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# EARNINGS QUALITY DURING COVID-19: CENTRAL ASIAN CASE

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## ABSTRACT

*The purpose of this research.* In 2021 Gong & Choi investigated the effect of State ownership on Accounting quality. Positive relationship between State ownership and Earnings management has weakened in recent years, which is the result of the effective mixed-ownership reform [1]. Our research is an event study to assess the impact of COVID-19 on the National IPO/SPO Program results in terms of Earnings quality changes in partial state-owned enterprises.

*Methodology.* We analyze 572 unbalanced panel firm-year observations during 2009-2021period. Sample data is extracted from KASE Stock Exchange population across different industries excluding financial institutions and investment holdings. To estimate Earnings quality, we combine Kasznik cash flow model for accrual-based Earnings management and Roychowdhury aggregate model for real activity Earnings management [2; 3].

*Findings.* We found that COVID-19 positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to Earnings quality in 100 % owned private and state enterprises. Despite such the immediate and positive reaction, in post COVID-19 2021 year, Earnings quality deteriorated in partial state-owned companies (with 50-99 % Government ownership) up to the level of 100 % private/state companies.

*Originality / value of the research*. Our study is among the first attempts to analyze Earnings quality dynamics over 2009-2021 horizon in Kazakhstan with the assessment of COVID-19 impact. As a practical recommendation, our research findings could be integrated into the National IPO/SPO Program as a red flag to impact Earnings quality trend in partial state-owned enterprises.

*Keywords:* Earnings quality, Ownership structure, Republic of Kazakhstan, National IPO/SPO Program, COVID-19.

## INTRODUCTION

In 2021 Gong & Choi investigated the effect of State ownership on Accounting quality, measured by earnings management. They found out that positive relationship between State ownership and Earnings management has weakened in recent years, implying the mixed-ownership reform to be effective [1]. Proper functioning of capital markets highly depends on transparency and quality of financial information. Investors assess companies not only by profitability and cash generation but also by risk of earnings information quality that affect future sustainability.

The National IPO/SPO Program (or ownership reform) in Kazakhstan started more than 10 years ago. The program was developed in pursuance of the Instructions of ex-President Nazarbayev during the XIII Congress of the Nur-Otan, People's Democratic Party, on February 11, 2011. The National IPO/SPO Program is expected to be effective, especially during shock periods like COVID-19 when it's vital to keep potential investors interested in investing into partial state-owned enterprises attracting not only by cash and profits but by transparent high-quality financial corporate data.

Here is an excerpt from the President of the Republic of Kazakhstan K. K. Tokayev's speech delivered to the representatives of international investment companies on December 3, 2021:

«A large-scale campaign is now underway on privatization of more than 700 state-owned enterprises in

various sectors of the economy of Kazakhstan, including oil and gas, energy, infrastructure. We consider it preferable to place shares of the largest companies on national stock exchanges».

KazTransOil joint-stock company (hereinafter JSC) was the first state company to go public in 2012. As part of The National IPO Program, citizens of Kazakhstan and local pension funds, were offered to purchase 38 million ordinary shares of the company at 725 tenge per share by subscription. On December 18, 2014, the initial offering of ordinary shares of KEGOC JSC on the KASE stock market was carried out through subscription. In November 2018, Samruk-Kazyna JSC put over the National IPO of NC Kazatomprom JSC in the amount of 14.92 % or 38 million shares and global depositary receipts with a double listing on the London Stock Exchange and the Astana International Exchange. In 2019 and 2020, Samruk-Kazyna JSC conducted Secondary Public Offering of NC Kazatomprom JSC through the accelerated book building. As a result of the IPO/SPO, 25 % of the issued shares was placed in free circulation. Later in 2022, Samruk-Kazyna JSC announced Secondary Public Offering of KazMunaiGaz JSC shares on the AIX and KASE Stock Exchanges. Government adopted a new Comprehensive Privatization Plan for 2021-2025 approved by Decree of the Government of the Republic of Kazakhstan as of December 29, 2020, No.908) to reduce the presence of the state in the economy.

Problem, objective and questions: Lack of the research regarding the effects of the National IPO/SPO on Earnings quality during COVID-19 pandemic inspires us to investigate this research problem and provide results to the investor community and all stakeholders involved in the National IPO/SPO program.

