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台灣地區住宅存量與住宅價格之動態調整：失衡模型之應用*

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摘要

台灣住宅市場的的空屋率一直居高不下，自 1980 年初期的 7%水準攀升至 2007 年的 13%水準，期間經歷 1991 年的容積率管制措施，造成往後幾年的住宅供給量大增。在此一情況下，再加上建物的耐久財特性，使得台灣房地產經歷了長期的不景氣。然而，如果供需機制能有效運作時，理應能消化此一過多的餘屋，然我們卻發現空屋率依舊維持在相對的高水位，顯示出台灣住宅市場呈現長期的失衡現象。

本文嘗試由存量、流量的架構出發，建構一失衡調整模型，研究台灣在 1980 年至 2007 年間，住宅市場的價量動態調整過程，藉由此一機制，我們將可發現台灣住宅市場價量變化的特性。然此一失衡模型之應用亦有極限，特別是未考量政策因素與區域特徵將導致偏誤的估計值，本文亦提出進一步修正此一模型的可能性。

關鍵詞：住宅存量、住宅價格、失衡模型
JEL Classification：R21, R31

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一、前言

住宅市場中的需求行爲與供給行爲，一直都是住宅領域中重要的研究課題。比方說，許多國內外學者估計住宅的需求彈性與所得彈性， 例如Hanushek and Quigley(1990) 、Glennon(1989)、吳森田(1994)、吳森田與吳祥華(2004)、與林祖嘉與林素菁(1994)等。也有許多學者估計住宅供給彈性，例如 de Leeuw and Ekanem(1971)、Smith(1976)、與林素菁與林祖嘉(2001)等等。

也有不少學者同時考慮住宅市場的供需，以均衡模型來探討住宅市場的狀況，例如Rosenand Smith(1983)、Wheaton(1990)、林祖嘉等(1994)、花敬群(2001)、與彭建文(2004)等。這些研究除了探討住宅市場的供需行爲以外，也同時探討空屋率的問題。另外，也有一些文章直接研究住宅價格變動與存量調整的關係，例如Heckman(1985)與花敬群與張金鶚(1997)。

上述的研究都是基於一個最基本的假設，即住宅市場是處於均衡的狀態，所以可以利用傳統的均衡分析來處理。然而，住宅市場中有幾個特性，使得許多學者對於住宅市場是否處於均衡狀態一直都有很大的爭議。第一，住宅的調整(或遷徙)成本很高，使得有些家計單位雖然對於住宅需求已有改變(例如家庭人口增加或減少)，但仍不願意調整其住宅消費，造成失衡。第二，由於住宅的異質性很大，市場訊息又不充分，使得住宅需求雙方不易找到相合的適當交易對象，造成住宅市場上經濟出現很大的價格分散(price dispersion)，例如林祖嘉(1994)。在供需雙方都缺乏訊息下，很容易造成住宅市場的失衡。第三，由於住宅的興建速度較慢，再加上供需雙方對於市場價格的反應與調整較慢，於是造成住宅市場的失衡(disequilibrium)，而且往均衡調整的速度很慢，可參見Fair(1972)、DiPasquale and Wheaton (1994)、與Riddle(2004)。由於住宅市場缺乏訊息的結果，也造成住宅市場缺乏效率性，見Case and Shiller(1989)。

以國內的住宅市場來看，過去三次人口普查(1980、1990、與2000)，台灣住宅的空屋率分別高達(12.65%、13.16%、與18.19%)。雖然林祖嘉等(1994)與彭建文(2004)等研究指出台灣的均衡空屋率很高，我們仍然無法否認台灣市場上的兩大特性，即住宅市場的長期失衡是存在的，同時，住宅市場往均衡調整的速度很慢，這兩個現象與國外學者研究國外市場得到的結果十分相似。

既然國內的住宅市場具有長期失衡的現象，我們仍使用均衡模型來討論住宅供需，在方法上是否適當？或許我們應該改用失衡模型來處理台灣住宅市場的供需較爲妥當？這個問題不但在學術上很重要，而且也具有很重要的政策意義。因爲如果失衡模型較好，那麼過去對於住宅市場供需的估計可能都會有問題，或者至少會產生一些偏誤。而不幸得是，雖然我們看到台灣住宅市場長期處於失衡狀態，但國內文獻卻一直缺乏採用失衡模型來處理市場供需與市場調整的問題。

因此，本研究主要目的就是在利用 DiPasouale and Wheaton(1994)與 Riddle(2004)

所採用的失衡模型，來探討國內住宅市場的狀況。本文先建立一個簡單的失衡供需模型，然後加入部分調整模型，再將之轉換成計量模型，最後再以台灣地區 1982 到 2007 年住宅市場 26 年的季資料來測試住宅市場的供需與調整速度。由於國內採用失衡模型的研究很少，在住宅市場上更可能是第一次嘗試，所以本文對於國內研究住宅領域方面應該有很重要的學術價值。

二、失衡模型

(1) 失衡模型的建立

依據 Fair(1972)與 Fair and Jaffee(1972)的失衡模型，第 t 年住宅市場的需求曲線(HD_t)與供給曲線(HS_t)分別可以寫成

$$HD_t = HD_t^e + u_t \qquad (1)$$

$$HS_t = HS_t^e + v_t \qquad (2)$$

其中u_t與v_t代表影響需求與供給的誤差項(不均衡量)，HD_t^e與HS_t^e分別代表長期均衡的需求與供給，其分別決定於相關的解釋變數，可分別寫成

$$HD_t^e = \alpha_0 + \alpha_1 P_t + XD_t \qquad (3)$$

$$HS_t^e = \beta_0 + \beta_1 P_t + XS_t \qquad (4)$$

其中P_t爲市場價格；XD_t與XS_t則是決定長期住宅需求與供給的有關變數，本研究稍後有更詳細的說明。

再依失衡理論，第 t 年的實際交易量(HD_t)(或是可看成長期均衡量HD_t^e)決定於需求量(HD_t)與供給量(HS_t)較小的一方，即

$$HQ_t = \min(HD_t, HS_t) \qquad (5)$$

或是

$$HQ_t = \begin{cases} HD_{t,} & if\ HD_t \le HS_t \\ HS_{t,} & if\ HS_t \le HD_t \end{cases} \qquad (6)$$

或是

$$HQ_t = kHD_t + (1-k)HS_t \qquad (7)$$

$$\text{其中 } k = \begin{cases} 0, & if\ HQ_t = HD_{t,} or\ HD_t \le HS_t \\ 1, & if\ HQ_t = HS_{t,} or\ HS_t \le HD_t \end{cases}$$

在住宅市場上，由於住宅是一種標準的耐久財(durable goods)，在市場不均衡的情況下，每期數量的變化會決定於本期均衡交易量 HQ_t^e 與前期存量 HQ_{t-1} 的差異。依 DiPasquale and Wheaton(1994)與 Riddle(2004)，此一住宅存量調整(ΔS_t)可用部分調整模型(partial adjustment model)來處理，即

$$\Delta S_t = \gamma(HQ_t^e - HQ_{t-1}) \qquad (8)$$

同樣的，住宅價格的調整也決定於本期均價格(P_t^e)與前期價格的差異，即

$$\Delta P_t = \delta(P_t^e - P_{t-1}) \qquad (9)$$

其中 γ 代表住宅數量的調整速度，δ 則代表住宅價格的調整速度。由於住宅興建大約需要兩年以上的時間，再加上通常每年住宅興建的數量(即住宅投資)大約只有住宅存量的 2%到 3%左右，所以理論上來說，短期下住宅數量往均衡調整的速度較慢，而長期下才可能看到較大的調整。反之，住宅價格則可以有較快的調整，所以一般而言，γ 要小於 δ 。

(2)失衡模型的估計

在估計失衡模型方面，通常會有二個步驟，第一個步驟是先估計住宅的需求函數與住宅的供給函數，即上述的(1)與(2)式。然後，我們再把(1)式及(2)式代入(8)式與(9)式當中，可以得到(8)式與(9)式的縮減式(reduced form)。依 Riddle(2004)，

此縮減式可寫成：

$$\Delta S_t = a_0 + a_1 \Delta P_t + a_2 \Delta XD_t + a_3 \Delta XS_t + a_4 u_{t-1} + a_5 v_{t-1} + \varepsilon_t \qquad (10)$$

$$\Delta P_t = b_0 + b_1 \Delta S_t + b_2 \Delta XD_t + b_3 \Delta XS_t + b_4 u_{t-1} + b_5 v_{t-1} + e_t \qquad (11)$$

其中 ΔXD_t 是關於影響住宅需求相關變數的變動量， ΔXS_t 是關於影響住宅供給相關變數的變動量， u_{t-1} 與 v_{t-1} 則是前一期需求變數與供給函數的差額(即不均衡下的數額)，此 u_{t-1} 與 v_{t-1} 的估計可由(1)式與(2)式的估計式中得到。而 ε_t 與 e_t 則符合傳統誤差項的假設。

就住宅市場失衡模型而言，我們最在意的是前期失衡量(u_{t-1} 與 v_{t-1})對於本期數量變化(ΔS_t)與價格變化(ΔP_t)的影響，亦即 a_4 、 a_5 、 b_4 與 b_5 的符號方向與大小。就理論上來看，當前期的住宅需求量(u_{t-1})太大(代表的是使需求曲線右移)，或是前期供給量(v_{t-1})太大(代表的是使供給曲線右移)，都會引起本期存量(ΔS_t)的增加(即 a_4 、 a_5 爲正)。但另一方面，當前期住宅需求的失衡量(u_{t-1})太大(代表的是使需求曲線右移)，則會使本期價格(ΔP_t)上升；而當前期住宅供給失衡量(v_{t-1})太大(代表的是使供給曲線右移)，則會使本期價格(ΔP_t)下降。換言之，我們預期 $b_4 > 0$ 、 $b_5 < 0$ 。因此我們要檢定的假設有兩組，即在住宅數量調整方面，我們要檢定的假設是：

$$H_0 : a_4 > 0, a_5 > 0$$
$$H_1 : not\ H_0 \qquad (12)$$

在住宅價格調整方面，我們要檢定的假設是：

$$H_0 : b_4 > 0, b_5 < 0$$
$$H_1 : not\ H_0 \qquad (13)$$

最後，在計量分析架構方面，依一般時間數列分析的流程，我們首先進行數列的定態檢定。理論上，因長短期的關係即爲 DiPasquale and Wheaton(1994)與 Riddle(2004)所提及的存量-流量關係，而存量又爲流量之累積，存量經一階差分後即爲流量分析，也就是式(10)與式(11)的失衡模型，故判定變數差分前後的階次，是確保分析可靠性的首要條件。

在確定數列的階次後，遂進入式(3)與式(4)的長期均衡關係估計，本文在此一階段將採用共整合估計的方式來描述變數間的關係。Riddle(2004)的研究則是在確認變數階次後，直接以 OLS 估計其長期均衡關係，此一作法相對較不嚴謹，稍後本研究有更詳細探討。在獲得長期關係之後，我們進一步計算此一方程式的殘差值作爲長期關係失衡時的代表，並以延遲一期的方式(u_{t-1} 與 v_{t-1})呈現在式(10)與式(11)的失衡模型中。

三、實證結果分析

(1) 資料來源與數列恆定檢定

依實證分析的需求，本文採用的變數相對較多，同時部分變數依研究需求亦將略微修正，或資料長度不足而改以插補法的方式補足所需之觀察值。本研究期間由 1982Q2 自 2007Q4，爲季資料，共 103 季。在存量-流量的架構中，如DiPasquale and Wheaton(1994)與Riddle(2004)的模型，採用住宅存量作爲存量變數。而台灣住宅存量登記始自 1990 年開始，時間長度過短且相對不精確，因此本文改以使用執照面積(SQF)之累積量(CSQF)作爲本文的存量變數。[1]在房價變數選取方面，因國泰房價指數與信義房價指數時間長度過短而無法使用，本文以預售屋住宅價格(HP)作爲本文的住宅價格變數。在其餘的需求變數方面，本文亦將選取累積之家戶數存量(HH)作爲人口特徵變數，租金指數(RENT)作爲租賃選擇變數，國民可支配所得代表所得效果，再依Almon(1962)的方法，將國民可支配所得轉換成恆常所得(PY)。[2]在衡量家戶需求的資金成本方面，本文以Dougherty and Van Order(1982)定義的使用者成本(USERC)作爲家戶借貸時的資金成本。[3]

在影響供給量的選取方面，除累積執照面積(CSQF)外，本文採用的變數尚有營建成本指數(CC)、空屋率(VAC)、GDP與代表建商短期融資成本的 90 天期商業本票利率(TBR)。[4]因使用的變數頗多，爲節省文章的篇幅與撰寫之流暢性，本文一併於附錄中說明的資料定義與來源出處。此外，爲方便實證結果的說明，除使用者成本、商業本票利率與空屋率外，其餘變數均進行對數化處理，並以L加註之。

在表一中，我們列出各主要變數的基本統計量，包括平均數與標準差。不過由於我們使用的是時間數列分析，所以平均數只能當作一個很基本的參考資料，而各主要變數時間數列的統計性質才是我們所關心的。

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[1] 以衡量供給量變動的角度而言，因每件推案的面積均不相同，住宅存量記錄的方式相對較不精確且容易失真。相對而言，使用執照面積則是代表當期實際產生的供給量，並以面積(平方公尺)的方式紀錄，較易掌握建商真實的供給行爲。

[2] 因家戶購買住宅必須考量長期的支付能力，以當期可支配所得描述可能略嫌不足，故研究以改以恆常所得的概念定義所得需求變化的影響，Almon (1962)多項式時間落後模型(polynomial distributed lag)的定義爲 $A_n(Y_t)=[2/(n+1)]\sum_{i=0}^{n}(n-i)Y_{t-i}$，i=1…n，本文以n=4 計算恆常所得。

[3] $USERC_t=(i_t+t_p)(1-t_y)-0.5(\Delta HP_t/HP_t)-0.5(\Delta HP_{t-1}/HP_{t-1})$，$t_p$ 與t_y 分別代表地價稅率與所得稅率，台灣的地價稅率極小(約千分之二)可忽略，所得稅率則以 33%表示，HP_t 爲預售屋住宅價格指數。Dougherty and Van Order(1982)站在已擁屋者的角度來看，當房價升值時，機會成本較小。

[4] Riddel(2004)是以 90 天期的國庫券利率作爲建商的短期資金成本，但台灣的國庫券交易並不似美國熱絡，利率的變化相對較小，因此本文以商業本票利率來替代。

表一 變數基本統計量

變數	平均數	標準差
家戶數 (HH) (戶)	5775069	1043912
累積使用執照面積 (SQF) (平方公尺)	4.36E+08	2.77E+08
恆常所得水準 (PY) (百萬元)	6607104	2574400
國內生產毛額 (GDP) (百萬元)	1739177	860400
預售屋住宅價格 (HP) (萬)	13.501	5.370
租金指數 (RENT) (指數)	84.015	16.622
建築成本指數 (CC) (指數)	77.657	10.612
90 天期商業本票利率 (TBR) (%)	0.057	0.030
空屋率 (VAC) (%)	0.106	0.025
使用者成本 (USERC) (%)	0.040	0.053

資料來源：本研究。

表二 單根檢定結果

	ADF 檢定統計量	
變數	原始值	一次差分
家戶數 (HH)	-1.919	-3.352***
累積使用執照面積 (SQF)	1.247	-2.008**
恆常所得水準 (PY)	-0.809	-3.764**
預售屋住宅價格 (HP)	-2.105	-4.840***
國內生產毛額 (GDP)	-0.372	-4.506***
租金指數 (RENT)	0.729	-1.866*
建築成本指數 (CC)	0.653	-5.292***
90 天期商業本票利率 TBR	-3.004	-10.95***
空屋率 (VAC)	-1.061	-3.090**
使用者成本 (USERC)	-2.856	-11.697***

資料來源：本研究。

附　　註：(a)表中數值代表檢定統計量。

(b)*、**與***分別代表在10%、5%與1%的顯著水準下拒絕數列爲單根的虛無假設。

在檢定數列是否爲恆定數列上，本研究採用 ADF(Augmented Dickey-Fuller)的檢定方法進行，並表列原始值與一次差分後的檢定結果。由表二的結果發現，本文採用變數的原始數列皆顯著爲非恆定數列，但再經一次差分後，所有數列均在至少 10%的顯著水準下，均已呈現恆定狀態。經恆定狀態的檢定後，便可進入存量-流量分析的架構。

(2) 實證結果

在前述理論說明中，本文已對將採用之架構有詳細的描述，同時在確定文中使用數列的階次後，便可估計供需的長期需求關係，此部分也就是存量分析。接著將所得之長期關係的殘差帶入短期關係中，也就是流量分析。本文首先就建構供給與需求的長期均衡式工具說明。

以需求面而言，本文採用恆常所得、租金指數、使用者成本、家戶數與新成屋房價作爲影響需求的主要來源。同時本文依據 DiPasquale and Wheaton(1994)與 Riddle(2004)的作法，將需求函數定義在家戶數變化比例下的實質家戶需求，如下所示：

$$LCSQF_t = HH_t \cdot f(LP_t, XD_t) + u_t$$

其中 XD_t 表示恆常所得、租金指數與使用者成本的水準值，亦即影響存量累積的因素是以家戶數的水準值加成(proportional)而來。同時爲方便實際估計時的運算，通常會將之改寫成：

$$LPCSQF_t = \frac{LCSQF_t}{HH_t} = f(LP_t, XD_t) + u_t$$

式中的 $f(LP_t, XD_t)$ 以本文而言爲一線性關係，同時本文對殘差值 u_t 採用相同的符號，因這並不影響我們的分析。[5]在供給面的長期關係方面，依舊由累積使用執照面積表示供給存量，影響供給存量的來源，仍假定先前介紹過的變數，其關係亦爲線性。

在估計長期關係的工具方面，Riddle(2004)採用Engle and Granger的方法來決定長期關係，此法相對而言有較多的缺點。[6]本文採用Johansen(1990)的方法來檢定變數間是否存在共整合，此一共整合關係即爲本文描述的需求(供給)的長期均

[5] 本文的作法是將累計使用執照面積發放的原始值除以家戶累計數後，在進行對數化處理，並以P表示加成(proportional)之意。同時，本文亦對 $LPCSQF$ 進行單根檢定，發現原始值亦呈現單根性質，經一次差分後，而在 5%的顯著水準下，已顯著拒絕單根的虛無假設。

[6] Engle and Granger的方法除無極限分配外，亦法檢驗變數間長期關係的各種可能性。

衡關係。Johansen(1990)的檢定結果如表三所示：

表三 共整合檢定

	Hypothesized No. of CE(s)	Trace test	Max test
需求面	None	136.887**	56.941**
	At most 1	79.947**	51.575**
供給面	None	195.316**	88.217**
	At most 1	107.099**	42.911**

資料來源：本研究。

附　　註：**與*分別表 5%與 10%的顯著水準下拒絕虛無假設。

Johansen 的共整合結果顯示，不論是需求的均衡式或供給的均衡式均存在不止一條的長期關係式。理論上，實證研究者希望得到唯一的一條關係式，但事實上，估計的過程不易獲得僅一條的關係式，特別是模型採用的變數爲數較多時。通常會採一較折衷的方式，即採用眾多關係式中，估計係數較符合經濟意義的關係式作爲說明，本文亦採此一作法。需求與供給的長期關係表示如下：

$$LPCSQF_t = \underset{(0.136)}{0.388}*LPY_t + \underset{(0.285)}{2.820}*LRENT_t - \underset{(1.022)}{3.449}*USERC_t - \underset{(0.087)}{0.510}*LHP_t$$

$$LCSQF_t = \underset{(0.032)}{0.216}*LHP_t + \underset{(0.058)}{0.810}*LGDP_t - \underset{(0.341)}{2.805}*TBR_t - \underset{(0.063)}{0.046}*LCC_t + \underset{(0.452)}{1.356}*VAC_t$$

上兩式中括弧內是 S.D.。其中長期需求關係式的參數估計結果均符合我們事前的預期，而且係數顯著，恆常所得增加(0.388)會使住宅需求增加，租金增加(2.820)會使租賃成本增加而衍生住宅需求。使用者成本(-3.449)的影響亦在預料之中，當資金的機會成本越低，住宅的需求就越大。而當房價(-0.510)越低，住宅需求相對較高亦是吾人所預期。

在供給方面，大多數的變數對供給量影響的亦如預期，房價越高時建商的供給意願更大。DiPasquale and Wheaton(1994)認爲住宅供給與GDP有一定比例關係，GDP越高則供給量越大，本文得到的估計係數(0.810)亦支持此一論述。代表建商短期融資成本的商業本票利率亦對供給量有顯著影響(-2.805)，利率越低則建商的機會成本亦相對較小。建築成本的影響則未如我們預期的具有顯著影響，本文猜測因建築成本指數的建構僅包含建築材料或人力成本，但卻未納入土地成本所致。[7]最後，我們發現空屋率對供給的影響並未如本文預期(1.356)，正向且顯著的

[7] 以台灣建築成本結構而言，土地與建材(包含人力成本)佔總成本的比例約爲 7：3 或 6：4，土

影響顯然與理論不符，吾人造成此一結果可能來自於忽略區域差異所致。

在獲得長期均衡關係式後，我們計算二者共整合估計下長期關係式，並將之以延遲一期的效果帶入價量的短期結構式中。在短期的價量調整式中，依據式(10)與式(11)所述，將影響需求與供給均衡的外生變數，經一次差分後以延遲一期的效果帶入短期調整式中。本文爲防止可能遺漏變數延遲效果可能性，故將遲落效果由 1 期延長至 3 期，並將估計過程中不顯著的估計係數予以剔除，僅保留 10%以上的顯著水準下的估計係數值，並以此說明經濟意涵，估計係數彙整如表三所示。

在表四的估計結果中，本文關注的是誤差修正估計係數u_{t-1}與v_{t-1}，與本研究事先的預期有所差距，住宅流量調整方程式對需求失衡的調整速度爲-0.063，但並不顯著。而當面對供給失衡時時，供給行爲將持續擴大失衡狀態，以每期約 0.45 的速度增加，且此一效果具有統計上的顯著性，此一結論顯與吾人的猜測不符，吾人對此結果的看法，將於說明價格調整方程式後一併分析。在價格調整方程式方面，需求與供給的失衡都顯著的衝擊價格調整，誤差修正係數分別爲-0.317與 0.343，且都在 1%的顯著水準之上，面對需求的下降致使當期整體住宅價格下降，相對符合經濟直覺與相關研究的結論。但面對供給失衡時，正向的誤差調整係數說明當市場存在超額供給，將進一步推升房地產房價，此一結果亦與經濟直覺相違背，且與流量調整方程式的結論雷同。

吾人猜測造成此一估計的原因如下，第一，理論上，當市場存在超額供給時，房價即使不會立即反應過多的供給，亦不至造成房價上漲。但若考慮台灣住宅市場結構，確有可能促使此一情況發生，台灣建築業的景氣循環具有擴張期間短，收縮期間長的特性，且擴張期間價格上漲迅速，當處於衰退期間，住宅價格的下跌十分緩慢，甚至不明顯。輔以政府時常採用的購屋優惠貸款措施，更進一步阻絕房價下跌的空間，此外，此一政策效果亦可能造成建商的預期心理，在餘屋過多的情況下持續推案，遂使供給不減反增。

再者，政府於 1992 年實行建壁率與融資率管制措施，造成建商一窩蜂的搶建風潮，遂造成往後數年的住宅供給量遽增，其餘總體特徵變數的變化卻相對平穩。很明顯的，此一期間的供給行爲明顯偏離長期均衡水準，而供給量與存量爲本文採用的應變數之一，在無其餘替代變數的情況下，此一政策影響的結果自然會造成估計時的精確度下降，甚至是錯誤的結論。第三，忽略區域因素造成的差異，區位特徵在住宅市場的扮演的地位不下於總體特徵變數，以台灣爲例，台北市是相對發展較早、也較快的區域，多數的土地都已開發，而以外的都會區發展較晚且多屬平原地形，在此一先天結構下，土地取得的難易不同，造成價量調整的過程不盡相同。忽略區域因素，亦可能是造成存量均衡式中，有關空屋率的估計係數與理論不符的因素。

地成本的比重相對較高。

表四 住宅流量與房價部分調整方程式

	住宅流量調整方程式			房價調整方程式	
變數	估計係數	標準差	變數	估計係數	標準差
Constant	11.496	2.021	Constant	-6.825	1.038
u_{t-1}	-0.063	0.093	u_{t-1}	-0.317	0.048
v_{t-1}	0.450	0.111	v_{t-1}	0.343	0.053
ΔLPY_{t-2}	-13.807	2.488	$\Delta USERC_{t}$	-1.442	0.118
$\Delta LGDP_{t-1}$	11.326	2.585	$\Delta USERC_{t-1}$	0.392	0.124
$\Delta LGDP_{t-2}$	4.422	1.423	$\Delta USERC_{t-2}$	-0.315	0.132
ΔVAC_{t}	0.404	0.062	$\Delta LRENT_{t}$	8.897	1.162
ΔVAC_{t-2}	0.422	0.060	ΔTBR_{t}	0.802	0.336
ΔTBR_{t}	2.454	1.503	ΔTBR_{t-1}	0.794	0.365
R-squared	0.678		R-squared	0.707	

資料來源：本研究。

在短期特徵變化的影響方面，當期流量的調整明顯受實質所得的影響較大，兩期的遲落效果皆爲正向(11.326 與 4.422)。而遲落二期的房價變化影響爲負(-13.807)，表示房價越高則供給量越少，此一估計結果亦與實際觀察不符，推測此一原因與遺漏重要變數或遲落效果超過兩期以上有關。空屋率的影響一如存量均衡式一般，對當期供給量有正向影響(0.404 與 0.422)，與理論論述有不同的結果，吾人對此一結果的解讀亦與爲進行區位劃分有關。商業本票利率變化的影響爲正(2.454)，融資成本上升卻推升當期供給量，此結果亦可能是不同延遲效果所致。

在房價調整方程式方面，使用者成本的變化顯然是構成房價變化的主因，不同延遲期數有不同的效果(-1.442、0.392 與-0.315)，加總效果約爲-1.4，說明當使用者成本下降，其效果具有持續性之外，對房價的推升相對顯著。租金指數的改變亦如本文的預期，對房價產生正向的間接效果(8.897)，當期租金越高的產生的替代效果，致使住宅需求越高，進而推升房價。商業本票利率變化亦對房屋價格變化有正向顯著的影響(0.802 與 0.794)，此一結果係透過供給面的管道傳遞，本文亦傾向解釋爲忽略區域因素所致。

四、結論

本文由存量-流量的架構出發，利用失衡模型來探討供給與需求的均衡關係

破壞時，如何衝擊短期價量的變化，以此來解讀台灣 20 餘年房地產市場，構成價與量的主要因素。我們發現，以長期關係而言，以家戶變化爲比例的住宅需求與房價、恆常所得、租金水準與使用者成本構成一穩定的均衡關係。在供給方面，亦發現存量與房價、GDP、90 天期商業本票利率與空屋率有顯著關連性，唯空屋率的影響並產生預期的效果，本文推測可能是忽略區域因素所致。

在流量變化與房價的短期調整方面，需求面失衡僅對房價產生衝擊，未對流量有顯著影響。而供給面的失衡雖顯著影響房價變化與住宅供給量的調整，但其方向卻非吾人所預期，我們推測可能是來自於未考量政策效果或區域特徵所致。此一效果亦影響部分外生變數短期間的變化對房價與供給量的衝擊，產生不符合經濟直覺的估計係數。未來可進一步依區位劃分估計方程式，並尋找衡量政策效果的可靠變數，將能使價量變化的失衡模型更精確的描述台灣房地產市場。

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附錄：資料來源說明

使用執照面積(SQF)(平方公尺)：內政部營建署。

預售屋住宅價格(HP)(萬元)：內政部營建署。

家戶數存量(HH)(戶)：中華民國人口統計月報。

租金指數(RENT)(指數)：內政部營建署。

恆常所得(PY)(Almon 定義轉換)：行政院主計處公布之國民可支配所得(單位爲百萬台幣)，本文以 Almon(1962)建議轉換成恆常所得定義。

國內生產毛額(GDP)(百萬)：行政院主計處發行之國民所得統計摘要。

使用者成本(USERC)(%)：金融統計月報之本國一般銀行放款利率，再依定義轉換成使用者成本。

營建成本指數(CC)(指數)：資料來源爲內政部營建署，原始資料自 1991 年開始以月資料型態登錄，本文以算數平均將之轉換成季資料型態，並利用 AR(3)的模型將插補至本文研究期間的起始點(1982Q1)。

空屋率(VAC)(%)：內政部營建署。利用台電紀錄之不足用電底數的家戶數資料。

90 天期商業本票利率(TBR)：金融統計月報。

國立政治大學補助學術活動執行成果報告書

填表日期：96 年　8 月　19 日

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□讀書會　□鼓勵教師及研究人員申請國科會專題研究計畫
□其他＿＿＿＿＿＿＿＿＿＿</td></tr>
<tr><td>申請人姓名</td><td>林祖嘉</td><td>服務單位</td><td>政大經濟系</td><td>職稱</td><td>V 教師/研究人員
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<tr><td colspan="2">實際活動起迄日期</td><td colspan="2">2007.7.9 - 12</td><td>活動地點</td><td>澳門</td></tr>
<tr><td>活動名稱</td><td colspan="5">（中文）第十三屆亞洲不動產學會與美國不動產與都市經濟學會聯合年會
（英文）The 12th AsRES Annual Conference & The 2007 AREUEA International Conference</td></tr>
</table>

National Chengchi University Faculty Attendance at International Conferences--Report

19/80/2007 (dd/mm/yyyy)

Name	Chu –Chia Lin	Administrative Unit and Job Title	Department of Economics Professor
Location of Conference	Macau	Duration of Conference	09~12/07/2007
Name of Conference	(Chinese) 第十三屆亞洲不動產學會與美國不動產與都市經濟學會聯合年會 (English) The 12th AsRES Annual Conference & The 2007 AREUEA International Conference		
Title of Presented Manuscript	Chinese)住宅環境與兒童教育表現關係的新證據：台灣的個案分析 (English) New Evidence on the Link between Housing Environment and Children's Educational Attainments：The case of Taiwan		

The report should include:

1.Type of participation in the conference

2.Reflections deriving from conference participation

3.Suggestions

4.Name and content of the materials brought back

5.Other

2007 年出席國際學術會議心得報告書

一． 會議名稱：the 12th AsRES Annual Conference and The 207 AREUEA International Conference

二． 會議地點：Macau

三． 參與人數與論文數目：約三百人，約八十場，約二百三十篇論文

四． 本人論文發表場次 7/12, 1400-1530, Session I-5
題目：New Evidence on the Link between Housing Environment and Children's Educational Attainments: The Case of Taiwan

五． 重要結論與研究成果：

(1) 國際學術文獻中有許多探討居住環境對小孩讀書效果影響的文章，但是這些文章中都一直缺乏嚴謹的實証研究。我們的文章利用台灣 2000 年的住宅普查資料，我們可以實際的來檢視居住環境對於小孩讀書成效的正面影響效果。因爲台灣的住宅普查資料中，有完整的地址資料，所以我們可以用來控制無法觀察到的家庭異質變異的問題，然後我們可以進一步的來比較居住在鄰近的同年級小孩的讀書成效。結果我們發現，16 與 17 歲的青少年及 19 與 20 歲的年輕成年人的學術表現與其家庭的住宅面積、居住時間與是否自有等變數有正且顯著的關係；而與住宅年齡有負的關係。

在現在的國際學術文獻當中，本研究可能使用住宅資料來討論這個問題最完整的文章，所以本文的學術貢獻應該是很可觀的，因此本文應該有很大的機會在國際學術期刊上發表。

(2) 在本人發表的場次上，也有許多學者提出問題，顯示他們對於本文的議題都很有興趣，對於本文的改進建議也有不少，對本文的修改也有很顯大的助益。

六． 相關聯結：Faculty of Business Administration, University of Macau
http://www.umac.mo/fba

七． 附件：(1) 本人論文全文一份
(2) 大會手冊一份

New Evidence on the Link between Housing Environment and Children's Educational Attainments[+]

Hsien-Ming Lien[*], Wen-Chieh Wu[**], Chu-Chia Lin[***]

Abstract

There is an extensive literature that posits the hypothesis that a better housing environment enhances a child's educational attainments. However, there is little causal evidence demonstrating the presence of this effect. Using the census files covering the entire population of Taiwan, we examine the effect of housing environment on children's educational attainments. Because the Taiwan census data contain unique address information for every household, we are able to control for unobserved family heterogeneity by comparing a child with his or her peers of the same age cohort in the same neighborhood. After controlling for neighborhood using tens of thousands of area dummies, the chance of high school enrollment for teens (ages 16 and 17) and college enrollment for young adults (ages 19 and 20) is found to be positively correlated with increases in floor space, increases in residential stability, and ownership status, but negatively correlated with increases in building age. In addition, we found that the effect of a child's private space on the chance of school enrollment is nonlinear and different across age and gender. The results are robust even when we account for the potential endogeneity between sibship size and educational outcome using the instrumental variable method.

Keywords: quantity–quality trade-off, housing, educational attainment

JEL classification: R0, I2

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1. Introduction

One long-standing area of interest in the social sciences is to understand the connection between the family environment and a child's outcome, particularly educational attainments. It is generally believed that a larger family size may negatively affect a child's outcome through resource dilution [e.g., Blake (1981, 1989)]. The best-known economic theory that links family circumstances and a child's educational outcome is perhaps the quantity–quality trade-off model [Becker and Lewis (1973) and Becker and Tomes (1976)]. This theory claims that as parents become richer because of the interaction between quantity and quality in the budget constraint, they demand higher quality children, but not necessarily more children. Thus, a reduction in family size leads to an improvement in a child's schooling.

The majority of early studies confirm this trade-off relationship, with a negative relationship between family size and a child's educational attainments being widely observed in regression results.[1] While this negative correlation is often interpreted as evidence supporting the quantity–quality trade-off theory, the conclusions are facing serious criticism. Most problematic is that the apparent negative relationship is not necessarily indicative of a causal effect. That children raised in larger families have less schooling than those in smaller families is not necessarily because of the sibship size per se, but may reflect the omission of other unobserved characteristics, such as parental preferences, household resources, neighborhood conditions, and quality of schooling. In light of this potential bias, several studies have sought to uncover the *causal* effect of family size on a child's educational outcome using the instrumental variable method (IV) [e.g., Angrist, Lavy, and Schlosser (2005), Caceres (2004), and Conley and Glauber (2005)], or controlling for family fixed effects [e.g., Guo and VanWey (1999) and Black, Devereux, and Salvanes (2005)]. Notably, these studies generally found the coefficient of sibship size becomes insignificant after controlling for unobserved family characteristics.

[1] For a review in the economic literature on the link between family size and children's outcomes, see Schultz (2005). There have also been numerous discussions on this issue in sociology. For details, see Blake (1981, 1989), Powell and Stellman (1993), and Guo and VanWey (1999).

Why are results of OLS estimation so different from those of IV or the family fixed effects model? One likely explanation, as pointed out by Phillips (1999), is that sibship size does not produce a negative impact on a child's educational outcome, but the type of family resources it dilutes does.[2] Furthermore, Goux and Maurin (2005) investigated the effect of household crowdedness on a child's school performance, one key resource likely to affect a child's education. Using exogenous variations of family size and household crowdedness as instruments, they found the importance of sibship size becomes negligible under IV estimation, but the private space each child has is negatively associated with a child's educational attainments. In other words, children in large families perform less well not because of their family size, but because of the smaller private space each child has available to them.

In the same spirit as Goux and Maurin (2005), this paper seeks to explore the underlying relationship between the housing environment and a child's educational attainments. Unlike Goux and Maurin (2005), which controls for unobserved family heterogeneity using instruments, we overcome this difficulty by comparing a child with his or her peers of the same age in the same very small neighborhood: "lin," the smallest government jurisdiction in Taiwan that usually covers less than 0.1 square kilometer. Families residing in the same lin often share similar housing preferences and family incomes. In addition, youths raised in the same lin generally have experienced the same neighborhood effect. Furthermore, under the current regulation, children in the same lin typically attend the same school for compulsory education. Thus, by comparing youths with peers of the same age in the same lin, we control to some extent for unobserved family heterogeneity such as parental preferences, earning potential, neighborhood conditions, and, most importantly, quality of compulsory schooling.

Our data are derived from the census files that cover the entire Taiwanese population, more than 22 million, in the year 2000. The census data not only record detailed family and housing information, but also include *unique* address information for every household. The large sample size, together with detailed address information, allows us to examine the chances of high school enrollment for teens (ages 16 and 17) and college enrollment for young adults (ages 19 and 20) while controlling for family

[2] Black, Devereux, and Salvanes (2005) offer a different explanation: family size itself might have little impact on the quality of every child, but more likely impacts the marginal child through the effect of birth order. In their results, children of higher birth orders are likely to have worse educational attainments.

heterogeneity. After including tens of thousands of area dummies, our results confirm the importance of housing environment in determining a child's educational attainments. Specifically, our estimates show that youths' educational attainment is positively associated with an increase in housing floor space, an increase in residential stability, and ownership status, but negatively related to an increase of building age. The results continue to hold even accounting for the endogeneity between sibship size and a child's education using twin births or sex-composition as instruments.

