MODELING THE ASYMMETRIC DYNAMICS OF FINANCIAL ASSETS: INSIGHTS INTO HEDGING, SAFE HAVEN AND PORTFOLIO DIVERSIFICATION STRATEGIES

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DEDICATION

I would like to dedicate this work to my parents and grandparents, you are my universe, my inspiration and I love you for making me a good person. To my brother and sister whose continued support and encouragement along the way have made this possible. To my lovely wife, we will accomplish the dreams together. I am lucky to have you next to me in all difficult and joyful moments; my Ph.D. achievement would not have been the same without you.

Abstract of the thesis presented to the Senate of Universiti Malaysia Terengganu
in the fulfillment of the requirement for degree of
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This thesis examines the dynamic dependence, hedging effectiveness, safe haven and portfolio diversification benefits of bonds, crude oil, gold and VIX futures for global stock markets including G-12 countries, selected Eurozone, regional world Islamic and conventional stock markets. The daily data spans from January 1, 1991 to December 31, 2015. The DCC, ADCC and GO-GARCH techniques are used to model the volatilities and conditional correlations. The rolling window estimation technique is employed to construct an out-of-sample one-step-ahead forecast of the dynamic conditional correlations and the optimal hedge ratios.

However, the wavelet coherence (WTC) approach is utilized to detect the cross-asset contagion and thereafter determine the safe haven dynamics of alternative assets in the

time-frequency domain. Findings of the thesis reveal that negative shocks have more pronounced effects in comparison to positive shocks. That pushes investors to seek refuge in safe haven assets in order to safeguard their investments from extreme negative shocks. For most of the situations studied, the volatility index (VIX) provides the best and effective hedge to stock returns and the national benchmark bond indices provide the second best hedge.

The noteworthy findings which are reported in analysis reveal that in comparison to gold, oil and benchmark bonds, VIX served as a strong safe haven in all crisis periods over both the short and the long-run. Further, the risk and downside risk measures highlight that a stock-only portfolio would exhibit the greatest risk and the expected maximum loss (or the variability of losses), compared to a mixed bond-stock, a mixed VIX-stock or mixed gold-stock portfolios. The evidence further suggests that Islamic stock indices have greater risk and downside risk-reduction benefits when mixed with the alternative assets as compared to their conventional counterparts. In sum, the development of Islamic stock indices provides alternative opportunities to diversify portfolios globally and across asset classes.

The results are reasonably robust to alternative model specifications, choices of model refits and distributional assumptions. These findings provide useful insights to investors, fund managers, policy makers, and risk management practitioner.

Abstrak tesis yang dikemukakan kepada Senat Universiti Malaysia Terengganu
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

PEMODELAN DINAMIK TIDAK BERSIMETRI TERHADAP ASET KEWANGAN: PENGGUNAAN DI DALAM STRATEGI LINDUNG NILAI, BEBAS IMPAK DAN PORTFOLIO YANG PELBAGAI

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Tesis ini mengkaji kebersandaran dinamik, keberkesanan lindung nilai, kesan bebas impak dan kesan portfolio yang pelbagai terhadap bon, minyak mentah, emas dan kontrak niaga hadapan bagi indeks kemeruapan (VIX) untuk pasaran saham global, iaitu termasuk negara-negara G-12, beberapa negara Eurozone, pasaran saham Islamik dan konvensional. Data harian yang digunakan bermula dari 1 Januari 1991 sehingga 31 Disember 2015. Teknik-teknik DCC, ADCC dan GO_GARCH telah digunapakai untuk memodelkan kemeruapan dan korelasi bersyarat. Teknik penganggaran pemasaan bergerak pula telah digunakan untuk mendapat jangkaan luar sampel berjeda satu bagi korelasi dinamik bersyarat dan nisbah lindung nilai yang optimum.

Di samping itu, teknik keriakan padu (WTC) telah digunapakai untuk mengesan limpahan impak yang merentas aset dan menentukan sama ada dinamik bebas impak

bagi aset-aset alternatif wujud di dalam domain masa-kekerapan. Hasil kajian menunjukkan bahawa impak negatif memberi lebih kesan berbanding impak positif. Ini menyebabkan para pelabur beralih kepada aset-aset bebas impak bagi melindungi pelaburan mereka daripada impak negatif. Di dalam kebanyakan situasi, indeks kemeruapan (VIX) memberikan lindung nilai yang efektif dan terbaik untuk pulangan saham manakala indeks penentu aras bon bagi negara pula memberikan lindung nilai kedua terbaik.

Seterusnya, hasil kajian juga menunjukkan bahawa berbanding emas, minyak dan indeks penentu aras bon, VIX juga adalah pelaburan bebas impak terbaik ketika krisis kewangan berlaku, sama ada krisis tersebut berjangka masa pendek atau berjangka masa panjang. Daripada pengiraan risiko dan risiko terbesar pula, didapati bahawa portfolio yang terdiri daripada saham sahaja cenderung untuk mendapat risiko terbesar dan jangkaan kerugian terbesar (atau serakan kerugian terbesar), berbanding portfolio campuran saham dan bon, portfolio campuran VIX dan saham dan portfolio campuran emas dan saham. Ia juga menunjukkan indeks saham Islamik mempunyai risiko terbesar tetapi indeks tersebut mempunyai manfaat pengurangan risiko terbesar apabila dipelbagaikan dengan aset-aset alternatif, berbanding indeks saham konvensional. Kesimpulannya, pembangunan indeks saham Islamik memberikan peluang baru untuk mempelbagaikan portfolio secara global dan merentasi kelas-kelas aset.

Keputusan kajian ini adalah kalis kepada pembangunan dan penyuaian model-model yang baru, dan bentuk taburan data. Ia merupakan maklumat yang berguna untuk para pelabur, pengurus dana, pembuat dasar dan pihak pengurusan risiko.