Many researchers use Earnings management as a measure of Earnings quality: higher/lower EM imply lower/higher EQ. Recent study by Brennan analyze various definitions of EM and reviewed the frequently used items in the academic literature such as «Accounting choice», «Income smoothing», «Earnings management» and «Earnings manipulation» [4]. We emphasize on the opportunistic use of the financial reporting strategy that usually leads to the accounting manipulations, mainly referring to the Healy & Wahlen definition:

«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» [5].

Research objective is to assess the impact of COVID-19 on the National IPO/SPO Program results in terms of Earnings quality changes in partial state-owned enterprises.

RQ1: Did COVID-19 improve Earnings quality in partially state-owned companies?

RQ2: Was COVID-19 effect relatively stronger in partially state-owned companies?

Contributions: Our study is among the first attempts to analyze Earnings quality dynamics over 2009-2021 horizon in Kazakhstan with the assessment of COVID-19 impact. In addition to literature gap reduction, our research findings could be practically integrated into the National IPO/SPO Program as a red flag to adjust further Earnings quality trend in partial state-owned enterprises.

The rest of the paper is organized as follows. In the literature review we develop the research hypothesis. In the methodology section we explain data sampling approach and measure Earnings quality variable applying earnings management models. Then, we discuss our empirical results in Results & Discussion and conclude.

**Literature review.** *Papers on Earnings management strategies.* Roychowdhury believe that managers manipulate not only the abnormal accruals (or «AEM»), but also engage into the operational activities (or «REM»). One issue left behind the scope of her findings is the trade-off between AEM and REM conditioned that managers are flexible in their choice [3]. In 2008 Cohen proved that the analysis of only AEM doesn't provide a full picture without REM study. Moreover, both should be treated as substitutes to achieve earnings benchmarks in the post-SOX world [6]. In 2012 Zang documented that managers do switch AEM and REM based on the relative costs, and REM goes first with AEM serving as an adjustment [7].

*Papers on Earnings management and ownership structure relation.* In classic paper Ding et al. 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 [8].

Among contemporaneous studies Lu et al. using A-share listed Chinese firms on both the Shanghai and Shenzhen Stock Exchanges, investigated impacts of State ownership on management's decision to select REM

or AEM earnings management strategies. Authors found that state-owned enterprises tend to favor REM over AEM earnings management strategies more than private [9]. In 2021 Gong & Choi investigated the effect of State ownership on Accounting quality, measured by earnings management. Using the samples of state-owned enterprises listed in the A-share market in China during 2009-2017, authors found that there is a significantly positive relationship between State ownership and Earnings management. Furthermore, the results indicate that higher industry competition effectively inhibit the negative effect of State ownership on Accounting quality. It also turned out that positive relationship between State ownership and Earnings management has weakened in recent years, implying the mixed-ownership reform to be effective [1].

**Hypotheses.** In 2020 Orazalin measured Earnings management in Kazakhstan and concluded that companies with larger boards apply a more restrained approach to EM practices. We continue and extend local EM measurement combining AEM and REM to get a proxy for Earnings quality [10]. Based on the literature review, we hypothesize relation between ownership structure and Earnings quality in Kazakhstan. We expect positive association of State ownership with EM implying state-owned companies prefer increase-increasing EM strategies whereas insignificant association with absolute value of EM should indicate potential U-shaped relation.

H1.1: State ownership is correlated with Earnings quality.

Once direction and strength of association in H1 are determined, we are ready to answer our research questions whether COVID-19 event affected Earnings quality dynamics. Based on the literature review we expect the National IPO/SPO Program to be effective in Kazakhstan, especially during shock periods like COVID-19 when it's vital to keep potential investors interested in investing into partial state-owned enterprises attracting not only by cash and profits but by transparent high-quality financial corporate data. SOE stands for 100 % public state-owned enterprises; POE means public privately-owned enterprises.

H2: COVID-19 positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to those in SOE/POE.

H3: post COVID-19 period positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to those in SOE/POE.

In the next section, we describe KASE population, Earnings quality variable and EM models.

