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都市化與經濟成長

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都市化與經濟成長

中文摘要

關鍵詞：都市化

盧卡斯(Lucas, 1988)曾提及「人才的集中對創新很重要...，城市是經濟成長的動力」。資料顯示，全球的人口集中在少數大都會區，經濟生產活動集中在少數大城市，而創新活動則集中在少數國家。與全球經濟(Global economy)脫節的國家，佔了全球絕大部分的區域。全球化經濟加速了國家與國家間、城市間，以及城市與鄉村的貧富差距。本研究探討台灣的都市化程度與經濟成長的關係。

證實研究結果，都市化的程度越高，所得水準也越高，其關係是正向的 (Fay and Opal, 2000; Jones and Kone, 1996; Lemelin and Polese, 1995; Tolley and Thomas, 1987)。也有研究證實，城市中經濟活動的聚集會提高廠商的生產力(Ciccone and Hall, 1996; Glaeser, 1994, 1998; Henderson, 1988, 2003; Krugman, 1991; Rauch, 1993; Quigley, 1998)。相關研究發現，愈大的城市，生產力愈強，所得水準也愈高。但是愈大的城市，所得水準的成長率卻不一定愈高。探討都市化與經濟成長相互關係的研究，無法證實城市會促進經濟成長。尚無文獻發現都市化程度與所得的成長有顯著的相關性，都市化與經濟成長的相關性與因果關係尚未定論 (Mario Polese, 2005; Fay and Opal, 2002; Black and Henderson, 1999)。本研究的目的是以台灣的資料分析經濟成長與都市化 (urbanization) 和人力資本的關係。探討尚未定論的都市化與經濟成長的相關性與因果關係。研究結果顯示，台灣所得的成長率與都市化程度的關係與文獻結果一致，是不確定的；相反的，人力資本對所得的成長率有顯著的正向影響。

Urbanization and Economic Growth

Abstract

Keywords: Urbanization

Henderson (2003) investigates the impact of the degree of urban concentration on economic growth, with too much or too little urban concentration having a relatively negative impact on growth. This relationship changes with levels of concentration: first rising and then falling with the level of development. The positive relationship between urbanization level (cities) and per capita incomes (economic development) is overwhelming. However, the link between urbanization with growth in incomes is less clear.

The purpose of this research is to explore the cross relationships among urbanization (city growth), human capital and income growth. We use Taiwan data to investigate the relationship of urbanization and income growth.

The estimated result shows that both percentage of college school degree and percentage of population above 65 years of age have significant effect on the growth of income. Similar to the results of Mario Polese (2005), Henderson (2003), and Fay and Opal (2000), no significant relationship is observable between urbanization levels and subsequent growth in GDP per capita. This research shows that productivity growth is significantly affected by human capital. The link between urbanization with growth in incomes is less clear.

1. Introduction

Recent observation indicates that three sorts of places make up the modern economic landscape. First are the a few cities in a few countries that generate innovations. These are the tallest peaks. Second are the economic “hills”; places that manufacture the world’s established goods and support its innovation engines. Finally there are the vast valleys, places with little connection to the global economy (Florida, 2005). Globalization has reinforced the gain from innovation which exacerbates disparities of wealth and economic production worldwide. Are cities causes or outcomes of economic growth? The underlying forces why economic activity agglomerates into cities makes cities the engines of economic growth in an economy (Lucas 1988). The purpose of this research is to explore the cross relationships among urbanization, human capital and income growth. We use Taiwan data to investigate the relationship of urbanization and income growth.

Henderson (2003) investigates the impact of the degree of urban concentration on economic growth, with too much or too little urban concentration having a relatively negative impact on growth. This relationship changes with levels of concentration: first rising and then falling with the level of development.

Bertinelli and Black (2004) explore how the trade-off between optimal and equilibrium city size behaves when introducing dynamic human capital externalities in addition to the classical congestion externalities. They show that there are dynamic gains from statically oversized cities; myopic policies designed to reduce the degree of over-urbanization by limiting urbanization will tend to have an adverse impact on economic growth. They assume that productivity depends on human capital, which is solely accumulated in cities, such that urbanization is the engine of growth.

