

Education 、 Science & Technology Development and Human Resources Exploitation In Western Regions

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[Abstract] This article discusses issues of education、 science & technology development and human resources in western development. The authors believe that the deficiency of the capacity of education and technique in western region restricts its economy increase and society development .Thus, we can exploit human resources of western region in three ways: education 、 technology research and introducing into people with ability. It also analyzes measures which must be taken.

[Keywords] human resources exploitation; education and training; technology research ; introducing into people with ability.

The insufficient capacity of education, the deficiency of science and technology, abundant human resources but insufficient human capitals is a restriction to economics and society development in western regions all the time .It is a urgent task that improving capacity of science and technology and education and exploiting human capitals is laid in national western exploitation project.

1. preface : understanding concerning western regions and questions needs to be explained

Generally speaking , western region includes northwest :Shanxi、 Gansu 、 Qinghai 、 Ningxia、 Xinjiang and southwest: Sichuan 、 Chongqing 、 Yunnan、 Guizhou 、 Tibet . However, in region development , we usually cognize some regions advanced regions or underdeveloped regions, mostly because we classify regions of same or close economics development level into one type. Above 10 provinces 、 cities 、 municipalities have intercommunity in many ways ,such as relatively flimsy ecological environment 、 minority gathering and lagging economics comparing with eastern advanced regions ,so we make them belong to one same type regions .What’ s more ,Inner Mongolia municipality 、 Guangxi Chuang municipality 、 western regions in Hunan and Hubei is same to above regions .Thus , it constitutes basal spatial pattern of china west exploitation :10+2+2(illuminated by figure 1)

There is an obvious difference between this regions scope and traditional western regions : some provinces in middle regions is also included in west exploitation regions .Because of this , we can not mistake west development as western regions development and we should consider it as “underdeveloped

regions development” .

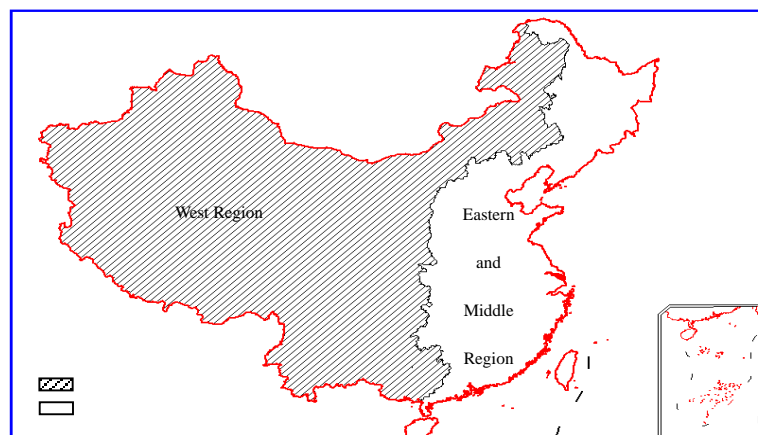


Figure 1 the bound of west region of China

Even so , we also have two concerning questions needs explaining :

Firstly, even in “the western regions ”, there are some relatively advanced regions , especially the almost same modernization degree of some big and middle cities to those in eastern regions .Under the conditions of “the whole underdevelopment” ,the difference between urban and county in “western regions ” must be bigger than it in eastern regions. Thus, the statistical numbers adopted in this article analysis mask the difference between urban and county in fact.

Secondly, the area of “western regions ” is vast, it can be divide into a lot of “economic areas ”,there are huge differences among “economic areas” .Due to these reason, paying a great attention to the inner difference among “western regions ” is essential. The question is that we are short of essential data analyzing “economic areas ”,but the existing data and research literature are obtained according to “district ”.Thus , research results can not show the differences among “economic areas ” and may dilute the pertinence of establishing policy in order to resolve western economic problems.

In this article , because the information concerning “economic area ” according to above understanding and cleaning up information will waste a lot of time, this article will look on provinces included in “west exploitation ” provinces confirmed by china as research object under the conditions that it won’ t influence research results .we will use data obtained according to “district ” and we will analyze a certain province as a act under a lot of conditions in order to explain the typical property of question.

2. status of education 、 science and technology in western regions

2.1 the weak capacity of education 、 deficient human

resource development

The weak capacity of education , deficient human resource development is an important factor restricting economic increase and society development in western regions .