## MAIN RESEARCH BODY

**Methodology.** Data collection and sampling: Data is manually collected from annual audited financial reports of the companies listed on KASE Stock Exchange. As a four-eyes review procedure, we (co-authors) separately extracted and compared data to minimize errors. KASE Stock Exchange sample population is 52 local companies, 26 state and 26 private, (out of 235 eminents) across different industries excluding banks, insurance companies, leasing companies, pension funds and other investment holdings. Time horizon is 13 years during 2009-2021 totaling 572 unbalanced panel firm-year observations.

Table 1 – Descriptive statistics

| variable | mean | sd | iqr | max | p50 | min |
|---|---|---|---|---|---|---|
| **state** | .4667832 | .4993321 | 1 | 1 | 0 | 0 |
| state_share | .2929699 | .4078172 | .5440000 | 1 | 0 | 0 |
| AGG | .0012825 | .1922879 | .2267061 | .608434 | .0183802 | -.547961 |
| Abs(AGG) | .1471139 | .1236611 | .1582190 | .608434 | .1152467 | .0001515 |
| roa | .1047998 | .2618265 | .1437082 | 4.457944 | .0605795 | -1.05379 |
| cfota | .1300129 | .2074945 | .1531988 | 1.063830 | .1035490 | -1.52381 |
| lev | .6000122 | .4197225 | .3579337 | 3.268509 | .5120107 | .0586207 |
| growth | .3578330 | 3.0916830 | .3104409 | 71.727270 | .1166663 | -1 |
| liq | 1.8774750 | 1.9339820 | 1.474174 | 14.454550 | 1.3202750 | .0144605 |
| size | 4.3441270 | 1.8607110 | 2.486751 | 9.592420 | 4.0943390 | .1823216 |
| Source: authors' calculation using Stata15.1 tool | | | | | | |

Stata software offers variety of tests for unit roots in panel data including Fisher-type test for unbalanced panel data. Unit root test is required for all variables except dummy variables. Test combines p-values using the inverse chi-squared, inverse-normal, and inverse-logit transformations. Non-stationary panel data produce unreliable results in panel data models and need to be transformed. For calculation of AEM and REM, variables don't contain unit root (p-values = 0 at 1 % significance level.

Testing for normality using Jarque-Bera and Skewness / Kurtosis tests (omitted) in panel data and plotting histogram identified high kurtosis due to potential outlier presence. We apply the approach of winsorising outliers to deal with high kurtosis. A value of skewness for the response variables and associated residuals is between -0.5 and 0.5 indicating that the distribution is fairly symmetrical. Winsorising at 5 % reached kurtosis around 3-3.5 which is within the acceptable range.

**Operationalization of variables**. To measure overall Earnings quality, we combine the effects of both AEM plus REM earnings management measures.

$$\text{Abs(AGG)} = \text{AEM} + \text{REM}, \quad (1)$$

where AGG – determines direction of earnings management strategies, abs(AGG) – absolute value of AGG and determines aggregate level of Earnings quality, AEM – accrual-based EM, and REM – real activity EM.

To measure AEM, we follow Kasznik cash flow (variation of Jones1991 model) model [2; 11]:

$$\text{TA}i,/\,\text{A}i,t\text{-}1 = \alpha 0 \,/\, \text{A}i,t\text{-}1 + \alpha 1\,(\Delta\text{Rev}i,t)\,/\,\text{A}i,t\text{-}1 + \\ + \alpha 2\,(\text{PPE}i,)\,/\,\text{A}i,\text{-}1 + \alpha 3\,(\Delta\text{CFO}i,t)\,/\,\text{A}i,t\text{-}1 + \mu, \quad (2)$$

where TA – EBIX-CFO (cash flow approach), EBIX – earnings before extraordinary items and discontinued operations, A – total assets, Rev – sales, CFO – net operating cash flow, PPE – gross fixed assets, μ - AEM.

Kasznik model exhibits relatively higher ranking based on F-statistics, adjusted R^2, individual model variable significance, separate period 2009-2021 and 4 industries regression significance (O&G, Manufacturing, Mining and Services). Based on the results of Hausman test (F-test, LM-test) and the presence of Autocorrelation, Heteroskedasticity, Cross-sectional dependence issues, we applied Random-effects GLS Regression with Driscoll-Kraay standard errors.

