

**UNIT ROOTS AND STRUCTURAL BREAKS:  
NEW KNOWLEDGE FOR THE  
ASEAN MACROECONOMIC TIME SERIES MODEL**



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**BY :**

**TAN YAN LING  
ABU HASSAN SHAARI MOHD NOR  
NUR ADILAH SAUD  
ZAILATI AHMAD**

**NOVEMBER 2013**

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## LETTER OF REPORT SUBMISSION

Tarikh : 06 November 2013  
Kod Projek : 600-RMI/SSP/FRGS 5/3/Fsp (134/2010)

YBhg. Profesor Dato' Dr. Abu Bakar Abdul Majeed  
Penolong Naib Canselor (Penyelidikan)  
Bahagian Penyelidikan (FRGS)  
Institut Pengurusan Penyelidikan (RMI)  
Universiti Teknologi MARA  
40450 Shah Alam  
Selangor

YBhg Prof.,

**LAPORAN AKHIR PENYELIDIKAN FRGS FASA 2/2010 “UNIT ROOTS AND STRUCTURAL BREAKS: NEW KNOWLEDGE FOR THE ASEAN MACROECONOMIC TIME SERIES MODEL”**

Merujuk kepada perkara di atas, bersama-sama ini disertakan dua (2) salinan (*hardcopy*) dan satu (1) salinan (*softcopy*) Laporan Akhir Penyelidikan FRGS Fasa 2/2010 bertajuk “*Unit Roots And Structural Breaks: New Knowledge For The ASEAN Macroeconomic Time Series Model*”.

Sekian, terima kasih.

Yang benar,

**TAN YAN LING**  
Ketua Projek  
FRGS Fasa 2/2010 (Sains Sosial)  
Kod Projek : 600-RMI/SSP/FRGS 5/3/Fsp (134/2010)

## LETTER OF OFFER (RESEARCH GRANT)

Surat Kami : 600-RMI/SSP/FRGS 5/3/Fsp (134/2010)  
Tarikh : 30 Disember 2010



**Pn Tan Yan Ling**  
Fakulti Pengurusan Perniagaan  
Universiti Teknologi MARA Johor,  
KM 12, Jalan Muar  
85200 Segamat, Johor

Y. Brs. Prof/Tuan/Puan

### KELULUSAN SKIM GERAN PENYELIDIKAN FRGS FASA 2/2010

Tajuk Projek : Unit Roots and Structural Breaks: New Knowledge for the Asean  
Macroeconomic Time Series Model  
Kod Projek : 600-RMI/SSP/FRGS 5/3/Fsp (134/2010)  
Bidang : Sains Sosial  
Tempoh : 27 Disember 2010 – 26 Disember 2012 (24 bulan)  
Jumlah Peruntukan : RM 25,000.00  
Ketua Projek : Pn Tan Yan Ling

Dengan hormatnya perkara di atas adalah dirujuk.

2. Sukacita dimaklumkan pihak Kementerian Pengajian Tinggi melalui surat JPT.S(BPKI) 2000/011/09 Jilid. 4 (19) telah meluluskan cadangan penyelidikan Y. Brs. Prof./tuan/puan untuk di biayai di bawah Skim Geran Penyelidikan Fundamental (FRGS) Fasa 2/2010.

3. Bagi pihak Universiti kami mengucapkan tahniah kepada Y. Brs. Prof./tuan/puan kerana kejayaan ini dan seterusnya diharapkan berjaya menyalakan projek ini dengan cemerlang.

4. Peruntukan kewangan akan disalurkan melalui tiga (3) peringkat berdasarkan kepada laporan kemajuan serta kewangan yang mencapai perbelanjaan lebih kurang 50% dari peruntukan yang diterima.

Peringkat Pertama	20%
Peringkat Kedua	40%
Peringkat Ketiga	40%

5. Untuk tujuan mengemaskini, pihak Prof./tuan/puan adalah diminta untuk melengkapkan semula kertas cadangan penyelidikan sekiranya perlu, mengisi borang setuju terima projek penyelidikan dan menyusun perancangan semula bajet yang baru seperti yang diluluskan. Sila lihat lampiran bagi tatacara tambahan untuk pengurusan projek.

Sekian, harap maklum.

**"SELAMAT MENJALANKAN PENYELIDIKAN DENGAN JAYANYA"**

Yang benar

**MUSTAFAR KAMAL HAMZAH**  
Ketua Penyelidikan (Sains dan Teknologi)

Penolong Naib Canselor (Penyelidikan) : 003-5544 2094/2095  
Bahagian Penyelidikan : 003-5544 2092/2091/2301/5521 1462  
Bahagian Perundingan : 003-5544 2100/2787/2892/2093  
Bahagian Invoisi : 003-5544 2750/2747/2748

Bahagian Penerbitan : 003-5544 1425/2785  
Bahagian Sokongan ICT : 003-5544 3097/2104/5521 1461  
Bahagian Sains : 003-5544 2096/3521 1463  
Pejabat Am : 003-5544 2359/2057/5521 1636

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## **PROPOSED EXECUTIVE SUMMARY**

(Original proposal – 300 words)

The objective of this study is to examine the unit root hypothesis of ASEAN macroeconomic time series when the structural breaks are taken into account. The data set covers the period 1980 – 2008. The study starts with the conventional unit root test without structural. It is then followed by unit root tests allowing a single exogenous structural break which modified by Perron (1989) as well as a single endogenous structural break as suggested by Zivot and Andrews (1992). Alternatively, the simplification models of Perron and Zivot and Andrews will be used to test the unit root with structural break of a series. From the expected results, it shows that majority ASEAN macroeconomic time series contain unit root over the study period. The results subsequently highlights that mostly ASEAN macroeconomic time series tend to be more stationary when a single exogenous structural break is included.

## **ENHANCED EXECUTIVE SUMMARY**

(Abstract of the research)

The purpose of this study is to carry out a comprehensive examination of the univariate statistical properties in ASEAN macroeconomic time series from 1960 to 2010 using a battery of endogenous break ADF-type unit root tests. Our empirical findings show that number of rejections of a unit root null is relatively higher when considering structural breaks than without breaks in the models. Most index and rate variables can be treated as trend-stationary processes in Indonesia and Malaysia particularly. However, macroeconomic time series under US Dollar and Local currency terms have an opposite findings. As in ZA models, the US Dollar terms denomination series are more favorable of trend-stationary processes. Alternatively, the series under Local Currency terms tend to reject the null hypothesis of a unit root for all ASEAN countries except Thailand in LP models. Hence, the shocks to macroeconomic time series are temporary, these series will return to their long run trend rate of growth. Moreover, the break points are closely associated with global economic events such as the first oil shock of 1973-1975, the second oil shock in 1979-1980, the commodity crisis in 1985-1986 and the Asian financial crisis of 1997-1998. To this extent, if the shocks to series are transitory, then the macroeconomic stabilization policies may not be over-implemented in ASEAN countries particularly for index and rate variables in Indonesia and Malaysia. The policy authorities may use the historical information to forecast future movements in macroeconomic time series. Lastly, our findings also shed light on the importance of considering exchange rate fluctuations in the process of trend-stationary and random walk processes.