Market Imperfections and Dividend Policy Decisions: Evidence from Manufacturing Sector of Pakistan

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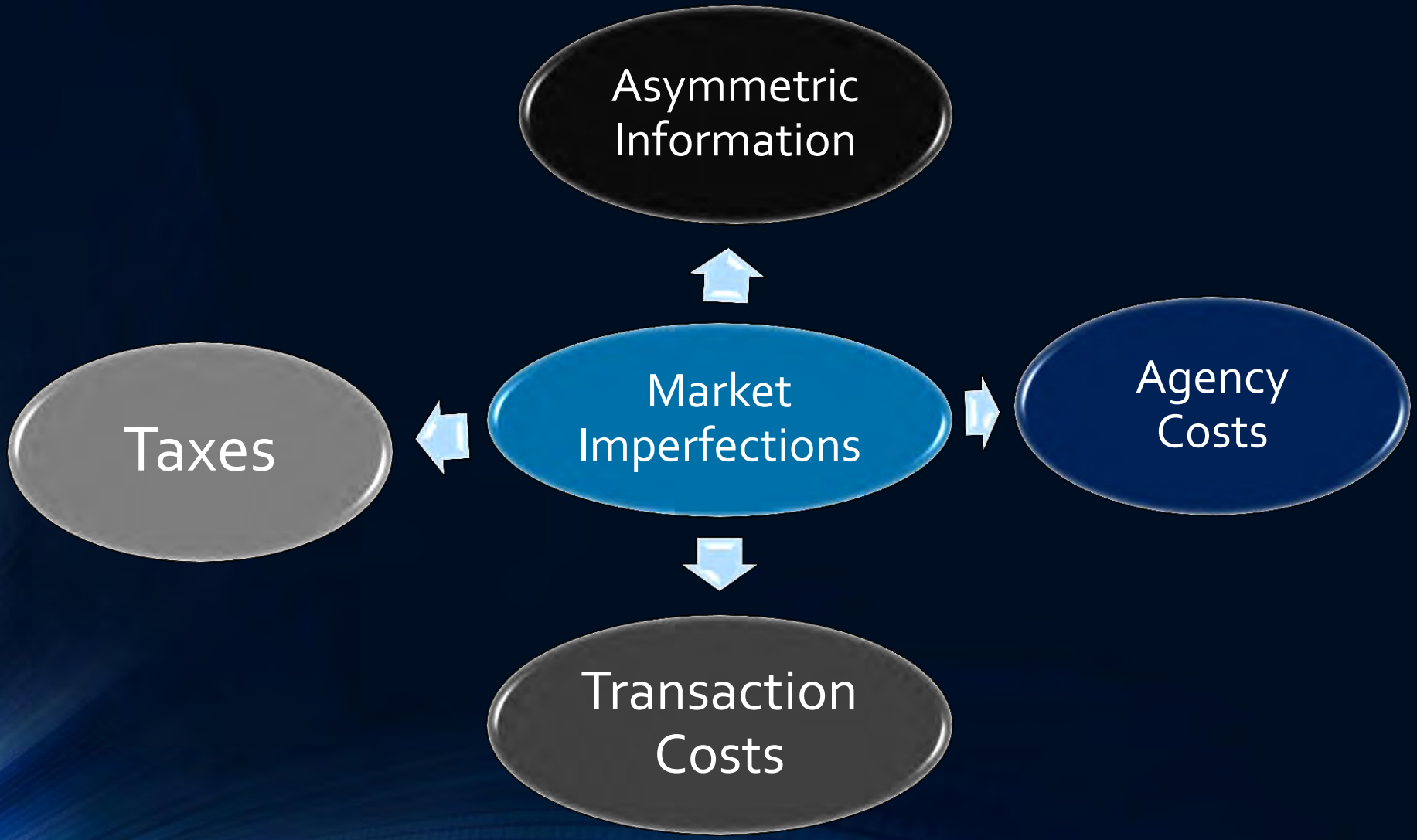
Introduction

