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Influence of University Graduates Employment on Economic Growth and Its Statistical Forecast and Analysis

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Abstract: Based on the analysis of the employment status of university graduates in the independent innovation stage, this study tested the relationship between the employment status of university graduates and the economic growth. This study provided the measurement of university graduates employments influence on potential loss of GDP and statistical forecast of future university graduates employment with corresponding policy suggestions on university graduates employment in the end. The results showed that a positive correlation existed between university graduates employment and economic growth and every one unit increase in employment of college graduates would bring 642.752 units of GDP growth; the annual loss rate of potential GDP is 27% caused by the low initial employment rate; and the initial employment rate of university graduates shows a tendency of further decline.

Key words: College graduates, potential GDP, initial employment rate

INTRODUCTION

The current financial crisis has had a major impact on the labor market, affecting, among others, the employment of university graduates. As more university graduates face the prospect of unemployment and underemployment, higher education institutions are expected to take measures that will enhance the employability of their graduates and their earnings in the labor market. There is evidence to suggest that, due to the economic downturn, higher education students place greater emphasis on employability and make educational choices that increase their employment prospects (Bacchus, 2008). In this context, increases in tuition fees have been linked to changes in student expectations (Betts, 1996; Blau and Ferber, 1991). Students are considered to behave more like customers of a service, who expect 'value for money' and greater attention to their needs (Botelho and Pinto, 2004). As a result, knowledge of students' needs becomes more important as universities increasingly adopt a marketing orientation in the provision of services (Carvajal *et al.*, 2000). Sander *et al.* (2000) draw attention to the fact that, for many decades, those inside higher education institutions assumed they knew what students expected or valued in higher education (an 'inside out' approach). However, recent developments have resulted in the adoption of an 'outside in' perspective, focusing on the need to increase student satisfaction. Despite the growing awareness of

the importance of addressing students' employability needs, the students' transition from the university to the labor market has not been investigated on a systematic basis in many countries.

The present study aims at investigating students' expectations about future earnings and employment in China. Specifically, it compares the earnings and employment expectations of university students and the realized earnings and employment paths of recent graduates (Dey and Hill, 2007). On a policy level, the investigation of students' expectations can serve as the basis for a strategic approach to the management of student expectations, consistent with an 'outside in' perspective. On a theoretical level, the present study aims at investigating the degree to which students' expectations about their future earnings and employment are in agreement with the predictions of human capital theory regarding the choice of education over alternative investments (Dominitz and Manski, 1996). According to human capital theory, education will be selected over alternative investments on the basis of its profitability. This rests on the assumption that individual students have realistic perceptions of their earnings and employability prospects in the labor market. The evidence on this assumption is insufficient as it has been put to the test by a limited number of studies.

As can be seen from Table 1, the Chinese university graduates and employment showed a rapid growth in 1998-2009, the number of graduates in 2001 more than

Table 1: No. of university graduates and employment from 1998-2009

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
No. of graduates	829800	847600	949800	1036300	1337300	1877500	2392100	3068000	4137400	4952500	5596100	6112400
No. of employment	552200	559400	619400	725400	855900	1314300	1745600	2239600	2896200	3499600	3860500	4143500
Growth of graduates (%)	-	2.15	12.06	9.11	29.05	40.39	27.41	28.26	34.86	19.70	13.00	9.23
Growth of employment (%)	-	1.30	10.73	17.11	17.99	53.56	32.82	28.30	29.32	20.83	10.31	7.33
First employment rate (%)	66.55	66.00	65.21	70.00	64.00	70.00	72.97	73.00	70.00	70.66	68.99	67.79

1 million people for the first time, to the number of graduates in 2009 to 61,124 million, an increase of up to 490 %; Qoq growth rate since 1999, the growth rate of the number of university graduates in China are to maintain a larger growth rate which reached 40.39% in 2003. Be seen from the number of university graduates of view, the institutions of higher enrollment is a direct result of the growth in the number of college students graduating, although the amplitude decline in enrollment since 2006, but in total it has been on the rise. This leads to a certain extent, the decline in the rate of employment of university students in China. From the employment point of view, the number of the students' employment growth trend year by year, but its growth is much smaller than the number of university graduates. Employment qoq growth rate was less than the number of graduates of the ring than the growth rate of recent years, the students' employment situation is getting grim, therefore, improve the rate of employment of university students is a social problem of government departments at all levels must to be faced.

