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Unemployment and the Speed of Transition in China

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Abstract

We investigate the relationship between unemployment and growth in China. We ﬁnd considerable diﬀerences in the nature of this relationship across Chinese regions. We argue that this may reﬂect the diﬀerent progress in transition across regions, in line with the Aghion-Blanchard model of optimal speed of transition. When we test this model, we ﬁnd strong evidence of a hump-shaped relationship between unemployment and our proxy for the speed of reform. The current unemployment in China, furthermore, appears to be close to the level associated with optimal speed of transition.

JEL Codes: E24, E61, J64.

Keywords: Unemployment; Okun's Law; Growth; Optimal Speed of Transition; China.

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1 Introduction

China has been experiencing a rapid and steady economic growth since 1978 when it initiated a gradual reform of its economy. However, the last two decades brought about also a steady increase in unemployment, which has been seen as one of the most pressing problems facing the Chinese economy at present. Intuitively, we would expect that high output growth should help keep unemployment low. This would be in line with Okun's Law, one of the basic rules of macroeconomics, which postulates an inverse relationship between output growth and changes in unemployment (Okun, 1962). However, the Okun's Law has been formulated in the context of a mature market economy, the US. China, in contrast, has been undergoing a dramatic and multi-faceted transition since 1978: from central planning to a market economy, and from a primarily agrarian and closed economy to an industrialized and open one.

The process of economic transition has had a major impact on the urban labor market in China. As the other former communist countries, China started its transition with full employment. The pre-reform labor market was characterized by four key features. First, the bulk of the labor force was employed in the agriculture. Second, urban workers enjoyed life-long employment without any fear of dismissal or unemployment. Third, the *hukou* system of household registration restricted the ability of workers to move between rural and urban areas and across regions. Fourth, welfare policies including rationing of basic necessities, social security policy exclusive to urban regions and other public service provisions (the so-called 'iron rice bowl') further restricted labor mobility and equal treatment of residents in rural and urban areas (Cai and Wang, 2010). The reform lead to a liberalization of urban employment and *broke* the iron rice bowl. As a result, the allocation of labor in urban regions has become mostly market-based (however, the *hukou* system and di¤erentiated provision of public goods and social security in urban and rural regions have remained in place and continue to impede labor mobility between rural and urban areas). The subsequent privatization of state owned enterprises in the late 1990s, in turn, has given rise to unemployment in urban areas (Cai and Wang, 2010). Around ten million workers were laid o¤ from state owned enterprises and urban collectives in 1996 and in 1997 alone (Qian, 1999).

The experience of China has differed markedly from that of the post-communist countries in Eastern Europe. In the former, output grew steadily and at relatively high rates, while unemployment stayed, especially initially, modest. In the latter, the onset of transition was associated with a sudden and sharp contraction and a rapidly growing and persistently high unemployment, in a process labeled 'Transformational Recession' (Kornai, 1994). A number of studies have sought to shed light on the reasons behind these differences (see Roland, 2000, and Woo, 2014, for broad overviews). An important difference between China and Eastern Europe was in the speed and sequencing of reform. The Eastern European countries implemented multiple reforms at once and at a relatively high pace, in a big-bang fashion. China, in contrast, elected a more cautious approach: reforms were implemented gradually and in a dual-track fashion, the latter meaning that the centrally-planned sector was maintained but private initiative was allowed at the margin. Another important difference was high share of agriculture in the Chinese economy at the beginning of the reforms. This ensured a vast supply of potential labor for the manufacturing sector once the reform created favorable incentives for its expansion.

Aghion and Blanchard (1994) formulate a theoretical model of reform of centrally planned economies in which they seeks to explain some of the stylized facts of the post-communist transition, such as the differences in the pace of reform and the associated economic outcomes across countries. They posit that there is an important relationship between unemployment and the speed of reform. Specifically, unemployment, which arises when workers in ailing state-owned enterprises lose their jobs, puts a downward pressure on wages. This, in turn, helps facilitate the expansion of the private sector. At the same time, however, unemployment increases the tax burden imposed on the private sector, whose taxes are used to finance unemployment benefits. This results in an inverted U-shaped relationship between unemployment and the speed of reform. When unemployment is too low, the private sector workers require excessively high wages, so that the private sector grows only slowly or not at all. Under high unemployment, taxes become too high, which again impedes the expansion of the private sector. The inverted U-shaped relationship implies that there is a single intermediate level of unemployment that is

optimal in the sense that it maximizes the expansion of the private sector. The major insight of the Aghion-Blanchard model for China, therefore, is that growing unemployment need not undermine China's future prospects. In fact, while in several Eastern European countries unemployment may have exceeded the optimal level, the current unemployment in China remains

growth may reduce the life time of production units and thus raises the equilibrium level of unemployment by raising the job separation rate. In order to take advantage of innovation, the old machines need to be shut down by the ...rm. When this happens, workers become unemployed until matched with a new machine. Aghion and Howitt show that the 'creative destruction' e¤ect dominates at low growth rates while the 'capitalization' e¤ect dominates at high ones, leading to a hump shaped relationship between unemployment and growth. The sign of the relationship between growth and unemployment therefore can be either positive or negative.