To measure REM, we follow Roychowdhury aggregate model of 3 models, cash flow model, production model and discretionary expenses model [3]:

$$\text{CFO}i,/\,\text{A}i,t\text{-}1 = \beta 0 \,/\, \text{A}i,t\text{-}1 + \beta 1\,(\text{Rev}i,t)\,/\,\text{A}i,t\text{-}1 + \\ + \beta 2\,(\Delta\text{Rev}i,)\,/\,\text{A}i,\text{-}1 + €, \quad (3)$$

$$\text{PROD}i,/\,\text{A}i,t\text{-}1 = \pi 0 \,/\, \text{A}i,t\text{-}1 + \pi 1\,(\text{Rev}i,t)\,/\,\text{A}i,t\text{-}1 + \\ + \pi 2\,(\Delta\text{Rev}i,)\,/\,\text{A}i,\text{-}1 + \pi 3\,(\Delta\text{Rev}i,t\text{-}1)\,/\,\text{A}i,t\text{-}1 + £, \quad (4)$$

$$\text{DISX}i,/\,\text{A}i,t\text{-}1 = \Omega 0 \,/\, \text{A}i,t\text{-}1 + \Omega 1\,(\text{Rev}i,t\text{-}1)\,/\,\text{A}i,t\text{-}1 + ¥, \quad (5)$$

where A – total assets, Rev – sales, CFO – net operating cash flow, PROD – Inventory + COGS, DISX – S G&A expenses, β π Ω - constant variables, SUM ((-€) + £ + (- ¥)) – aggregate REM.

Based on the results of Hausman test (F-test, LM-test) and the presence of Autocorrelation, Heteroskedasticity, Cross-sectional dependence issues, we applied: 1) Random-effects GLS Regression with robust standard errors to cash flow model, 2) Fixed-effects (within companies) Regression with robust standard errors to production model, and 3) Random-effects GLS Regression with Driscoll-Kraay standard errors discretionary expenses model.

State ownership has two measures: 1) state dummy; and 2) state shares variable is measured as % of total shares owned by State. For further analysis, we split state-owned companies into sub-groups: 1) 0-49 % partial SOE, 2) 50-99 % partial SOE, and 3) 100 % SOE.

**Results and Discussion.** Using Stata 15.1 application and Earning quality model discussed in Methodology section, in Table 2 we present dynamics of EQ during 2010-2021, year-wise and by ownership structure.

Table 2 – Dynamics of Earnings quality (by mean values of abs(AGG) variable)

| YEAR/EQ | POE+SOE | POE | SOE (ALL) | SOE (0-49 %) | SOE (50-99 %) | SOE (100 %) |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| 2010 | .1251898 | .0929009 | .1861800 | n/a | .2061028 | .1702418 |
| 2011 | .1728404 | .1486017 | .2074671 | .2095962 | .1519161 | .2347103 |
| 2012 | .1824038 | .1897452 | .1737670 | .1571375 | .2031036 | .1681194 |
| 2013 | .1656531 | .1682971 | .1628623 | .1386692 | .1514307 | .1813836 |
| 2014 | .1726620 | .1931144 | .1522096 | .1442915 | .1357993 | .1693943 |
| 2015 | .1016811 | .1356040 | .0734119 | .0862590 | .0416771 | .0767680 |
| 2016 | .1341990 | .1317927 | .1362203 | .1553800 | .1009660 | .1323887 |
| 2017 | .1307015 | .1657560 | .0956471 | .0621830 | .1257465 | .1198259 |
| 2018 | .1481170 | .1518126 | .1441259 | .1128874 | .1356699 | .1934207 |
| 2019 | .1527137 | .1484179 | .1577255 | .1506067 | .0929602 | .2151981 |
| 2020 | .1500812 | .1727228 | .1246093 | .0960342 | .0743895 | .1952875 |
| 2021 | .1392865 | .1489499 | .1275223 | .0974174 | .1546033 | .1554866 |
| AVG | **.1471139** | **.1548477** | **.1386318** | **.1170183** | **.1273776** | **.1660832** |
| Source: authors' calculation using Stata15.1 tool | | | | | | |

For the comparison purpose, we call year 2020 - COVID-19 time point, year 2019 – pre COVID-19, year 2021 – post COVID-19, and year 2014-2015 – local currency (Kazakhstani tenge) Devaluation or free flow period.

