

**ASSESSING THE EFFECT OF ASYMMETRY, TIME-VARYING,
MULTISCALE AND CORPORATE HEDGING TOWARDS
FOREIGN CURRENCY EXPOSURE OF MALAYSIAN NON-
FINANCIAL FIRMS**

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“I complain of my grief and sorrow to ALLAH and I know from ALLAH that you know not” {12:86}

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“Then which of the favours of your Lord will ye deny” {55:13}

ABSTRACT

Foreign currency fluctuations are one of the key sources of market risks for firms with global operations. Firms in developing countries face greater foreign exchange exposure level due to higher market openness and hedging intensity. However, comprehensive study on the level of exchange rate exposure in a small open economy such as Malaysia remains scarce. As existing studies of currency exposure in Malaysia ignore the asymmetric relationship of firm value and exchange rate movement that could cause estimation bias, the first objective of this study analyses the symmetric and asymmetric exchange rate exposure of non-financial firms in Malaysia. Data are collected from 207 non-financial firms from 1995 to 2016. On the overall symmetric exposure, the analysis finds significant negative overall stock returns exposure to changes in the USD. The firm-level analysis is conducted using regression with GARCH(1,1) specification and finds that symmetric exposure significantly affected 35.75% of the sample firms. As for asymmetric exposure, 16.43% of the firm are significantly affected by the USD appreciation, while 10.14% firms are significantly affected by the USD depreciation. Sensitivity of Malaysia's open economy towards market changes leads to the second objective which analyses currency exposure level by considering the time-varying factor. The findings show decreasing exposure levels throughout the sub-periods, with notable different significant levels during Asian financial crisis (AFC), global financial crisis (GFC) and peg periods suggesting event specific nature of foreign exchange exposure. Afterward, existence of vast investment preferences in the market drives the third objective which focuses on multiscale exchange rate exposure by using the maximal overlap discrete wavelet transformation (MODWT) analysis on daily data. The study finds higher and negative exposure at higher time scale (wider investment horizon) for the overall analysis. Sequentially, low level of hedging practice shown in our preliminary analysis prompts the study to further analyse the effect of corporate hedging practices towards the sample firms. The hedging practice is segregated into financial and operational hedging. The findings show significant effect of financial hedging in managing the currency exposure level. However, operational hedging fails to exert significant influence towards firm value for both cross-countries and regional diversifications. Our results offer broadly applicable implications for Malaysian firms with high currency exposure to consider the financial derivatives in their foreign exchange risk management strategies. For operational hedging, the effectiveness of geographical diversification could be enhanced under greater regional expansion where diversification benefits could be fully realised.

ABSTRAK

Pergerakan mata wang asing adalah salah satu sumber utama risiko pasaran yang dihadapi oleh firma dengan operasi global. Tahap pendedahan mata wang yang tinggi di kalangan negara membangun berpunca dari dasar pasaran terbuka dan paras amalan lindung nilai yang lebih rendah. Walaubagaimanapun, kajian komprehensif mengenai tahap pendedahan mata wang di dalam ekonomi kecil dan terbuka seperti Malaysia masih rendah walaupun berhadapan dengan kadar pendedahan mata wang yang tinggi. Kajian lepas di Malaysia telah mangabaikan hubungan asimetri antara nilai firma dan pergerakan mata wang yang menyebabkan bias anggaran. Oleh itu, objektif pertama kajian ini menilai kadar pendedahan mata wang asing dari sudut simetri dan asimetri melibatkan 207 firma bukan kewangan di Malaysia. Analisis panel (peringkat agregat) mendapati kadar pendedahan mata wang yang signifikan dan negatif terhadap perubahan USD. Seterusnya, analisis di peringkat firma individu melibatkan regresi dengan spesifikasi GARCH (1,1) menyimpulkan 35.75% dari firma sampel dipengaruhi oleh pendedahan mata wang simetri. Untuk pendedahan mata wang asimetrik, 16.43% firma dipengaruhi oleh kenaikan USD, sementara 10.14% firma dipengaruhi oleh penurunan nilai USD. Sensitiviti ekonomi terbuka di Malaysia membawa kepada objektif kedua kajian berdasarkan hipotesis bahawa pendedahan mata wang adalah responsif terhadap peristiwa yang signifikan. Analisis di bawah lima sub-tempoh menunjukkan penurunan tahap pendedahan mata wang sepanjang sub-tempoh terutamanya perbezaan yang signifikan di antara kadar pendedahan mata wang semasa krisis kewangan Asia (AFC), krisis kewangan global (GFC) dan tempoh tambatan mata wang yang membuktikan pendedahan mata wang bergantung kepada peristiwa tertentu. Kepelbagaian kecenderungan pelaburan di dalam pasaran menjadi asas kepada objektif ketiga yang menfokuskan kepada pendedahan mata wang pelbagai skala waktu dengan menggunakan metod *maximal overlap discrete wavelet transformation* (MODWT) pada data harian dari 1995 hingga 2016. Hasil kajian menunjukkan pendedahan mata wang yang lebih tinggi dan negatif pada skala masa yang lebih tinggi (sela masa yang lebih panjang) untuk keseluruhan analisis. Seterusnya, kajian ini menganalisis tahap keberkesanan amalan lindung nilai korporat di Malaysia. Amalan lindung nilai dibahagikan kepada dua kategori iaitu lindung nilai kewangan dan operasi. Hasil kajian menunjukkan penggunaan lindung nilai kewangan sangat efektif dalam mengurangkan tahap pendedahan mata wang. Walau bagaimanapun, kajian ini mendapati amalan lindung nilai operasi tidak memberikan pengaruh penting terhadap tahap pendedahan mata wang. Hasil kajian ini menyumbang beberapa implikasi kepada firma di Malaysia yang terdedah kepada pergerakan mata wang dalam menentukan derivatif kewangan yang sesuai untuk mengurus risiko pendedahan mata wang. Bagi aktiviti lindung nilai operasi, keberkesanan pempelbagaian geografi untuk operasi firma boleh diperkasakan melalui pengembangan wilayah bagi merealisasikan sepenuhnya faedah tersebut.

