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**ANALYSIS OF POLLUTION HAVEN HYPOTHESIS (PHH)
AND ENVIRONMENTAL KUZNETS CURVE (EKC) IN
SELECTED ASSOCIATION OF SOUTH EAST ASIAN
NATIONS (ASEAN) COUNTRIES**



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**DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
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ENVIRONMENTAL KUZNETS CURVE (EKC) IN SELECTED
ASSOCIATION OF SOUTH EAST ASIAN NATIONS (ASEAN) COUNTRIES**



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Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
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Kolej Perniagaan
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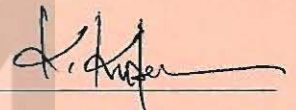
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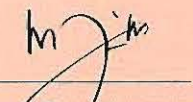
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ABSTRACT

The Pollution Haven Hypothesis (PHH) claims that because of international trade, developing countries have been specializing and exporting pollution-intensive goods to advanced countries. This study examines the PHH claim for trade between the six Association of South East Asian Nations (ASEAN) countries and two advanced countries (the USA, Japan) in Environmental Kuznets Curve (EKC) framework for the period 1989-2014. The Fully Modified Ordinary Least Square (FMLOS) panel co-integration approach has been employed to estimate the coefficients of the EKC model. The results reveal that the EKC does exist in the ASEAN countries and Singapore is the only country that has crossed the peak turning point income level of the EKC. This result implies that economic growth without any environment policy brings more CO₂ emission in the ASEAN region. When the effect of exports of pollution-intensive goods is controlled, turning point of the EKC arrives earlier. It implies that production and export of pollution-intensive goods has increased the environmental cost of economic growth in the ASEAN countries. The conclusion remains same in the model where exports of pollution-intensive goods are taken as an interaction term with income. The positive significant coefficients on FDI in all models indicate that FDI also contributes to the increase in CO₂ emissions. It is therefore, concluded that world pollution cannot be curtailed unless advanced countries reduce the consumption of pollution-intensive goods. It is a necessary condition for the existence of the world EKC that income elasticity for the demand of pollution-intensive products must fall as income increases. Changes in technologies and taste and preferences of consumers in developed world are required to reduce global pollution. An integrated well devised global programme is imperative to tackle the alarming issue of the global warming and advanced countries should lead this programme.

Keywords: pollution haven hypothesis, CO₂ emissions, environmental Kuznets curve, pollution-intensive goods, ASEAN, FMOLS

ABSTRAK

Hipotesis Pencemaran *Haven* (PHH) mendakwa bahawa perdagangan antarabangsa mendorong negara-negara membangun mengkhushus dan mengeksport barangan intensif-pencemaran ke negara-negara maju. Kajian ini meneliti dakwaan PHH dalam kerangka Keluk Alam Sekitar Kuznets (EKC) untuk perdagangan enam negara Persatuan Negara Negara Asia Tenggara(ASEAN) dan negara maju (Amerika Syarikat, Jepun) bagi tempoh 1989-2014. Kaedah integrasi panel *Fully Modified Ordinary Least Square* (FMLOS) telah digunakan untuk membuat anggaran kecekapan bersama model tersebut. Menurut hasil kajian, EKC tidak wujud dalam negara ASEAN dan Singapura merupakan satu-satunya negara yang melepasi tahap pendapatan EKC. Keadaan ini menandakan pertumbuhan ekonomi tanpa sebarang ukuran dasar akan mendatangkan lebih banyak pelepasan Gas Rumah Hijau (GHG) dalam negara negara ASEAN. Apabila kesan eksport bahan pencemaran intensif dikawal, titik perubahan EKC akan tiba lebih awal. Hal ini menandakan pengeluaran dan eksport barangan intensif-pencemaran telah melambatkan titik perubahan EKC dan meningkatkan kos pertumbuhan ekonomi alam sekitar. Kesimpulannya kekal sama dalam model di mana pengeksportan barangan intensif-pencemaran diambil secara interaktif dengan pendapatan. Koefisien positif yang signifikan terhadap FDI dalam semua model menunjukkan FDI juga menyumbang kepada pelepasan GHG. Hasil yang sama dilihat dalam kes pengeksportan barangan intensif-pencemaran ke Amerika Syarikat. Oleh yang demikian, dapat disimpulkan bahawa pencemaran dunia tidak dapat dikurangkan melainkan negara-negara maju mengurangkan tahap penggunaan yang tinggi. Dunia perlu peka dengan kewujudan EKC bahawa keanjalan pendapatan terhadap permintaan produk intensif-pencemaran perlu menurun apabila terdapat peningkatan pendapatan. Perubahan beban bukanlah penyelesaian. Sebuah program global bersepadu yang baik diperlukan untuk menangani masalah pemanasan global dan negara-negara maju harus memimpin program tersebut.

Kata kunci: Hipotesis Pencemaran Haven, pengeluaran CO₂, Keluk Alam Sekitar Kuznets, barangan intensif-pencemaran, ASEAN, FMOLS

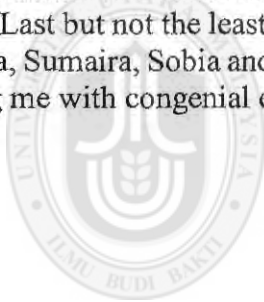
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CHAPTER ONE

INTRODUCTION

The first Chapter has 15 sections. Section 1.1 states the background of the Pollution Haven Hypothesis (PHH) and Section 1.2 describes some examples of the PHH. Section 1.3 explains the difference between the PHH and the Pollution Haven Effect while, Section 1.4 reveals arguments against the PHH. Section 1.5 describes the Environmental Kuznets Curve(EKC) and the PHH. Section 1.6 and 1.7 explains the trade and environment situation in the Association of South East Asian (ASEAN) countries and section 1.8 details the problem statement. The general and specific research questions have been described in Section 1.9 and Section 1.10 respectively. Section 1.11 describes the general objectives of the study while, Section 1.12 describes the key objectives of the study. Contribution of the study has been detailed in section 1.13. The scope of the study has been described in Section 1.14 and Section 1.15 finally concludes the significance of the study. Lastly, Section 1.16 concludes the chapter.

1.1 Background of the Pollution Haven Hypothesis (PHH)

Since 1970s, the issues related to international trade and environment have been extensively debated. The impact of international trade on environment and environment on international trade have been the focus of the debate. This debate started in 1970's and became intense in 1990's when trade openness was expanded by different organizations like North American Free Trade Agreement (NAFTA), United Nations Conference on Environment and Development (UNCED), Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and World Trade Organization (WTO). The trade agreements in the 1990s like NAFTA, UNCED and GATT included environment considerations in their main documents. The Environmental

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