THE IMPACTS OF CLIMATE CHANGE ON THE DIVIDEND PAYOUT POLICY: STUDY ON MALAYSIAN PUBLIC LISTED PLANTATION FIRMS

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Abstract

The purpose of this study is to investigate the influences of climate change and firm characteristics on Malaysian plantation companies' dividend payout policy. The sample of this paper took 33 agro firms listed in Bursa Malaysia with 462 firm-year observations over the period of 2003 to 2016. Using Robust Fixed Effects Model, the result of this paper indicates that El Nino positively and significantly influences dividend payout ratio, whereby flood is found to be insignificant positively in impacting Malaysian plantation companies' dividend payout. Besides, firm size, liquidity and financial leverage of agro firms have positive linkage with dividend payout as well. However, profitability and growth opportunity are inversely related to dividend payout ratio. This research contributes to the literature based on the context of Malaysian plantation firms and delivers empirical evidence on the influences of climate change on financial adaptation of plantation firms, namely dividend payout. The findings of the study will be highly beneficial for capital market investors of agro-based companies through understanding about the adjustment of the climate change information in the stock market. The management of plantation companies will get an idea about the dividend need to pay related to the climatic events.

Keywords: El Nino, Flood, Dividend Payout, Plantation Firms, Malaysia

Abstrak

Tujuan kajian ini adalah untuk mengkaji pengaruh perubahan iklim dan ciri-ciri firma pada dasar pembayaran dividen syarikat perladangan Malaysia. Sampel kertas ini mengambil 33 firma agro yang disenaraikan di Bursa Malaysia dengan 462 firman tahun pemerhatian sepanjang tempoh 2003 hingga 2016. Dengan menggunakan Model Kesan Tetap Berkesan, hasil kertas ini menunjukkan bahawa El Nino secara positif dan signifikan mempengaruhi nisbah pembayaran dividen, di mana banjir didapati tidak penting secara positif dalam memberi kesan kepada pembayaran dividen syarikat perladangan Malaysia. Di samping itu, saiz firma, kecairan dan leverage kewangan firma agro mempunyai hubungan positif dengan pembayaran dividen. Walau bagaimanapun, keuntungan dan peluang pertumbuhan adalah terbalik secara songsang dengan nisbah pembayaran dividen. Penyelidikan ini menyumbang kepada kesusasteraan berdasarkan konteks firma perladangan Malaysia dan menyampaikan bukti empirik mengenai pengaruh perubahan iklim terhadap penyesuaian kewangan firma perladangan, iaitu pembayaran dividen. Penemuan kajian ini sangat bermanfaat bagi pelabur pasaran modal syarikat berasaskan pertanian melalui pemahaman mengenai penyesuaian maklumat perubahan iklim di pasaran saham. Pengurusan syarikat perladangan akan mendapat gambaran mengenai keperluan dividen yang harus dibayar berkaitan dengan peristiwa iklim.

Kata kunci: El Nino, Banjir, Pembayaran Dividen, Firma Perladangan, Malaysia

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Table of Contents

PERMISSION TO USE iii
ABSTRACT iv
ABSTRAK v
ACKNOWLEDGEMENTS vi
LIST OF TABLES x
LIST OF FIGURES xi
LIST OF APPENDICES xii
LIST OF ABBREVIATIONS xiii
CHAPTER ONE: INTRODUCTION
1.1 Introduction 1
1.2 Background of the Study 1
1.2.1 Malaysian Agriculture Sector 3
1.3 Problem Statement 5
1.4 Research Questions 7
1.5 Research Objectives 8
1.6 Significance of the Study 8
1.7 Scope of the Study 9
1.8 Organization of the Study 9
CHAPTER TWO: LITERATURE REVIEW
2.1 Introduction 10
2.2 Underpinning Theory 10
2.2.1 Modigliani Miller Dividend Irrelevance Theory 10
2.2.2 Bird in Hand Theory 10
2.2.3 Signaling Theory 11
2.2.4 Agency Theory 11
2.3 Empirical Evidence 12
2.3.1 Climate Change and Dividend Payout Ratio 12
2.3.1.1 El Nino and Dividend Payout Ratio 12
2.3.1.2 Flood and Dividend Payout Ratio 14
2.3.1.3 Climate Change and Sustainable Stock Exchange 15
2.3.2 Firm Characteristics and Dividend Payout Ratio 16
2.3.2.1 Profitability and Dividend Payout Ratio 16
2.3.2.2 Leverage and Dividend Payout Ratio 18