The Aghion and Blanchard (1994) model has been formulated to capture the speci...c circumstances prevailing in the countries in transition from central planning to a market economy. They suggest that the speed of labor reallocation during transition and the rate of unemployment are connected in an inverted U-shaped fashion. Figure 1 depicts this relationship, with

based on the 2002 follow-up survey to the China Urban Labor Survey which complies with international practice for de…ning unemployment. Their estimates include the xia gang among the unemployed, as long as they meet the standard international criteria for being categorized as unemployed. The correlation between the o¢ cial urban registered unemployment rate and their "true" unemployment rate is very high: 0.98. Therefore, the di¤erence in the de…nition of the unemployment rate should not substantially a¤ect the direction of the …ndings of our study. Since their estimates are limited in their coverage, in this paper we use the o¢ cial urban registered unemployment as a proxy for the "true" unemployment rates.

Finally, we measure the speed of transition as the change in the number of private employees, which includes workers in …rms belonging to individuals, share holders, joint ventures with stakes held by foreigners, foreign funds, investors from Hong Kong, Taiwan or Macao, share cooperatives, and limited liability companies.

4 Is there a Relationship between Unemployment and Growth in China?

There are two conventional speci…cations for estimating the Okun's relationship: the "…rst-di¤erence" and "gap" models. The …rst-di¤erence model uses the real GDP (or GNP) growth and the …rst di¤erence of unemployment, as given by the following expression:

$$ - \qquad\qquad\qquad\qquad (1) $$

The gap model, instead, considers the di¤erence between the observed and natural rate of unemployment, and the di¤erence between the observed and potential GDP, or output gap:

$$ - \qquad - \qquad\qquad\qquad (2) $$

where   and   stand for the natural rate of unemployment and the potential GDP, respectively.

For China, there are no reliable estimates of potential GDP, NAIRU, or similar macroeconomic benchmarks. Therefore, only the …rst-di¤erence model is feasible for our study. We follow Izyumov and Vahaly (2002) and estimate the following relationship:

$$\beta t \qquad _{i;t} - \ _{i;t-1} \qquad _{i;t} - \ _{i;t-1} \qquad _{i;t} \qquad\qquad (3)$$

where   denotes provinces,

nature of the relationship between growth and unemployment may be driven by the uneven progress in implementing economic reform in China. The coastal areas of the East region were exposed to the reform measures and the market economy much earlier than the interior areas of Center and especially West. That would explain also why Okun's relation can be found in East and Center during the later sub-period for but not during the earlier one and in neither sub-period for West. We address this issue in the following two sections.

5 The Relationship between Growth Rate and Unemployment Rate

Much of the previous empirical literature on this topic is concerned with the e¤ect of growth on unemployment. However, there are also likely to be forces running in the opposite direction. High unemployment may have an adverse e¤ect on growth in the presence of a learning-by-doing e¤ect, reducing the pool of saving available for investment in pg-

and Howitt (1994) model, the creative destruction eﬀect dominates in China at present.

Table 4, in turn, considers the eﬀect of unemployment on growth. The results are more mixed and less clear cut than those above. There is again a hump-shaped relationship between unemployment and growth in the full sample, and in the West and East sub-samples. However,

reforms have progressed relatively far, insigni...cant in Central China, and positive in the West.

Since the model stipulates a hump shaped relationship between the speed of reform and unemployment, we regress the change in the number of private employees, our proxy for the speed of reform, on a quadratic polynomial of the unemployment rate. The results based on the full sample, reported in Table 5, strongly support the model: there is an inverted U-shaped relationship between the speed of transition and unemployment rate in China and this relationship is signi...cant at the 1 percent level. Hence, at low levels, increasing unemployment should increase the speed of transition whereas the opposite should be the case in regions with already high unemployment. The optimal speed of transition is predicted to be attained at an unemployment rate of 3.53 percent. In fact, China's average unemployment rate was 3.54 percent over the period covered in this analysis.[2] Hence, the relatively moderate unemployment prevailing in China at present should not be seen as a necessarily negative phenomenon. Rather, it may be necessary to help facilitate China's transition and economic reform. Short-term hardship thus will be outweighed by long-term economic gain (Valev, 2004).

7   Conclusions

Based on the above analysis, we can shed some light on the economic implications of growing unemployment in China. We ...nd that the negative relationship between growth and unemploy-ment, the well-known Okun's Law, is only emerging in China. Speci...cally, we ...nd evidence that such a negative relationship prevails in Central and Eastern China, especially in more recent times, but not in Western China where the relationship mamic

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reports the o¢ cial unemployment rate as 4.6 percent.[3] The Aghion and Blanchard (1994) model suggests that an intermediate level of unemployment is necessary to achieve an optimal speed of transition. Our empirical estimates suggest that the current unemployment rate in China is indeed close to the optimal rate. Unemployment is thus the price that China needs to pay for future prosperity.