At present, various education in western regions is lower than average level to some different extent. (illuminated by table-1)

**Table 1 Comparison of Population with Various Education
Attainment Per 100 000 Persons by Region**

Education Region	(persons)			
	Junior College and Above	Senior Secondary / Secondary Technical School	Junior School	Primary School
Whole country	3611	11146	33961	35701
Beijing	16843	23151	34391	16956
Tianjin	9007	20851	34590	25031
Hebei	2698	10717	39075	33760
Shanxi	3423	11562	38928	31761
Inner Mongolia	3803	13760	34798	31134
Liaoning	6182	13205	40082	29771
Jilin	4926	15076	35687	33598
Heilongjiang	4797	13866	38863	31253
Shanghai	10940	23018	36803	18934
Jiangsu	3917	13039	36372	32881
Zhejiang	3189	10758	33336	36622
Anhui	2297	7625	32780	37342
Fujian	2967	10602	33708	38317
Jiangxi	2576	9819	33219	38902
Shandong	3331	11036	36634	32736
Henan	2674	10031	39392	33196
Hubei	3898	12595	34311	35416
Hunan	2927	11125	35656	38328
Guangdong	3560	12880	36690	33145
Guangxi	2389	9554	32339	42176
Hainan	3167	12491	32502	34404
Chongqing	2802	8596	29413	43386
Sichuan	2470	7587	29358	42960
Guizhou	1902	5626	20480	43595
Yunnan	2013	6563	21233	44768
Tibet	1262	3395	6136	30615
Shaanxi	4138	12246	33203	34475
Gansu	2665	9863	23925	36907
Qinghai	3299	10431	21661	30944
Ningxia	3690	10910	27830	31770
Xinjiang	5141	12089	27528	37950

Data origin: Cleaned up according to <<Statistic Annual of China>>, China Statistic Press .2001

According to national expecting goal, by the end of 2000, 9 compulsory education is popular and illiteracy of youth and prime of life is cleaned off (Generally speaking, this is “two basis ”.)The population cover rate getting through checking and accepting is over 85%. Among

these, the population cover rate in eastern advanced regions is 100% and that in western regions is only 71%.Table 2 reflects the instance of the whole country and different regions getting through “two basis” in 2000.

Table 2 the instance of the whole country and different regions getting through “two basis” in 2000.

region	The population(a hundred million person)	Population cover rate realizing “two basis”	The number of unit at county level not realizing “two basis”	The number of needy county at country level not realizing “two basis”
The whole country	12. 66	85	524	273
East	4. 16	100	0	0
West	3. 55	71	465	235

Data original : It is cleaned up according to data obtained by education department in2000

The population in 2000 is quoted from national statistics bureau <<The fifth whole country population popularly checked chief data communique in 2000>>(number 2),<<china daily>>,2001,4,3 the whole data is confined to mainland.

Relatively typical number is: children enrollment rate before school age in Qinghai is lower than the whole country average level by 17.1 percent, besides from Shanxi , the other provinces is also lower than the country average level in different degree ; 10%-15%of elementary school graduate leave school and don’t continue studying; about 50%-65%of junior high school graduate leave school and don’t continue studying; woman adult illiteracy in country varies from 17% to 72%; the average culture degree of the population over 15 or employee is also lower than the whole country average ;the year dropout rate of elementary varies from 1.1% to 3%,the year dropout rate of junior high school varies from 3.4% to 5.6%.The dangerous building area of junior high school and elementary school in Xinjiang is as high as 102 myriad square meter and that in Shanxi and Ningxia is over 30 myriad square meter .(referring to book by Shi Peijun ,Zhou Wuguang ,2000)

The being educated level of worker directly taking apart in social economic activity plays an important part in the level of economic activity. The research shows that there is a strong relativity between worker’s being educated level and productivity .By surveying, if the enrollment rate is improved by one in a thousand, the average GDP ‘s increasing rate of one person can be improved 0.35-0.59 percent. At the same time, worker’s being educated level is of strong relativity to industry transfer. According to investigation into constitution of country surplus worker’s transfer and worker’s making in 1995 of western 11 provinces, workers of some knowledge have some advantages when they are transfer into outside. It means that employment and transfer will be more flexible and the scope being chosen will be larger if worker’s culture level is higher or workers can be accomplished in some production technology, but the culture making of workers taking up agriculture production in customary place is lower ,this is so-called “mediocre person deposition ”.Table 3 shows the difference between the whole country ‘s being educated level and western region’s being educated level , it shows that the whole culture making of western workers

is so low.