An important difference between our study and Goux and Maurin (2005) is that we include a wide range of housing variables. Aside from each child's private space, this study also considers a house's floor space, building age, residential stability, and ownership status as various determinants of housing environment. Therefore, the analysis is able to provide a more complete picture about the impact of housing on a child's education. Another key difference is that we obtain a different effect of household crowdedness. While Goux and Maurin (2005) found that a reduction in a child's private space resulted in a negative effect on his or her schooling, our estimates indicate that the effect may be nonlinear: conditional on a household's size, reducing each child's private space does not always lead to an decrease in the chance of school enrollment. Moreover, this crowdedness effect is likely to differ according to the child's gender and age.

Our paper also relates to another line of literature exploring the effect of housing variables on children's outcomes, including tenure status [e.g., Green and White (1997), Boehm and Schlottmann (1999), Aaronson (2000), and Haurin, Parcel, and Haurin (2002)] and residential mobility [e.g., Lee, Oropesa, and Kanan (1994), Green and White (1997), Aaronson (2000), and Haurin, Parcel, and Haurin (2002)].[3] Although some studies have demonstrated the importance of housing environment, few of them controlled for the endogeneity problem caused by various housing variables.[4] To our knowledge, this paper is the first study that investigates the effect on a child's educational attainments of a wide range of housing variables.

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[3] For a complete review on the tenure status literature, see Haurin, Dietz, and Weinberg (2003).

[4] A number of studies have attempted to control for the endogeneity of housing variables. For instance, Green and White (1997) adopted the bivariate probit model to solve the selection bias problem between tenure decision and schooling, but found no evidence of it. Haurin, Parcel, and Haurin (2002) used a treatment effect model to reduce selection bias. Aaronson (2000) dealt with the endogeneity problem of home ownership and mobility.

The paper is organized as follows. In the next section, we outline the estimation problem and discuss the existing identification strategies as well as our strategies. Section 3 describes the data source, sample selection, and measures of educational attainments, along with the basic statistics of our sample. Section 4 shows results of the basic specification, the effect of area dummies, as well as comparisons with IV estimates. Section 5 offers concluding remarks.

2. Conceptual Framework

A. Parameter of Interest

Let:

$$(1) \qquad edu_i = X_i\alpha + \beta N_i + \nu_i + \varepsilon_i,$$

where edu_i is the child's educational attainments, X_i is a vector of observed characteristics of the child and his or her family (e.g., age, sex, birth order, and father's and mother's education and working status), N_i is a variable of child *i*'s sibship size, ν_i is the family-specific unobserved determinant (e.g., parental preferences or quality of schooling), and ε_i represents the idiosyncratic shock that is assumed to be independent across other factors.

The central parameter of interest is β, which is viewed as a measure of the trade-off between quantity and quality of children. Early studies primarily found this coefficient to be negative in OLS estimation and therefore inferred that substantial quality improvements can be gained by controlling for family size. However, the regression results are likely to be confounded by the existing observed factors (e.g., parental education) as well as the unobserved determinants (e.g., quality of schooling). The omitted variable formula suggests that the OLS coefficient from the regression is:

$$(2) \qquad \beta_{OLS} = \beta + \frac{\mathrm{cov}(N_i, X_i\alpha)}{\mathrm{var}(N_i)} + \frac{\mathrm{cov}(N_i, \nu_i)}{\mathrm{var}(N_i)}.$$

Therefore, even if children raised in larger families have less schooling than those in smaller families, the strength of the relationship could be driven by the correlation between sibship size and other observed and unobserved factors, not necessarily the quantity–quality trade-off.

B. Existing Identification Strategy

In light of the potential bias, the existing literature has adopted several methods to uncover the underlying relationship between a child's education and sibship size. Early studies attempted to account for this potential bias by including more controls, such as parental IQ, and better measures of household income. However, adding more controls cannot rule out the possibility of an association between family size, educational attainment, and something immeasurable, such as housing environment, neighborhood conditions, or quality of schooling. As a result, recent studies have taken different approaches to account for unobserved family heterogeneity. For instance, Guo and VanWey (1999) and Black, Devereux, and Salvanes (2005) include the household's dummies, i.e., family fixed effects, to control for the unobserved family-level heterogeneity. Angrist, Lavy, and Schlosser (2005), Caceres (2004), and Conley and Glauber (2005) employ exogenous variations in family size, such as multiple births or preferences of a mixed sibling-sex composition, as instruments to investigate the causal effect of family size on a child's education. Notably, studies using IV estimations or fixed family effects found weaker correlations between family size and a child's education, many of which turn out to be negligible.

The inconsistency of results between OLS and other estimation methods cast doubts over the link between family size and a child's outcome. One likely explanation, as pointed out by Phillips (1999), is that sibship size per se does not affect the child's educational attainments, but the type of resources it dilutes does. Goux and Maurin (2005) extended this line of thought by exploring the impact of a child's private space, one important kind of resource likely to be affected by additional children, on the child's schooling. Specifically, they considered the following equation:

$$(3) \qquad edu_i = X_i\alpha + \beta N_i + \gamma h_i + \nu_i + \varepsilon_i,$$

where h_i is the average number of rooms per person in the household, used as a proxy for a child's private space. Notice that equation (3) also includes the sibship size variable to account for the effect caused by family size. Because sibship size and the child's private space are likely to be endogenous, they employ two instruments, gender of the first two children and of the last two children, respectively, to control for unobserved family heterogeneity. Consistent with previous studies, they found that the coefficient of sibship size becomes insignificant under IV estimation. Interestingly, the coefficient of the average number of rooms per person in IV estimates is significantly negative, suggesting that children in large families perform less well, not because of their family size, but because of the smaller private space available to each child.

C. Our Identification Strategy

In contrast to Goux and Maurin (2005), our study seeks to identify the effect of a variety of housing variables on a child's educational outcome, such that:

$$edu_i = X_i\alpha + \beta N_i + H_i\gamma + \nu_i + \varepsilon_i. \quad (4)$$

The biggest difference between (3) and (4) is that the housing environment is now a vector of multiple variables (H_i) instead of a single variable (h_i). There are substantial difficulties in using existing identification strategies for this specification. Because these housing variables do not change within a household, including household dummies essentially eliminates the effect of housing environment. Another possible strategy is to find instruments for housing variables, as Goux and Maurin (2005) did for household crowdedness. Nevertheless, controlling for the unobserved heterogeneity in this setting requires us to find many more instruments.

We take a different approach to identify the causal link. Apart from including a detailed set of important variables of a child's family background used in previous studies (e.g., a child's birth order, parental age, work status, and education), we account for unobserved family heterogeneity by adding dummies of the child's residential neighborhood. Our unique data are derived from the census data that collects information on the entire Taiwanese population, with detailed address information.

Therefore, we are able to compare a child with his or her peers of the same age in the same very small neighborhood, the lin. Families residing in the same lin tend to share similar housing preferences and parental incomes, as well as earning potentials. Moreover, youths raised in the same lin generally encounter the same neighborhood effect. Furthermore, youths in the same lin typically attend the same elementary or junior high schools, allowing us to control for the quality of compulsory schooling prior to high school or college. In fact, given Taiwan's current school regulation, it is almost certain that youths in the same lin go to the same school.[5,6] Thus, by controlling for neighborhood fixed effects, we account for the neighborhood effect, quality of schooling, and parental incomes and preferences. Nevertheless, it is still possible that our approach may not fully capture unobserved family heterogeneity. We will discuss this point in the results section.

To be more specific, we estimate the following equation:

$$(5) \qquad edu_i = X_i\alpha + \beta N_i + \gamma H_i + Area_i + \varepsilon_i,$$

where edu_i is a dummy equal to one if child *i*'s highest educational attainment is general high school for teens or general college for young adults, and zero otherwise; H_i is a set of variables on the housing environment, including building age, tenure status, household crowdedness, and residential stability; $Area_i$ is a vector of neighborhood dummies to control for unobserved family heterogeneity; and ε_i is an independent error across various individuals. As discussed earlier, we compare youths residing in the same lin. In Taiwan, the lin is the fourth and smallest level of government jurisdiction, following county, town, and village. As such, the estimation includes tens of thousands of area

[5] According to Taiwan Compulsory Education Law, students residing in the same "lin" belong to the same public school district and thus are assigned to the same public elementary or junior high school. For instance, the school district for Beitu Elementary School in Taipei includes every Lin of Central and Da-Tong Villages, 1st–9th and 12th Lin of Chang-An, 2nd Lin of Hot-Spring Village, and 1st–10th Lin of Ching-Jiang Village. For details on the regulations, see http://www.tp.edu.tw/neighbor/elementary/e_beitu.jsp.

[6] One exception is that children hoping to enroll in better elementary or junior high schools may move their registries to relatives or friends residing in better school districts, but continue to live with their parents. In this case, those children are coded as "other relatives" in the households of friends or relatives in the census. Because our data remove children that coreside with other relatives, we expect this proportion to be small in our sample.

dummies. Because of computational complexity, we focus on the linear probability model instead of nonlinear models. Alternative models (e.g., probit and logit), however, yield similar results.

3. Data and Sample

A. Data Source

The data for this study are derived from the 2000 Taiwan census, conducted every 10 years by the Directorate of General Budgeting, Accounting, and Statistics. The Taiwan census files collect information using a detailed questionnaire similar to that used to create the PUMS files for the US censuses (long-form), except that income-related variables are excluded. At each household, the interviewer records each individual's basic demographics (race, sex, age, and marital status), educational attainment, relationship with the head of household, working and employment status within the past two weeks, as well as the industry in which he or she works. In addition, the interviewer records the residence's structure (number of living rooms, bedrooms, kitchens, and bathrooms), tenure status (rent or own), years lived in the residence, and the location from which the family last moved. The residence information is further linked with the housing registry from the Ministry of Interior to ascertain the floor space of the house, the building year, and the major construction material used for the residence. More importantly, the Taiwan census includes a scrambled, but unique, address for every household's residence. As seen below, this unique address information plays an essential role in the analysis.

The advantage of using the Taiwan census is that the files contain the full sample of Taiwan residents, around 22 million in total or 300,000 individuals in most age cohorts. The large sample size, together with the detailed address information, provides a good opportunity to analyze the effect on educational attainment of the housing environment. Ideally, we would examine the link using the final education levels of all family adult respondents and their current housing information. In practice, however, this is not possible because the census files do not record family information of those who no longer reside with their parents and siblings. Obtaining the complete family background is therefore difficult, especially for adult respondents because a large portion of them do not coreside with parents

and siblings. Moreover, the census files report only the respondent's relationship with the head of the household, but not with other members. Although we could match their relationships according to each member's age and gender, the identification becomes quite complicated when there are more than three adults in a household (e.g., coresiding with a brother or sister-in-law).

B. Sample Selection

For the purposes of this study, we restrict the sample in several ways. We select households with at least one unmarried child aged between 15 and 20 at the time of the census, of which the eldest sibling is no older than 22. We focus on the younger sample to reduce the bias resulting from incomplete family information. We restrict the sample to ages over 15 because compulsory schooling in Taiwan ends at junior high school (9^{th} grade). To avoid mistakes arising from matching parents, we keep only nuclear families in the sample, eliminating households that live with grandparents, relatives, or other friends. Furthermore, we drop households in which children are raised by a single parent to reduce complications because different family structures may also affect a child's education. Finally, we include only samples that have stayed in the residence for at least three years because the housing effect usually takes a longer time to materialize.

To demonstrate the impact of exclusion criteria, Table 1 lists the observed number of youths aged from 15 to 20 for each selection criteria. The first column lists the total number of youths in the census by age cohort. As indicated by these numbers, the number of respondents peaks at the age of 19 and then gradually declines as their age rises; this pattern is consistent with the number of births between 1980 and 1985 (ages 15 to 20 in 2000) in Taiwan.[7] The vast majority of youths, particularly younger ones, coreside with their families. This can be seen from the difference between the first and the second columns, which shows the number of youths who live with at least one adult aged 35 or older. Nevertheless, more and more youths, especially those older than 20 years, choose to live alone for either marriage or work reasons. That youths live alone for other reasons may increase the risks of matching complete family information, a point we will return to later.

[7] The number of respondents obtained from the census data is very close to the birth numbers between 1970 and 1975; the difference is less than 3 percent in every age cohort.

The largest reduction in sample size occurs when restricting the sample to nuclear families. This is not surprising because about 67% of the elderly in Taiwan coreside with their children.[8] Among these nuclear families, around 20% of the youth do not have valid parental information: either they are growing up in single-parent families (around 60% are single mothers) or are no longer coresiding with both parents. Another 10–20% are removed because of the age restriction of the eldest sibling; the older the respondent, the more likely they are to be removed by this age constraint. Finally, around 7% are eliminated because they have stayed in the current residence for less than three years. The final sample size consists of a little over one third of the original sample. Still, we have around 100,000 respondents in each age cohort.

C. Measure of Educational Attainment

Before describing our analysis sample, it is important to first discuss our measures of educational attainment. Previously used measures include the highest completed level of education [Boehm and Schlottmann (1999), Angrist, Lavy and Schlosser (2005), Black, Devereux and Salvanes (2005)], private school attendance [Conley and Glauber (2005)], held back in school grade [Conley and Glauber (2005), Goux and Maurin (2005)], test scores [Guo and VanWey (1999), Haurin, Parcel, and Haurin (2002)], dropping out [Green and White (1997)], and graduating from school by a certain age [Aaronson (2000)]. Because our data are derived from the census files, we cannot make distinctions between the quality of the youth's school (e.g., school ranking), or the youth's academic performance within the school. Therefore, we adopt a measure similar to the one used in Conley and Glauber (2005) that compares the respondent's age with the highest schooling that he or she is currently enrolled in or has completed so far. The education system in Taiwan is similar to that of the United States, except that compulsory schooling is nine instead of 12 years. Therefore, from the age of six, children are required to take six years of elementary school and three years of junior high school. After finishing junior high school, those seeking additional education can go to senior high school (three years) and even higher after graduating from high school. Suppose a child of age 16 reports his or her highest

[8] According to the Taiwan Elderly Survey in the year 2000, 67.3% of adults aged over 65 coreside with their children.

schooling is junior high school. Then he or she either did not proceed to higher education or had been held back a grade in previous school years. By examining one's age and highest schooling, we can compare a child's educational attainments with those of peers in the same age cohort.

There are, however, two complications with this measure. First is that the cut-off birthday for school admission may result in some children starting school late.[9] For instance, a September-born child may be almost one year older than a child born the following August but they are in the same school grade. Because the census data only record an individual's age (in years) at the time of the census interview, we are unable to determine whether a child meets the full age requirement at the time of school enrollment. Thus, some 15-year-old children may already be in senior high school, while others are still in junior high school.[10] Second, there are two types of senior high schools (general versus vocational) and colleges (general versus junior) in Taiwan. Although the quality difference between various types of schools is small in some countries, the gap is large here because students are enrolled into schools based on their test scores on school entrance exams. Generally, general high schools are more difficult to enter, as are general colleges.[11]To resolve these difficulties, we first restrict the sample to youths of ages 16 and 17, and ages 19 and 20. Youths aged 15 and 18 are removed because their educational measures are harder to define. Next, we check if the respondent's reported schooling matches the highest schooling of his or her age. More specifically, we examine if youths of ages 16 or 17 attended general high schools (nonvocational), and whether youths of ages 19 or 20 attend general colleges (nonjunior). In the discussion that follows, we refer to the younger sample as the "teen" sample and the older sample as the "young adult" sample.

D. Description of Analysis Sample

We work with two analysis samples, both described in Table 2. To demonstrate the effect of our sample selection criteria, we continue to present sample statistics by age cohorts. In total, there are

[9] The cut-off birthday in Taiwan is similar to that of the United States: children must be six years old (full) by September 1st to be enrolled in the school.

[10] The 2000 Taiwan census is conducted at the end of that year. Therefore, roughly half of all 15-year-old children are in junior high school, while the rest are in senior high school.

[11] For instance, the minimum score for entering a public high school in Taipei in 2004 was 220 points, about 30 points higher than that of public vocational schools. Likewise, the minimum score for entering general college is considerably higher than that of junior college in Taiwan.

283,959 teens and 188,937 young adults because more young adults are removed during the selection process. In both samples, except for youths aged 20, we have more males than females, reflecting the special gender preference in Taiwan.[12] Because of the sibling's age restriction, a higher proportion of first-borns are observed in young adults than teens. No significant difference, however, is observed in the average number of siblings among different age cohorts.

The educational attainment of youths is listed in the first set of rows of Table 2. A little over half of teens were enrolled in general high schools at the time of the census; 35% were in vocational high schools, while the remaining teens were out of school. The variation in schooling among young adults is larger. About 40–50% of young adults continued schooling after high school (e.g., general or junior colleges), while another 40–50% chose to stop after general or vocational high schools. Only 5–10% of young adults stopped their education after compulsory schooling.

One concern with our educational measure is whether the cut-off birthday affects schooling. If that is the case, we should observe a large discrepancy in schooling between two consecutive ages. Table 2 provides some evidence regarding this concern. For teens, there are only limited schooling differences between ages. In fact, the proportion of those attending general high school for 17-year-old youths is actually lower than that of 16 year olds, showing that the cut-off is not a concern for teens.

The schooling comparison among young adults is a little bit complicated. Our data for a child's education show a rising trend of schooling between the two age cohorts. For instance, the proportion of youths attending general college increased from 17% to 25%, and attending junior college increased from 22% to 30%. Nevertheless, this observation seems unlikely to be because of the cut-off birthday because the number of young adults in each age cohort enrolled in general and junior colleges remains almost the same.[13] Instead, the increase in schooling reflects the fact that those who did not seek higher education left home for work. Because our sample removes youths that live alone, young adults

[12] The observation that there are more 20-year-old females than males is likely to reflect the fact that males are more likely to work away from home. As a result, the category of youths aged 20 that coreside with parents is dominated by females.

[13] The number of youths enrolled in general and junior colleges is 19,056 and 24,400 for youths of age 19, and 19,736 and 23,573 of age 20.

that live with their family at the age of 20 tended to enroll in higher education. In other words, the rising schooling trend is primarily because of our selection criteria, a point that we return to later.

Table 2 also reports variables describing the parental background of the youths, including age, education, and work status. The average parental age of young adults is two years older than that of teens, reflecting the age difference between teens and young adults. In both the teen and the young adult samples, mothers are less likely to have acquired higher levels of education than fathers, especially for colleges or above. Likewise, the difference in working status between fathers and mothers is quite large. Over 90% of fathers in both samples hold a full-time job, while only around 60% of mothers do. Nevertheless, in some families mothers shoulder more economic burden than fathers, with about 10% of the sample being female-headed households.

The Taiwan census data include a wide range of descriptions of housing environment, including floor space, number of rooms, age of building, tenure status, and the location from which the family last migrated. The floor space of the house is measured by square meter. On average, the typical respondent lives in a building 10 to 20 years old, with 3.5 rooms, and 130 square meters. To better account for overcrowdedness, we construct three dummies that compare the number of bedrooms in a house with the number of children in a family. Typically, parents share a bedroom, so the comparison is based on the remaining bedrooms (minus the parents' bedroom) and the number of children. A household is considered as having high crowdedness if some children share a room, medium crowdedness if every child has his or her own room, and low crowdedness if every child has more than one room. By this standard, more than 60% of respondents live in a house with medium crowdedness; the rest reside in households with limited private space. These rates remain almost unchanged with respect to the teen or young adult sample.

More than 90% of youths live in self-owned households, reflecting the high rate of owner-occupied houses in Taiwan. In most cases, the youths in the sample have been at the same residence for more than 10 years; less than 14% of youths moved into the current residence within the last five years, of which around 3% moved within the local vicinity (within the same village); the rest migrated from other villages.

E. Area Dummies and Family Heterogeneity

Before showing the estimation results, it is useful to first describe the area dummies, which aim to control for unobserved family heterogeneity. Because the census data record detailed address information, area dummies can be constructed from the highest level (county) to the lowest (lin). For instance, Taipei, the capital of Taiwan, consists of 12 towns, 435 villages, and 9741 lins. The average number of square kilometers of a town, village, and lin in Taipei are 22.6, 0.624, and 0.028, respectively.[14] Not surprisingly, as seen in Table 3, the sample number in an area drops sharply as the level of government jurisdiction moves from towns to lins. While there are, on average, 780 teens and 520 young adults in a town, each lin accommodates only 3.1 teens and 2.4 young adults. From the percentile distribution based on lin, at least half of lins have only one teen and one young adult at the time of the census. Despite this, there is still a great deal of variation in many other lins in the sample. This can be seen from the numbers in parentheses, showing that the number of teens or young adults at the first quartile, based on the whole sample, is 3 and 2, respectively.

If area dummies are good controls for family heterogeneity, we should observe that the extent of variation within a neighborhood declines when a smaller neighborhood is used. To demonstrate the relationship between family heterogeneity and area dummies, Table 4 shows "within" and "between" standard deviations (SD) of housing environment variables. Because these SDs may exhibit different patterns in cities and rural regions, we further separate our sample into two groups based on the number of residents in the town: large towns (more than 100,000 residents) and small towns (less than 100,000 residents). For the purpose of exposition, we only list these numbers at the village and lin level. Consistent with our expectation, "between" SD rises and becomes larger than "within" SD for the vast majority of housing variables as the neighborhood level moves from village to lin. Nevertheless, we do not find a clear difference in SD between large and small towns in the sample.

[14] The total size of Taipei is 271.8 square kilometers.

4. Empirical Analysis

A. Basic Specification

Results of our basic specification using the two analysis samples are presented in Table 5. Our basic specification estimates the linear probability model including all variables displayed in Table 2, except the father's age because father's age is highly correlated with mother's age. Because estimates from the teen and young adult samples are similar, we first discuss the similarities in the two results, and then discuss the differences.

As is typical for these types of regressions, our coefficients imply strong links between a child's education and parental schooling. The better the parental schooling, the more likely it is that youths will seek higher education. As discussed earlier, the findings could reflect parental preferences over a child's education or a child's generic abilities inherited from higher-educated parents or both. In addition, higher educational achievements are also positively associated with an increase in the mother's age and the father's employment status, but negatively related to the mother's employment status. There is no observed difference in the education of children raised in female- and male-headed households.

Two variables of a child's characteristics deserve special attention. First, our results indicate that the sibship size produces a small and negative marginally significant effect after controlling for all other factors. Our estimates suggest that adding one sibling reduces the chance of going to general high school by 0.3% and general college by 0.4%. Second, our estimates indicate that being the first born largely increases the chance of enrollment in general high school and college, by 6.6% and 3.2%, respectively.

Our results demonstrate a strong link between a child's education and housing variables. A positive correlation is observed between a child's education and the floor space. An increase of 100 square meters, for instance, is associated with an increase in the chance of enrollment in general high school and college by 1.5% and 1.2%, respectively. Likewise, children living in owner-occupied houses have a higher chance of getting into general high school or college, as are children living in newer houses. However, interpreting these results requires caution. It is possible that the results reflect the fact that

parents that are more willing to invest in a house are likely to create positive benefits for their children's learning.[15] It is also possible that these coefficients may reflect our inability to control for household income. Perhaps new, larger, self-owned houses produce a positive effect simply because they are associated with a child's family's well-being. We will discuss this issue later.

Youths who have recently moved from other locations (migrated 3–5 years ago) are less likely to be enrolled in general high school. The greater the distance they moved, the larger the negative effect on a child's education. Because the housing effect usually takes time to materialize, this effect should be attributed to residential stability in an earlier period, i.e., at the time of junior high school. Residential stability is valuable to teens probably because they do not have to learn to adapt to a new social network (junior high schools are usually very close to where teens live).[16] Notice that the effect of residential stability is less evident among teens. This could be because general high school admissions are based on every young adult's test score. As a result, many young adults cannot benefit from the existing social network as they did at junior high school because they must attend distant general high schools.

One parameter of particular interest is the household crowdedness. Similar to Goux and Maurin (2005), our results also confirm the importance of private space on a child's education.[17] Nevertheless, its effect is more complex and possibly nonlinear. For instance, teens growing up in families of medium crowdedness are more likely to enroll in high school than those in high- or low-crowdedness houses. For young adults, those raised in medium crowdedness perform equally well as those in low-crowdedness houses. Notice that our estimation also controls for a house's floor space. Changing from

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[15] Green and White (1997) explained why home ownership might positively influence children's cognitive and behavioral outcomes. First, there is a stronger investment incentive for owners compared with renters. Better physical home environments increase the probability of success of the children of owners. Second, compared with renters, there is higher self-esteem among owners, resulting in greater emotional support for the children. Finally, there is greater geographic stability creating a neighborhood network that is likely to promote a child's outcome.

[16] A longer tenure (or less mobility) often implies a more stable home and school (peer) environment, which helps to invest in building social capital that enhances a child's outcomes. Therefore, a longer tenure tends to lead to better outcomes for children. For details, see Coleman (1988).

[17] Because our estimation setting is different from that of Goux and Maurin (2005), a comparison may be inappropriate. However, we estimated an additional model using the average number of rooms per person as the proxy for household crowdedness. Results of that estimation are similar to that of Goux and Maurin (2005), where we found a significant and negative impact of household crowdedness on a child's education.

high- to low-crowdedness houses does not refer to an increase in floor space and number of rooms at the same time. Instead, the effect should be interpreted as increasing the private space, but reducing the shared space, in a household (e.g., smaller living room). From our estimates, it appears that there is an optimal mix of private and shared space that helps a child's schooling.

As stated earlier, there is a risk of bias generated from our sample selection. Most notable is the restriction on the eldest sibling's age and on coresiding with a mid-aged adult. If such a restriction induces a new bias into the estimation, we should observe differences in results that use only 17-year-old youths from the teen sample and only 19-year-old youths from the young adult sample. This can be seen from Table 5, where we list estimated results of youths from the age cohorts of 17 and 19, respectively. As demonstrated in the table, we observe only modest differences between results using the full sample and half of the sample. None of the estimated coefficients, however, changes its sign after restricting the sample, and the vast majority remain statistically significant. These results imply that our sample selection, at most, results in small biases in the estimation.

B. Effects of Area Dummies

One key concern regarding our findings is whether our results demonstrate the importance of housing variables or just the inability to control for unobserved family heterogeneity. For instance, strong associations between a child's education and housing variables found in the estimation could possibly be caused by failure to control for the household's income, one kind of unobserved family heterogeneity. To address this question properly, it is important to show some evidence that adding area dummies indeed mitigates the concern of unobserved family factors. Table 6 lists the estimated results using area dummies at the town, village, and lin levels, respectively. For the purpose of comparison, we also include results without controlling for neighborhood fixed effects. As indicated from this table, the total number of area dummies at each level is 0, 364, 7508, and 91,929, respectively, and a slightly smaller number for young adults. Given that the number of area dummies varies so much, it is not surprising that regressions controlling for different levels of neighborhood effects yield dramatically different estimates. For instance, the coefficient of sibship size in the teen sample changes from –0.016 when there are no area controls to –0.006 and –0.003 when controlling at

the village and lin level, respectively. In fact, the Hausman test suggests that any two sets of estimates are statistically different.[18]If positive relationships between housing variables, especially floor space, ownership status, housing age, and child's education, are posited as another channel to display the income effect, we should anticipate the effect becoming smaller when looking across children residing in the same neighborhood. Families residing in the same neighborhood should have similar family assets or potential earnings. Throughout the table, however, estimates of housing variables continue to show significant effects on the youth's educational outcome, some of which become even larger after controlling for many more area dummies. While it is still possible that our results are biased because large variations exist within the same neighborhood, the results do not seem to suggest that our findings are driven by unmeasured household income.

Another way to examine the effect of area dummies is to compare our results with findings in previous studies accounting for unobserved endogeneity through IV methods or family dummies. Generally, these studies found the coefficient on sibship size changes from statistically significant in OLS estimation to insignificant in IV estimation [e.g., Angrist, Lavy, and Schlosser (2005), Black, Devereux, and Salvanes (2005)]. It is therefore interesting to see whether adding more area dummies generates a similar result. From the table, it is clear that the coefficient of sibship size diminishes when a finer level of area controls is included. At the level of the lin, the coefficient of sibship size for teens is only marginally significant at the 10% level Obviously, a finer area control reduces the effect of sibship size, a sign supporting the reduction of unobserved family heterogeneity.

C. IV Estimation

So far we have shown that estimates with area fixed effects exhibit a pattern similar to recent studies employing IV strategy. Nevertheless, it is still uncertain whether neighborhood dummies are good controls for unobserved family heterogeneity. A more convincing method is to compare area fixed effect results with IV results so that the extent of endogenous bias can be determined.

[18] The smallest chi-square value occurs when comparing results of village fixed effects with those of lin fixed effects. Even for these, the value is 31.82 for young adults and 114.56 for teens, strongly rejecting the null hypothesis of the Hausman Test that these two sets of estimates are indifferent.

Nevertheless, this is not easy because our regression includes, in addition to the number of siblings, a variety of variables characterizing a child's housing environment. Unless we are able to find an instrument for every housing variable, implementing a full-scale IV estimation is extremely difficult.

In light of this difficulty, we have decided to conduct IV estimation in a different way. We first use multiple births and preferences toward a mixed sibling-sex composition to construct the instrument of sibship size.[19] Through exogenous variations because of multiple births at the third-born and sibling-sex composition of the oldest three children, we can look at the effect of three or more births on the educational outcome of the first- and second-born child in families with at least three children. Neighborhood dummies are also included to aid family controls.

The estimates in the first two columns of Table 7 report the first-stage and IV results for teens and young adults in families of at least three children. Because our sample is reduced to less than half of its original size because of the restriction on the number of children, we control for the village instead of the lin fixed effects. All instruments are significant in the first stage. Family size goes up by 0.83–0.87 in response to multiple births at the third born. Likewise, the family size increases by 0.38–0.42 for families whose first three siblings are girls; this reflects Taiwanese parents' preference for boys over girls.

Controlling for the village fixed effects, IV results again show that the number of siblings has little effect on the child's education. Moreover, we do not observe clear differences in the coefficients of housing variables between regression results and IV results. The vast majority of housing variables still hold their original signs and magnitudes. To formally examine whether IV results differ from area fixed effects results, we reestimate the area fixed effects model using village dummies based on this new sample.[20] The Hausman Test shows the chi-square value for these two sets of estimates is 3.5 for the teen sample and 0.29 for the young adult sample; both fail to reject the null hypothesis that the IV results and regression results are statistically indifferent.

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[19] Taiwan Census data only record the age of each family member. Therefore, multiple births are identified by checking whether two consecutive children share the same age. It is possible that our method overstates the number of multiple births for families whose age gap between two consecutive children is less than one year. Nevertheless, we believe the likelihood of a mother having two children in one year is limited.

[20] The Hausman test is conducted based on the 21 explanatory variables in the regressions. Coefficients of fixed dummies are not considered.

Results reported above account for the potential endogeneity between sibship size and child's education. However, our estimates can still be subject to biases if housing variables are endogenously determined based on the number of children (e.g., parents may decide to move to a bigger house once they have more children). Given we cannot find an instrument for every housing variable, we restrict our sample to those who have moved into their current residence one year before the second child was born. For these families, the chance that their housing variables are correlated with the exogenous variations in sibship size (e.g., multiple births or sex composition) should be considerably lower, and therefore should shed some light on the effect of housing variables. The remaining columns of Table 7 present the first-stage and IV estimates for this particular sample. Although the first-stage results continue to confirm the validity of our instruments, coefficients on many housing variables become insignificant after imposing the restriction, likely because of a much smaller sample imposed by the move-in year constraint. Nevertheless, the majority of housing variables still hold their sign, showing at least some evidence of their importance.

D. Gender Differences

When discussing housing variables, one often-raised question is whether gender differences exist. Do boys need a bigger house? Do girls have special needs for private space? To explore this possibility, Table 8 expands the estimation by allowing for gender interactions on three variables: first-born, floor space, and household crowdedness. As expected, first-born boys have a higher school enrollment than first-born girls; this is likely because boys in Taiwan's society are subject to more social pressure than girls.

Both household crowdedness and floor space exhibit some gender differences. In addition, those gender differences seem to change for different ages. The chance of school enrollment is higher for boys raised in households with larger floor space, but there is no observable gender difference in the teen sample. On the contrary, girls raised in medium-crowdedness households have a higher chance of getting into high school. However, the gender difference disappears in the young adult sample. It appears that different housing needs exist for boys and girls at different times in their lives.

5. Conclusions

Understanding factors that determine the children's educational attainments is an important research question in the social sciences. The answer is not only crucial for human capital formulation, a key driver of economic growth, but also essential for income distribution purposes because education is considered a driver for income mobility.[21] Among those components, housing environment provided by the parents is often considered of great relevance [Haveman and Wolfe (1995)]. While it is widely believed that a better housing environment stimulates a child's learning, there is limited evidence as to the causal link between housing environment and a child's schooling.

In this study, we seek to uncover the effect of housing environment on children's educational attainments. Differing from Goux and Maurin (2005), who use exogenous variations in the child's private space as instruments, we control for unobserved family heterogeneity through their residential choices. In general, families living within a close distance share similar parental preferences, household assets, and earning potential. In addition, children in the same neighborhood typically go to the same school. Using the Taiwan census files that include the unique address information of every household in the records, we compare the chance of general high school or general college enrollment for youths of the same age and in the same neighborhood. After controlling for area fixed effects using tens of thousands of area dummies, our results indicate the importance of housing variables in determining a child's schooling. The educational attainment of children is positively associated with increases in floor space, increases in residence stability, and the ownership status, but negatively related to increases in building age. The results are robust even accounting for the endogeneity between sibship size and child's education using IV estimation.

Several findings deserve special attention. First, a first-born child, particularly a boy, is more likely to perform well in school. While the finding may reflect the fact that parents, particularly those in Taiwan, tend to put more pressure on first-borns, our finding is consistent with Black, Devereux, and Salvanes (2005) who argue that birth order, not family size, matters for a child's outcome. A more

[21] According to Haveman and Wolfe (1995), the government's spending on children in terms of primary and secondary education in 1992 is estimated to be 235 billion, or roughly 4% of GDP in U. S. In Taiwan, the spending on compulsory education is a little less than 3 percent of GDP.

careful analysis that explores a full range of effects of birth order and possibly its interactions with housing variables may be necessary.

Second, our results are different from the findings of Goux and Maurin (2005) regarding the effect of a child's private space. Although our results also confirm the importance of household crowdedness, its effect appears to be nonlinear because the chance of school enrollment is higher for children raised in medium-crowdedness houses than those in low-crowdedness houses. Further investigations on the effect of household crowdedness may also be necessary to uncover the exact impact.

Finally, and most importantly, our identification uses the area fixed effects to control for unobserved family heterogeneity. While we have shown evidence supporting this approach, we caution readers that there might still be uncontrolled family factors, such as genetic differences or interactions between parents and children, in the estimation.

The main contribution of this paper is to provide causal evidence regarding the effect of housing environment on a child's education. Although many studies have attempted to establish the link between housing environment and children's educational achievement (e.g., ownership, residential stability), our paper appears to be the first that offers a complete picture of the effect of a wide range of housing variables. Our paper has demonstrated the importance of a few housing variables (e.g., tenure status and house floor space). Future studies could use our findings as the basis to consider more effective policy instruments to enhance children's educational attainments in designing housing policy.

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Table 1: Youths Used in the Analysis
(Table Entries are Number of Observations Meeting Selection Criteria)

Age	Total number of youths available in the census	...and live in households that have at least one adult (aged over 35)	…and have no other relatives (nuclear families)
15	336,040	315,248	219,341
16	358,437	333,616	235,237
17	371,046	344,711	246,760
18	387,969	338,183	224,750
19	398,667	334,469	218,989
20	387,682	292,182	175,669

Table 1: Cont.
(Table Entries are Number of Observations Meeting Selection Criteria)

Age	…and have valid father and mother info (exclude single parent)	…and the eldest sibling is less than or equal to 22 years old	…and moved into the current residence 3 years ago
15	158,577	149,821	132,404
16	170,769	158,145	140,616
17	178,860	160,429	143,343
18	160,706	137,039	122,611
19	155,629	122,284	109,924
20	123,481	87,234	79,013

Table 2: Summary Statistics of the Youth's Education, Family Background, and Housing

	Mean/Percent		Mean/Percent	
	Age (16)	Age (17)	Age (19)	Age (20)
Child's Education				
Junior High School or Less	8.72%	8.30%	6.87%	5.18%
Vocational High School	36.45%	40.35%	32.16%	25.16%
General High School	54.83%	50.89%	21.43%	14.86%
Junior College	0.00%	0.31%	22.20%	29.83%
General College or Above	0.00%	0.15%	17.34%	24.98%
Child's Characteristics				
Male	52.03%	52.21%	52.00%	40.65%
First Born	49.42%	54.19%	63.56%	70.07%
Number of Siblings (Self Included)	2.49	2.45	2.45	2.43
	(0.859)	(0.871)	(0.886)	(0.915)
Parental Background				
Female Economic Head	10.48%	10.80%	11.32%	11.50%
Mother's Age	41.86	42.50	43.61	44.36
	(3.398)	(3.390)	(3.246)	(3.158)
Mother's Education (0-6 years)	28.30%	31.72%	40.31%	41.19%
Mother's Education (6-9 years)	28.59%	27.70%	26.18%	24.12%
Mother's Education (9-12 years)	31.02%	29.42%	24.75%	24.92%
Mother's Education (12+ years)	12.09%	11.16%	8.77%	9.77%
Mother's Employment	60.03%	60.09%	58.67%	57.73%
Father's Age	44.81	45.48	46.64	47.36
	(3.454)	(3.407)	(3.212)	(3.087)
Father's Education (0-6 years)	23.12%	26.08%	34.17%	34.31%
Father's Education (6-9 years)	24.67%	23.62%	22.17%	20.31%
Father's Education (9-12 years)	30.75%	29.85%	27.34%	27.01%
Father's Education (12+ years)	21.45%	20.45%	16.32%	18.37%
Father's Employment	93.25%	92.74%	91.16%	90.97%
Housing Environment				
Rent	6.54%	6.36%	6.66%	6.02%
Space (Square Meter/100)	1.32	1.32	1.31	1.32
	(0.697)	(0.703)	(0.699)	(0.696)
Number of Rooms	3.52	3.53	3.53	3.53
	(1.268)	(1.265)	(1.279)	(1.260)
Low Crowdedness	29.56%	31.45%	31.70%	32.72%
Medium Crowdedness	36.44%	36.03%	35.77%	35.13%
High Crowdedness	34.00%	32.53%	32.53%	32.15%
Move from Vicinity*	3.20%	3.06%	2.90%	2.65%
Move from Distant Area*	10.01%	9.27%	9.20%	9.13%
Building Age (0-10 years)	22.57%	21.59%	19.71%	18.82%
Building Age (10-20 years)	40.99%	40.76%	40.04%	40.14%
Building Age (20+ years)	36.43%	37.65%	40.25%	41.04%
Number of Observations	140,616	143,343	109,924	79,013

Standard deviations are in parentheses.

