs, reputations, and compensation within the firm, the informative EM aims to provide private information to the investors about the firm's future performance.

Therefore, it is important to identify managers' intent in order to determine whether EM is opportunistic behavior or informative exercise. Hence, many attempts have been made in the previous literature to identify various motivations to manage earnings. Academia world distinguish 3 types of incentives for EM behavior. Executives manipulate results to save job and own reputation. Companies manage earnings to avoid losses or decreases or correct forecasts. Last motivation associates with investors and creditors – manipulate numbers to attract external funding and meet investors' expectations.

Major Findings from Literature Review

In attempt to review EM literature relevant to Kazakhstan, we encounter scarcity issue right away. Few articles overall on Mendeley Web and Research gate (and other databases) and couple related to EM area.

Baimukhamedova et al. (2015) examined the effect of Corporate Governance on companies' EM in natural resources sector of Kazakhstan.

Another article presented by R. Makarov (2015) who seeks to investigate correlation between EM and quality of audit provided by Big4 in agricultural sector of Kazakhstan and revealed that neither Jones nor Modified Jones model is capable capture idiosyncrasies of the sector and disaggregate discretionary accruals.

One more study, more or less related to corporate reporting in Kazakhstan, was brought by

N.Orazalin, R.Makarov, and M.Mahmood(2014) whose study aims at investigating the extent and determinants of voluntary disclosures and their relationship with the corporate governance (CG) aspects of banking companies in Kazakhstan. The empirical results suggest that the number of outside directors has significant positive impact on a disclosure score.

So for the purpose of the experiment, we reviewed several articles with important findings evident from developing and emerging markets leaving cases of developed countries out of scope for the reason.

Ding et al. (2007) investigated the role played by a firm's ownership structure in EM, with reference to the Chinese capital market and found that the relationship between EM measures and ownership concentration exhibits a statistically significant non-linear, inverted U-shape pattern known as the "entrenchment versus alignment" effect.

Siregar & Utama(2008) investigate whether companies listed on the Jakarta Stock Exchange (JSE) conduct efficient or opportunistic EM and to examine the effect of ownership structure, firm size, and corporate-governance practices on it and found inconsistent evidence with regard to the impact of institutional ownership, firm size, and corporate-governance practices on type of EM.

Agustia(2014) examined the impact of good corporate governance, free cash flow, and leverage ratio on EM and found that all components of good corporate governance (audit committee's size, the proportion of independent commissioners, institutional ownership, and managerial ownership), have no significant effect on EM, while leverage ratio has a significant effect on EM, and free cash flow has a negative and significant effect on EM.

Yi & Kim (2005) investigated whether, and how, the deviation of controlling shareholders' control from ownership, business group affiliation, and listing status differentially affect the extent of EM and found that stock markets create incentives for public firms to manage reported earnings to satisfy the expectations of various market participants.

Yang et al.(2010) examined the relation between managerial ownership structure and EM. For a large sample of Taiwanese listed firms over the period 1997 and 2004, authors found that discretionary accruals first increase and then decrease with executive ownership, forming an inverted U-shaped relationship. However, discretionary accruals are positively affected by director ownership and blockholder ownership.

Al-Fayoumi et al. (2013) examined the relationship between EM and ownership structure for a sample of Jordanian industrial firms during the period 2001-2005. Results indicate that insiders' ownership is significant and positively affect EM.

Mohd Ali et al.(2008) examines the association between the level of managerial ownership and EM activities and found that large-sized firms demand and use better corporate governance mechanisms due to higher agency conflicts, and, therefore, less managerial ownership is needed for control.

Saona & Muro(2018) analyzed firm- and country-level determinants of the EM for a sample of Latin American companies from 1997 to 2015. Results show that dividend pay-outs impact positively on EM. The ownership structure, however, is a double-edged sword as a controlling mechanism that may constrain EM but may also exacerbate it.

