行政院國家科學委員會專題研究計畫 成果報告

匯率不確定性與海外直接投資時機之選擇：實質選擇權賽局理論之應用與台灣廠商之實證
研究成果報告(精簡版)

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中文摘要： 本研究應用實質選擇權賽局理論探討匯率不確定性與海外直接投資時機之關係。本研究理論分析顯示，在面臨匯率不確定情況下，若國外市場愈競爭，市場導向型廠商愈可能延遲進入該市場。相反的，對依成本導向型廠商而言，若其本國市場愈競爭，該廠商愈可能提早將生產活動移往低工資國家。本研究利用台商至中國大陸投資的調查資料進行實證研究，以檢驗本文理論架構之解釋能力。本研究採用事件歷史分析法(event history analysis)。本研究實證結果大致支持本研究之理論預期。

英文摘要： This study applies a real option game approach to examine the relationship between exchange rate uncertainty and the timing of foreign direct investment. In the theoretical part, we show that a more competitive foreign market will deter a market-seeking firm to enter the market earlier if it faces exchange rate uncertainty. In contrast, a more competitive home market will induce a cost-oriented firm to shift its production to a low-wage foreign country earlier. In the empirical part, a recent survey dataset for Taiwanese firms' investment into China is employed to check the validity of our theoretic framework. With event history modeling, our empirical results are generally consistent with our theoretical prediction.

行政院國家科學委員會補助專題研究計畫 ☑成果報告 □期中進度報告

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中　華　民　國 100 年 10 月 31 日

摘要

　　本研究應用實質選擇權賽局理論探討匯率不確定性與海外直接投資時機之關係。本研究理論分析顯示，在面臨匯率不確定情況下，若國外市場愈競爭，市場導向型廠商愈可能延遲進入該市場。相反的，對依成本導向型廠商而言，若其本國市場愈競爭，該廠商愈可能提早將生產活動移往低工資國家。本研究利用台商至中國大陸投資的調查資料進行實證研究，以檢驗本文理論架構之解釋能力。本研究採用事件歷史分析法(event history analysis)。本研究實證結果大致支持本研究之理論預期。

關鍵詞: 匯率不確定性，海外直接投資，實質選擇權，賽局理論，事件歷史分
　　　　析研究法

Abstract

This study applies a real option game approach to examine the relationship between exchange rate uncertainty and the timing of foreign direct investment. In the theoretical part, we show that a more competitive foreign market will deter a market-seeking firm to enter the market earlier if it faces exchange rate uncertainty. In contrast, a more competitive home market will induce a cost-oriented firm to shift its production to a low-wage foreign country earlier. In the empirical part, a recent survey dataset for Taiwanese firms' investment into China is employed to check the validity of our theoretic framework. With event history modeling, our empirical results are generally consistent with our theoretical prediction.

Keywords: Exchange rate uncertainty, foreign direct investment, real options, game theory, event history modeling

一‧ 前言

近三十年來，各國對外直接投資(foreign direct investment，簡稱 FDI)之流量不僅成長快速，而且波動幅度相當劇烈。[1] 對於 FDI 短期間大幅波動之現象，傳統的 FDI 理論並無法提供合理的解釋 (Blonigen (1997, p.447))。由於廠商對外直接投資所產生之成本或效益往往涉及不同貨幣之轉換，而 1970 年代以來，因為各國紛紛採行浮動或機動匯率制度，以致許多國家匯率波動幅度日劇，因此陸續出現許多文獻探討匯率波動與 FDI 短期波動的關聯性。

綜合過去相關理論與實證文獻，雖然匯率波動對 FDI 可能產生影響已受到肯定，然而，其影響方向在文獻上的意見卻仍十分歧異。Chen et al. (2006)及 Lin et al. (2006)指出，文獻上的歧異可能是由於未區分廠商投資動機所致。若匯率水準與匯率波動對 FDI 之影響視廠商投資動機而定，使用總體資料來分析這個問題可能會造成加總偏誤(aggregation bias)。他們建立一個實質選擇權模型，並討論了三種投資動機的 FDI：回銷導向、尋求新市場導向及替代出口導向。研究結果顯示，匯率不確定性對 FDI 的影響會依不同投資動機及不同風險態度而異。此外，他們以台商至中國大陸投資為研究對象，發現投資動機的確是造成匯率及匯率波動對 FDI 時點影響不同的重要因素。可惜的是，不管是 Chen et al. (2006)及 Lin et al. (2006)或過去其他文獻，皆未考慮不完全競爭市場的情況。由於廠商的策略互動可能影響選擇權之價值，而多國籍公司在國際上一般往往有一定的定價能力，因此似有必要將廠商的策略互動的可能影響納入模型之中。

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[1] 例如，根據統計，美國的 FDI 流入金額在 1993 年與 1998 年分別成長 159%以及 70%，但在 2001 年衰退 48%而且 2002 年又衰退了 57%。很多國家的 FDI 大多有類似的巨幅波動情況。參見 OECD International Direct Investment Database。

二·研究目的

本研究的目的，就是延續申請人過去之相關研究 (Chen et al. (2006), Lin et al. (2006), Lin and Chen (2008))，應用實質選擇權理論架構，探討寡占市場下匯率波動與海外直接投資之關係，並以台商至大陸的投資資料驗證本文理論架構之解釋能力。雖然申請人過去之實證結果大多符合其理論預期，顯示實質選擇權理論具有相當之解釋能力，惟申請人過去之相關研究均未將市場結構以及廠商策略互動關係納入。基於近年有關實質選擇權賽局理論之發展，實有必要在理論架構以及實證模型中考慮市場結構以及廠商策略互動等因素，以進一步探索實質選擇權賽局理論在不同市場結構與競爭條件下之適用性。

在理論分析方面，本研究探討的主要議題為：匯率波動性與海外直接投資的關係是否可能受到市場結構以及廠商策略互動等因素之影響?若是，則對於不同投資動機下之廠商所產生之影響可能有何不同？實證分析分面，本研究將根據理論分析之結果建構實證模型，採用個體廠商資料並應用事件歷史研究法進行經濟計量分析

三、 文獻回顧

有關匯率波動與 FDI 短期波動的關聯性的文獻，主要包括二大類：(1) 匯率水準值與 FDI；(2) 匯率不確定性與 FDI。然而，這些文獻對於匯率水準值及其波動影響 FDI 的方式及方向，目前皆尚未有一定論。以下簡要分別介紹此二大類文獻。

匯率水準值與 FDI

關於匯率水準值與 FDI 關聯性的文獻，大致上可分為兩類。第一類文獻聚焦於匯率的波動如何影響廠商收購國外資產時之成本（例如，Froot and Stein (1991)與 Blonigen (1997)），第二類文獻則指出匯率波動將可能影響廠商在國外生產之利潤（例如，Cushman (1985)與 Campa (1993)）。茲簡述如下。

Froot and Stein (1991) 建立一個不完全資本市場模型(imperfect capital market)。該文指出，本國貨幣貶值會使本國人民財富相對縮水，因此會促使外國人民前來併購本國資產或廠商。Blonigen (1997)則指出，匯率波動可能會影響併購型 FDI 的行為，因為本國廠商併購之外國資產通常包含了專屬於該廠商的特定優勢（如技術與管理技能），而該優勢可創造新的利潤且轉移過程不必經由貨幣轉換，可降低併購國外資產的價格，所以會刺激 FDI 之進行。

在匯率波動對 FDI 之利潤影響方面，Cushman (1985)建立了一個非常完整的模型，其中考慮了多國籍廠商在何處生產、何處購買生產要素、何處融資與何處銷售產品等因素。該研究指出，外國貨幣貶值可降低以本國貨幣表示之外國生產成本，因此對 FDI 有利。[2]上述本國貨幣升值（或外國貨幣貶值）可促進本國廠商進行 FDI 活動的結論得到非常多實證文章的支持，例如，Kohlhagen (1977)、Cushman (1985)、Froot and Stein (1991)、Klein and Rosengren (1994)、Campa (1994)、Dewenter (1995)、Kogut and Chang (1996)、Blonigen (1997)、Bell and Campa (1997)、Xing (2002)、Iannizzotto and Miller (2002)與 Kiyota and Urata (2004)。

另一方面，Campa (1993)使用 Dixit (1989b)的實質選擇權架構探討匯率波動對 FDI 之影響。與其他文獻不同的地方就是該文討論的是以銷售為目的之 FDI。當地主國貨幣升值，以本國貨幣表示之銷售收入會較高，故應有刺激 FDI 的效果。Campa (1993)與 Tomlin (2000)以美國零售業為樣本之實證結果支持這個論點。

另外，有些文獻則發現匯率水準值對 FDI 的影響會依不同產業或不同國家而異，例如 Goldberg (1993)、Kosteletou and Liargovas (2000)、Gorg and Wakelin (2002)、Kyrkilis and Pantelidis (2003)與 Pain and Van Welsum (2003)等。

匯率不確定性與 FDI

有關匯率不確定性與 FDI 關係之文獻，我們亦可依影響管道之不同將文獻概略分成兩類：廠商風險態度與保持投資彈性之選擇權價值。較早之文獻認為對風險祛避(risk-averse)廠商而言，較高的匯率波動會提高利潤之風險程度，以致降低廠商對該利潤之確定等值(certainty equivalent value)，因此匯率

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[2] Kohlhagen (1977)也有類似的發現。

波動提高將不利於廠商進行 FDI。[3] 相反的， Itagaki (1981)則強調利潤暴露在匯率風險下部位(the exposure to exchange rate risk)的重要性。該篇文章指出匯率波動對多國公司生產與貿易之影響，需視該公司之利潤暴露在匯率風險下的部位是正或是負而定。Cushman (1985)與 Goldberg and Kolstad (1995)亦強調必須考慮廠商投資後其利潤暴露在匯率風險下的部位有何改變。例如，如果廠商是以 FDI 替代出口，則 FDI 行為可能降低利潤暴露在匯率風險下的部位，以致匯率波動提高反而有利於 FDI 活動。

另一方面，傳統文獻大多忽略了國際投資之的一項重要特性，就是 FDI 之執行時機通常是有些彈性，而非本期決定不投資後即失去該投資機會。由 1980 年代開始，實質選擇權理論(real options theory)開始被應用在分析投資行為上。在不確定性與投資不可回復性(irreversible investment)的假設之下，實質選擇權理論認為不確定性提高時，廠商可能為了得到未來更多市場資訊而決定多等待一期，因而延遲投資。Dixit (1989a,b)指出，即使對於風險中立的廠商而言，不確定性提高會使廠商等待的價值(waiting value)提高。因此，由此可以推論匯率波動提高對 FDI 應是不利的。另外，Darby et al. (1999)使用 Dixit-Pindyck (1994)的模型，發現考慮廠商風險袪避行為後，匯率波動對 FDI 時點的影響就會變成不確定。

在實證文章方面，過去的文章亦指出匯率不確定性對 FDI 的影響仍會依不同國家、不同投資型態與不同時間而異。例如，Amuedo-Dorantes and Pozo (2001)、 Bell and Campa (1997)、Campa (1993, 1994)、Darby et al. (1999)、Crowley and Lee (2002)與 Kiyota and Urata (2004)發現匯率不確定性和 FDI 是負向關係，但 Cushman (1985)、Goldberg and Kolstad (1995)與 Pain and Van Welsum (2003) 則發現匯率不確定性和 FDI 是正向關係。

不確定性情況下廠商策略互動與 FDI

目前已有相當多文獻試圖將實質選擇權理論以及賽局理論結合起來，以分析實質選擇權理論在不同市場結構下之適用性。主要原因在於許多產業的廠商同時面臨不確定性以及彼此存在策略互動關係。由於廠商的策略互動可能影響選擇權之價值，而多國籍公司在國際上一般往往有一定的定價能力，因此在探討匯率不確定性對 FDI 的影響時似有必要將廠商的策略互動的可能影響納入模型之中。這方面的文獻包括 Kester (1984)，Trigeorgis (1991)，Smit and Ankum (1993)，Grenadier (1996, 2000, 2002), Kutatilaka and Perotti (1998)，Baldursson (1998) ，Weeds (2002)，Nielson (2002)，Lambrecht and Perraudin

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[3]請見 Wihlborg (1978)。

(2003)，Huisman and Kort (2004)，Smit and Trigeorgis (2004, 2006)， Pawlina and Kort (2006)，Thijssen et al. (2006)等。[4] 有些文獻指出，市場競爭或廠商策略互動會減弱不確性對廠商延遲投資的影響力，亦即當市場存在兩家以上的廠商彼此競爭時，等待的價值(option value to wait)會隨著競爭程度的提高而減少；例如 Grenadier (1996, 2000, 2002)， Lambrecht and Perraudin (2003), Huisman and Kort (2004), Smit and Trigeorgis (2004) and Thijssen et al. (2006)。Bulan et. al.(2009) 對加拿大溫哥華公寓建案以及 Bontempi et.al.(2010) 對義大利製造商投資案之實證均支持市場競爭會減弱不確性對廠商延遲投資的影響力。惟有關實質選擇權理論賽局之實證研究仍然極為少見(Azevedo and Paxson (2010, p.42)。特別是，有關匯率波動與 FDI 關係之實證研究，似尚未有考慮市場競爭程度之文獻出現。

四、理論架構

本研究首先建立理論架構，探討不同投資動機下匯率波動與海外直接投資之關係。本文研究聚焦在成本導向之海外直接投資 (cost-oriented FDI) 以及市場導向之海外直接投資 (market-oriented FDI)，因為在過去台商對外投資之動機中，這兩類型之海外直接投資佔了絕大部分。

(一) 市場導向之海外直接投資

假設廠商面對不確定之匯率水準(R)，而在決定產量時假設匯率水準已知。假設廠商基於尋找新市場之考量，考慮在適當時機進入國外市場。匯率係以一單位外幣可以兌換多少本國貨幣表示。假設廠商為風險中立。假設國外設廠生產均必須花費一固定的沉沒成本(sunk costs) ， I。為了簡化分析，假設變動生產成本為零。假設廠商只在國外市場銷售，面對一線性的逆需求函數$P(Q)$：

$$P(Q) = a - bQ \tag{1}$$

1. 獨占情況

首先，假設廠商在進入國外市場前該市場不存在其他廠商，且進入後變成為獨占廠商。則廠商在進入該市場後每期得到之利潤流量如下：

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[4]有關這方面的文獻介紹，詳見 Azevedo and Paxson (2010)。

$$\triangle \pi_M^M = \pi_1 = (a - q_1)q_1 R = \frac{1}{4}a^2 R \tag{2}$$

進入該市場投資帶來之累積利潤折現值可以表為

$$\xi_M^M (R) = \frac{a^2}{4(\rho - \mu)}R \tag{3}$$

其中，$\rho > \mu$。 該獨占廠商選擇適當時點進入國外市場之決策問題可以寫為：

$$V_0(R) = \max\left\{\xi_M(R) - I, \frac{1}{1 + \Delta t\rho}\mathrm{E}\big[V_0(R')\big|R\big]\right\} \tag{4}$$

該獨占廠商只有在匯率水準夠高時(亦即本國幣值夠低時)才會進入國外市場，其門檻值如下：

$$R_M^M = \frac{4(\rho - \mu)I}{a^2}\frac{\beta}{\beta - 1} \tag{5}$$

其中，$\beta = \sigma^{-2}[-(\mu - 0.5\sigma^2) + \sqrt{(\mu - 0.5\sigma^2)^2 + 2\sigma^2\rho}] > 1$ (Dixit, 1989b, p.626.)。

比較靜態分析結果如下：

$$\frac{dR_M}{dI} > 0 , \ \frac{dR_M}{d\sigma} > 0 , \ \frac{dR_M}{d\mu} < 0 \tag{6}$$

由(6)式可知，沈沒成本提高、匯率波動提高或預期本國貨幣升值都會促使尋找新市場之廠商延後進入國外市場。此結果之經濟直覺參見 Chen et al. (2006)。

2. 雙占情況

接著，假設廠商在進入國外市場前該市場已經存在一家廠商，且進入後該市場變成為雙占局面，且兩廠商彼此進行數量競爭。則廠商在進入該市場後每期得到之利潤流量如下：

$$\pi_M^D = \pi_1 = (a - Q)q_1R = \frac{1}{9}a^2R \tag{7}$$

其中，$Q = q_1 + q_2$。

進入該市場之投資帶來之折現值可以表為

$$\xi_M^D(R) = \frac{a^2}{9(\rho - \mu)}R \tag{8}$$

同理，該廠商只有在匯率水準夠高時(亦即本國幣值夠低時)才會進入國外市場。雙占情況下之門檻值如下：

$$R_M^D = \frac{9(\rho - \mu)I}{a^2}\frac{\beta}{\beta - 1} \tag{9}$$

3. 獨占與雙占情況之比較

為了瞭解市場競爭對廠商在面對匯率波動時進入國外市場之時點的影響，我們比較在此兩種情況下之匯率門檻值如下：

$$R_M^D - R_M^M = \frac{5(\rho - \mu)I}{a^2}\frac{\beta}{\beta - 1} > 0 \tag{10}$$

由(10)式可知，獨占情況下之匯率門檻值較低，此表示市場競爭將促使尋求新市場之廠商延後進入國外市場。此結果之經濟直覺如下：進入國外市場之機會可視為一項買權(call option)。是否進入一個市場或是繼續等待，必須衡量其成本與效益。延遲進入之成本為犧牲一期之利潤流量，但其效益為繼續保有選擇更適當時點進入市場之機會(及該選擇權)。在雙占情況下利潤流量較低，且選擇權價值較高，故會等待較久。

由(10)式對 σ 微分可得，

$$\frac{d}{d\sigma}\left(R_M^D - R_M^M\right) = -\frac{R_M^D - R_M^M}{\beta(\beta - 1)}\frac{\partial \beta}{\partial \sigma} > 0 \tag{11}$$

其中， $\frac{\partial \beta}{\partial \sigma} = \frac{\beta}{\sigma}[-1 + \frac{2 \mu^2 \sigma}{2\sqrt{2\rho \sigma^2 + (\mu - 0.5\sigma^2)^2}}]$ 。由(11)式可知， 匯率波動愈大，市場競爭促使尋求新市場之廠商進入國外市場的時點更為延後。此結果之經濟直覺為: 匯率波動變大，選擇權價值提升，但由於雙佔下的選擇權價值較高，故提升的幅度也就變大。