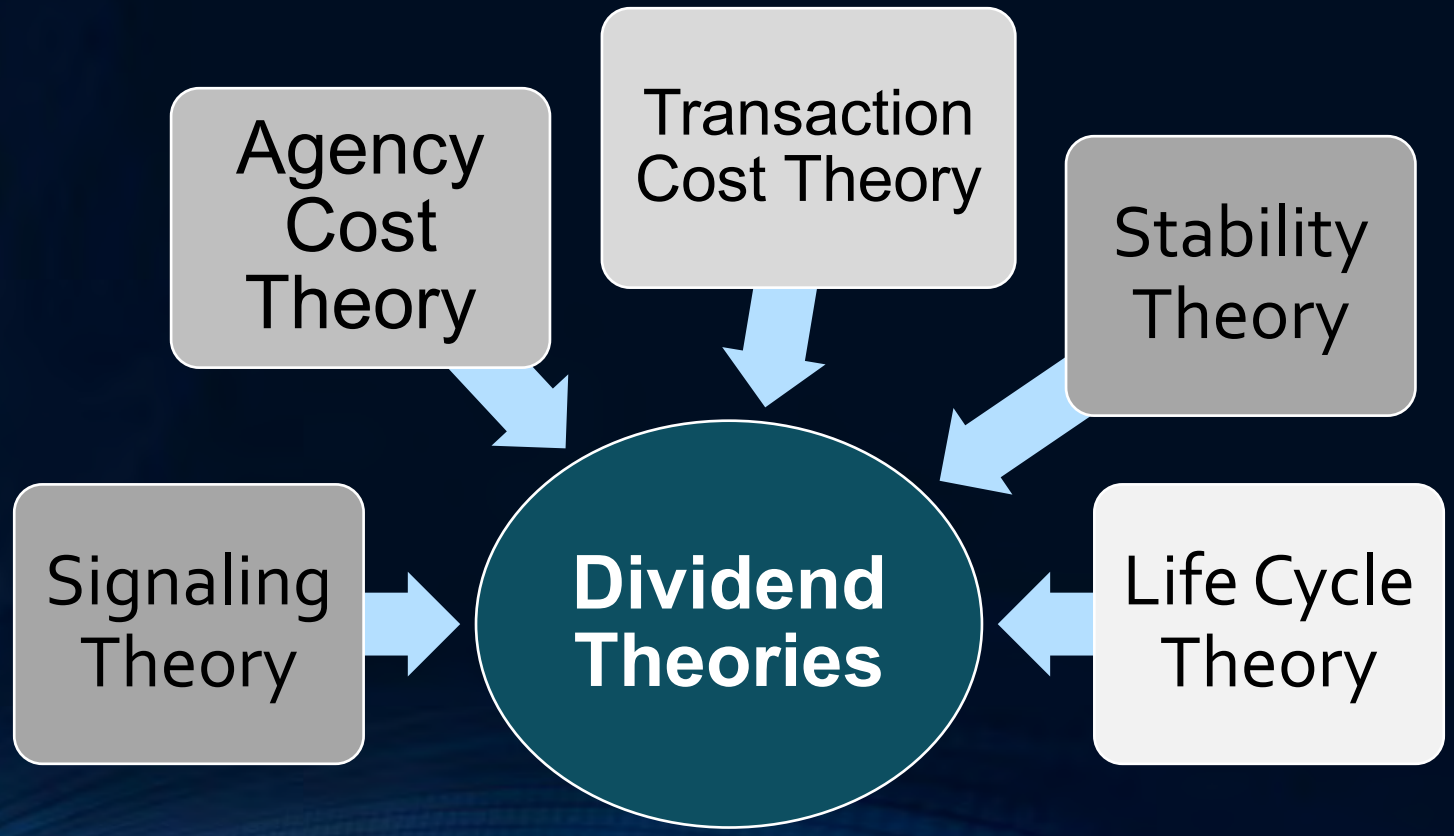
- In corporate finance, the finance manager is generally thought to face two operational decisions: the investment (or capital budgeting) and the financing decisions. A third decision may arise, however, when the firm begins to generate profits.
- When firm decides to pay a dividend there is a tradeoff between retained earnings and new shares.
- Dividend policy is important financial decision and one of the essential parts of corporate policy.

Motivation of the Study



Significance of Study

The present study contributes to existing literature by testing significance of dividend theories.



Research Objectives

To test the relevance of the Lintner (1956) model and check whether firms in manufacturing sector follow smooth and stable dividend policy or not.

To test that dividends help in reducing agency cost of the firms in manufacturing sector.

To test that dividend policies signal corporate operating characteristics of these firms.

To test the effect of transaction costs on the dividend paying ability of these firms.

To test whether mature, profitable, low growth firms pay more dividends or not.

Theoretical Background

Agency Cost Theory

Firstly agency problem identified by Jensen and Meckling (1976) and further extended by Rozeff (1982) and Easterbrook (1984). This theory derives from the potential conflict of interests between corporate managers (agents) and outside shareholders (principals).

Signaling Theory

This theory suggests that there is information asymmetry between managers and stockholders. Managers have internal information while stockholders have not. Managers would take costly but credible measures to transfer this information. One of these measures is dividend.

Theoretical Background

Transaction Cost Theory

Williamson (1988, 1996) states that corporate finance and corporate governance questions can be answered with the help of transaction cost economics. Low transaction costs of issuing equity or debt is positively related to dividend payments and firms that have high transaction costs reduce their dividend payments to shareholders.

Life Cycle Theory

The firm life cycle theory of dividends states that mature firms face low investment opportunities and anticipates firm growth rate and earnings are expected to fall.

Theoretical background

Stability Theory

Bringham and Houstan (2004) have stated that stable dividend policy is substantial for firm value. Shareholders require stability of dividend because they depend on dividends to fulfill their costs.

Free Cash Flow Theory

Free cash flow is primarily amount of cash that would be left after all positive net present value projects are taken up. Distribution of FCF as dividends help to reduce overinvestment problem.

