Relationship between Financial Reporting Transparency and Investment Efficiency: Evidence from Iran

Bita Mashayekhi, Hamid Kalhornia

Abstract—One of the most important roles of financial reporting is improving the firms' investment decisions; however, there is not much supporting evidence for this claim in emerging markets like Iran. In this study, the effect of financial reporting transparency in investment efficiency of Iranian firms has been investigated. In order to do this, 336 listed companies on Tehran Stock Exchange (TSE) has been selected for time period 2012 to 2015 as research sample. For testing our main hypothesis, we classified sample firms into two groups based on their deviation from expected investment: under-investment and over-investment cases. The results indicate that there is positive significant relationship between financial transparency and investment efficiency. In the other words, transparency can mitigate both underinvestment and overinvestment situations.

Keywords—Corporate governance, disclosure, investment decisions, investment efficiency, transparency.

I. INTRODUCTION

ONE of the financial reporting goals is facilitating the allocation of resources in entire economy. Prior studies showed that the most important aspect of this goal is to improve the decision making. As we know, financial statements are one of the best sources to obtain the desired financial and non-financial information for decision making purposes. If financial statements are in transparent form and out of biased data, then the process of decision making will be more effective. On the other hand, fast growth and changing economic relations have caused severe competition in commerce, industry and investment areas. According to this condition, firms need to take proper and timely investment related decisions for their survival and extending their operations in the markets. Firms' financial reporting shall provide information that is useful for actual and potential investors, creditors and other users for their rational investment, lending credit and related decisions. Financial reports shall include the necessary information for evaluating financial condition and economic strength, evaluating performance and profitability power, financing structure and cash consumption, management stewardship role and doing legal duties and providing the supplementary information for better understanding the financial information provided and predicting future position of the firm. Thus, these reports play an important role in achieving mentioned goals, and increasing their quality can lead to more efficient investment decisions by firms and help to maintain and extend their resources. Recent studies claim that increase in financial reporting has important economic consequences like increased investment efficiency [1]-[3]. Although strong and steady theories support this relationship, there is little evidence for this assertion.

From theoretical perspective, improvement in financial reporting transparency has the potential to mitigate under and over-investment problems, and recent studies also confirm this (e.g. [4], [5]). But, we should note that this evidence is limited to the firms in developed countries such United States. In this research, we want to examine the role of financial reporting transparency (hereafter transparency) in a different situation and in which we carry out this study in an emerging market.

In this paper, we examine the relationship between transparency and investment efficiency for a sample of Iranian public firms, which has not been studied in the prior domestic researches. Studying the relationship between two mentioned variables is important because of following reasons: first, it is inherently interesting to examine the situations in which the presence of investment inefficiencies is more likely. For example, some prior research concluded that private firms have lower transparency than have public firms. The most usual answer to this phenomenon is that private firms face less demand for high-quality financial information. Additionally, many prior researches suggest that the value relevance of accounting information is lower in less developed countries in comparison with developed ones. Surveying this area of accounting literature on developed countries' accounting systems and their financial reporting quality, shows that much or less is known about the role of accounting in emerging markets, and research like this is virtually non-existent despite its importance to international organizations such as the World Bank, the International Accounting Standards Board (IASB), and others. Finally, after Iran's nuclear deal, there will be vast opportunities for new investments from foreign countries and so the investment efficiency and financial transparency would become more important than before.

Section II reviews related research and develops our hypotheses. After that, we describe our data and our measures of financial transparency and investment efficiency in Section III. Section IV presents our empirical tests and results and Section V concludes.

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II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

As mentioned in Section I, one of the most important roles of financial reporting is improving firms' investment decisions. In this area, theory suggests that improved financial transparency has the potential to alleviate both under-investment and over-investment problems and recent studies have confirmed this prediction (for example [4], [5]).

Reference [6] studied on a sample of Spanish listed companies found that transparency and debt maturity are mechanisms with some degree of substitution in enhancing investment efficiency: firms with lower (higher) use of short-term debt, exhibit higher (lower) transparency effect on investment efficiency.

Reference [7] studied the effect of accounting disclosure on value relevance in different stages of firm life cycles. Their sample included 101 listed companies of Tehran stock exchange between years 2005 to 2011. They found that there is no significant difference between each stage in the case of impact of disclosure quality on value relevance.

Reference [5] studied the relationship between financial reporting quality and investment efficiency in private firms of developing markets. They surveyed data from 79 countries for time period of 2002 to 2005. The results show that financial reporting quality positively affects investment efficiency. Furthermore, financing through banks improves the role of accounting information in investment decisions and reduces income minimizing incentive for tax purposes.