(二) 成本節省型之海外直接投資

本小節接著探討在匯率不確定情況下成本節省型之廠商海外直接投資時機與市場競爭之關係。假設廠商基於國內生產成本過高，考慮將生產活動移往海外，但生產後將產品回銷回母國。廠商在決定設廠地點時面對不確定之匯率水準(R)，而在決定產量時假設匯率水準已知。匯率係以一單位外幣可以兌換多少本國貨幣表示。假設廠商為風險中立。假設國外設廠生產均必須花費一固定的沉沒成本(sunk costs) ， I 。假設投資前單位成本為k_2，投資後單位成本為$R \cdot k_1$，且$R \cdot k_1 < k_2$，亦即在國外生產具有成本優勢。假設廠商只在國內市場銷售，面對一線性的逆需求函數$P(Q)$:

$$P(Q) = a - bQ$$

1. 獨占情況

首先，假設廠商在進入國外生產前國內市場不存在其他廠商。則廠商在進入該市場前與進入後每期得到之利潤流量分別如下:

　FDI 前利潤： $\pi_1^0 = (a - q_1)q_1 - k_2 q_1$ 　　　　　　　　　(12)

　FDI 後利潤： $\pi_1^1 = (a - q_1)q_1 - k_1 R q_1$ 　　　　　　　　　(13)

進入國外生產帶來之每期利潤流量可以表為

$$\triangle \pi_C^M = \pi_1^1 - \pi_1^0 = \frac{1}{4}(a - R \cdot k_1)^2 - \frac{1}{4}(a - k_2)^2 \tag{14}$$

因此，進入國外生產帶來之累積利潤的折現值可以表為

$$\xi_C^M(R) = \frac{k_2(2a - k_2)}{4\rho} - \frac{ak_1}{2(\rho - \mu)}R + \frac{k_1^2}{4(\rho - 2\mu - \sigma^2)}R^2 \tag{15}$$

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其中，$\rho > 2\mu + \sigma^2$。該獨占廠商選擇適當時點進入國外市場之決策問題可以寫為：

$$V_0(R) = \max\left\{\xi_C(R) - I, \frac{1}{1 + \Delta t \rho}E\left[V_0(R')|R\right]\right\} \tag{16}$$

該獨占廠商只有在匯率水準夠低時(亦即本國幣值夠高時)才會進入國外生產。假設其門檻值為 R_C^M。

當 $R = R_C^M$ 時的選擇權價值為

$$\frac{k_1 R}{2\alpha}\left(\frac{a}{\rho - \mu} - \frac{k_1 R}{\rho - 2\mu - \sigma^2}\right) \quad,$$

其中，$\alpha = \sigma^{-2}[(\mu - 0.5\sigma^2) + \sqrt{(\mu - 0.5\sigma^2)^2 + 2\sigma^2\rho}] > 0$。若進入國外生產帶來之累積利潤的折現值

$\xi_C^M(R)$ 較選擇權價值高，該廠商即會進入國外生產。反之，若進入國外生產帶來之累積利潤的折現值

$\xi_C^M(R)$ 較選擇權價值低，該廠商就會選擇繼續等待。由於非線性關係不易看出門檻值，故以下將使用

數值模擬方式。

本文假設：$\mu = 0$，$\rho = 0.05$，$k_1 = 1$，$a = 100$，$\rho > 2\mu + \sigma^2$，$k_1 R < k_2$。若 $R < R_C^M$ 則投資。R_C^M 的模擬結

果如表 1 所示。由表 1 可知，匯率波動愈高，R_C^M 愈小，因此廠商愈會延後投資；策略優勢愈大（投資

前後成本差異愈大），R_C^M 愈大，因此廠商愈會提前投資。

2. 雙占情況

接著，假設廠商在進入國外生產前本國市場已經存在另一家相同生產成本之廠商，且兩廠商彼此

進行數量競爭。則第 1 家廠商(以下標 2 表示)在進入該市場後每期得到之利潤流量如下：

FDI 前利潤：$\pi_1^0 = (a - Q)q_1 - k_2 q_1$ \hfill (17)

FDI 後利潤：$\pi_1^1 = (a - Q)q_1 - k_1 R q_1$ \hfill (18)

假設競爭廠商(以下標 2 表示)不管如何都未前往海外設廠，故其利潤函數如下：

$$\pi_2 = (a - Q)q_2 - k_2 q_2 \tag{19}$$

第 1 家廠商進入國外生產帶來之每期利潤流量可以表為

$$\triangle \pi_C^D = \pi_1^1 - \pi_1^0 = \frac{1}{9}\left(a + k_2 - 2R \cdot k_1\right)^2 - \frac{1}{9}\left(a - k_2\right)^2 \tag{20}$$

因此，第 1 家進入國外生產帶來之累積利潤的折現值可以表為

$$\xi_C^D\left(R\right) = \frac{4ak_2}{9\rho} - \frac{4k_1\left(a + k_2\right)}{9\left(\rho - \mu\right)}R + \frac{4k_1^2}{9\left(\rho - 2\mu - \sigma^2\right)}R^2 \tag{21}$$

其中，$\rho > 2\mu + \sigma^2$。$R = R_C^D$ 時的選擇權價值為 $\frac{4k_1 R}{9\alpha}\left(\frac{a + k_2}{\rho - \mu} - \frac{2k_1 R}{\rho - 2\mu - \sigma^2}\right)$。由於非線性關係不易看出

門檻值，故以下將使用數值模擬方式。本文假設：$\mu = 0$，$\rho = 0.05$，$k_1 = 1$，$a = 100$，$\rho > 2\mu + \sigma^2$，

$k_1 R < k_2$。若 $R < R_C^D$ 則投資。R_C^D 的模擬結果如表 2 所示。表 2 結果與表 1 類似。匯率波動愈高，R_C^D

愈小，因此廠商愈會延後投資；策略優勢愈大（投資前後成本差異愈大），R_C^D 愈大，因此廠商愈會提

前投資。

　　為了瞭解市場競爭對成本節省型廠商在面對匯率波動時進入國外生產之時點的影響，我們模擬分

析兩種情況下之匯率門檻值大小。本文假設：$\mu = 0$，$\rho = 0.05$，$k_1 = 1$，$a = 100$，$\rho > 2\mu + \sigma^2$，$k_1 R < k_2$。

$R_C^D - R_C^M$ 的模擬結果如表 3 所示。表 3 結果顯示 $R_C^D - R_C^M > 0$，亦即市場競爭將促使成本節省型廠商在

面對匯率波動時提早進入國外生產。此外，表 3 結果顯示，匯率波動愈大，$R_C^D - R_C^M$ 愈大，因此市場

競爭對 FDI 的正面效果愈顯著。再者，策略優勢愈大，亦即 k_2 愈大，市場競爭對 FDI 的正面效果也愈

顯著。此結果與尋找新市場之 FDI 剛好相反。其經濟直覺如下:與尋找新市場之 FDI 一個重要差異就是，

在雙占情況下，先進入國外生產之廠商將會享有生產成本優勢，而在獨占情況下卻無此種可能。然而，

成本節省型廠商延遲進入國外生產時仍有營收，因此也沒有犧牲當期利潤之問題。因此，最後之結果

端視此兩種力量何者較大而定。

五、 實證分析

實證模型

　　有關實證分析方面，由於本研究目的在於探討匯率波動性與廠商海外直接投資時機之關聯性，我

們採用事件歷史研究法(event history analysis)。事件歷史研究法探討某個事件發生前一段時間可能出現

的事情。就本研究而言，廠商進入國際市場的時機可視為此事件發生的時機。 實證模型方面，本研究採用 Cox (1972, 1975)的比例風險模型(proportional hazard model)。假設樣本的風險率(hazard rate，$h(t)$)的函數如下：

$$h\left(t \mid \mathbf{x}_{i1}, \mathbf{x}_{2i}(t)\right) = h_0\left(t\right)\exp\left(\beta\mathbf{x}_{1i} + \alpha\mathbf{x}_{2i}(t)\right)$$

式中下標 t 代表時間，i 代表廠商；β 與 α 為參數向量； $\mathbf{x}_{1i}$ 為與時間無關之解釋變數向量而 $\mathbf{x}_{2i}(t)$ 則是與時間有關之解釋變數向量；$h_0(t)$ 為基準風險函數(baseline hazard function)。假設 $h_0(t)$ 不受 $\mathbf{x}_{1i}$ 以及 $\mathbf{x}_{2i}(t)$ 之影響。

假設我們有 n 個觀察值以及 K 個不同的進入市場時間點 。如果我們將樣本按照進入市場時間先後排序，則其概似函數， L_p，可以表示為

$$L_p = \prod_{i=1}^{n}\left[\frac{e^{\beta'\mathbf{x}_{1i} + \alpha'\mathbf{x}_{2i}(t)}}{\sum_{j \in \Omega(t_i)} e^{\beta'\mathbf{x}_{1j} + \alpha'\mathbf{x}_{2j}(t)}}\right]^{\delta_i} \tag{22}$$

式中 $\Omega(t_i)$ 代表風險集合(risk set)，亦為所有可能進入市場之廠商所形成之集合(詳見 Lawless (2003) or Box-Steffensmeier and Jones (2004))；δ_i 為一指標(indicator)，$\delta_i = 0$ 表示該樣本為右截斷(right-censored)。

本研究將根據前述理論架構建立廠商進入國際市場時機的實證模型如下：

$$\begin{aligned}
\log[h_t(/h_0\ t)] =\ & \gamma_1 HCP_i + \gamma_2 HCP_i \times MS_i + \gamma_3 HCP_i \times CS_i \\
& + \alpha_1 \sigma_t + \alpha_2 \sigma_t \times HCP_i \times MS_i + \alpha_3 \sigma_t \times HCP_i \times CS_i \\
& + \alpha_4 R_{t-1} + \alpha_5 R_{t-1} \times MS_i + \alpha_6 R_{t-1} \times CS_i + \alpha_7 WAGE_{it-1} + \alpha_8 PF_{it} \\
& + \beta_1 MKT_i + \beta_2 FUND_i + \beta_3 R\&D_i + \beta_4 SIZE_i + \beta_5 SIZE_i \times SIZE_i \\
& + \beta_6 KL_i + \beta_7 HT_i + \varepsilon_{it}
\end{aligned} \tag{23}$$

各符號說明如下：

MS：虛擬變數。尋求新市場 FDI 廠商為 1，其餘為 0。如果在中國子公司當地銷售比率超過 80%，則定義為尋求新市場 FDI 廠商，符合該定義的廠商共有 70 家。

CS：虛擬變數。尋求降低成本 FDI 廠商為 1，其餘為 0。若廠商屬傳統勞力密集型產業，則定義為降低成本 FDI 廠商，符合該定義的廠商共有 23 家。傳統勞力密集型產業包括食品飲料製造業、非金

屬製造業、紡織業、成衣服飾業、造紙及印刷業、皮革製品製造業、木竹籐柳製造業等。

HCP：虛擬變數。該廠商所處產業競爭激烈為 1，其餘為 0。依前述理論模型推論，競爭程度對 FDI 時點影響，依投資動機不同而異。本研究預期對尋求新市場廠商而言，競爭程度提高，FDI 時點會延後；但對降低成本廠商而言，競爭程度提高，FDI 時點將會提前。也就是說，本研究預期符號 γ_2 為負，γ_3 為正。

R_{t-1}：人民幣相對於新台幣實質匯率水準，以台灣與中國大陸之消費者物價指數平減，因為 FDI 決策需較長時間，故採用落後一期之匯率。本研究預期新台幣貶值對尋求新市場的 FDI 廠商有利，但對降低成本 FDI 廠商較不利。資料來源為中央銀行與台灣經濟新報資料庫(TEJ)。依前述理論模型推論，本研究預期 α_5 符號為正，α_6 為負。

σ_t：匯率波動度。本研究預期當匯率波動提高，對廠商 FDI 時點有負面影響。然而，對於尋求新市場的廠商而言，當競爭程度提高，匯率波動提高對 FDI 時點的影響是負面的。反之，對於降低成本 FDI 廠商而言，競爭程度提高，匯率波動提高，對 FDI 時點影響則是正面的。因此，本研究預期符號 α_2 為負，α_3 為正。

$WAGE_{t-1}$：落後一期之中國與台灣實質工資水準比率。資料來源為 TEJ 資料庫。

其他控制變數：母公司利潤率(PF)、母公司行銷密集度(MKT)、母公司研發密集度(R&D)、母公司銷貨收入(SIZE)、母公司資本勞動比(KL)。這些變數為 1987-1991 年之平均值，若該公司於 1987 年後設立，則為設立後 5 年之平均值，資料來源為 TEJ 資料庫。另外，資金來源(FUND)為虛擬變數，若主要資金來自母公司則設為 1，其餘為 0，資料來源為問卷資料。產業虛擬變數(HT)方面，若該廠商屬高科技產業則設為 1，其餘為 0，資料來源為經濟部發行之科技產業白皮書。

實證資料

本研究使用經濟部投資審議委員會 2003 年與 2004 年「大陸投資事業營運調查分析報告」之問卷資料為研究對象。該問卷的調查對象為在台灣地區經投資審議委員會核准之中國大陸地區投資事業，營運日期滿一年以上之全體廠商。該問卷調查的是台商大陸子公司前一年度之營運狀況，例如，2003 年之問卷調查乃是調查廠商 2002 年之營運狀況。2003 年問卷回收 877 家，回收率為 30.2%，2004 年問卷回收 872 家，回收率為 34.2%。本研究挑選回收問卷之中上市上櫃廠商共 198 家。進一步，根據台灣經濟新報資料庫統計，截至 2002 年底，全體上市上櫃公司共 1,145 家，其中在 2002 年之前赴中國大陸投資者有 672 家，也就是說，本研究樣本占已赴中國大陸投資之上市上櫃公司 29.5%，為避免

樣本偏誤的問題產生,因此再從未赴中國大陸投資廠商中隨機抽取得 139 家,故總樣本廠商數共計 337 家。

　　由於台灣政府 1987 年開放台灣民眾至中國大陸探親,故本研究設定由 1987 年起為廠商可至中國投資的起點。但若廠商於 1987 年後才設立,則改以其設立時間為起點,這樣的廠商共有 36 家。接下來,在問卷中填寫同業競爭激烈的廠商共有 111 家,占至中國大陸投資樣本的 56%。各變數之基本統計量請見表 4。

　　進一步,本研究使用條件變異數-GARCH 來估計匯率波動,估計期間為 1985:01~ 2002:12,在這段期間,我們使用 Augmented Dickey Fuller (ADF) 檢定,一階差分之 $\Delta \ln R_t$ 數列均拒絕單根(unit root)之虛無假設,GARCH 模型估計如下:

$$\Delta \ln R_t = \ln R_t - \ln R_{t-1} = \underset{(-1.24)}{-0.0031} + u_t , \qquad (25)$$

$$h_t = \underset{(18.00)}{0.0012} + \underset{(9.54)}{0.3389} u_{t-1}^2 - \underset{(-4.22)}{0.1049} h_{t-1} ,$$

其中, h_t 為條件變異數; u_t 為誤差項;括弧內為 t 統計量。因此,σ 為:

$$\sigma_t = \left[\frac{1}{T} \sum_{j=1}^{T} h_{t-j+1} \right]^{1/2}$$

實證結果

　　本研究實證結果列於表 5-2。(1)欄未考慮投資動機,(2)欄與(3)欄則考慮投資動機扮演的角色。由(1)欄中可看出,競爭程度提高使台商至中國大陸進行 FDI 的時點提前,且估計係數在 1%顯著水準下,顯著異於零。其次,匯率波動程度提高,對 FDI 時點影響為正,但未達統計上之顯著水準。在匯率水準值方面,對尋求新市場廠商而言,新台幣貶值使 FDI 時點提前;但對降低成本廠商而言,則為新台幣升值使 FDI 時點提前。然而,後者之估計係數未達統計上之顯著水準。

　　在控制變數方面,多數控制變數均和過去文獻之實證結果相似。例如,台灣工資水準相對於中國大陸提高對 FDI 時點有正面影響;獲利率較高、母公司提供資金、研發密集度較高對 FDI 時點有正面影響;規模愈大對 FDI 時點有正面影響,但當規模大到某個程度,規模提高對 FDI 時點則為負面影響;資本勞動比愈高,對 FDI 時點有負面影響;高科技廠商相對其他廠商,FDI 時點較晚。

　　第(2)欄與第(3)欄加入了投資動機的虛擬變數,實證結果均是顯著的。其中,對尋求新市場廠商而

言，競爭程度提高，FDI 時點相對其他廠商是延後的（γ_2 估計係數為-1.5548）；反之，對於降低成本廠商而言，競爭程度提高，FDI 時點相對其他廠商是提前的（γ_3 估計係數為 0.8853）。最後，對於競爭激烈之尋求新市場廠商，匯率波動提高會使其 FDI 時點延後（α_2 估計係數為-41.61）。但對競爭激烈之降低成本廠商，匯率波動提高會使其 FDI 時點提前（α_3 估計係數為 21.64）。這些實證結果和前節之理論推理是一致的。

六、 結論

國際間 FDI 流量短期間大幅波動之現象，傳統的 FDI 理論並無法提供合理的解釋。對於此現象，過去雖已出現許多理論與實證文獻探討匯率波動與 FDI 流量短期間出現大幅波動的關係，然而，其影響方向在文獻上的意見卻仍十分紛歧。本研究延續申請人過去之相關研究 (Chen et al. (2006), Lin et al. (2006), Lin and Chen (2008))，應用實質選擇權理論架構，進一步探討寡占市場下匯率波動與海外直接投資之關係，並以台商至大陸的投資資料驗證本文理論架構之解釋能力。

本研究理論分析顯示，在面臨匯率不確定情況下，若國外市場愈競爭，市場導向型廠商愈可能延遲進入該市場。相反的，對於成本導向型廠商而言，若其本國市場愈競爭，該廠商愈可能提早將生產活動移往低工資國家。本研究利用台商至中國大陸投資的調查資料進行實證研究，以檢驗本文理論架構之解釋能力。本研究採用事件歷史分析法(event history analysis)。本研究實證結果大致支持本研究之理論預期。

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表 1 獨占情況下成本節省型 FDI 匯率門檻值(R_C^M)模擬結果