Literature Review

Theory	Year	
Agency Cost theory	1980,1984,1986	Grossman and Hart , Easterbrook , and Jensen said that dividend payment at lest partially reduce the agency cost problem. When management pay dividend it would have less cash in control so difficult for management to misuse shareholder wealth through unmonitored activities
Signaling Theory	1977,1979	Properties of dividends emerging from signaling models were examined by Ross and Bhattacharya. When firm announces to pay dividends surplus returns noticed because of this announcement and signaling theories help to investigate these excess returns.

Literature Review

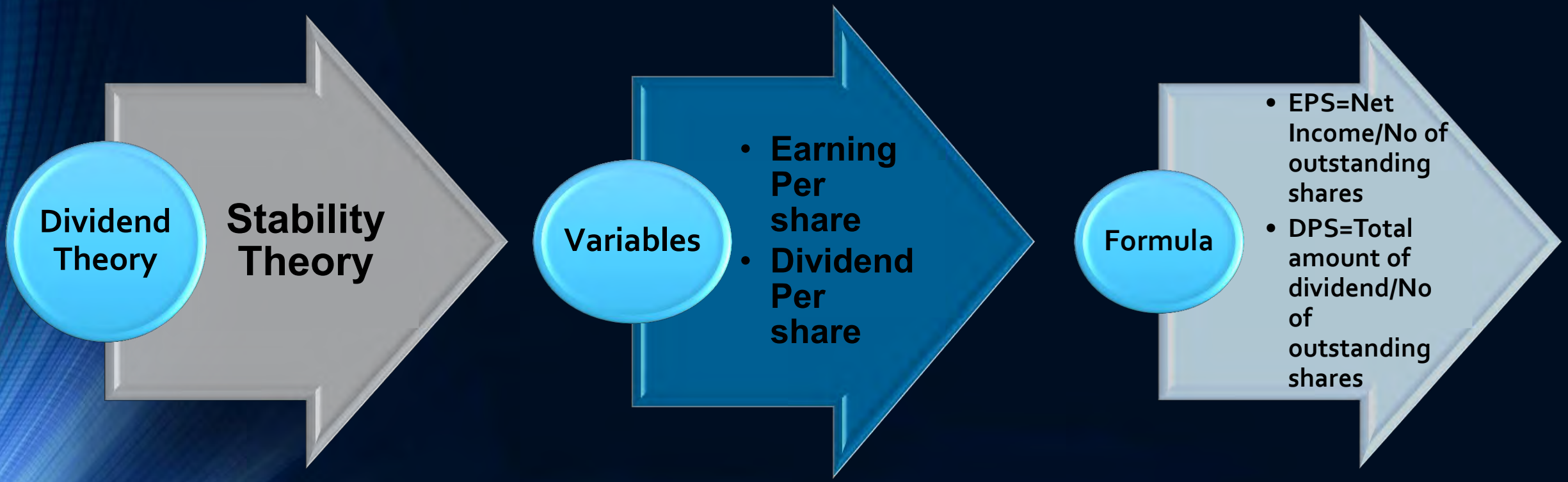
Theory	Year	
Transaction Cost Theory	1988,1996	Williamson states that corporate finance and corporate governance questions can be answered with the help of transaction cost economics. Low transaction costs of issuing equity or debt is positively related to dividend payments and firms that have high transaction costs reduce their dividend payments to shareholders.
Dividend Stability Theory	2004	Bringham and Houstan have stated that stable dividend policy is substantial for firm value. Revenue, favorable financing circumstances and cash flows change with time. Therefore firms change their dividends with time e.g. firm increase dividends when investment opportunities are low and cash flows are large and vice versa.

Literature Review

Theory	Year	
Life Cycle Theory	1961	Miller and Modigliani states that under perfect capital market conditions firm investment and dividend choices are independent but in case of market imperfections for example taxes, agency problems and transaction costs effect the corporate dividend and investment decisions.
Free Cash Flow Theory	1998	Free cash flow hypothesis states that corporations with less growth and investment opportunities face problem of overinvestment therefore such firms prefer to pay more dividends.