Reference [8] found that high-quality accounting information of Shanghai and Shenzhen listed firms can have higher transparency. They also assert that the effects of accrual quality and earnings smoothness on under and over investment are most significant. Also, [8] showed that companies with more transparency, have more investment efficiency and less investment cash flow sensitivity against other companies [2].

References [2] and [3] found that improving transparency leads to improved investment efficiency. Reference [9] studied the influence of private information and monitoring on investment efficiency both directly and through the role of accounting information as a mechanism to increase investment efficiency. They expected that access to private information and applying direct restrictions on investments can increase the investment efficiency through increased accounting information quality. Results show that although external creditors reduce the importance of accounting information quality by contractual restrictions on investment, but restriction in investments increases investment efficiency and reduce the effect of accounting information quality on investment efficiency.

Reference [10] showed in their studies that financial reporting has impact on firm's different characteristics such as financial leverage, investment, audit quality, financial structure of the firm. They found positive impact of financial reporting on firm's investment condition.

The results of [2], [11]-[13] showed that increasing the financial information quality leads to decreasing information asymmetry and consequently reduces the equity cost.

Reference [3] highlighted that low transparency leads to make information risk and increase capital cost.

Based on prior literature, we test whether financial information transparency can mitigate the level of under and over-investment. So, our hypothesis is as follows: Financial information transparency mitigates the level of both under-investment and over-investment.

III. DATA AND SAMPLE SELECTION

The data for the research have been collected from Tehran Stock Exchange database for listed firms during 2005 to 2015. According to the data restrictions, 346 firms have been selected for each year or 3806 Firm-year observations for whole time period.
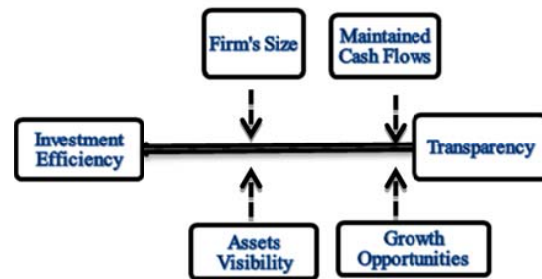

Fig. 1 Conceptual model and definition of research variables

A. Dependent Variable

Investment efficiency: According to [14], for measuring investment efficiency, we use deviation from the expected investment formula using the forecasting investment model as a function of revenue growth. So, under-investment (negative deviation from expected investment) and over-investment (positive deviation from expected investment) are used as inefficiency of investment [5]. Below is the research model:

$$\text{Invest}_{i,t} = a_0 + a_1\text{NEG}_{i,t} + a_2\%\text{RevGrowth}_{i,t-1} \\ + a_3\text{NEG} * \%\text{RevGrowth}_{i,t-1} + \varepsilon_{i,t}$$

in which: $\text{Invest}_{i,t}$ is total investment in property, plant and equipment, R&D expenditures minus revenue from selling fixed assets divided by total assets of firm i in year t, $\text{NEG}_{i,t}$ is a dummy variable which will be equal one for negative revenue growth amounts and zero otherwise, $\%\text{RevGrowth}_{i,t-1}$ is annual revenue growth rate for firm i in year t-1, $\varepsilon_{i,t}$ is residual value

According to [4], the amount of deviation from expected investment (residual value) is a proxy for investment inefficiency. The negative value indicates underinvestment, and the positive one means overinvestment.

B. Independent Variables

1. Transparency:

For measuring transparency, we have combined four proxies: accruals quality, management EPS prediction deviation, auditor type, and Tehran Stock Exchange's (TSE) transparency scores.

Accruals quality: For accruals quality, we have used Jones' modified model [15]. The estimation period is from 2005 to 2011 and the event period is from 2012 to 2015. The estimation model is as follow:

$$TA_{i,t} / A_{i,t-1} = \alpha (1 / A_{i,t-1}) + \beta_1 (\Delta REV_{i,t} / A_{i,t-1}) + \beta_2 (PPE_{i,t} / A_{i,t-1}) + \varepsilon_{i,t}$$

where, $TA_{i,t}$ is firm's total accrual, $\Delta REV_{i,t}$ is change in revenue between time t and time t-1, $\Delta Rec_{i,t}$ is change in receivables between time t and time t-1, $PPE_{i,t}$ is plant, property and equipment for time t

After running the above regression during estimation period (and calculating the coefficients of variables, we use real data for event period in the following equation for estimating discretionary accruals:

$$DAC_{i,t} = TAi,t / Ai,t-1 - (\alpha (1 / Ai,t-1) + \beta_1 (\Delta REVi,t - \Delta Reci,t / Ai,t-1) + \beta_2 PPEi,t / Ai,t-1)$$

$DAC_{i,t}$ is discretionary accruals for firm i in time t.