σ \ k_2	1	1.25	1.50	1.75	2.0
0.05	0.8540	1.0676	1.2811	1.4947	1.7083
0.10	0.7304	0.9132	1.0961	1.2790	1.4621
0.15	0.6268	0.7841	0.9416	1.0993	1.2573
0.20	0.5449	0.6838	0.8238	0.9650	1.1075

表 2 雙占情況下成本節省型 FDI 匯率門檻值(R_C^D)模擬結果

σ \ k_2	1	1.25	1.50	1.75	2.0
0.05	0.8542	1.0678	1.2814	1.4951	1.7088
0.10	0.7310	0.9141	1.0974	1.2809	1.4645
0.15	0.6286	0.7869	0.9457	1.1049	1.2647
0.20	0.5536	0.6977	0.8445	0.9941	1.1466

表 3 雙占與獨占情況下成本節省型 FDI 匯率門檻值差異($R_C^D - R_C^M$)之模擬結果

σ \ k_2	1	1.25	1.50	1.75	2.0
0.05	0.0002	0.0002	0.0003	0.0004	0.0005
0.10	0.0006	0.0009	0.0013	0.0019	0.0024
0.15	0.0018	0.0028	0.0041	0.0056	0.0074
0.20	0.0087	0.0139	0.0207	0.0291	0.0391

表 4 基礎統計量

變數名稱	平均值	最小值	最大值	標準差
實質匯率(R)	3.6895	2.6263	4.5714	0.5576
實質相對工資率(WAGE)	0.0648	0.0454	0.1198	0.0218
行銷密集度(MKT, %)	6.6%	0.0%	67.8%	8.4%
廠商規模(SIZE, 十億新台幣)	1.9198	0.0069	138.29	8.5817
利潤率(PF, %)	5.1%	-178.0%	61.8%	19.2%
研發密集度(R&D, %)	0.8%	0.0%	33.1%	2.7%
資本勞動比(KL, 百萬新台幣/人)	2.5517	0.0545	49.00	3.8554

表 5 台商至中國大陸投資時點決定因素實證結果

Equations / Covariates	(1) coefficient	t-statistics	(2) coefficient	t-statistics	(3) coefficient	t-statistics
HCP (γ_1)	1.4957***	8.64	1.9207***	9.23	1.9282***	9.34
$HCP*MS$ (γ_2)			-1.5548***	-4.77		
$HCP*CS$ (γ_3)			0.8853*	1.99		
σ_t(α_1)	151.6	1.60	176.6*	1.86	184.4*	1.94
$\sigma_t*HCP*MS$ (α_2)					-41.61***	-4.87
$\sigma_t* HCP*CS$ (α_3)					21.64*	1.88
R_{t-1} (α_4)	-0.0905	-0.26	-0.2196	-0.61	-0.2188	-0.61
$R_{t-1}*MS$ (α_5)	0.1065**	2.42	0.3705***	5.46	0.3744***	5.57
$R_{t-1}*CS$ (α_6)	0.0191	0.30	-0.0824	-0.89	-0.0730	-0.80
$WAGE_{t-1}$ (α_7)	-0.4599***	-9.80	-0.4240***	-8.98	-0.4242***	-8.99
MKT_i (β_1)	-1.1854	-0.99	-1.1682	-0.94	-1.1267	-0.91
$PF_{i,t}$ (α_8)	0.0084***	3.62	0.0086***	3.65	0.0086***	3.67
$FUND_i$ (β_2)	0.3428*	1.83	0.2460	1.31	0.2463	1.31
$R\&D_i$ (β_3)	0.0979***	3.80	0.0913***	3.42	0.0908***	3.41
$SIZE_i$ (β_4)	0.1377**	2.51	0.1356**	2.50	0.1363**	2.51
$SIZE_i*SIZE_i$ (β_5)	-0.0041**	-2.49	-0.0038**	-2.32	-0.0038**	-2.33
KL_i (β_6)	-0.0920**	-2.53	-0.1032***	-2.72	-0.1025***	-2.71
HT_i (β_7)	-0.4972***	-2.93	-0.4510***	-2.65	-0.4487***	-2.63
Likelihood ratio test	273.5***		298.6***		299.1***	

Notes: superscripts ***, ** and * denote that the test statistics are significant at the 1%, 5% and 10% levels, respectively.

行政院國家科學委員會補助國內專家學者出席國際學術會議報告

報告人姓名	陳坤銘	服務機構及職稱	國立政治大學國際經營與貿易學系教授
會議　時間　地點	100 年 4 月 26 日~4 月 29 日 澳洲，布里斯班	本會核定補助文號	臺會綜二字第 0990041047 號
會議名稱	Western Economic Association International 9th Biennial Pacific Rim Conference		
發表論文題目	Exchange Rate Uncertainty, Strategic Interaction and the Timing of Foreign Direct Investment		

一、參加會議經過

　　報告人於 100 年 4 月 23 日晚間搭機前往澳洲，4 月 24 日中午抵達布里斯班。4 月 25 日前往開會地點 Queensland University of Technology 了解當地交通路線以及校園環境，並在附近地區參觀。4 月 26 日至 29 日參加研討會。4 月 29 日晚間搭機回國，4 月 30 日早上抵達台北。會議期間，報告人於 4 月 26 日早上參加開幕式，接者在當天第一場會議發表論文。此外，除了參加 4 月 27 日下午第一場會議評論一篇文章之外，也參加了許多場次的論文發表會。

二、與會心得

　　此次會議吸引世界各國許多經濟學家參加。有相當多學者來自澳洲、紐西蘭與美國。亞太地區的中國、日本、韓國與台灣等地出席的學者也相當多。研討會主題雖涵蓋經濟學各個領域，但以貿易、經濟發展以及環境議題居多。此一方面反映這些議題在亞太地區之重要性，另一方面，在此次會議議程中，有多個場次的論文發表，係為了向國際貿易領域之著名經濟學家 Murray Kemp 教授致敬的論文。在這些場次的會議中，Murray Kemp 以及 Ronald Jones 兩位高齡的著名經濟學家大都沒缺席，而且專心聆聽演講，其敬業精神令人欽佩。

　　此次會議的另一項特色就是有多場有關水資源問題的研討論文。最近全球各地許多城市飽受洪水侵襲，但同時卻有許多城市(包括臺灣)鬧水荒。水資源的管理看來是當前各國面臨的一項重要經濟課題。

三、考察參觀活動(無是項活動者省略)
　　無。

四、建議
　　無。

五、攜回資料名稱及內容
　　本次會議議程。

六、其他

無。

無。

Exchange Rate Uncertainty, Strategic Interaction and the Timing of Foreign Direct Investment[*]

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Abstract

This paper examines the relationship between exchange rate uncertainty and the timing of foreign direct investment empirically. The focus of this paper is on exploring if the relationship between exchange rate movements and the timing of foreign direct investment is related to the market structure and strategic interaction of investing firms. A recent survey dataset for Taiwanese firms' investment into China is employed. Based on event history modeling, our empirical results reveal that the more competitive a market is, the earlier a firm will enter the market. This result supports the previous theoretical and empirical findings that market competition might diminish the option value of entering a new market, thus reducing the delay in the timing of foreign entry. Our results also demonstrate that there is weak evidence about the possible nonlinear relation between exchange rate volatility and the timing of foreign direct investment, which hinges on market structure.

Keywords: Exchange rate uncertainty, foreign direct investment, real options, game theory, event history modeling

JEL: F21, F31, G13, C41

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1. Introduction

The flows of foreign direct investment (FDI) have been increasing dramatically in many countries since the 1970s. However, the levels of FDI flows in those countries tend to fluctuate sharply over time - a phenomenon that cannot be explained satisfactorily by traditional theories. For instance, the rise in FDI is regarded by OLI paradigm proposed by Dunning (1977) as being motivated by ownership, location or internalization advantages. While those advantages may account for the increase on FDI levels in the long run, they offer little explanation for their substantial short-run movements (Blonigen (1977)).

Ever since the breakdown of the Bretton Woods system in 1973, the exchange rates of many countries have also been fluctuating considerably during the same period. A large body of recent research deals with the possible linkages between exchange rate movements and foreign direct investment. While many theoretical and empirical studies indicate that exchange rate movements have had a significant effect on FDI movements, their impact is found to be heterogeneous across countries and types of investment, and varies over time.

Regarding the relationship between exchange rate level and FDI, some studies focus on the impact of exchange rate movements on acquisition costs of foreign assets. For instance, Froot and Stein (1991) and Blonigen (1997) indicate that, in an imperfect capital market, the depreciation of a country's currency might induce foreign firm to take over its domestic firms. Some other studies emphasize the impact of exchange rate movements on the profitability of foreign production. Cushman (1985) develops a general model to show that the depreciation of a foreign country's currency might reduce the costs of foreign production in terms of the currency of the home country. In other words, the depreciation of a country's currency might induce international capital inflows, which is supported by many empirical studies, such as Kohlhagen (1977)、Cushman (1985)、Froot and Stein (1991)、Campa (1993)、Klein and Rosengren (1994)、Campa (1994)、Dewenter (1995)、Kogut and Chang (1996)、Blonigen (1997)、Bell and Campa (1997)、Tomlin (2000) andKiyota and Urata (2004).

In contrast, Campa (1993) demonstrates that the appreciation of a host country's currency might increase the revenue of foreign sales in terms of the currency of the home country and thus the appreciation of a host country's currency might attract international capital inflows. Therefore, the relationship between exchange rate movements and FDI tends to hinge on the investing motives of the firms. Specifically, for a cost-oriented firm, the depreciation of a host country's currency will stimulate FDI, while for a market-oriented firm the depreciation of a host country's currency will deter FDI. These relationships are developed in a real-options model by Chen et al. (2006), and the empirical results from their study on the determinants of Taiwanese firms into mainland China are consistent with the perdition of the theory.

Regarding the relationship between exchange rate volatility and FDI, Previous theoretical studies demonstrate that exchange rate volatility affects FDI activity through two main channels: firms' attitude towards risk and the option value of investment flexibility. It has been suggested that, for a risk-averse firm, higher volatility lowers the certainty equivalent value of the investing firm (Wihlborg (1978)). Hence, FDI decreases as exchange rate volatility increases. By contrast, Itagaki (1981), Cushman (1985), and Goldberg and Kolstad (1995) illustrate the importance of considering the post-FDI changes in the exposure of a firm's profits to exchange rate risk. If the investing firm can choose to serve foreign markets via exports or FDI, then an increase in exchange rate volatility might lead the firm to substitute FDI for exports, since FDI activity reduces the exposure of its profits to exchange rate risk.

The studies mentioned above are based on the traditional investment theory which assumes that an investment decision is to be taken now or never. They neglect the option of delaying an investment. Beginning in the 1980s a real options theory has been developed to analyze investment behavior. Under the assumptions of uncertainty and irreversible investment, the real options theory emphasizes the option value of the flexibility that a firm has in possibly delaying an investment decision in order to obtain more information about the

future. Dixit (1989a,b) indicates that the waiting value increases as the uncertainty rises even for a risk-neutral firm. Hence, an increase in exchange rate uncertainty will defer the FDI activity of the firm. Using Dixit-Pindyck's (1994) model, however, Darby et al. (1999) illustrate that, for a risk-averse firm, the impact of exchange rate uncertainty on the timing of FDI is ambiguous.

A limitation of Dixit-Pindyck (1994) and Darby et al. (1999) is their treatment of firms' risk aversion. The risk aversion is incorporated into their model through a risk premium added to the private discount rate. This approach does not consider an important feature in the traditional theory that allows the exposure of the investing firm's profits to exchange rate risk to vary with different types of FDI.[1] Lin et al. (2010) develop an integrated framework of FDI under uncertainty in which a firm's attitude towards risk and the option value of investment flexibility are incorporated simultaneously. It is shown that the relationship between exchange rate uncertainty and FDI varies with the extent of the exposure to exchange rate risk which is determined by investing motives. They find that exchange rate volatility tends to delay the FDI activity of a market-seeking firm, but it may accelerate the FDI activity of an export-substituting firm.

One limitation in Chen et al. (2010) is that they do not consider strategic interaction among investing firms in their theoretical models. Since multinational firms tend to operate under an imperfect competition environment, those firms usually have strategic interactions with their competitors. The strategic interaction among investing firms might diminish the option values of those firms and this affect their invest decision. Several recent studies has tried to incorporate game theory into real option models to investigate investment decision in imperfect competitive markets, such as Grenadier (1996, 2002), Kutatilaka and Perotti (1998), Lambrecht and Perraudin (2003), Huisman and Kort (2004), Smit and Trigeorgis (2004) and Thijssen et al. (2006).

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[1] Although Chen et al. (2006) consider different motives of firms, the risk neutrality assumption in their model makes their results same as Dixit's analysis. The "exposure problem" also has not been discussed in their framework.

The purpose of this paper is to extend the empirical study of Lin et al. (2010) by incorporating market structure into their model in order to test the validity of the aforementioned game-theoretical option models. Firm-level data on Taiwanese investment into China will be used. The remainder of the paper proceeds as follows. Section 2 discusses our empirical methodology and model. Section 3 presents the data and empirical results. Brief concluding remarks are given in the final section.

2. Empirical methodology and model

2.1 Empirical methodology

This paper focuses on the analysis of how exchange rate volatility affects the timing of foreign entry. One widely applied method to examine the issue about timing is to conduct event history analysis. Event history analysis investigates what may happen over a time span before a certain event occurs. In our case, the event is a firm's entry into a foreign market. The waiting time for a firm to enter a foreign market can be treated as the survival time of the firm, and the timing of entry can be treated as the timing of event occurrence.

We adopts Cox's proportional hazard model (Cox (1972, 1975)), which imposes the condition of "hazard proportionality" and thus makes the analysis of covariates possible without specifying a hazard function itself. The model treats each sample's hazard rate $h_i(t)$ as a function of a number of covariates and conceptually defines the baseline hazard $h_0(t)$ that is not influenced by any covariate. We define the hazard rate as the rate at which a firm invests in a foreign country by time t given that the firm has stayed in the home country until t. Thus, the hazard function $h(t \mid x_i)$ can be expressed as

$$h\left(t \mid x_{i1}, x_{2i}(t)\right) = h_0\left(t\right) \exp\left(\beta x_{1i} + \alpha x_{2i}(t)\right) \tag{1}$$

where $h_0(t)$ is the baseline hazard function; β and α are coefficients; x_{1i} and $x_{2i}(t)$ are time-independent covariates and time varying covariates, respectively; subscript i

represents i^{th} firm; subscript t represents time.

Suppose that we have a dataset with n observations and K distinct entry times. If we sort the sample by the order of entry times, then the partial likelihood function L_p becomes

$$L_p = \prod_{i=1}^{n} \left[\frac{e^{\beta' x_{1i} + \alpha' x_{2i}(t)}}{\sum_{j \in \Omega(t_i)} e^{\beta' x_{1j} + \alpha' x_{2j}(t)}} \right]^{\delta_i} \tag{2}$$

where $\Omega(t_i)$ is the "risk set", which represents the number of firms that are at risk of experiencing an entry at time t_i; δ_i is an indicator, whose value is 0 if the sample is right-censored, and 1 if the sample is uncensored.[2] The positive (negative) estimators $\hat{\beta}$ and $\hat{\alpha}$ represent the variables have positive (negative) impact on the occurrence of the event.[3]

2.2 Empirical model

Based on the theoretical framework of Lin et al. (2010) and Kulatilaka and Perotti (1998), the following empirical model is established:

$$
\begin{aligned}
\log\left[h(t)/h_0(t)\right] = {} & \gamma_1 HCP_i + \gamma_2 HCP_i \times \sigma_t \\
& + \alpha_1 \sigma_t + \alpha_2 \sigma_t \times MS + \alpha_3 \sigma_t \times ES + \alpha_4 R_{t-1} + \alpha_5 R_{t-1} \times MS + \alpha_6 R_{t-1} \times ES \\
& + \alpha_7 \mu_t + \alpha_8 \mu_t \times MS + \alpha_9 \mu_t \times ES + \alpha_{10} WAGE_{t-1} + \alpha_{11} PF_{i,t} + \beta_1 MKT_i \\
& + \beta_2 FUND_i + \beta_3 R\&D_i + \beta_4 SIZE_i + \beta_5 SIZE_i * SIZE_i + \beta_6 KL_i + \beta_7 HT_i
\end{aligned} \tag{3}
$$

Here, subscript i represents i^{th} firm. Since Taiwanese firms were not permitted to invest in China until 1987, the dependent variable is defined as the duration from 1987 to the year when the firm invested there. As for independent variables, in addition to the exchange rate variables and industry dummies to take into account investing motives and market competition condition, some are added as explanatory variables in order to control for some important factors that are not considered in the theoretical framework of Lin et al. (2010). The definition of these variables and their expected signs are discussed as follows (see also Table

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[2] If firms do not invest in the sample period but may invest in the future, then the sample is referred to as a right-censored sample.

[3] See Lawless (2003) or Box-Steffensmeier and Jones (2004) for further discussion.

1)[4]:

σ_t: exchange rate volatility. According to Lin et al. (2010), while exchange rate uncertainty tends to deter the FDI activity of market-seeking firms, its impact on export-substituting firms is ambiguous. To test the validity of the theory, we define two dummy variables: 1. *MS*, whose value is 1 for market-seeking firms; and 0 otherwise; 2. *ES*, whose value is 1 for export-substituting firms; and 0 otherwise. Therefore, the expected sign of $(\alpha_1 + \alpha_2)$ is negative, and that of $(\alpha_1 + \alpha_3)$ is positive (negative) for those export-substituting firms with high (low) risk-aversion.

HCP_i: market competition condition. According to Kulatilaka and Perotti (1996), in a highly competitive market, strategic interaction among investing firms might diminish the option values of foreign market entry and thus induce earlier entry. We define a dummy variable, HCP_i, whose value is 1 highly competitive industries,; and 0 otherwise. Therefore, the expected sign of HCP_i is positive. However, Kulatilaka and Perotti (1996) also indicate that strategic investment under uncertainty might cause strong preemptive effects due to the deterrence or commitment effect. If these effects outweigh its downside risks under certain market conditions, uncertainty may favorable to investment. In order to test the possible non-linearity between uncertainty and FDI, we include a multiplicative term, $HCP_i \times \sigma_t$ in the regression equation.