STUDENTS' EMPLOYMENT IMPACT ON THE ECONOMY

Relationship between university students employment and economic development: As can be seen from Table 2, the positive relationship exists regardless of the number of university graduates, the number of college students' employment and the GDP. The correlation coefficient is very high, in Table 1, view from the two-tailed test, GDP is increased accompanied by the increase of the number of university graduates and employment and the growth rate has a strong consistency.

View from Table 3, the coefficient of determination is higher, reaching more than 0.98. T absolute value greater than 2, the regression parameters are significant test, indicating that these 2 groups regression model reliability strong. The regression coefficients of university graduates and graduates employee are 448.768 and 642.752, respectively. That means these two variables are the most closely influencing factor of economic

Table 2: Correlation coefficient of graduates, employment and economic development

Variable	No. of graduates	No. of employment
Pearson's correlation coefficient	0.994	0.992
Two-tailed test	0.000	0.000

development, further, we can see that the regression coefficient of employment is 193.984 higher than the regression coefficient of graduates, we can obtain the conclusion that the factor, graduates employment, will be more directly impact to the growth of the economy, is the main factor in the economic development.

Graduate employment potential GDP: Here, assumes that the total GDP in the case of initial employment rate of 100% will be that all university graduates employment potential GDP. As can be seen from Table 4, when all college students are employment, the value of GDP for each year have a more substantial growth increase of up to 47.65% in 2006, by \$ 103,078 02 Other Year smallest growth in the proportion 2001, also up to 9.5% that is, if the community is able to create sufficient job opportunities for the employment of all university graduates, then there will be more than 25% of our total GDP growth. Specific potential GDP growth trend in 2001 has been dropped, but is in an upward trend in 2006, but later in the downward trend, this is because early in the college students enrollment with the increase in the number of graduates did not reach the jobs provided by the community has been saturated, so the ability of the society to absorb university graduates has been relatively strong; With the continuous expansion of the number of university graduates, the social demand for university graduates is declining, resulting in a further rise in the percentage of GDP loss; recent years, in view of the original total of GDP improve and the country attaches great importance on the employment of university students, the rate of potential GDP losses caused by the low employment rate of college students also decreased, but to reduce the magnitude of not large. Visible, increase the rate of employment of university students will help to improve the level of economic output, effective way to tap the potential production capacity of a country and region.

Table 3: No. of graduates, employment and GDP regression test

Variable	Coefficient of determination	Regression coefficient	Standard error	T-test	Two-tailed test
No. of graduates	0.9939	52793.712	5373.879	9.824	0.0000
		448.768	16.072	27.922	0.0000
No. of employment	0.9840	53460.209	6799.719	7.862	0.0000
		642.752	29.271	21.959	0.0000

Table 4: Potential GDP value from 1998-2009

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP (10 ⁹ yuan)	8440	8967	9921	1096	1203	1358	1598	1849	2163	2658	3140	3405
	2.28	7.05	4.55	55.17	32.69	22.76	78.34	37.40	14.40	10.30	45.40	06.90
Potential GDP (10 ⁸ yuan)	1067	1079	1145	1200	1394	1741	2072	2506	3193	3717	4131	4463
	95.77	39.87	08.79	68.60	15.43	36.90	12.91	56.52	92.42	83.14	50.66	35.94
Difference (10 ⁸ yuan)	2239	1826	1529	1041	1908	3831	4733	6571	1080	1059	9910	1058
	3.49	2.81	4.24	3.43	2.74	4.14	4.58	9.12	78.02	72.84	5.26	29.04
Age loss of GDP (%)	26.53	20.37	15.42	9.50	15.86	28.21	29.61	35.54	47.65	39.87	31.56	31.08