*The youth is considered as a new mover if his/her current address differs from that of 5 years ago

Table 3: Observation Number at Various Levels of Government Jurisdiction[a]

	High School (Age 16/17)			College (Age 19/20)		
	Town	Village	Lin	Town	Village	Lin
Min	1	1	1	1	1	1
Max	8,708	372	95	6,228	244	42
Mean	780.11	37.82	3.09	519.06	25.44	2.40
	(1124.02)	(38.42)	(2.66)	(772.35)	(25.40)	(1.87)
25% Percentile	130	11	1	82	7	1
	(798)	(37)	(3)	(549)	(25)	(2)
50% Percentile	130	11	1	82	7	1
	(1803)	(67)	(4)	(1388)	(45)	(3)
75% Percentile	990	55	4	629	36	3
	(3239)	(103)	(7)	(2166)	(68)	(5)
# of jurisdictions	364	7,508	91,929	364	7,428	78707

[a]The percentile in parentheses reflects the observation number over the whole distribution

Table 4: "Within" and "Between" Standard Deviation of Housing Variables at the Level of Village and Lin

	High School (Age 16/17)				College (Age 19/20)			
	Large Towns[b]		Small Towns		Large Towns		Small Towns	
	Village	Lin	Village	Lin	Village	Lin	Village	Lin
Tenure Status	0.079	0.213	0.085	0.179	0.088	0.223	0.090	0.177
	(.26)	(.207)	(.204)	(.153)	(.261)	(.193)	(.195)	(.136)
Space (Square Meter/100)	0.348	0.571	0.389	0.684	0.366	0.585	0.413	0.695
	(.552)	(.4)	(.696)	(.492)	(.55)	(.372)	(.681)	(.438)
Number of Rooms	0.551	0.972	0.804	1.365	0.523	0.983	0.899	1.381
	(1.026)	(.769)	(1.349)	(.936)	(1.026)	(.72)	(1.335)	(.846)
Low Crowdedness	0.150	0.340	0.206	0.399	0.158	0.370	0.232	0.423
	(.429)	(.347)	(.457)	(.345)	(.435)	(.326)	(.459)	(.318)
Medium Crowdedness	0.121	0.351	0.176	0.371	0.137	0.381	0.200	0.391
	(.48)	(.398)	(.453)	(.353)	(.476)	(.366)	(.447)	(.319)
High Crowdedness	0.147	0.353	0.201	0.385	0.156	0.374	0.216	0.394
	(.457)	(.372)	(.451)	(.342)	(.456)	(.344)	(.44)	(.308)
Move from Vicinity	0.050	0.130	0.067	0.149	0.049	0.134	0.081	0.146
	(.169)	(.136)	(.173)	(.129)	(.16)	(.119)	(.161)	(.111)
Move from Distant Area	0.094	0.238	0.110	0.227	0.106	0.247	0.141	0.246
	(.297)	(.229)	(.267)	(.198)	(.284)	(.204)	(.265)	(.18)
Building Age (0-10 years)	0.179	0.348	0.185	0.370	0.176	0.346	0.196	0.371
	(.359)	(.213)	(.41)	(.269)	(.342)	(.19)	(.389)	(.235)
Building Age (10-20 years)	0.223	0.433	0.204	0.399	0.229	0.444	0.222	0.418
	(.45)	(.261)	(.447)	(.292)	(.445)	(.243)	(.444)	(.267)
Building Age (20+ years)	0.251	0.449	0.247	0.441	0.256	0.459	0.266	0.455
	(.421)	(.244)	(.449)	(.289)	(.428)	(.232)	(.451)	(.264)
# of observations	169,290	169,290	114,669	114,669	114,138	114,138	74,799	74,799

[a]The number in the parentheses is the "within" standard deviation of housing variables.

[b] A town is defined as large if its number of residents exceeds 100,000 residents and as small if less than 100,000 residents.

Table 5: Estimated Results of the Youth's Educational Achievements

	High School		College	
	Age (16/17)	Age(17)	Age(19/20)	Age (19)
Child's Characteristics				
Male	-0.006	-0.008	0.001	-0.026
	(0.002)***	(0.003)**	(0.002)	(0.003)***
First Born	0.066	0.073	0.032	0.017
	(0.002)***	(0.004)***	(0.003)***	(0.004)***
Number of Siblings (Self Included)	-0.003	-0.001	-0.004	-0.005
	(0.002)*	(0.003)	(0.002)**	(0.003)*
Parental Background				
Family Head	-0.001	-0.002	-0.005	0.000
	(0.004)	(0.006)	(0.004)	(0.006)
Mother's Age	0.017	0.026	0.04	0.018
	(0.006)***	(0.009)***	(0.007)***	(0.010)*
Mother's Age Square	0.000	0.000	0.000	0.000
	(0.000)**	(0.000)***	(0.000)***	(0.000)
Mother's Education (6-9 years)	0.034	0.033	0.018	0.014
	(0.003)***	(0.005)***	(0.003)***	(0.004)***
Mother's Education (9-12 years)	0.069	0.069	0.057	0.045
	(0.003)***	(0.005)***	(0.004)***	(0.005)***
Mother's Education (12+ years)	0.143	0.147	0.128	0.117
	(0.005)***	(0.008)***	(0.005)***	(0.008)***
Mother's Employment	-0.008	-0.007	0.000	-0.001
	(0.002)***	(0.004)*	(0.003)	(0.004)
Father's Education (6-9 years)	0.034	0.029	0.024	0.016
	(0.003)***	(0.005)***	(0.003)***	(0.005)***
Father's Education (9-12 years)	0.059	0.054	0.06	0.054
	(0.003)***	(0.005)***	(0.003)***	(0.005)***
Father's Education (12+ years)	0.149	0.144	0.153	0.143
	(0.004)***	(0.007)***	(0.005)***	(0.006)***
Father's Employment	0.024	0.02	0.027	0.027
	(0.004)***	(0.007)***	(0.004)***	(0.006)***
Housing Environment				
Rental Status	-0.031	-0.025	-0.058	-0.053
	(0.005)***	(0.008)***	(0.005)***	(0.007)***
Space (Square Meter/100)	0.015	0.009	0.012	0.012
	(0.002)***	(0.003)***	(0.002)***	(0.003)***
Low Crowdedness	0.005	0.007	0.014	0.009
	(0.004)	(0.006)	(0.004)**	(0.006)
Medium Crowdedness	0.011	0.014	0.013	0.011
	(0.003)**	(0.005)**	(0.003)**	(0.005)*
Move from Vicinity*	-0.024	-0.026	-0.023	-0.022
	(0.006)***	(0.011)**	(0.008)***	(0.010)**
Move from Distant Area*	-0.040	-0.041	0.001	-0.003
	(0.004)***	(0.007)***	(0.005)	(0.006)
Building Age (10-20 years)	-0.012	-0.006	0.002	-0.004
	(0.004)***	(0.006)	(0.005)	(0.006)
Building Age (20+ years)	-0.024	-0.023	-0.009	-0.015
	(0.004)***	(0.007)***	(0.005)*	(0.007)**
Number of Area Dummies (lin)	91929	71294	78707	62122
Number of Observations	283,959	143,343	188,937	79,013

* significant at 5%; ** significant at 1%; Standard deviations are in parentheses.

Table 6: Estimated Results of the Youth's Educational Achievements (Robustness Checks)[a]

	High School (Age 16/17)			College (Age 19/20)		
Level of Jurisdiction	Town	Village	Lin	Town	Village	Lin
Number of Dummies	364	7,508	91,929	364	7,428	78,707
Child's Characteristics						
First-Born	0.072	0.072	0.066	0.029	0.030	0.032
	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.003)**
Number of Siblings	-0.007	-0.005	-0.003	-0.004	-0.004	-0.004
	(0.001)**	(0.001)**	(0.002)	(0.001)**	(0.001)**	(0.002)*
House Characteristics						
Tenure Status	-0.027	-0.031	-0.031	-0.054	-0.058	-0.058
	(0.004)**	(0.004)**	(0.005)**	(0.004)**	(0.004)**	(0.005)**
Space (Square Meter/100)	0.018	0.017	0.015	0.015	0.014	0.012
	(0.001)**	(0.002)**	(0.002)**	(0.001)**	(0.002)**	(0.002)**
Low Crowdedness	-0.003	0.001	0.005	0.008	0.008	0.014
	(0.003)	(0.003)	(0.004)	(0.003)**	(0.003)**	(0.004)**
Medium Crowdedness	0.007	0.009	0.011	0.011	0.010	0.013
	(0.002)**	(0.002)**	(0.003)**	(0.002)**	(0.002)**	(0.003)**
Move from Vicinity	-0.031	-0.030	-0.024	-0.021	-0.018	-0.023
	(0.005)**	(0.005)**	(0.006)**	(0.005)**	(0.005)**	(0.008)**
Move from Distant Area	-0.040	-0.042	-0.040	0.001	0.003	0.001
	(0.003)**	(0.003)**	(0.004)**	(0.003)	(0.003)	(0.005)
Building Age (10-20 years)	-0.017	-0.017	-0.012	0.002	0.001	0.002
	(0.002)**	(0.003)**	(0.004)**	(0.003)	(0.003)	(0.005)
Building Age (20+ years)	-0.026	-0.027	-0.024	-0.007	-0.010	-0.009
	(0.003)**	(0.003)**	(0.004)**	(0.003)**	(0.003)**	(0.005)
Hausman Test						
vs Town Fixed Effect		447.60	295.42		201.99	75.27
vs Village Fixed Effect			114.56			31.82

** significant at 5%; * significant at 1%; standard deviations are in parentheses.

[a]The estimation controls for the mother's age, education and employment of mother and father, economic head, and child's gender.

Table 7: Results of IV Estimation Using Twin Births and Sex-Composition as Instrument[a]

Sample Selection	First and second child in families with at least 3 children		...and moved in before the 2nd child is born	
	High School (Age 16/17)	College (Age 19/20)	High School (Age 16/17)	College (Age 19/20)
First-stage Results				
Instruments				
First Two Boys	-0.048	-0.071	-0.059	-0.053
	(0.006)***	(0.007)***	(0.012)***	(0.018)***
First Two Girls	0.043	0.056	0.053	0.048
	(0.005)***	(0.005)***	(0.009)***	(0.013)***
First Three Boys	0.041	0.048	0.047	0.022
	(0.007)***	(0.009)***	(0.014)***	-0.022
First Three Girls	0.382	0.420	0.385	0.446
	(0.005)***	(0.006)***	(0.010)***	(0.014)***
Twins at the Third Birth	0.869	0.828	0.857	0.811
	(0.017)***	(0.021)***	(0.035)***	(0.057)***
Fixed Effect/ IV Results				
Child's Characteristics				
First Born	0.070	0.029	0.061	0.030
	(0.003)***	(0.003)***	(0.007)***	(0.007)***
Number of Sibling	0.000	-0.006	0.011	-0.021
	(0.010)	(0.008)	(0.021)	(0.017)
House Characteristics				
Rental Status	-0.024	-0.051	-0.008	-0.049
	(0.006)***	(0.005)***	(0.005)	(0.018)***
Space (Square Meter/100)	0.014	0.009	0.006	0.012
	(0.003)***	(0.002)***	(0.005)	(0.005)**
Low Crowdedness	0.002	0.003	-0.008	-0.019
	(0.006)	(0.005)	(0.011)	(0.010)*
Medium Crowdedness	0.019	0.013	0.010	0.006
	(0.005)***	(0.004)***	(0.010)	(0.009)
Move from Vicinity	-0.030	-0.024	-0.086	-0.057
	(0.009)***	(0.008)***	(0.025)***	(0.025)**
Move from Distant Area	-0.040	0.005	-0.108	0.026
	(0.006)***	(0.005)	(0.017)***	(0.015)*
Building Age (10-20)	-0.020	-0.001	-0.104	0.142
	(0.005)***	(0.004)	(0.078)	(0.135)
Building Age (20+)	-0.025	-0.009	-0.094	0.155
	(0.005)***	(0.004)**	(0.078)	(0.135)
Number of Area Dummies	7145	7145	6290	5578
Number of Observations	94457	94457	26885	17546

* significant at 10%; ** significant at 5%; *** significant at 1%; Standard deviations are in parentheses.

[a]The estimation controls for the mother's age, education and employment of the mother and father economic head, gender, as well as neighborhood fixed effects at village level.

Table 8: Results of the Youth's Educational Attainments (Gender Interactions)[a]

	High School Age (16/17)	College Age (19/20)
Child's Characteristics		
Male	-0.015	-0.017
	(0.006)**	(0.007)**
First Born*Boy	0.055	0.031
	(0.003)***	(0.005)***
First Born*Girl	0.042	0.023
	(0.004)***	(0.004)***
Number of Sibling	-0.01	-0.007
	(0.002)***	(0.002)***
Housing Environment		
Rental Status	-0.031	-0.058
	(0.005)***	(0.005)***
Space (Square Meter/100)*Boy	0.014	0.014
	(0.003)***	(0.003)***
Space (Square Meter/100)*Girl	0.014	0.009
	(0.003)***	(0.003)***
Low Crowdedness*Boy	0.002	0.018
	(0.005)	(0.005)***
Low Crowdedness*Girl	0.006	0.01
	(0.005)	(0.005)**
Medium Crowdedness*Boy	0.004	0.011
	(0.004)	(0.005)**
Medium Crowdedness*Girl	0.009	0.012
	(0.004)**	(0.004)***
Move from Vicinity*	-0.023	-0.023
	(0.006)***	(0.008)**
Move from Distant Area*	-0.039	0.001
	(0.004)***	(0.005)
Building Age (10-20)	-0.012	0.002
	(0.004)***	(0.005)
Building Age (20+)	-0.025	-0.009
	(0.004)***	(0.005)*
Number of Area Dummies	91929	78707
Number of Observations	283,959	188,937

* significant at 10%; ** significant at 5%; *** significant at 1%; Standard deviations are in parentheses.

[a]The estimation controls for neighborhood dummies at lin level

Conference Programme

CONFERENCE OVERVIEW

The 12th Asian Real Estate Society International Conference (jointly the 2007 AREUEA International Conference) takes place in the Macau Tower Convention and Entertainment Center, Macau, China, during July 9-12, 2007. The conference provides a forum for academics, practitioners, and policymakers in the areas of real estate market, real estate finance, development and investment, housing and urban planning, hospitality and tourism development, urban economics, regulation and government policy, to exchange ideas on important issues. Participants can fully relax and enjoy the summer in the Orient, while simultaneously sharing academic and research ideas in the conference.

It is our great honor to have four keynote speakers, all having remarkable influence to both the real estate markets and the academia, adding much glamour to our conference opening ceremony. Secretary Alphonso Jackson is the secretary of the Housing and Urban Development Department of the United States of American government. Prof. Sir James A. Mirrlees is the 1996 Nobel laureate in Economics. Dr. William Newman is a pioneer in the development of new REIT concept. Prof. Sheridan Titman is a world renowned professor in the area of finance.

This conference also features several highlights. In addition to nine sessions featuring six concurrent paper sessions, covering over 250 papers on current theoretical and applied research, there are always one (or more) English as well as a Chinese special panel discussions (one of which offers English/Chinese simultaneous interpretation) in each of the nine sessions by both academics and practitioners on issues about Asia and rest of the world. We have also organized a plenary session, a dinner speech, and a couple discussion sessions on some topical issues on the practicing side of real estate. Furthermore, a Chinese paper session is offered in each of the nine session time slots.

Our delegates consist of many leading scholars and practitioners from all over the world. We have gathered over 400 participants from Australia, Austria, China, Hong Kong, Italy, Macau, Malaysia, Singapore, Spain, Taiwan, Thailand, the United Kingdom, and the United States, to name a few. We are confident that this conference can serve the purpose of providing a stimulating environment and platform for all academics and practitioners to meet in this small city that is famous for being a bridge where East meets West.

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BEST PAPER AWARDS

US$1,000 Best Paper Awards sponsored by

American Real Estate Society (ARES) Foundation

Appraisal Institute Education Trust Award

(for the best paper in the area of valuation)

Center for the Study of Real Estate Brokerage/Agency at Cleveland State University

(for the best paper on issues related to brokerage/agency)

Maury Seldin Advanced Studies Institute

RICS Foundation Award

(for the best paper on issues relating to sustainability)

KEYNOTE SPEAKERS

Secretary Alphonso Jackson

- Secretary of Housing and Urban Development, United States of America, since 2004.
- President of American Electric Power-TEXAS, a $13 billion utility company located in Austin, Texas before joining HUD.
- 1989 - 1996 as President and CEO of the Housing Authority of Dallas, Texas, ranked as one of the best-managed large-city housing agencies in the country.
- Prior to that, Secretary Jackson was Director of the Department of Public and Assisted Housing in Washington, D.C., and also served as Chairperson for the District of Columbia Redevelopment Land Agency Board.

Professor Sir James A. Mirrlees

- Nobel Laureate, awarded in 1996 for his "fundamental contributions to the economic theory of incentives under asymmetric information".
- Distinguished Professor of Economics, University of Macau

Dr. William Newman

- Founder and chairman of New Plan Excel Realty Trust, Inc., one of the nation's largest real estate companies, which focuses on the ownership, management, acquisition, development and redevelopment of community and neighborhood shopping centers.
- Received the Wall Street Transcript's gold, silver, and bronze medals for national leadership in the real estate industry, and Ernst & Young's Real Estate Entrepreneur of the Year Award in 1998.
- Former chairman of the National Association of Real Estate Investment Trusts, a position he occupied from 1990 to 1992.
- A pioneer in the development of new REIT concept, which reformed the REIT industry in the early 1990s.

Professor Sheridan Titman

Sheridan Titman holds the McAllister Centennial Chair in Financial Services at the University of Texas and is the Director of the Real Estate Finance and Investment Center. He has a B.S. from the University of Colorado and an M.S. and Ph.D. from Carnegie Mellon University. Prior to joining the faculty at the University of Texas, Professor Titman was a Professor at UCLA, the Hong Kong University of Science and Technology and Boston College and spent the 1988-89 academic year in Washington D.C. as the special assistant to the Assistant Secretary of the Treasury for Economic Policy.

Professor Titman's research interests include investments, corporate finance, and real estate; and he has published and consulted in all of these areas. He has also co-authored a leading advanced corporate finance textbook entitled "Financial Markets and Corporate Strategy," and has served on the editorial boards of leading academic journals. He is a past director of the American Finance Association and the Asia Pacific Finance Association and is the current President of the Western Finance Association.

PROGRAMME

The conference is at the Macau Tower Convention and Entertainment Center, which is located at Largo da Torre de Macau, Macau (+853 2893 3339). A total of about 250 academic papers will be presented and discussed in the three-day conference. The conference also features 11 English and 9 Chinese panel sessions in addition to four keynote speeches and a distinguished dinner speech.

Sessions marked with this sign 🎧 have simultaneous interpretation provided.

July 9, 2007 (Monday) at Wynn Macau	
Time	**Speaker /Title**
2:30 PM - 6:30 PM	**Pre-conference Registration**
2:00 PM - 4:00 PM	**IRES Board Meeting**
4:00 PM - 6:00 PM	**AsRES Board Meeting I**
6:00 PM - 8:00 PM	**Pre-conference Reception**

July 10, 2007 (Tuesday) at Macau Tower		
Time	**Session #**	**Speaker /Title**
8:00 AM - 6:00 PM	**Conference Registration**	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM - 12:00 PM	**Opening Ceremony**	
	Speech by the Secretary for Social Affairs and Culture, Macao SAR	
	Speech by the Rector of the University of Macau	
	AsRES Presidential Speech	
	Keynote 1	Prof. Sir James A. Mirrlees, 1996 Nobel Laureate in Economics, Distinguished Professor of Economics, University of Macau
	Keynote 2	Dr. William Newman, Founder and Chairman of New Plan Excel Realty Trust, Inc.
	Keynote 3	Prof. Sheridan Titman, University of Texas at Austin
	Coffee Break	
	Keynote 4	The Honorable Alphonso Jackson, Secretary of Housing and Urban Development, United States of America
12:10 PM - 2:00 PM	**Lunch (Sponsored by Wynn Macau)**	
2:00 PM - 3:45 PM	A - 1	Theoretical Development in Real Estate I
	A - 2	**English Panel: International Real Estate Investing**
	A - 3	**Chinese Panel: Real Estate Education in China and the World (中國與國際房地產教育與學術研究)**
	A - 4	Portfolio Risk and Return Considerations I
	A - 5	Valuation Methodologies I
	A - 6	Dynamic Forces in Real Estate
	A - 7	Nonresidential Real Estate Issues I
	A - 8	Chinese Papers: Topical Research I
3:45 PM - 4:00 PM	**Coffee Break (Sponsored by Cartography and Cadastre Bureau, Macao SAR)**	
4:00 PM - 5:45 PM	B - 1	Mortgage Issues I
	B - 2	**English Panel:** Getting Published in Top Real Estate Journals
	B - 3	**Chinese Panel: The Application of IT in Real Estate Administration (現代技術在房地產管理中的應用)**
	B - 4	Options & Optimization
	B - 5	Real Estate Potpourri I
	B - 6	Real Estate Development and Redevelopment
	B - 7	Mobility/Aging Population and Real Estate
	B - 8	Chinese Papers: Policy and Tax
5:45 PM - 6:45 PM	Transportation to Dinner Venue (from both Macau Tower and Hotel)	
7:00 PM - 9:00 PM	**Dinner at the Fisherman's Wharf (Hosted by the Secretary for Social Affairs and Culture, Macao SAR)**	

July 11, 2007 (Wednesday) at Macau Tower		
Time	**Session #**	**Speaker /Title**
8:00 AM - 6:00 PM	**Conference Registration**	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM - 10:45AM	C - 1	Real Estate Potpourri II
	C - 2	**English Panel: Asian Real Estate Law and Property Law Issues**
	C - 3	**Chinese Panel: The transaction and prospects of real estate industry in China (中國房地產業的轉型與發展)**
	C - 4	Valuation Methodologies II
	C - 5	Real Estate Indices and Applications
	C - 6	Chinese Land Issues
	C - 7	International Real Estate Research I
	C - 8	Chinese Papers: Capital, Rental and Ownership
10:45AM -11:00AM	**Coffee Break**	
11:00AM -12:45PM	D - 1	Factors and Controversies Impacting Property Valuation
	D - 2	**English Panel: Real Estate Indexes and Derivatives**
	D - 3	**Chinese Panel: Real Property Tax: What can China Learn from International Experiences (國際房地產稅經驗與中國房地產實施研討)**
	D - 4	Mortgage Issues II
	D - 5	Land Issues
	D - 6	Policy
	D - 7	International Real Estate Research II
	D - 8	Chinese Papers: Bubbles
12:45PM - 2:00 PM	**Lunch**	
2:00 PM - 3:30 PM	E - 1	Theoretical Development in Real Estate II
	E - 2	**English Panel: Evaluating Global Real Estate Investments: Transparency, Technology and Indices**
	E - 3	**Chinese Panel: Land Supply System and Real Estate Market (土地供應制度與房地產市場)**
	E - 4	Real Estate Potpourri III
	E - 5	International Real Estate Research III
	E - 6	Demographics and Real Estate Markets
	E - 7	Real Estate Potpourri IV
	E - 8	Chinese Papers: Land Issues

3:30 PM - 3:45 PM	**Coffee Break**	
3:45 PM - 5:15 PM	F - 1	Market & Pricing Dynamics I
	F - 2	**English Panel: Tourism Site Development**
	F - 3	**Chinese Panel: Real Estate Data and Real Estate Market Analysis (如何運用資料資訊進行房地產市場分析)**
	F - 4	Property Rights and Legal Issues
	F - 5	Portfolio Risk and Return Considerations II
	F - 6	International Real Estate Research IV
	F - 7	China Real Estate Markets
	F - 8	Chinese Papers: Pricing
5:15 PM - 6:45 PM	Plenary Session: Establishing Secondary Mortgage Market Chaired by Darlene Williams (Assistant Secretary, US Department of Housing and Urban Development) Panelists: Di Xu, China Construction Bank (China) Kwan Young Kim, Hanyang University (Korea) Che-Chun Lin, National Tsinghua University (Taiwan) Piyush Tiwari, University of Aberdeen (UK)	
6:45 PM - 9:00 PM	**Dinner at the Banquet Hall, Macau Tower** **(Hosted by the Macau Government Tourist Office, Macao SAR)** Featuring a Speech by Dr. Ronnie Chan (Chairman of Hang Lung Group, Hong Kong)	

July 12, 2007 (Thursday) at Macau Tower

Time	Session #	Speaker /Title
8:00AM -12:00NOON	**Conference Registration**	
8:00 AM - 9:30 AM	***AsRES Board Meeting II***	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM -10:45AM	G - 1	REITs
	G - 2	**English Panel: Measuring and Managing Mortgage Credit Risks**
	G - 3	**Chinese Panel: The Prospected Development of Real Estate Finance in China (中國房地產金融的現狀與未來發展)**
	G - 4	House Price Risks, Consumption, and Asset Pricing
	G - 5	Issues on Appraisers
	G - 6	International Real Estate Research V
	G - 7	***Room Reserved for AsRES Board Meeting II***
	G - 8	Chinese Papers: Topical Research II

10:45 AM - 11:00AM	**Coffee Break (Sponsored by Jones Lang LaSalle, Macau)**	
11:00 AM -12:45 PM	H - 1	Market & Pricing Dynamics II
	H - 2	**English Panel: Impact of Gaming Industries on Property Market in Macau**
	H - 3	**Chinese Panel: The Policy Framework of Real Estate Industry in China (中國房地產政策論壇)**
	H - 4	Real Estate Potpourri V
	H - 5	International Real Estate Research VI
	H - 6	**English Panel: Evolution of Asian Housing Finance Systems**
	H - 7	Hotel Real Estate
	H - 8	Chinese Papers: Topical Research III
12:45 PM - 2:00 PM	**Lunch**	
2:00 PM - 3:30 PM	I - 1	Theoretical Development in Real Estate III
	I - 2	**English Panel: Housing Finance Policies**
	I - 3	**REALM Lecture on DCF & ARGUS**
	I - 4	Nonresidential Real Estate Issues II
	I - 5	International Real Estate Research VII
	I - 6	Housing and Tenure Choice
	I - 7	International Real Estate Research VIII
	I - 8	**Chinese Panel: Real Estate Investment Issues in Hong Kong, Macau and Mainland China**

Tuesday, July 10, 14:00-15:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session A -1 14:00 - 15:45 Grand Hall GH 1

Theoretical Development in Real Estate I

Chair: **Robert Van Order**, University of Michigan

IPO Pricing Strategies with Deadweight and Search Costs
Ko Wang, Baruch College, CUNY
Jing Yang, California State University
Discussant: David Frame, Baruch College, CUNY

Optimal Revenue Sharing Contracts with Externalities and Dual Agency
Timothy J. Riddiough, University of Wisconsin – Madison
Joseph T. Williams, Professors Capital
Discussant: Richard Green, The George Washington University

Mortgage Securitization in Asia: Gains and Barriers
Richard K. Green, The George Washington University
Roberto Mariano, Singapore Management University
Andrey Pavlov, University of Pennsylvania and Simon Fraser University
Susan Wachter, University of Pennsylvania
Discussant: Robert Van Order, University of Michigan

Property Market Bubbles, Heterogeneous Beliefs, and Auction Outcomes: Evidence from Hong Kong Land Auctions
Yuk Ying Chang, Massey University
Sudipto Dasgupta, Hong Kong University of Science and Technology
Jie Gan, Hong Kong University of Science and Technology
Discussant: Newell Graeme, University of Western Sydney

Session A -2 14:00 – 15:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *International Real Estate Investing*

Moderator: **Robert Edelstein**, University of California, Berkeley

Morgan A. Laughlin, Real Estate Finance Group - Asia, The Royal Bank of Scotland
Mark Gabbay, Managing Director, Lehman Brothers Real Estate Limited
Robert Lie, AIG
Boaz Boon, CapitaLand

Session A -3 14:00 - 15:45 Grand Hall GH 3

Chinese Panel : *Real Estate Education in China and the World*
(中國與國際房地產教育與學術研究)

論壇主辦單位: 中國高校房地產專業教師聯誼會

Moderator(主持人): 劉洪玉，清華大學房地產研究所教授

Panel Lists (嘉賓)
張永岳，華東師範大學東方房地產學院院長、教授，
上海易居房地產研究院院長
馮長春，北京大學不動產研究鑒定中心教授
鄒廣榮，香港大學房地產與建設系教授
符育明，國立新加坡大學房地產系教授
林祖嘉，國立政治大學經濟系教授
鄧永恆，School of Policy, Planning, and Development and Marshall School of Business, University of Southern California
艾建國，華中師範大學城市經濟管理系系主任、教授
虞曉芬，浙江工業大學房地產研究所所長、教授

Session A -4 14:00 – 15:45 Grand Hall GH 4

Portfolio Risk and Return Considerations I

Chair: **Richard Green**, The George Washington University

The Wealth Effects of Yield-Accretive Acquisitions: The Case of Asian REITs
Joseph T.L. Ooi, National University of Singapore
Seow Eng Ong, National University of Singapore
Poh-Har Neo, National University of Singapore
Discussant: Richard Green, The George Washington University

On the Interest Rate Risk of the Housing Government Sponsored Enterprises
Dwight M. Jaffee, University of California, Berkeley
Gerd M. Welke, Baruch College, CUNY
Discussant: James Shilling, DePaul University

A Comparison of International Residential Housing Risk Premia
Chris Julliard, London School of Economics
Grace Wong, Wharton School of Business
Discussant: Robert Van Order, University of Michigan

Corporate Liquidity Management and Financial Constraints
Zhonghua Wu, Florida International University
Yongqiang Chu, University of Wisconsin-Madison
Discussant: Yuming Fu, National University of Singapore

Session A -5 14:00 - 15:45 Grand Hall GH 5

Valuation Methodologies I

Chair: **Donald Bleich**, California State University – Northrodge

A Cobweb Theory of House Price Incorporated with the Behavior of Investors
Ming-chi Chen, National Sun Yat-sen University
I-Chun Tsai, Southern Taiwan University of Technology
Tien-Foo Sing, National University of Singapore

The Application of Fuzzy Set Theory for Evaluating the Real Estate Agency Service Quality
Hsing Ping Kuo, Southern Taiwan University of Technology
Kang-Li Wu, National Cheng-Kung University

CAREB – Computer Aided Real Estate Benchmarking
David A. Steixner, University of Applied Sciences FHS KufsteinTirol
Thomas Madritsch, University of Applied Sciences FHS KufsteinTirol;
University for Health Sciences, Medical Informatics and Technology
Sven Bienert, Financial Advisory Services - Real Estate, KPMG

Modeling House Price Volatility States in the UK by Switching ARCH Models
I-Chun Tsai, Southern Taiwan University of Technology
Ming-Chi Chen, National Sun Yat-sen University

The Significance and Performance of REIT Market in Singapore
Wu Yue, University of Western Sydney

Session A -6 14:00 - 15:45 Grand Hall GH 6

Dynamic Forces in Real Estate

Chair: **Joe Lipscomb**, Texas Christian University

Does Corporate Governance Play A Role in Corporate Real Estate Holdings?
Julan Du, Chinese University of Hong Kong
Charles Ka Yui Leung, City University of Hong Kong
Derek Chu, Chinese University of Hong Kong

Why do the Wealth Effects of Asset-Backed Securitization Differ?
Yang-Pin Shen, Yuan Ze University
Li-Ching Chiu, Yuan Ze University
Chiu-Ling Lu, Yuan Ze University and University of Cambridge

The Effect of Passing Pedestrians Characteristics on Retail Rents
Seung-Young Jeong, Dankook University
Jinu Kim, The University of New South Wales

The Effects of Monetary Policy on Real Estate Price Dynamics: An "Asset Substitutability" Perspective
Hai-Feng Hu, Wenzao Ursuline College of Languages

Research on Applications of the Earned Value Management in the Real Estate Investment Management
Yuhua An, Jilin Architectural and Civil Engineering Institute
Xiaoxin Ding, Jilin Architectural and Civil Engineering Institute

Session A -7 14:00 – 15:45 Grand Hall GH 7

Nonresidential Real Estate Issues I

Chair: **Kishore Tandon**, Baruch College, CUNY

Plant, Machinery and Equipment (PME) Valuation: Application among Local Authorities in Malaysia
Sabariah Bt Eni, Universiti Tun Hussein Onn Malaysia

Sustainability and the Value of Office Buildings – Will the Market Pay for Green Buildings?
Richard G Reed, University of Melbourne
Sara Wilkinson, University of Melbourne

The Study of Location Determinants and Characteristics of Korea Listing Companies and Kosdaq Companies
Su-Teon Jung, Cheju National University
Heon soo Park, Chung Ang University
Tae-Ug Rho, Kangnam University

Hidden Office User Markets And Their Control
Hao Wu, The University of Melbourne
Richard Reed, The University of Melbourne
Jon Robinson, The University of Melbourne

The Impact of RMB Appreciation on The Development of Real Estate Market – A Case Study of Beijing
Bao-Kui Liu, Peking University
Chang-Chun Feng, Peking University

Session A -8 14:00 – 15:45 Grand Hall GH 8

Chinese Papers: Topical Research I

Chair: 賈士軍，廣州大學

不動產自售網站對不動產仲介業產生“去中介化”之研究
張欣民，國立政治大學
陳奉瑤，國立政治大學

從促進土地資訊流通的觀點探討地籍與物業登記服務的整合方向
張紹基，中國人民大學

中國房地產市場非有效性：理論分析與實證探討
王洪衛，上海財經大學
潘愛民，上海財經大學

中國住宅消費中的情緒因素與認知偏差
陳江濤，浙江大學，香港理工大學
許智文，香港理工大學
王重鳴，浙江大學

土地一級開發企業成本控制策略之探討—以北京市土地一級開發企業為例
王洪野，中國人民大學

Tuesday, July 10, 16:00-17:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session B -1 16:00 - 17:45 Grand Hall GH 1

Mortgage Issues I

Chair: **Peter Zorn**, Freddie Mac

The Impact of Securitization on the Pricing of Multifamily Mortgages
Xudong An, University of Southern California
Yongheng Deng, University of Southern California
Stuart A. Gabriel, University of Southern California
Discussant: Timothy Riddiough, University of Wisconsin – Madison

The Building of New Reverse Mortgage Payment Plans in the Korean Housing Market
Seungryul Ma, Korea Housing Financial Corporation
Deokho Cho, Daegu University
Discussant: Shiawee Yang, Northeastern University

The Potential for Use and Misuse of Reverse Mortgages in Australia
Richard G Reed, University of Melbourne
Hao Wu, University of Melbourne
Discussant: Graeme Newell, University Of Western Sydney

Session B -2 16:00 – 17:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Getting Published in Top Real Estate Journals*

Moderator: **Graeme Newell**, University of Western Sydney
(*Journal of Property Research*)

Sheridan Titman, University of Texas at Austin
(*Past Editor of Review of Financial Studies*)
James Shilling, DePaul University (*Journal of Real Estate Finance and Economics*)
Ko Wang, Baruch College, CUNY (*Journal of Real Estate Research*)
Hongyu Liu, Tsinghua University (*International Real Estate Research*)
Edward Coulson, Pennsylvania State University (*Real Estate Economics*)

Session B -3 16:00 – 17:45 Grand Hall GH 3

Chinese Panel: *The Application of IT in Real Estate Administration*
(現代技術在房地產管理中的應用)

論壇主辦單位：澳門地圖繪製暨地籍局

Moderator (主持人)：張紹基，澳門地圖繪製暨地籍局局長

Panel Lists (嘉賓)