R_{t-1}: one-period lagged real exchange rate of NTD versus RMB, in which nominal exchange rates are deflated with prices of the respective countries to control for the possible movements in prices following the change in nominal exchange rates. Since it is time-consuming to make an FDI decision, the final decision might be more related to the previous exchange rate level, and thus the one-period lagged values are used. According to Lin et al. (2010), an appreciation of the host country's currency increases market-seeking

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[4] See Lin et al. (2010) and Kulatilaka and Perotti (1998) for detailed discussion about the expected signs of the explanatory variables.

firms' profits in terms of the home currency and decreases those of export-substituting firms. Therefore, the expected sign of $(\alpha_4 + \alpha_5)$ is positive, and that of $(\alpha_4 + \alpha_6)$ is negative.

μ_t: trend of exchange rate. According to Lin et al. (2010), for firms with very low risk-aversion, an increase in μ_t accelerates the FDI activity of market-seeking firms and delays the FDI activity of export-substituting firms. By contrast, for firms with very high risk-aversion, an increase in μ_t delays the FDI activity of market-seeking firms and accelerates the FDI activity of export-substituting firms. Therefore, if the risk-aversion of the firms is very low, then the expected sign of $(\alpha_7 + \alpha_8)$ is positive and that of $(\alpha_7 + \alpha_9)$ is negative. If the risk-aversion of the firms is very high, then the expected sign of $(\alpha_7 + \alpha_8)$ is negative and that of $(\alpha_7 + \alpha_9)$ is positive.

$WAGE_{t-1}$: wage rate of the foreign country relative to that of the home country. The ratio of China's one-period lagged real wage rate over Taiwan's one-period lagged real wage rate is used. According to Lin et al. (2010), the expected sign of the coefficient for export-substituting firms is negative, and that for market-seeking firms is ambiguous.

MKT_i: marketing intensity, a proxy variable of the sunk costs. According to Lin et al. (2010), the expected sign of its coefficient is negative.

As for the control variables, based on the previous studies,[5] the following variables are used: profits (*PF*), source of funds (*FUND*), R&D intensity (*R&D*), firm's size (*SIZE*), capital-labor ratio (*KL*), and high-tech industry dummy (*HT*). According to the liquidity hypothesis, since the cost of internal funds is viewed by investors to be lower than the costs of external funds,[6] there is a positive relation between a firm's internal cash flows and its investment abroad. The profit rate ($PF_{i,t}$) is used as a proxy of a firm's internal capital, the expected sign of its coefficient is positive. In addition, if the parent company of an investing firm can provide necessary funds, the firm is more unlikely to face financial constraint, and

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[5] See, for instance, Agarwal (1980), and Blonigen (2005) for literature surveys.
[6] This may be attributed to imperfections in the financial and capital markets.

thus it will be more likely to enter foreign markets earlier. We create a dummy variable $FUND_i$, whose value is 1 if the parent company provides the necessary funds and 0 otherwise. We expect the sign of its coefficient to be positive.

The internalization hypothesis indicates that due to high transaction costs of intangible assets, an investing firm with superior knowledge and management expertise will choose to set up a subsidiary rather than simply licensing a foreign firm to produce the product. R&D intensity variable ($R\&D_i$) is used as a measure of the investing firm's intangible assets. The expected sign of this variable is positive.[7] In addition, Horst (1972) argues that a firm's success at home will be highly correlated with its success abroad, since both are the result of the same technological and marketing capabilities. Hence, lager firms are more likely to invest abroad than smaller firms. The sales of a firm ($SIZE_i$) are used to measure its size and its expected sign is positive. However, very large firms suffer more from institutional constraints imposed by Taiwan's government which discourage its firms to invest into China due to hostility across the Taiwan Strait. Thus, the effect of the firm's size should have an inverse U-shape. That is, the expected sign of the coefficient of $SIZE_i$ is positive but that of $SIZE_i*SIZE_i$ is negative.

It has been suggested that one of the important driving forces behind FDI is to seek a production location with low labor cost (Kojima (1973)). Since wage rates in China are significantly lower than those in Taiwan, a labor-intensive firm will benefit more from investing in China. As a result, we expect that a firm's capital-labor ratio (KL_i) will be negatively related to its FDI activity. Finally, according to the OLI paradigm proposed by Dunning (1977), one of the three necessary conditions for a firm to undertake foreign direct investment is ownership advantage. Since Taiwan, relative to China, has a comparative advantage in high-tech industries (particularly the IT industries), these industries are more likely to expand their markets through FDI into China. However, the policy of "to take root in Taiwan" restricts high-tech industries' investment timing, types and amount in China. We

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[7] See also Blonigen (2005).

define a high-tech dummy variable HT_i which takes a value 1 for the high technology industries, and 0 otherwise. The expected sign of its coefficient is ambiguous.

3. The data and empirical results

3.1 The data

The data on the dependent variable used in this paper are compiled from the "*Survey on Taiwanese Firms in Mainland China*", published by Taiwan's Investment Commission, Ministry of Economic Affairs (MOEAIC) in 2003 and 2004.[8] It investigated all firms which invested in China for more than one year. This paper chooses 198 listed companies on Taiwan Stock Market from the sample of the survey. Taiwan Economic Journal (TEJ) database indicates that among 1,145 available listed companies on Taiwan's Stock Market, 672 companies invested in China before 2002. Thus, our sample firms account for 29.5% of all Taiwanese firms investing into China. To avoid the problem of sample selection bias, we use a uniform distribution to randomly choose 139 companies from those listed firms that had not invested in China before 2002. Because these companies might have invested in China after 2002, they are treated as right-censored samples. Therefore, our final sample consists of 337 firms.

Taiwan government prohibited domestic firms from having any trade or investment relationship with China before 1987. These barriers in trade or investment were removed or lowered starting in 1987. We therefore analyze the timing of Taiwanese firms' entry into China during the period from 1987 to 2002. In other words, Taiwanese firms enter the risk set of entry from 1987, but there are 36 firms that were set up after 1987, and thus the risk set of these firms begins from the years of their establishment. The entry years are obtained from the government's official survey data. The number of entries has increased considerably from 1993, reaching a peak in 2000.

As mentioned above, in order to control for diversity in investing motives, two dummy

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[8] See Appendix 2 for the sources of data on the explanatory variables.

variables *MS* and *ES* are created. We separate the sample firms into three groups, according to their pre-FDI export ratios: market-seeking firms (firms with zero exports), export-substituting firms (firms with export ratios more than 60%), and other firms. The definition of these two variables are accordingly: (1) market-seeking firm dummy, *MS*, taking a value 1 for a firm with zero exports if the sales of the firm's subsidiary account for more than 80% of its total sale in China, and 0 otherwise; (2) export-substituting firm dummy, *ES*, taking a value 1 for a firm with a export ratio greater than 60%, and 0 otherwise. According to these criteria, we have 23 market-seeking firms and 22 export-substituting firms in our sample.[9]

Table 2 summarizes the distribution of the sample firms by industry. The electronics and electric industries account for significant shares of all sample firms as well as investing firms. Both shares are around 40%. Furthermore, most of export-substituting firms belong to electronic and electric appliances industries, but by contrast, most of market-seeking firms belong to services and food & beverage industries. It is worth noting that the export ratios of the sample firms scatter widely with a standard deviation of 30.8%, which allows us to separate our sample firms into three groups so as to test the validity of our theory. Summary statistics of these variables are summarized in Table 3.

Regarding the measures of trend and volatility of the real exchange rate, we use a GARCH process to estimate the conditional mean and variance of the real exchange rate as the other measures of its trend and volatility, since some studies such as Pozo (1992) note that exchange rates often exhibit persistent behavior. The monthly sample data covering the period 1985:01~ 2002:12 are used. The monthly nominal exchange rates are compiled from the Central Bank of China (Taiwan) and CPI are compiled from the database of TEJ. Augmented Dickey Fuller (ADF) test is adopted to test for unit root in the first-order differences of the real exchange rate $\Delta \ln R_t$. The null hypothesis of unit root is rejected.

The GARCH model is subsequently estimated as shown in the following equation:

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[9] To test the robustness of our empirical results, we have relaxed our criteria about investing firms by including those firms with sales of its subsidiary accounting for more than 50% of the subsidiary's total sales in China. We find that the empirical results are basically the same.

$$\Delta \ln R_t = \ln R_t - \ln R_{t-1} = \underset{(-1.24)}{-0.0031} + u_t,$$

$$h_t = \underset{(18.00)}{0.0012} + \underset{(9.54)}{0.3389} u_{t-1}^2 - \underset{(-4.22)}{0.1049} h_{t-1},$$

where h_t is the conditional variance; u_t is error terms; the conditional mean; the figures in the parentheses are t statistics. Therefore, the conditional mean and variance of the real exchange rate, $\mu_{GARCH,t}$ and $\sigma_{GARCH,t}$, are calculated accordingly as follows:

$$\sigma_{GARCH,t} = \left[\frac{1}{T} \sum_{j=1}^{T} h_{t-j+1} \right]^{1/2}, \mu_{GARCH,t} = \frac{1}{T} \sum_{j=1}^{T} u_{t-j+1}.$$

3.2 Empirical results

Table 4 summarizes the estimation results of our empirical model.[10] The results in the first column are reproduced from Lin et al. (2010). We use this regression equation as our benchmark case, in which the dummy variable HCP_i that controls market competition condition is not considered. The dummy variable HCP_i is added in column 2; while both HCP_i and $HCP_i \times \sigma_t$ are added in column 3.

The comparison between the first column and the other two columns reveals that the main results of Lin et al. (2010) are invariant after the incorporation of market competition condition into the model. Specifically, the effect of real exchange rate volatility on market-seeking FDI is significantly negative, while its effect on export-substituting FDI, is significantly positive. As for the effect of real exchange rate, whereas its effect on market-seeking FDI, is significantly positive, its effect on export-substituting FDI is significantly negative. It is also worth noting that, in contrast, the coefficients of firm's size (SIZEi), source of funds (FUNDi), profit (PFi,t), and R&D intensive (R&Di) are significantly positive. This indicates that Taiwanese firms that have a larger size, are funding from their parent companies, have higher profit rates, or have a higher R&D intensity tend to have a higher incentive to invest into China earlier. Furthermore, the coefficient of SIZEi * SIZEi is

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[10] The estimation in Table 4 uses the method of Efron.

significantly negative, which suggests that the entry of very large Taiwanese firms into China might be deterred due to Taiwan government's policy. In addition, the coefficient of KLi is significantly negative and the coefficient of HTi is negative but not statistically significant, indicating that investing firms in labor intensive or traditional industries are more likely to invest into China.

The empirical results in columns 2 and 3 also indicate that the coefficient of HCP_i is positive and statistically significant. These suggest that the more competitive a foreign market is, the earlier an investing firm invest into that market. This result supports the previous theoretical and empirical findings that market competition might diminish the option value of entering a new market, thus reducing the delay in the timing of foreign entry. In addition, the coefficient of $HCP_i \times \sigma_t$ is negative but statistically insignificant. It implies that there is weak evidence about the nonlinear relationship between market competition and the timing of foreign entry, which hinges on market structure. This result is consistent with the theory developed by by Kulatilaka and Perotti. (1998).

4. Conclusion

This paper empirically examines how exchange rate uncertainty influences the timing of FDI. Firm-level data on Taiwanese firm's outward FDI into China over the period between 1987 and 2002 are employed. Our empirical findings indicate that real exchange rate movements have had a significant impact on Taiwanese firms' investment into China. In addition, our empirical results reveal that the more competitive a market is, the earlier a firm will enter the market. This result supports the previous theoretical and empirical findings that market competition might diminish the option value of entering a new market, thus reducing the delay in the timing of foreign entry. Our results also demonstrate that there is weak evidence about the nonlinear relation between market competition condition and the timing of foreign direct investment might be nonlinear.

Our empirical results have several implications. First, they demonstrate that the movements of real exchange rates have played an important role in the considerable fluctuation of foreign direct investment over time, which has important implications for exchange rate policy. Second, the relationship between exchange rate movements and FDI hinges on the investing motives. It is essential to incorporate this factor into empirical model when investigating this issue. Third, real option theory seems provide a valuable analytical framework in examining investment decision. However, the usefulness of real option models diminishes with market competition condition. When a firm faces a highly competitive market, since the option value of entry is small, the investment decision based on traditional investment theory might be as valid as that formulated under a real option model.

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Table 1 Definition of the explanatory variables and their expected signs

Explanatory Variable	Definition	Expected sign	
		MS	ES
Exchange rate volatility	σ_t , Volatility of the real exchange rate	-	?
Exchange rate trend	μ_t , Trend of the real exchange rate	?	?
Exchange rate	R_{t-1} , One-period lagged real exchange rate of Taiwan's currency against RMB	+	-
Relative wage rate	$WAGE_{t-1}$, Ratio of China's one-period lagged real wage rate over Taiwan's one-period lagged real wage rate	?	-
Marketing intensity	MKT_i , Average ratio of marketing expenditures to total sales of the firm over the period 1987-1991[1] (%)	-	-
Control variables			
Profit rate	$PF_{i,t}$, Average ratio of profits to total sales of the firm over the period 1987-1991[1] (%)	+	+
Source of funds	$FUND_i$, Dummy variable, whose value is 1 for the firms that are provided with funds from parent; 0, otherwise	+	+
R&D intensity	$R\&D_i$, Average ratio of R&D expenditures to total sales of the firm over the period 1987-1991[1] (%)	+	+
Firm size	$SIZE_i$, Average sales of the firm over the period 1987-1991[1] (billion NTD)	+	+
Squares of firm size	$SIZE_i * SIZE_i$	-	-
Capital-labor ratio	KL_i , Average ratio of total fixed assets to the number of employees of the firm over the period 1987-1991[1] (million NTD per worker)	-	-
High-technology industry	HT_i , Dummy variable, whose value is 1 for the electronics & electric appliances, chemicals and precision instruments industries; 0 otherwise.	?	?
Market competition condition	HCP_i , Dummy variable, whose value is 1 for highly competitive industries; 0 otherwise.	+	+

Sources: Lin, et al. (2010) and Kutatilaka and Perotti (1998)..

Notes: 1. If a firm was established after 1987, then the ratios computed are based on the data for the five years beginning from its establishment year.

2. (+) represents early investment; (-) represents delaying investment; (?) represents undetermined.

3. MS represents market-seeking FDI; ES represents export-substituting FDI.

Table 2 Distribution of sample firms by industry

Industry	Subtotal	Investing firms	Market-seeking firms	Export-substituting firms
Food & Beverage	11	7	7	0
Chemicals and Plastic Products	27	19	1	2
Electronic & Electric Appliances	153	80	1	15
Other Manufacturing	76	46	5	5
Services	54	38	8	0
Others	16	8	1	0
Total	337	198	23	22

Note: The industry of an investing firm is the industry which its parent company belongs to.

Table 3 Summary statistics

Variable	Mean	Min	Max	Standard deviation
Real exchange rate	3.6895	2.6263	4.5714	0.5576
Real relative wage rate	0.0648	0.0454	0.1198	0.0218
Marketing intensity (%)	6.6%	0.0%	67.8%	8.4%
Firm size (billion NTD)	1.9198	0.0069	138.29	8.5817
Profit rate (%)	5.1%	-178.0%	61.8%	19.2%
R&D intensity (%)	0.8%	0.0%	33.1%	2.7%
Capital-labor ratio (million NTD per worker)	2.5517	0.0545	49.00	3.8554
Export ratio of export-substituting firms (%)	83.5%	64.7%	100.0%	12.2%

Table 4 The estimation of the determinants of the timing of FDI

Covariates \ Equations	(1)		(2)		(3)	
$HCP\,(\gamma_1)$			0.9593^a	(8.36)	1.5572^a	(2.08)
$HCP *\sigma_t\,(\gamma_2)$					-16.59	(-0.95)
$\sigma_t(\alpha_1)$	27.29^c	(1.89)	28.64^c	(1.84)	35.92	(1.56)
$MS *\sigma_t\,(\alpha_2)$	-49.59^a	(-5.50)	-45.38^a	(-5.80)	-44.27^a	(-6.22)
$ES *\sigma_t\,(\alpha_3)$	5.8598	(0.44)	-1.7153	(-0.19)	1.4860	(0.24)
$R_{t-1}\,(\alpha_4)$	-0.2012	(-1.44)	-0.2646	(-1.42)	-0.2709	(-1.34)
$MS *R_{t-1}\,(\alpha_5)$	0.6676^a	(6.00)	0.5571^a	(4.68)	0.5439^a	(4.95)
$ES *R_{t-1}\,(\alpha_6)$	-0.1071^c	(-1.88)	-0.1427^a	(-4.13)	-0.1567^a	(-8.46)
$\mu_t\,(\alpha_7)$	-9.9318	(-0.45)	-21.57	(-0.88)	-23.21	(-1.03)
$MS *\mu_t\,(\alpha_8)$	92.91^a	(4.87)	85.97^a	(4.14)	85.40^a	(3.93)
$ES *\mu_t\,(\alpha_9)$	53.92^a	(8.10)	42.19^a	(4.27)	36.39^a	(3.59)
$WAGE_{t-1}\,(\alpha_{10})$	-112.02^a	(-6.91)	-0.4580^a	(-6.67)	-0.4643^a	(-5.95)
$MKT_i\,(\beta_1)$	-3.3328^a	(-2.86)	-2.8862^a	(-2.25)	-2.8991^a	(-2.17)
$PF_{i,t}\,(\alpha_{11})$	0.0107^a	(6.44)	0.0102^a	(8.16)	0.0100^a	(7.12)
$FUND_i\,(\beta_2)$	0.7545^a	(4.06)	0.5711^a	(4.85)	0.5767^a	(5.21)
$R\&D_i\,(\beta_3)$	0.0991	(1.59)	0.1106	(1.67)	0.1091	(1.70)
$SIZE_i\,(\beta_4)$	0.0935^c	(1.97)	0.0691	(1.58)	0.0716^c	(1.77)
$SIZE_i*SIZE_i\,(\beta_5)$	-0.0032^b	(-2.45)	-0.0023^b	(-1.97)	-0.0024^b	(-2..19)
$KL_i\,(\beta_6)$	-0.0924^a	(-5.11)	-0.0943^a	(-5.60)	-0.0935^a	(-5.35)
$HT_i\,(\beta_7)$	-0.6644	(-0.91)	-0.6170	(-0.92)	-0.6185	(-0.92)
$\gamma_2 + \alpha_1$					19.33^a	(2.61)
Likelihood ratio test	232.79^a		260.13^a		232.79^a	

Notes: The t-statistics are in parentheses; superscripts a, b and c denote that the test statistics are significant at the 1%, 5% and 10% levels, respectively.