Table 5: Model test

Variables	Coefficient	Standard error	T-test	Two-tailed test	Coefficient of determination	F-test
No. of graduates						
First power	-59.06	15.94	-3.70	0.01	0.994	609.374
Square	14.18	2.79	5.08	0.00		
Cubic	-0.49	0.14	-3.47	0.01		
Constant	141.36	24.94	5.67	0.00		
No. of employment						
First power	-48.95	11.09	-4.41	0.00	0.996	609.233
Square	11.81	1.94	6.08	0.00		
Cubic	-0.46	0.10	-4.66	0.00		
Constant	102.93	17.34	5.93	0.00		

ANALYSIS OF THE STUDENTS' EMPLOYMENT STATISTICS FORECAST

Accurate picture of the number of university graduates in China and the development trend of the employment, active and effective in the prevention of the adverse effects of the Graduate Employment change

Use polynomial curve trend extrapolation forecasting model to predict the number of university graduates in China and the trend of the employment. Available scatter of the number of university graduates and employment trends figure using SPSS13 software from Fig. 1 and 2 the specific fitting curve can be seen, each year the number of university graduates and employment scatter falls on curve fitting, so a cubic spline model can be used to fit.

As can be seen from Table 5, the number of university graduates and employment cubic spline model in the overall significant test of fitting a high degree.

From the prediction model in China from 2010-2012, the number of university graduates and employment (Table 6). Can be seen by the predictive value 2010, 2012 a certain extent, the growth of the number of university graduates and employment, the number of university graduates an average annual increase of 6.77%, will exceed 700 million in 2011. College students employment will increase, with an average annual increase of 2.48%, less than the growth of the number of university

Table 6: Forecasting value of the number of university graduates and employment

	2010	2011	2012
No. of graduates	6892156.6	7439239	7856682.5
No. of employment	4540033.3	4728169	4766862.5

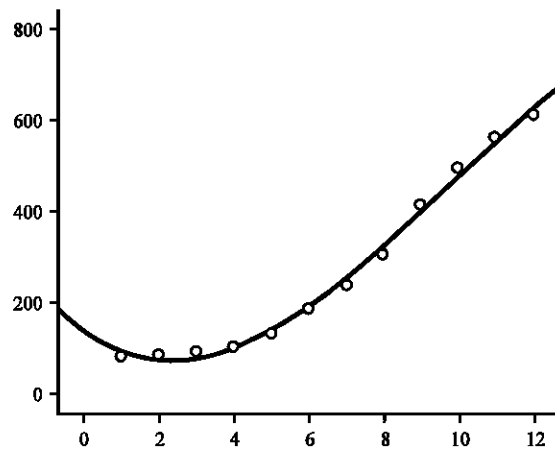


Fig. 1: No. of university graduates

graduates, the predictive value 2010, 2012 China University initial employment rate is 65.87, 63.55 and 60.67%, respectively. Visible initial employment rate further downward trend, college students, governments at all levels and departments in accordance with the

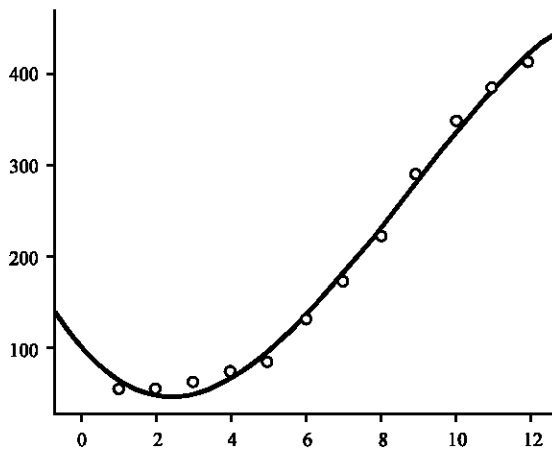


Fig. 2: No. of college students employment

current situation moderately good the Graduate Employment security system, to minimize the negative impact due to the low employment rate for university students.

CONCLUSION AND RECOMMENDATIONS

During 2010-2012 the forecasting number of university graduates and employment in China will be an obviously growth. The average annual increase rate of graduate employment is 2.48%, lower than the growth rate of university graduates. But, the initial employment rate is in the process of decreasing, so the government should improve the employment security system, to minimize the negative impact due to the low employment rate for university students.

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