史文中，香港理工大學土地測量及地理資訊學系教授

Paul H.Y. Tsui, MRICS, MHKIS, Director, Sales and Marketing (銷售及技術總監), ESRI China (Hong Kong)

張欣民，國立政治大學地政系

田傳浩，浙江大學房地產研究中心

Wang Shengwei, Head of Department of Building Service Engineering , The Hong Kong Polytechnic University

WuZhi Gang, Center for Urban Development & Leisure Research, South China Normal University

Session B -4 16:00 – 17:45 Grand Hall GH 4

Options & Optimization

Chair: **Robert Edelstein**, University of California, Berkeley

Buy to Scrape? Hedonic Pricing with Redevelopment Options
John M. Clapp, University of Connecticut
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Gerd M. Welke, Baruch College, CUNY

Optimal Sprawl
Kerry D. Vandell, University of California – Irvine
Discussant: Yuming Fu, National University of Singapore

Option to Change Strategy between Audits in Mortgage Insurance
Robert Van Order, University of Michigan
Rose Neng Lai, University of Macau
Discussant: Desmond Tsang, McGill University

Session B -5 16:00 - 17:45 Grand Hall GH 5

Real Estate Potpourri I

Chair: **Kwong Wing Chau**, University of Hong Kong

The Incentives of Asset-Backed Securitization
Yang-Pin Shen, Yuan Ze University
Li-Ching Chiu, Yuan Ze University
Chiu-Ling Lu, Yuan Ze University and University of Cambridge

The Determinants of Land Prices in Competitive Bidding
Zhi Dong, National University of Singapore
Tien-Foo Sing, National University of Singapore

Modeling Price Volatility in the Hong Kong Property Market
Sherry Z. Zhou, City University of Hong Kong.
Helen X.H. Bao, University of Cambridge

Study of the Real Estate Project Management Maturity Model
Xiaoxin Ding, Jilin Architectural and Civil Engineering Institute
Yuhua An, Jilin Architectural and Civil Engineering Institute

Session B -6 16:00 - 17:45 Grand Hall GH 6

Real Estate Development and Redevelopment

Chair: **Paloma Taltavull de La Paz**, University of Alicante

Foreign Direct Real Estate Investment in the U.S. – Opportunities and Cautions
John A. Kilpatrick, Greenfield Advisors LLC
Discussant: Austin Jaffe, Pennsylvania State University

Revisiting the Market of 921 Earthquake Rebuilt Program Using R-T Model Before and After
Kun-Jung Hsu, Leader University
Chun-Ho Pan, Honda Assets Valuation Co
Discussant: Tsur Somerville, University of British Columbia

The Impact of Fees and Taxes on Choices of Development Timing and Capital Intensity
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Leah Brooks, McGill University

An Preliminary Study to Formulate User-centered New Town Development
Kim Ju Young, Korea Land Corporation
Discussant: Lennon Choy, Hong Kong Polytechnic University

Can the Building Bulk Incentives Create Development Clusters in Urban Redevelopment Areas? An Exploration Based on Transaction Cost Theory
I-Chih Lan, National Taipei University
Shih-Kung Lai, National Taipei University
Ming-Sheng Xue, National Taipei University
Discussant: Siqi Zheng, Tsinghua University

Session B -7 16:00 - 17:45 Grand Hall GH 7

Mobility/Aging Population and Real Estate

Chair: **William G. Hardin III**, Florida International University

Be It Ever So Humble: Understanding Housing Using Subjective Well-being Data
Grace Wong, University of Pennsylvania

Residential Mobility And Aging Population
Eddie Chi Man Hui, The Hong Kong Polytechnic University
Ka Hung Yu, The Hong Kong Polytechnic University

A Financial Analysis of BOT-Project for the Elderly Housing - The Case of Pin-Lin Geriatric House in Taiwan
Kun-jung Hsu, Leader University
Yuan-kun Lu, Leader University

Which is More Decentralized by the Rail Transit in Beijing: Jobs or Residences?
Lu Yu, Tsinghua University
Siqi Zheng, Tsinghua University

Study on Comparison of the Housing Market Structure in Tokyo and Suburbs of Tokyo
Mari Tanaka, University of Tokyo
Yasushi Asami, University of Tokyo

Session B -8 16:00 – 17:45 Grand Hall GH 8

Chinese Papers: *Policy and Tax*

Chair: 馮長春，北京大學

胡錦濤時期之住宅政策
游惠君，臺灣國立政治大學

住宅保有財產稅起征點的探討
王全民，東北財經大學

臺灣房地產保有稅分析
王秀寧，Polaris Securities Group

我國房地產稅收制度的發展過程及其現狀的簡要分析
杜方敏，上海財經大學

多年調控的房地產市場為何未能奏效
葛震明，同濟大學

Wednesday, July 11, 9:00-10:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session C -1 9:00 - 10:45 Grand Hall GH 1

Real Estate Potpourri II

Chair: **Timothy J. Riddiough**, University of Wisconsin - Madison

The Impact of Price-to Rent Ratios on Homeownership Rates
Chien-wen Peng, National Taipei University
Tyler T. Yang, IFE Group
Discussant: Peter Zorn, Freddie Mac

Presales, "Overbuilding" and "Overpricing"
Su H. Chan, California State University, Fullerton
Jing Yang, California State University, Fullerton
Rose Neng Lai, University of Macau
Discussant: David Barker, University of Iowa

Lemons in Real Estate: Do People Believe Repairs?
Sanghoon Lee, University of British Columbia
Tsur Somerville, University of British Columbia
Discussant: John Clapp, University of Connecticut

Markets and Housing Finance
Veronica Cacdac Warnock, University of Virginia
Frank Warnock, University of Virginia

Session C -2 9:00 - 10:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Asian Real Estate Law and Property Law Issues*

Moderator: **Jay Weiser**, Baruch College, CUNY

The New Chinese Basic Law of Property: Impact on the Real Estate Industry in China
Patrick A. Randolph, Jr., UMKC School of Law
Jianbo Lou, Center for Real Estate Law, Law School, Peking University

Beyond the Basel Accord: Should the Capital Adequacy Ratio Take Account of The Real Estate Environment in the Hong Kong SAR?
Berry Hsu, Department of Real Estate and Construction, University of Hong Kong

Informal Mortgage Law in the People's Republic of China
Gregory Stein, University of Tennessee

Comments on China's Land Title Security System OR Housing Policy of the People's Republic of China: Successes and Disappointments
Joyce Palomar, University of Oklahoma

Session C -3 9:00 – 10:45 Grand Hall GH 3

Chinese Panel:
The transaction and prospects of real estate industry in China
(中國房地產業的轉型與發展)

論壇主辦單位：華東師範大學東方房地產學院

Moderator (主持人)：張永岳，華東師範大學東方房地產學院院長、教授，上海易居房地產研究院院長

Panel Lists (嘉賓)
林　中，旭輝集團股份有限公司董事長
彭勝浩，上海紫江房地產開發有限公司總裁
單正林，上海朱家角房地產開發有限公司總經理
秦少秋，上海北孚（集團）有限公司董事長
丁祖昱，上海易居房地產研究院副院長
崔　裴，華東師範大學東方房地產學院副教授、院長助理

Session C -4 9:00 - 10:45 Grand Hall GH 4

Valuation Methodologies II

Chair: **Graeme Newell**, University of Western Sydney

Just-in-Time Monte Carlo for MBS valuation
Samir K. Dutt, California Polytechnic State University
Gerd M. Welke, Baruch College, CUNY

A Hybrid Method of Mass Appraisal with Hedonic Price and Quantile Regression
Chung-Hsien Yang, National Pingtung Institute of Commerce

Housing Uncertain Quality: Identifying and Pricing
Qiao Sun, Tsinghua University
Siqi Zheng, Tsinghua University
Hongyu Liu, Tsinghua University

Comparing the Quality of Accruals for GAAP vs. Non-GAAP Summary Performance Measures in Financial Reporting
Desmond Tsang, McGill University

Session C -5 9:00 - 10:45 Grand Hall GH 5

Real Estate Indices and Applications

Chair: **Kyung-Hwan Kim**, Sogang University

Comparing Real Estate Indices Based on the Role of Real Estate in an Investor's Portfolio
Yao-Min Chiang, National Chengchi University
Fong-Yao Chen, National Chengchi University

Housing Affordability Index in Korea
Kyu-Hyun Ji, Korea National Housing Corporation
Jin-Yoo Kim, Kyonggi University

Testing for Structural Breaks in Korea's Real Estate Price Indices: An Application of the GMM Estimation
Heonsoo Park, Chung-Ang University
Tae Kyung Kim, Gyeonggi Research Institute

Quantifying the Reversibility Phenomenon for the Repeat-sales Index
Arnaud Simon, Paris Dauphine University

Housing Liquidity Index: A New Housing Market Indicator in Urban China
Jing Wu, Tsinghua University
Hongyu Liu, Tsinghua University

Session C -6 9:00 - 10:45 Grand Hall GH 6

Chinese Land Issues

Chair: **Charles Ka-yui Leung**, City University of Hong Kong

Government Regulation on Urban Land Supply in China – A Case Study of Beijing
Chun Chen, Peking University
Chang-Chun Feng, Peking University

Land Supply and Housing Price: A Case in Beijing
Jinhai Yan, Renmin University of China

Economic Determinants of Urban Spatial Scale - Chinese Cities in Transition
Shanzi Ke, Hunan University
Ming He, Hunan University
Yan Song, University of North Carolina

Urban Land Reform and the Development of Land Markets: Evidence from Hangzhou
Chuanhao Tian, Zhejiang University
Hong Yang, Zhejiang University

Residential Land Use in Urban Fringes: Spatial Heterogeneity and Readjustment Mode
Tao Zhou, Renmin University of China
Ying Lin, Renmin University of China
Ping Lu, Renmin University of China

Session C -7 9:00 - 10:45 Grand Hall GH 7

International Real Estate Research I

Chair: **Chin-Oh Chang**, National Chengchi University

The Internationalization of Real Estate Research
Kam C. Chan, Western Kentucky University
William G. Hardin III, Florida International University
Kartono Liano, Mississippi State Universtiy
Zheng Yu, Mississippi State University

The Role of the List Price: Evidence from the Hong Kong Housing Market
Eddie Chi Man Hui, The Hong Kong Polytechnic University
Joe T.Y. Wong, The Hong Kong Polytechnic University
K.T. Wong, The Hong Kong Polytechnic University

Land Tenure Security and Home Maintenance: The Case of Japan
Shinichiro Iwata, University of Toyama
Hisaki Yamaga, University of Tsukuba

The Problems of and Prospects for the China Property Markets
Nell S Y Chang, Mackintosh School of Architecture, The Glasgow School of Art
Timothy M. Havard, Circle Software Ltd.

Quantile Regression Analyses on Saving and Housing of Taiwanese Households over Rapid Economic Development
Chien-Liang Chen, National Chi Nan University

Session C-8 9:00 - 10:45 Grand Hall GH 8

Chinese Papers: *Capital, Rental and Ownership*

Chair: 艾建國，華中師範大學

中國房地產價格與股票價格關係的實證分析
高曉暉，上海財經大學

我國旅遊房地產理性發展的思路分析
彭慧，中國人民大學
葉劍平，中國人民大學

廉租住房配租方式的比較分析
廖俊平，中山大學
劉妍潔，中山大學

基於層次分析的中國城市房地產投資吸引力排名研究
曲衛東, 中國人民大學

住房反抵押貸款中的道德風險問題研究
姚玲珍，上海財經大學
楊有志，上海財經大學
鄧光豔，上海財經大學
魏　瑋，上海財經大學

Wednesday, July 11, 11:00-12:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session D -1 11:00 – 12:45 Grand Hall GH 1

Factors and Controversies Impacting Property Valuation

Chair: **John M. Clapp**, University of Connecticut

The Determinants of Heating and Maintenance Costs: An Empirical Survey
Wolfgang Brunauer, University of Applied Sciences Kufstein
Stefan Lang, University of Innsbruck
David Steixner, University of Applied Sciences Kufstein
Discussant: Li-Min Hsueh, China University of Technology

Main Variables Influencing Residential Property Values Using the Entropy Method – the Case of Auckland
Janet Xin Ge, University of Technology Sydney
Yue Du, Beijing Widnell Engineering Consultancy Co. Ltd
Discussant: Karl Runesen, University of Technology, Sydney

House Price Dynamics in the U.S. Residential Market: Speculation, Superstar Cities and Superstar States
Yun Woo Park, California State University
Vipin Agrawal, California State University
Su Han Chan, Baruch College, CUNY and California State University
Discussant: Tien Foo Sing, National University of Singapore

Estimating the Intergenerational Discount Rate: A Case in Hong Kong
K.W. Chau, The University of Hong Kong
S. K. Wong, The University of Hong Kong
C.Y. Yiu, The University of Hong Kong
M.K.W. Yu, The University of Hong Kong
Discussant: Rui Yao, Baruch College, CUNY

Session D -2 11:00 – 12:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Real Estate Indexes and Derivatives*

Moderator: **Robert Edelstein**, University of California, Berkeley

Jeffrey Fisher, Department of Finance, Indiana University
Lijian Chen, Managing Director, UBS
Kawaguchi Yuichiro, Waseda University
Jacques Gordon, Global Investment Strategist, LaSalle Investment Management, Chicago

Session D -3 11:00 – 12:45 Grand Hall GH 3

Chinese Panel:
Real Property Tax: What Can China Learn from International Experiences
(國際房地產稅經驗與中國房地產實施研討)

論壇主辦單位：北京大學不動產研究鑒定中心

Moderator (主持人)：馮長春，北京大學不動產研究鑒定中心教授

Panel Lists (嘉賓)

王全民，東北財經大學教授
劉振生，北京地稅局 處長
葉祖達，香港城市規劃學會會長

Session D -4 11:00 – 12:45 Grand Hall GH 4

Mortgage Issues II

Chair: **James Shilling**, DePaul University

Mortgage Prepayment and Default Behavior with Embedded Forward Contract Risks in China's Housing Market
Yongheng Deng, University of Southern California
Peng Liu, University of California, Berkeley
Discussant: Charles Ka-Yui Leung, The City University of Hong Kong

Selection and Moral Hazard in the Reverse Mortgage Market
Thomas Davidoff, University of California, Berkeley
Gerd M. Welke, Baruch College, CUNY
Discussant: Richard Green, The George Washington University

180 Years' Evolution of the US Mortgage Banking System: Lessons for Emerging Mortgage Markets
Man Cho, The KDI School
Discussant: Robert Van Order, University of Michigan

Session D -5 11:00 – 12:45 Grand Hall GH 5

Land Issues

Chair: **John A. Kilpatrick**, Greenfield Advisors LLC

Land Value Determination in an Emerging Market: Empirical Evidence from China
Helen X. H. Bao, University of Cambridge
Sherry Zhou, City University of Hong Kong
John L. Glascock, University of Cambridge

An Indifference Binomial Valuation of Urban Land
Gang-zhi Fan, National University of Singapore

Rural Land Use Strategy in Hong Kong
Eddie Chi Man Hui, Hong Kong Polytechnic University
Stanley C.W. Yeung, Hong Kong Polytechnic University
Helen Lung, Hong Kong Polytechnic University
Joe T.Y. Wong, Hong Kong Polytechnic University

Research on Industrial Land Distribution Evolvement Mechanism and its Influence
Ping Lu, Renmin University of China
Yuehong Xu, Renmin University of China
Jiaqing Shen, Renmin University of China

Analysis of the Interrelationship Between House Price and Land Price: An Empirical Study Based on the Data of Beijing, Shanghai and Wuhan
Jianguo Ai, Central China Normal University
Lieyun Ding, Central China Normal University
Shengbin He, Huazhong University of Science and Technology

Session D -6 11:00 – 12:45 Grand Hall GH 6

Policy

Chair: **Edward Coulson**, Pennsylvania State University

Inside the Gift Horse's Mouth: Tax and Expenditure Limits, Flypaper, and the Community Development Block Grant Program
Leah Brooks, McGill University
Justin Phillips, Columbia University
Discussant: Jyh-Bang Jou, National Taiwan University

Neutral Property Taxation Under Uncertainty
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Edward Coulson, Penn State University

The Application of Social Impact Assessment in Urban Planning and Development – the Australian Experience
Stanley C.W. Yeung, The Hong Kong Polytechnic University
Kevin K.L. Lau, Hong Kong Polytechnic University
Bo B.S. Tang, Hong Kong Polytechnic University

Housing Tenure and Labor Market Impacts: The Search Goes On
Edward Coulson, Pennsylvania State University
Lynn M. Fisher, Massachusetts Institute of Technology
Discussant: Leah Brooks, McGill University

Quantifying Uncompensated Risk
Stephen E. Roulac, Roulac Global Places LLC
Deepika Kapoor

Session D -7 11:00 – 12:45 Grand Hall GH 7

International Real Estate Research II

Chair: **Wai Kin Leung**, The Chinese University of Hong Kong

The Effectiveness of the Chinese Government's Intervention in the Housing Market: Evidence from Six Major Cities
Songtao Wang, Tsinghua University
Hongyu Liu, Tsinghua University

Evaluation of the Coordinated Degree of Land use-Economy in Development Zones —A Case Study of Beijing Economic-Technological Development Area
Xiaojuan Zhi, Renmin University of China
Wenlin Yuan, Renmin University of China

Electronic Business of Real Estate in China: Review, Perspective & Suggestion
Zhi-Gang Wu, South China Normal University
Chun Chen, Peking University
Chang-Chun Feng, Peking University

An Investigation to the Rent Multiplier Mystery of Taipei—An User Cost Approach
Sun-Tien Wu, China University of Technology
Chieh-Hsuan Wang, National Chengchi University

Public Policy and Property Markets in India
Piyush Tiwari, University of Aberdeen
Anil Kashyap, University of Ulster
Shashwat Tewary, National Law College

Session D -8 11:00 – 12:45 Grand Hall GH 8

Chinese Papers: *Bubbles*

Chair: 鄭思齊，清華大學

房地產價格區域間聯動與泡沫的空間擴散—基於 2000 年—2005 年中國 35 個大中城市面板數據的實證檢驗
洪濤, 哈爾濱工業大學
西寶, 哈爾濱工業大學
高波, 南京大學

A Study on the Anomalies in the Real Estate Market of Shanghai
鄧偉，上海財經大學
張小勇，上海財經大學

基於久期依賴模型的房地產泡沫實證研究—以北京，上海為例
王琳，Shanghai University of Finance and Economics
王洪衛，Shanghai University of Finance and Economics

基於 Panel Data 模型的城市地價水平影響因素研究—以全國 27 個大中城市為例
胡冠軍，浙江大學
賈生華，浙江大學

Wednesday, July 11, 14:00-15:30

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session E -1 14:00 – 15:30 Grand Hall GH 1

Theoretical Development in Real Estate II

Chair: **John Quigley**, University of California, Berkeley

Ownership Dynamics with Multiple Insiders: The Case of REITs
Robert H. Edelstein, University of California, Berkeley
Antoni Sureda-Gomila, Universitat Pompeu Fabra, Barcelona, Spain
Branko Urošević, University of Belgrade
Nicholas Wonder, Western Washington University
Discussant: David Barker, University of Iowa

An Error-Correction Model of Housing Supply
Simon Stevenson, Cass Business School, City University
James Young, University of Auckland
Discussant: Xudong An, University of Southern California

Urban Meiosis
David E. Frame, Carnegie Mellon University and Baruch College
Discussant: Charles Leung, City University of Hong Kong

Session E -2 14:00 – 15:30 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion:
Evaluating Global Real Estate Investments: Transparency, Technology and Indices

Moderator: Jeffrey Fisher, Indiana University

Jacques Gordon, Global Investment Strategist, LaSalle Investment Management
Mark Kingston, CEO of Realm Business Solutions (ARGUS, Circle Software)
Bruce Kellogg, Vice Chair of OSCRE Americas and Past President of the Appraisal Institute
Kawaguchi Yuichiro, Waseda University
Vincent Mo, CEO Soufun
Ko Wang, Department of Real Estate, Baruch College, CUNY

Session E -3 14:00 – 15:30 Grand Hall GH 3

Chinese Panel: *Land Supply System and Real Estate Market*
(土地供應制度與房地產市場)

論壇主辦單位：浙江大學房地產研究中心

Moderator(主持人)：賈生華，浙江大學房地產研究中心主任、教授
Panel Lists (嘉賓)
黃賢金，南京大學國土資源與旅遊學系系主任、教授
王克強，上海財經大學資源環境政策與管理研究所所長、教授
楊剛橋，華中農業大學土地資源管理學院土地管理系系主任、教授
張安錄，華中農業大學土地管理學院院長、教授
田傳浩，浙江大學房地產研究中心副教授

Session E -4 14:00 – 15:30 Grand Hall GH 4

Real Estate Potpourri III

Chair: **Kerry D. Vandell**, University of California – Irvine

Are Valuations Representative of Housing Prices in the Market: Evidence from the Spanish Market
Paloma Taltavull, University of Alicante
Stanley McGreal, University of Ulster
Discussant: Austin Jaffe, Pennsylvania State University

The Significance and Performance of the Emerging Property Markets in Asia
Graeme Newell, University of Western Sydney
Kwong Wing Chau, University of Hong Kong
Siu Kei Wong, University of Hong Kong
Discussant: Rui Yao, Baruch College, CUNY

Price and Volatility Spillovers between Large and Small Cities: A Study of the Spanish Market
Hany Guirguis, Manhattan College
Christos Giannikos, Columbia University & Baruch College
Laura Galguera, University of Oviedo
Discussant: David Downs, Virginia Commonwealth University

Smoothing and Implications for Asset Allocation Choices
Gianluca Marcato, University of Reading
Tony Key, CASS Business School (City University)
Discussant: Kerry D. Vandell, University of California – Irvine

Session E -5 14:00 – 15:30 Grand Hall GH 5

International Real Estate Research III

Chair: **Tien-Foo Sing**, National University of Singapore

Three Dimensional Interpretations of the Korean Housing Market: Structural Relationship among Sales, Chonsei, and Monthly Rent Markets
Chang-Moo Lee, Hanyang University
Seong-Ho Choi, Hanyang University

The Dynamics of Cross-border Residence from Hong Kong to Mainland China
Eddie Chi Man Hui, Hong Kong Polytechnic University
Francis Kwan Wah Wong, Hong Kong Polytechnic University
Si Ming Li, Baptist University
Ka Hung Yu, Hong Kong Polytechnic University

Effectiveness of Monetary Policy toward Curbing Real Estate Prices in Korea
Sae Woon Park, Changwon National University
Doo Woan Bahng, Changwon National University
Hyun Whang, Changsin College

On Real Estate Taxation in China
Chang-Chun Feng, Peking University
Xiang-Lai Song, Peking University

The Performance Evaluation for The Housing Management and Maintenance in Taipei
Fang-Ni Ju, National Chengchi University
Chin-Oh Chang, National Chengchi University

Session E -6 14:00 – 15:30 Grand Hall GH 6

Demographics and Real Estate Markets

Chair: **Nils Kok**, Maastricht University

Why Does Urban Skyline Look Irregular?
Hak Choi, Chienkuo Technology University

The Spatiality and Cost of Language Identity
Diana K. Mok, The University of Western Ontario

Analyses of Spatial-temporal Distribution Changes of Residential Land Prices in Beijing
Fan Zhang, Renmin University of China
Shaoji Zhang, Renmin University of China

Migration Decision and Residential Location Choice: Empirical Models of Science-based Industrial Park in Taiwan
Chao-Hong Lu, National Cheng-kung University
Yen-Jong Chen, National Cheng-kung University

Foreign Direct Investment and International Real Estate Investment in Thailand
Sopon Pornchokchai, Thai Real Estate Business School

Session E -7 14:00 – 15:30 Grand Hall GH 7

Real Estate Potpourri IV

Chair: **Piyush Tiwari**, University of Aberdeen

Performance of Hotel Real Estate Investment Trusts - Another Look
Haynes H.M. Yung, The Chinese University of Hong Kong

Extreme Prices in Momentum Trading of Tourism Stocks
Wai K. Leung, The Chinese University of Hong Kong

Movement of Older Americans into Retirement Housing
Karen M. Gibler, Georgia State University
Guo Chen, Georgia State University

Urban Planning Practices and Scenarios for Macao Development: Case Studies of Macao's Urban Sustainable Development
Francisco Vizeu Pinheiro, IIUM
Penny Wan, Institute For Tourism Studies (IFT)

The Impacts of Rail Transit on Property Values - Empirical Study in Batong Line of Beijing
Yizhen Gu, Beijing Municipal Institute of City Planning & Design

Session E -8 14:00 – 15:30 Grand Hall GH 8

Chinese Papers: Land Issues

Chair: 廖俊平，Sun Yat-sen University

基於 **REMIS** 的土地一級供給調控的方法論研究
樓江，同濟大學
楊光，同濟大學
徐敏娟，同濟大學

基於單中心擴展模型的城市地價空間結構研究—以杭州市為例
田傳浩，浙江大學
周昭霞，浙江大學
賈生華，浙江大學

新一輪產業結構調整中浦東新區土地集約利用研究
張學文，上海財經大學

我國房地產市場財富效應的實證分析：**1998－2006**
高波, 南京大學
宋勃, 南京大學

Wednesday, July 11, 15:45-17:15

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session F -1 15:45 – 17:15 Grand Hall GH 1

Market & Pricing Dynamics I

Chair: **Austin Jaffe**, Pennsylvania State University

The Real Interest Rate Effect on the Price Elasticity of House Supply
Eric J. Levin, University of Glasgow
Gwilym Pryce, University of Glasgow

The Excess Momentum in the U.S. House Price Movement
Ko Wang, Baruch College, CUNY
Jing Yang, California State University, Fullerton

Irrational but Predictable Price Formation in Seoul's Housing Market
Hoon Cho, KAIST
Kyung-Hwan Kim, Sogang University
James D. Shilling, DePaul University

Housing Markets with Competitive Search
Charles Ka Yui Leung, The City University of Hong Kong
Jun Zhang, The Chinese University of Hong Kong

Session F -2 15:45 – 17:15 Grand Hall GH 3

Panel Discussion: *Tourism Site Development*

Moderator: **Lee Kam-hon**, Chinese University of Hong Kong

Weimin Tian, Dean, School of Business and Tourism Management, Yunnan University, Kuming, China
Matthias Li, Deputy Chief Executive, Ocean Park Corporation, Hong Kong
Alan Ho, Executive Director, Florinda Hotel International, Macau

Session F -3 15:45 – 17:15 Grand Hall GH 2

Simultaneous interpretation will be provided

Chinese Panel: *Real Estate Data and Real Estate Market Analysis*
(如何運用資料資訊進行房地產市場分析)

論壇主辦單位：中國房地產指數系統/中國指數研究院

Moderator (主持人)：莫天全, 中國指數研究院院長、中國房地產指數系統秘書長
Panel Lists (嘉賓)
馮長春, 北京大學不動產研究鑒定中心教授
Eddie Hui, 香港理工大學建築與房地產系教授
符育明, 國立新加坡大學房地產系教授
黃　瑜, 中國指數研究院常務副院長
李文斌, 中央財經大學管理科學與工程學院副院長
虞曉芬, 浙江工業大學房地產研究所所長、教授

Session F -4 15:45 – 17:15 Grand Hall GH 4

Property Rights and Legal Issues

Chair: **John L. Glascock**, University of Cambridge

An Introduction to the Legal Framework of Real Estate Transaction in Macau
Io Cheng Tong, University of Macau

Institutional Infrastructure and Harmonization National Law in Function of Business Prosperities in Central Balkan
Vignjevic-Djordjevic Nada, University of Belgrade

Initial Assignment of Property Rights in China Urban Land Market
Lennon Hung Tat Choy, The Hong Kong Polytechnic University
K.W. Chau, University of Hong Kong

Property Rights and Housing Value: the Impacts of Political Instability
Yong Tu, National University of Singapore
Helen X.H. Bao, Cambridge University

Session F -5 15:45 – 17:15 Grand Hall GH 5

Portfolio Risk and Return Considerations II

Chair: **Paloma Taltavull de La Paz**, University of Alicante

An Examination of Real Estate Factor on Asset Pricing Model: The Hong Kong Experience
Peter M.W. Chui, University of Macau

The Short Interest Market for Publicly Traded Real Estate
Honghui Chen, University of Central Florida
David H. Downs, Virginia Commonwealth University
Gary A. Patterson, University of Central Florida

The Informational Content of Indirect Real Estate Options: Evidence from Hong Kong
Amory N. Li, University of Hong Kong
K.W. Chau, University of Hong Kong

Institutional Benchmarks for International Real Estate Investment
Lay Cheng Lim, University of Ulster
Stanley McGreal, University of Ulster
James R. Webb, Cleveland State University

Land Price Discovery in A City with Rapid Land Use Change
Rongrong Ren, Tsinghua University
Yuming Fu, National University of Singapore
Hongyu Liu, Tsinghua University

Session F -6 15:45 – 17:15 Grand Hall GH 6

International Real Estate Research IV

Chair: **Miki Seko,** Keio University

Islamic REITs: A Syariah-compliant Investment Option
Ting Kien Hwa, Universiti Teknologi MARA
Abdul Rahman Md. Nor, Universiti Teknologi MARA

A Study of the Demand of Eco-Digit Communities in Taiwan under the Trend of Global Climate Changes
Kang-Li Wu, National Cheng-Kung University

Housing Price Gradient Changes between Macau and Hong Kong
C. Y. Yiu, The University of Hong Kong

An Analysis of the Crystal Structure of Willingness To Pay for National Rental Housing: Using Double Bounded Dichotomous Choice Question
Myeong-Han Yu, Hanyang University
Chang-Moo Lee, Hanyang University

Overview and Prospects of Real Estate Market In Ghana
Noah Kofi Karley, Heriot Watt University
Samuel Yaw Akomea, Kwame Nkrumah University of Science & Technology

Session F -7 15:45 – 17:15 Grand Hall GH 7

China Real Estate Markets

Chair: **Tyler Yang**, IFE Group

Cointegration of House Price and Land Prices - An Inter-area Comparison in China
Changrong Den, University of Electronic Science and Technology of China
Yao-Min Chiang, National Chengchi University
Yongkai Ma, University of Electronic Science and Technology of China

The Significance and Performance of Infrastructure in China
Graeme Newell, University of Western Sydney
Kwong Wing Chau, University of Hong Kong
Siu Kei Wong, University of Hong Kong

External Dependent Economy and Real Estate Bubbles: The Case of China
Lijian Sun, Fudan University
Shengxing Zhang, Fudan University

The Marketization of Housing in Urban China: How Far Have We Come and How Far Do We Have Left to Go?
Siqi Zheng, Tsinghua University
Mark Duda, Harvard University

The Chinese Real Estate Market: Potentials for International Investors
Ruijue Peng, Property and Portfolio Research
Shiawee Yang, Northeastern University

Session F -8 15:45 – 17:15 Grand Hall GH 8

Chinese Papers: *Pricing*

Chair: 呂萍，中國人民大學

上海住宅商品房房價芻議
冷君雷，上海社會科學院

軌道交通對房地產價值的影響：重複銷售法的應用研究
郭睿，北京市城市規劃設計研究院

期望交通改善對住房價格的影響—基於中國杭州地鐵規劃的研究
顧傑，浙江工商大學
徐建春，浙江工商大學

上海房地產市場的現狀與趨勢分析
方芳，上海財經大學

超高層建築成功運作的外部環境分析—以金茂大廈為例
吳林, 中國金茂（集團）股份有限公司

Wednesday, July 11, 17:15-18:45

The 12th Asian Real Estate Society (AsRES) Annual Conference
and
The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Plenary Session 17:15 - 18:45 Grand Hall GH 2

Panel Discussion: *Establishing Secondary Mortgage Markets*

Chair: Darlene Williams,
Assistant Secretary, US Department of Housing and Urban Development

Di Xu, China Construction Bank (China)
Kwan Young Kim, Hanyang University (Korea)
Che-Chun Lin, National Tsinghua University (Taiwan)
Piyush Tiwari, University of Aberdeen (UK)

Thursday, July 12, 9:00-10:45

The 12th Asian Real Estate Society (AsRES) Annual Conference
and
The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session G -1 9:00 – 10:45 Grand Hall GH 1

REITs

Chair: **Desmond Tsang**, McGill University

Corporate Governance and Firm Valuation: The REIT-Effect
Rob Bauer, Maastricht University
Piet M.A. Eichholtz, Maastricht University
Nils Kok, Maastricht University

A Value Investing Assessment of Singapore REIT Stocks
Kim Hin Ho, National University of Singapore
Discussant: Kyung-Hwan Kim, Sogang University

Portfolio Diversification and Real Estate Investment Trusts: The Era of REITs in S&P Indexes
Kathy Szu-Yin Hung, California State University
Charles C. Tu, University of San Diego
Discussant: David Downs, Virginia Commonwealth University

Inflation-Hedging Properties of REITs in Inflationary Economies: An Application of Markov Regime-Switching Model
Isil Erol, Middle East Technical University
Dogan Tirtiroglu, Concordia University
Kasirga Yildirak, Trakya University
Discussant: Piyush Tiwari, University of Aberdeen

Session G -2 9:00 – 10:45 Grand Hall GH 3

Panel Discussion: *Measuring and Managing Mortgage Credit Risks*

Moderator: **Shannon Sorzano,**
Deputy Assistant Secretary, US Department of Housing and Urban Development

Kawaguchi Yuichiro, Waseda University (Japan)
Tien-Foo Sing, National University of Singapore
Calvin Tsoyu Lin, National Taichung Institute of Technology (Taiwan)
Tyler Yang, IFE Group (US)

Session G -3 9:00 – 10:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Chinese Panel: The Prospected Development of Real Estate Finance in China

(中國房地產金融的現狀與未來發展)

論壇主辦單位：上海財經大學

Moderator (主持人)：姚玲珍，上海財經大學教授、不動產研究所常務副所長
Panel Lists (嘉賓)
魏曉峰，信東(香港)有限公司董事
黃劍榮，香港新鴻基地產集團高級經理
王秀寧，Polaris Securities Group
李晨昊，上海房屋與土地資源管理局
張　年，上海房屋與土地資源管理局
王洪衛，上海財經大學副校長、教授、不動產研究所所長
高波，南京大學房地產資訊研究中心主任，兼任江蘇省房地產經濟學會副會長

Session G -4 9:00 – 10:45 Grand Hall GH 4

House Price Risks, Consumption, and Asset Pricing

Chair: **Rui Yao**, Baruch College, CUNY

Intra-temporal Elasticity of Substitution in the Presence of Housing Adjustment Costs
Wenli Li, Federal Reserve Bank of Philadelphia
Rui Yao, Baruch College, CUNY
Discussant: James Shilling, Depaul University

House Price Dynamics Across Metropolitan Areas
Lu Han, University of Toronto
Discussant: David Frame, Baruch College, CUNY

An Intertemporal Capital Asset Pricing Model With Owner-Occupied Housing
Yongqiang Chu, University of Wisconsin
Discussant: Charles Leung, City University of Hong Kong

Session G -5 9:00 – 10:45 Grand Hall GH 5

Issues on Appraisers

Chair: **Yuming Fu,** National University of Singapore

Training of Valuers for Specialized Properties
Ana Maria Grămescu, Technical University Ovidius
Drd. Ec. Daniela Barbu, CMF Consulting Bucharest

A Differential Analysis between An Appraiser Evaluation and the Nearest Neighbor Method at Sales Comparison Approach: Taiwan Resident Experience
Ying-Hui Chiang, National Chengchi University
Chin-Oh Chang, National Chengchi University

Determinants of Experts' Prospects in Korea Real Estate Market
Jin-Yoo Kim, Kyonggi University

Australian Graduates Perspective of their Professional Socialization as Valuers
Geoff Page, University of South Australia

Ethics and Lobbying: the Case of Real Estate Brokerage
David Barker, University of Iowa

Session G -6 9:00 – 10:45 Grand Hall GH 6

International Real Estate Research V

Chair: **Shiawee Yang,** Northeastern University

Institutions and Institutional Changes: the Case of Taiwan's Non-Urban Land Development System
Kuo-Cheng Hsu, National Cheng-chi University Taipei
Tsung-Yu Lai, National Cheng-chi University Taipei

Management and Evaluation Systems of SOC (Social Overhead Capital) Projects in Korea
Jin-Kyung Lee, Industries and Construction Team of Evaluation Research Institute

Effects of Earthquake Occurrence Probability on Housing Prices in Japan: Estimation of the Earthquake Risk Premium
Michio Naoi, Keio University
Kazuto Sumita, Kanazawa Seiryo University
Miki Seko, Keio University

Managing Readiness for Internationalization of China's Real Estate Companies
Javier C. Cuervo, University of Macau
Soo-May Cheng, Institute for Tourism Studies

Is It a Logical Increase of the Housing Price in China: A Quantitative Analysis from the View of Money Supply
Zhang Yu, Tsinghua University

Session G -7 9:00 – 10:45 Grand Hall GH 7

AsRES Board Meeting II

Session G -8 9:00 – 10:45 Grand Hall GH 8

Chinese Papers: *Topical Research II*

Chair: **Zhenming Ge**, Tongju University

中國住房消費中住房公積金貢獻度的實證研究
徐峰，上海交通大學
胡昊，上海交通大學
黃理，上海交通大學

軌道交通對房地產項目價值影響分析
宋永發，大連理工大學
楊宇杰，大連理工大學

Analysis of Urban Security House Standard in China: A Case Study of Low-cost Housing
Yu Liu, Renmin University of China
Xiaolong Li, Renmin University of China

