



UNIVERSITI PUTRA MALAYSIA

***ESTIMATING THE ECONOMIC BENEFITS OF URBAN TREES USING
CONTINGENT VALUATION METHOD***

YEO SOK CHENG

FH 2012 16

**ESTIMATING THE ECONOMIC BENEFITS OF URBAN TREES USING
CONTINGENT VALUATION METHOD**

By

YEO SOK CHENG

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfillment of the Requirements for the Degree of Master of Science**

September 2012

DEDICATION

Especially dedicated to my beloved parents, brothers and friends.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

**ESTIMATING THE ECONOMIC BENEFITS OF URBAN TREES USING
CONTINGENT VALUATION METHOD**

By

YEO SOK CHENG

September 2012

Chairman: Professor Awang Noor Abd. Ghani, PhD

Faculty: Forestry

Urban trees provide multitude of tangible and intangible services, which include provisionary, regulatory, cultural and support services to the community. Urban trees are important in reducing the environmental quality impacts such as air pollution. Unfortunately, to set a monetary value on these said services is challenging to say the least. Thus, there is a lack of economic benefits of urban trees study in Malaysia. Ignorance of such monetary value is unintentional and mainly due to lack of awareness and the absence of monetary value of the services itself. Hence, the quality of these urban trees degrades over time as no one appreciates its monetary value. In light of this situation, a study was initiated to determine the economic benefits of urban trees that have been planted surrounding the Tasik Perdana (TP) area. TP is selected to be the study site not just because it is the oldest green park (urban park) and a famous recreation place as recommended by the tourism industry, but also to value the economic benefit of its urban trees. Local government is willing to spend about RM 5.6 million to manage and maintain urban green especially the urban trees. It is clear that local government attaches the importance of these urban trees. However, there is no proof or study to define the value of urban trees in this

park. To value the economic benefit of the urban trees, a total of 313 respondents were interviewed in the TP area using the contingent valuation method (CVM). The payment vehicle used in the study was an additional fund for preserving the urban trees in TP. The objective of this study is to elicit willingness to pay (WTP) for urban trees conservation. The WTP represents the willingness of a person to pay in monetary terms to secure and sustain these urban trees. Seven bid prices were used and distributed to respondents – RM 1.00, RM 5.00, RM 10.00, RM 15.00, RM 20.00, RM 25.00 and RM 30.00. Logit and linear regression models were applied to predict the maximum, mean, and median WTP.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**PENILAIAN FAEDAH EKONOMI POKOK BANDAR MENGGUNAKAN
KAEDAH PENILAIAN KONTINGEN**

Oleh

YEO SOK CHENG

September 2012

Pengerusi :Profesor Awang Noor Abd. Ghani, PhD

Fakulti: Perhutanan

Pokok bandar menyediakan pelbagai perkhidmatan yang ketara dan tidak ketara, termasuk sementara, kawalan, budaya, dan sokongan perkhidmatan kepada masyarakat. Pokok bandar adalah penting bagi mengurangkan kesan kualiti alam sekitar seperti pencemaran udara. Malangnya, penetapan nilai monetari pada perkhidmatan yang dinyatakan agar mencabar. Oleh itu, kekurangan kajian di atas penilaian ekonomi pokok bandar di Malaysia. Pengabaian nilai monetari ini disebabkan kekurangan kesedaran di kalangan masyarakat dan tiada nilai wujud di perkhidmatan tersebut. Kualiti pokok-pokok bandar merosot dari masa ke masa disebabkan tiada orang menghargai nilai pokok bandar tersebut. Memandangkan keadaan ini, satu kajian telah dikajikan untuk menentukan nilai ekonomi pokok bandar di sekitar kawasan Tasik Perdana (TP). TP dipilih menjadi tapak kajian bukan kerana TP adalah taman hijau (taman bandar) tertua dan tempat rekreasi yang terkenal dicadangkan oleh industri pelancongan, tetapi untuk menilai nilai ekonomi pokok bandar. Kerajaan tempatan sanggup membelanjakan sekira-kira RM 5.6 juta untuk mengurus dan mengekal bandar hijau terutamanya pokok bandar. Hal ini jelas dilihat bahawa kerajaan tempatan menumpuh perhatian pada kepentingan pokok