Table 3 constitution of the whole country 's being educated level and western region's being educated level (%)

	illiteracy or little illiteracy	Elementary school	Junior high school	Senior high school	Over Junior college
The whole country	11. 0	33. 3	39. 9	11. 9	3. 8
Chongqing	10. 9	44. 3	33. 2	9. 0	2. 7
Sichuan	13. 4	43. 4	33. 5	7. 5	2. 2
Guizhou	22. 8	40. 7	26. 0	7. 8	2. 7
Yunnan	20. 5	47. 7	25. 3	5. 1	1. 4
Tibet	67. 5	28. 5	4. 0	0. 1	0. 0
Shanxi	14. 0	27. 4	39. 3	15. 1	4. 2
Gansu	23. 6	30. 9	31. 1	11. 3	3. 2
Qinghai	29. 6	30. 1	23. 5	11. 5	5. 3
Ningxia	22. 0	26. 9	35. 1	11. 6	4. 4
Xinjiang	7. 1	32. 4	33. 4	16. 7	10. 5
Inner Mongolia	12. 7	29. 1	36. 6	16. 4	5. 1
Guangxi	8. 1	42. 5	40. 2	8. 2	0. 9

Data origin : <<Statistic Annals of China >>(1999) ,China Statistic Press.

The relatively lagged education level has already become a restrictive factor restricting quick development of western economics, but investing to people's education is a radical approach quick development of western regions.

The relatively lagged education level needs more education investment, in fact, the increase of western education investment is lower than eastern regions and it more widens the difference between east and west in education. In the statistic of the whole country education outlay in 1999, you can see the instance approximately . see table 4:

Table 4 the whole country education outlay performed instance statistic table of 2000

(yuan/student)

Region	General Elementary school			General senior high school			General junior high school		
	1999	2000	The rate of increase(%)	1999	2000	The rate of increase(%)	1999	2000	The rate of increase(%)
Whole country	414. 78	491. 58	18. 52	1269. 31	1314. 19	3. 60	639. 63	679. 81	6. 28
Beijing	1493. 8	1915. 41	28. 22	2976. 94	3524. 18	18. 38	2155. 98	2416. 06	12. 06
Tianjin	1027. 75	1256. 77	22. 28	2604. 05	3108. 98	19. 39	1445. 74	1676. 14	15. 94
Hebei	303. 73	387. 36	27. 53	1152. 04	1150. 64	-0. 12	495. 20	550. 42	11. 15
Shanxi	369. 13	446. 20	20. 88	1072. 33	1053. 79	-1. 73	559. 58	625. 23	11. 73
Inner Mongolia	536. 54	593. 99	10. 71	992. 13	1001. 65	0. 96	655. 86	669. 39	2. 06
Liaoning	513. 97	583. 24	13. 48	1246. 28	1318. 45	5. 79	897. 74	909. 04	1. 26
Jilin	474. 41	566. 21	19. 35	1095. 81	1033. 79	-5. 66	753. 99	782. 20	3. 74
Heilongjiang	657. 03	852. 29	29. 72	1291. 12	1408. 44	9. 09	666. 63	737. 88	10. 69
Shanghai	2346. 25	2755. 79	17. 46	4484. 54	4043. 85	-9. 83	2616. 57	2788. 07	6. 55