Variables Definition

Variables Definition



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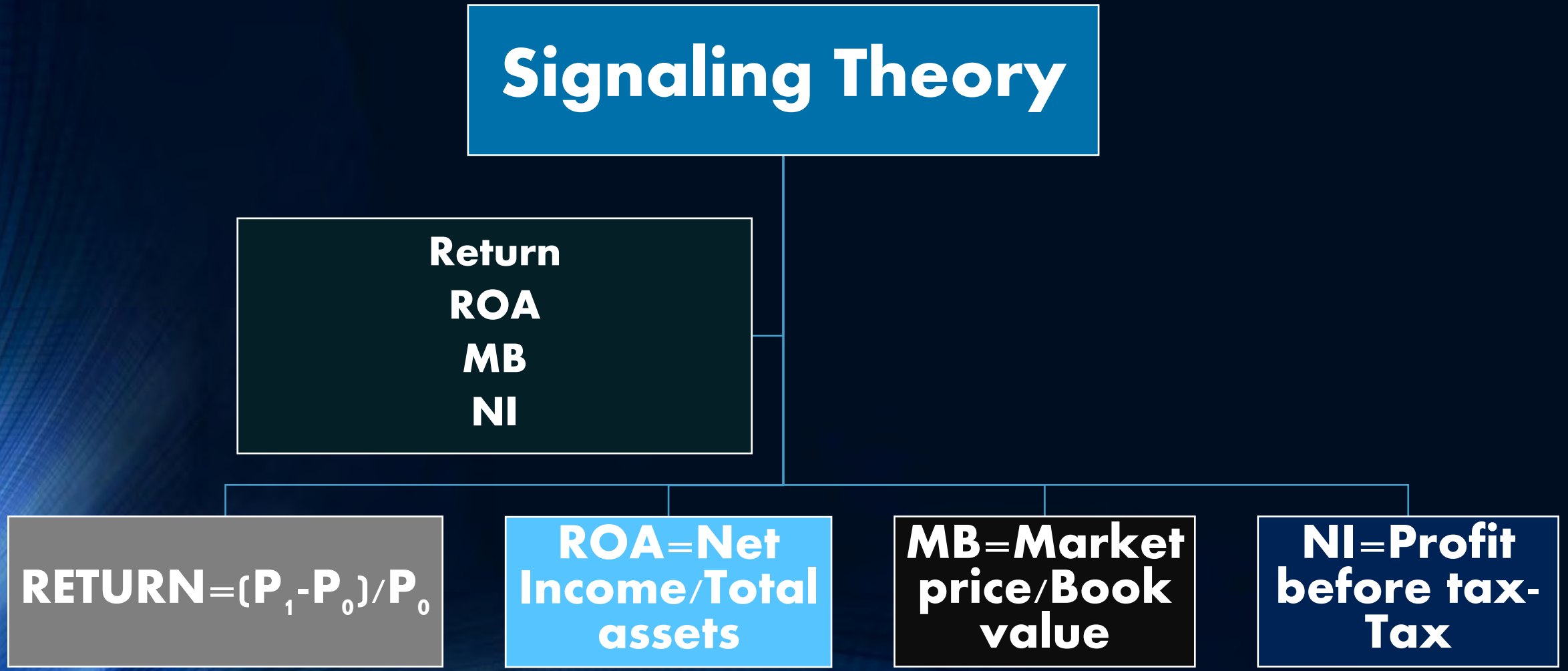


Variables Definition

- **Agency cost Theory**

Dividend Theory

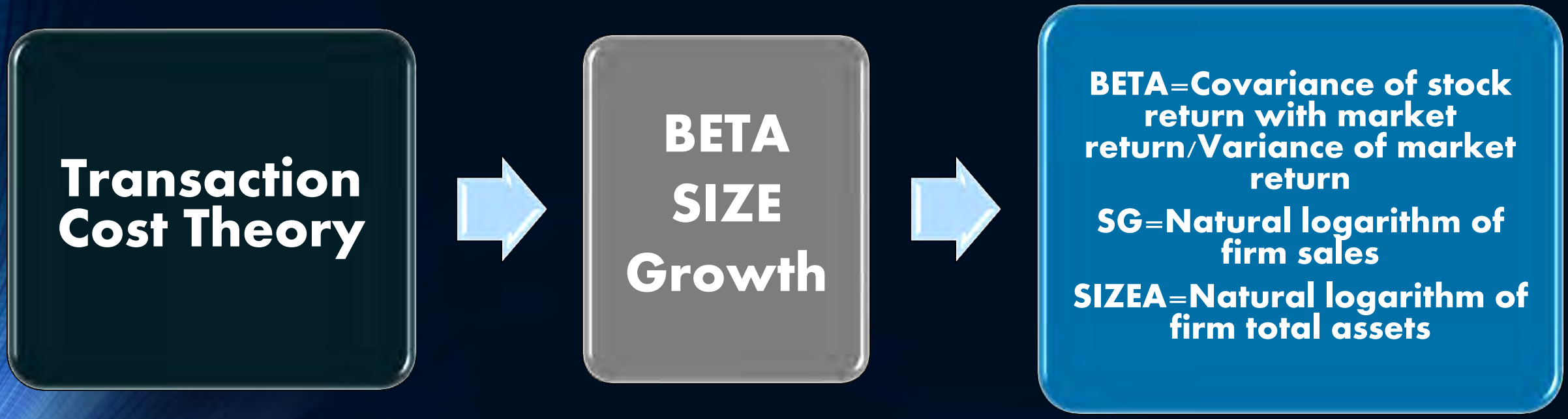
Proxies

- **Insider Ownership**
- **Free Cash Flow**
- **Collateral Capacity**

- **MSO=Percentage of shares held by mangers.**
- **FCF=Ratio of FCF/Total asset**
- **LNFIX=Natural Log of fixed assets**