Shen & Chih (2007) studied the impacts of corporate governance on EM and found that firms with good corporate governance tend to conduct less EM. Size effect for earnings smoothing is large size firms are prone to conduct earnings smoothing, but good corporate governance can mitigate the effect on average. There is a turning point for leverage effect, when the governance index is large, leverage effect exists, otherwise reverse leverage effect exists. Firms with higher growth (lower earnings yield) are prone to engage in earnings smoothing and earnings aggressiveness.

#### Conceptual Hypotheses

Based on the review of the relevant literature and mixed results as well as theoretical framework we formulate the following hypothesized relationships.

H1: Inverse U-shaped relation between Leverage and EM supported by the interaction between the Leverage (Debt-equity hypothesis) and the reverse Leverage effects(Shen & Chih, 2007).

On one side managers manipulate numbers to meet debt covenants which is called Leverage effect. On the other hand high debt level serves control mechanism constraining EM because debt reduces resources necessary for discretionary projects of managers' interests – reverse Leverage effect.

H2: Positive relationship between EM and the Dividends. The seminal work of Lintner (1956) documents that managers are reluctant to cut dividends and target long-term pay-out ratios (Dividend conservatism hypothesis)(Saona & Muro, 2018).

Daniel et al. (2008) dividend-paying firms tend to manage earnings upward when their earnings would otherwise fall short of expected dividend levels because such fall impacts payment capacity constrained by debt covenants.

Mitton (2004) argues that preference for dividends may be stronger in emerging markets with weak investor protection.

H3: Negative relationship between the corporate Ownership concentration and EM.

López Iturriaga & Saona Hoffmann(2005) argued that capital structure and the ownership structure as mechanisms of control of the managers of the firms and to reduce their accounting discretionary power for a sample of Chilean firms.

Concentrated ownership structures is expected to solve some vertical agency problems through direct supervision of managers.

Jensen& Meckling(1976) – ownership concentration according to the efficient monitoring hypothesis leads to a less opportunistic behavior.

H4: Political cost (size) hypothesis suggests that large firms are more likely to choose income-decreasing EM.

H5: Firms with low performance are more intended to manage earnings. (preservation of reputation hypothesis).

## Methodology

### Sample selection and Data collection

KASE stock exchange list counts about 35-40 (out of 170 eminent) companies across different industries excluding banks, insurance companies, leasing companies, pension funds and other investment holdings.

Sample includes 20 largest corporations by size and sales across different industries listed on KASE stock exchange operating during last 10 years period 2009-2018.

20 major companies sampled from the list of 36 listed on KASE excluding investments funds, pension funds, banks, financial institutions, leasing companies, those already consolidated within parent which already on the list represent 98% of population assets and sales. (refer to Appendix 3 for the full list of companies)

Data is manually extracted from the annual audited financial reports and / or yearly corporate reports of the companies listed on Kazakhstan Stock Exchange (KASE). As a two-eye review procedure, we asked help from two students to minimize errors in data extraction into excel / stata spreadsheets.

**Table 1** – Sample selection

mln KZT 2017	Assets	Sales	#
Total for 36 listed KASE companies exclfin.inst., funds, banks etc.	23,362,056	6,175,886	36
Sample chosen	22,987,680	6,049,182	20
notinthesample	374,376	126,704	16
coverageby	98%	98%	56%

### Operationalization of EM and Variables

Accruals EM – cross-sectional model of discretionary accruals based on Jones (1991) model as described in Dechow et al. (1995) and Kothari et al. (2005) Model.

The independent variables include the Capital structure measured by leverage, Dividend policy by dividends paid presented in financing part of CF statement, and Ownership structure as % shares of major shareholder described in Capital / Equity notes of the financial report.

– Leverage – Liabilities / Assets or Liabilities / Equity

– Dividends policy – Cash Dividend / NI or Dividend / CFO

– Ownership Concentration – % shares held by majority shareholder

The following factors are incorporated as controls, since these variables may influence EM:

– Size – Ln (Total Assets or Sales) or Ln (MV Equity)

– ROA (or ROE) – NI / Assets (Equity)

– Growth – Change % (Sales)

### Applied Research Methodology

To estimate the discretionary accruals EM, the Modified Jones (1995) model is utilized that regresses the residuals (discretionary accruals) on a set of explanatory variables (ownership structure, capital structure and dividend policy) that hypothesize to determine EM.