Jiangsu	555.74	617.50	11.11	1508.96	1651.88	9.47	897.61	928.05	3.39
Zhejiang	677.31	786.34	16.10	1505.75	1753.84	16.48	867.28	996.27	14.87
Anhui	324.83	376.60	15.94	951.17	986.55	3.72	447.06	448.98	0.43
Fujian	600.94	694.27	15.53	1814.91	1425.02	8.37	723.24	804.35	11.21
Jiangxi	327.48	400.37	22.26	760.55	864.48	13.69	424.59	463.71	9.21
Shandong	370.21	492.57	33.05	1056.29	1161.04	9.92	575.17	638.17	10.95
Henan	218.54	260.77	19.32	874.12	879.73	0.64	418.88	419.70	0.20
Hubei	246.56	292.92	18.80	796.68	830.05	4.19	508.83	551.53	8.39
Hunan	283.30	351.48	24.07	902.33	865.85	-4.04	443.42	466.90	5.30
Guangdong	557.19	644.34	15.64	1833.42	1892.32	3.21	795.52	881.28	10.78
Guangxi	336.41	410.59	22.05	806.73	848.37	5.16	422.20	483.69	14.56
Hainan	443.20	491.79	10.96	1238.03	1229.28	-0.71	679.88	695.79	2.34
Chongqing	374.55	368.63	-1.58	1035.16	939.92	-9.20	578.41	523.74	-9.45
Sichuan	304.68	370.16	21.49	964.02	983.45	2.02	499.52	509.02	1.90
Guizhou	264.96	311.72	17.65	879.84	842.88	-4.20	398.53	440.86	10.62
Yunnan	565.56	653.20	15.50	1646.52	1644.12	-0.15	898.87	908.48	1.07
Tibet	971.10	1110.09	14.31	5353.80	3229.98	-39.67	3409.61	2391.26	-29.87
Shaanxi	265.19	322.52	21.62	856.63	832.77	-2.79	494.18	509.93	3.19
Gansu	375.72	421.69	12.24	972.15	1084.54	11.56	583.76	595.98	2.09
Qinghai	674.94	732.95	8.59	1666.82	1658.92	-0.47	1038.53	1079.83	3.98
Ningxia	514.03	581.48	13.12	931.90	1033.85	10.94	690.20	765.47	10.91
Xinjiang	614.81	733.13	19.24	1348.51	1560.55	15.72	828.92	923.38	11.40

Region	Professional middle school		General college or university			
	1999	2000	The rate of increase(%)	1999	2000	The rate of increase(%)
Whole country	1024.10	1349.45	12.07	7201.24	7309.58	1.50
Beijing	2814.79	3021.37	7.34	10966.96	11151.23	1.68
Tianjin	1650.03	1861.63	12.82	7639.02	8198.59	7.33
Hebei	807.96	968.95	19.93	5342.17	4867.77	-8.88
Shanxi	941.08	1060.41	12.68	5851.00	5085.40	-13.08
Inner Mongolia	795.49	891.76	12.10	5044.37	3981.93	-21.06
Liaoning	1399.38	1562.30	11.64	6061.37	5099.99	-15.86
Jilin	1053.80	1245.01	18.14	6743.07	5177.18	-23.22
Heilongjiang	1288.12	1547.62	20.15	5342.13	4783.69	-10.45
Shanghai	2661.76	3066.87	15.22	15126.22	13313.68	-11.98
Jiangsu	1456.07	1748.56	20.09	5368.42	6838.60	27.39
Zhejiang	1416.92	1607.01	13.42	6496.40	6651.44	2.39
Anhui	551.28	528.06	-4.21	4960.88	4003.46	-19.30
Fujian	1344.90	1329.97	-1.11	4927.71	5252.67	6.59
Jiangxi	793.60	935.65	17.90	3892.48	3881.49	-0.28
Shandong	1386.88	1680.67	21.18	6274.25	6046.39	-3.63
Henan	644.01	835.91	29.80	6538.14	4477.28	-31.52
Hubei	851.42	1027.18	20.64	4345.09	3634.92	-16.34
Hunan	1133.06	1293.37	14.15	3984.09	3498.83	-12.18
Guangdong	2519.98	2469.33	-2.01	7742.85	7886.55	1.86
Guangxi	1146.97	1245.45	8.59	3995.22	4333.52	8.47
Hainan	1782.70	2120.70	18.96	7035.28	7971.12	13.30
Chongqing	1273.17	1333.58	4.74	4833.77	6179.91	27.85
Sichuan	1120.89	1292.73	15.33	3580.64	3680.11	2.78
Guizhou	969.71	1041.45	7.40	5232.19	3634.61	-30.53
Yunnan	1456.52	1639.90	12.59	7198.13	7975.74	10.80