Variable Structure

Variables Definition



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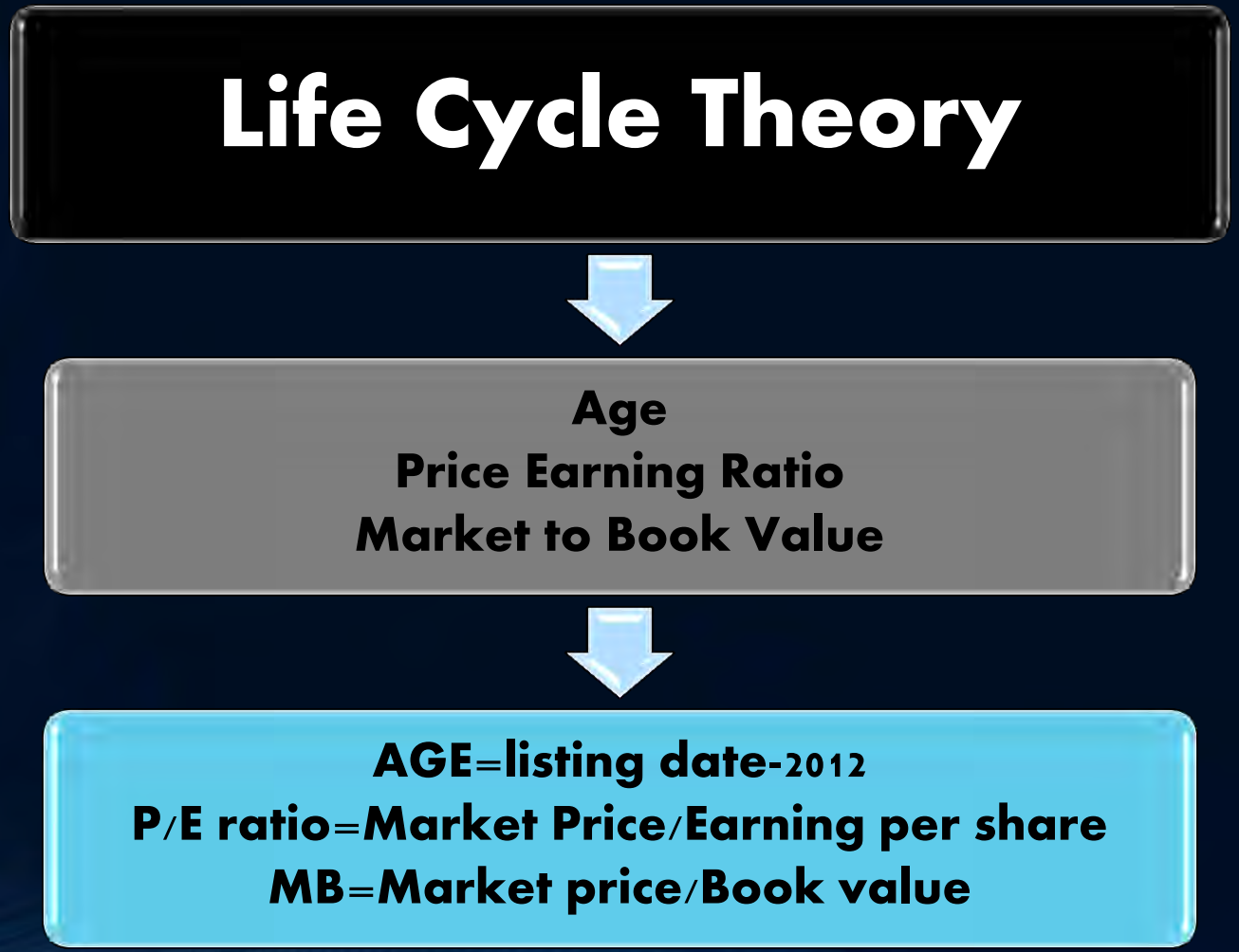


Model Development

- Analysis begins with the Lintner Model which was developed in 1956 by John Lintner who said that firms set a target payout ratio according to their earnings and whenever their occurs a change in their earnings firms don't immediately change their dividends but these changes are partial . So this model is also called Partial Adjusted model.

Lintner Model

- Lintner (1956) built the following behavioral model in light of his survey findings:

$D_t - D_{t-1} = \alpha_o + K(rP_t - D_{t-1}) + u_t$

$D_t = \alpha_o + \alpha_1 Pt + \alpha_2 D_{t-1}$

Where $\alpha_1 = rK$, $\alpha_2 = 1-K$

α_o is generally positive.