A Study on the Effect of Macroeconomics on the House Price
Dan Liu, Shanghai University of Finance and Economics

中國大陸住宅市場中消費者偏好研究
賈士軍，廣州大學
周耀旭，廣州大學

Thursday, July 12, 11:00-12:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session H-1 11:00 – 12:45 Grand Hall GH 1

Market & Pricing Dynamics II
Chair: **Robert Van Order**, University of Michigan

Do Institutional Real Estate Investors have Rational Expectations?
James D. Shilling, DePaul University
Tien Foo Sing, National University of Singapore
Discussant: Timothy J. Riddiough, University of Wisconsin – Madison

Do Relationships Change after A Crisis? The Case of A Housing Market
Charles Ka Yui Leung, City University of Hong Kong
Patrick Wai Yin Cheung, City University of Hong Kong

Explaining Housing Supply Elasticity across Chinese Cities
Yuming Fu, National University of Singapore
Siqi Zheng, Tsinghua University
Hongyu Liu, Tsinghua University

A General Equilibrium Analysis of Land Use Restrictions and Residential Welfare
John M. Quigley, University of California, Berkeley
Aaron Swoboda
Discussant: Rui Yao, Baruch College, CUNY

Session H-2 11:00 – 12:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion:
Impact of Gaming Industries on Property Markets in Macau

Moderator: **Gabriel Donleavy**, University of Macau
Wee Liat Lee, Head of Greater China Research, Jones Lang Lasalle Limited (Hong Kong)
Jose Sai-Peng Chui, President of CAA City Planning & Engineering Consultants Ltd. and Member of the Legislative Assembly of Macao SAR
Choi Kung Ung, Vice-President of Association of Property Agents and Realty Developers of Macau and Member of Legislative Assembly of the Macao SAR
Wing Ching Shih, Chairman, Centaline (Holdings) Company Limited

Session H-3 11:00 – 12:45 Grand Hall GH 3

Chinese Panel: *The Policy Framework of Real Estate Industry in China*
(中國房地產政策論壇)

論壇主辦單位：中國房地產業協會產業發展與政策研究專業委員會

Moderator (主持人)：莫天全，
中國指數研究院院長、中國房地產業協會產業發展與政策研究專業委員會秘書長
Panel Lists (嘉賓)
朱中一，中國房地產業協會副會長兼秘書長
劉洪玉，清華大學房地產研究所所長
楊太樂，美國 IFE Group
程天富，新加坡大學房地產系
黃　瑜，中國指數研究院常務副院長

Session H-4 11:00 – 12:45 Grand Hall GH 4

Real Estate Potpourri V

Chair: **Marsha Courchane**, ERS Group

Mortgage Default of Borrowers in Korea
Kyu Hyun Ji, Housing and Urban Research Institute
Chang Gyu Choi, The University of Suwon

A Study on the Default Determination of Residential Mortgages: The Application of Bayes' Theorem on Classification Adequacy
Peter Hsien-Chueh Yang, National Kaohsiung First University of Science and Technology
Calvin Tsoyu Lin, National Taichung Institute of Technology
Tsung-Hao Chen, National Kaohsiung First University of Science and Technology

Structuring Australian Commercial Mortgage-Backed Securities: An AHP Approach
Bwembya Chikolwa, Curtin University of Technology

The Performance and Problems of Affordable Housing Policy
Yi Niu, Renmin University of China

Session H-5 11:00 – 12:45 Grand Hall GH 5

International Real Estate Research VI

Chair: **Lijian Chen**, UBS Realty Investors LLC

The Impact of Housing and Financial Wealth on Household Consumption: Evidence from Hong Kong
King Fai Man, The Hong Kong Polytechnic University
Raymond Y.C. Tse, Hong Kong Institute of Real Estate and ICUA
C.Y. Yiu, University of Hong Kong

Agency Problem in External Management System of J-REIT
Shunichi Maekawa, Meikai University
Wei-Ju Tsao, Meikai University

Regional Variations of Residential Real Estate Returns in Malaysia
Kien Hwa Ting, Universiti Teknologi MARA
Sherry Z. Zhou, City University of Hong Kong
Helen X.H. Bao, University of Cambridge

An Acquisition of Orang Asil Native Land in Malaysia: Perceptions and Challenges in Quantifying of the Compensation
Anuar Alias, University of Malaya

Beijing' s Land Use Reforms
Thomas G. Thibodeau, University of Colorado-Boulder
Wenbin Li, Central University of Finance and Economics
Ying Xiao, University of Colorado-Boulder

Session H-6 11:00 – 12:45 Grand Hall GH 6

Panel Discussion: *Evolution of Asian Housing Finance Systems*

Moderator: **Morey Kogul**, PADCO

Session H-7 11:00 – 12:45 Grand Hall GH 7

Hotel Real Estate

Chair: **Kam-hon Lee**, Chinese University of Hong Kong

Role of Bangladesh Tourism Industry as An Important Source of Economic Development—An Empirical Evaluation
Jannat Ara Parveen, University of Chittagong

The Use of Environmental Management As a Facilities Management Tool: Case Study of Hotels in Macao
Penny Yim Kim Wan, Institute For Tourism Studies (IFT)

Delisting of Toursim Stocks and Associated Strategic Decisions
Wai K. Leung, Chinese University of Hong Kong
Eliza Tse, Chinese University of Hong Kong

Conceptualization of Retirement Resorts for Senior in Pearl River Delta
Wilco W. Chan, Hong Kong Polytechnic University

Session H-8 11:00 – 12:45 Grand Hall GH 8

Chinese Papers: *Topical Research III*

Chair: 姚玲珍，Shanghai University of Finance and Economics

房價與經濟發展：數據分析與現實評價
譚善勇，首都經貿大學

城市房屋指導租金測定研究
賈士軍，廣州大學

應用結構方程模式評估節慶活動效益—以台灣苗栗國際假面藝術節為例
李泳龍，長榮大學
黃宗誠，嘉南藥理科技大學
林貞岑，長榮大學

論宏觀經濟調控下商業銀行按揭貸款風險的防範
衣寅炯，同濟大學

國內按揭貸款市場面臨更為多元化的競爭—淺析外資銀行對按揭貸款市場的影響及中資銀行的對策建議
趙曉英，中國建設銀行住房金融與個人信貸部
羅寧，中國建設銀行住房金融與個人信貸部

Thursday, July 12, 14:00-15:30

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session I -1 14:00 – 15:30 Grand Hall GH 1

Theoretical Development in Real Estate III

Chair: **David Downs**, Virginia Commonwealth University

Path Dependence Concepts and the Real Estate Market: An Assessment of the Significance of Lock-in and History
Éamonn D'Arcy, University of Reading

A Multivariate Unobserved Component Analysis of U.S. Housing Market
Mohamadou L. Fadiga, Texa Tech University
Yongsheng Wang, Washington and Jefferson College

The Quantitative Model for Residential Site Value
Kak K. Lo, Hong Kong Polytechnic University
Eddie C.M. Hui, Hong Kong Polytechnic University

Housing Supply in Beijing: Developers' Incentives and Their Pricing Strategies
Siqi Zheng, Tsinghua University
Matthew E. Kahn, University of California at Los Angeles

Session I -2 14:00 – 15:30 Grand Hall GH 3

Panel Discussion: *Housing Finance Policies*

Moderator: **Man Cho**, The KDI School

Charles Ka-yui Leung, City University of Hong Kong
Alven Lam, US Department of Housing and Urban Development
Renu Sud Karnad, Housing Development Finance Corporation
Kyung-Hwan Kim, Sogang University

Session I -3 14:00 – 15:30 Grand Hall GH 2

Simultaneous interpretation will be provided

REALM Lecture on DCF & ARGUS
Reception: Sponsored by Realm and Chinese Version of ARGUS

Jeffrey Fisher, Indiana University
Mark Kingston, CEO of Realm Business Solutions
Melissa Securda, Director of Market Research, Realm Business Solutions

Session I -4 14:00 – 15:30 Grand Hall GH 4

Nonresidential Real Estate Issues II

Chair: **Yongheng Deng**, University of Southern California

Hotel Attributes and Hedonic Prices: An Analysis of Internet-based Transactions in Singapore's Market for Hotel Rooms
David Emanuel Andersson, National Cheng-Kung University

Strategic Industrial Real Estate for the New Economy--*The Biopolis*: The Singapore Experience
Kim Hin Ho, National University of Singapore
Norman Wei Jing Ng, National University of Singapore
Javier C. Cuervo, University of Macau

Small Apartment, Large House
Yongqiang Chu, University of Wisconsin

Which Firms Should Use EVA? Which Ones Shouldn't?
Kishore Tandon, Baruch College, CUNY
Susana Yu, Montclair State University
Gwendolyn Webb, Baruch College, CUNY

Session I -5 14:00 – 15:30 Grand Hall GH 5

International Real Estate Research VII

Chair: **Kwan Yong Kim**, Hanyang University

Differential Treatment of Residential Properties for Property Taxation: An Empirical Investigation for Greater Mumbai
Anita Rath, Tata Institute of Social Sciences

Market Failure or Institutional Failure: Why the Chinese Urbanites Find Housing Increasingly Unaffordable?
Albert Cao, Oxford Brookes University
Ramin Keivani, Oxford Brookes University

New Evidence on the Link between Housing Environment and Children's Educational Attainments: The Case of Taiwan
Hsien-Ming Lien, National Cheng-Chi Unversity
Wen-Chieh Wu, National Cheng-Chi Unversity
Chu-Chia Lin, National Cheng-Chi University

Logistics in China - Containerized Pearl River Delta
David Cheung, Vigers International Property Consultants

Who Pay for and Who Benefit from Local Public Goods when There is No Property Tax? Evidence from Beijing's Housing and Land Markets
Yijun Wang, Tsinghua University
Fenjie Long, Tsinghua University
Siqi Zheng, Tsinghua University

Session I -6 14:00 – 15:30 Grand Hall GH 6

Housing and Tenure Choice

Chair: **John Goering**, Baruch College, CUNY

A Cohort Analysis of Housing Choices in Taiwan— Following the Cohort of Female
Li-Min Hsueh, China University of Technology
Chin-Lung Yen, National Taiwan University

In the Quest of Quality Urban Living: A Case Study of Urban Development in Kuala Lumpur
Wan Nor Azriyati Wan Abd Aziz, University of Malaya
Noor Rosly Hanif, University of Malaya
Zahiriah Yahya, University of Malaya

Home-Ownership, Poverty and Educational Achievement: School & Neighbourhood Effects
Noah Kofi Karley, Heriot Watt University
Glen Bramley, Heriot Watt University

Determinants of Renters' Choice on Contract Types and Corresponding Housing Consumption
Yong-Kyung Kim, Hanyang University
Chang-Moo Lee, Hanyang University

The Behaviour of Housing Tenure Choice and Elasticity: the Case of Hangzhou
Xiaofen Yu, Zhejiang University of Technology

Session I -7 14:00 – 15:30 Grand Hall GH 7

International Real Estate Research VIII

Chair: **Tien Foo Sing**, National University of Singapore

Market Fundamentals and Rational Expectations: Housing Price Dynamics in Beijing
Huixun Lai, Tsinghua University
Xueliang Tao, Tsinghua University
Hongyu Liu, Tsinghua University

A Proposition for Evaluating the Stocks of Real Estate Firms in Brazil
João da Rocha, Jr. Lima, Universidade de São Paulo
Eliane Monetti, Universidade de São Paulo
Carolina Andrea Garisto Gregório, Universidade de São Paulo

Empirical Study on Housing Conditions of Middle and Low Income Groups — Exemplified by Guangzhou City
Lin Chen, Guangzhou University
Kai-Ze Wu, Guangzhou University

Risk-Return Characteristics of Korean Real Estate Investment Trust after 5 Year Experiences since Its Introduction
Kwan-Young Kim, Hanyang University
Jung-ho Park, Just R Real Estate Advisors

Session I -8 14:00 – 15:30 Grand Hall GH 8

Chinese Panel:
Real Estate Investment Issues in Hong Kong, Macau and Mainland China

Moderator (主持人): **Wai Kin Leung**, The Chinese University of Hong Kong
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Ambrose Cheung, Executive Director, Lai Sun Development and Esun Holdings Ltd
Tony Leung, President, TL Property Consultants Int'l Ltd
Alex Chiu, Director, Yue Xiu Finance Co., Ltd
Yao Cheng, Director, Global Villa Ltd.
Yong Ma, Dean, Academy of Tourism Development and Director, MICE Research Center, Hubei University

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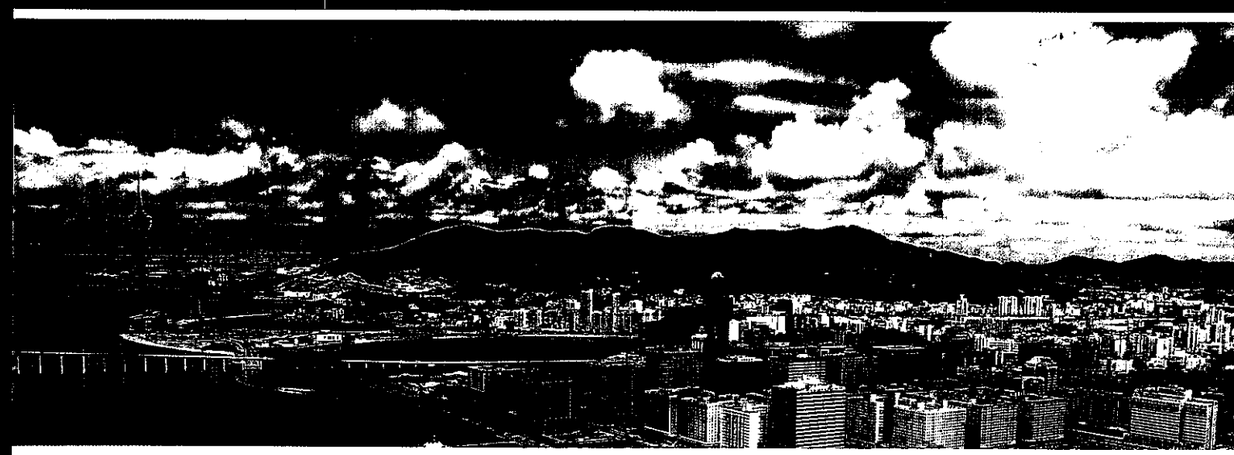

July 9-12, 2007 Macau China

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國立政治大學補助學術活動執行成果報告書

填表日期：96 年　8 月　19 日

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<tr><td>活動類別</td><td colspan="5">□研究團隊　□學術研討會　V 出席國際會議發表論文
□讀書會　□鼓勵教師及研究人員申請國科會專題研究計畫
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<tr><td>活動名稱</td><td colspan="5">（中文）第十三屆亞洲不動產學會與美國不動產與都市經濟學會聯合年會
（英文）The 12th AsRES Annual Conference & The 2007 AREUEA International Conference</td></tr>
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National Chengchi University Faculty Attendance at International Conferences--Report

19/80/2007 (dd/mm/yyyy)

Name	Chu –Chia Lin	Administrative Unit and Job Title	Department of Economics Professor
Location of Conference	Macau	Duration of Conference	09~12/07/2007
Name of Conference	(Chinese) 第十三屆亞洲不動產學會與美國不動產與都市經濟學會聯合年會 (English) The 12th AsRES Annual Conference & The 2007 AREUEA International Conference		
Title of Presented Manuscript	Chinese)住宅環境與兒童教育表現關係的新證據：台灣的個案分析 (English) New Evidence on the Link between Housing Environment and Children's Educational Attainments：The case of Taiwan		

The report should include:

1.Type of participation in the conference

2.Reflections deriving from conference participation

3.Suggestions

4.Name and content of the materials brought back

5.Other

2007 年出席國際學術會議心得報告書

一． 會議名稱：the 12th AsRES Annual Conference and The 207 AREUEA International Conference

二． 會議地點：Macau

三． 參與人數與論文數目：約三百人，約八十場，約二百三十篇論文

四． 本人論文發表場次 7/12, 1400-1530, Session I-5
題目：New Evidence on the Link between Housing Environment and Children's Educational Attainments: The Case of Taiwan

五． 重要結論與研究成果：

(1) 國際學術文獻中有許多探討居住環境對小孩讀書效果影響的文章，但是這些文章中都一直缺乏嚴謹的實証研究。我們的文章利用台灣 2000 年的住宅普查資料，我們可以實際的來檢視居住環境對於小孩讀書成效的正面影響效果。因爲台灣的住宅普查資料中，有完整的地址資料，所以我們可以用來控制無法觀察到的家庭異質變異的問題，然後我們可以進一步的來比較居住在鄰近的同年級小孩的讀書成效。結果我們發現，16 與 17 歲的青少年及 19 與 20 歲的年輕成年人的學術表現與其家庭的住宅面積、居住時間與是否自有等變數有正且顯著的關係；而與住宅年齡有負的關係。

在現在的國際學術文獻當中，本研究可能使用住宅資料來討論這個問題最完整的文章，所以本文的學術貢獻應該是很可觀的，因此本文應該有很大的機會在國際學術期刊上發表。

(2) 在本人發表的場次上，也有許多學者提出問題，顯示他們對於本文的議題都很有興趣，對於本文的改進建議也有不少，對本文的修改也有很顯大的助益。

六． 相關聯結：Faculty of Business Administration, University of Macau
http://www.umac.mo/fba

七． 附件：(1) 本人論文全文一份
(2) 大會手冊一份

New Evidence on the Link between Housing Environment and Children's Educational Attainments[+]

Hsien-Ming Lien[*], Wen-Chieh Wu[**], Chu-Chia Lin[***]

Abstract

There is an extensive literature that posits the hypothesis that a better housing environment enhances a child's educational attainments. However, there is little causal evidence demonstrating the presence of this effect. Using the census files covering the entire population of Taiwan, we examine the effect of housing environment on children's educational attainments. Because the Taiwan census data contain unique address information for every household, we are able to control for unobserved family heterogeneity by comparing a child with his or her peers of the same age cohort in the same neighborhood. After controlling for neighborhood using tens of thousands of area dummies, the chance of high school enrollment for teens (ages 16 and 17) and college enrollment for young adults (ages 19 and 20) is found to be positively correlated with increases in floor space, increases in residential stability, and ownership status, but negatively correlated with increases in building age. In addition, we found that the effect of a child's private space on the chance of school enrollment is nonlinear and different across age and gender. The results are robust even when we account for the potential endogeneity between sibship size and educational outcome using the instrumental variable method.

Keywords: quantity–quality trade-off, housing, educational attainment

JEL classification: R0, I2

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1. Introduction

One long-standing area of interest in the social sciences is to understand the connection between the family environment and a child's outcome, particularly educational attainments. It is generally believed that a larger family size may negatively affect a child's outcome through resource dilution [e.g., Blake (1981, 1989)]. The best-known economic theory that links family circumstances and a child's educational outcome is perhaps the quantity–quality trade-off model [Becker and Lewis (1973) and Becker and Tomes (1976)]. This theory claims that as parents become richer because of the interaction between quantity and quality in the budget constraint, they demand higher quality children, but not necessarily more children. Thus, a reduction in family size leads to an improvement in a child's schooling.

The majority of early studies confirm this trade-off relationship, with a negative relationship between family size and a child's educational attainments being widely observed in regression results.[1] While this negative correlation is often interpreted as evidence supporting the quantity–quality trade-off theory, the conclusions are facing serious criticism. Most problematic is that the apparent negative relationship is not necessarily indicative of a causal effect. That children raised in larger families have less schooling than those in smaller families is not necessarily because of the sibship size per se, but may reflect the omission of other unobserved characteristics, such as parental preferences, household resources, neighborhood conditions, and quality of schooling. In light of this potential bias, several studies have sought to uncover the *causal* effect of family size on a child's educational outcome using the instrumental variable method (IV) [e.g., Angrist, Lavy, and Schlosser (2005), Caceres (2004), and Conley and Glauber (2005)], or controlling for family fixed effects [e.g., Guo and VanWey (1999) and Black, Devereux, and Salvanes (2005)]. Notably, these studies generally found the coefficient of sibship size becomes insignificant after controlling for unobserved family characteristics.

[1] For a review in the economic literature on the link between family size and children's outcomes, see Schultz (2005). There have also been numerous discussions on this issue in sociology. For details, see Blake (1981, 1989), Powell and Stellman (1993), and Guo and VanWey (1999).

Why are results of OLS estimation so different from those of IV or the family fixed effects model? One likely explanation, as pointed out by Phillips (1999), is that sibship size does not produce a negative impact on a child's educational outcome, but the type of family resources it dilutes does.[2] Furthermore, Goux and Maurin (2005) investigated the effect of household crowdedness on a child's school performance, one key resource likely to affect a child's education. Using exogenous variations of family size and household crowdedness as instruments, they found the importance of sibship size becomes negligible under IV estimation, but the private space each child has is negatively associated with a child's educational attainments. In other words, children in large families perform less well not because of their family size, but because of the smaller private space each child has available to them.

In the same spirit as Goux and Maurin (2005), this paper seeks to explore the underlying relationship between the housing environment and a child's educational attainments. Unlike Goux and Maurin (2005), which controls for unobserved family heterogeneity using instruments, we overcome this difficulty by comparing a child with his or her peers of the same age in the same very small neighborhood: "lin," the smallest government jurisdiction in Taiwan that usually covers less than 0.1 square kilometer. Families residing in the same lin often share similar housing preferences and family incomes. In addition, youths raised in the same lin generally have experienced the same neighborhood effect. Furthermore, under the current regulation, children in the same lin typically attend the same school for compulsory education. Thus, by comparing youths with peers of the same age in the same lin, we control to some extent for unobserved family heterogeneity such as parental preferences, earning potential, neighborhood conditions, and, most importantly, quality of compulsory schooling.

Our data are derived from the census files that cover the entire Taiwanese population, more than 22 million, in the year 2000. The census data not only record detailed family and housing information, but also include *unique* address information for every household. The large sample size, together with detailed address information, allows us to examine the chances of high school enrollment for teens (ages 16 and 17) and college enrollment for young adults (ages 19 and 20) while controlling for family

[2] Black, Devereux, and Salvanes (2005) offer a different explanation: family size itself might have little impact on the quality of every child, but more likely impacts the marginal child through the effect of birth order. In their results, children of higher birth orders are likely to have worse educational attainments.

heterogeneity. After including tens of thousands of area dummies, our results confirm the importance of housing environment in determining a child's educational attainments. Specifically, our estimates show that youths' educational attainment is positively associated with an increase in housing floor space, an increase in residential stability, and ownership status, but negatively related to an increase of building age. The results continue to hold even accounting for the endogeneity between sibship size and a child's education using twin births or sex-composition as instruments.

An important difference between our study and Goux and Maurin (2005) is that we include a wide range of housing variables. Aside from each child's private space, this study also considers a house's floor space, building age, residential stability, and ownership status as various determinants of housing environment. Therefore, the analysis is able to provide a more complete picture about the impact of housing on a child's education. Another key difference is that we obtain a different effect of household crowdedness. While Goux and Maurin (2005) found that a reduction in a child's private space resulted in a negative effect on his or her schooling, our estimates indicate that the effect may be nonlinear: conditional on a household's size, reducing each child's private space does not always lead to an decrease in the chance of school enrollment. Moreover, this crowdedness effect is likely to differ according to the child's gender and age.

Our paper also relates to another line of literature exploring the effect of housing variables on children's outcomes, including tenure status [e.g., Green and White (1997), Boehm and Schlottmann (1999), Aaronson (2000), and Haurin, Parcel, and Haurin (2002)] and residential mobility [e.g., Lee, Oropesa, and Kanan (1994), Green and White (1997), Aaronson (2000), and Haurin, Parcel, and Haurin (2002)].[3] Although some studies have demonstrated the importance of housing environment, few of them controlled for the endogeneity problem caused by various housing variables.[4] To our knowledge, this paper is the first study that investigates the effect on a child's educational attainments of a wide range of housing variables.

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[3] For a complete review on the tenure status literature, see Haurin, Dietz, and Weinberg (2003).

[4] A number of studies have attempted to control for the endogeneity of housing variables. For instance, Green and White (1997) adopted the bivariate probit model to solve the selection bias problem between tenure decision and schooling, but found no evidence of it. Haurin, Parcel, and Haurin (2002) used a treatment effect model to reduce selection bias. Aaronson (2000) dealt with the endogeneity problem of home ownership and mobility.

The paper is organized as follows. In the next section, we outline the estimation problem and discuss the existing identification strategies as well as our strategies. Section 3 describes the data source, sample selection, and measures of educational attainments, along with the basic statistics of our sample. Section 4 shows results of the basic specification, the effect of area dummies, as well as comparisons with IV estimates. Section 5 offers concluding remarks.

2. Conceptual Framework

A. Parameter of Interest

Let:

$$(1) \qquad edu_i = X_i\alpha + \beta N_i + \nu_i + \varepsilon_i,$$

where edu_i is the child's educational attainments, X_i is a vector of observed characteristics of the child and his or her family (e.g., age, sex, birth order, and father's and mother's education and working status), N_i is a variable of child *i*'s sibship size, ν_i is the family-specific unobserved determinant (e.g., parental preferences or quality of schooling), and ε_i represents the idiosyncratic shock that is assumed to be independent across other factors.

The central parameter of interest is β, which is viewed as a measure of the trade-off between quantity and quality of children. Early studies primarily found this coefficient to be negative in OLS estimation and therefore inferred that substantial quality improvements can be gained by controlling for family size. However, the regression results are likely to be confounded by the existing observed factors (e.g., parental education) as well as the unobserved determinants (e.g., quality of schooling). The omitted variable formula suggests that the OLS coefficient from the regression is:

$$(2) \qquad \beta_{OLS} = \beta + \frac{\mathrm{cov}(N_i, X_i\alpha)}{\mathrm{var}(N_i)} + \frac{\mathrm{cov}(N_i, \nu_i)}{\mathrm{var}(N_i)}.$$

Therefore, even if children raised in larger families have less schooling than those in smaller families, the strength of the relationship could be driven by the correlation between sibship size and other observed and unobserved factors, not necessarily the quantity–quality trade-off.

B. Existing Identification Strategy

In light of the potential bias, the existing literature has adopted several methods to uncover the underlying relationship between a child's education and sibship size. Early studies attempted to account for this potential bias by including more controls, such as parental IQ, and better measures of household income. However, adding more controls cannot rule out the possibility of an association between family size, educational attainment, and something immeasurable, such as housing environment, neighborhood conditions, or quality of schooling. As a result, recent studies have taken different approaches to account for unobserved family heterogeneity. For instance, Guo and VanWey (1999) and Black, Devereux, and Salvanes (2005) include the household's dummies, i.e., family fixed effects, to control for the unobserved family-level heterogeneity. Angrist, Lavy, and Schlosser (2005), Caceres (2004), and Conley and Glauber (2005) employ exogenous variations in family size, such as multiple births or preferences of a mixed sibling-sex composition, as instruments to investigate the causal effect of family size on a child's education. Notably, studies using IV estimations or fixed family effects found weaker correlations between family size and a child's education, many of which turn out to be negligible.

The inconsistency of results between OLS and other estimation methods cast doubts over the link between family size and a child's outcome. One likely explanation, as pointed out by Phillips (1999), is that sibship size per se does not affect the child's educational attainments, but the type of resources it dilutes does. Goux and Maurin (2005) extended this line of thought by exploring the impact of a child's private space, one important kind of resource likely to be affected by additional children, on the child's schooling. Specifically, they considered the following equation:

$$(3) \qquad edu_i = X_i\alpha + \beta N_i + \gamma h_i + \nu_i + \varepsilon_i,$$

where h_i is the average number of rooms per person in the household, used as a proxy for a child's private space. Notice that equation (3) also includes the sibship size variable to account for the effect caused by family size. Because sibship size and the child's private space are likely to be endogenous, they employ two instruments, gender of the first two children and of the last two children, respectively, to control for unobserved family heterogeneity. Consistent with previous studies, they found that the coefficient of sibship size becomes insignificant under IV estimation. Interestingly, the coefficient of the average number of rooms per person in IV estimates is significantly negative, suggesting that children in large families perform less well, not because of their family size, but because of the smaller private space available to each child.

C. Our Identification Strategy

In contrast to Goux and Maurin (2005), our study seeks to identify the effect of a variety of housing variables on a child's educational outcome, such that:

$$edu_i = X_i\alpha + \beta N_i + H_i\gamma + \nu_i + \varepsilon_i. \quad (4)$$

The biggest difference between (3) and (4) is that the housing environment is now a vector of multiple variables (H_i) instead of a single variable (h_i). There are substantial difficulties in using existing identification strategies for this specification. Because these housing variables do not change within a household, including household dummies essentially eliminates the effect of housing environment. Another possible strategy is to find instruments for housing variables, as Goux and Maurin (2005) did for household crowdedness. Nevertheless, controlling for the unobserved heterogeneity in this setting requires us to find many more instruments.

We take a different approach to identify the causal link. Apart from including a detailed set of important variables of a child's family background used in previous studies (e.g., a child's birth order, parental age, work status, and education), we account for unobserved family heterogeneity by adding dummies of the child's residential neighborhood. Our unique data are derived from the census data that collects information on the entire Taiwanese population, with detailed address information.

Therefore, we are able to compare a child with his or her peers of the same age in the same very small neighborhood, the lin. Families residing in the same lin tend to share similar housing preferences and parental incomes, as well as earning potentials. Moreover, youths raised in the same lin generally encounter the same neighborhood effect. Furthermore, youths in the same lin typically attend the same elementary or junior high schools, allowing us to control for the quality of compulsory schooling prior to high school or college. In fact, given Taiwan's current school regulation, it is almost certain that youths in the same lin go to the same school.[5,6] Thus, by controlling for neighborhood fixed effects, we account for the neighborhood effect, quality of schooling, and parental incomes and preferences. Nevertheless, it is still possible that our approach may not fully capture unobserved family heterogeneity. We will discuss this point in the results section.

To be more specific, we estimate the following equation:

$$(5) \qquad edu_i = X_i\alpha + \beta N_i + \gamma H_i + Area_i + \varepsilon_i,$$

where edu_i is a dummy equal to one if child *i*'s highest educational attainment is general high school for teens or general college for young adults, and zero otherwise; H_i is a set of variables on the housing environment, including building age, tenure status, household crowdedness, and residential stability; $Area_i$ is a vector of neighborhood dummies to control for unobserved family heterogeneity; and ε_i is an independent error across various individuals. As discussed earlier, we compare youths residing in the same lin. In Taiwan, the lin is the fourth and smallest level of government jurisdiction, following county, town, and village. As such, the estimation includes tens of thousands of area

[5] According to Taiwan Compulsory Education Law, students residing in the same "lin" belong to the same public school district and thus are assigned to the same public elementary or junior high school. For instance, the school district for Beitu Elementary School in Taipei includes every Lin of Central and Da-Tong Villages, 1st–9th and 12th Lin of Chang-An, 2nd Lin of Hot-Spring Village, and 1st–10th Lin of Ching-Jiang Village. For details on the regulations, see http://www.tp.edu.tw/neighbor/elementary/e_beitu.jsp.

[6] One exception is that children hoping to enroll in better elementary or junior high schools may move their registries to relatives or friends residing in better school districts, but continue to live with their parents. In this case, those children are coded as "other relatives" in the households of friends or relatives in the census. Because our data remove children that coreside with other relatives, we expect this proportion to be small in our sample.

dummies. Because of computational complexity, we focus on the linear probability model instead of nonlinear models. Alternative models (e.g., probit and logit), however, yield similar results.

3. Data and Sample

A. Data Source

The data for this study are derived from the 2000 Taiwan census, conducted every 10 years by the Directorate of General Budgeting, Accounting, and Statistics. The Taiwan census files collect information using a detailed questionnaire similar to that used to create the PUMS files for the US censuses (long-form), except that income-related variables are excluded. At each household, the interviewer records each individual's basic demographics (race, sex, age, and marital status), educational attainment, relationship with the head of household, working and employment status within the past two weeks, as well as the industry in which he or she works. In addition, the interviewer records the residence's structure (number of living rooms, bedrooms, kitchens, and bathrooms), tenure status (rent or own), years lived in the residence, and the location from which the family last moved. The residence information is further linked with the housing registry from the Ministry of Interior to ascertain the floor space of the house, the building year, and the major construction material used for the residence. More importantly, the Taiwan census includes a scrambled, but unique, address for every household's residence. As seen below, this unique address information plays an essential role in the analysis.

The advantage of using the Taiwan census is that the files contain the full sample of Taiwan residents, around 22 million in total or 300,000 individuals in most age cohorts. The large sample size, together with the detailed address information, provides a good opportunity to analyze the effect on educational attainment of the housing environment. Ideally, we would examine the link using the final education levels of all family adult respondents and their current housing information. In practice, however, this is not possible because the census files do not record family information of those who no longer reside with their parents and siblings. Obtaining the complete family background is therefore difficult, especially for adult respondents because a large portion of them do not coreside with parents

and siblings. Moreover, the census files report only the respondent's relationship with the head of the household, but not with other members. Although we could match their relationships according to each member's age and gender, the identification becomes quite complicated when there are more than three adults in a household (e.g., coresiding with a brother or sister-in-law).

B. Sample Selection

For the purposes of this study, we restrict the sample in several ways. We select households with at least one unmarried child aged between 15 and 20 at the time of the census, of which the eldest sibling is no older than 22. We focus on the younger sample to reduce the bias resulting from incomplete family information. We restrict the sample to ages over 15 because compulsory schooling in Taiwan ends at junior high school (9^{th} grade). To avoid mistakes arising from matching parents, we keep only nuclear families in the sample, eliminating households that live with grandparents, relatives, or other friends. Furthermore, we drop households in which children are raised by a single parent to reduce complications because different family structures may also affect a child's education. Finally, we include only samples that have stayed in the residence for at least three years because the housing effect usually takes a longer time to materialize.

To demonstrate the impact of exclusion criteria, Table 1 lists the observed number of youths aged from 15 to 20 for each selection criteria. The first column lists the total number of youths in the census by age cohort. As indicated by these numbers, the number of respondents peaks at the age of 19 and then gradually declines as their age rises; this pattern is consistent with the number of births between 1980 and 1985 (ages 15 to 20 in 2000) in Taiwan.[7] The vast majority of youths, particularly younger ones, coreside with their families. This can be seen from the difference between the first and the second columns, which shows the number of youths who live with at least one adult aged 35 or older. Nevertheless, more and more youths, especially those older than 20 years, choose to live alone for either marriage or work reasons. That youths live alone for other reasons may increase the risks of matching complete family information, a point we will return to later.

[7] The number of respondents obtained from the census data is very close to the birth numbers between 1970 and 1975; the difference is less than 3 percent in every age cohort.

The largest reduction in sample size occurs when restricting the sample to nuclear families. This is not surprising because about 67% of the elderly in Taiwan coreside with their children.[8] Among these nuclear families, around 20% of the youth do not have valid parental information: either they are growing up in single-parent families (around 60% are single mothers) or are no longer coresiding with both parents. Another 10–20% are removed because of the age restriction of the eldest sibling; the older the respondent, the more likely they are to be removed by this age constraint. Finally, around 7% are eliminated because they have stayed in the current residence for less than three years. The final sample size consists of a little over one third of the original sample. Still, we have around 100,000 respondents in each age cohort.

C. Measure of Educational Attainment

Before describing our analysis sample, it is important to first discuss our measures of educational attainment. Previously used measures include the highest completed level of education [Boehm and Schlottmann (1999), Angrist, Lavy and Schlosser (2005), Black, Devereux and Salvanes (2005)], private school attendance [Conley and Glauber (2005)], held back in school grade [Conley and Glauber (2005), Goux and Maurin (2005)], test scores [Guo and VanWey (1999), Haurin, Parcel, and Haurin (2002)], dropping out [Green and White (1997)], and graduating from school by a certain age [Aaronson (2000)]. Because our data are derived from the census files, we cannot make distinctions between the quality of the youth's school (e.g., school ranking), or the youth's academic performance within the school. Therefore, we adopt a measure similar to the one used in Conley and Glauber (2005) that compares the respondent's age with the highest schooling that he or she is currently enrolled in or has completed so far. The education system in Taiwan is similar to that of the United States, except that compulsory schooling is nine instead of 12 years. Therefore, from the age of six, children are required to take six years of elementary school and three years of junior high school. After finishing junior high school, those seeking additional education can go to senior high school (three years) and even higher after graduating from high school. Suppose a child of age 16 reports his or her highest

[8] According to the Taiwan Elderly Survey in the year 2000, 67.3% of adults aged over 65 coreside with their children.

schooling is junior high school. Then he or she either did not proceed to higher education or had been held back a grade in previous school years. By examining one's age and highest schooling, we can compare a child's educational attainments with those of peers in the same age cohort.