2.3.2.3 Liquidity and Dividend Payout Ratio 19
2.3.2.4 Firm Size and Dividend Payout Ratio 20
2.3.2.5 Growth Opportunity and Dividend Payout Ratio 22
2.4 Chapter Summary 23
CHAPTER THREE: METHODOLOGY
3.1 Introduction 24
3.2 Research Framework 24
3.3 Hypotheses Development 26
3.3.1 Climate Change 26
3.3.1.1 El Nino 27
3.3.1.2 Flood 27
3.3.2 Firm Characteristics 27
3.3.2.1 Profitability 27
3.3.2.2 Leverage 28
3.3.2.3 Liquidity 28
3.3.2.4 Firm Size 28
3.3.2.5 Growth Opportunity 29
3.4 Variables and Measurement 29
3.4.1 Dependent Variable 29
3.4.2 Independent Variables 30
3.4.2.1 Climate Change Measurement 30
3.4.2.2 Firm Characteristics Measurement 31
3.5 Sample 34
3.6 Data Collection 35
3.7 Panel Data Analysis 35
3.8 Diagnostic Tests 37
3.8.1 Breusch and Pagan Lagrangian Multiplier Test 37
3.8.2 Hausman Test 37
3.8.3 Variance Inflation Factors (VIF) 37
3.8.4 Wooldridge Test 38
3.8.5 Breusch-Pagan / Cook-Weisberg Test and Modified Wald Test 38
3.9 Chapter Summary 38
CHAPTER FOUR: RESULTS AND DISCUSSION
4.1 Introduction 39
4.2 Descriptive Statistics 39

4.3 Correlation Matrix 40
4.4 Regression Analysis 42
4.5 Breusch and Pagan Lagrangian Multiplier and Hausman Test 45
4.6 Post Estimation Diagnostic Tests 45
4.7 Fixed Effect Model with Robust Standard Error 46
4.8 Summary of Hypothesis Testing 52
CHAPTER FIVE: CONCLUSION AND RECOMMENDATION
5.1 Introduction 53
5.2 Summary of Findings 53
5.3 Research Contributions 54
5.4 Policy Implications 54
5.5 Limitations of the Study 55
5.6 Recommendation for Future Research 55
REFERENCES 56
Appendices 67

List of Tables

Table 3.1 Summary of Variables, Measurements and Expected Sign.....32

Table 3.2 List of Plantation Companies.....34

Table 4.1 Descriptive Statistics.....39

Table 4.2 Correlations Matrix.....41

Table 4.3 Regression Analysis Result of Pooled OLS, Fixed Effects and Random Effects Model.....42

Table 4.4 Breusch and Pagan LM Test and Hausman Test.....45

Table 4.5 Post Estimation Diagnostic Test.....45

Table 4.6 Robust Fixed Effects Model.....47

Table 4.7 Summary of Hypothesis Testing.....52

List of Figures

Figure 1.1 Percentage Share in GDP (Year 2017).....4

Figure 1.2 GDP contribution by Agriculture Sector from 2013 to 2017.....5

Figure 3.1 Research Framework..... 25

List of Appendices

Appendix A : Descriptive Statistics..... 67

Appendix B : Correlation Matrix..... 68

Appendix C : Pooled OLS Regression Result..... 69

Appendix D : Fixed Effects Regression Result..... 70

Appendix E : Random Effects Regression Result..... 71

Appendix F : Breusch and Pagan LM Test..... 71

Appendix G : Hausman Test.....72

Appendix H : Variance Inflation Factor.....73

Appendix I : Wooldridge Test.....73

Appendix J : Modified Wald Test.....73

Appendix K : Fixed Effect with Robust Standard Error.....74

List of Abbreviations

ASE	Athens Stock Exchange
BM&FBOVESPA	Brazilian Mercantile and Futures Exchange & São Paulo Stock Exchange
CDSB	Climate Disclosure Standards Board
ENSO	El Niño Southern Oscillation
GCC	Gulf Co-operation Council
GDP	Gross domestic product
KSE	Karachi Stock Exchange
LM	Lagrangian Multiplier
MENA	Middle East and North Africa
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
PSX	Pakistan Stock Exchange
SSE	Saudi Stock Exchange
UNFCCC	United Nations Framework Convention on Climate Change
USA	United Stated of America

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter describes the area of the research along with Malaysian Agriculture Sector, problem statement, and then research questions will be stated as below, follow by discussing the significance and scope of the study.