Key for Participating Organizations

AARES ...... Australian Agricultural and Resource Economics Society

NAASE ...... North American Association of Sports Economists

Sessions without an organizer listed are volunteer sessions assembled by a Screening Committee, Session Consultants, and the WEAI Executive Office from individual volunteer submissions.

Tuesday, April 26

Registration and Morning Coffee   8:30–9:15 a.m.

Welcome and Conference Opening   9:15–9:45 a.m.

[1]   10:00–11:45 a.m.
SESSIONS IN HONOUR OF MURRAY KEMP: HISTORY OF ECONOMIC THOUGHT
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Satya Paul, University of Western Sydney
Papers: Craig F. Freedman, Macquarie University
   The Chicago School and the Betrayal of the Classical Liberal Tradition
John Lodewijks, University of Western Sydney
   Economists from the Antipodes: What Can Oral History Tell Us?
Binh Tran-Nam, University of New South Wales
   Gossen and Time Allocation Theory
Discussants: to be announced

[2]   10:00–11:45 a.m.
INNOVATION IN TEACHING UNDERGRADUATE ECONOMICS
Organizer: Michael P. Cameron, University of Waikato
Chairs: Michael P. Cameron, University of Waikato, and Steven Lim, University of Waikato
Papers: Michael P. Cameron, University of Waikato, and Steven Lim, University of Waikato
   An Innovative Multimedia Assessment for Freshman Economics
Tommy Tang, Queensland University of Technology, and Tim Robinson, Queensland University of Technology
   Conceptual Change in Economics Education—The Role of Language
Paul McKeowan, Lincoln University, and Gillis Maclean, Lincoln University
   Online Quizzes—Are They Worth the Effort?
Discussants: Susan Olivia, Monash University
Steven Lim, University of Waikato
John K. Gibson, University of Waikato

[3]   10:00–11:45 a.m.
FOREIGN DIRECT INVESTMENT
Chair: Anil V. Mishra, University of Western Sydney
Papers: Kun-Ming Chen, National Chengchi University, Chia-Ching Lin, National Taichung Institute of Technology, and Wei-jen Wen, National Chengchi University
   Exchange Rate Uncertainty, Strategic Interaction and the Timing of Foreign Direct Investment
Quan V. Le, Seattle University, Bonnie Buchanan, Seattle University, David Mummy, Seattle University, and Meenakshi Rishi, Seattle University
   Software Piracy and Foreign Direct Investment

Anil V. Mishra, University of Western Sydney, and Ronald A. Ratti, University of Western Sydney
   Foreign Investment and Taxation
Discussants: Sizhong Sun, James Cook University
Quan V. Le, Seattle University
Kun-Ming Chen, National Chengchi University

[4]   10:00–11:45 a.m.
Allied Organization Session
SPORTS ECONOMICS I—GENDER AND PARTICIPATION IN SPORTS — (NAASE)
Organizer: Victor Matheson, College of the Holy Cross
Chair: Benno Torgler, Queensland University of Technology
Papers: Victor Matheson, College of the Holy Cross, and Robert Baumann, College of the Holy Cross
   Gender Differences in Competitive Balance in Intercollegiate Sports
Brad R. Humphreys, University of Alberta, Katerina Maresova, University of Economics, Prague, and Jane E. Ruseski, University of Alberta
   National Sport Policy, Sporting Success and Individual Sport Participation: An International Comparison
Discussants: Joao Ramos, Queensland University of Technology
Brad R. Humphreys, University of Alberta
Marco Piatti, Queensland University of Technology

[5]   10:00–11:45 a.m.
PRODUCTIVITY, GROWTH, AND MIGRATION
Chair: Petr Hanel, University of Sherbrooke
Papers: Neil Dias Karunaratne, University of Queensland
   Total Factor Productivity and FDI Flows—A Panel Data Analysis of OECD Countries (1983-2007)
Yui Nakamura, Fukuoka University
   A Self-Selection System for Poverty Alleviation and Economic Growth
Jaai Parasnis, Monash University, Dietrich K. Fausten, Monash University, and Asadul Islam, Monash University
   Immigrant and Native Saving Behavior in Australia
Paul A. Rivera, California State University, Channel Islands, and Patricia Delaney, St. Michael's College
   Migration and Remittances as Driving Forces in Tonga
Discussants: Paul A. Rivera, California State University, Channel Islands
Donald G. Freeman, Sam Houston State University
Yui Nakamura, Fukuoka University
Jaai Parasnis, Monash University

[6]   10:00–11:45 a.m.
Contemporary Economic Policy Session
FISHERIES, FORESTS, AND SPECIES SURVIVAL
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: John Williams, Natural Resources Commission of New South Wales
Papers: Clement A. Tisdell, University of Queensland
   Logging Intensities and the Survival of Forest Wildlife Species e.g. Orangutans: Economic Considerations
John A. Janmaat, University of British Columbia
   Fishing in a Shallow Lake: Exploring a Classic Fishery Model in a Habitat with Shallow Lake Dynamics
Discussants: John Williams, Natural Resources Commission of New South Wales
Louisa Coglan, Queensland University of Technology

[7]   10:00–11:45 a.m.
Contemporary Economic Policy Session
DEVELOPMENT AND SOCIETY

Organizer: Jack W. Hou, California State University, Long Beach
Chair: Tao-Tony Fang, York University, and University of Toronto
Papers: Yong Wang, City University of Hong Kong, and Kamhon Kan, Academia Sinica
Development Patterns in China and India: A Perspective with CES Production Function
Muhammad Shahbaz, COMSATS, Faridul Islam, Utah Valley University, and Muhammad Sabihuddin Butt, University of Karachi
Financial Development, Energy Consumption and CO2 Emissions: Evidence from ARDL Approach for Pakistan
Rahul Nilakantan, Indian Institute of Management, and Saurabh Singhal, University of Southern California
The Economic Costs of Naxalite Violence and the Economic Benefits of Unique Robust Security Response
Discussants: Rahul Nilakantan, Indian Institute of Management
Yong Wang, City University of Hong Kong
Muhammad Shahbaz, COMSATS

[8]   10:00–11:45 a.m.
Contemporary Economic Policy Session
GROUNDWATER
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Sean Pascoe, CSIRO
Papers: David L. Sunding, University of California, Berkeley
Valuing Groundwater Storage
Clevo I. Wilson, Queensland University of Technology, and Wasantha Athukorala, Queensland University of Technology
Long Term Welfare Losses Due to Groundwater Extraction for Agriculture: Evidence from Sri Lanka
Jason K. Hansen, Naval Postgraduate School
The Economics of Optimal Urban Groundwater Pumping
Discussants: Malcolm K. Wegener, University of Queensland
M. Ejaz Qureshi, CSIRO, and Australian National University
Gavin C. G. Fraser, Rhodes University

Box Lunch---pick up in Z block foyer   11:45 a.m.–12:45 p.m.

[9]   12:45–2:30 p.m.
SESSIONS IN HONOUR OF MURRAY KEMP: TRADE THEORY
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Murray C. Kemp, University of New South Wales
Papers: Kazuo Nishimura, Kyoto University, Eric W. Bond, Vanderbilt University, and Kazumichi Iwasa, Kyoto University
Poverty Trap and Inferior Goods in a Dynamic Heckscher-Ohlin Model
Peter J. Lloyd, University of Melbourne
The Discovery of the Heckscher-Ohlin Model of International Trade
Ngo Van Long, McGill University
North-South Trade in Pharmaceutical Products: Some Theoretical Considerations
Discussants: to be announced

[10]   12:45–2:30 p.m.
INTERNATIONAL ECONOMIC DEVELOPMENT ISSUES
Organizer and Chair: Anna Strutt, University of Waikato
Papers: Bentry Mkwara, University of Waikato, and Dan Marsh, University of Waikato
Effects of Maize Fertilizer Subsidies on Food Security in Malawi
Lula G. Mengesha, University of Waikato, and Mark J. Holmes, University of Waikato
Does Dollarization Alleviate or Aggravate Exchange Rate Volatility?
Anna Strutt, University of Waikato, Thomas Hertel, Purdue University, and Susan F. Stone, OECD
Improving Infrastructure, Facilitating Trade and Reducing Poverty in the Greater Mekong Subregion
Discussants: to be announced

[11]   12:45–2:30 p.m.
MACROECONOMICS
Chair: Ming-Jen Chang, National Dong Hwa University
Papers: Ming-Jen Chang, National Dong Hwa University, and Meng-Chao Liu, National Dong Hwa University
Accounting for Monetary and Fiscal Policy Effects in a Simple Dynamic General Equilibrium Model
Pietro Enrico Ferri, Universita degli Studi di Bergamo
Fluctuations in a Debt Economy
Manfred W. Keil, Claremont McKenna College, and James Symons, University College of London
The Housing Market and the U.S. Business Cycle
Ho-Chuan Huang, Tamkang University, and Chih-Chuan Yeh, Overseas Chinese University
Inflation Targeting and Financial Development
Discussants: Takashi Matsuki, Osaka Gakuin University
Kimiko Sugimoto, Osaka Gakuin University
Pietro Enrico Ferri, Universita degli Studi di Bergamo
Manfred W. Keil, Claremont McKenna College

[12]   12:45–2:30 p.m.
CHILD WELFARE AND LABOR
Chair: Samer S. Kherfi, American University of Sharjah
Papers: Susan Olivia, Monash University, Lisa Cameron, Monash University, and Manisha Shah, University of California, Irvine
Sanitation Improvements and Child Health in Rural Indonesia
Jayanta Sarkar, Queensland University of Technology
A Nutrition-based Explanation of Child Labour
Discussants: Tomoko Kishi, Nanzan University
Jayanta Sarkar, Queensland University of Technology

[13]   12:45–2:30 p.m.
Allied Organization Session
SPORTS ECONOMICS II—VICES: DRUGS, VIOLENCE AND GAMBLING IN SPORTS — (NAASE)
Organizer and Chair: Victor Matheson, College of the Holy Cross
Papers: Joao Ramos, Queensland University of Technology, Markus Schaffner, Queensland University of Technology, and Benno Torgler, Queensland University of Technology
Doping and Cycling
Ross Booth, Monash University, and Robert Brooks, Monash University
Violence in the Australian Football League: For Better or Worse?
Brad R. Humphreys, University of Alberta, Rodney J. Paul, Saint Bonaventure University, and Andrew P. Weinbach, Coastal Carolina University
Consumption Benefits and Gambling: Evidence from the NCAA Basketball Betting Market
Discussants: Jane E. Ruseski, University of Alberta
Victor Matheson, College of the Holy Cross

[14]   12:45–2:30 p.m.
ECONOMIC GROWTH AND SUSTAINABLE LIVELIHOODS IN ASIA
Organizer and Chair: Steven Lim, University of Waikato
Papers: Steven Lim, University of Waikato, Jason Le Vaillant, Ministry of Economic Development, New Zealand, and Harry X. Wu, Hong Kong Polytechnic University
What Can China's Percentage Growth Rates Tell Us? A Decomposition Method under Growth Instabiliity
Tran Quang Tuyen, University of Waikato
Building a Highway: Impacts on Sustainable Livelihoods in Hanoi
Harry X. Wu, Hong Kong Polytechnic University, and Steven Lim, University of Waikato
Dynamic Comparative Advantage and Structural Change in China
Discussants: Michael P. Cameron, University of Waikato
Steven Lim, University of Waikato
Tran Quang Tuyen, University of Waikato

[15] 12:45–2:30 p.m.
Contemporary Economic Policy Session
SUSTAINABILITY, AGRICULTURE, AND RANGELANDS
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Malcolm K. Wegener, University of Queensland
Papers: Euan Fleming, University of New England, Prathanthip Kramol, University of New England, Paul Kristiansen, University of New England, and Renato Andrin Villano, University of New England
   Explaining the Adoption of Smallholders of Sustainable Practices in Vegetable Production in Northern Thailand
Gavin C. G. Fraser, Rhodes University, and Thula Dlamini, Rhodes University
   Wool or Venison? A Stochastic Efficiency Analysis of the Sustainability of Rangelands Economic Systems in the Eastern Cape Karoo
Discussants: Shyama Ratnasiri, Griffith University
Jason K. Hansen, Naval Postgraduate School

[16] 12:45–2:30 p.m.
Contemporary Economic Policy Session
CHINA: FINANCIAL, GLOBALIZATION, AND UNIONS
Organizers: Jack W. Hou, California State University, Long Beach, and Tao-Tony Fang, York University, and University of Toronto
Chair: Jack W. Hou, California State University, Long Beach
Papers: Vinh Q. T. Dang, University of Macau, Kenneth S. Chan, City University of Hong Kong, and Kit Ming Isabel Yan, City University of Hong Kong
   Financial Liberalization and Financing Constraints: Some Evidence from Panel Data of Chinese Firms
Tao-Tony Fang, York University, and University of Toronto
   Unionization and Firm Innovation in China: Synergy or Strife?
John R. Graham, University of Calgary, and Marion E. Jones, University of Regina
   Social Exclusion and Self-esteem: The Impact of the Identity-bureaucracy Nexus on Employed People Experiencing Homelessness
Discussants: Yenhuang Chen, Chinese Culture University
John R. Graham, University of Calgary
Tao-Tony Fang, York University, and University of Toronto

[17] 12:45–2:30 p.m.
Contemporary Economic Policy Session
CALIFORNIA WATER ISSUES
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Andrew C. Worthington, Griffith University
Papers: Ellen Hanak, Public Policy Institute of California, Ariel Dinar, University of California, Riverside, and Richard E. Howitt, University of California, Davis
   Managing California's Water: From Conflict to Reconciliation
David L. Sunding, University of California, Berkeley
   Achieving Water Sustainability in Los Angeles County
Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
   Application of Prescriptive Public Choice to Urban Water Rate Design
Discussants: David L. Sunding, University of California, Berkeley
Ellen Hanak, Public Policy Institute of California
Alan Randall, Ohio State University, and University of Sydney

[18] 2:45–4:30 p.m.
SESSIONS IN HONOUR OF MURRAY KEMP: ECONOMICS OF POSITIONAL GOODS AND SOCIAL CONSUMPTION
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: John Lodewijks, University of Western Sydney
Papers: Satya Paul, University of Western Sydney
   Relative Deprivation and Its Applications in Economics

Hiroshi Ohta, Kobe University, and Seichi Katayama, Aichi Gakuin University
   Status-seeking and Exhaustible Resource under Uncertainty
Makoto Yano, Kyoto University, and Keio University, and Takakazu Honryo, Columbia University
   A Two-Country Game of Competition Policies
Discussants: to be announced

[19] 2:45–4:30 p.m.
PUBLIC POLICY AND FINANCIAL CRISIS
Chair: Lee-Jung Lu, Tungnan University
Papers: Lee-Jung Lu, Tungnan University, Shih-Wen Hu, Feng Chia University, and Meng Yi Tai, Fo Guang University
   Expectations and Commodity Price Dynamics: The Application of Portfolio Balance Model
Meng Yi Tai, Fo Guang University, Shih-Wen Hu, Feng Chia University, and Lee-Jung Lu, Tungnan University
   Policy Announcement, Holmes-Smyth Effect and Housing Price Dynamics
Yi-Hao Lai, Da-Yeh University
   Does Dependence-switching Model for Dynamic Hedging with Major Foreign Currencies Survive during the Financial Crisis?
Discussants: from above participants

[20] 2:45–4:30 p.m.
TAX, IMPORT, AND CURRENCY
Chair: P. C. Roger Cheng, National Central University
Papers: P. C. Roger Cheng, National Central University, and Zoe Huang, National Central University
   Credential Competing among Heterogeneous Contestants
Takashi Matsuki, Osaka Gakuin University
   Linear and Nonlinear Comovement in Asian Local Currency Bond: Stepwise Multiple Testing Approach
Kimiko Sugimoto, Osaka Gakuin University
   Currency Convertibility and Import Demand in the ECOWAS Countries
Nobuhiro Takahashi, Osaka City University, and Mita Takahashi, Osaka University of Economics and Law
   Tax Credits and Optimum Tax and Tariff Policies
Discussants: Simona Fabrizi, Massey University
Ming-Jen Chang, National Dong Hwa University
Pietro Enrico Ferri, Universita degli Studi di Bergamo
Chih-Chuan Yeh, Overseas Chinese University

[21] 2:45–4:30 p.m.
INEQUALITY, POVERTY AND HEALTH IN CHINA
Organizer and Chair: John K. Gibson, University of Waikato
Papers: Chao Li, University of Waikato, and John K. Gibson, University of Waikato
   Rising Regional Inequality in China: Fact or Artefact?
Susan Olivia, Monash University, Xiangzheng Deng, Chinese Academy of Sciences, John K. Gibson, University of Waikato, Scott D. Rozelle, Stanford University, and Aaron D. Smith, University of California, Davis
   Spatial Econometric Small-Area Estimates of Poverty in China
John K. Gibson, University of Waikato, Yun Liang, Motu Economic and Public Policy Research, and Steven Stillman, Motu Economic and Public Policy Research
   Are Home Owners Healthier? Panel Data Evidence from China
Discussants: Susan Olivia, Monash University
Steven Lim, University of Waikato
Michael P. Cameron, University of Waikato

[22] 2:45–4:30 p.m.
Contemporary Economic Policy Session
RETAIL AND WHOLESALE WATER UTILITIES
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Douglas Fisher, Queensland University of Technology
Papers: Andrew C. Worthington, Griffith University

Efficiency, Technology and Productivity Change in Australian Urban Water Utilities
Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Los Angeles Urban Water Rate Design
David L. Sunding, University of California, Berkeley
The Value of Water Supply Reliability
Discussants: Benno Torgler, Queensland University of Technology
Shyama Ratnasiri, Griffith University
M. Ejaz Qureshi, CSIRO, and Australian National University