There are, however, two complications with this measure. First is that the cut-off birthday for school admission may result in some children starting school late.[9] For instance, a September-born child may be almost one year older than a child born the following August but they are in the same school grade. Because the census data only record an individual's age (in years) at the time of the census interview, we are unable to determine whether a child meets the full age requirement at the time of school enrollment. Thus, some 15-year-old children may already be in senior high school, while others are still in junior high school.[10] Second, there are two types of senior high schools (general versus vocational) and colleges (general versus junior) in Taiwan. Although the quality difference between various types of schools is small in some countries, the gap is large here because students are enrolled into schools based on their test scores on school entrance exams. Generally, general high schools are more difficult to enter, as are general colleges.[11]To resolve these difficulties, we first restrict the sample to youths of ages 16 and 17, and ages 19 and 20. Youths aged 15 and 18 are removed because their educational measures are harder to define. Next, we check if the respondent's reported schooling matches the highest schooling of his or her age. More specifically, we examine if youths of ages 16 or 17 attended general high schools (nonvocational), and whether youths of ages 19 or 20 attend general colleges (nonjunior). In the discussion that follows, we refer to the younger sample as the "teen" sample and the older sample as the "young adult" sample.

D. Description of Analysis Sample

We work with two analysis samples, both described in Table 2. To demonstrate the effect of our sample selection criteria, we continue to present sample statistics by age cohorts. In total, there are

[9] The cut-off birthday in Taiwan is similar to that of the United States: children must be six years old (full) by September 1st to be enrolled in the school.

[10] The 2000 Taiwan census is conducted at the end of that year. Therefore, roughly half of all 15-year-old children are in junior high school, while the rest are in senior high school.

[11] For instance, the minimum score for entering a public high school in Taipei in 2004 was 220 points, about 30 points higher than that of public vocational schools. Likewise, the minimum score for entering general college is considerably higher than that of junior college in Taiwan.

283,959 teens and 188,937 young adults because more young adults are removed during the selection process. In both samples, except for youths aged 20, we have more males than females, reflecting the special gender preference in Taiwan.[12] Because of the sibling's age restriction, a higher proportion of first-borns are observed in young adults than teens. No significant difference, however, is observed in the average number of siblings among different age cohorts.

The educational attainment of youths is listed in the first set of rows of Table 2. A little over half of teens were enrolled in general high schools at the time of the census; 35% were in vocational high schools, while the remaining teens were out of school. The variation in schooling among young adults is larger. About 40–50% of young adults continued schooling after high school (e.g., general or junior colleges), while another 40–50% chose to stop after general or vocational high schools. Only 5–10% of young adults stopped their education after compulsory schooling.

One concern with our educational measure is whether the cut-off birthday affects schooling. If that is the case, we should observe a large discrepancy in schooling between two consecutive ages. Table 2 provides some evidence regarding this concern. For teens, there are only limited schooling differences between ages. In fact, the proportion of those attending general high school for 17-year-old youths is actually lower than that of 16 year olds, showing that the cut-off is not a concern for teens.

The schooling comparison among young adults is a little bit complicated. Our data for a child's education show a rising trend of schooling between the two age cohorts. For instance, the proportion of youths attending general college increased from 17% to 25%, and attending junior college increased from 22% to 30%. Nevertheless, this observation seems unlikely to be because of the cut-off birthday because the number of young adults in each age cohort enrolled in general and junior colleges remains almost the same.[13] Instead, the increase in schooling reflects the fact that those who did not seek higher education left home for work. Because our sample removes youths that live alone, young adults

[12] The observation that there are more 20-year-old females than males is likely to reflect the fact that males are more likely to work away from home. As a result, the category of youths aged 20 that coreside with parents is dominated by females.

[13] The number of youths enrolled in general and junior colleges is 19,056 and 24,400 for youths of age 19, and 19,736 and 23,573 of age 20.

that live with their family at the age of 20 tended to enroll in higher education. In other words, the rising schooling trend is primarily because of our selection criteria, a point that we return to later.

Table 2 also reports variables describing the parental background of the youths, including age, education, and work status. The average parental age of young adults is two years older than that of teens, reflecting the age difference between teens and young adults. In both the teen and the young adult samples, mothers are less likely to have acquired higher levels of education than fathers, especially for colleges or above. Likewise, the difference in working status between fathers and mothers is quite large. Over 90% of fathers in both samples hold a full-time job, while only around 60% of mothers do. Nevertheless, in some families mothers shoulder more economic burden than fathers, with about 10% of the sample being female-headed households.

The Taiwan census data include a wide range of descriptions of housing environment, including floor space, number of rooms, age of building, tenure status, and the location from which the family last migrated. The floor space of the house is measured by square meter. On average, the typical respondent lives in a building 10 to 20 years old, with 3.5 rooms, and 130 square meters. To better account for overcrowdedness, we construct three dummies that compare the number of bedrooms in a house with the number of children in a family. Typically, parents share a bedroom, so the comparison is based on the remaining bedrooms (minus the parents' bedroom) and the number of children. A household is considered as having high crowdedness if some children share a room, medium crowdedness if every child has his or her own room, and low crowdedness if every child has more than one room. By this standard, more than 60% of respondents live in a house with medium crowdedness; the rest reside in households with limited private space. These rates remain almost unchanged with respect to the teen or young adult sample.

More than 90% of youths live in self-owned households, reflecting the high rate of owner-occupied houses in Taiwan. In most cases, the youths in the sample have been at the same residence for more than 10 years; less than 14% of youths moved into the current residence within the last five years, of which around 3% moved within the local vicinity (within the same village); the rest migrated from other villages.

E. Area Dummies and Family Heterogeneity

Before showing the estimation results, it is useful to first describe the area dummies, which aim to control for unobserved family heterogeneity. Because the census data record detailed address information, area dummies can be constructed from the highest level (county) to the lowest (lin). For instance, Taipei, the capital of Taiwan, consists of 12 towns, 435 villages, and 9741 lins. The average number of square kilometers of a town, village, and lin in Taipei are 22.6, 0.624, and 0.028, respectively.[14] Not surprisingly, as seen in Table 3, the sample number in an area drops sharply as the level of government jurisdiction moves from towns to lins. While there are, on average, 780 teens and 520 young adults in a town, each lin accommodates only 3.1 teens and 2.4 young adults. From the percentile distribution based on lin, at least half of lins have only one teen and one young adult at the time of the census. Despite this, there is still a great deal of variation in many other lins in the sample. This can be seen from the numbers in parentheses, showing that the number of teens or young adults at the first quartile, based on the whole sample, is 3 and 2, respectively.

If area dummies are good controls for family heterogeneity, we should observe that the extent of variation within a neighborhood declines when a smaller neighborhood is used. To demonstrate the relationship between family heterogeneity and area dummies, Table 4 shows "within" and "between" standard deviations (SD) of housing environment variables. Because these SDs may exhibit different patterns in cities and rural regions, we further separate our sample into two groups based on the number of residents in the town: large towns (more than 100,000 residents) and small towns (less than 100,000 residents). For the purpose of exposition, we only list these numbers at the village and lin level. Consistent with our expectation, "between" SD rises and becomes larger than "within" SD for the vast majority of housing variables as the neighborhood level moves from village to lin. Nevertheless, we do not find a clear difference in SD between large and small towns in the sample.

[14] The total size of Taipei is 271.8 square kilometers.

4. Empirical Analysis

A. Basic Specification

Results of our basic specification using the two analysis samples are presented in Table 5. Our basic specification estimates the linear probability model including all variables displayed in Table 2, except the father's age because father's age is highly correlated with mother's age. Because estimates from the teen and young adult samples are similar, we first discuss the similarities in the two results, and then discuss the differences.

As is typical for these types of regressions, our coefficients imply strong links between a child's education and parental schooling. The better the parental schooling, the more likely it is that youths will seek higher education. As discussed earlier, the findings could reflect parental preferences over a child's education or a child's generic abilities inherited from higher-educated parents or both. In addition, higher educational achievements are also positively associated with an increase in the mother's age and the father's employment status, but negatively related to the mother's employment status. There is no observed difference in the education of children raised in female- and male-headed households.

Two variables of a child's characteristics deserve special attention. First, our results indicate that the sibship size produces a small and negative marginally significant effect after controlling for all other factors. Our estimates suggest that adding one sibling reduces the chance of going to general high school by 0.3% and general college by 0.4%. Second, our estimates indicate that being the first born largely increases the chance of enrollment in general high school and college, by 6.6% and 3.2%, respectively.

Our results demonstrate a strong link between a child's education and housing variables. A positive correlation is observed between a child's education and the floor space. An increase of 100 square meters, for instance, is associated with an increase in the chance of enrollment in general high school and college by 1.5% and 1.2%, respectively. Likewise, children living in owner-occupied houses have a higher chance of getting into general high school or college, as are children living in newer houses. However, interpreting these results requires caution. It is possible that the results reflect the fact that

parents that are more willing to invest in a house are likely to create positive benefits for their children's learning.[15] It is also possible that these coefficients may reflect our inability to control for household income. Perhaps new, larger, self-owned houses produce a positive effect simply because they are associated with a child's family's well-being. We will discuss this issue later.

Youths who have recently moved from other locations (migrated 3–5 years ago) are less likely to be enrolled in general high school. The greater the distance they moved, the larger the negative effect on a child's education. Because the housing effect usually takes time to materialize, this effect should be attributed to residential stability in an earlier period, i.e., at the time of junior high school. Residential stability is valuable to teens probably because they do not have to learn to adapt to a new social network (junior high schools are usually very close to where teens live).[16] Notice that the effect of residential stability is less evident among teens. This could be because general high school admissions are based on every young adult's test score. As a result, many young adults cannot benefit from the existing social network as they did at junior high school because they must attend distant general high schools.

One parameter of particular interest is the household crowdedness. Similar to Goux and Maurin (2005), our results also confirm the importance of private space on a child's education.[17] Nevertheless, its effect is more complex and possibly nonlinear. For instance, teens growing up in families of medium crowdedness are more likely to enroll in high school than those in high- or low-crowdedness houses. For young adults, those raised in medium crowdedness perform equally well as those in low-crowdedness houses. Notice that our estimation also controls for a house's floor space. Changing from

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[15] Green and White (1997) explained why home ownership might positively influence children's cognitive and behavioral outcomes. First, there is a stronger investment incentive for owners compared with renters. Better physical home environments increase the probability of success of the children of owners. Second, compared with renters, there is higher self-esteem among owners, resulting in greater emotional support for the children. Finally, there is greater geographic stability creating a neighborhood network that is likely to promote a child's outcome.

[16] A longer tenure (or less mobility) often implies a more stable home and school (peer) environment, which helps to invest in building social capital that enhances a child's outcomes. Therefore, a longer tenure tends to lead to better outcomes for children. For details, see Coleman (1988).

[17] Because our estimation setting is different from that of Goux and Maurin (2005), a comparison may be inappropriate. However, we estimated an additional model using the average number of rooms per person as the proxy for household crowdedness. Results of that estimation are similar to that of Goux and Maurin (2005), where we found a significant and negative impact of household crowdedness on a child's education.

high- to low-crowdedness houses does not refer to an increase in floor space and number of rooms at the same time. Instead, the effect should be interpreted as increasing the private space, but reducing the shared space, in a household (e.g., smaller living room). From our estimates, it appears that there is an optimal mix of private and shared space that helps a child's schooling.

As stated earlier, there is a risk of bias generated from our sample selection. Most notable is the restriction on the eldest sibling's age and on coresiding with a mid-aged adult. If such a restriction induces a new bias into the estimation, we should observe differences in results that use only 17-year-old youths from the teen sample and only 19-year-old youths from the young adult sample. This can be seen from Table 5, where we list estimated results of youths from the age cohorts of 17 and 19, respectively. As demonstrated in the table, we observe only modest differences between results using the full sample and half of the sample. None of the estimated coefficients, however, changes its sign after restricting the sample, and the vast majority remain statistically significant. These results imply that our sample selection, at most, results in small biases in the estimation.

B. Effects of Area Dummies

One key concern regarding our findings is whether our results demonstrate the importance of housing variables or just the inability to control for unobserved family heterogeneity. For instance, strong associations between a child's education and housing variables found in the estimation could possibly be caused by failure to control for the household's income, one kind of unobserved family heterogeneity. To address this question properly, it is important to show some evidence that adding area dummies indeed mitigates the concern of unobserved family factors. Table 6 lists the estimated results using area dummies at the town, village, and lin levels, respectively. For the purpose of comparison, we also include results without controlling for neighborhood fixed effects. As indicated from this table, the total number of area dummies at each level is 0, 364, 7508, and 91,929, respectively, and a slightly smaller number for young adults. Given that the number of area dummies varies so much, it is not surprising that regressions controlling for different levels of neighborhood effects yield dramatically different estimates. For instance, the coefficient of sibship size in the teen sample changes from –0.016 when there are no area controls to –0.006 and –0.003 when controlling at

the village and lin level, respectively. In fact, the Hausman test suggests that any two sets of estimates are statistically different.[18]If positive relationships between housing variables, especially floor space, ownership status, housing age, and child's education, are posited as another channel to display the income effect, we should anticipate the effect becoming smaller when looking across children residing in the same neighborhood. Families residing in the same neighborhood should have similar family assets or potential earnings. Throughout the table, however, estimates of housing variables continue to show significant effects on the youth's educational outcome, some of which become even larger after controlling for many more area dummies. While it is still possible that our results are biased because large variations exist within the same neighborhood, the results do not seem to suggest that our findings are driven by unmeasured household income.

Another way to examine the effect of area dummies is to compare our results with findings in previous studies accounting for unobserved endogeneity through IV methods or family dummies. Generally, these studies found the coefficient on sibship size changes from statistically significant in OLS estimation to insignificant in IV estimation [e.g., Angrist, Lavy, and Schlosser (2005), Black, Devereux, and Salvanes (2005)]. It is therefore interesting to see whether adding more area dummies generates a similar result. From the table, it is clear that the coefficient of sibship size diminishes when a finer level of area controls is included. At the level of the lin, the coefficient of sibship size for teens is only marginally significant at the 10% level Obviously, a finer area control reduces the effect of sibship size, a sign supporting the reduction of unobserved family heterogeneity.

C. IV Estimation

So far we have shown that estimates with area fixed effects exhibit a pattern similar to recent studies employing IV strategy. Nevertheless, it is still uncertain whether neighborhood dummies are good controls for unobserved family heterogeneity. A more convincing method is to compare area fixed effect results with IV results so that the extent of endogenous bias can be determined.

[18] The smallest chi-square value occurs when comparing results of village fixed effects with those of lin fixed effects. Even for these, the value is 31.82 for young adults and 114.56 for teens, strongly rejecting the null hypothesis of the Hausman Test that these two sets of estimates are indifferent.

Nevertheless, this is not easy because our regression includes, in addition to the number of siblings, a variety of variables characterizing a child's housing environment. Unless we are able to find an instrument for every housing variable, implementing a full-scale IV estimation is extremely difficult.

In light of this difficulty, we have decided to conduct IV estimation in a different way. We first use multiple births and preferences toward a mixed sibling-sex composition to construct the instrument of sibship size.[19] Through exogenous variations because of multiple births at the third-born and sibling-sex composition of the oldest three children, we can look at the effect of three or more births on the educational outcome of the first- and second-born child in families with at least three children. Neighborhood dummies are also included to aid family controls.

The estimates in the first two columns of Table 7 report the first-stage and IV results for teens and young adults in families of at least three children. Because our sample is reduced to less than half of its original size because of the restriction on the number of children, we control for the village instead of the lin fixed effects. All instruments are significant in the first stage. Family size goes up by 0.83–0.87 in response to multiple births at the third born. Likewise, the family size increases by 0.38–0.42 for families whose first three siblings are girls; this reflects Taiwanese parents' preference for boys over girls.

Controlling for the village fixed effects, IV results again show that the number of siblings has little effect on the child's education. Moreover, we do not observe clear differences in the coefficients of housing variables between regression results and IV results. The vast majority of housing variables still hold their original signs and magnitudes. To formally examine whether IV results differ from area fixed effects results, we reestimate the area fixed effects model using village dummies based on this new sample.[20] The Hausman Test shows the chi-square value for these two sets of estimates is 3.5 for the teen sample and 0.29 for the young adult sample; both fail to reject the null hypothesis that the IV results and regression results are statistically indifferent.

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[19] Taiwan Census data only record the age of each family member. Therefore, multiple births are identified by checking whether two consecutive children share the same age. It is possible that our method overstates the number of multiple births for families whose age gap between two consecutive children is less than one year. Nevertheless, we believe the likelihood of a mother having two children in one year is limited.

[20] The Hausman test is conducted based on the 21 explanatory variables in the regressions. Coefficients of fixed dummies are not considered.

Results reported above account for the potential endogeneity between sibship size and child's education. However, our estimates can still be subject to biases if housing variables are endogenously determined based on the number of children (e.g., parents may decide to move to a bigger house once they have more children). Given we cannot find an instrument for every housing variable, we restrict our sample to those who have moved into their current residence one year before the second child was born. For these families, the chance that their housing variables are correlated with the exogenous variations in sibship size (e.g., multiple births or sex composition) should be considerably lower, and therefore should shed some light on the effect of housing variables. The remaining columns of Table 7 present the first-stage and IV estimates for this particular sample. Although the first-stage results continue to confirm the validity of our instruments, coefficients on many housing variables become insignificant after imposing the restriction, likely because of a much smaller sample imposed by the move-in year constraint. Nevertheless, the majority of housing variables still hold their sign, showing at least some evidence of their importance.

D. Gender Differences

When discussing housing variables, one often-raised question is whether gender differences exist. Do boys need a bigger house? Do girls have special needs for private space? To explore this possibility, Table 8 expands the estimation by allowing for gender interactions on three variables: first-born, floor space, and household crowdedness. As expected, first-born boys have a higher school enrollment than first-born girls; this is likely because boys in Taiwan's society are subject to more social pressure than girls.

Both household crowdedness and floor space exhibit some gender differences. In addition, those gender differences seem to change for different ages. The chance of school enrollment is higher for boys raised in households with larger floor space, but there is no observable gender difference in the teen sample. On the contrary, girls raised in medium-crowdedness households have a higher chance of getting into high school. However, the gender difference disappears in the young adult sample. It appears that different housing needs exist for boys and girls at different times in their lives.

5. Conclusions

Understanding factors that determine the children's educational attainments is an important research question in the social sciences. The answer is not only crucial for human capital formulation, a key driver of economic growth, but also essential for income distribution purposes because education is considered a driver for income mobility.[21] Among those components, housing environment provided by the parents is often considered of great relevance [Haveman and Wolfe (1995)]. While it is widely believed that a better housing environment stimulates a child's learning, there is limited evidence as to the causal link between housing environment and a child's schooling.

In this study, we seek to uncover the effect of housing environment on children's educational attainments. Differing from Goux and Maurin (2005), who use exogenous variations in the child's private space as instruments, we control for unobserved family heterogeneity through their residential choices. In general, families living within a close distance share similar parental preferences, household assets, and earning potential. In addition, children in the same neighborhood typically go to the same school. Using the Taiwan census files that include the unique address information of every household in the records, we compare the chance of general high school or general college enrollment for youths of the same age and in the same neighborhood. After controlling for area fixed effects using tens of thousands of area dummies, our results indicate the importance of housing variables in determining a child's schooling. The educational attainment of children is positively associated with increases in floor space, increases in residence stability, and the ownership status, but negatively related to increases in building age. The results are robust even accounting for the endogeneity between sibship size and child's education using IV estimation.

Several findings deserve special attention. First, a first-born child, particularly a boy, is more likely to perform well in school. While the finding may reflect the fact that parents, particularly those in Taiwan, tend to put more pressure on first-borns, our finding is consistent with Black, Devereux, and Salvanes (2005) who argue that birth order, not family size, matters for a child's outcome. A more

[21] According to Haveman and Wolfe (1995), the government's spending on children in terms of primary and secondary education in 1992 is estimated to be 235 billion, or roughly 4% of GDP in U. S. In Taiwan, the spending on compulsory education is a little less than 3 percent of GDP.

careful analysis that explores a full range of effects of birth order and possibly its interactions with housing variables may be necessary.

Second, our results are different from the findings of Goux and Maurin (2005) regarding the effect of a child's private space. Although our results also confirm the importance of household crowdedness, its effect appears to be nonlinear because the chance of school enrollment is higher for children raised in medium-crowdedness houses than those in low-crowdedness houses. Further investigations on the effect of household crowdedness may also be necessary to uncover the exact impact.

Finally, and most importantly, our identification uses the area fixed effects to control for unobserved family heterogeneity. While we have shown evidence supporting this approach, we caution readers that there might still be uncontrolled family factors, such as genetic differences or interactions between parents and children, in the estimation.

The main contribution of this paper is to provide causal evidence regarding the effect of housing environment on a child's education. Although many studies have attempted to establish the link between housing environment and children's educational achievement (e.g., ownership, residential stability), our paper appears to be the first that offers a complete picture of the effect of a wide range of housing variables. Our paper has demonstrated the importance of a few housing variables (e.g., tenure status and house floor space). Future studies could use our findings as the basis to consider more effective policy instruments to enhance children's educational attainments in designing housing policy.

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Table 1: Youths Used in the Analysis
(Table Entries are Number of Observations Meeting Selection Criteria)

Age	Total number of youths available in the census	...and live in households that have at least one adult (aged over 35)	…and have no other relatives (nuclear families)
15	336,040	315,248	219,341
16	358,437	333,616	235,237
17	371,046	344,711	246,760
18	387,969	338,183	224,750
19	398,667	334,469	218,989
20	387,682	292,182	175,669

Table 1: Cont.
(Table Entries are Number of Observations Meeting Selection Criteria)

Age	…and have valid father and mother info (exclude single parent)	…and the eldest sibling is less than or equal to 22 years old	…and moved into the current residence 3 years ago
15	158,577	149,821	132,404
16	170,769	158,145	140,616
17	178,860	160,429	143,343
18	160,706	137,039	122,611
19	155,629	122,284	109,924
20	123,481	87,234	79,013

Table 2: Summary Statistics of the Youth's Education, Family Background, and Housing

	Mean/Percent		Mean/Percent	
	Age (16)	Age (17)	Age (19)	Age (20)
Child's Education				
Junior High School or Less	8.72%	8.30%	6.87%	5.18%
Vocational High School	36.45%	40.35%	32.16%	25.16%
General High School	54.83%	50.89%	21.43%	14.86%
Junior College	0.00%	0.31%	22.20%	29.83%
General College or Above	0.00%	0.15%	17.34%	24.98%
Child's Characteristics				
Male	52.03%	52.21%	52.00%	40.65%
First Born	49.42%	54.19%	63.56%	70.07%
Number of Siblings (Self Included)	2.49	2.45	2.45	2.43
	(0.859)	(0.871)	(0.886)	(0.915)
Parental Background				
Female Economic Head	10.48%	10.80%	11.32%	11.50%
Mother's Age	41.86	42.50	43.61	44.36
	(3.398)	(3.390)	(3.246)	(3.158)
Mother's Education (0-6 years)	28.30%	31.72%	40.31%	41.19%
Mother's Education (6-9 years)	28.59%	27.70%	26.18%	24.12%
Mother's Education (9-12 years)	31.02%	29.42%	24.75%	24.92%
Mother's Education (12+ years)	12.09%	11.16%	8.77%	9.77%
Mother's Employment	60.03%	60.09%	58.67%	57.73%
Father's Age	44.81	45.48	46.64	47.36
	(3.454)	(3.407)	(3.212)	(3.087)
Father's Education (0-6 years)	23.12%	26.08%	34.17%	34.31%
Father's Education (6-9 years)	24.67%	23.62%	22.17%	20.31%
Father's Education (9-12 years)	30.75%	29.85%	27.34%	27.01%
Father's Education (12+ years)	21.45%	20.45%	16.32%	18.37%
Father's Employment	93.25%	92.74%	91.16%	90.97%
Housing Environment				
Rent	6.54%	6.36%	6.66%	6.02%
Space (Square Meter/100)	1.32	1.32	1.31	1.32
	(0.697)	(0.703)	(0.699)	(0.696)
Number of Rooms	3.52	3.53	3.53	3.53
	(1.268)	(1.265)	(1.279)	(1.260)
Low Crowdedness	29.56%	31.45%	31.70%	32.72%
Medium Crowdedness	36.44%	36.03%	35.77%	35.13%
High Crowdedness	34.00%	32.53%	32.53%	32.15%
Move from Vicinity*	3.20%	3.06%	2.90%	2.65%
Move from Distant Area*	10.01%	9.27%	9.20%	9.13%
Building Age (0-10 years)	22.57%	21.59%	19.71%	18.82%
Building Age (10-20 years)	40.99%	40.76%	40.04%	40.14%
Building Age (20+ years)	36.43%	37.65%	40.25%	41.04%
Number of Observations	140,616	143,343	109,924	79,013

Standard deviations are in parentheses.

*The youth is considered as a new mover if his/her current address differs from that of 5 years ago

Table 3: Observation Number at Various Levels of Government Jurisdiction[a]

	High School (Age 16/17)			College (Age 19/20)		
	Town	Village	Lin	Town	Village	Lin
Min	1	1	1	1	1	1
Max	8,708	372	95	6,228	244	42
Mean	780.11	37.82	3.09	519.06	25.44	2.40
	(1124.02)	(38.42)	(2.66)	(772.35)	(25.40)	(1.87)
25% Percentile	130	11	1	82	7	1
	(798)	(37)	(3)	(549)	(25)	(2)
50% Percentile	130	11	1	82	7	1
	(1803)	(67)	(4)	(1388)	(45)	(3)
75% Percentile	990	55	4	629	36	3
	(3239)	(103)	(7)	(2166)	(68)	(5)
# of jurisdictions	364	7,508	91,929	364	7,428	78707

[a]The percentile in parentheses reflects the observation number over the whole distribution

Table 4: "Within" and "Between" Standard Deviation of Housing Variables at the Level of Village and Lin

	High School (Age 16/17)				College (Age 19/20)			
	Large Towns[b]		Small Towns		Large Towns		Small Towns	
	Village	Lin	Village	Lin	Village	Lin	Village	Lin
Tenure Status	0.079	0.213	0.085	0.179	0.088	0.223	0.090	0.177
	(.26)	(.207)	(.204)	(.153)	(.261)	(.193)	(.195)	(.136)
Space (Square Meter/100)	0.348	0.571	0.389	0.684	0.366	0.585	0.413	0.695
	(.552)	(.4)	(.696)	(.492)	(.55)	(.372)	(.681)	(.438)
Number of Rooms	0.551	0.972	0.804	1.365	0.523	0.983	0.899	1.381
	(1.026)	(.769)	(1.349)	(.936)	(1.026)	(.72)	(1.335)	(.846)
Low Crowdedness	0.150	0.340	0.206	0.399	0.158	0.370	0.232	0.423
	(.429)	(.347)	(.457)	(.345)	(.435)	(.326)	(.459)	(.318)
Medium Crowdedness	0.121	0.351	0.176	0.371	0.137	0.381	0.200	0.391
	(.48)	(.398)	(.453)	(.353)	(.476)	(.366)	(.447)	(.319)
High Crowdedness	0.147	0.353	0.201	0.385	0.156	0.374	0.216	0.394
	(.457)	(.372)	(.451)	(.342)	(.456)	(.344)	(.44)	(.308)
Move from Vicinity	0.050	0.130	0.067	0.149	0.049	0.134	0.081	0.146
	(.169)	(.136)	(.173)	(.129)	(.16)	(.119)	(.161)	(.111)
Move from Distant Area	0.094	0.238	0.110	0.227	0.106	0.247	0.141	0.246
	(.297)	(.229)	(.267)	(.198)	(.284)	(.204)	(.265)	(.18)
Building Age (0-10 years)	0.179	0.348	0.185	0.370	0.176	0.346	0.196	0.371
	(.359)	(.213)	(.41)	(.269)	(.342)	(.19)	(.389)	(.235)
Building Age (10-20 years)	0.223	0.433	0.204	0.399	0.229	0.444	0.222	0.418
	(.45)	(.261)	(.447)	(.292)	(.445)	(.243)	(.444)	(.267)
Building Age (20+ years)	0.251	0.449	0.247	0.441	0.256	0.459	0.266	0.455
	(.421)	(.244)	(.449)	(.289)	(.428)	(.232)	(.451)	(.264)
# of observations	169,290	169,290	114,669	114,669	114,138	114,138	74,799	74,799

[a]The number in the parentheses is the "within" standard deviation of housing variables.

[b] A town is defined as large if its number of residents exceeds 100,000 residents and as small if less than 100,000 residents.

Table 5: Estimated Results of the Youth's Educational Achievements

	High School		College	
	Age (16/17)	Age(17)	Age(19/20)	Age (19)
Child's Characteristics				
Male	-0.006	-0.008	0.001	-0.026
	(0.002)***	(0.003)**	(0.002)	(0.003)***
First Born	0.066	0.073	0.032	0.017
	(0.002)***	(0.004)***	(0.003)***	(0.004)***
Number of Siblings (Self Included)	-0.003	-0.001	-0.004	-0.005
	(0.002)*	(0.003)	(0.002)**	(0.003)*
Parental Background				
Family Head	-0.001	-0.002	-0.005	0.000
	(0.004)	(0.006)	(0.004)	(0.006)
Mother's Age	0.017	0.026	0.04	0.018
	(0.006)***	(0.009)***	(0.007)***	(0.010)*
Mother's Age Square	0.000	0.000	0.000	0.000
	(0.000)**	(0.000)***	(0.000)***	(0.000)
Mother's Education (6-9 years)	0.034	0.033	0.018	0.014
	(0.003)***	(0.005)***	(0.003)***	(0.004)***
Mother's Education (9-12 years)	0.069	0.069	0.057	0.045
	(0.003)***	(0.005)***	(0.004)***	(0.005)***
Mother's Education (12+ years)	0.143	0.147	0.128	0.117
	(0.005)***	(0.008)***	(0.005)***	(0.008)***
Mother's Employment	-0.008	-0.007	0.000	-0.001
	(0.002)***	(0.004)*	(0.003)	(0.004)
Father's Education (6-9 years)	0.034	0.029	0.024	0.016
	(0.003)***	(0.005)***	(0.003)***	(0.005)***
Father's Education (9-12 years)	0.059	0.054	0.06	0.054
	(0.003)***	(0.005)***	(0.003)***	(0.005)***
Father's Education (12+ years)	0.149	0.144	0.153	0.143
	(0.004)***	(0.007)***	(0.005)***	(0.006)***
Father's Employment	0.024	0.02	0.027	0.027
	(0.004)***	(0.007)***	(0.004)***	(0.006)***
Housing Environment				
Rental Status	-0.031	-0.025	-0.058	-0.053
	(0.005)***	(0.008)***	(0.005)***	(0.007)***
Space (Square Meter/100)	0.015	0.009	0.012	0.012
	(0.002)***	(0.003)***	(0.002)***	(0.003)***
Low Crowdedness	0.005	0.007	0.014	0.009
	(0.004)	(0.006)	(0.004)**	(0.006)
Medium Crowdedness	0.011	0.014	0.013	0.011
	(0.003)**	(0.005)**	(0.003)**	(0.005)*
Move from Vicinity*	-0.024	-0.026	-0.023	-0.022
	(0.006)***	(0.011)**	(0.008)***	(0.010)**
Move from Distant Area*	-0.040	-0.041	0.001	-0.003
	(0.004)***	(0.007)***	(0.005)	(0.006)
Building Age (10-20 years)	-0.012	-0.006	0.002	-0.004
	(0.004)***	(0.006)	(0.005)	(0.006)
Building Age (20+ years)	-0.024	-0.023	-0.009	-0.015
	(0.004)***	(0.007)***	(0.005)*	(0.007)**
Number of Area Dummies (lin)	91929	71294	78707	62122
Number of Observations	283,959	143,343	188,937	79,013

* significant at 5%; ** significant at 1%; Standard deviations are in parentheses.

Table 6: Estimated Results of the Youth's Educational Achievements (Robustness Checks)[a]

	High School (Age 16/17)			College (Age 19/20)		
Level of Jurisdiction	Town	Village	Lin	Town	Village	Lin
Number of Dummies	364	7,508	91,929	364	7,428	78,707
Child's Characteristics						
First-Born	0.072	0.072	0.066	0.029	0.030	0.032
	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.003)**
Number of Siblings	-0.007	-0.005	-0.003	-0.004	-0.004	-0.004
	(0.001)**	(0.001)**	(0.002)	(0.001)**	(0.001)**	(0.002)*
House Characteristics						
Tenure Status	-0.027	-0.031	-0.031	-0.054	-0.058	-0.058
	(0.004)**	(0.004)**	(0.005)**	(0.004)**	(0.004)**	(0.005)**
Space (Square Meter/100)	0.018	0.017	0.015	0.015	0.014	0.012
	(0.001)**	(0.002)**	(0.002)**	(0.001)**	(0.002)**	(0.002)**
Low Crowdedness	-0.003	0.001	0.005	0.008	0.008	0.014
	(0.003)	(0.003)	(0.004)	(0.003)**	(0.003)**	(0.004)**
Medium Crowdedness	0.007	0.009	0.011	0.011	0.010	0.013
	(0.002)**	(0.002)**	(0.003)**	(0.002)**	(0.002)**	(0.003)**
Move from Vicinity	-0.031	-0.030	-0.024	-0.021	-0.018	-0.023
	(0.005)**	(0.005)**	(0.006)**	(0.005)**	(0.005)**	(0.008)**
Move from Distant Area	-0.040	-0.042	-0.040	0.001	0.003	0.001
	(0.003)**	(0.003)**	(0.004)**	(0.003)	(0.003)	(0.005)
Building Age (10-20 years)	-0.017	-0.017	-0.012	0.002	0.001	0.002
	(0.002)**	(0.003)**	(0.004)**	(0.003)	(0.003)	(0.005)
Building Age (20+ years)	-0.026	-0.027	-0.024	-0.007	-0.010	-0.009
	(0.003)**	(0.003)**	(0.004)**	(0.003)**	(0.003)**	(0.005)
Hausman Test						
vs Town Fixed Effect		447.60	295.42		201.99	75.27
vs Village Fixed Effect			114.56			31.82

** significant at 5%; * significant at 1%; standard deviations are in parentheses.

[a]The estimation controls for the mother's age, education and employment of mother and father, economic head, and child's gender.

Table 7: Results of IV Estimation Using Twin Births and Sex-Composition as Instrument[a]

Sample Selection	First and second child in families with at least 3 children		...and moved in before the 2nd child is born	
	High School (Age 16/17)	College (Age 19/20)	High School (Age 16/17)	College (Age 19/20)
First-stage Results				
Instruments				
First Two Boys	-0.048	-0.071	-0.059	-0.053
	(0.006)***	(0.007)***	(0.012)***	(0.018)***
First Two Girls	0.043	0.056	0.053	0.048
	(0.005)***	(0.005)***	(0.009)***	(0.013)***
First Three Boys	0.041	0.048	0.047	0.022
	(0.007)***	(0.009)***	(0.014)***	-0.022
First Three Girls	0.382	0.420	0.385	0.446
	(0.005)***	(0.006)***	(0.010)***	(0.014)***
Twins at the Third Birth	0.869	0.828	0.857	0.811
	(0.017)***	(0.021)***	(0.035)***	(0.057)***
Fixed Effect/ IV Results				
Child's Characteristics				
First Born	0.070	0.029	0.061	0.030
	(0.003)***	(0.003)***	(0.007)***	(0.007)***
Number of Sibling	0.000	-0.006	0.011	-0.021
	(0.010)	(0.008)	(0.021)	(0.017)
House Characteristics				
Rental Status	-0.024	-0.051	-0.008	-0.049
	(0.006)***	(0.005)***	(0.005)	(0.018)***
Space (Square Meter/100)	0.014	0.009	0.006	0.012
	(0.003)***	(0.002)***	(0.005)	(0.005)**
Low Crowdedness	0.002	0.003	-0.008	-0.019
	(0.006)	(0.005)	(0.011)	(0.010)*
Medium Crowdedness	0.019	0.013	0.010	0.006
	(0.005)***	(0.004)***	(0.010)	(0.009)
Move from Vicinity	-0.030	-0.024	-0.086	-0.057
	(0.009)***	(0.008)***	(0.025)***	(0.025)**
Move from Distant Area	-0.040	0.005	-0.108	0.026
	(0.006)***	(0.005)	(0.017)***	(0.015)*
Building Age (10-20)	-0.020	-0.001	-0.104	0.142
	(0.005)***	(0.004)	(0.078)	(0.135)
Building Age (20+)	-0.025	-0.009	-0.094	0.155
	(0.005)***	(0.004)**	(0.078)	(0.135)
Number of Area Dummies	7145	7145	6290	5578
Number of Observations	94457	94457	26885	17546

* significant at 10%; ** significant at 5%; *** significant at 1%; Standard deviations are in parentheses.

[a]The estimation controls for the mother's age, education and employment of the mother and father economic head, gender, as well as neighborhood fixed effects at village level.