Management EPS prediction deviation is a dummy variable that will be equal to 1for firms that their absolute amount of deviation is less than the median of total observations and zero otherwise.

Auditor type is a dummy variable which is 1 for firms that have been audited by Iran audit organization (known as the biggest audit formation in Iran) and zero otherwise.

TSE's transparency score is a transparency score given to firms by Tehran stock exchange. Here, we use it in a dummy variable form and its value equals to 1 for firms that their scores are more than the median of observations and zero otherwise.

C. Control Variables

Motivated by prior research (e.g., [8]), control variables of this research are firm's size, maintained cash flow, growth opportunities, age, financial slack and assets tangibility.

Firm's size is the log of total assets of firm I in year t. Maintained cash flow is amount of cash flow which is scaled by total assets. Growth opportunity is measured by dividing market value to book value of the firm's equity:

$$Growop = P_{it} / BV_{it}$$

in which: P_{it} is market value of the firm's equity and BV_{it} is book value of firm's equity. Age is the age of the firm in years. Slack is the ratio of cash to total assets and means extra money that is available for the company in case of a downturn in sales, revenue, or profit. Tangibility of assets is the ratio of assets tangibility that is measured in the following way:

$$Tang = \frac{PPE_{i,t}}{Total\ Asset_{i,t}}$$

in which, $Tang_{i,t}$ means tangibility of assets, $PPE_{i,t}$ is property, plant and equipment of firm i in year t, and Total Asset$_{i,t}$ is book value of total asset of firm i in year t

IV. RESEARCH DESIGN

In this paper, we study the relationship between financial transparency and investment efficiency. In the other words, we are interested in how transparency affects investment efficiency. For doing this, we test our hypothesis by regressing the measure of investment efficiency in year t+1 on the measure of transparency in year t. According to [14], we estimate separately for underinvestment and overinvestment. This procedure allows us to test whether higher transparency mitigates both. Our main model is:

$$InvEff_{i,t+1} = \beta_0 + \beta_1 Trans_{i,t} + \beta_2 Size_{i,t} + \beta_3 MBV_{i,t} + \beta_4 Age_{i,t} + \beta_5 Slack_{i,t} + \beta_6 Tang_{i,t} + \beta_7 LogMaintained\ Cash\ flow_{i,t} + \varepsilon_{i,t}$$

where: InvEff is deviation from expected investment (underinvestment or overinvestment) and is the residual of the investment model as described above. We use the absolute value of the residuals for measuring deviation from expected investment; and Trans is measure of transparency that the way of its calculation method is mentioned earlier.

Motivated by prior research (e.g., [4]), we include firm size, firm age, asset tangibility, financial slack and market to book ratio as control variables. To the extent that transparency mitigates under and overinvestment, we expect β_1 to be negative.

TABLE I
DESCRIPTIVE STATISTICS OF THE MAIN SAMPLE

Variable	Obs	Mean	STD	Min	Median	Max
InvEff	1384	0.008	0.102	0.000	-0.038	1.000
Overi-nvestment	586	0.172	0.263	0.006	0.041	0.986
Under-investment	798	0.072	0.046	0.023	0.053	0.914
Trans	1384	0.524	0.462	0.000	0.478	1.000
RevGrowth	1384	-0.052	0.042	0.000	0.055	119.022
LogMaintained Cash Flow	1384	0.262	0.815	0.003	0.221	16.712
Size	1384	0.172	0.726	0.078	0.152	1.110
GrowOpp	1384	2.463	1.176	0.815	2.523	12.022
Age	1384	11.483	12.021	6.119	11.925	27.829
Slack	1384	0.083	0.113	0.001	0.072	2.125
Tang	1384	0.482	0.315	0.012	0.317	0.904

V. RESULTS

Table I provides descriptive statistics for our measures of research variables. This table shows that 42% of firms belong to the overinvestment class, while the majority of sample firms lies under underinvestment group. This finding confirms that firms in our sample, probably due to their difficulty in achieving and securing external financing, are more disposed to the problem of underinvestment rather than overinvestment. Pearson correlations are reported in Table II. As we have predicted, our proxy for transparency is significantly and negatively correlated with the investment inefficiency. Other correlations between research different variables are also shown in the table.

Table III reports the regression result for the test of research hypothesis for under-investment case. The results for over- investment case are also shown in the Table IV.