Speed of Adjustment(K)=1-α_2

Payout ratio(r)=α_1/1-α_2

Stability Theory Model

- The preceding model is modified to test for stability in the dividend policy of the Manufacturing companies listed on the KSE. As is the standard practice in the financial economics literature, the Lintner model is modified as per Fama and Babiak (1968), and estimated as:

$$DPS_{i,t} = \alpha_1 + \beta_1 EPS_{i,t} + \beta_2 DPS_{i,(t-1)} + \epsilon_{i,t}$$

Signaling Theory Model

Dividend and Return

$$Div_{it} = \alpha + \beta_1 RETURN_{it} + \beta_2 SIZEA_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

Dividend and Performance

$$Div_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 SIZEA_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

Dividend and Performance

$$Div_{it} = \alpha + \beta_1 MB_{it} + \beta_2 SIZEA_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

Dividend and Earnings

$$Div_{it} = \alpha + \beta_1 NI_{it} + \beta_2 SIZEA_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

Agency Cost Theory Model

$$Div_{it} = \alpha + \beta_1 FCF_{it} + \beta_2 SG_{it} + \beta_3 ROA_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 Lnfix_{it} + \beta_2 SG_{it} + \beta_3 ROA_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 MSO_{it} + \beta_2 SG_{it} + \beta_3 ROA_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 MSO_{it} + \beta_2 Lnfix_{it} + \beta_3 FCF_{it} + \beta_4 SG_{it} + \beta_5 DY_{i(t-1)} + \epsilon_{it}$$

Transaction Cost Theory Model

$$Div_{it} = \alpha + \beta_1 BETA_{it} + \beta_2 NI_{it} + \beta_3 EPS_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 SIZEA_{it} + \beta_2 NI_{it} + \beta_3 EPS_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 GS_{it} + \beta_2 NI_{it} + \beta_3 EPS_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 BETA_{it} + \beta_2 SIZEA_{it} + \beta_3 GS_{it} + \beta_4 NI_{it} + \beta_5 EPS_{it} + \beta_6 DY_{i(t-1)} + \epsilon_{it}$$

Life Cycle Theory Model

$$Div_{it} = \alpha + \beta_1 AGE_{it} + \beta_2 NI_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 P/E_{it} + \beta_2 NI_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 MB_{it} + \beta_2 NI_{it} + \beta_3 LEVEARGE_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it}$$

$$Div_{it} = \alpha + \beta_1 AGE_{it} + \beta_2 MB_{it} + \beta_3 P/E_{it} + \beta_4 NI_{it} + \beta_5 LEVERAGE + \beta_6 DY_{i(t-1)} + \epsilon_{it}$$

Sample Selection

Observations are from 2003-2011.

138 firm are selected from 19 different sectors.

Firms are taken on the basis of total asset.

Data is taken from annul reports, balance sheet analysis and business recorder.

Estimation Technique

- For estimating the previously explained model we have used panel data GMM technique because GMM technique deal with the problems like endogenity .GMM technique is used as
- GMM CEM to test the individual effect of firms characteristic.
- GMM FEM to check industry effect by dummy variable.
- GMM REM to check the random effects of error terms.

Lintner Model Results

Regressors	CEM	FEM	REM
NI	0.23* (2.44)	0.08 (0.48)	0.23* (2.54)
D_{t-1}	0.57* (19.8)	0.30* (9.01)	0.57* (20.63)
Adjusted R-squared	30.7%	35.92%	30.7%
Hausman test(p-value)			0.000
Sargan test(p-value)	0.4	0.97	0.4
Durbin Watson(p-value)	2.1	2.0	2.1
The speed of adjustment ($1-a_i$)	43%	70%	43%
The target payout ratio ($\beta/(1-a_i)$)	53%	11.42%	53%

Stability Theory

Regressors	CEM	FEM	REM
EPS	0.08* (13.07)	0.07* (10.38)	0.08* (14.77)
DPS_{t-1}	0.68* (31.26)	0.27* (8.90)	0.68* (35.35)
Adjusted R-squared	70.92%	76.90%	70.92%
Hausman test(p-value)			0.000
Sargan test(p-value)	0.124	0.061	0.115
Durbin Watson(p-value)	2.3	2.2	2.3
The speed of adjustment $(1-a_i)$	32%	73%	32%
The target payout ratio $(\beta/(1-a_i))$	25%	9%	25%

Signaling Theory Results

Regressors	Model 1	Model 2	Model 3	Model 4
RETURN	-0.039** (1.98)			
ROA		0.04* (5.82)		
MB			0.08(0.96)	
NI				0.179** (1.92)
SIZEA	0.002* (4.75)	0.0016*(3.30)	0.0023* (4.47)	0.002* (3.40)
LEVERAGE	-0.008*** (1.63)	-0.004(0.91)	-0.009*** (1.8)	-0.004(0.90)
DY_{t-1}	0.56* (21.73)	0.51* (19.11)	0.54* (19.02)	0.54* (18.69)
Adjusted R-squared	34.81%	35.75%	31.75%	31.42%
Hausman test(pvalue)	0.000	0.000	0.000	0.000
Sargantest(p-value)	0.07	0.07	0.09	0.56
Durbin Watson(p value)	2.11	2.04	2.08	2.08

Individual Model for Agency Cost Theory

Regressors	Model 1	Model 2	Model 3
FCF	0.032* (2.32)		
MSO		0.005(1.16)	
LNFIX			0.016* (2.34)
SG	0.015* (3.25)	0.09* (2.48)	0.09* (2.31)
ROA	0.02(1.55)	0.05* (6.87)	0.05* (6.47)
DY_{t-1}	0.53* (16.25)	0.5* (17.76)	0.48* (16.36)
Adjusted R-squared	38.25%	34.12%	33.64%
Hausman test(p-value)	0.000	0.000	0.000
Sargantest(p-value)	0.107	0.138	0.110
Durbin Watson(p-value)	1.99	2.02	2.03