The positive relationship between urbanization level (cities) and per capita incomes (economic development) is overwhelming. (Fay and Opal,2000; Jones and Kone, 1996; Lemelin and Polese, 1995; Tolley and Thomas, 1987) Others have demonstrated the positive link between productivity and the agglomeration of economic activity in cities (Ciccone and Hall, 1996; Glaeser, 1994, 1998; Henderson, 1988, 2003; Krugman, 1991; Rauch, 1993; Quigley, 1998). In sum, bigger cities mean higher productivity and higher per capita income. However, the link between urbanization with growth in incomes is less clear.

Mario Polese (2005) proposes a review of the link between cities and economic growth, and shows that cities cause economic growth is inclusive. No significant relationship is observable between urbanization levels and subsequent growth in GDP per capita. He finds that it is difficult to imagine sustained economic growth without cities, but cities are not a sufficient condition to generate long-term economic growth. Fay and Opal (2000) find that urbanization levels are poor predictors of growth. The direction of causation lies at the heart of the debate. The idea that cities are sources of economic growth has gained ground in recent years. The pioneer view point of this idea is from Jane Jacobs (1969, 1984). It is difficult to test the relationship between agglomeration and economic growth, part of the problem stems from the difficulty of distinguishing factors that allow cities to capture a greater share of national economic growth from those that allow cities to add to national economic growth.

Black and Henderson (1999) explore how urbanization affects efficiency of the growth process and how growth affects patterns of urbanization in an economy experiencing endogenous economic growth and exogenous population growth. They find individual city sizes grow with local human capital accumulation and knowledge spillovers; and city numbers generally increase, which is consistent with empirical evidence. The purpose of this paper is to investigate the relation between urbanization, human capital and income growth rate in Taiwan.

2. Data and Methods

The data used in this study is the county data in Taiwan from 1998 to 2005. There are 23 counties in Taiwan. Population is from The Ministry of Interior, Executive Yuan, Taiwan; and Per Capita Disposable Income is from Directorate General of Budget, Accounting and Statistics, Executive Yuan, Taiwan.

We estimate simple regressions of the forms to investigate the relation of urbanization, human capital and economic growth.

$$G_{(t,t+1),i} = a_0 + a_1 y_{t,i} + a_2 A_{t,i} + \beta A_{t,i}^2 + a_3 H_{t,i} + a_4 C_{t,i} + a_5 O_{t,i} + a_6 R_i + \alpha_i + \eta_t + \varepsilon_{t,i} \quad (1)$$

$$G_{(t,t+1),i} = a_0 + a_1 y_{t,i} + a_2 \ln(S_i) A_{t,i} + \beta A_{t,i}^2 + a_3 H_{t,i} + a_4 C_{t,i} + a_5 O_{t,i} + a_6 R_i + \alpha_i + \eta_t + \varepsilon_{t,i} \quad (2)$$

where G_i is county i 's annual growth rate of income per capita, y_i is county i 's \log of income per capita, A_i is the degree of urbanization in county i , H_i measure county i 's percentage of adults with high school degree, C_i measure county i 's percentage of adults with college school degree, O_i measure county i 's percentage of population above 65 years of age. R_i is regional dummies controlling for the possibility of different growth patterns in different regions. S_i is the population or land area of county i . The degree of urbanization is measured by the ratio of the population density of urbanized area to the whole county.

3. Results

The regression results are presented in Table 1 and 2. Table 1 shows the regression result of equation (1), and Table 2 shows the regression result of equation (2). It shows that both percentage of college school degree and percentage of population above 65 years of age have significant effect on the growth of income. Similar to the results of Mario Polese (2005),

Henderson (2003), and Fay and Opal (2000), no significant relationship is observable between urbanization levels and subsequent growth in GDP per capita. This research shows that productivity growth is significantly affected by human capital. However, the link between urbanization with growth in incomes is less clear.

Table 1. Regression result of equation (1)