TA are calculated according to the formula (Leuz et al., 2003):

$$TA = (\Delta CA_{i,t} - \Delta Cash_{i,t}) - (\Delta CL_{i,t} - \Delta STD_{i,t}) - Dep_{i,t} \quad (1)$$

where CA – current assets, CL – current liabilities, STD – current portion of loans and short loans, and Dep – depreciation.

$$TA_{i,t} / A_{i,t-1} = \alpha_1 / A_{i,t-1} + \alpha_2 (\Delta Rev_{i,t} - \Delta AR_{i,t}) / A_{i,t-1} + \alpha_3 (PPE_{i,t}) / A_{i,t-1} + \mu \quad (2)$$

where A – total assets, Rev – sales, AR – trade receivables, PPE – fixed assets,  $\mu$  – DA.

Because EM practice may be upward and / or downward, we take module form of  $\mu$ .

$Abs(DA)_{i,t} = F(\text{Ownership Structure; Capital Structure, Dividend Policy, Control Variables})$

## Results and Discussion

### 1. Modified Jones Model (1995) and Discretionary accruals (DA)

Lagged TA is regressed on lagged PPE and lagged difference of change in sales and receivables. Coefficients except for intercept are significant at 95% confidence level (P-value 0,003) that proves the validity of the model. Using stata we generate DA based on pooled OLS. For the purpose of this experiment we are interested in the extent of DA without specific directions (+ or -) that is absolute values of DA.

**Table 2** – Modified Jones Model (1995)

Source	SS	df	MS	Number of obs	=	160
				F( 3, 157)	=	9.18
Model	0.5190312	3	0.1730104	Prob> F	=	0.0000
Residual	2.9577232	157	0.0188390	R-squared	=	0.1493
				Adj R-squared	=	0.1330
Total	3.4767544	160	0.0217297	Root MSE	=	0.1373
L_TAC	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
LTA	-570.5729	404.7324	-1.41	0.161	-1370.00	228.85
L_d_Sales_AR	0.1189462	0.03225	3.69	0.000	0.05525	0.18265
L_PPE	-0.058252	0.019248	-3.03	0.003	-0.09627	-0.02023

**Table 3** – Discretionary accruals (DA)

One-sample t test	
Variable	Obs Mean Std. Err. Std. Dev. [95% Conf. Interval]
absDA	160 .0909428 .0080154 .1013875 .0751125 .1067732
mean = mean(absDA)	t = 11.3460
Ho: mean = 0	degrees of freedom = 159
Ha: mean < 0	Ha: mean != 0
Ha: mean > 0	
Pr(T < t) = 1.0000	Pr( T  >  t ) = 0.0000
Pr(T > t) = 0.0000	

Applying stata we test whether DA statistically different from 0. Within 95% confidence level (P-value 0,000, t-stat = 11.34) results prove the existence of EM among the listed companies in Kazakhstani market. It means that Kazakhstani companies did manipulate and applied EM practices during given period 2010-2017.

On the basis of literature review, chosen theoretical framework and developed hypotheses

we establish absDA derived from Modified Jones Model 1995 as a function of the following factors or firm-level determinants.

$$Abs(DA)_{i,t} = F(\text{Ownership Structure; Capital Structure, Dividend Policy, Control Var}) \quad (3)$$

where, control variables includes Growth, Profitability ROE and Size (lnSales)

### 2. Main regression: model selection

At this point, we observe Size, Profitability, Leverage and Dividends policy play important role as factors that determine and impact manipulation practice among the listed Kazakhstani companies. (P-value < 0,1, Confidence level 90%). However, since we deal with panel data we are required to check whether the company's error term is not correlated with the predictors, which allows for time-invariant variables to play a role as explanatory variables.