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Table 1: Sub-groups

Sample	Observations
East	Beijing, Tianjin, Shanghai, Liaoning, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Hainan
Central	Hebei, Shanxi, Neimenggu, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hunan, Hubei
West	Guangxi, Guizhou, Yunan, Sichuan, Shanxi, Gansu, Ningxia, Qinghai, Xinjiang

Figure 1: The Optimal Level of Unemployment   And The Maximal Speed of Transition p
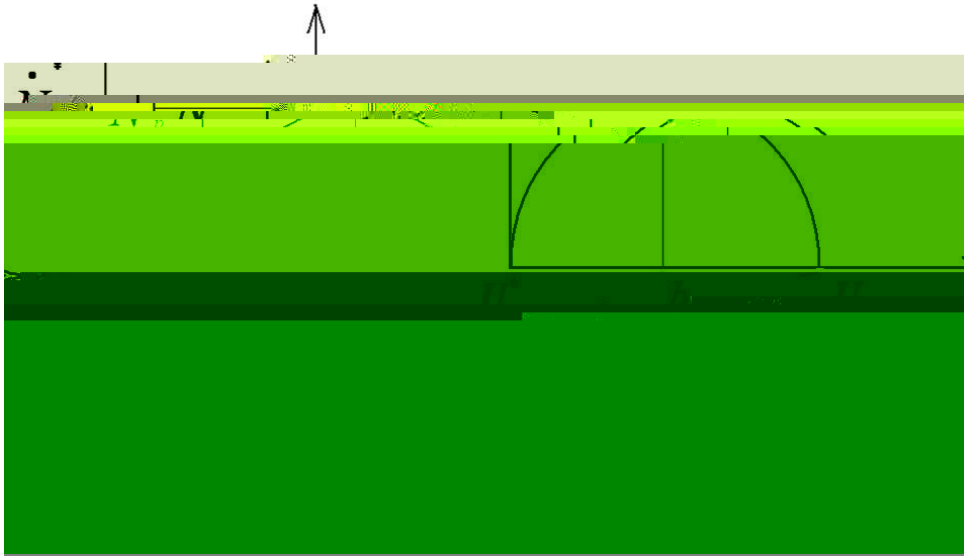
Table 2: Okun's Coefficient, LSDV Panel approach

	Period	Okun's coefficient	t-Statistics
China	—	—	—
		(0.001780)	
	—		
		(0.000578)	
	—	—	—
		(0.002877)	
East	—	—	—
		(0.003695)	
	—	—	—
		(0.003376)	
	—	—	—
		(0.002803)	
Center	—	—	—
		(0.005477)	
	—	—	—
		(0.002992)	
	—	—	—
		(0.007618)	
West	—		
		(0.001985)	
	—		
		(0.000623)	
	—	—	—
		(0.006111)	

Standard errors in parentheses. *** 1% significance, ** 5% significance.

Table 3: Unemployment as function of growth during 1997-2006

Variables	Full sample	EAST	CENTRAL	WEST
constant		—		
	(0.301767)	(2.143907)	(0.395113)	(0.206061)
g	—	—	—	—
	(21.56805)	(161.2112)	(25.72050)	(23.78040)
	(5.166393)	(37.65610)	(6.549670)	(4.459429)
R^2	0.78	0.81	0.78	0.92

U is the unemployment rate. g is the growth rate.

Standard errors in parentheses. *** 1% significance, ** 5% significance.

Table 4: Growth as function of unemployment during 1997-2006

Variables	Full sample	EAST	CENTRAL	WEST
constant				—
	(0:010074)	(0:015763)	(0:041436)	(0:011111)
2	—	—		—
	(0:000570)	(0:001560)	(0:003659)	(0:000490)
	(0:004883)	(0:010182)	(0:024942)	(0:004794)
2				

U is the unemployment rate. g is the growth rate.

Standard errors in parentheses. *** 1% signi…cance, ** 5% signi…cance.

Table 5: Interaction between the speed of transition and unemployment during 1997-2006

variables	Full sample
constant	—
	(52:11857)
2	—
	(3:890164)
	(28:81680)
2	

U is the unemployment rate..

Standard errors in parentheses. *** 1% signi…cance, ** 5% signi…cance.
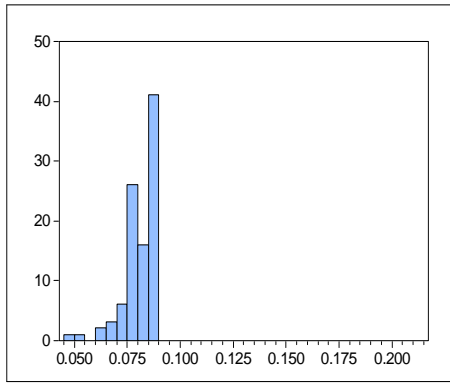
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Figure 2: Growth rate: Chinese regions

Figure 3: Unemployment rate: Chinese regions