Table 8: Results of the Youth's Educational Attainments (Gender Interactions)[a]

	High School Age (16/17)	College Age (19/20)
Child's Characteristics		
Male	-0.015	-0.017
	(0.006)**	(0.007)**
First Born*Boy	0.055	0.031
	(0.003)***	(0.005)***
First Born*Girl	0.042	0.023
	(0.004)***	(0.004)***
Number of Sibling	-0.01	-0.007
	(0.002)***	(0.002)***
Housing Environment		
Rental Status	-0.031	-0.058
	(0.005)***	(0.005)***
Space (Square Meter/100)*Boy	0.014	0.014
	(0.003)***	(0.003)***
Space (Square Meter/100)*Girl	0.014	0.009
	(0.003)***	(0.003)***
Low Crowdedness*Boy	0.002	0.018
	(0.005)	(0.005)***
Low Crowdedness*Girl	0.006	0.01
	(0.005)	(0.005)**
Medium Crowdedness*Boy	0.004	0.011
	(0.004)	(0.005)**
Medium Crowdedness*Girl	0.009	0.012
	(0.004)**	(0.004)***
Move from Vicinity*	-0.023	-0.023
	(0.006)***	(0.008)**
Move from Distant Area*	-0.039	0.001
	(0.004)***	(0.005)
Building Age (10-20)	-0.012	0.002
	(0.004)***	(0.005)
Building Age (20+)	-0.025	-0.009
	(0.004)***	(0.005)*
Number of Area Dummies	91929	78707
Number of Observations	283,959	188,937

* significant at 10%; ** significant at 5%; *** significant at 1%; Standard deviations are in parentheses.

[a]The estimation controls for neighborhood dummies at lin level

Conference Programme

CONFERENCE OVERVIEW

The 12th Asian Real Estate Society International Conference (jointly the 2007 AREUEA International Conference) takes place in the Macau Tower Convention and Entertainment Center, Macau, China, during July 9-12, 2007. The conference provides a forum for academics, practitioners, and policymakers in the areas of real estate market, real estate finance, development and investment, housing and urban planning, hospitality and tourism development, urban economics, regulation and government policy, to exchange ideas on important issues. Participants can fully relax and enjoy the summer in the Orient, while simultaneously sharing academic and research ideas in the conference.

It is our great honor to have four keynote speakers, all having remarkable influence to both the real estate markets and the academia, adding much glamour to our conference opening ceremony. Secretary Alphonso Jackson is the secretary of the Housing and Urban Development Department of the United States of American government. Prof. Sir James A. Mirrlees is the 1996 Nobel laureate in Economics. Dr. William Newman is a pioneer in the development of new REIT concept. Prof. Sheridan Titman is a world renowned professor in the area of finance.

This conference also features several highlights. In addition to nine sessions featuring six concurrent paper sessions, covering over 250 papers on current theoretical and applied research, there are always one (or more) English as well as a Chinese special panel discussions (one of which offers English/Chinese simultaneous interpretation) in each of the nine sessions by both academics and practitioners on issues about Asia and rest of the world. We have also organized a plenary session, a dinner speech, and a couple discussion sessions on some topical issues on the practicing side of real estate. Furthermore, a Chinese paper session is offered in each of the nine session time slots.

Our delegates consist of many leading scholars and practitioners from all over the world. We have gathered over 400 participants from Australia, Austria, China, Hong Kong, Italy, Macau, Malaysia, Singapore, Spain, Taiwan, Thailand, the United Kingdom, and the United States, to name a few. We are confident that this conference can serve the purpose of providing a stimulating environment and platform for all academics and practitioners to meet in this small city that is famous for being a bridge where East meets West.

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BEST PAPER AWARDS

US$1,000 Best Paper Awards sponsored by

American Real Estate Society (ARES) Foundation

Appraisal Institute Education Trust Award

(for the best paper in the area of valuation)

Center for the Study of Real Estate Brokerage/Agency at Cleveland State University

(for the best paper on issues related to brokerage/agency)

Maury Seldin Advanced Studies Institute

RICS Foundation Award

(for the best paper on issues relating to sustainability)

KEYNOTE SPEAKERS

Secretary Alphonso Jackson

- Secretary of Housing and Urban Development, United States of America, since 2004.
- President of American Electric Power-TEXAS, a $13 billion utility company located in Austin, Texas before joining HUD.
- 1989 - 1996 as President and CEO of the Housing Authority of Dallas, Texas, ranked as one of the best-managed large-city housing agencies in the country.
- Prior to that, Secretary Jackson was Director of the Department of Public and Assisted Housing in Washington, D.C., and also served as Chairperson for the District of Columbia Redevelopment Land Agency Board.

Professor Sir James A. Mirrlees

- Nobel Laureate, awarded in 1996 for his "fundamental contributions to the economic theory of incentives under asymmetric information".
- Distinguished Professor of Economics, University of Macau

Dr. William Newman

- Founder and chairman of New Plan Excel Realty Trust, Inc., one of the nation's largest real estate companies, which focuses on the ownership, management, acquisition, development and redevelopment of community and neighborhood shopping centers.
- Received the Wall Street Transcript's gold, silver, and bronze medals for national leadership in the real estate industry, and Ernst & Young's Real Estate Entrepreneur of the Year Award in 1998.
- Former chairman of the National Association of Real Estate Investment Trusts, a position he occupied from 1990 to 1992.
- A pioneer in the development of new REIT concept, which reformed the REIT industry in the early 1990s.

Professor Sheridan Titman

Sheridan Titman holds the McAllister Centennial Chair in Financial Services at the University of Texas and is the Director of the Real Estate Finance and Investment Center. He has a B.S. from the University of Colorado and an M.S. and Ph.D. from Carnegie Mellon University. Prior to joining the faculty at the University of Texas, Professor Titman was a Professor at UCLA, the Hong Kong University of Science and Technology and Boston College and spent the 1988-89 academic year in Washington D.C. as the special assistant to the Assistant Secretary of the Treasury for Economic Policy.

Professor Titman's research interests include investments, corporate finance, and real estate; and he has published and consulted in all of these areas. He has also co-authored a leading advanced corporate finance textbook entitled "Financial Markets and Corporate Strategy," and has served on the editorial boards of leading academic journals. He is a past director of the American Finance Association and the Asia Pacific Finance Association and is the current President of the Western Finance Association.

PROGRAMME

The conference is at the Macau Tower Convention and Entertainment Center, which is located at Largo da Torre de Macau, Macau (+853 2893 3339). A total of about 250 academic papers will be presented and discussed in the three-day conference. The conference also features 11 English and 9 Chinese panel sessions in addition to four keynote speeches and a distinguished dinner speech.

Sessions marked with this sign 🎧 have simultaneous interpretation provided.

July 9, 2007 (Monday) at Wynn Macau	
Time	**Speaker /Title**
2:30 PM - 6:30 PM	**Pre-conference Registration**
2:00 PM - 4:00 PM	**IRES Board Meeting**
4:00 PM - 6:00 PM	**AsRES Board Meeting I**
6:00 PM - 8:00 PM	**Pre-conference Reception**

July 10, 2007 (Tuesday) at Macau Tower		
Time	**Session #**	**Speaker /Title**
8:00 AM - 6:00 PM	**Conference Registration**	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM - 12:00 PM	**Opening Ceremony**	
	Speech by the Secretary for Social Affairs and Culture, Macao SAR	
	Speech by the Rector of the University of Macau	
	AsRES Presidential Speech	
	Keynote 1	Prof. Sir James A. Mirrlees, 1996 Nobel Laureate in Economics, Distinguished Professor of Economics, University of Macau
	Keynote 2	Dr. William Newman, Founder and Chairman of New Plan Excel Realty Trust, Inc.
	Keynote 3	Prof. Sheridan Titman, University of Texas at Austin
	Coffee Break	
	Keynote 4	The Honorable Alphonso Jackson, Secretary of Housing and Urban Development, United States of America
12:10 PM - 2:00 PM	**Lunch (Sponsored by Wynn Macau)**	
2:00 PM - 3:45 PM	A - 1	Theoretical Development in Real Estate I
	A - 2	**English Panel: International Real Estate Investing**
	A - 3	**Chinese Panel: Real Estate Education in China and the World (中國與國際房地產教育與學術研究)**
	A - 4	Portfolio Risk and Return Considerations I
	A - 5	Valuation Methodologies I
	A - 6	Dynamic Forces in Real Estate
	A - 7	Nonresidential Real Estate Issues I
	A - 8	Chinese Papers: Topical Research I
3:45 PM - 4:00 PM	**Coffee Break (Sponsored by Cartography and Cadastre Bureau, Macao SAR)**	
4:00 PM - 5:45 PM	B - 1	Mortgage Issues I
	B - 2	**English Panel:** Getting Published in Top Real Estate Journals
	B - 3	**Chinese Panel: The Application of IT in Real Estate Administration (現代技術在房地產管理中的應用)**
	B - 4	Options & Optimization
	B - 5	Real Estate Potpourri I
	B - 6	Real Estate Development and Redevelopment
	B - 7	Mobility/Aging Population and Real Estate
	B - 8	Chinese Papers: Policy and Tax
5:45 PM - 6:45 PM	Transportation to Dinner Venue (from both Macau Tower and Hotel)	
7:00 PM - 9:00 PM	**Dinner at the Fisherman's Wharf (Hosted by the Secretary for Social Affairs and Culture, Macao SAR)**	

July 11, 2007 (Wednesday) at Macau Tower		
Time	**Session #**	**Speaker /Title**
8:00 AM - 6:00 PM	**Conference Registration**	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM - 10:45AM	C - 1	Real Estate Potpourri II
	C - 2	**English Panel: Asian Real Estate Law and Property Law Issues**
	C - 3	**Chinese Panel: The transaction and prospects of real estate industry in China (中國房地產業的轉型與發展)**
	C - 4	Valuation Methodologies II
	C - 5	Real Estate Indices and Applications
	C - 6	Chinese Land Issues
	C - 7	International Real Estate Research I
	C - 8	Chinese Papers: Capital, Rental and Ownership
10:45AM -11:00AM	**Coffee Break**	
11:00AM -12:45PM	D - 1	Factors and Controversies Impacting Property Valuation
	D - 2	**English Panel: Real Estate Indexes and Derivatives**
	D - 3	**Chinese Panel: Real Property Tax: What can China Learn from International Experiences (國際房地產稅經驗與中國房地產實施研討)**
	D - 4	Mortgage Issues II
	D - 5	Land Issues
	D - 6	Policy
	D - 7	International Real Estate Research II
	D - 8	Chinese Papers: Bubbles
12:45PM - 2:00 PM	**Lunch**	
2:00 PM - 3:30 PM	E - 1	Theoretical Development in Real Estate II
	E - 2	**English Panel: Evaluating Global Real Estate Investments: Transparency, Technology and Indices**
	E - 3	**Chinese Panel: Land Supply System and Real Estate Market (土地供應制度與房地產市場)**
	E - 4	Real Estate Potpourri III
	E - 5	International Real Estate Research III
	E - 6	Demographics and Real Estate Markets
	E - 7	Real Estate Potpourri IV
	E - 8	Chinese Papers: Land Issues

3:30 PM - 3:45 PM	**Coffee Break**	
3:45 PM - 5:15 PM	F - 1	Market & Pricing Dynamics I
	F - 2	**English Panel: Tourism Site Development**
	F - 3	**Chinese Panel: Real Estate Data and Real Estate Market Analysis (如何運用資料資訊進行房地產市場分析)**
	F - 4	Property Rights and Legal Issues
	F - 5	Portfolio Risk and Return Considerations II
	F - 6	International Real Estate Research IV
	F - 7	China Real Estate Markets
	F - 8	Chinese Papers: Pricing
5:15 PM - 6:45 PM	Plenary Session: Establishing Secondary Mortgage Market Chaired by Darlene Williams (Assistant Secretary, US Department of Housing and Urban Development) Panelists: Di Xu, China Construction Bank (China) Kwan Young Kim, Hanyang University (Korea) Che-Chun Lin, National Tsinghua University (Taiwan) Piyush Tiwari, University of Aberdeen (UK)	
6:45 PM - 9:00 PM	**Dinner at the Banquet Hall, Macau Tower** **(Hosted by the Macau Government Tourist Office, Macao SAR)** Featuring a Speech by Dr. Ronnie Chan (Chairman of Hang Lung Group, Hong Kong)	

July 12, 2007 (Thursday) at Macau Tower

Time	Session #	Speaker /Title
8:00AM -12:00NOON	**Conference Registration**	
8:00 AM - 9:30 AM	***AsRES Board Meeting II***	
8:00 AM - 9:00 AM	**Light Wakeup Snack**	
9:00 AM -10:45AM	G - 1	REITs
	G - 2	**English Panel: Measuring and Managing Mortgage Credit Risks**
	G - 3	**Chinese Panel: The Prospected Development of Real Estate Finance in China (中國房地產金融的現狀與未來發展)**
	G - 4	House Price Risks, Consumption, and Asset Pricing
	G - 5	Issues on Appraisers
	G - 6	International Real Estate Research V
	G - 7	***Room Reserved for AsRES Board Meeting II***
	G - 8	Chinese Papers: Topical Research II

10:45 AM - 11:00AM	**Coffee Break (Sponsored by Jones Lang LaSalle, Macau)**	
11:00 AM -12:45 PM	H - 1	Market & Pricing Dynamics II
	H - 2	**English Panel: Impact of Gaming Industries on Property Market in Macau**
	H - 3	**Chinese Panel: The Policy Framework of Real Estate Industry in China (中國房地產政策論壇)**
	H - 4	Real Estate Potpourri V
	H - 5	International Real Estate Research VI
	H - 6	**English Panel: Evolution of Asian Housing Finance Systems**
	H - 7	Hotel Real Estate
	H - 8	Chinese Papers: Topical Research III
12:45 PM - 2:00 PM	**Lunch**	
2:00 PM - 3:30 PM	I - 1	Theoretical Development in Real Estate III
	I - 2	**English Panel: Housing Finance Policies**
	I - 3	**REALM Lecture on DCF & ARGUS**
	I - 4	Nonresidential Real Estate Issues II
	I - 5	International Real Estate Research VII
	I - 6	Housing and Tenure Choice
	I - 7	International Real Estate Research VIII
	I - 8	**Chinese Panel: Real Estate Investment Issues in Hong Kong, Macau and Mainland China**

Tuesday, July 10, 14:00-15:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session A -1 14:00 - 15:45 Grand Hall GH 1

Theoretical Development in Real Estate I

Chair: **Robert Van Order**, University of Michigan

IPO Pricing Strategies with Deadweight and Search Costs
Ko Wang, Baruch College, CUNY
Jing Yang, California State University
Discussant: David Frame, Baruch College, CUNY

Optimal Revenue Sharing Contracts with Externalities and Dual Agency
Timothy J. Riddiough, University of Wisconsin – Madison
Joseph T. Williams, Professors Capital
Discussant: Richard Green, The George Washington University

Mortgage Securitization in Asia: Gains and Barriers
Richard K. Green, The George Washington University
Roberto Mariano, Singapore Management University
Andrey Pavlov, University of Pennsylvania and Simon Fraser University
Susan Wachter, University of Pennsylvania
Discussant: Robert Van Order, University of Michigan

Property Market Bubbles, Heterogeneous Beliefs, and Auction Outcomes: Evidence from Hong Kong Land Auctions
Yuk Ying Chang, Massey University
Sudipto Dasgupta, Hong Kong University of Science and Technology
Jie Gan, Hong Kong University of Science and Technology
Discussant: Newell Graeme, University of Western Sydney

Session A -2 14:00 – 15:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *International Real Estate Investing*

Moderator: **Robert Edelstein**, University of California, Berkeley

Morgan A. Laughlin, Real Estate Finance Group - Asia, The Royal Bank of Scotland
Mark Gabbay, Managing Director, Lehman Brothers Real Estate Limited
Robert Lie, AIG
Boaz Boon, CapitaLand

Session A -3 14:00 - 15:45 Grand Hall GH 3

Chinese Panel : *Real Estate Education in China and the World*
(中國與國際房地產教育與學術研究)

論壇主辦單位: 中國高校房地產專業教師聯誼會

Moderator(主持人): 劉洪玉，清華大學房地產研究所教授

Panel Lists (嘉賓)
張永岳，華東師範大學東方房地產學院院長、教授，
上海易居房地產研究院院長
馮長春，北京大學不動產研究鑒定中心教授
鄒廣榮，香港大學房地產與建設系教授
符育明，國立新加坡大學房地產系教授
林祖嘉，國立政治大學經濟系教授
鄧永恆，School of Policy, Planning, and Development and Marshall School of Business, University of Southern California
艾建國，華中師範大學城市經濟管理系系主任、教授
虞曉芬，浙江工業大學房地產研究所所長、教授

Session A -4 14:00 – 15:45 Grand Hall GH 4

Portfolio Risk and Return Considerations I

Chair: **Richard Green**, The George Washington University

The Wealth Effects of Yield-Accretive Acquisitions: The Case of Asian REITs
Joseph T.L. Ooi, National University of Singapore
Seow Eng Ong, National University of Singapore
Poh-Har Neo, National University of Singapore
Discussant: Richard Green, The George Washington University

On the Interest Rate Risk of the Housing Government Sponsored Enterprises
Dwight M. Jaffee, University of California, Berkeley
Gerd M. Welke, Baruch College, CUNY
Discussant: James Shilling, DePaul University

A Comparison of International Residential Housing Risk Premia
Chris Julliard, London School of Economics
Grace Wong, Wharton School of Business
Discussant: Robert Van Order, University of Michigan

Corporate Liquidity Management and Financial Constraints
Zhonghua Wu, Florida International University
Yongqiang Chu, University of Wisconsin-Madison
Discussant: Yuming Fu, National University of Singapore

Session A -5 14:00 - 15:45 Grand Hall GH 5

Valuation Methodologies I

Chair: **Donald Bleich**, California State University – Northrodge

A Cobweb Theory of House Price Incorporated with the Behavior of Investors
Ming-chi Chen, National Sun Yat-sen University
I-Chun Tsai, Southern Taiwan University of Technology
Tien-Foo Sing, National University of Singapore

The Application of Fuzzy Set Theory for Evaluating the Real Estate Agency Service Quality
Hsing Ping Kuo, Southern Taiwan University of Technology
Kang-Li Wu, National Cheng-Kung University

CAREB – Computer Aided Real Estate Benchmarking
David A. Steixner, University of Applied Sciences FHS KufsteinTirol
Thomas Madritsch, University of Applied Sciences FHS KufsteinTirol;
University for Health Sciences, Medical Informatics and Technology
Sven Bienert, Financial Advisory Services - Real Estate, KPMG

Modeling House Price Volatility States in the UK by Switching ARCH Models
I-Chun Tsai, Southern Taiwan University of Technology
Ming-Chi Chen, National Sun Yat-sen University

The Significance and Performance of REIT Market in Singapore
Wu Yue, University of Western Sydney

Session A -6 14:00 - 15:45 Grand Hall GH 6

Dynamic Forces in Real Estate

Chair: **Joe Lipscomb**, Texas Christian University

Does Corporate Governance Play A Role in Corporate Real Estate Holdings?
Julan Du, Chinese University of Hong Kong
Charles Ka Yui Leung, City University of Hong Kong
Derek Chu, Chinese University of Hong Kong

Why do the Wealth Effects of Asset-Backed Securitization Differ?
Yang-Pin Shen, Yuan Ze University
Li-Ching Chiu, Yuan Ze University
Chiu-Ling Lu, Yuan Ze University and University of Cambridge

The Effect of Passing Pedestrians Characteristics on Retail Rents
Seung-Young Jeong, Dankook University
Jinu Kim, The University of New South Wales

The Effects of Monetary Policy on Real Estate Price Dynamics: An "Asset Substitutability" Perspective
Hai-Feng Hu, Wenzao Ursuline College of Languages

Research on Applications of the Earned Value Management in the Real Estate Investment Management
Yuhua An, Jilin Architectural and Civil Engineering Institute
Xiaoxin Ding, Jilin Architectural and Civil Engineering Institute

Session A -7 14:00 – 15:45 Grand Hall GH 7

Nonresidential Real Estate Issues I

Chair: **Kishore Tandon**, Baruch College, CUNY

Plant, Machinery and Equipment (PME) Valuation: Application among Local Authorities in Malaysia
Sabariah Bt Eni, Universiti Tun Hussein Onn Malaysia

Sustainability and the Value of Office Buildings – Will the Market Pay for Green Buildings?
Richard G Reed, University of Melbourne
Sara Wilkinson, University of Melbourne

The Study of Location Determinants and Characteristics of Korea Listing Companies and Kosdaq Companies
Su-Teon Jung, Cheju National University
Heon soo Park, Chung Ang University
Tae-Ug Rho, Kangnam University

Hidden Office User Markets And Their Control
Hao Wu, The University of Melbourne
Richard Reed, The University of Melbourne
Jon Robinson, The University of Melbourne

The Impact of RMB Appreciation on The Development of Real Estate Market – A Case Study of Beijing
Bao-Kui Liu, Peking University
Chang-Chun Feng, Peking University

Session A -8 14:00 – 15:45 Grand Hall GH 8

Chinese Papers: Topical Research I

Chair: 賈士軍，廣州大學

不動產自售網站對不動產仲介業產生“去中介化”之研究
張欣民，國立政治大學
陳奉瑤，國立政治大學

從促進土地資訊流通的觀點探討地籍與物業登記服務的整合方向
張紹基，中國人民大學

中國房地產市場非有效性：理論分析與實證探討
王洪衛，上海財經大學
潘愛民，上海財經大學

中國住宅消費中的情緒因素與認知偏差
陳江濤，浙江大學，香港理工大學
許智文，香港理工大學
王重鳴，浙江大學

土地一級開發企業成本控制策略之探討—以北京市土地一級開發企業為例
王洪野，中國人民大學

Tuesday, July 10, 16:00-17:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session B -1 16:00 - 17:45 Grand Hall GH 1

Mortgage Issues I

Chair: **Peter Zorn**, Freddie Mac

The Impact of Securitization on the Pricing of Multifamily Mortgages
Xudong An, University of Southern California
Yongheng Deng, University of Southern California
Stuart A. Gabriel, University of Southern California
Discussant: Timothy Riddiough, University of Wisconsin – Madison

The Building of New Reverse Mortgage Payment Plans in the Korean Housing Market
Seungryul Ma, Korea Housing Financial Corporation
Deokho Cho, Daegu University
Discussant: Shiawee Yang, Northeastern University

The Potential for Use and Misuse of Reverse Mortgages in Australia
Richard G Reed, University of Melbourne
Hao Wu, University of Melbourne
Discussant: Graeme Newell, University Of Western Sydney

Session B -2 16:00 – 17:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Getting Published in Top Real Estate Journals*

Moderator: **Graeme Newell**, University of Western Sydney
(*Journal of Property Research*)

Sheridan Titman, University of Texas at Austin
(*Past Editor of Review of Financial Studies*)
James Shilling, DePaul University (*Journal of Real Estate Finance and Economics*)
Ko Wang, Baruch College, CUNY (*Journal of Real Estate Research*)
Hongyu Liu, Tsinghua University (*International Real Estate Research*)
Edward Coulson, Pennsylvania State University (*Real Estate Economics*)

Session B -3 16:00 – 17:45 Grand Hall GH 3

Chinese Panel: *The Application of IT in Real Estate Administration*
(現代技術在房地產管理中的應用)

論壇主辦單位：澳門地圖繪製暨地籍局

Moderator (主持人)：張紹基，澳門地圖繪製暨地籍局局長

Panel Lists (嘉賓)

史文中，香港理工大學土地測量及地理資訊學系教授

Paul H.Y. Tsui, MRICS, MHKIS, Director, Sales and Marketing (銷售及技術總監), ESRI China (Hong Kong)

張欣民，國立政治大學地政系

田傳浩，浙江大學房地產研究中心

Wang Shengwei, Head of Department of Building Service Engineering , The Hong Kong Polytechnic University

WuZhi Gang, Center for Urban Development & Leisure Research, South China Normal University

Session B -4 16:00 – 17:45 Grand Hall GH 4

Options & Optimization

Chair: **Robert Edelstein**, University of California, Berkeley

Buy to Scrape? Hedonic Pricing with Redevelopment Options
John M. Clapp, University of Connecticut
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Gerd M. Welke, Baruch College, CUNY

Optimal Sprawl
Kerry D. Vandell, University of California – Irvine
Discussant: Yuming Fu, National University of Singapore

Option to Change Strategy between Audits in Mortgage Insurance
Robert Van Order, University of Michigan
Rose Neng Lai, University of Macau
Discussant: Desmond Tsang, McGill University

Session B -5 16:00 - 17:45 Grand Hall GH 5

Real Estate Potpourri I

Chair: **Kwong Wing Chau**, University of Hong Kong

The Incentives of Asset-Backed Securitization
Yang-Pin Shen, Yuan Ze University
Li-Ching Chiu, Yuan Ze University
Chiu-Ling Lu, Yuan Ze University and University of Cambridge

The Determinants of Land Prices in Competitive Bidding
Zhi Dong, National University of Singapore
Tien-Foo Sing, National University of Singapore

Modeling Price Volatility in the Hong Kong Property Market
Sherry Z. Zhou, City University of Hong Kong.
Helen X.H. Bao, University of Cambridge

Study of the Real Estate Project Management Maturity Model
Xiaoxin Ding, Jilin Architectural and Civil Engineering Institute
Yuhua An, Jilin Architectural and Civil Engineering Institute

Session B -6 16:00 - 17:45 Grand Hall GH 6

Real Estate Development and Redevelopment

Chair: **Paloma Taltavull de La Paz**, University of Alicante

Foreign Direct Real Estate Investment in the U.S. – Opportunities and Cautions
John A. Kilpatrick, Greenfield Advisors LLC
Discussant: Austin Jaffe, Pennsylvania State University

Revisiting the Market of 921 Earthquake Rebuilt Program Using R-T Model Before and After
Kun-Jung Hsu, Leader University
Chun-Ho Pan, Honda Assets Valuation Co
Discussant: Tsur Somerville, University of British Columbia

The Impact of Fees and Taxes on Choices of Development Timing and Capital Intensity
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Leah Brooks, McGill University

An Preliminary Study to Formulate User-centered New Town Development
Kim Ju Young, Korea Land Corporation
Discussant: Lennon Choy, Hong Kong Polytechnic University

Can the Building Bulk Incentives Create Development Clusters in Urban Redevelopment Areas? An Exploration Based on Transaction Cost Theory
I-Chih Lan, National Taipei University
Shih-Kung Lai, National Taipei University
Ming-Sheng Xue, National Taipei University
Discussant: Siqi Zheng, Tsinghua University

Session B -7 16:00 - 17:45 Grand Hall GH 7

Mobility/Aging Population and Real Estate

Chair: **William G. Hardin III**, Florida International University

Be It Ever So Humble: Understanding Housing Using Subjective Well-being Data
Grace Wong, University of Pennsylvania

Residential Mobility And Aging Population
Eddie Chi Man Hui, The Hong Kong Polytechnic University
Ka Hung Yu, The Hong Kong Polytechnic University

A Financial Analysis of BOT-Project for the Elderly Housing - The Case of Pin-Lin Geriatric House in Taiwan
Kun-jung Hsu, Leader University
Yuan-kun Lu, Leader University

Which is More Decentralized by the Rail Transit in Beijing: Jobs or Residences?
Lu Yu, Tsinghua University
Siqi Zheng, Tsinghua University

Study on Comparison of the Housing Market Structure in Tokyo and Suburbs of Tokyo
Mari Tanaka, University of Tokyo
Yasushi Asami, University of Tokyo

Session B -8 16:00 – 17:45 Grand Hall GH 8

Chinese Papers: *Policy and Tax*

Chair: 馮長春，北京大學

胡錦濤時期之住宅政策
游惠君，臺灣國立政治大學

住宅保有財產稅起征點的探討
王全民，東北財經大學

臺灣房地產保有稅分析
王秀寧，Polaris Securities Group

我國房地產稅收制度的發展過程及其現狀的簡要分析
杜方敏，上海財經大學

多年調控的房地產市場為何未能奏效
葛震明，同濟大學

Wednesday, July 11, 9:00-10:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session C -1 9:00 - 10:45 Grand Hall GH 1

Real Estate Potpourri II

Chair: **Timothy J. Riddiough**, University of Wisconsin - Madison

The Impact of Price-to Rent Ratios on Homeownership Rates
Chien-wen Peng, National Taipei University
Tyler T. Yang, IFE Group
Discussant: Peter Zorn, Freddie Mac

Presales, "Overbuilding" and "Overpricing"
Su H. Chan, California State University, Fullerton
Jing Yang, California State University, Fullerton
Rose Neng Lai, University of Macau
Discussant: David Barker, University of Iowa

Lemons in Real Estate: Do People Believe Repairs?
Sanghoon Lee, University of British Columbia
Tsur Somerville, University of British Columbia
Discussant: John Clapp, University of Connecticut

Markets and Housing Finance
Veronica Cacdac Warnock, University of Virginia
Frank Warnock, University of Virginia

Session C -2 9:00 - 10:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Asian Real Estate Law and Property Law Issues*

Moderator: **Jay Weiser**, Baruch College, CUNY

The New Chinese Basic Law of Property: Impact on the Real Estate Industry in China
Patrick A. Randolph, Jr., UMKC School of Law
Jianbo Lou, Center for Real Estate Law, Law School, Peking University

Beyond the Basel Accord: Should the Capital Adequacy Ratio Take Account of The Real Estate Environment in the Hong Kong SAR?
Berry Hsu, Department of Real Estate and Construction, University of Hong Kong

Informal Mortgage Law in the People's Republic of China
Gregory Stein, University of Tennessee

Comments on China's Land Title Security System OR Housing Policy of the People's Republic of China: Successes and Disappointments
Joyce Palomar, University of Oklahoma

Session C -3 9:00 – 10:45 Grand Hall GH 3

Chinese Panel:
The transaction and prospects of real estate industry in China
(中國房地產業的轉型與發展)

論壇主辦單位：華東師範大學東方房地產學院

Moderator (主持人)：張永岳，華東師範大學東方房地產學院院長、教授，上海易居房地產研究院院長

Panel Lists (嘉賓)
林　中，旭輝集團股份有限公司董事長
彭勝浩，上海紫江房地產開發有限公司總裁
單正林，上海朱家角房地產開發有限公司總經理
秦少秋，上海北孚（集團）有限公司董事長
丁祖昱，上海易居房地產研究院副院長
崔　裴，華東師範大學東方房地產學院副教授、院長助理

Session C -4 9:00 - 10:45 Grand Hall GH 4

Valuation Methodologies II

Chair: **Graeme Newell**, University of Western Sydney

Just-in-Time Monte Carlo for MBS valuation
Samir K. Dutt, California Polytechnic State University
Gerd M. Welke, Baruch College, CUNY

A Hybrid Method of Mass Appraisal with Hedonic Price and Quantile Regression
Chung-Hsien Yang, National Pingtung Institute of Commerce

Housing Uncertain Quality: Identifying and Pricing
Qiao Sun, Tsinghua University
Siqi Zheng, Tsinghua University
Hongyu Liu, Tsinghua University

Comparing the Quality of Accruals for GAAP vs. Non-GAAP Summary Performance Measures in Financial Reporting
Desmond Tsang, McGill University

Session C -5 9:00 - 10:45 Grand Hall GH 5

Real Estate Indices and Applications

Chair: **Kyung-Hwan Kim**, Sogang University

Comparing Real Estate Indices Based on the Role of Real Estate in an Investor's Portfolio
Yao-Min Chiang, National Chengchi University
Fong-Yao Chen, National Chengchi University

Housing Affordability Index in Korea
Kyu-Hyun Ji, Korea National Housing Corporation
Jin-Yoo Kim, Kyonggi University

Testing for Structural Breaks in Korea's Real Estate Price Indices: An Application of the GMM Estimation
Heonsoo Park, Chung-Ang University
Tae Kyung Kim, Gyeonggi Research Institute

Quantifying the Reversibility Phenomenon for the Repeat-sales Index
Arnaud Simon, Paris Dauphine University

Housing Liquidity Index: A New Housing Market Indicator in Urban China
Jing Wu, Tsinghua University
Hongyu Liu, Tsinghua University

Session C -6 9:00 - 10:45 Grand Hall GH 6

Chinese Land Issues

Chair: **Charles Ka-yui Leung**, City University of Hong Kong

Government Regulation on Urban Land Supply in China – A Case Study of Beijing
Chun Chen, Peking University
Chang-Chun Feng, Peking University

Land Supply and Housing Price: A Case in Beijing
Jinhai Yan, Renmin University of China

Economic Determinants of Urban Spatial Scale - Chinese Cities in Transition
Shanzi Ke, Hunan University
Ming He, Hunan University
Yan Song, University of North Carolina

Urban Land Reform and the Development of Land Markets: Evidence from Hangzhou
Chuanhao Tian, Zhejiang University
Hong Yang, Zhejiang University

Residential Land Use in Urban Fringes: Spatial Heterogeneity and Readjustment Mode
Tao Zhou, Renmin University of China
Ying Lin, Renmin University of China
Ping Lu, Renmin University of China

Session C -7 9:00 - 10:45 Grand Hall GH 7

International Real Estate Research I

Chair: **Chin-Oh Chang**, National Chengchi University

The Internationalization of Real Estate Research
Kam C. Chan, Western Kentucky University
William G. Hardin III, Florida International University
Kartono Liano, Mississippi State Universtiy
Zheng Yu, Mississippi State University

The Role of the List Price: Evidence from the Hong Kong Housing Market
Eddie Chi Man Hui, The Hong Kong Polytechnic University
Joe T.Y. Wong, The Hong Kong Polytechnic University
K.T. Wong, The Hong Kong Polytechnic University

Land Tenure Security and Home Maintenance: The Case of Japan
Shinichiro Iwata, University of Toyama
Hisaki Yamaga, University of Tsukuba

The Problems of and Prospects for the China Property Markets
Nell S Y Chang, Mackintosh School of Architecture, The Glasgow School of Art
Timothy M. Havard, Circle Software Ltd.