1.2 Background of the Study

According to the United Nations Framework Convention on Climate Change (UNFCCC), climate finance is defined as the fund used to decrease emissions, improve sinks of ozone depleting substances and diminish vulnerability of, as well as upsurge the flexibility of mortal and ecological systems to harmful drawback of climate change (UNFCCC, 2014). Climate finance is the broadest form that represents the fund that being used to all projects and activities that support climate mitigation and climate adaptation. However, the main focused area here is adaptation finance. Adaptation finance is the fund that supports to implement the adaptation actions towards the negative impacts of the changes of climate. There are various types of adaptation finance tools can be used to decrease the risk and loss in profitability due to the adverse impacts by bad climate, for instance, equity market risk premium, crop sharing, insurance, future options, income stabilization programs by the government (Alam, Siwar & Al-Amin, 2010).

In case of public limited agro or plantation company, they need to spend money in three stages for the climate change adaptation. At the first stage, they need to spend

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Appendices

Appendix A: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
DIV	462	26.38253	22.87616	0	99.81
PROF	462	5.357987	5.675711	-15.11	39.67
LEV	462	57.25747	78.81945	-175.82	446.88
LIQD	462	8.334757	19.13453	.026183	252.7381
LnSIZE	462	17.82684	6.075	3.178054	23.89482
GROP	462	.1868961	.665845	-.984512	7.222567
ELN	462	.2857143	.4522437	0	1
FLD	462	.3571429	.4796768	0	1

Appendix B: Correlation Matrix

	DIV	PROF	LEV	LIQD	LnSIZE	GROP	ELN
DIV	1.0000						
PROF	0.0143	1.0000					
LEV	0.2164	0.1059	1.0000				
LIQD	0.0857	0.0071	0.2526	1.0000			
LnSIZE	-0.1015	-0.2118	-0.2854	-0.1480	1.0000		
GROP	-0.0665	-0.0843	-0.0098	-0.0223	0.0822	1.0000	
ELN	0.1889	-0.1677	0.0273	0.0054	0.0289	0.0229	1.0000
FLD	0.0406	-0.1713	-0.0106	0.0039	0.0014	0.0077	0.1886

	FLD
FLD	1.0000

Appendix C: Pooled OLS Regression Result

Source	SS	df	MS	Number of obs	=	462
				F(7, 454)	=	6.25
Model	21199.7491	7	3028.53559	Prob > F	=	0.0000
Residual	220050.267	454	484.692219	R-squared	=	0.0879
				Adj R-squared	=	0.0738
Total	241250.017	461	523.318908	Root MSE	=	22.016

DIV	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
PROF	.052227	.190371	0.27	0.784	-.3218907	.4263446
LEV	.0553035	.0139606	3.96	0.000	.0278681	.0827389
LIQD	.0347087	.0556162	0.62	0.533	-.0745885	.1440059
LnSIZE	-.1514687	.1806056	-0.84	0.402	-.5063953	.2034578
GROP	-2.196576	1.549384	-1.42	0.157	-5.241429	.8482768
ELN	9.432804	2.334366	4.04	0.000	4.845301	14.02031
FLD	.4805392	2.201242	0.22	0.827	-3.845349	4.806427
_cons	22.89091	4.151086	5.51	0.000	14.73318	31.04863

Appendix D: Fixed Effects Regression Result

```
Fixed-effects (within) regression               Number of obs      =       462
Group variable: countrynum                      Number of groups   =        33

R-sq:                                           Obs per group:
     within  = 0.1043                                         min =        14
     between = 0.0342                                         avg =      14.0
     overall = 0.0061                                         max =        14

                                                F(7,422)           =      7.02
corr(u_i, Xb)  = -0.9466                        Prob > F           =    0.0000
```

DIV	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
PROF	-.2174888	.1863374	-1.17	0.244	-.5837538	.1487763
LEV	.0137997	.0213604	0.65	0.519	-.0281864	.0557857
LIQD	.1080757	.0598424	1.81	0.072	-.0095506	.225702
LnSIZE	7.045309	1.918736	3.67	0.000	3.27384	10.81678
GROP	-1.811563	1.297919	-1.40	0.164	-4.362755	.7396294
ELN	6.280438	2.02675	3.10	0.002	2.296656	10.26422
FLD	.2763489	1.798976	0.15	0.878	-3.259722	3.81242
_cons	-101.2932	34.34975	-2.95	0.003	-168.8111	-33.77528
sigma_u	47.612928					
sigma_e	17.834558					
rho	.87695792	(fraction of variance due to u_i)				