TABLE II
CORRELATION MATRIX

Variable	InvEff	Trans	LogMaintained Cash flow	Size	MBV	Age	Slack	Tang
Trans	-0.429	1.000						
LogMaintained Cash flow	-0.022	0.009	1.000					
Size	-0.253	-0.063	-0.003	1.000				
GrowOpp	0.019	-0.518	0.040	0.048	1.000			
Age	-0.078	0.081	0.007	0.212	0.041	1.000		
Slack	0.072	-0.017	0.028	-0.283	-0.257	0.050	1.000	
Tang	0.053	0.219	-0.072	0.102	0.034	-0.159	-0.114	1.000

TABLE III
THE RELATIONSHIP BETWEEN FINANCIAL REPORTING QUALITY AND INVESTMENT EFFICIENCY (UNDERINVESTMENT)

$InvEff_{i,t+1} = \beta_0 + \beta_1 Trans_{i,t} + \beta_2 Size + \beta_3 MBV + \beta_4 Age + \beta_5 Slack + \beta_6 Tang + \beta_7 LogMaintained\ Cash\ flow$

	$InvEff_{i,t+1}$	Standard Error	t-statistics	P-Value
intercept	21.715	0.003	0.034	0.032
TRANS	-8.099	0.034	0.001	0.017
Log Maintained Cash Flow	-2.011	0.013	-3.128	0.183
Size	-5.720	0.000	-0.062	0.004
GrowOpp	8.115	0.076	0.429	0.143
LogAge	-0.252	0.083	-1.982	0.019
Slack	3.117	0.010	0.836	0.752
Tang	1.932	0.077	0.031	0.086
Adjusted R^2	0.472		F	4.982
Durbin-watson	1.815		P-value (F)	0.000
			N	868

TABLE IV
THE RELATIONSHIP BETWEEN FINANCIAL REPORTING QUALITY AND INVESTMENT EFFICIENCY (OVERINVESTMENT)

$InvEff_{i,t+1} = \beta_0 + \beta_1 Trans_{i,t} + \beta_2 Size + \beta_3 MBV + \beta_4 Age + \beta_5 Slack + \beta_6 Tang + \beta_7 LogMaintained\ Cash\ flow$

	$InvEff_{i,t+1}$	Standard Error	t-statistics	P-Value
intercept	6.428	0.082	0.061	0.041
TRANS	-4.713	0.017	-0.021	0.043
LogMaintained Cash Flow	-3.101	0.014	-0.516	0.814
Size	-4.114	0.043	-0.421	0.039
GrowOpp	-1.715	0.036	-0.289	0.560
Age	-0.065	0.009	-3.024	0.002
Slack	1.415	0.219	1.842	.031
Tang	0.021	0.065	0.824	0.443
Adjusted R^2	0.410		F	4.115
Durbin-watson	1.917		P-value (F)	0.003
			2422	868

Across two test specifications, the conclusion is that transparency enhances investment efficiency. The results are consistent with the Pearson correlation coefficients and are robust to controls for our five firm-level characteristic. The firm size is negatively and significantly associated with both under- and overinvestment, consistent with our expectations and prior research. Asset tangibility is positively correlated with deviations from expected investment. Financial slack also is positively correlated with under- and overinvestment. The

findings of this research confirm positive association between transparency and investment efficiency for our sample firms.

In terms of the economic significance and for example in the overinvestment case, a decrease of standard deviation in the Trans measure implies a decrease of overinvestment by 1.41% of total assets.

To make the story short, the results in Tables III and IV show that, although prior research indicates that transparency is lower in emerging markets than in developed ones, we observe that the quality of financial reporting and transparency affects the subsequent capital investment efficiency in accordance with theory, even for firms in emerging markets. Specifically, our tests confirm our hypothesis and suggest that higher transparency enhances the investment efficiency.

VI. CONCLUSION

In this paper, we studied the impact of financial information transparency on the investment efficiency of Iranian listed firms between 2012 and 2015. The findings indicate a positive relationship between transparency and investment efficiency measures. Also, we have found that both underinvestment and overinvestment and financial transparency are positively and significantly associated. In the other words, transparency by reducing information asymmetry between internal and external groups mitigates both under and overinvestment situations.

In addition to complementing and developing prior academic research, our findings should be relevant to the International Monetary Fund and World Bank, whose mission is to aid in improving life quality and financial conditions in developing countries, as it is likely that more efficient investments should lead to higher social welfare. Policymakers in governmental and international aid organizations believe that, in developing countries, small firms have inadequate access to external financing due to the market imperfections [16].

Our study is subjected to some restrictions. First, we acknowledge that both financial transparency and investment efficiency variables likely suffer from measurement error. Second, the results of this study do not necessarily generalize to all emerging markets. Third, it is difficult to prove causality and it requires more and deep research in this area of literature. With respect to the mentioned potential caveats, we hope that our findings will be of interest to researchers,

standard setters and other regulators, government officials in emerging markets, investors and finally world bank, and others that are involved in improving economic conditions in developing countries.

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