المخلص

إن تقلبات العملة الأجنبية من إحدى المصادر الأساسية في مخاطر السوق التي تواجهها الشركات ذات العمليات العالمية. إن الشركات في الدول المتقدمة لها الحد الأدنى من التعرض في تحركات العملة. التعرض القليل هو بسبب وجود كثير من أدوات التحوط وتطبيقاته. إن مستوى التعرض العالي هو بسبب تطبيق التحوط القليل وأنشطة التجارة عبر الحدود القوية. وإزاء هذه الخلفية، فالهدف الأول لهذا البحث هو تحليل تعريض سعر الصرف المتماثل وغير المتماثل للشركات غير المالية في ماليزيا. جمعت البيانات من 207 الشركات غير المالية من سنة 1995 حتى سنة 2016. وفي التعرض المتماثل الإجمالي، وجد التحليل عن تغير تعرض عائد الأسهم الإجمالي السلبي الفعال في الدولار الأمريكي. إن الشركات المستوردة قد استفدت من تخفيضات الولايات المتحدة الأمريكية لأنها تجعل مبالغها المستحقة الدفع تنخفض. إن تحليل مستوى الشركات أقيم بنماذج انحدار مع $GARCH(1,1)$. ووجد هذا التحليل بأن 35.75% من الشركات المعنية متأثرة بالتعرض المتماثل. وللتعرض المتماثل، فـ16.43% من الشركات قد تأثر بارتفاع الدولار الأمريكي تأثراً فعالاً. أما 10.14% من الشركات قد تأثر بانخفاض الدولار الأمريكي تأثراً فعالاً. فالغرض لهذا الهدف الثاني هو تحليل مستوى تعرض العملة بالنظر إلى عامل متغير. إن التقييم في مستوى التعرض لفترات متفاوتة أشار إلى انخفاض مستوى التعرض طوال الفترات الفرعية. فعلى الكل، جميع الاكتشافات أيدت حدس دراسة تقدير المتحيز، إلا إذا حلل تعرض العملة بغض النظر إلى الأحداث المالية الكبيرة. والنتائج أيضاً أشارت إلى أن مدى تعرض العملة هو الحادثة الخاصة. فالهدف الثالث أيضاً عن الحساسية. قد استخدم البحث التقييم على المعلومات اليومية من سنة 1995 حتى 2016 للتداخل الأقصى لتغير الموجات المنفصل. وقد سجل التعرض العالي والسلبي في أعلى النطاق الزمني في التحليل الكلي. والتحقق على التوقعات الأولية لأعلى التعرض في أفق الاستثمار الأوسع. لذا، اختتم هذا البحث بأن عامل النطاق الزمني يجب أن يؤخذ بعين الاعتبار عند قياس تعرض العملات الأجنبية. ومتابعة من تحليل التعرض، فالبحث قد اكتشف تطبيق التحوط التجاري في الدولة. تطبيق التحوط منفصل إلى التحوط المالي والتحوط التنفيذي. فالنتيجة من هذه الدراسة تبين بأن التحوط المالي هو أكثر فعالاً في إدارة مستوى تعرض العملة. ولكن، التحوط التنفيذي قد فشل في ممارسة التأثير الكثير تجاه قيمة الشركات لكلي عبر الدول والتنوع الإقليمي. لذلك، هذا البحث يستطيع أن يعد برهان عن تعرض العملة في السوق الماليزي من الأساليب المنهجية المختلفة. أولاً، أشارت هذه الدراسة بأن تكوين الشركات التي تتأثر بكثير من تحرك العملة عال. وثانياً، إن الشركات تتأثر غير متماثلة بتحريك العملات المتماثل. وثالثاً، هذه الدراسة أيضاً تبرهن بأن شركات العينة قد أشارت تعرض متعدد المقاييس عندما تقسيم البيانات إلى عدة المتسلسلات الزمنية. وللإجابة إلى البحث عن مستوى تعرض العملة، فهذا البحث اكتشف عن مستوى تطبيق التحوط التجاري في هذه الدولة.

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LIST OF ABBREVIATIONS

AFC	Asian financial crisis
ASEAN	Association of South East Asian Nations
AUD	Australian Dollar
BNM	Bank Negara Malaysia
FBM-KLCI	FTSE Bursa Malaysia-Kuala Lumpur Composite Index
FCD	Foreign Currency Derivative
FE	Fixed Effects Regression Model
FRS	Financial Reporting Standard
GARCH	Generalised Autoregressive Conditional Heteroscedasticity Test
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GFC	Global financial crisis
MODWT	Maximal Overlap Discrete Wavelet Transformation
OLS	Ordinary Least Squares
OTC	Over-the-counter
PTM	Pricing-to-market
RAM	Rating Agency Malaysia
RE	Random Effects Regression Model
RM	Ringgit Malaysia
SEA	South East Asia
SOE	State Owned Enterprises
S&P	Standard & Poors
UAE	United Arab Emirates
UK	United Kingdom
US	The United States of America
USD	The United States of America Dollar