Overall Model for Agency Cost Theory

Regressors	CEM	FEM	REM
FCF	0.05* (5.72)	0.054* (4.95)	0.05* (6.03)
MSO	0.00814(1.28)	0.003* (2.05)	0.00814(1.35)
LNFIX	0.018* (2.06)	0.06* (3.09)	0.018* (2.17)
SG	0.015* (3.04)	0.008* (2.07)	0.015* (3.20)
DY_{t-1}	0.52* (14.60)	0.30* (9.58)	0.52* (15.38)
Adjusted R-squared	37.32%	38.10%	37.32%
Hausman test(p-value)			0.000
Sargantest(p-value)	0.106	0.187	0.106
Durbin Watson(p-value)	2.0	2.0	2.0

Results of Transaction Cost Theory

Regressors	REM	REM	REM
Beta	-0.039(0.172)		
SIZEA		0.017* (3.27)	
SG			0.011* (3.01)
NI	0.177** (1.90)	0.12(1.28)	0.168*** (1.83)
EPS	0.02* (4.73)	0.02* (4.11)	0.0002* (4.35)
DY_{t-1}	0.54* (19.19)	0.52* (18.34)	0.53* (19.09)
Adjusted R-squared	32.10%	32.80%	32.69%
Hausman test(p-value)	0.000	0.000	0.000
Sargantest(p-value)	0.69	0.86	0.71
Durbin Watson(p-value)	2.07	2.05	2.06

Overall Model Results for Transaction Cost Theory

Regressors	CEM	FEM	REM
Beta	-0.013(0.65)	0.449(0.019)	-0.013(0.667)
SIZEA	0.017* (3.47)	0.027* (2.63)	0.017* (3.55)
SG	0.01* (2.80)	0.0082* (2.15)	0.010* (2.87)
EPS	0.01* (2.99)	0.019* (2.73)	0.015* (3.06)
NI	0.114(1.25)	-0.103(0.66)	0.114(1.28)
DY_{t-1}	0.53* (20.06)	0.32* (10.57)	0.53* (20.53)
Adjusted R-squared	34.08%	37.82%	34.88%
Hausman test(p-value)			0.000
Sargantest(p-value)	0.29	0.45	0.29
Durbin-Watson (P-Value)	2.08	2.04	2.08

Results of Life Cycle Theory

Regressors	REM	REM	REM
AGE	0.0061 (0.725)		
MB		0.0012 (1.40)	
P/E			0.0023 (0.38)
NI	0.228* (2.46)	0.209* (2.25)	0.225* (2.40)
LEV	-0.005 (1.02)	-0.005 (0.90)	-0.005 (1.01)
DY_{t-1}	0.57* (20.42)	0.56* (19.96)	0.57* (20.50)
Adjusted R-squared	30.8%	30.7%	30.8%
Hausman test(p-value)	0.000	0.000	0.000
Sargantest(p-value)	0.75	0.05	0.64
Durbin Watson(p-value)	2.1	2.1	2.1

Overall Model Results of Life Cycle Theory

Regressors	CEM	FEM	REM
AGE	0.062 (0.70)	-0.002 (0.16)	0.006 (0.74)
MB	0.001 (1.34)	-0.006* (4.42)	0.001 (1.41)
P/E	0.0017 (0.27)	-0.002 (0.38)	0.002 (0.28)
NI	0.202* (2.05)	0.114 (0.66)	0.202* (2.16)
LEV	-0.0068 (1.17)	-0.0017 (0.23)	-0.0068 (1.23)
DY_{t-1}	0.56* (18.78)	0.30* (8.9)	0.56* (19.72)
Adjusted R-squared	30.8%	37.2%	30.8%
Hausman test(p-value)			0.000
Sargantest(p-value)	0.17	0.05	0.17
Durbin Watson(p-value)	2.1	2.1	2.1

Results of Life Cycle and Free Cash Flow Theory

Regressors	CEM	FEM	REM
FCF	0.028* (2.05)	0.034* (2.38)	0.028* (2.15)
ROA	0.03* (2.15)	0.04* (2.42)	0.03* (2.25)
MB	-0.01 (1.59)	-0.06* (5.42)	-0.01 (1.59)
P/E	-0.02 (0.38)	-0.02 (0.26)	-0.023 (0.39)
LEV	-0.06 (0.11)	-0.04 (0.30)	0.06 (0.12)
DY_{t-1}	0.50* (16.8)	0.30* (9.68)	0.50* (17.63)
Adjusted R-squared	34.17%	39.1%	34.17%
Hausman test(p-value)			0.000
Sargantest(p-value)	0.11	0.29	0.11
Durbin Watson(p-value)	2.02	2.0	2.02