[23]   2:45–4:30 p.m.
Contemporary Economic Policy Session
ENERGY AND ENVIRONMENT
Organizers: Jack W. Hou, California State University, Long Beach, and Faridul Islam, Utah Valley University
Chair: Jack W. Hou, California State University, Long Beach
Papers: Yenhuang Chen, Chinese Culture University, and Jie Hu, Xi'an Jiao Tong University
Vertical Specialization in the Chinese Electronic Industry
Faridul Islam, Utah Valley University, and Muhammad Shahbaz, COMSATS
Is there an Environmental Kuznets Curve for Bangladesh?
Ashraf Nakibullah, University of Bahrain
Monetary Policies and Performance of the Oil-Exporting GCC Countries
Hedayat Omidvar, National Iranian Gas Company
Prospect of Iran Natural Gas Export Projects
Discussants: Jack W. Hou, California State University, Long Beach
Ashraf Nakibullah, University of Bahrain
Hedayat Omidvar, National Iranian Gas Company
Faridul Islam, Utah Valley University

[24]   2:45–4:30 p.m.
BEHAVIORAL ECONOMICS AND INTANGIBLE CAPITAL
Chair: Luke Strongman, The Open Polytechnic of New Zealand
Papers: Michael Falta, University of Otago, and N. Kergozou de la Boessiere, University of Otago
Homo Decertatius
John Mirikitani, Hallym University, and Steven J. Jordan, KAIST
The Most Amazing Season: 'Sports Mood' and Behavioral Finance
John Mirikitani, Hallym University
A Behavioral Economics Analysis of 'Clash of Civilizations': Frustration-Aggression Caused by the Passing of the USA's Economic Hegemony
Luke Strongman, The Open Polytechnic of New Zealand
Poststructuralism and Economic Intangibles
Discussants: John Mirikitani, Hallym University
Brad R. Humphreys, University of Alberta
Luke Strongman, The Open Polytechnic of New Zealand
Michael Falta, University of Otago

[25]   2:45–4:30 p.m.
Contemporary Economic Policy Session
AGRICULTURE, BIOFUELS, AND PACIFIC RIM ISSUES
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Vincent Hoang, Queensland University of Technology
Papers: George Antony, Queensland Department of Employment, Economic Development and Innovation, and Sarah L. Goswami, Queensland Department of Employment, Economic Development and Innovation
Expected Socio-Economic Impacts of the Establishment of Asian Honeybees in Australia
Clement A. Tisdell, University of Queensland
Structural Economic Changes in China and Vietnam: Policy Issues and Consequences for Agriculture
Marguerite Renouf, University of Queensland, and Malcolm K. Wegener, University of Queensland

Biofuels: Environmental Life Cycle Assessment of Fermentable Materials
Malcolm K. Wegener, University of Queensland
Opportunities for Renewable Energy and Bio-Materials from Sugarcane
Discussants: Wasantha Athukorala, Queensland University of Technology
Vincent Hoang, Queensland University of Technology
Max Briggs, Queensland University of Technology

Wednesday, April 27

Registration and Morning Coffee   8:30–9:00 a.m.

[26]   9:00–10:45 a.m.
EXPERIMENTAL ECONOMICS—TRUST AND EFFORT
Organizer and Chair: Uwe Dulleck, Queensland University of Technology
Papers: Pablo Guillen, University of Sydney, and Daniel Ji, University of Sydney
Discrimination and Acculturation
Jonas Fooken, Queensland University of Technology, Tony Beatton, Queensland University of Technology, Uwe Dulleck, Queensland University of Technology, Yumei He, Southeast University and A&M College, and Markus Schaffner, Queensland University of Technology
Gift Exchange in China—Is There a Difference between Migrants and Locals?
Andreas Ortmann, University of New South Wales, Stefania Bortlotti, Universita degli Studi di Trento, and Giovanna Devetag, University of Perugia
Individual Incentives or Group Incentives? A Real-Effort Weak-Link Experiment
Discussants: from above participants

[27]   9:00–10:45 a.m.
DETERMINANTS OF FIRM TRADE PERFORMANCE
Organizer: Robert E. Lipsey, National Bureau of Economic Research, and City University of New York
Chair: Eric D. Ramstetter, ICSEAD
Papers: Kazuhiko Yokota, Waseda University, Kyosuke Kurita, Waseda University, and Shujiro Urata, Waseda University
Foreign Trade of Chinese Enterprises by Different Organizational Forms
Dionisius A. Narjoko, ERIA
Liberalized Trade and Investment Regime, Firm Entry, and Performance: Learning from Vietnamese Manufacturing
Eric D. Ramstetter, ICSEAD, and Minh Ngoc Phan, ICSEAD
Productivity, Ownership, and Producer Concentration in Transition: Evidence from Vietnamese Manufacturing
Discussants: Juthathip Jongwanich, Asian Institute of Technology
Cassey Lee, University of Wollongong
Archanun Kohpaiboon, Thammasat University

[28]   9:00–10:45 a.m.
WHY THE GLOBAL FINANCIAL CRISIS?
Organizer and Chair: Tim Robinson, Queensland University of Technology
Papers: Jakob B. Madsen, Monash University
A Repayment Model of House Prices: House Prices and the GFC
Mark McGovern, Queensland University of Technology
Beyond the Debt Dreamtime: Defusing and Resolving Crisis
Steve Keen, University of Western Sydney
More of the GFC
Discussants: Steve Keen, University of Western Sydney
Tim Robinson, Queensland University of Technology
Jakob B. Madsen, Monash University

[29]   9:00–10:45 a.m.
LABOR AND DEMOGRAPHIC ECONOMICS

Chair: Hugo Toledo, American University of Sharjah
Papers: Donald G. Freeman, Sam Houston State University
  On (not) Closing the Gaps: Poverty and Unemployment in White and Non-White Populations
Tiago Freire, National University of Singapore
  Skill Wages Gap in Brazil: 1980-2000
Tomoko Kishi, Nanzan University, and Faridul Islam, Utah Valley University
  A Wage Curve for Japan: Further Evidence from Panel Data
Hugo Toledo, American University of Sharjah
  The Political Economy of Emiratization in the UAE
Discussants: Sasan Bakhtiari, University of New South Wales
Alvaro A. Comin, University of Sao Paulo
Hugo Toledo, American University of Sharjah

[30]   9:00–10:45 a.m.
HEALTH CARE AND PUBLIC POLICY
Chair: Sheng-Tung Chen, Feng Chia University
Papers: Sheng-Tung Chen, Feng Chia University
  The Effect of Military Service System Changes to Military Expenditure
Kannika Damrongplasit, Nanyang Technological University, Gerald Kominski, University of California, Los Angeles, Nadereh Pourat, University of California, Los Angeles, and Dylan Roby, University of California, Los Angeles
  Racial/Ethnic Disparities in Health Care Expenditures of Chronically Ill Medicaid Beneficiaries
Kazuki Onji, Australian National University
  Tax Consolidation and the Structure of Corporate Groups: Evidence from the Japanese Tax Reform of 2002
Jane E. Ruseski, University of Alberta, Brad R. Humphreys, University of Alberta, and John A. Nyman, University of Minnesota
  Gambling, Healthcare and Health: Evidence from Canada
Discussants: Kannika Damrongplasit, Nanyang Technological University
Jacob A. Bikker, De Nederlandsche Bank
Yang Li, University of Queensland
Friska Parulian, ERIA

[31]   9:00–10:45 a.m.
Allied Organization Session
SPORTS ECONOMICS III—TEAMS, LEAGUES, AND COMPETITIVE BALANCE — (NAASE)
Organizer and Chair: Victor Matheson, College of the Holy Cross
Papers: Christian Deutscher, University of Paderborn
  Incentive Effects of Prize Spreads in Heterogeneous Tournaments—Empirical Findings from the National Basketball Association
Ross Booth, Monash University, Brad R. Humphreys, University of Alberta, and Stefan Szymanski, City University London
  Revenue Sharing and Competitive Balance in Australian Rules Football
Discussants: Liam Lenten, La Trobe University
Markus Schaffner, Queensland University of Technology
Benno Torgler, Queensland University of Technology

[32]   9:00–10:45 a.m.
ENERGY AND DEVELOPMENT IN CHINA
Chair: Jayanta Sarkar, Queensland University of Technology
Papers: Pun Lee Lam, Hong Kong Polytechnic University, and Alice Shiu, Hong Kong Polytechnic University
  Inconsistency in China's Energy and GDP Statistics: Evidence after the Financial Tsunami
Yu Hsuan Liao, National University of Kaohsiung, and Yang Li, National University of Kaohsiung
  Study of Regional Efficiency and Productivity of Mainland China: Perspectives of FDI and Green Development
John T. Shieh, California State Polytechnic University, Pomona, and Tzu-Wen Sung, Aletheia University
  Economic Development in China's Western Frontier
Alice Shiu, Hong Kong Polytechnic University, and Pun Lee Lam, Hong Kong Polytechnic University

Energy Growth, Electricity Investment and Transportation Infrastructure: Implications of Chinese Regional Disparities
Discussants: Yu Hsuan Liao, National University of Kaohsiung
Pun Lee Lam, Hong Kong Polytechnic University
Jayanta Sarkar, Queensland University of Technology
Sizhong Sun, James Cook University

[33]   9:00–10:45 a.m.
POLLUTION AND GREEN BUSINESS
Chair: Shigeru Matsumoto, Aoyama Gakuin University
Papers: Kankesu Jayanthakumaran, University of Wollongong, and Ying Liu, University of Wollongong
  Trade Intensity and Emissions in Australian States: 1998/99-2007/08
Smitu Malhotra, XLRI Jamshedpur, Devika Bhartiya, Independent Researcher, Mansi Chanra, Deloitte, Neha Jain, ITC Infotech, Karan Parmanandkar, Nomura Securities International, and Piyush Puri, SBI Capital
  Green Retail: Responding to Growing Concern for the Environment
Venugopal Pingali, XLRI Jamshedpur, and Aurobindo Saha, Lexmark International Inc.
  Green Printing: Formulating a Marketing Plan
John P. Tang, Australian National University
  Pollution Havens and the Trade in Toxic Chemicals: Evidence from U.S. Trade Flows
Discussants: John A. Janmaat, University of British Columbia
Shigeru Matsumoto, Aoyama Gakuin University
Smitu Malhotra, XLRI Jamshedpur
Shamila A. Jayasuriya, Ohio University

[34]   9:00–10:45 a.m.
Contemporary Economic Policy Session
MICRO FOUNDATION OF POLICY FORMATION
Organizer and Chair: Jack W. Hou, California State University, Long Beach
Papers: William N. Thompson, University of Nevada, Las Vegas
  Taxation, Gambling and Good Public Policy
Xingming Fang, Southwestern University of Finance and Economics, Ye Luo, Southwestern University of Finance and Economics, and H. Holly Wang, Purdue University
  The Three-Party Game of Contract Farming: Low Contract Compliance Rates in Grain Transactions in China
Ruixin Su, Xi'an Jiao Tong University, and University of Virginia
  The Differences of CSR Motives and Policy Meaning in China: A Firm Nature Perspective
Discussants: Ruixin Su, Xi'an Jiao Tong University, and University of Virginia
William N. Thompson, University of Nevada, Las Vegas
Xingming Fang, Southwestern University of Finance and Economics

[35]   9:00–10:45 a.m.
URBAN WATER CONSERVATION AND MANAGEMENT
Organizer and Chair: Clevo I. Wilson, Queensland University of Technology
Papers: Shyama Ratnasiri, Griffith University, Wasantha Athukorala, Queensland University of Technology, Maria A. Garcia-Valinas, Toulouse School of Economics, Robert Gifford, University of Victoria, Benno Torgler, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
  Effectiveness of Uniform Pricing vs. Increasing Block Rate Pricing on Urban Water Demand
Clevo I. Wilson, Queensland University of Technology, Wasantha Athukorala, Queensland University of Technology, Maria A. Garcia-Valinas, Toulouse School of Economics, Robert Gifford, University of Victoria, and Benno Torgler, Queensland University of Technology
  Factors Influencing Residents' Willingness to Pay to Avoid Water Restrictions
Maria A. Garcia-Valinas, Toulouse School of Economics, Wasantha Athukorala, Queensland University of Technology, Robert Gifford,

University of Victoria, Benno Torgler, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
  Non-discretionary Residential Water Uses: The Impact of Habits and Water-Efficient Technologies
Discussants: Ellen Hanak, Public Policy Institute of California
John Tisdell, University of Tasmania
Andrew C. Worthington, Griffith University

[36]   11:00 a.m.–12:45 p.m.
SESSIONS IN HONOUR OF MURRAY KEMP: ECONOMIC THEORY
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Craig F. Freedman, Macquarie University
Papers: Murray C. Kemp, University of New South Wales
  Public Goods in Economic Theory
Yunfang Hu, Tohuku University
  Dynamic Interdeterminacy and Transfer Paradox
Henry Wan Jr., Cornell University
  Implications of Learning and Doing on the Micro-foundations of Trade, Industrial Organization and Development Policy
Ronald W. Jones, University of Rochester
  In Defense of Cones
Discussants: to be announced

[37]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session
EDUCATING FOR SUCCESS
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Peter Elias, University of Warwick
Papers: Girijasankar Mallik, University of New South Wales
  Importance of Mathematics in University Education
Samer S. Kherfi, American University of Sharjah, and George Naufal, American University of Sharjah
  Does the Choice of High School Matter? Evidence from the UAE on the Effects of Schooling on Students' University Performance
KimMarie McGoldrick, University of Richmond, Mark H. Maier, Glendale Community College, and Scott Simkins, North Carolina A&T State University
  Starting Point: Pedagogical Resources for Teaching and Learning Economics
Discussants: Samer S. Kherfi, American University of Sharjah
Girijasankar Mallik, University of New South Wales
Michael P. Cameron, University of Waikato

[38]   11:00 a.m.–12:45 p.m.
EXPERIMENTAL ECONOMICS—HONESTY AND GUILT
Organizer and Chair: Uwe Dulleck, Queensland University of Technology
Papers: Lana Friesen, University of Queensland, and Lata Gangadharan, Monash University
  TBC—Dishonesty in the Lab
Uwe Dulleck, Queensland University of Technology, David Johnston, Queensland University of Technology, and Monash University, Rudolf Kerschbamer, University of Innsbruck, and Matthias Sutter, University of Innsbruck
  Does Pricing Reveal Information About the Honesty of An Expert?
Markus Schaffner, Queensland University of Technology, Uwe Dulleck, Queensland University of Technology, and Benno Torgler, Queensland University of Technology
  Using Heart Rate Variability Measurements to Observe Guilt in the Ultimate Bargaining Game
Discussants: from above participants

[39]   11:00 a.m.–12:45 p.m.
INNOVATION AND PRODUCTIVITY IN MALAYSIA AND THAILAND

Organizer: Eric D. Ramstetter, ICSEAD
Chair: Cassey Lee, University of Wollongong
Papers: Juthathip Jongwanich, Asian Institute of Technology, and Archanun Kohpaiboon, Thammasat University
  MNEs, Export and R&D in Thai Manufacturing
Archanun Kohpaiboon, Thammasat University, and Juthathip Jongwanich, Asian Institute of Technology
  Productivity and R&D Heterogeneity in Thai Manufacturers
Cassey Lee, University of Wollongong
  Trade, Productivity, and Innovation in Malaysian Manufacturing
Discussants: Kankesu Jayanthakumaran, University of Wollongong
Kazuhiko Yokota, Waseda University
Eric D. Ramstetter, ICSEAD

[40]   11:00 a.m.–12:45 p.m.
Allied Organization Session
SPORTS ECONOMICS IV—MYTHS AND LIES IN SPORTS — (NAASE)
Organizer: Victor Matheson, College of the Holy Cross
Chair: Brad R. Humphreys, University of Alberta
Papers: Lionel Page, Queensland University of Technology, David Savage, Queensland University of Technology, and Benno Torgler, Queensland University of Technology
  Football Crowd Estimates: A White Lie
Liam Lenten, La Trobe University
  It Is Okay to Score Early against Brazil
Victor Matheson, College of the Holy Cross, Robert Baumann, College of the Holy Cross, and Bryan Engelhardt, College of the Holy Cross
  Labor Market Effects of the World Cup: A Sectoral Analysis
Discussants: Christian Deutscher, University of Paderborn
Ross Booth, Monash University
Lionel Page, Queensland University of Technology

[41]   11:00 a.m.–12:45 p.m.
PEACE AND CONFLICT
Chair: Wen-Hsien Liu, National Chung Cheng University
Papers: John Mirikitani, Hallym University, and Steven J. Jordan, KAIST
  Globalization and 'Rationalizable' Tit-for-Tat: Kasmir and Jordan
Dipanwita Sarkar, Queensland University of Technology, Jung Chul Park, Louisiana Tech University, and Jayanta Sarkar, Queensland University of Technology
  Does Anti-Americanism Affect US MNCs?
Discussants: Watcharapong Ratisukpimol, University of Colorado, Boulder
Chung Q. Tran, Australian National University

[42]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session
WILDFIRES
Organizers: Wade E. Martin, California State University, Long Beach, and Clevo I. Wilson, Queensland University of Technology
Chair: Wade E. Martin, California State University, Long Beach
Papers: Chris Eves, Queensland University of Technology
  Natural Disasters and Their Varying Impact on Residential Property Values
Clevo I. Wilson, Queensland University of Technology, Wasantha Athukorala, Queensland University of Technology, and Wade E. Martin, California State University, Long Beach
  Do Residents in Bushfire Prone Areas Heed Warnings? A Hedonic Property Values Study
Ingrid M. Martin, California State University, Long Beach, and Wade E. Martin, California State University, Long Beach
  Understanding the Risk Mitigation Decision: Homeowners and Wildfire Risks
Discussants: from above participants

[43]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session

FINANCIAL MARKETS: RISK, VOLATILITY, AND RESPONSES

Organizer: Jack W. Hou, California State University, Long Beach
Chair: John R. Graham, University of Calgary
Papers: Ling Jiang, Southwestern University of Finance and Economics
Causes of Global Imbalances: The Permanent Income-Life Cycle Hypothesis' and International Division of Labor Perspective
Chengsi Zhang, Renmin University of China
China's CPI: Cheating Price Inflation?
Therese Quang, University of Paris West-Nanterre, and Jinzhao Chen, University of Paris West-Nanterre
International Financial Integration and Economic Growth: New Evidence on Threshold Effects
Discussants: Vinh Q. T. Dang, University of Macau
Ling Jiang, Southwestern University of Finance and Economics
Chengsi Zhang, Renmin University of China