bandar. Walau bagaimanapun, tidak ada bukti atau kajian untuk menentukan nilai pokok bandar ini. Untuk menentukan nilai ekonomi pokok bandar, sebanyak 313 responden telah ditemubual di TP menggunakan kaedah penilaian kontingen (CVM). Kaedah Pembayaran (payment vehicle) yang di dalam kajian ini adalah tabung tambahan untuk pemuliharaan pokok bandar di TP. Objektif kajian ini adalah menentukan nilai kesanggupan membayar (WTP) pada pokok bandar. WTP mewakili kesanggupan seseorang untuk membayar (dari segi kewangan) untuk menjaminkan dan mengekalkan pokok-pokok bandar. Tujuh harga bida telah digunakan dan diedarkan kepada responden terdiri pada RM 1, RM 5, RM 10, RM 15, RM 20, RM 25 dan RM 30. Kaedah OLS (Ordinary Least Square) dan Logit digunakan meramalkan maksimum WTP, min WTP, and median WTP.

ACKNOWLEDGEMENTS

I would like to acknowledge with heartfelt to my chairman of the Supervisory Committee, Prof. Dr. Awang Noor Abd. Ghani, of his guidance, constructive comment and suggestion in this study. My sincere thank to my committee member, Dr. Khamurudin Mohd Noor who always encourages me with his guidance.

I would also like to thank you to Tn. Hj. Amat Ramsa Aman and my friends who had given all the moral support and some ideas in this study.

Last but not least, my deepest thanks dedicate to my beloved parents and brothers of their endless love and encouragement. I really appreciate what they have support to me.



I certify that a Thesis Examination Committee has met on **28th September 2012** to conduct the final examination of **Yeo Sok Cheng** on her thesis entitled “ **Estimating the Economic Benefits of Urban Trees Using Contingent Valuation Method** ” in accordance with the Universities and University Collages Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the degree of Master of Science.

Members of the Thesis Examination Committee were as follows:

Zaiton Binti Samdin, PhD

Senior Lecturer
Department of Forest Management
Faculty of Forestry
Universiti Putra Malaysia
(Chairman)

Abdullah Bin Mohd, PhD

Associate Professor
Department of Forest Management
Faculty of Forestry
Universiti Putra Malaysia
(Internal Examiner)

Alias Bin Radam, PhD

Associate Professor
Faculty of Economics and Management
Universiti Putra Malaysia
(Internal Examiner)

Tonga Noweg, PhD

Associate Professor
Centre for Applied Learning and Multimedia
Universiti Malaysia Sarawak
Malaysia
(External Examiner)

SEOW HENG FONG, PhD

Professor and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

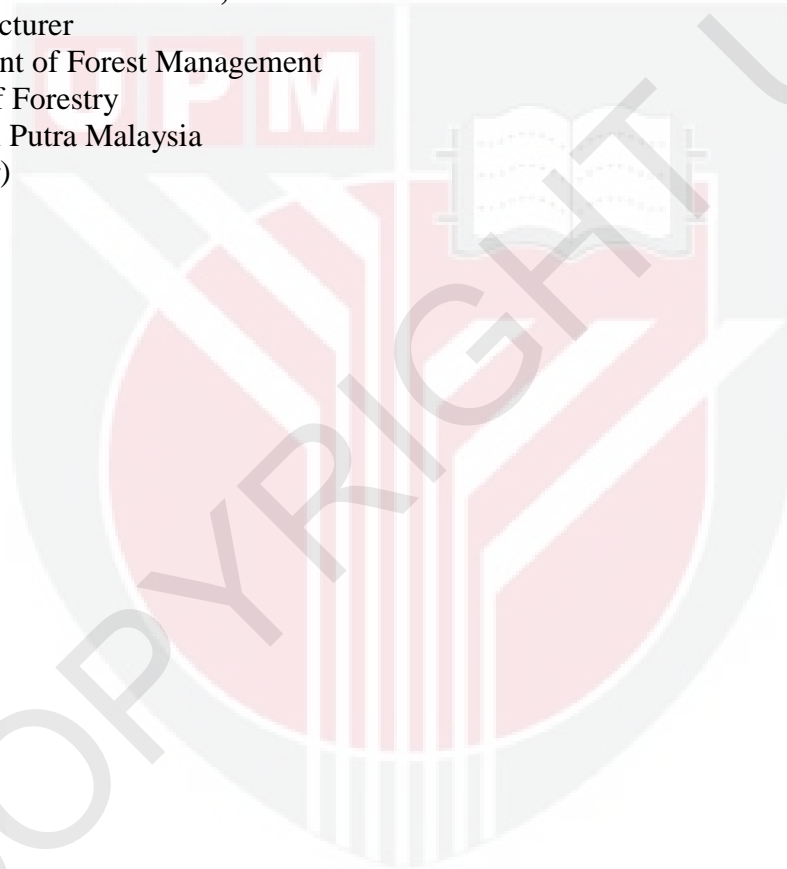
This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Awang Noor Abd.Ghani, PhD