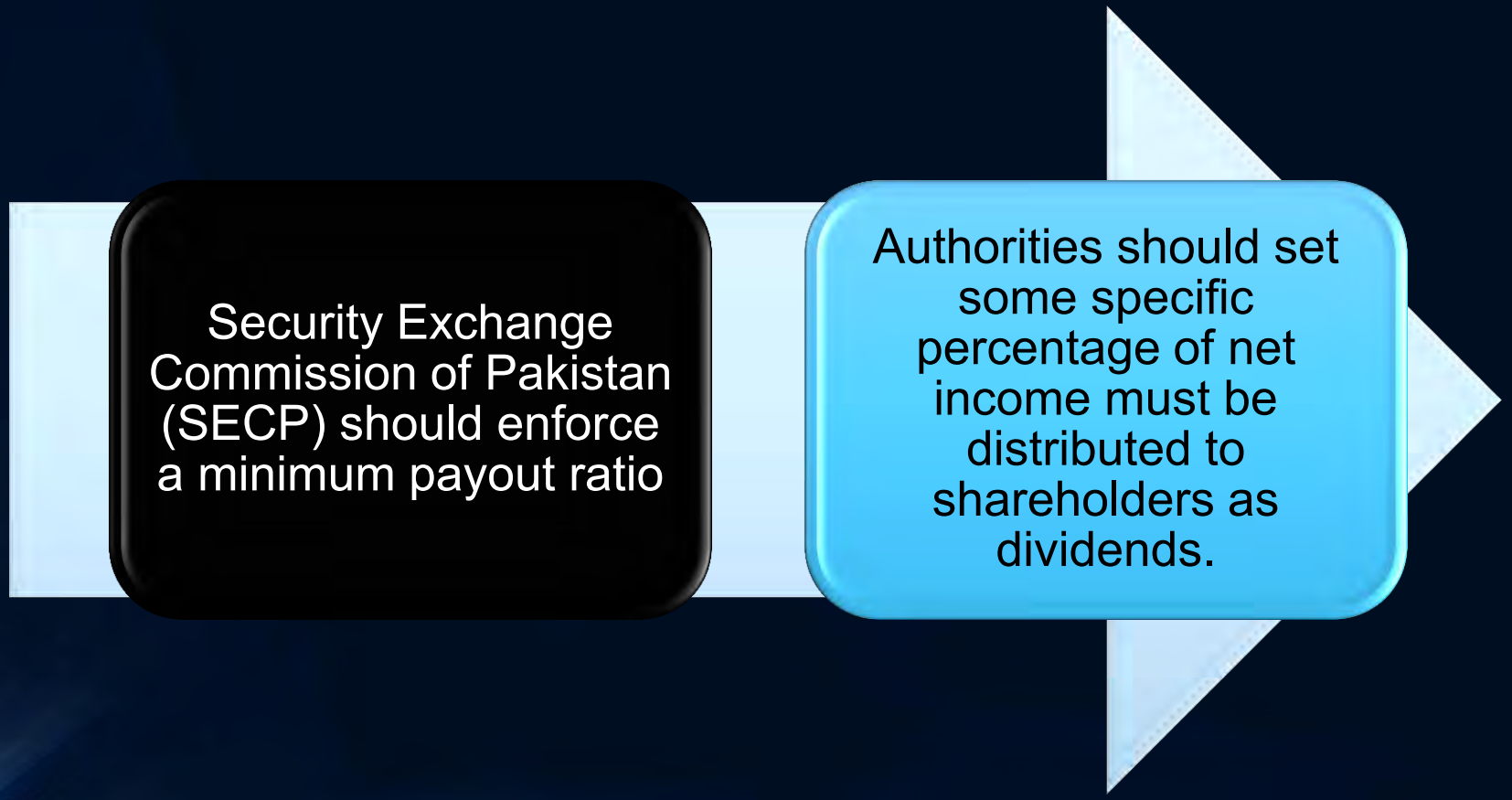
Conclusion

- Lintner Model results show that dividend yield has a positive relationship with last year's dividend yield and current year earnings.
- Fama and Babiak (1968) model shows absence of dividend stability.
- Dividend signal information by two operating characteristics of firm which are earnings and performance.
- Free cash flow and collateral capacity are more useful tools to minimize agency costs.
- Firm size and sales growth are more effective instruments to reduce transaction costs.

Conclusion

- Results show insignificant relationship of dividend yield with firm maturity proxies and do not support firm life cycle theory of dividends.
- Free cash flow and return on asset are used to test free cash flow hypothesis and results support this hypothesis indicating that when firms have more free cash flow managers choose to pay more dividends.
- It can be said that signaling hypothesis has dominant role in discussing dividend policy.

Policy Implications



Future Research

- Which dividend theory best describe the dividend behavior of financial firms listed on Karachi Stock Exchange (KSE) and compare their dividend payout polices with non financial firms listed on Karachi Stock Exchange (KSE).
- Further analysis can also be done to investigate shareholders choice between dividend and capital gain.
- Behavioral aspects of management that effect dividend policy can also be considered.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