**Table 4** – Main regression (EM vs Firm-level Determinants)

Source	SS	df	MS	Numberofobs	=	160
				F( 6, 153)	=	5.66
Model	0.296904	6	0.049484	Prob> F	=	0.0000
Residual	1.337524	153	0.008742	R-squared	=	0.1817
				Adj R-squared	=	0.1496
Total	1.634428	159	0.010279	Root MSE	=	0.0935
absDA	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
levlta	0.144284	0.03209	4.50	0.000	0.08089	0.20768
payoutratiodivni	0.029557	0.014751	2.00	0.047	0.00042	0.05870
own_concentration	0.039008	0.038622	1.01	0.314	-0.03729	0.11531
sizeInsales	-0.00583	0.002488	-2.35	0.020	-0.01075	-0.00092
roa	0.07741	0.044269	1.75	0.082	-0.01005	0.16487
growth	-0.00525	0.012319	-0.43	0.670	-0.02959	0.01908
_cons	0.038815	0.039909	0.97	0.332	-0.04003	0.11766

Referring to methodology of Model selection for panel data, we follow testing procedures:

- Fixed effects are tested by the F test,
- Random effects are examined by the Lagrange multiplier (LM) test.

- F-test by Chow for poolability.

Panel data models examine group (individual-specific) effects, time effects, or both in order to deal with heterogeneity or individual effect that may or may not be observed. A fixed effect model examines if intercepts vary across group or time period, whereas a random effect model explores differences in error variance components across group or time period. If individual effect (cross-sectional or time specific effect) does not exist, ordinary least squares (OLS) produces efficient and consistent parameter estimates.

If the null hypothesis is not rejected in either test, the pooled OLS regression is favored if not then perform Hausman test. Results show insignificant both F-test (P-value 0,23) and LM-test (P-value 0,27). Let's check LM-test in details. Breusch-Pagan Lagrange multiplier (LM) test: RE effects vs pooled OLS regression. Test verifies whether variances across companies present or not. The LM test helps you decide between a random effects regression and a pooled OLS regression. The null hypothesis in the LM test is that variances across companies is zero. This means no significant difference across units or no panel effect.

H0: OLS regression, variances across entities is zero

Ha: Random effects model

**Table 5** – Breusch-Pagan Lagrange multiplier (LM) test

Breusch and Pagan Lagrangian multiplier test for random effects		
absDA[companyN,t] = Xb + u[companyN] + e[companyN,t]		
Estimated results:		
Varsd = sqrt(Var)		
absDA   .0102794 .1013875		
e   .008484 .0921085		
u   7.87e-06 .0028057		
Test: Var(u) = 0		
chibar2(01) = 0.38		
Prob> chibar2 = 0.2698		

Here P-value equal 0,27 and we don't reject the null and conclude that pooled OLS is appropriate. This means no sufficient evidence of significant differences across companies.

Poolability asks if slopes are the same across group or over time. One simple version of poolability test is an extension of the Chow test (Chow, 1960). The null hypothesis of this Chow test is the slope of a regressor is the same regardless of individual for all k regressors. Slopes remain constant in fixed and random effect models; only intercepts and error variances matter.

F-test by Chow for poolability: pooled OLS vs Random Coefficient model (mixed), is performed manually calculating SSE for each group regression and plug-in results into F-test formula. It verified

existence of heterogeneity in slopes rather than in intercepts (FE) or error-component (RE).

Chow F-test for poolability / heterogeneity in slopes check results in small  $F = 1,01$  and we don't reject null hypothesis  $H_0$ : the slope of a regressor is the same.

3. Main regression: refined robust OLS estimator

Finally, we established the pooled OLS model as the most appropriate after tests. To solve possible Heteroscedasticity problem, Robust SE are added to the regression.