Column (1) POE+SOE refers to total sample population of KASE-listed companies, where Column (2) POE are firms owned by non-government public shareholders and Column (3) SOE – enterprises with full or partial state engagement. Columns (4) – (6) present state companies according to the degree of Government ownership.

Variable abs(AGG) or EM increase/decrease implies EQ decrease/increase.

*Total sample population.* Earnings quality in our total sample population is equal 0.14 with the lowest value of abs(AGG) in Devaluation period and below-average values (0.13) during post Devaluation 2016-2017. EQ drastically improved in 2015 (from 0.17 to 0.10 mean value) when tenge was freed to flow and started deteriorating right after up to COVID-19. In 2020 when COVID-19 took place, EQ level didn't react quickly and only 1 year after we see improvement by 0.1 point (from 0.15 to 0.139 mean value). Overall, looking at total sample population, we conclude that COVID-19 event, though with 1-year lag, did impact positively on Earnings quality in 2021.

*POE vs SOE.* Next, we'd like to estimate COVID-19 effect separately according to ownership structure. Statistically, abs(AGG) measure is lower in SOE and significantly different from that in POE. (refer to Table 3 below) So year-wise, Earnings quality is better in state-owned enterprises except for 2010 (sig T-stat), 2011, and 2019. (refer to Table 2, Column (2) vs Column (3)) In 2013 and 2016 EQ is at the relatively same level, 0.16 and 0.13 respectively. EQ in SOE began to increase after Devaluation of tenge and outperform EQ in POE during 7 years, significantly in 2015, 2017 and 2020.

Table 3 – T-test: Earnings quality in SOE vs POE

| **. ttest absAGG, by( state ) unequal** | |
|---|---|
| Two-sample t test with unequal variances | |
| | |
| Group Obs Mean Std. Err. Std. Dev. | [95 % Conf. Interval] |
| | |
| 0 272 .1548477 .0076316 .1258638 | .1398229 .1698725 |
| 1 248 .1386318 .0076761 .1208836 | .1235128 .1537508 |
| | |
| combined 520 .1471139 .0054229 .1236611 | .1364604 .1577675 |
| | |
| diff .0162159 .0108242 | -.0050491 .0374809 |
| | |
| diff = mean(0) - mean(1) | t = 1.4981 |
| Ho: diff = 0 Satterthwaite's degrees | of freedom = 516.592 |
| Ha: diff < 0 Ha: diff != 0 | Ha: diff > 0 |
| Pr(T < t) = 0.9326 Pr(T > t) = 0.1347 | Pr(T > t) = 0.0674 |
| Source: authors' calculation using Stata15.1 tool | |

To remind, EQ in total sample population remained the same (0.15) in 2019 and 2020. This happened because EQ in SOE and POE moved in different directions and compensated each other. EQ POE deteriorated from 0.14 in 2019 to 0.17 in 2020 whereas EQ SOE improved from 0.15 to 0.12 respectively. In post COVID-19 period, EQ POE improved to 0.14 while EQ SOE remained the same (0.12). That explains how and why COVID-19 affected EQ in the total sample only after 1 year. Looking at COVID-19 impact through ownership structure, we get a better picture. EQ SOE positively and immediately reacted to COVID-19. In turn, EQ POE first had a negative right away impact, but returned the pre COVID-19 EQ level back in 2021.

*POE vs SOE vs partial SOE.* Once we evaluated the effects of COVID-19 on EQ in SOE and POE, next step is to analyze EQ dynamics in partial SOE, number of which increases due to the National IPO/SPO Program. (refer to Table 2, Columns (2), (4)-(6))

**Ranking analysis.** Since we have 4 groups, ranking analysis is applied to conclude who is the winner in terms of EQ year-wise. For that, number 1 is assigned to the lowest value of abs(AGG) or highest EQ, and number 4 is given to the highest value of abs(AGG) or lowest EQ. In table 2 we highlighted cells of winners. As a result of totaling year-wise numbers, the highest EQ ranking (21 scores) is assigned to partial SOE (50-99 %), following by partial SOE (0-49 %) (22 scores), then POE (31 scores) and finally SOE (100 %) (36 scores).