Quantile Regression Analyses on Saving and Housing of Taiwanese Households over Rapid Economic Development
Chien-Liang Chen, National Chi Nan University

Session C-8 9:00 - 10:45 Grand Hall GH 8

Chinese Papers: *Capital, Rental and Ownership*

Chair: 艾建國，華中師範大學

中國房地產價格與股票價格關係的實證分析
高曉暉，上海財經大學

我國旅遊房地產理性發展的思路分析
彭慧，中國人民大學
葉劍平，中國人民大學

廉租住房配租方式的比較分析
廖俊平，中山大學
劉妍潔，中山大學

基於層次分析的中國城市房地產投資吸引力排名研究
曲衛東, 中國人民大學

住房反抵押貸款中的道德風險問題研究
姚玲珍，上海財經大學
楊有志，上海財經大學
鄧光豔，上海財經大學
魏　瑋，上海財經大學

Wednesday, July 11, 11:00-12:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session D -1 11:00 – 12:45 Grand Hall GH 1

Factors and Controversies Impacting Property Valuation

Chair: **John M. Clapp**, University of Connecticut

The Determinants of Heating and Maintenance Costs: An Empirical Survey
Wolfgang Brunauer, University of Applied Sciences Kufstein
Stefan Lang, University of Innsbruck
David Steixner, University of Applied Sciences Kufstein
Discussant: Li-Min Hsueh, China University of Technology

Main Variables Influencing Residential Property Values Using the Entropy Method – the Case of Auckland
Janet Xin Ge, University of Technology Sydney
Yue Du, Beijing Widnell Engineering Consultancy Co. Ltd
Discussant: Karl Runesen, University of Technology, Sydney

House Price Dynamics in the U.S. Residential Market: Speculation, Superstar Cities and Superstar States
Yun Woo Park, California State University
Vipin Agrawal, California State University
Su Han Chan, Baruch College, CUNY and California State University
Discussant: Tien Foo Sing, National University of Singapore

Estimating the Intergenerational Discount Rate: A Case in Hong Kong
K.W. Chau, The University of Hong Kong
S. K. Wong, The University of Hong Kong
C.Y. Yiu, The University of Hong Kong
M.K.W. Yu, The University of Hong Kong
Discussant: Rui Yao, Baruch College, CUNY

Session D -2 11:00 – 12:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion: *Real Estate Indexes and Derivatives*

Moderator: **Robert Edelstein**, University of California, Berkeley

Jeffrey Fisher, Department of Finance, Indiana University
Lijian Chen, Managing Director, UBS
Kawaguchi Yuichiro, Waseda University
Jacques Gordon, Global Investment Strategist, LaSalle Investment Management, Chicago

Session D -3 11:00 – 12:45 Grand Hall GH 3

Chinese Panel:
Real Property Tax: What Can China Learn from International Experiences
(國際房地產稅經驗與中國房地產實施研討)

論壇主辦單位：北京大學不動產研究鑒定中心

Moderator (主持人)：馮長春，北京大學不動產研究鑒定中心教授

Panel Lists (嘉賓)

王全民，東北財經大學教授
劉振生，北京地稅局 處長
葉祖達，香港城市規劃學會會長

Session D -4 11:00 – 12:45 Grand Hall GH 4

Mortgage Issues II

Chair: **James Shilling**, DePaul University

Mortgage Prepayment and Default Behavior with Embedded Forward Contract Risks in China's Housing Market
Yongheng Deng, University of Southern California
Peng Liu, University of California, Berkeley
Discussant: Charles Ka-Yui Leung, The City University of Hong Kong

Selection and Moral Hazard in the Reverse Mortgage Market
Thomas Davidoff, University of California, Berkeley
Gerd M. Welke, Baruch College, CUNY
Discussant: Richard Green, The George Washington University

180 Years' Evolution of the US Mortgage Banking System: Lessons for Emerging Mortgage Markets
Man Cho, The KDI School
Discussant: Robert Van Order, University of Michigan

Session D -5 11:00 – 12:45 Grand Hall GH 5

Land Issues

Chair: **John A. Kilpatrick**, Greenfield Advisors LLC

Land Value Determination in an Emerging Market: Empirical Evidence from China
Helen X. H. Bao, University of Cambridge
Sherry Zhou, City University of Hong Kong
John L. Glascock, University of Cambridge

An Indifference Binomial Valuation of Urban Land
Gang-zhi Fan, National University of Singapore

Rural Land Use Strategy in Hong Kong
Eddie Chi Man Hui, Hong Kong Polytechnic University
Stanley C.W. Yeung, Hong Kong Polytechnic University
Helen Lung, Hong Kong Polytechnic University
Joe T.Y. Wong, Hong Kong Polytechnic University

Research on Industrial Land Distribution Evolvement Mechanism and its Influence
Ping Lu, Renmin University of China
Yuehong Xu, Renmin University of China
Jiaqing Shen, Renmin University of China

Analysis of the Interrelationship Between House Price and Land Price: An Empirical Study Based on the Data of Beijing, Shanghai and Wuhan
Jianguo Ai, Central China Normal University
Lieyun Ding, Central China Normal University
Shengbin He, Huazhong University of Science and Technology

Session D -6 11:00 – 12:45 Grand Hall GH 6

Policy

Chair: **Edward Coulson**, Pennsylvania State University

Inside the Gift Horse's Mouth: Tax and Expenditure Limits, Flypaper, and the Community Development Block Grant Program
Leah Brooks, McGill University
Justin Phillips, Columbia University
Discussant: Jyh-Bang Jou, National Taiwan University

Neutral Property Taxation Under Uncertainty
Jyh-Bang Jou, National Taiwan University
Tan Lee, Yuan Ze University
Discussant: Edward Coulson, Penn State University

The Application of Social Impact Assessment in Urban Planning and Development – the Australian Experience
Stanley C.W. Yeung, The Hong Kong Polytechnic University
Kevin K.L. Lau, Hong Kong Polytechnic University
Bo B.S. Tang, Hong Kong Polytechnic University

Housing Tenure and Labor Market Impacts: The Search Goes On
Edward Coulson, Pennsylvania State University
Lynn M. Fisher, Massachusetts Institute of Technology
Discussant: Leah Brooks, McGill University

Quantifying Uncompensated Risk
Stephen E. Roulac, Roulac Global Places LLC
Deepika Kapoor

Session D -7 11:00 – 12:45 Grand Hall GH 7

International Real Estate Research II

Chair: **Wai Kin Leung**, The Chinese University of Hong Kong

The Effectiveness of the Chinese Government's Intervention in the Housing Market: Evidence from Six Major Cities
Songtao Wang, Tsinghua University
Hongyu Liu, Tsinghua University

Evaluation of the Coordinated Degree of Land use-Economy in Development Zones —A Case Study of Beijing Economic-Technological Development Area
Xiaojuan Zhi, Renmin University of China
Wenlin Yuan, Renmin University of China

Electronic Business of Real Estate in China: Review, Perspective & Suggestion
Zhi-Gang Wu, South China Normal University
Chun Chen, Peking University
Chang-Chun Feng, Peking University

An Investigation to the Rent Multiplier Mystery of Taipei—An User Cost Approach
Sun-Tien Wu, China University of Technology
Chieh-Hsuan Wang, National Chengchi University

Public Policy and Property Markets in India
Piyush Tiwari, University of Aberdeen
Anil Kashyap, University of Ulster
Shashwat Tewary, National Law College

Session D -8 11:00 – 12:45 Grand Hall GH 8

Chinese Papers: *Bubbles*

Chair: 鄭思齊，清華大學

房地產價格區域間聯動與泡沫的空間擴散—基於 2000 年—2005 年中國 35 個大中城市面板數據的實證檢驗
洪濤, 哈爾濱工業大學
西寶, 哈爾濱工業大學
高波, 南京大學

A Study on the Anomalies in the Real Estate Market of Shanghai
鄧偉，上海財經大學
張小勇，上海財經大學

基於久期依賴模型的房地產泡沫實證研究—以北京，上海為例
王琳，Shanghai University of Finance and Economics
王洪衛，Shanghai University of Finance and Economics

基於 Panel Data 模型的城市地價水平影響因素研究—以全國 27 個大中城市為例
胡冠軍，浙江大學
賈生華，浙江大學

Wednesday, July 11, 14:00-15:30

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session E -1 14:00 – 15:30 Grand Hall GH 1

Theoretical Development in Real Estate II

Chair: **John Quigley**, University of California, Berkeley

Ownership Dynamics with Multiple Insiders: The Case of REITs
Robert H. Edelstein, University of California, Berkeley
Antoni Sureda-Gomila, Universitat Pompeu Fabra, Barcelona, Spain
Branko Urošević, University of Belgrade
Nicholas Wonder, Western Washington University
Discussant: David Barker, University of Iowa

An Error-Correction Model of Housing Supply
Simon Stevenson, Cass Business School, City University
James Young, University of Auckland
Discussant: Xudong An, University of Southern California

Urban Meiosis
David E. Frame, Carnegie Mellon University and Baruch College
Discussant: Charles Leung, City University of Hong Kong

Session E -2 14:00 – 15:30 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion:
Evaluating Global Real Estate Investments: Transparency, Technology and Indices

Moderator: Jeffrey Fisher, Indiana University

Jacques Gordon, Global Investment Strategist, LaSalle Investment Management
Mark Kingston, CEO of Realm Business Solutions (ARGUS, Circle Software)
Bruce Kellogg, Vice Chair of OSCRE Americas and Past President of the Appraisal Institute
Kawaguchi Yuichiro, Waseda University
Vincent Mo, CEO Soufun
Ko Wang, Department of Real Estate, Baruch College, CUNY

Session E -3 14:00 – 15:30 Grand Hall GH 3

Chinese Panel: *Land Supply System and Real Estate Market*
(土地供應制度與房地產市場)

論壇主辦單位：浙江大學房地產研究中心

Moderator(主持人)：賈生華，浙江大學房地產研究中心主任、教授
Panel Lists (嘉賓)
黃賢金，南京大學國土資源與旅遊學系系主任、教授
王克強，上海財經大學資源環境政策與管理研究所所長、教授
楊剛橋，華中農業大學土地資源管理學院土地管理系系主任、教授
張安錄，華中農業大學土地管理學院院長、教授
田傳浩，浙江大學房地產研究中心副教授

Session E -4 14:00 – 15:30 Grand Hall GH 4

Real Estate Potpourri III

Chair: **Kerry D. Vandell**, University of California – Irvine

Are Valuations Representative of Housing Prices in the Market: Evidence from the Spanish Market
Paloma Taltavull, University of Alicante
Stanley McGreal, University of Ulster
Discussant: Austin Jaffe, Pennsylvania State University

The Significance and Performance of the Emerging Property Markets in Asia
Graeme Newell, University of Western Sydney
Kwong Wing Chau, University of Hong Kong
Siu Kei Wong, University of Hong Kong
Discussant: Rui Yao, Baruch College, CUNY

Price and Volatility Spillovers between Large and Small Cities: A Study of the Spanish Market
Hany Guirguis, Manhattan College
Christos Giannikos, Columbia University & Baruch College
Laura Galguera, University of Oviedo
Discussant: David Downs, Virginia Commonwealth University

Smoothing and Implications for Asset Allocation Choices
Gianluca Marcato, University of Reading
Tony Key, CASS Business School (City University)
Discussant: Kerry D. Vandell, University of California – Irvine

Session E -5 14:00 – 15:30 Grand Hall GH 5

International Real Estate Research III

Chair: **Tien-Foo Sing**, National University of Singapore

Three Dimensional Interpretations of the Korean Housing Market: Structural Relationship among Sales, Chonsei, and Monthly Rent Markets
Chang-Moo Lee, Hanyang University
Seong-Ho Choi, Hanyang University

The Dynamics of Cross-border Residence from Hong Kong to Mainland China
Eddie Chi Man Hui, Hong Kong Polytechnic University
Francis Kwan Wah Wong, Hong Kong Polytechnic University
Si Ming Li, Baptist University
Ka Hung Yu, Hong Kong Polytechnic University

Effectiveness of Monetary Policy toward Curbing Real Estate Prices in Korea
Sae Woon Park, Changwon National University
Doo Woan Bahng, Changwon National University
Hyun Whang, Changsin College

On Real Estate Taxation in China
Chang-Chun Feng, Peking University
Xiang-Lai Song, Peking University

The Performance Evaluation for The Housing Management and Maintenance in Taipei
Fang-Ni Ju, National Chengchi University
Chin-Oh Chang, National Chengchi University

Session E -6 14:00 – 15:30 Grand Hall GH 6

Demographics and Real Estate Markets

Chair: **Nils Kok**, Maastricht University

Why Does Urban Skyline Look Irregular?
Hak Choi, Chienkuo Technology University

The Spatiality and Cost of Language Identity
Diana K. Mok, The University of Western Ontario

Analyses of Spatial-temporal Distribution Changes of Residential Land Prices in Beijing
Fan Zhang, Renmin University of China
Shaoji Zhang, Renmin University of China

Migration Decision and Residential Location Choice: Empirical Models of Science-based Industrial Park in Taiwan
Chao-Hong Lu, National Cheng-kung University
Yen-Jong Chen, National Cheng-kung University

Foreign Direct Investment and International Real Estate Investment in Thailand
Sopon Pornchokchai, Thai Real Estate Business School

Session E -7 14:00 – 15:30 Grand Hall GH 7

Real Estate Potpourri IV

Chair: **Piyush Tiwari**, University of Aberdeen

Performance of Hotel Real Estate Investment Trusts - Another Look
Haynes H.M. Yung, The Chinese University of Hong Kong

Extreme Prices in Momentum Trading of Tourism Stocks
Wai K. Leung, The Chinese University of Hong Kong

Movement of Older Americans into Retirement Housing
Karen M. Gibler, Georgia State University
Guo Chen, Georgia State University

Urban Planning Practices and Scenarios for Macao Development: Case Studies of Macao's Urban Sustainable Development
Francisco Vizeu Pinheiro, IIUM
Penny Wan, Institute For Tourism Studies (IFT)

The Impacts of Rail Transit on Property Values - Empirical Study in Batong Line of Beijing
Yizhen Gu, Beijing Municipal Institute of City Planning & Design

Session E -8 14:00 – 15:30 Grand Hall GH 8

Chinese Papers: Land Issues

Chair: 廖俊平，Sun Yat-sen University

基於 **REMIS** 的土地一級供給調控的方法論研究
樓江，同濟大學
楊光，同濟大學
徐敏娟，同濟大學

基於單中心擴展模型的城市地價空間結構研究—以杭州市為例
田傳浩，浙江大學
周昭霞，浙江大學
賈生華，浙江大學

新一輪產業結構調整中浦東新區土地集約利用研究
張學文，上海財經大學

我國房地產市場財富效應的實證分析：**1998－2006**
高波, 南京大學
宋勃, 南京大學

Wednesday, July 11, 15:45-17:15

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session F -1 15:45 – 17:15 Grand Hall GH 1

Market & Pricing Dynamics I

Chair: **Austin Jaffe**, Pennsylvania State University

The Real Interest Rate Effect on the Price Elasticity of House Supply
Eric J. Levin, University of Glasgow
Gwilym Pryce, University of Glasgow

The Excess Momentum in the U.S. House Price Movement
Ko Wang, Baruch College, CUNY
Jing Yang, California State University, Fullerton

Irrational but Predictable Price Formation in Seoul's Housing Market
Hoon Cho, KAIST
Kyung-Hwan Kim, Sogang University
James D. Shilling, DePaul University

Housing Markets with Competitive Search
Charles Ka Yui Leung, The City University of Hong Kong
Jun Zhang, The Chinese University of Hong Kong

Session F -2 15:45 – 17:15 Grand Hall GH 3

Panel Discussion: *Tourism Site Development*

Moderator: **Lee Kam-hon**, Chinese University of Hong Kong

Weimin Tian, Dean, School of Business and Tourism Management, Yunnan University, Kuming, China
Matthias Li, Deputy Chief Executive, Ocean Park Corporation, Hong Kong
Alan Ho, Executive Director, Florinda Hotel International, Macau

Session F -3 15:45 – 17:15 Grand Hall GH 2

Simultaneous interpretation will be provided

Chinese Panel: *Real Estate Data and Real Estate Market Analysis*
(如何運用資料資訊進行房地產市場分析)

論壇主辦單位：中國房地產指數系統/中國指數研究院

Moderator (主持人)：莫天全, 中國指數研究院院長、中國房地產指數系統秘書長
Panel Lists (嘉賓)
馮長春, 北京大學不動產研究鑒定中心教授
Eddie Hui, 香港理工大學建築與房地產系教授
符育明, 國立新加坡大學房地產系教授
黃　瑜, 中國指數研究院常務副院長
李文斌, 中央財經大學管理科學與工程學院副院長
虞曉芬, 浙江工業大學房地產研究所所長、教授

Session F -4 15:45 – 17:15 Grand Hall GH 4

Property Rights and Legal Issues

Chair: **John L. Glascock**, University of Cambridge

An Introduction to the Legal Framework of Real Estate Transaction in Macau
Io Cheng Tong, University of Macau

Institutional Infrastructure and Harmonization National Law in Function of Business Prosperities in Central Balkan
Vignjevic-Djordjevic Nada, University of Belgrade

Initial Assignment of Property Rights in China Urban Land Market
Lennon Hung Tat Choy, The Hong Kong Polytechnic University
K.W. Chau, University of Hong Kong

Property Rights and Housing Value: the Impacts of Political Instability
Yong Tu, National University of Singapore
Helen X.H. Bao, Cambridge University

Session F -5 15:45 – 17:15 Grand Hall GH 5

Portfolio Risk and Return Considerations II

Chair: **Paloma Taltavull de La Paz**, University of Alicante

An Examination of Real Estate Factor on Asset Pricing Model: The Hong Kong Experience
Peter M.W. Chui, University of Macau

The Short Interest Market for Publicly Traded Real Estate
Honghui Chen, University of Central Florida
David H. Downs, Virginia Commonwealth University
Gary A. Patterson, University of Central Florida

The Informational Content of Indirect Real Estate Options: Evidence from Hong Kong
Amory N. Li, University of Hong Kong
K.W. Chau, University of Hong Kong

Institutional Benchmarks for International Real Estate Investment
Lay Cheng Lim, University of Ulster
Stanley McGreal, University of Ulster
James R. Webb, Cleveland State University

Land Price Discovery in A City with Rapid Land Use Change
Rongrong Ren, Tsinghua University
Yuming Fu, National University of Singapore
Hongyu Liu, Tsinghua University

Session F -6 15:45 – 17:15 Grand Hall GH 6

International Real Estate Research IV

Chair: **Miki Seko,** Keio University

Islamic REITs: A Syariah-compliant Investment Option
Ting Kien Hwa, Universiti Teknologi MARA
Abdul Rahman Md. Nor, Universiti Teknologi MARA

A Study of the Demand of Eco-Digit Communities in Taiwan under the Trend of Global Climate Changes
Kang-Li Wu, National Cheng-Kung University

Housing Price Gradient Changes between Macau and Hong Kong
C. Y. Yiu, The University of Hong Kong

An Analysis of the Crystal Structure of Willingness To Pay for National Rental Housing: Using Double Bounded Dichotomous Choice Question
Myeong-Han Yu, Hanyang University
Chang-Moo Lee, Hanyang University

Overview and Prospects of Real Estate Market In Ghana
Noah Kofi Karley, Heriot Watt University
Samuel Yaw Akomea, Kwame Nkrumah University of Science & Technology

Session F -7 15:45 – 17:15 Grand Hall GH 7

China Real Estate Markets

Chair: **Tyler Yang**, IFE Group

Cointegration of House Price and Land Prices - An Inter-area Comparison in China
Changrong Den, University of Electronic Science and Technology of China
Yao-Min Chiang, National Chengchi University
Yongkai Ma, University of Electronic Science and Technology of China

The Significance and Performance of Infrastructure in China
Graeme Newell, University of Western Sydney
Kwong Wing Chau, University of Hong Kong
Siu Kei Wong, University of Hong Kong

External Dependent Economy and Real Estate Bubbles: The Case of China
Lijian Sun, Fudan University
Shengxing Zhang, Fudan University

The Marketization of Housing in Urban China: How Far Have We Come and How Far Do We Have Left to Go?
Siqi Zheng, Tsinghua University
Mark Duda, Harvard University

The Chinese Real Estate Market: Potentials for International Investors
Ruijue Peng, Property and Portfolio Research
Shiawee Yang, Northeastern University

Session F -8 15:45 – 17:15 Grand Hall GH 8

Chinese Papers: *Pricing*

Chair: 呂萍，中國人民大學

上海住宅商品房房價芻議
冷君雷，上海社會科學院

軌道交通對房地產價值的影響：重複銷售法的應用研究
郭睿，北京市城市規劃設計研究院

期望交通改善對住房價格的影響—基於中國杭州地鐵規劃的研究
顧傑，浙江工商大學
徐建春，浙江工商大學

上海房地產市場的現狀與趨勢分析
方芳，上海財經大學

超高層建築成功運作的外部環境分析—以金茂大廈為例
吳林, 中國金茂（集團）股份有限公司

Wednesday, July 11, 17:15-18:45

The 12th Asian Real Estate Society (AsRES) Annual Conference
and
The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Plenary Session 17:15 - 18:45 Grand Hall GH 2

Panel Discussion: *Establishing Secondary Mortgage Markets*

Chair: Darlene Williams,
Assistant Secretary, US Department of Housing and Urban Development

Di Xu, China Construction Bank (China)
Kwan Young Kim, Hanyang University (Korea)
Che-Chun Lin, National Tsinghua University (Taiwan)
Piyush Tiwari, University of Aberdeen (UK)

Thursday, July 12, 9:00-10:45

The 12th Asian Real Estate Society (AsRES) Annual Conference
and
The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session G -1 9:00 – 10:45 Grand Hall GH 1

REITs

Chair: **Desmond Tsang**, McGill University

Corporate Governance and Firm Valuation: The REIT-Effect
Rob Bauer, Maastricht University
Piet M.A. Eichholtz, Maastricht University
Nils Kok, Maastricht University

A Value Investing Assessment of Singapore REIT Stocks
Kim Hin Ho, National University of Singapore
Discussant: Kyung-Hwan Kim, Sogang University

Portfolio Diversification and Real Estate Investment Trusts: The Era of REITs in S&P Indexes
Kathy Szu-Yin Hung, California State University
Charles C. Tu, University of San Diego
Discussant: David Downs, Virginia Commonwealth University

Inflation-Hedging Properties of REITs in Inflationary Economies: An Application of Markov Regime-Switching Model
Isil Erol, Middle East Technical University
Dogan Tirtiroglu, Concordia University
Kasirga Yildirak, Trakya University
Discussant: Piyush Tiwari, University of Aberdeen

Session G -2 9:00 – 10:45 Grand Hall GH 3

Panel Discussion: *Measuring and Managing Mortgage Credit Risks*

Moderator: **Shannon Sorzano,**
Deputy Assistant Secretary, US Department of Housing and Urban Development

Kawaguchi Yuichiro, Waseda University (Japan)
Tien-Foo Sing, National University of Singapore
Calvin Tsoyu Lin, National Taichung Institute of Technology (Taiwan)
Tyler Yang, IFE Group (US)

Session G -3 9:00 – 10:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Chinese Panel: The Prospected Development of Real Estate Finance in China

(中國房地產金融的現狀與未來發展)

論壇主辦單位：上海財經大學

Moderator (主持人)：姚玲珍，上海財經大學教授、不動產研究所常務副所長
Panel Lists (嘉賓)
魏曉峰，信東(香港)有限公司董事
黃劍榮，香港新鴻基地產集團高級經理
王秀寧，Polaris Securities Group
李晨昊，上海房屋與土地資源管理局
張　年，上海房屋與土地資源管理局
王洪衛，上海財經大學副校長、教授、不動產研究所所長
高波，南京大學房地產資訊研究中心主任，兼任江蘇省房地產經濟學會副會長

Session G -4 9:00 – 10:45 Grand Hall GH 4

House Price Risks, Consumption, and Asset Pricing

Chair: **Rui Yao**, Baruch College, CUNY

Intra-temporal Elasticity of Substitution in the Presence of Housing Adjustment Costs
Wenli Li, Federal Reserve Bank of Philadelphia
Rui Yao, Baruch College, CUNY
Discussant: James Shilling, Depaul University

House Price Dynamics Across Metropolitan Areas
Lu Han, University of Toronto
Discussant: David Frame, Baruch College, CUNY

An Intertemporal Capital Asset Pricing Model With Owner-Occupied Housing
Yongqiang Chu, University of Wisconsin
Discussant: Charles Leung, City University of Hong Kong

Session G -5 9:00 – 10:45 Grand Hall GH 5

Issues on Appraisers

Chair: **Yuming Fu,** National University of Singapore

Training of Valuers for Specialized Properties
Ana Maria Grămescu, Technical University Ovidius
Drd. Ec. Daniela Barbu, CMF Consulting Bucharest

A Differential Analysis between An Appraiser Evaluation and the Nearest Neighbor Method at Sales Comparison Approach: Taiwan Resident Experience
Ying-Hui Chiang, National Chengchi University
Chin-Oh Chang, National Chengchi University

Determinants of Experts' Prospects in Korea Real Estate Market
Jin-Yoo Kim, Kyonggi University

Australian Graduates Perspective of their Professional Socialization as Valuers
Geoff Page, University of South Australia

Ethics and Lobbying: the Case of Real Estate Brokerage
David Barker, University of Iowa

Session G -6 9:00 – 10:45 Grand Hall GH 6

International Real Estate Research V

Chair: **Shiawee Yang,** Northeastern University

Institutions and Institutional Changes: the Case of Taiwan's Non-Urban Land Development System
Kuo-Cheng Hsu, National Cheng-chi University Taipei
Tsung-Yu Lai, National Cheng-chi University Taipei

Management and Evaluation Systems of SOC (Social Overhead Capital) Projects in Korea
Jin-Kyung Lee, Industries and Construction Team of Evaluation Research Institute

Effects of Earthquake Occurrence Probability on Housing Prices in Japan: Estimation of the Earthquake Risk Premium
Michio Naoi, Keio University
Kazuto Sumita, Kanazawa Seiryo University
Miki Seko, Keio University

Managing Readiness for Internationalization of China's Real Estate Companies
Javier C. Cuervo, University of Macau
Soo-May Cheng, Institute for Tourism Studies

Is It a Logical Increase of the Housing Price in China: A Quantitative Analysis from the View of Money Supply
Zhang Yu, Tsinghua University

Session G -7 9:00 – 10:45 Grand Hall GH 7

AsRES Board Meeting II

Session G -8 9:00 – 10:45 Grand Hall GH 8

Chinese Papers: *Topical Research II*

Chair: **Zhenming Ge**, Tongju University

中國住房消費中住房公積金貢獻度的實證研究
徐峰，上海交通大學
胡昊，上海交通大學
黃理，上海交通大學

軌道交通對房地產項目價值影響分析
宋永發，大連理工大學
楊宇杰，大連理工大學

Analysis of Urban Security House Standard in China: A Case Study of Low-cost Housing
Yu Liu, Renmin University of China
Xiaolong Li, Renmin University of China

A Study on the Effect of Macroeconomics on the House Price
Dan Liu, Shanghai University of Finance and Economics

中國大陸住宅市場中消費者偏好研究
賈士軍，廣州大學
周耀旭，廣州大學

Thursday, July 12, 11:00-12:45

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session H-1 11:00 – 12:45 Grand Hall GH 1

Market & Pricing Dynamics II
Chair: **Robert Van Order**, University of Michigan

Do Institutional Real Estate Investors have Rational Expectations?
James D. Shilling, DePaul University
Tien Foo Sing, National University of Singapore
Discussant: Timothy J. Riddiough, University of Wisconsin – Madison

Do Relationships Change after A Crisis? The Case of A Housing Market
Charles Ka Yui Leung, City University of Hong Kong
Patrick Wai Yin Cheung, City University of Hong Kong

Explaining Housing Supply Elasticity across Chinese Cities
Yuming Fu, National University of Singapore
Siqi Zheng, Tsinghua University
Hongyu Liu, Tsinghua University

A General Equilibrium Analysis of Land Use Restrictions and Residential Welfare
John M. Quigley, University of California, Berkeley
Aaron Swoboda
Discussant: Rui Yao, Baruch College, CUNY

Session H-2 11:00 – 12:45 Grand Hall GH 2

Simultaneous interpretation will be provided

Panel Discussion:
Impact of Gaming Industries on Property Markets in Macau

Moderator: **Gabriel Donleavy**, University of Macau
Wee Liat Lee, Head of Greater China Research, Jones Lang Lasalle Limited (Hong Kong)
Jose Sai-Peng Chui, President of CAA City Planning & Engineering Consultants Ltd. and Member of the Legislative Assembly of Macao SAR
Choi Kung Ung, Vice-President of Association of Property Agents and Realty Developers of Macau and Member of Legislative Assembly of the Macao SAR
Wing Ching Shih, Chairman, Centaline (Holdings) Company Limited

Session H-3 11:00 – 12:45 Grand Hall GH 3

Chinese Panel: *The Policy Framework of Real Estate Industry in China*
(中國房地產政策論壇)

論壇主辦單位：中國房地產業協會產業發展與政策研究專業委員會

Moderator (主持人)：莫天全，
中國指數研究院院長、中國房地產業協會產業發展與政策研究專業委員會秘書長
Panel Lists (嘉賓)
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黃　瑜，中國指數研究院常務副院長

Session H-4 11:00 – 12:45 Grand Hall GH 4

Real Estate Potpourri V

Chair: **Marsha Courchane**, ERS Group

Mortgage Default of Borrowers in Korea
Kyu Hyun Ji, Housing and Urban Research Institute
Chang Gyu Choi, The University of Suwon

A Study on the Default Determination of Residential Mortgages: The Application of Bayes' Theorem on Classification Adequacy
Peter Hsien-Chueh Yang, National Kaohsiung First University of Science and Technology
Calvin Tsoyu Lin, National Taichung Institute of Technology
Tsung-Hao Chen, National Kaohsiung First University of Science and Technology

Structuring Australian Commercial Mortgage-Backed Securities: An AHP Approach
Bwembya Chikolwa, Curtin University of Technology

The Performance and Problems of Affordable Housing Policy
Yi Niu, Renmin University of China

Session H-5 11:00 – 12:45 Grand Hall GH 5

International Real Estate Research VI

Chair: **Lijian Chen**, UBS Realty Investors LLC

The Impact of Housing and Financial Wealth on Household Consumption: Evidence from Hong Kong
King Fai Man, The Hong Kong Polytechnic University
Raymond Y.C. Tse, Hong Kong Institute of Real Estate and ICUA
C.Y. Yiu, University of Hong Kong

Agency Problem in External Management System of J-REIT
Shunichi Maekawa, Meikai University
Wei-Ju Tsao, Meikai University

Regional Variations of Residential Real Estate Returns in Malaysia
Kien Hwa Ting, Universiti Teknologi MARA
Sherry Z. Zhou, City University of Hong Kong
Helen X.H. Bao, University of Cambridge

An Acquisition of Orang Asil Native Land in Malaysia: Perceptions and Challenges in Quantifying of the Compensation
Anuar Alias, University of Malaya

Beijing' s Land Use Reforms
Thomas G. Thibodeau, University of Colorado-Boulder
Wenbin Li, Central University of Finance and Economics
Ying Xiao, University of Colorado-Boulder

Session H-6 11:00 – 12:45 Grand Hall GH 6

Panel Discussion: *Evolution of Asian Housing Finance Systems*

Moderator: **Morey Kogul**, PADCO

Session H-7 11:00 – 12:45 Grand Hall GH 7

Hotel Real Estate

Chair: **Kam-hon Lee**, Chinese University of Hong Kong

Role of Bangladesh Tourism Industry as An Important Source of Economic Development—An Empirical Evaluation
Jannat Ara Parveen, University of Chittagong

The Use of Environmental Management As a Facilities Management Tool: Case Study of Hotels in Macao
Penny Yim Kim Wan, Institute For Tourism Studies (IFT)

Delisting of Toursim Stocks and Associated Strategic Decisions
Wai K. Leung, Chinese University of Hong Kong
Eliza Tse, Chinese University of Hong Kong

Conceptualization of Retirement Resorts for Senior in Pearl River Delta
Wilco W. Chan, Hong Kong Polytechnic University

Session H-8 11:00 – 12:45 Grand Hall GH 8

Chinese Papers: *Topical Research III*

Chair: 姚玲珍，Shanghai University of Finance and Economics

房價與經濟發展：數據分析與現實評價
譚善勇，首都經貿大學

城市房屋指導租金測定研究
賈士軍，廣州大學

應用結構方程模式評估節慶活動效益—以台灣苗栗國際假面藝術節為例
李泳龍，長榮大學
黃宗誠，嘉南藥理科技大學
林貞岑，長榮大學

論宏觀經濟調控下商業銀行按揭貸款風險的防範
衣寅炯，同濟大學

國內按揭貸款市場面臨更為多元化的競爭—淺析外資銀行對按揭貸款市場的影響及中資銀行的對策建議
趙曉英，中國建設銀行住房金融與個人信貸部
羅寧，中國建設銀行住房金融與個人信貸部

Thursday, July 12, 14:00-15:30

The 12th Asian Real Estate Society (AsRES) Annual Conference and The 2007 AREUEA International Conference

Session Schedule
All Sessions Will be Held in the Macau Tower Convention and Entertainment Center

Session I -1 14:00 – 15:30 Grand Hall GH 1

Theoretical Development in Real Estate III

Chair: **David Downs**, Virginia Commonwealth University

Path Dependence Concepts and the Real Estate Market: An Assessment of the Significance of Lock-in and History
Éamonn D'Arcy, University of Reading

A Multivariate Unobserved Component Analysis of U.S. Housing Market
Mohamadou L. Fadiga, Texa Tech University
Yongsheng Wang, Washington and Jefferson College

The Quantitative Model for Residential Site Value
Kak K. Lo, Hong Kong Polytechnic University
Eddie C.M. Hui, Hong Kong Polytechnic University

Housing Supply in Beijing: Developers' Incentives and Their Pricing Strategies
Siqi Zheng, Tsinghua University
Matthew E. Kahn, University of California at Los Angeles

Session I -2 14:00 – 15:30 Grand Hall GH 3

Panel Discussion: *Housing Finance Policies*

Moderator: **Man Cho**, The KDI School

Charles Ka-yui Leung, City University of Hong Kong
Alven Lam, US Department of Housing and Urban Development
Renu Sud Karnad, Housing Development Finance Corporation
Kyung-Hwan Kim, Sogang University

Session I -3 14:00 – 15:30 Grand Hall GH 2

Simultaneous interpretation will be provided

REALM Lecture on DCF & ARGUS
Reception: Sponsored by Realm and Chinese Version of ARGUS

Jeffrey Fisher, Indiana University
Mark Kingston, CEO of Realm Business Solutions
Melissa Securda, Director of Market Research, Realm Business Solutions

Session I -4 14:00 – 15:30 Grand Hall GH 4

Nonresidential Real Estate Issues II

Chair: **Yongheng Deng**, University of Southern California

Hotel Attributes and Hedonic Prices: An Analysis of Internet-based Transactions in Singapore's Market for Hotel Rooms
David Emanuel Andersson, National Cheng-Kung University

Strategic Industrial Real Estate for the New Economy--*The Biopolis*: The Singapore Experience
Kim Hin Ho, National University of Singapore
Norman Wei Jing Ng, National University of Singapore
Javier C. Cuervo, University of Macau

Small Apartment, Large House
Yongqiang Chu, University of Wisconsin

Which Firms Should Use EVA? Which Ones Shouldn't?
Kishore Tandon, Baruch College, CUNY
Susana Yu, Montclair State University
Gwendolyn Webb, Baruch College, CUNY

Session I -5 14:00 – 15:30 Grand Hall GH 5

International Real Estate Research VII

Chair: **Kwan Yong Kim**, Hanyang University

Differential Treatment of Residential Properties for Property Taxation: An Empirical Investigation for Greater Mumbai
Anita Rath, Tata Institute of Social Sciences

Market Failure or Institutional Failure: Why the Chinese Urbanites Find Housing Increasingly Unaffordable?
Albert Cao, Oxford Brookes University
Ramin Keivani, Oxford Brookes University

New Evidence on the Link between Housing Environment and Children's Educational Attainments: The Case of Taiwan
Hsien-Ming Lien, National Cheng-Chi Unversity
Wen-Chieh Wu, National Cheng-Chi Unversity
Chu-Chia Lin, National Cheng-Chi University

Logistics in China - Containerized Pearl River Delta
David Cheung, Vigers International Property Consultants

Who Pay for and Who Benefit from Local Public Goods when There is No Property Tax? Evidence from Beijing's Housing and Land Markets
Yijun Wang, Tsinghua University
Fenjie Long, Tsinghua University
Siqi Zheng, Tsinghua University

Session I -6 14:00 – 15:30 Grand Hall GH 6

Housing and Tenure Choice

Chair: **John Goering**, Baruch College, CUNY

A Cohort Analysis of Housing Choices in Taiwan— Following the Cohort of Female
Li-Min Hsueh, China University of Technology
Chin-Lung Yen, National Taiwan University

In the Quest of Quality Urban Living: A Case Study of Urban Development in Kuala Lumpur
Wan Nor Azriyati Wan Abd Aziz, University of Malaya
Noor Rosly Hanif, University of Malaya
Zahiriah Yahya, University of Malaya

Home-Ownership, Poverty and Educational Achievement: School & Neighbourhood Effects
Noah Kofi Karley, Heriot Watt University
Glen Bramley, Heriot Watt University

Determinants of Renters' Choice on Contract Types and Corresponding Housing Consumption
Yong-Kyung Kim, Hanyang University
Chang-Moo Lee, Hanyang University

The Behaviour of Housing Tenure Choice and Elasticity: the Case of Hangzhou
Xiaofen Yu, Zhejiang University of Technology

Session I -7 14:00 – 15:30 Grand Hall GH 7

International Real Estate Research VIII

Chair: **Tien Foo Sing**, National University of Singapore

Market Fundamentals and Rational Expectations: Housing Price Dynamics in Beijing
Huixun Lai, Tsinghua University
Xueliang Tao, Tsinghua University
Hongyu Liu, Tsinghua University

A Proposition for Evaluating the Stocks of Real Estate Firms in Brazil
João da Rocha, Jr. Lima, Universidade de São Paulo
Eliane Monetti, Universidade de São Paulo
Carolina Andrea Garisto Gregório, Universidade de São Paulo

Empirical Study on Housing Conditions of Middle and Low Income Groups — Exemplified by Guangzhou City
Lin Chen, Guangzhou University
Kai-Ze Wu, Guangzhou University

Risk-Return Characteristics of Korean Real Estate Investment Trust after 5 Year Experiences since Its Introduction
Kwan-Young Kim, Hanyang University
Jung-ho Park, Just R Real Estate Advisors

Session I -8 14:00 – 15:30 Grand Hall GH 8

Chinese Panel:
Real Estate Investment Issues in Hong Kong, Macau and Mainland China

Moderator (主持人): **Wai Kin Leung**, The Chinese University of Hong Kong
Panel Lists (嘉賓)
Ambrose Cheung, Executive Director, Lai Sun Development and Esun Holdings Ltd
Tony Leung, President, TL Property Consultants Int'l Ltd
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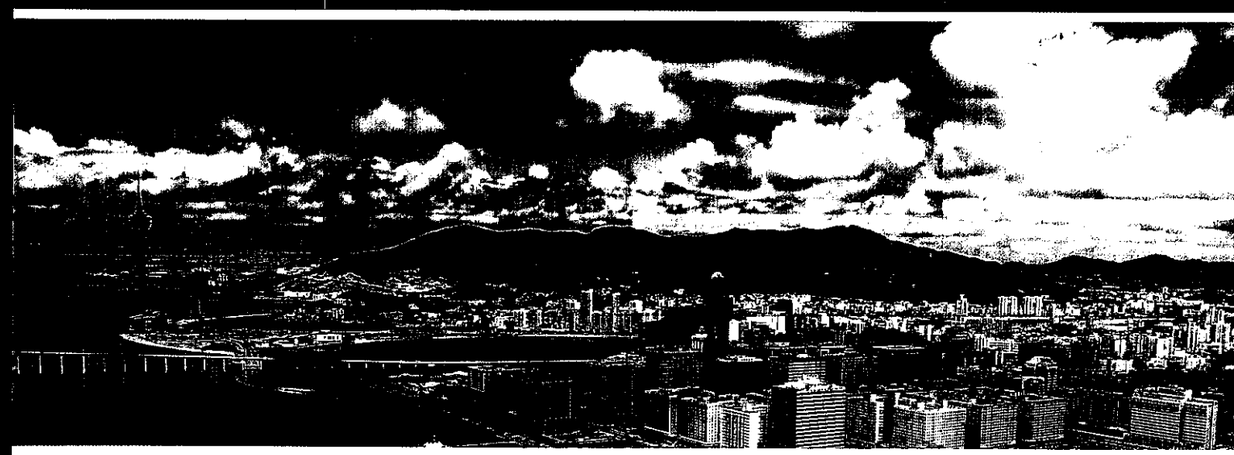

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