Professor
Department of Forest Management
Faculty of Forestry
Universiti Putra Malaysia
(Chairman)

Khamurudin Mohd Noor, PhD

Senior Lecturer
Department of Forest Management
Faculty of Forestry
Universiti Putra Malaysia
(Member)



BUJANG BIN KIM HUAT, PhD

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



YEO SOK CHENG

Date: 28 September 2012

TABLE OF CONTENTS

DEDICATION	Page
ABSTRACT	ii
ABSTRAK	iii
ACKNOWLEDGEMENTS	v
APPROVAL	vii
DECLARATION	viii
LIST OF TABLES	x
LIST OF FIGURES	xiii
LIST OF ABBREVIATIONS	xiv
	xv

CHAPTER

1	INTRODUCTION	1
	1.1 General Background	1
	1.2 Problem Statement	2
	1.3 Objective	6
2	LITERATURE REVIEW	7
	2.1 Urban Ecosystem	7
	2.1.1 Ancient Park	8
	2.1.2 Modern Park	9
	2.1.3 Urban Park	10
	2.2 Urban Tree	12
	2.2.1 Urban Tree in Malaysia	13
	2.2.2 Role of Urban Tree	15
	2.3 Ecosystem Services	22
	2.4 Environmental Economics	25
	2.4.1 Concept of Value	27
	2.4.2 Total Economic Value (TEV)	29
	2.5 Non-Market Valuation	31
	2.5.1 Contingent Valuation Method (CVM)	35
	2.5.2 Past Studies	37
3	RESEARCH METHOD	40
	3.1 Theoretical Framework	40
	3.2 Study Area	43
	3.2.1 Pilot Survey	45
	3.2.2 Data Collection	46
	3.3 Questionnaire Design	46
	3.3.1 Scenario Design	47
	3.3.2 Elicitation Format	48
	3.4 Data Analysis	49
	3.4.1 Respondent's Profile	49
	3.4.2 Respondent's Perception and Satisfaction	49

	3.4.3	Estimated WTP	50
4		RESULTS AND DISCUSSION	53
	4.1	Introduction	53
	4.2	Respondents' Profile	53
	4.3	Respondents' Satisfaction toward Urban Trees Conservation, Facilities, and Services	56
	4.4	Respondents' Perception toward Urban Trees Conservation	57
	4.5	Reason of WTP and Not-WTP for Urban Trees	58
	4.6	Other Ways to Support Urban Trees Conservation	59
	4.7	Estimated WTP	59
	4.7.1	Expected Relationship of Variable	61
	4.7.2	Logit and OLS Model	62
	4.7.3	Mean and Median WTP	64
	4.7.4	Maximum WTP	65
5		CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH	66
	5.1	Conclusion	66
	5.2	Policy Implication	68
	5.2.1	Provide Additional Fund to Conserve Urban Trees	68
	5.2.2	Develop a Policy to Protect the Urban Trees	68
	5.2.3	Pricing Mechanisms on Non-market Value Product	70
	5.2.4	Emphasize the Important of Urban Trees	71
	5.3	Recommendations	72
		REFERENCES	74
		APPENDICES	82
		BIODATA OF STUDENT	106