UNIVERSITI PUTRA MALAYSIA

ENERGY INTENSITY AND IMPACT OF ENERGY PRICES ON INFLATION AND HOUSEHOLDE EXPENDITURE IN MALAYSIA

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ENERGY INTENSITY AND IMPACT OF ENERGY PRICES ON INFLATION AND HOUSEHOLDE EXPENDITURE IN MALAYSIA

By

NARGES MORADKHANI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of Requirements for the Degree of Doctor Philosophy

August 2011
Dedicated to my father and my family:

For their endless supports
Abstract of thesis presented to the Senate of the Universiti Putra Malaysia in fulfillment of the requirements for the degree of Doctor of Philosophy

ENERGY INTENSITY AND IMPACT OF ENERGY PRICES ON INFLATION AND HOUSEHOLD EXPENDITURE IN MALAYSIA

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Faculty: Economics and Management

Malaysia is a developing country and its economy is growing, in order to keep growing at its present rate, must be supported by a stable and reliable energy supply. In the past, sustained economic growth has resulted in a growing consumption of energy. In order to achieve sustainable and reliable energy supply, energy requirements must be regulated. For this purpose an estimation of future energy requirements in lights of improving its efficiency is required and recognizing energy consumption patterns among households and energy intensity among productive sectors is needed.

It is important to note that, fluctuation in energy prices, particularly price of crude oil could exert an important influence on the macroeconomics of the country. This study, therefore, tries to construct a hybrid energy I-O table, conduct sectoral energy intensity analysis and evaluate the effects of higher energy prices on inflation and
household expenditures. The hybrid energy I-O table shows that Industrial and Transport sectors consumed approximately 80% of the country’s consumption of energy over time. Therefore, if we give special attention to these two sectors, it could help to conserve energy consumption effectively. In addition, any study such as the present one, could help policy makers in strategizing the future sustainable development of the industry and help households to be more prudent in energy consumption.

Results of the present study reveal that in general energy intensity of the economy has increased over time. The energy intensity for all sectors computed 0.094 and 0.103 toe/’000 RM and for non-energy sectors quantified 0.069 and 0.077 toe/’000 in the years 2000 and 2005 respectively. The most energy intensive sectors remained the same while the least energy intensive sectors changed slightly during 2000 – 2005 periods. It is also found that value-added share of high energy intensive sectors is higher than that of the low energy intensive sectors. It means that Malaysian economy can switch form more polluted, high CO2 emission and high energy intensive sectors to clean, less energy intensive and high value added activities.

In this research we assumed that the energy consumption behavior of consumers and producers remained constant, a double increase in the price of energy would lead to the value of household expenditure increased by 20 and 17 in years 2000 and 2005 respectively for the same quantities. Households consume 8121293 toe and 10762104 toe energy in Malaysian economy in the years 2000 and 2005. The households are responsible for almost 30 percent of energy consumption in Malaysia. Their energy consumption increase about 30 percent within years 2000 to 2005.
By doubling the energy prices the sectoral price change 14.57% and 15.43% in the years 2000 and 2005 while CPI change 14.74% and 11.21% respectively in the same years. These changes in CPI can have several reasons i) weights of CPI changes over years ii) Households expenditure pattern changes over years iii) The economy becomes less susceptible in response to energy price shocks.

Different groups of household expenditure affected by increasing the price of energy dissimilarly for urban and rural households. The group Food and Non-Alcoholic Beverage Rural more affected than urban in both years 2000 and 2005. But the groups Transport and Electricity, gas & other fuel urban more affected than rural in both years. In term of strata, bottom quintile more affected in the group Gross rent, Fuel & Power while top quintile more affected in the group Transport and Communications. The lowest income category of household, which is represented by the first quintile of the household strata, is the most vulnerable to the increase in the price of energy through the indirect effect of inter-sectoral linkages.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KEAMATAN TENAGA DAN KESAN HARGA TENAGA TERHADAP INFLASI DAN PERBELANJAAN ISI RUMAH DI MALAYSIA

Oleh

Narges Moradkhani

Ogos 2011

Pengerusi: Prof. Annuar Md Nassir, PhD
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Adalah penting untuk diperhatikan bahawa turun naik harga tenaga terutamanya harga minyak mentah boleh memberikan pengaruh penting kepada asas ekonomi.

Keputusan kajian ini menunjukkan secara umum, intensiti tenaga bagi ekonomi telah meningkat dari semasa ke semasa. Intensiti tenaga bagi semua sektor yang dikira 0.094 dan 0.103 toe/’000 RM dan bagi sektor bukan tenaga yang kuantitinya 0.069 dan 0.077 toe/’000 bagi tahun 2000 dan 2005. Kebanyakkan sektor tenaga intensif kekal serupa manakala sedikit sektor tenaga intensif mengalami perubahan sepanjang tempoh 2000 – 2005. Ia juga didapati bahawa bahagian nilai tambah bagi sektor tenaga intensif yang tinggi adalah lebih tinggi daripada sektor tenaga intensif yang rendah. Ini bermakna bahawa ekonomi Malaysia boleh beralih daripada sektor tenaga intensif yang rendah kepada bersih, kurang tenaga intensif dan aktiviti nilai tambah yang tinggi.


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Finally, I am immensely and forever grateful to my family for their endless supports and encouragements to do my research and progress in my life.
I certify that a Thesis Examination Committee has met .................. to conduct the final examination of Narges Moradkhani on his thesis entitled “Sectoral Energy Intensity and Impact of Higher Energy Prices on Household Expenditure” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the University Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the degree of Doctor of Philosophy.

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DECLARATION

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

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Narges Moradkhani

Date: 25 August 2011
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