F test that all u_i=0: F(32, 422) = 8.43 Prob > F = 0.0000

Appendix E: Random Effects Regression Result

```
Random-effects GLS regression                   Number of obs      =       462
Group variable: countrynum                      Number of groups   =        33

R-sq:                                           Obs per group:
     within  = 0.0742                                         min =        14
     between = 0.0644                                         avg =      14.0
     overall = 0.0695                                         max =        14

                                                Wald chi2(7)       =     35.95
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

DIV	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
PROF	-.269175	.1819257	-1.48	0.139	-.6257428	.0873928
LEV	.0339765	.0187223	1.65	0.098	-.0057186	.0676716
LIQD	.0838425	.0573588	1.46	0.144	-.0285788	.1962637
LnSIZE	-.0077029	.4079719	-0.02	0.985	-.8073132	.7919074
GROP	-2.052933	1.310145	-1.57	0.117	-4.62077	.514904
ELN	8.923346	1.932767	4.62	0.000	5.135193	12.7115
FLD	-.1345573	1.81784	-0.07	0.941	-3.697458	3.428343
_cons	23.37186	8.183235	2.86	0.004	7.333012	39.4107
sigma_u	13.112872					
sigma_e	17.834558					
rho	.35089956	(fraction of variance due to u_i)				

Appendix F: Breusch and Pagan LM Test

```
Breusch and Pagan Lagrangian multiplier test for random effects

        DIV[countrynum,t] = Xb + u[countrynum] + e[countrynum,t]

        Estimated results:
                         |       Var      sd = sqrt(Var)
                ---------+------------------------------
                     DIV |    523.3189        22.87616
                       e |    318.0715        17.83456
                       u |    171.9474        13.11287

        Test:   Var(u) = 0
                                 chibar2(01) =    282.49
                              Prob > chibar2 =    0.0000
```

Appendix G: Hausman Test

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
PROF	-.2174888	-.269175	.0516862	.0403072
LEV	.0137997	.0309765	-.0171769	.0102831
LIQD	.1080757	.0838425	.0242333	.0170609
LnSIZE	7.045309	-.0077029	7.053012	1.874861
GROP	-1.811563	-2.052933	.2413703	.
ELN	6.280438	8.923346	-2.642907	.6100229
FLD	.2763489	-.1345573	.4109062	.

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 23.23
Prob>chi2 = 0.0016
(V_b-V_B is not positive definite)

Appendix H: Variance Inflation Factor

Variable	VIF	1/VIF
LEV	1.15	0.868343
LnSIZE	1.14	0.873394
PROF	1.11	0.900581
LIQD	1.08	0.928381
FLD	1.06	0.943044
ELN	1.06	0.943370
GROP	1.01	0.987873
Mean VIF	1.09	

Appendix I: Wooldridge Test

```
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
       F(  1,     32) =      2.638
            Prob > F =      0.1142
```


Appendix J: Modified Wald Test

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (33)  =     903.14
Prob>chi2 =      0.0000
```

Appendix K: Fixed Effect with Robust Standard Error

```
Fixed-effects (within) regression               Number of obs      =       462
Group variable: countrynum                      Number of groups   =        33

R-sq:                                           Obs per group:
     within  = 0.1043                                         min =        14
     between = 0.0342                                         avg =      14.0
     overall = 0.0061                                         max =        14

                                                F(7,32)            =      5.71
corr(u_i, Xb)  = -0.9466                        Prob > F           =    0.0002

                                    (Std. Err. adjusted for 33 clusters in countrynum)
```

DIV	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
ELN	6.280438	1.779454	3.53	0.001	2.655809	9.905068
FLD	.2763489	1.411701	0.20	0.846	-2.599192	3.151889
PROF	-.2174888	.1419681	-1.53	0.135	-.5066684	.0716908
LEV	.0137997	.0290379	0.48	0.638	-.0453486	.0729479
LIQD	.1080757	.1111978	0.97	0.338	-.1184269	.3345783
LnSIZE	7.045309	3.508912	2.01	0.053	-.1021113	14.19273
GROP	-1.811563	1.411216	-1.28	0.208	-4.686115	1.06299
_cons	-101.2932	63.12639	-1.60	0.118	-229.8774	27.29106
sigma_u	47.612928					
sigma_e	17.834558					
rho	.87695792	(fraction of variance due to u_i)				