C	-5.31*** (-6.67)	-5.65*** (-6.81)	-5.65*** (-6.81)	-5.04*** (-6.04)	-5.37*** (-6.28)	-5.37*** (-6.29)
Y	0.43*** (6.61)	0.46*** (6.74)	0.46*** (6.74)	0.41*** (6.14)	0.44*** (6.38)	0.44*** (6.39)
Lab		-2.31 (-1.41)			-2.74 (-1.64)	
Emp			-2.42 (-1.41)			-2.90* (-1.66)
Unemp	-0.01** (-2.46)	-0.01 (-1.64)	-0.01 (-1.65)	-0.01** (-2.18)	-0.01** (-2.04)	-0.01** (-2.06)
Urb	-0.0002 (-0.20)	-0.001 (-0.59)	-0.001 (-0.59)	-0.0004 (-0.47)	-0.001 (-0.99)	-0.001 (-0.10)
Urb*Urb				9.52** (1.03)	1.25 (1.33)	1.27 (1.35)
PopD	-4.86 (-1.44)	-5.20 (-1.54)	-5.20 (-1.54)	-5.03 (-1.48)	-5.49 (-1.62)	-5.49 (-1.62)
Old	0.01*** (3.69)	0.01*** (3.09)	0.01*** (3.10)	0.01*** (2.67)	0.01* (1.92)	0.01* (1.91)
Coll	-0.004*** (-3.57)	-0.004*** (-3.77)	-0.004*** (-3.77)	-0.004*** (-3.40)	-0.004*** (-3.63)	-0.004*** (-3.63)
High	0.002* (1.80)	0.002 (1.59)	0.002 (1.60)	0.002 (1.43)	0.001 (1.11)	0.001 (1.10)
Reg	0.01** (2.14)	0.01** (2.08)	0.01** (2.09)	0.01** (2.00)	0.01* (1.90)	0.01* (1.90)
R-squared	0.23	0.24	0.24	0.24	0.25	0.25

Notes: t statistics in parentheses.

* Denotes a parameter which is statistically significant at 10%; ** at 5%, and *** at 1%

Data source: Directorate-General of Budget, Accounting and statistics, Executive Yuan, R.O.C. (Taiwan)

Variables: Y (log of income per capita), Lab (labor force), Emp (the employed), Unemp(unemployment rate), Urb(degree of urbanization), Area(log of land area),Pop(log of population), PopD(population density),Old(percentage of population above 65 years of age), Coll(percentage of adults with college school degree), High(percentage of adults with high school degree), Reg (regional dummies), C(constant)

Table 2. Regression result of equation (2)

C	-5.05*** (-6.05)	-5.37*** (-6.27)	-5.38*** (-6.29)	-5.05*** (-6.05)	-5.38*** (-6.30)	-5.38*** (-6.30)
Y	0.41*** (6.15)	0.44*** (6.38)	0.44*** (6.39)	0.41*** (6.15)	0.44*** (6.39)	0.44*** (6.40)
Lab		-2.69 (-1.62)			-2.74 (-1.65)	
Emp			-2.84 (-1.64)			-2.90* (-1.67)
Unep	-0.01** (-2.18)	-0.01** (-2.02)	-0.01** (-2.04)	-0.01** (-2.19)	-0.01** (-2.04)	-0.01** (-2.06)
Urb*Urb	9.45 (1.03)	1.21 (1.30)	1.23 (1.32)	9.41 (1.03)	1.19 (1.30)	1.21 (1.32)
Area*Urb	-5.19 (-0.49)	-0.0001 (-0.97)	-0.0001 (-0.98)			
Pop*Urb				-4.00 (-0.58)	-7.71 (-1.06)	-7.79 (-1.09)
Popd	-5.02 (-1.48)	-5.45 (-1.61)	-5.45 (-1.61)	-5.10 (-1.50)	-5.57 (-1.65)	-5.58 (-1.65)
Old	0.01*** (2.64)	0.01* (1.88)	0.01* (1.88)	0.01*** (2.66)	0.01* (1.90)	0.01* (1.90)
Coll	-0.004*** (-3.41)	-0.004*** (-3.62)	-0.004*** (-3.62)	-0.004*** (-3.43)	-0.004*** (-3.64)	-0.004*** (-3.65)
High	0.002 (1.41)	0.001 (1.07)	0.001 (1.07)	0.002 (1.43)	0.001 (1.11)	0.001 (1.10)
Reg	0.01** (2.04)	0.01* (1.97)	0.01* (1.97)	0.01** (2.01)	0.01* (1.93)	0.01* (1.93)
R-squared	0.24	0.25	0.25	0.24	0.25	0.25

Notes: t statistics in parentheses.

* Denotes a parameter which is statistically significant at 10%; ** at 5%, and *** at 1%

Data source: Directorate-General of Budget, Accounting and statistics, Executive Yuan, R.O.C. (Taiwan)

Variables: Y (log of income per capita), Lab(labor force), Emp (the employed), Unemp(unemployment rate), Urb(degree of urbanization), Area(log of land area),Pop(log of population), PopD(population density),Old(percentage of population above 65 years of age), Coll(percentage of adults with college school degree), High(percentage of adults with high school degree), Reg (regional dummies), C(constant)

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