To remind, EQ in SOE improved from (0.15) in 2019 to (0.12) in 2020. We observe that all 3 SOE Groups have EQ increased, with largest raise in SOE (0-49 %) from (0.15) to (0.09). In post COVID-19, EQ SOE remained unchanged which occurred mainly due to compensating effect of EQ SOE (50-99 %) decrease and EQ SOE (100 %) increase. EQ SOE (0-49 %) stayed the same (0.09). To sum, EQ in all SOE positively reacted to COVID-19 though EQ SOE (50-99 %) significantly deteriorated a year later.

*Correlation analysis.* A Spearman rank correlation describes the monotonic relationship between 2 variables. It is useful for nonnormally distributed continuous data, can be used for ordinal data, and is relatively robust to outliers. While the Pearson product-moment correlation coefficient is a measure of the strength and direction of association and requires data to be continuous, normal, linear without significant outliers. Since we failed to meet normality assumption based on Doornik-Hansen multivariate normality test, the Spearman rank correlation is preferred. The Spearman approach can often be useful for nonnormal data, as it can increase power while maintaining a low Type I error rate [12; 13].

Table 4 – Pearson correlation (rows) vs Spearman rank (columns)

| | AGG | Abs(AGG) | state | state_shares |
|---|---|---|---|---|
| **AGG** | 1.0000 | 0.0045 | 0.2043* | 0.2154* |
| abs(AGG) | -0.0950* | 1.0000 | -0.0693 | -0.0267 |
| state | 0.1853* | -0.0656 | 1.0000 | 0.9382* |
| state_shares | 0.1941* | 0.0091 | 0.7685* | 1.0000 |

*at 10 % significance level
Red-colored numbers are differences between correlation methods
Source: authors' calculation using Stata15.1 tool

There is no relation between Earnings quality (abs(AGG)) and State ownership which is explained by U-shaped nonlinear association with higher Earnings quality in partial SOE. (refer to Table 4 above) To remind Ranking analysis, the highest EQ ranking is assigned to partial SOEs, then to POE and finally SOE (100 %), which re-confirms U-shaped relation year-wise with exception in 2011, 2012, and 2016 where zigzag behavior is observed. For example, in 2016 as we move from POE to SOE (100 %) through partial SOEs, EQ (0.13) first deteriorates to (0.15), then improves to (0.10), and finally again increase to (0.13).

Based on the results of correlation and ranking analysis, we accept/reject H1 hypothesis set before.

H1: We accept hypothesis (State ownership is associated/correlated with Earnings quality). Both ownership measures (+state and +state_shares) are positively related to Earnings quality measure (AGG) whereas these measures seem to have no relation with abs(AGG) measure. This implies different income strategies used by different ownership structures and also U-shaped association between ownership and Earnings quality. To remind Ranking analysis, the highest EQ ranking is assigned to partial SOEs, then to POE and finally SOE (100 %), which re-confirms U-shaped relation.

Referring back to Table 2 above and study event analysis, we accept/reject hypotheses H2-H3 set in the literature review.

H2: We accept hypothesis in full (COVID-19 positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to those in SOE/POE). We observe that all 3 SOE Groups have EQ increased, with largest raise in partial SOE (0-49 %) from (0.15) to (0.09). Partial SOE (50-99 %) also improved EQ from (0.09) in 2019 to (0.07) in 2020.

H3: We reject hypothesis (post COVID-19 period positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to those in SOE/POE). EQ in all SOE positively reacted to COVID-19 though EQ SOE (50-99 %) significantly deteriorated a year later whereas POE/SOE (100 %) EQ increased. In 2021 EQ partial SOE (0-49 %) remained at (0.09). In turn, abs(AGG) measure in POE/SOE decreased from (0.17) and (0.19) in 2020 to (0.14) and (0.15) in 2021 respectively.

## CONCLUSION

Highlights: We found that COVID-19 positively affected Earnings quality in partially state-owned companies and its effect was stronger compared to Earnings quality effect in private/state enterprises. Despite such quick and positive reaction, a year later in post COVID-19, Earnings quality deteriorated in partial state-owned companies (particularly with 50-99 % Government ownership) up to the level of private/state companies.