**Table 6** – Pooled OLS refined regression with robust OLS estimator

Linear regression	Number of obs = 160					
	F( 6, 153) = 5.76					
	Prob> F = 0.0000					
	R-squared = 0.1817					
	Root MSE = .0935					
	Robust					
	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
absDA						
levlta	0.144284	0.034427	4.19	0.000	0.076270	0.212299
payoutratiodivni	0.029557	0.017648	1.67	0.096	-0.005309	0.064422
own_concentration	0.039008	0.036851	1.06	0.291	-0.033793	0.111810
sizeInsales	-0.00583	0.001453	-4.01	0.000	-0.008705	-0.002963
roa	0.07741	0.041956	1.85	0.067	-0.005478	0.160297
growth	-0.00525	0.009556	-0.55	0.583	-0.024132	0.013625
_cons	0.038815	0.029671	1.31	0.193	-0.019803	0.097434

**Table 7** – Autocorrelation test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity					
Ho: Constant variance					
Variables: fitted values of absDA					
chi2(1) = 8.70					
Prob> chi2 = 0.0032					
Wooldridge test for autocorrelation in panel data					
H0: no first-order autocorrelation					
F(1, 19) = 0.126					
Prob> F = 0.7262					

Findings appear to be quite significant except for Ownership concentration and Growth:

- Overall regression F stat is equal 5,76 (P-value 0,000)
- Overall R-squared amounts to 18,17%
- Leverage t-stat = 4,19 within 99% Confidence interval
- Dividends policy t-stat = 1,67 within 90% CI
- Size t-stat = -4,01 within 99% CI
- ROA t-stat = 1,85 within 90% CI

After solving Heteroskedasticity issue with Robust SE, we keep our parametric t-tests robust to normality assumption due to sufficient sample size. Autocorrelation turns not to be an issue.

#### 4. Descriptive Statistics

Using stata we summarize descriptive statistics for all variables in the regression below. It provides measures of central tendency, spread of distribution, median (p50), min and max values plus degree of asymmetry and heaviness of tails.

**Table 8** – Descriptive statistics

stats	absDA	DA	levlta	payout~i	own_co~n	size~es	roa	growth
mean	0.090943	-0.0067	0.535563	0.258188	0.758625	11.66819	0.088	0.211125
sd	0.101388	0.136224	0.267616	0.539007	0.243808	3.390677	0.20672	0.647348
skewness	2.327886	0.480404	0.731091	3.338	-0.49762	1.960732	0.456567	7.16727
kurtosis	9.931823	7.39043	3.187762	21.14072	1.758875	6.223452	6.800877	72.02883
p50	0.058436	-0.00467	0.485	0.06	0.86	10.8	0.06	0.13
iqr	0.100005	0.116715	0.36	0.31	0.46	1.89	0.105	0.255
min	0.000715	-0.47288	0.11	-1.14	0.3	6.5	-0.64	-0.72
max	0.634669	0.634669	1.35	4.2	1	21.9	0.82	6.87

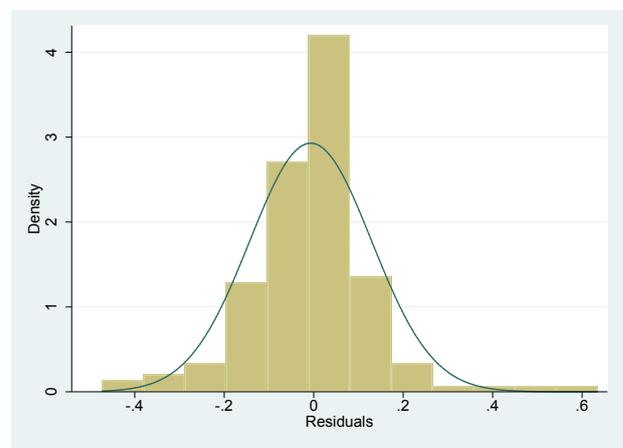
**Table 9** – Pearson's correlation

	absDA	levlta	payout~i	own_co~n	size~es	roa	growth
absDA	1						
levlta	0.2983*	1					
payout~i	0.1716*	-0.0904	1				
own_concen~n	-0.0883	-0.4264*	0.1162	1			
size~es	-0.1918*	-0.1536	0.0704	0.4533*	1		
roa	0.081	-0.3685*	0.3145*	0.3393*	0.0399	1	
growth	0.025	0.0041	-0.0615	0.0899	-0.0591	0.2955*	1

Our measure of EM is DA, which has mean and median close to zero (-0,006; -0,004); deviation 0,13; and max value of 0,63. It's not skewed since 0,48 value is within the acceptable range (-1, +1). However, it's a bit heavily tailed since Kurtosis is more than 3 and equal about 7. This supports our conclusions that Normality issue is mainly due to Kurtosis.