[44]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session
MURRAY DARLING RIVER SYSTEM

Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Chloe Munro, National Water Commission
Papers: Sarah Wheeler, University of South Australia, Henning Bjornlund, University of Lethbridge, and University of South Australia, Dustin Garrick, CSIRO, and University of South Australia, and Adam Loch, University of South Australia
Options for Restructuring the 'Restoring the Balance' Scheme
Alan Randall, Ohio State University, and University of Sydney
The Murray Darling Basin Plan: Exploring the Rationale for Environmental Flows First
M. Ejaz Qureshi, CSIRO, and Australian National University
Economic Impact of Climate Change on Agriculture Sectors Productivity and Profitability in the Murray Darling Basin
Douglas Fisher, Queensland University of Technology
Murray Darling Basin Governance: The Focus of the Law
Discussants: Sean Pascoe, CSIRO
Jeff Connor, CSIRO
Peter Grace, Queensland University of Technology
Chloe Munro, National Water Commission

[45]   12:50–2:15 p.m.
Lunch and General Session
KEYNOTE ADDRESS

Introduction: Paul A. David, Stanford University
Address: Edward J. Kane, Boston College
Controlling Growth in the Financial Safety Net

[46]   2:30–4:15 p.m.
SESSIONS IN HONOUR OF MURRAY KEMP:
ECONOMICS OF SUSTAINABILITY

Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Mamta Chowdhury, University of Western Sydney
Papers: Alison Sheridan, University of New England
Grappling with Sustainability: Reflections on Embedding Sustainability in the Business Curriculum
Maria Estella Varua, University of Western Sydney
(Un)Sustainable Consumption in Australian Households
Partha Gangopadhyay, University of Western Sydney
(Un)Sustainable Development and Rural Poverty: Theoretical Conjectures and Lessons from a Field Study in India
Discussants: to be announced

[47]   2:30–4:15 p.m.
CORRUPTION, TEMPTATION, AND PIRACY

Chair: Chung Q. Tran, Australian National University

Papers: Jason K. Hansen, Naval Postgraduate School, Robert M. McNab, Naval Postgraduate School, and Francois Melese, Naval Postgraduate School
A Dynamic Approach to Managing Corruption: Exploring the Optimal Path of Audits and Oversight
Watcharapong Ratisukpimol, University of Colorado, Boulder
Explaining Modern Maritime Piracy: An Empirical Analysis
Chung Q. Tran, Australian National University
Temptation and Fiscal Policy
Discussants: Dipanwita Sarkar, Queensland University of Technology
Chung Q. Tran, Australian National University
John Mirikitani, Hallym University

[48]   2:30–4:15 p.m.
FINANCIAL ECONOMETRICS I

Organizer and Chair: Adam Clements, Queensland University of Technology
Papers: Susan Thorp, University of Technology, Sydney
Asset Market Linkages through the Phases of the Crisis
Thijs van der Heijden, University of Melbourne
Optimal Timing of Derivative Trades
Jing Tian, University of Tasmania
Financial Markets and Macroeconomic News
Discussants: from above participants

[49]   2:30–4:15 p.m.
PRODUCTIVITY AND EFFICIENCY STUDIES

Organizer and Chair: Boon L. Lee, Queensland University of Technology
Papers: Antonio Peyrache, University of Queensland, and Alicia Rambaldi, University of Queensland
A State-Space Approach to Measuring Productivity
Christopher J. O'Donnell, University of Queensland
Econometric Estimation of Distance Functions and Associated Measures of Productivity and Efficiency Change
Euan Fleming, University of New England, Marc Jim M. Marian, Philippine Rice Research Institute, and Renato Andrin Villano, University of New England
Decomposing Productivity Change in Philippine Rice Farming: A Non-Parametric Approach
Discussants: Euan Fleming, University of New England
Antonio Peyrache, University of Queensland
Christopher J. O'Donnell, University of Queensland

[50]   2:30–4:15 p.m.
PATENTS AND INNOVATION

Organizer and Chair: Uwe Dulleck, Queensland University of Technology
Papers: Richard Jefferson, Queensland University of Technology, and Cambia
A Case of Missing Economics Analysis: Uncertainty, Asymmetric Information and Its Effects on Innovation
Dyuti S. Banerjee, Monash University
Effects of Network Externality and Piracy on Innovation
Uwe Dulleck, Queensland University of Technology
Adding to the Patent Thicket—Over-patenting As a Strategic Device and the Need for More Transparency
Discussants: from above participants

[51]   2:30–4:15 p.m.
FDI AND SPILLOVER

Chair: Sasan Bakhtiari, University of New South Wales
Papers: Wei-Long Lee, National Kaohsiung University of Applied Sciences, Yang Li, National University of Kaohsiung, and Chun-Yu Lin, National Kaohsiung University of Applied Sciences
The Spillover Effects of Foreign Direct Investment: An Example of ASEAN
Wen-Hsien Liu, National Chung Cheng University
Determinants of FDI Inflows to China: An Empirical Analysis of Source Country Characteristics

Sizhong Sun, James Cook University, Peter Drysdale, Australian National University, and Ligang Song, Australian National University
Geographical Proximity and FDI Export Spillovers: Evidence from China
Yu-Pei Hsu, Feng Chia University
PRs Protection, FTAs, and Foreign Direct Investment: Evidence from Taiwan
Discussants: Sung Hee Jun, Suncheon National University
Kun-Ming Chen, National Chengchi University
Wan Hua Lee, National University of Kaohsiung
Anil V. Mishra, University of Western Sydney

[52]   2:30–4:15 p.m.
TOPICS ON ENVIRONMENTAL ECONOMICS
Chair: John A. Janmaat, University of British Columbia
Papers: Vincent Hoang, Queensland University of Technology
Analysis of Variation in Environmental Efficiency: Revisited
Shigeru Matsumoto, Aoyama Gakuin University
The Opportunity Cost of Pro-Environmental Activities: Spending Time for Environment or Earning More Money
Discussants: Venugopal Pingali, XLRI Jamshedpur
Vincent Hoang, Queensland University of Technology

[53]   2:30–4:15 p.m.
Contemporary Economic Policy Session
SECTORAL AND REGIONAL DIFFERENTIALS IN CHINA
Organizers: Jack W. Hou, California State University, Long Beach, and John R. Graham, University of Calgary
Chair: John R. Graham, University of Calgary
Papers: Qing He, Renmin University of China, and Ning Zhang, Chinese University of Hong Kong
Time Varying Volatility in Chinese Economy: A Regional Perspective
Juan Yang, Beijing Normal University, Sylvie Demurger, Universite' de Lyon, and Shi Li, Beijing Normal University
Earnings Differentials between the Public and the Private Sectors in China: Explaining Changing Trends for Urban Locals in the 2000's
James Laurenceson, University of Queensland, and Christopher J. O'Donnell, University of Queensland
New Estimates and a Decomposition of Provincial Productivity Change in China
Discussants: James Laurenceson, University of Queensland
Daniel Xiangyi Meng, Central University of Finance and Economics
Qing He, Renmin University of China

[54]   2:30–4:15 p.m.
Contemporary Economic Policy Session
WATER SCARCITY AND POLICY
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Tim Robinson, Queensland University of Technology
Papers: M. Ejaz Qureshi, CSIRO, and Australian National University
Water Scarcity in Australia and Impact on Global Food Security
John Williams, Natural Resources Commission of New South Wales
Is Integrated Catchment Management Now a Possibility in NSW?
Chloe Munro, National Water Commission
to be announced
Ellen Hanak, Public Policy Institute of California
California's Water Market Updated
Discussants: Malcolm K. Wegener, University of Queensland
Clement A. Tisdell, University of Queensland
Douglas Fisher, Queensland University of Technology
David L. Sunding, University of California, Berkeley

[55]   4:30–6:15 p.m.
FINANCIAL ECONOMETRICS II
Organizer: Stan Hurn, Queensland University of Technology
Chair: Stan Hurn, Queensland University of Technology
Papers: Andrew McClelland, Queensland University of Technology
Quasi Maximum Likelihood Estimation of Jump Diffusions

Jiti Gao, Monash University
Trending Time Series and Financial Econometrics
Discussants: from above participants

[56]   4:30–6:15 p.m.
MACROECONOMIC POLICY
Chair: Ryan B. Edwards, University of Queensland
Papers: Ashton de Silva, RMIT University, and Sinclair Davidson, RMIT University
Has Government Intervention Worked? An Appraisal of Cash Handouts
Ryan B. Edwards, University of Queensland, and Fabrizio Carmignani, University of Queensland
Cross-border Fiscal Multipliers
Neil Dias Karunaratne, University of Queensland
The Policy Significance of Stylised Facts on Australia's Potential Output and Productivity
Discussants: Steve Keen, University of Western Sydney
Makram El-Shagi, Halle Institute for Economic Research
Saten Kumar, Auckland University of Technology
Ashton de Silva, RMIT University

[57]   4:30–6:15 p.m.
EAST-WEST TRADE AND ITS IMPACT ON ECONOMIC GROWTH
Organizer and Chair: Won W. Koo, North Dakota State University
Papers: Won W. Koo, North Dakota State University, and Oleksiy Tokovenko, North Dakota State University
The Role of Exchange Rate in Bilateral Trade between U.S. and China
P. Lynn Kennedy, LSU AgCenter, Brian Hillbun, Louisiana State University, and YoungJae Lee, Louisiana State University
A Determination of the Agricultural Trade Impacts of the US/Australia Free Trade Agreement
Xiangdong Qin, Shanghai Jiao Tong University
The Role of Specialization and Trade: An Experimental Approach
David Karemera, South Carolina State University, and Won W. Koo, North Dakota State University
NAFTA, the Environment, and Impacts on Agricultural Exports and Trade
Discussants: P. Lynn Kennedy, LSU AgCenter
Xiangdong Qin, Shanghai Jiao Tong University
Won W. Koo, North Dakota State University
Yasuko Ishiguro, University of Hyogo

[58]   4:30–6:15 p.m.
THE BANKING INDUSTRY
Chair: Yi-Ching Hsu, National University of Kaohsiung
Papers: Yi-Ching Hsu, National University of Kaohsiung, and Yang Li, National University of Kaohsiung
Efficiency Analysis of Banking Industry of Taiwan, Mainland China and Hong Kong: Perspectives of Capital Adequacy Ratios and Non-performing Loans
Satya Paul, University of Western Sydney, and Ammar Jreisat, University of Western Sydney
Productivity Change of Jordanian Banking Sector Based on Malmquist Productivity Index
Ching-Lung Lo, National University of Kaohsiung, and Yang Li, National University of Kaohsiung
Evaluating Performance of Economic Regions of Mainland China: Application of Directional Output Distance Function and Meta-Frontier
Discussants: from above participants

[59]   4:30–6:15 p.m.
TECHNOLOGY, INNOVATION, AND DIFFUSION
Chair: Petr Hanel, University of Sherbrooke
Papers: Chiang-Ping Chen, National Central University, Jin-Li Hu, National Chia-Tung University, and Chih-Hai Yang, National Central University
An International Comparison of R&D Productivity Change of Specific Innovative Outputs: Technical Progress or Efficiency Change?

Petr Hanel, University of Sherbrooke, Anthony Roger Amichia, University of Sherbrooke, Jorge Niosi, University of Quebec, and Susan Reid, Bishop's University
  International Diffusion of Biotechnology in Emerging Countries: Evidence from Patent and Trade Data
Rodney W. Strachan, Australian National University, and Herman K. van Dijk, Erasmus University
  Evidence on a Real Business Cycle Model with Neutral and Investment-Specific Technology Shocks Using Bayesian Model Averaging
Discussants: Petr Hanel, University of Sherbrooke
Yu-Pei Hsu, Feng Chia University
Chiang-Ping Chen, National Central University

[60]   4:30–6:15 p.m.
TOPICS ON INDUSTRIAL ORGANIZATION
Chair: Madhu S. Mohanty, California State University, Los Angeles
Papers: Simona Fabrizi, Massey University, Steffen Lippert, Massey University, Clemens Puppe, Karlsruhe Institute of Technology, and Stephanie Rosenkranz, Utrecht University
  Suggested Retail Prices with Downstream Competition
Sung Hee Jun, Suncheon National University, and Shi Young Lee, Chung-Ang University
  Does the Linder Hypothesis Hold for Service Trade?
Yukihide Kurakawa, Tokyo Institute of Technology
  Vertical Structure in Power Industry When the Incumbent Has a Cost Advantage
Vivek Pai, Charles River Associates, Inc., and Volodymyr Bilotkach, University of California, Irvine
  An Estimation of Hub Reliability Premium in the US Airline Industry
Discussants: Friska Parulian, ERIA
Massimiliano Tani, Macquarie University
Madhu S. Mohanty, California State University, Los Angeles
Yukihide Kurakawa, Tokyo Institute of Technology

[62]   4:30–6:15 p.m.
Contemporary Economic Policy Session
TRADE-OFFS IN ENVIRONMENTAL AND IRRIGATION CARRY-OVER
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: John Quiggin, University of Queensland
Papers: Jeff Connor, CSIRO, Sayed Iftekhar, University of Tasmania, Mac Kirby, CSIRO, and John Tisdell, University of Tasmania
  Trade-offs in Environmental and Irrigation Carry-Over: The Basic Model
John Tisdell, University of Tasmania, Jeff Connor, CSIRO, Sayed Iftekhar, University of Tasmania, and Mac Kirby, CSIRO
  Trade-offs in Environmental and Irrigation Carry-Over: Strategic Behavioural Models and Results
Jeff Connor, CSIRO, Sayed Iftekhar, University of Tasmania, Mac Kirby, CSIRO, and John Tisdell, University of Tasmania
  Trade-offs in Environmental and Irrigation Carry-Over and Water Trade Policy
Discussants: David L. Sunding, University of California, Berkeley
Ellen Hanak, Public Policy Institute of California
John Quiggin, University of Queensland

[63]   4:30–6:15 p.m.
INFRASTRUCTURE, SERVICE PROVISION AND RELATED ISSUES
Organizer: Clevo I. Wilson, Queensland University of Technology
Chair: Jeremy Webb, Queensland University of Technology
Papers: Jeremy Webb, Queensland University of Technology, Max Briggs, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
  Automotive Carbon Lock-In: A Study of Path Dependence and Lock-In
Jessica Harris, Queensland University of Technology, Wasantha Athukorala, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology

Residential Demand for Electicity: An Australian Perspective
Wasantha Athukorala, Queensland University of Technology, Premawansa Dissanayake, Queensland University of Technology, Peter Grace, Queensland University of Technology, Mike Heffernan, University of the Sunshine Coast, Oshan Manawadu, Queensland University of Technology, Evonne Miller, Queensland University of Technology, Prasad Neelawela, Queensland University of Technology, Tony Sahama, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
  Forecasting Population Changes and Service Requirements in the Regions: A Study of Two Regional Councils in Queensland, Australia
Discussants: to be announced

QUT Welcome Reception   6:30–8:00 p.m.

Thursday, April 28

Registration and Morning Coffee   8:30–9:00 a.m.

[64]   9:00–10:45 a.m.
SESSIONS IN HONOUR OF MURRAY KEMP: DEVELOPMENT AND MIGRATION
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Partha Gangopadhyay, University of Western Sydney
Papers: Masayuki Okawa, Ritsumeikan University
  The Optimal Tariff Policy and Endogenous Location Choice
Mamta Chowdhury, University of Western Sydney
  Remittances Flow and Financial Development in Bangladesh
Arlene Ozanne, University of Otago
  The Economic Impact of the International Migration of Health Workers: Sustainable Development of the Philippines and Emigration
Discussants: to be announced

[65]   9:00–10:45 a.m.
QUANTITATIVE AND EXPERIMENTAL METHODS IN FINANCIAL ECONOMICS
Chair: to be announced
Papers: Keith Cuthbertson, City University London, and Dirk Nitzsche, City University London
  Performance, Stock Selection and Market Timing: German Mutual Fund Industry
Dirk Nitzsche, City University London, and Keith Cuthbertson, City University London
  Winners and Losers: German Equity Mutual Funds
Nicolae Adrian Stoian, California State University, East Bay
  Public Messages and Asset Prices
Discussants: from above participants

[66]   9:00–10:45 a.m.
THRESHOLD CONCEPTS IN ECONOMICS EDUCATION— THEORY AND PRACTICE
Organizer and Chair: Tommy Tang, Queensland University of Technology
Papers: Ross S. Guest, Griffith University
  Threshold Concepts in Economics: What, Why and How?
Rod O'Donnell, University of Technology, Sydney
  Critique of the Threshold Concept Hypothesis
Mary R. Hedges, University of Auckland
  Embedding Threshold Concepts: Use of a Practice-Theory-Practice Cycle
Discussants: Tim Robinson, Queensland University of Technology
Tommy Tang, Queensland University of Technology

[67]   9:00–10:45 a.m.
NEW TALES OF GROWTH

Organizers: Eduard H. Hochreiter, Joint Vienna Institute, and Thorvaldur Gylfason, University of Iceland
Chair: Thorvaldur Gylfason, University of Iceland
Papers: Sven W. Arndt, Claremont McKenna College
   Open-economy Macro Adjustment among US, Euroland and China
Johannes W. Fedderke, Pennsylvania State University
   Comparative of the Indian and Chinese Manufacturing Sectors
Thorvaldur Gylfason, University of Iceland, and Eduard H. Hochreiter, Joint Vienna Institute
   Growing Together: Croatia and Latvia
Alfred Sitz, Vienna University of Economics and Business
   From PLUS 2 to MINUS 18 Percent: Why Did European Economies Experience Such Different Impacts of the Recent Financial Crisis
Discussants: to be announced

[68]   9:00–10:45 a.m.
OIL PRICES, VOLATILITY, PORTFOLIOS
Chair: Fardous Alom, Lincoln University
Papers: Fardous Alom, Lincoln University, Baiding Hu, Lincoln University, and Bert D. Ward, Lincoln University
   Asymmetric GARCH Models of Oil Price Volatility
Wei-han Liu, La Trobe University
   Portfolio Value-at-Risk Estimation for Oil Spot Prices and Their Futures—Incorporating a Reexamination of Maturity Effect
Discussants: Ronald A. Ratti, University of Western Sydney
Roger Ham, University of Western Sydney