Contributions and limitations: Despite limitations such as the manual data collection and the scarce local literature, our study is among the first attempts to analyze Earnings quality dynamics over 2009-2021 horizon in Kazakhstan with the assessment of COVID-19 impact. In addition to literature gap reduction, our research findings could be practically integrated into the National IPO/SPO Program as a red flag to adjust further Earnings quality trend in partial state-owned enterprises.

Future research: Ding et al. already found that the relationship between EM measures and ownership structures exhibits a statistically significant non-linear, inverted U-shape pattern known as the «entrenchment versus alignment» effect [8]. Ranking and Correlation analyses in our research indicate potential U-shaped cause-effect relationship and could be interested to researchers to dig deeper using regression analysis.

Earlier in 2005 Graham et al. found the evidence of managers' preference of REM over AEM to meet earnings targets in the post-SOX world, though economic costs appear to be higher [14]. Gunny empirically prove that consequences of REM are higher compared to AEM and reflected in the negative future performance as a result of managers' sacrifice of future cash flows for current earnings [15]. Our next research is to compare different EM strategies in terms of the impact on key investment indicators, particularly compensating strategies when REM is positive and at the year-end negative AEM is used as an instrument to balance overall level of EM resulting in less volatility and high-quality corporate data.

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## COVID-19 КЕЗІНДЕГІ ҚАРЖЫЛЫҚ ДЕРЕКТЕРДІҢ САПАСЫ: ОРТАЛЫҚ АЗИЯЛЫҚ КЕЙС

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**АҢДАТПА**

*Зерттеу мақсаты.* 2021 жылы Gong & Choi мемлекеттік меншік құрылымының қаржылық деректердің сапасына әсерін зерттеді. Меншік құрылымы мен қаржылық деректердің сапасы арасындағы оң байланысы соңғы жылдары әлсіреді, бұл аралас меншікті тиімді реформалаудың нәтижесі [1]. Біздің зерттеуіміз COVID-19-дың халықтық IPO/SPO бағдарламасының нәтижелеріне аралас мемлекет қатысатын кәсіпорындардағы деректер сапасының өзгеруі тұрғысынан әсерін бағалауға бағытталған оқиғаларды талдау болып табылады.

*Әдіснамасы.* Біз 2009-2021 жылдар кезеңінде 572 теңгерімсіз панельдік зерттеулерді талдадық. Бұл үлгілер қаржы институттары мен инвестициялық холдингтерді қоспағанда, экономиканың әр түрлі салаларындағы кәсіпорындар бойынша KASE қор биржасының сайтынан алынған. Деректер сапасын бағалау үшін біз 1) Нақты қызмет әдісі негізінде деректер манипуляциясын есептеу үшін 2) жиынтық модельмен бірлесіп есептеу әдісі негізінде деректер манипуляциясын есептеу үшін ақша ағындарының моделін ұстанамыз [2; 3].

*Зерттеу нәтижелері.* Біз COVID-19-дың аралас мемлекеттік қатысуы бар кәсіпорындардағы деректер сапасына оң әсер еткенін және оның әсері 100 % мемлекеттік қатысуы бар жеке компаниялар мен кәсіпорындардағы деректер сапасына әсерімен салыстырғанда күштірек екенін анықтадық. Осындай жедел және оң реакцияға қарамастан, 2021 жылы аралас (50-99 %) мемлекеттік қатысуы бар кәсіпорындардағы деректер сапасы нашарлап, жеке және Мемлекеттік (100 % қатысуымен) компаниялар деңгейіне дейін төмендеді.

*Зерттеудің бірегейлігі / құндылығы.* Біздің зерттеуіміз COVID-19 әсерін бағалай отырып, 2009-2021 жылдар ішінде Қазақстандағы қаржылық деректер сапасының өзгеру динамикасын талдаудың алғашқы әрекеттерінің бірі болып табылады. Практикалық ұсыныс ретінде біздің зерттеу нәтижелеріміз аралас мемлекет қатысатын кәсіпорындардағы деректер сапасының кейінгі өзгерістеріне әсер ететін ескерту индикаторы ретінде Халықтық IPO/SPO бағдарламасына біріктірілуі мүмкін..