The Pearson product-moment correlation coefficient, often shortened to Pearson correlation or Pearson's correlation, is a measure of the strength and direction of association that exists between two continuous variables. If the p-value is not less than the significance level ( $\alpha = 0.05$ ), decision: Do not reject the null hypothesis.

There is sufficient evidence to conclude there is a significant linear relationship between absDA and Leverage, Dividend policy and Size at 5% significance level (star 5), because the correlation coefficient is significantly different from zero.

**Figure 1** – Normality

## 5. Interpretation of the results

We formulated, tested and interpreted the following conceptual hypotheses.

**Table 10 – Conceptual hypotheses’ results interpretation**

Hypothesis	Determinant	Expected	Actual	Yes / No (significance)
H1	Leverage	U-shaped	+	Partialat 99% CI
H2	Dividends	+	+	Yesat 90% CI
H3	Ownership	-	0	No
H4	Size	+	-	Noat 99% CI
H5	Performance	-	+	Noat 90% CI

H1: Debt-equity hypothesis is partially supported. Managers do manipulate information to meet debt covenants; however Leverage effect doesn’t reverse at the point where high debt level is supposed to serve as control mechanism constraining EM, because debt reduces resources necessary for discretionary projects. (Coefficient of squared Leverage is not significant)

H2: Dividend conservatism hypothesis is supported according to which managers are reluctant to cut dividends and target long-term pay-out ratios. Dividend-paying firms are expected to manage earnings upward.

H3: Efficient monitoring hypothesis is not supported.

H4: Political cost hypothesis is not supported whereas significant. Negative relationship indicates that large firms tend to manipulate less. Large firms were expected to choose income-decreasing EM; however, they tend to reduce EM.

H5: Preservation of reputation hypothesis is also significant though not supported. Positive relationship indicates that firms with low performance are less intended to manage earnings.

### Conclusion

To sum up, we examined the influence of ownership structure, capital structure and dividend policy decisions on EM among state and private companies. Kazakhstani companies have been manipulating earnings through discretionary accruals during 2009-2018 period. 4 of 5 established hypotheses are significant and only one (Dividends) meets its concept in full. Profitable, leveraged, small-sized dividend-paying listed companies tend to engage into EM. Dividend policy plays a key role in determination of EM among companies.

Next step is to investigate which factors are more influential in companies when we consider

ownership structure, private vs state. Factors that determine EM are expected to differ.

KASE stock exchange list counts about 35-40 companies across different industries excluding banks, insurance companies, leasing companies, pension funds and other investment holdings. Even though findings due to small population cannot be generalized to the whole CIS region, such list represents Kazakhstani market and should be analyzed as such. It implies that in some cases analysis of small Kazakhstani market is more useful and representative for conclusions and interpretations than results generalized from the whole CIS region.

Empirical results believe to bring additional analysis to the market participants (investors, owners, regulators, standard-setters etc.) to improve decision-making and corporate reporting.

Future research recommendation

Comparison of different EM measurements: Besides cross-sectional model of discretionary accruals based on Jones (1991) model as described in (Dechow, Sloan, and Sweeney 1995), we may use and compare effectiveness of the different models:

- Kothari and al. (2005) Performance-Matched Model,
- Jones (1991) Model,
- The Healy (1985) Model,
- The Industry (Dechow and Sloan 1991) Model,
- The DeAngelo (1986) Model.

Although total-accruals models, specific-accruals models, and the frequency distribution approach are used as alternative approaches, the total-accruals approach is the most widely-used approach in the literature because it attempts to capture the total effect of accruals on earnings. The models under the aggregate accruals approach are based on classifying the total accruals into two components: discretionary and non-discretionary accruals.

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