[69]   9:00–10:45 a.m.
PUBLIC POLICY ISSUES
Chair: Jane E. Ruseski, University of Alberta
Papers: Jacob A. Bikker, De Nederlandsche Bank, Onno W. Steenbeek, Erasmus University, and All Pensions Group, and Federico Torracchi, De Nederlandsche Bank
   The Impact of Scale, Complexity, and Service Quality on the Administrative Costs of Pension Funds: A Cross-Country Comparison
Yang Li, University of Queensland, Kam Ki Tang, University of Queensland, and Jie Zhang, National University of Singapore
   Heterogeneous Health and Capital Endowments with Involuntary Retirement and Public Policy
Friska Parulian, ERIA, and Mukul G. Asher, National University of Singapore
   Civil Service Pensions in Middle Income Countries: Current Arrangement, Issues and Reform Direction
Discussants: Kazuki Onji, Australian National University
Nara F. Monkam, University of Pretoria
Siew Ling Yew, Monash University

[70]   9:00–10:45 a.m.
ECONOMETRIC MEASUREMENTS APPLICABLE TO STOCK INVESTORS, CORPORATIONS, AND GOVERNMENT
Chair: Rashmi Umesh Arora, Griffith University
Papers: Chia-Jui Chang, Chung Yuan Christian University, Sheng-Chieh Pan, China University of Technology, Meng-Hua Tsai, Chung Yuan Christian University, Po-Chin Wu, Chung Yuan Christian University, and Huei-Ping Zeng, Chung Yuan Christian University
   Cash Flow at Risk in Operating, Investing and Financing Activities: Evidence from the Companies in the Taiwan 50 Index
Shiao-Yen Liu, Chung Yuan Christian University, Chiung-Wen Fan, Nanya Institute of Technology, Sheng-Chieh Pan, China University of Technology, and Po-Chin Wu, Chung Yuan Christian University
   The Performance Evaluation of OECD Countries: A Consideration of Undesirable Outputs
Chia-Jui Peng, Chung Yuan Christian University, Yen-Yuan Lai, Chung Yuan Christian University, Shiao-Yen Liu, Chung Yuan Christian University, Po-Chin Wu, Chung Yuan Christian University, and Chien-Wen Yang, Chung Yuan Christian University
   Nonlinear Adjustment and Arbitrage Region of Stock Price—An Extensive Application of the Ohlson Model

Wan Hua Lee, National University of Kaohsiung, and Yang Li, National University of Kaohsiung
   Study of Operating Performances and Investment Strategies of Mainland China's Subsidiaries of Taiwan
Discussants: Shamila A. Jayasuriya, Ohio University
Jae Kim, La Trobe University
Chia-Jui Chang, Chung Yuan Christian University
Chun-Yu Lin, National Kaohsiung University of Applied Sciences

[71]   9:00–10:45 a.m.
ISSUES IN AGRICULTURAL PRODUCTION IN DEVELOPING COUNTRIES
Organizer: Clevo I. Wilson, Queensland University of Technology
Chair: Sean Pascoe, CSIRO
Papers: Kularatne G. Mohottala-Gedara, Queensland University of Technology, Sean Pascoe, CSIRO, Tim Robinson, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
   Factors Influencing Efficient Allocation of Water for Reservoir-based Agricultural Production in Sri Lanka
K. M. R. Muditha Karunarathna, Queensland University of Technology, Tim Robinson, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
   Components of Agricultural Biodiversity and Farm Level Technical Efficiency: An Empirical Investigation
Wasantha Athukorala, Queensland University of Technology, Tim Robinson, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
   Pesticide Use in Agriculture and Its Impact on Farm Level Inefficiency: Evidence from Sri Lanka
Discussants: Jason K. Hansen, Naval Postgraduate School
Euan Fleming, University of New England
George Antony, Queensland Department of Employment, Economic Development and Innovation

[72]   9:00–10:45 a.m.
Contemporary Economic Policy Session
FLOODS AND WATER SCARCITY
Organizer: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Chair: Rosalind Bark, CSIRO
Papers: Azusa Okagawa, National Institute for Environmental Studies, and Akira Hibiki, National Institute for Environmental Studies
   Flood Risk Management under Climate Change
Ellen Hanak, Public Policy Institute of California
   Flood Insurance Demand
Peter Sutherland, GHD
   Lessons from Two Decades of Water Reform in Australia: Facing a Scarce Water Future
Discussants: Shigeru Matsumoto, Aoyama Gakuin University
Jeremy Webb, Queensland University of Technology
Douglas Fisher, Queensland University of Technology

[73]   9:00–10:45 a.m.
EDUCATIONAL ACHIEVEMENT AND COMPENSATION
Organizer and Chair: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Papers: Peter Elias, University of Warwick, and Kate Purcell, University of Warwick
   Higher Education, Intergenerational Mobility and Earnings: The Case of the UK
Sarah Crichton, New Zealand Department of Labour, and Sylvia Dixon, New Zealand Department of Labour
   The Labour Market Returns to Further Education for Working Adults
Alvaro A. Comin, University of Sao Paulo
   The Impact of Higher Education Expansion on Labor Markets and Economic Restructuring in Brazil
Ian W. Li, University of Western Australia, Elisa R. Birch, University of Western Australia, and Anu Rammohan, University of Western Australia

The Gender-Wage Gap in Graduate Earnings: A Quantile Regression Approach
Discussants: Sarah Crichton, New Zealand Department of Labour
Ian W. Li, University of Western Australia
Tiago Freire, National University of Singapore
Dipanwita Sarkar, Queensland University of Technology

[74]   11:00 a.m.–12:45 p.m.
SESSIONS IN HONOUR OF MURRAY KEMP: ECONOMICS OF RIVALRY AND PARTNERSHIPS
Organizers: Partha Gangopadhyay, University of Western Sydney, and Binh Tran-Nam, University of New South Wales
Chair: Maria Estella Varua, University of Western Sydney
Papers: Kenji Fujiwara, Kwansei Gakuin University
Welfare Implications of Leadership in a Resource Market under Bilateral Monopoly
Vijay Mohan, Deakin University, and Bharat R. Hazari, City University of Hong Kong
Tax Policy When Countries Compete for Exports: A Simple Ricardian-Hotelling Model
Robert F. Owen, University of Nantes, and Partha Gangopadhyay, University of Western Sydney
Can Market Access Costs in the Absence of Sunk Costs Be a Source of Collusion in Vertical Markets?
Masahiro Kawai, Asian Development Bank Institute, Biswa Nath Bhattacharyay, Asian Development Bank Institute, and Kakali Mukhopadhyay, McGill University
Forging Economic Partnership between India and Japan: Prospects and Challenges
Discussants: to be announced

[75]   11:00 a.m.–12:45 p.m.
MONETARY ECONOMICS AND POLICY
Chair: Ashton de Silva, RMIT University
Papers: Makram El-Shagi, Halle Institute for Economic Research, and Sebastian Giesen, Halle Institute for Economic Research
Money and Inflation: The Role of Persistent Velocity Movements
Steve Keen, University of Western Sydney
Are We 'It' Yet? A Monetary Minsky Model of the Great Moderation and Recession
Saten Kumar, Auckland University of Technology, Scott Fargher, Auckland University of Technology, and Don J. Webber, Auckland University of Technology
Money Demand Stability: A Case of Nigeria
Discussants: Ryan B. Edwards, University of Queensland
Neil Dias Karunaratne, University of Queensland
Makram El-Shagi, Halle Institute for Economic Research

[76]   11:00 a.m.–12:45 p.m.
FINANCE AND TRADE IN INTERNATIONAL ECONOMICS
Chair: Chia-Jui Peng, Chung Yuan Christian University
Papers: Rashmi Umesh Arora, Griffith University, and Nicholas Rohde, Griffith University
Finance and Inequality in South Asia
Joze Damijan, University of Ljubljana, Crt Kostevc, University of Ljubljana, and Matija Rojec, University of Ljubljana
Learning from Trade through Innovation: Causal Link between Imports, Exports and Innovation in Spanish Microdata
Yasuko Ishiguro, University of Hyogo
A Krugman-type Core-Periphery Model with Financial Assets—Structure and Stability of Equilibria
Discussants: Keith Cuthbertson, City University London
Dirk Nitzsche, City University London

[77]   11:00 a.m.–12:45 p.m.
STOCK MARKET AND REGULATION
Chair: Shamila A. Jayasuriya, Ohio University
Papers: Shamila A. Jayasuriya, Ohio University
Stock Market Correlations between China and Its Neighbors

Jae Kim, La Trobe University, Kiam Ping Lim, Universiti Malaysia Sabah, and Abul Shamsuddin, University of Newcastle
Stock Return Predictability and the Adaptive Markets Hypothesis: Evidence from Century-Long U.S. Data
Discussants: Nicolae Adrian Stoian, California State University, East Bay
Jae Kim, La Trobe University

[78]   11:00 a.m.–12:45 p.m.
IMPLICATIONS OF TAX POLICY FOR REVENUE GENERATION, WELFARE, AND POPULATION GROWTH
Chair: Jacob A. Bikker, De Nederlandsche Bank
Papers: Nara F. Monkam, University of Pretoria
Mobilising Tax Revenue to Finance Development: The Case for Property Taxation in Francophone Africa
Siew Ling Yew, Monash University, and Jie Zhang, National University of Singapore
Golden-rule Social Security and Public Health in a Dynastic Model with Endogenous Longevity and Fertility
Discussants: Jane E. Ruseski, University of Alberta
Yang Li, University of Queensland

[79]   11:00 a.m.–12:45 p.m.
PRODUCTIVITY, OUTSOURCING, AND COMPETITION
Chair: Vivek Pai, Charles River Associates, Inc.
Papers: Sasan Bakhtiari, University of New South Wales
Productivity, Size and Outsourcing: Theory and Evidence from Australian Manufacturing
Wen-Jung Liang, Tamkang University, Pei-Ling Chen, National Taipei University, and Yen-Ju Lin, Fo Guang University
Lobby Competition and Standardization Union
Madhu S. Mohanty, California State University, Los Angeles
Effects of Positive Attitude on Productivity: A Theoretical Analysis
Massimiliano Tani, Macquarie University
Knowledge Flows across Organisations: The Role of Business Visits
Discussants: Vivek Pai, Charles River Associates, Inc.
Simona Fabrizi, Massey University
Wen-Jung Liang, Tamkang University
Sasan Bakhtiari, University of New South Wales

[80]   11:00 a.m.–12:45 p.m.
ISSUES ON OIL PRICE SHOCKS, STOCK PRICES, AND CARBON PRICE
Organizer and Chair: Ronald A. Ratti, University of Western Sydney
Papers: Harminder Singh, Deakin University, and Mohan Nandha, Monash University
Short- and Long-Run Oil Price Sensitivity of Chinese Stocks
Roger Ham, University of Western Sydney, and Kyung Hwan Yoon, University of Western Sydney
Oil Futures and Carbon Prices: Instability and Spillover
Ronald A. Ratti, University of Western Sydney, Wensheng Kang, Kent State University, and Kisok Lee, Kyung Hee University
Stock Price Volatility, Oil Price Shocks and Investment
Discussants: Fardous Alom, Lincoln University
Harminder Singh, Deakin University
Wei-han Liu, La Trobe University

[81]   11:00 a.m.–12:45 p.m.
STUDIES INVOLVING ENVIRONMENTAL VALUATION TECHNIQUES
Organizer: Clevo I. Wilson, Queensland University of Technology
Chair: Wasantha Athukorala, Queensland University of Technology
Papers: Clevo I. Wilson, Queensland University of Technology, Wasantha Athukorala, Queensland University of Technology, and Dan Carter, Redland City Council
The Presence of Koalas in Neighbourhoods and Property Values: A Hedonic Property Values Study
Wasantha Athukorala, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology

Health Benefits of Reducing Industrial Air Pollution: A Comparison of Willingness to Accept Compensation and Cost of Illness Estimates
Prasad Neelawela, Queensland University of Technology, Wasantha Athukorala, Queensland University of Technology, and Clevo I. Wilson, Queensland University of Technology
Impact of Mining Activities on Property Values
Discussants: John A. Janmaat, University of British Columbia
Jane V. Hall, California State University, Fullerton
Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Tony Sahama, Queensland University of Technology

[82]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session
ENVIRONMENTAL WATER GOVERNANCE: DESIGN PRINCIPLES AND IMPLEMENTATION LESSONS
Organizer: Dustin Garrick, CSIRO, and University of South Australia
Chair: Jeff Connor, CSIRO
Papers: Lin Crase, La Trobe University
Observations about Managing Environmental Water Reserves in Australia
Dustin Garrick, CSIRO, and University of South Australia, Rosalind Bark, CSIRO, and Jeff Connor, CSIRO
Nested Arrangements for Environmental Water Governance in the Southern Connected Murray
Erin O'Donnell, University of Melbourne
A New Approach to Environmental Water Governance in Victoria
Discussants: Sarah Wheeler, University of South Australia
Ellen Hanak, Public Policy Institute of California
Rosalind Bark, CSIRO

[83]   11:00 a.m.–12:45 p.m.
Contemporary Economic Policy Session
ECONOMIC ANALYSIS
Organizer: Jack W. Hou, California State University, Long Beach
Chair: James Laurenceson, University of Queensland
Papers: Jack W. Hou, California State University, Long Beach, Qun Bao, Nankai University, and Min Shao, Nankai University
How Do Firms' Export Decision Affect Employee Income? Evidence from China's Firm Level Data
Daniel Xiangyi Meng, Central University of Finance and Economics, and Yan Guo, Peking University
Public vs. Private R&D at the Firm Level: Evidence from One High-tech Park in China
John R. Graham, University of Calgary, and Marion E. Jones, University of Regina
Human and Social Capital for Vulnerable Populations: Insight from Employed People Experiencing Homelessness
Discussants: Qing He, Renmin University of China
Therese Quang, University of Paris West-Nanterre
Jack W. Hou, California State University, Long Beach

[84]   12:50–2:15 p.m.
Lunch and General Session
KEYNOTE ADDRESS
Introduction: Darwin C. Hall, California State University, Long Beach, and Western Economic Association International
Address: Paul A. David, Stanford University
Slowly Approaching Economic Catastrophes: Then, Now, ... and Next?

Barefoot Bowls & Sunset BBQ   2:30 p.m.

Advance ticket purchase required. Tickets can be purchase both bowling and BBQ or for just BBQ, which will begin approximately 5:00 p.m.

Friday, April 29

Registration and Morning Coffee   8:30–9:00 a.m.

WEAI conference registrants are invited to attend this symposium free of charge. Registration is AUD $70 for all others.

SYMPOSIUM ON THE ECONOMIC DIMENSION OF FLOODS AND NATURAL DISASTERS
Organized by the Australian Agricultural and Resource Economics Society

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[Session I] Z411   9:00–10:45 a.m.
Organizer: Malcolm K. Wegener, University of Queensland
Chair: Tim Robinson, Queensland University of Technology
Opening: Major-General Michael Slater, Chair, Queensland Reconstruction Authority
Papers: John Rolfe, Central Queensland University and Malcolm K. Wegener, University of Queensland
Damage and Losses from Flooding and Cyclones in Southeast, Central, and North Queensland
Speaker from Emergency Management Queensland
The Government's Strategy for Handling Natural Disasters—The National Strategy for Disaster Resilience

[Session 2] Z411   11:00 a.m.–12:45 p.m.
Papers: John Freebairn, Melbourne University
A Framework for Economic Decisions Dealing with Natural Disasters
John Quiggin, University of Queensland
Accounting for Natural Disasters: The Impact on the National Accounts
Russell Gorddard, CSIRO Sustainable Ecosystems, Canberra
New Approaches to Insurance

Lunch Break   12:45–2:00 p.m.
Please pick up your box lunch in the Z block foyer.

[Session 3] Z411   2:00–3:30 p.m.
Papers: Zvi Hochman, CSIRO Sustainable Ecosystems
Adaption Strategies for Primary Industries: Coping with Extreme Weather Events
Paul Barnes, Queensland University of Technology
New Approaches to National Risk Assessment and Disaster Mitigation
Ed Blakely, Sydney University
How Other Countries Handle Similar Disasters

國科會補助計畫衍生研發成果推廣資料表

國科會補助計畫	計畫名稱: 匯率不確定性與海外直接投資時機之選擇: 實質選擇權賽局理論之應用與台灣廠商之實證
	計畫主持人: 陳坤銘
	計畫編號: 99-2410-H-004-047-　　　　　學門領域: 國際經濟學

<div align="center">

無研發成果推廣資料

</div>

計畫名稱: 匯率不確定性與海外直接投資時機之選擇: 實質選擇權賽局理論之應用與台灣廠商之實證

計畫主持人: 陳坤銘

計畫編號: 99-2410-H-004-047-

99 年度專題研究計畫研究成果彙整表

計畫主持人：陳坤銘	計畫編號：99-2410-H-004-047-

計畫名稱：匯率不確定性與海外直接投資時機之選擇：實質選擇權賽局理論之應用與台灣廠商之實證

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	1	1	100%		
		研討會論文	1	1	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	1	1	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	1	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
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	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

	其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	無	

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估 ■達成目標 □未達成目標（請說明，以 100 字為限） 　　　□實驗失敗 　　　□因故實驗中斷 　　　□其他原因 　說明：
2. 研究成果在學術期刊發表或申請專利等情形： 　論文：□已發表 □未發表之文稿 ■撰寫中 □無 　專利：□已獲得 □申請中 ■無 　技轉：□已技轉 □洽談中 ■無 　其他：（以 100 字為限） 初步之實證成果曾於 2010 年 12 月在中華經貿研究學會學術研討會以及 2011 年 6 月在 Western Economic Asociation International 主辦之 The 9th Pacific Rim Conference 上發表。
3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限） 　將實質選擇權理論應用在寡占市場情況下之相關研究是當前的重要議題。本研究建立的理論架構顯示，廠商在面對匯率不確定情況下，市場競爭程度對其最適海外投資時機的影響方向與其投資動機息息相關。此結果有助於進一步釐清不同投資動機下匯率不確定性與海外直接投資的關係。本研究根據理論分析之結果建構實證模型，完成台商前往大陸投資時機之決定因素的經濟計量分析，驗證了本文理論分析之適用性。這些研究成果將整理投至學術期刊。這些研究成果也可提供中央銀行做為擬定匯率政策之參考。