*Түйін сөздер:* Қаржы деректерінің сапасы, меншік құрылымы, Қазақстан Республикасы, Халықтық IPO / SPO, COVID-19.

## КАЧЕСТВО ФИНАНСОВЫХ ДАННЫХ В ПЕРИОД COVID-19: КЕЙС ЦЕНТРАЛЬНОЙ АЗИИ

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## АННОТАЦИЯ

*Цель исследования.* 2021 году Gong & Choi исследовали влияние государственной структуры собственности на качество финансовых данных. Положительная связь между структурой собственности и качеством финансовых данных в последние годы ослабла, что является результатом эффективной реформы смешанной собственности [1]. Наше исследование представляет собой анализ событий, направленный на оценку влияния COVID-19 на результаты Народной программы IPO/SPO с точки зрения изменения качества данных на предприятиях со смешанным государственным участием.

*Методология.* Мы проанализировали 572 несбалансированных панельных наблюдения за период 2009-2021 гг. Данные выборки выгружены с сайта фондовой биржи KASE по предприятиям в различных отраслях экономики, за исключением финансовых учреждений и инвестиционных холдингов. Для оценки качества данных мы следуем 1) модели денежных потоков для расчета манипуляций данных на основе метода начислений, совместно с 2) совокупной моделью для расчета манипуляций данных на основе метода реальной деятельности [2; 3].

*Результаты исследования.* Мы обнаружили, что COVID-19 положительно повлиял на качество данных на предприятиях со смешанным государственным участием, и его эффект был сильнее по сравнению с влиянием на качество данных в частных компаниях и предприятиях со 100 % государственным участием. Несмотря на такую немедленную и положительную реакцию, в 2021 году качество данных на предприятиях со смешанным (50-99 %) государственным участием ухудшилось и опустилось до уровня частных и государственных (со 100 % участием) компаний.

*Оригинальность / ценность исследования.* Наше исследование является одной из первых попыток проанализировать динамику изменений качества финансовых данных в Казахстане в течение 2009-2021 гг., с оценкой влияния COVID-19. В качестве практической рекомендации, результаты

нашего исследования могут быть интегрированы в Народную программу IPO/SPO в качестве предупреждающего индикатора, который повлияет на последующие изменения качества данных на предприятиях со смешанным государственным участием.

*Ключевые слова:* Качество финансовых данных, Структура собственности, Республика Казахстан, Народное IPO/SPO, COVID-19

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# KAZAKHSTAN EXPERIENCE OF VENTURE CAPITAL FINANCING OF TECHNOLOGY ENTREPRENEURS

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## ABSTRACT

The economy cannot function without a high-quality technology production sector. To do this, a connection between science and business must be established. Supporting technology entrepreneurship is the first step in building communication amongst them. Technological entrepreneurship is a high level of commercialization of high-tech technologies with high added value.

Technology-based entrepreneurship needs an effective ecosystem where venture capital investment is developing, as it is a high-risk investment tool. The following indicators demonstrate the relevance of the study: R&D expenditures in the country's GDP have significantly decreased over the past 10 years; the rating of the Republic of Kazakhstan in GEM, according to the indicator «Access to entrepreneurial finance» – 38th place out of 45 countries; the rating in the Venture Capital & Private Equity Country Attractiveness Index – 54th place.

*The purpose of the study* is an analytical and empirical review of venture investment in technological entrepreneurship in the Republic of Kazakhstan.

*The research methodology* is based on the methods of basic statistics, logical analysis, correlation and regression analysis, questionnaires, and content analysis.

*The originality of the work* lies in the study of a phenomenon of gaining momentum in the country as venture financing of technological entrepreneurship, through a survey of technological entrepreneurs of the Republic of Kazakhstan.

*The results of the study* show that venture financing significantly affects the development of technological entrepreneurship. However, this method of financing is mainly available only to large enterprises. The authors come to the conclusion that techno-trainers find access to venture financing moderately difficult and mainly rely on personal finances.

*Keywords:* technological entrepreneurship, innovation, venture investments, R&D.