Tibet	1899.87	4326.32	127.72	15535.42	14057.90	-9.51
Shaanxi	883.60	856.42	-3.08	5409.54	5370.94	-0.71
Gansu	1366.72	1533.19	12.18	6285.25	6059.83	-3.59
Qinghai	1549.05	996.61	-35.66	5868.47	4885.98	-16.74
Ningxia	1254.73	1391.73	10.92	6237.82	6798.41	8.99
Xinjiang	1831.84	1753.56	-4.27	3152.87	2154.43	-31.67

Data origin : << China Education Newspaper >>2001 12 31

Because education is lagged, there exists a kind of phenomenon same to a lot of developing country in western regions: human resources is abundant, but human capitals is exiguous. We can extend capital theory to people as a outcome of some investment, then we unite call technique and production knowledge deposit which is represented in people , education plays an important part in human capitals forming and knowledge capacity structure . Because education level of western regions is weak, human resources exploitation is insufficient and can not become human capitals.

2.2 low technology capacity

Science and technology research is another important factor influencing economic development relative to education. Presently, the most active and the most key factor is knowledge and technology in economics increase and society development. In western regions, technology worker is weaker than eastern regions . Seeing table 5:

Table 5 Comparison of technology workers between eastern partial regions and western regions (1998)

	Population(myriad people)	Student number in myriad people Unit : people	General technology workers (over engineers)unit : people	general technology workers (over engineers)in myriad people unit: people
The whole country	123626	25. 68	1489452	12. 0
Beijing	1240	158. 13	149158	120. 3
Tianjing	953	77. 47	41968	44. 0
Shanghai	1457	105. 75	98130	67. 4
Liaoning	4138	45. 47	104782	25. 3
Heilongjiang	3751	30. 86	46332	12. 4
Jiangsu	7148	33. 45	126305	17. 7
zhejiang	4435	23. 07	35555	8. 0
Fujiang	3282	23. 79	20685	6. 3
Shangdong	8785	20. 04	93616	10. 7
Guangdong	7051	24. 78	68770	9. 8
Chongqing	3042	23. 40	25453	8. 4
Sichuan	8430	17. 80	91739	10. 9
Guizhou	3606	10. 67	17116	4. 7
Yunnan	4094	14. 03	19934	4. 9
Tibet	248	12. 90	271	1. 1
Guangxi	4633	15. 23	18171	3. 9
Shanxi	3570	39. 02	72689	20. 4

Gansu	2494	20. 32	32577	13. 1
Qinghai	496	16. 54	5513	11. 1
Ningxia	530	20. 68	4851	9. 2
Inner Mongolia	2326	16. 97	17768	7. 6
Xinjiang	1718	26. 60	15758	9. 2

Data origin : Sustaining Development Research Team of CAS,2000,<<Sustaining Development Stratagem Report of China in 2000>>, Science Press.

In northwest regions , besides from Xinjiang 、 Ningxia , science and technology worker out of 1000 people in Shanxi 、 Gansu 、 Qinghai is higher than the whole country average level; government technology outlay expend per person in Shanxi is greatly higher than the whole country average level , the other provinces is correspond to the whole country average level ranging from 63% to 85% ; the number of patent authorized out of myriad science and technology workers is only corresponding to 25%-90% of the whole country average level ;per person technology market bargain number of technology workers is only corresponding to 23%-26% of the whole country average level; the number of international papers of myriad technology workers in Gansu and Shanxi is little more than or little fewer than the whole country average number, but that in other provinces is fewer than the whole country average number . The capacity index of resources and creativity of R&D in northwest 5 provinces is seen from table 6:

Table 6 The capacity index of resources and creativity of R&D in northwest 5 provinces(1997)

index	Shanxi	Gansu	Qinghai	Ningxia	Xinjiang	The whole country
Number of workers taking up technology activity	133405	55391	13169	7119	21144	2433920
Number of R&D out of 1000 people	3.74	2.22	2.66	1.34	1.23	1.97
Number of patents authorized (piece)	946	295	56	84	328	41419
Technology market bargain number	71782	26427	12035	2351	18370	3813718
Number of international papers(piece,1996)	1063	467	4	1	21	19598
Technology expenditure government	165465.4	34218.8	7126.7	4970.3	15546.1	2101588.1
Patents of myriad technology workers	70.9(41.7)	53.3 (31.3)	42.5 (24.9)	118 (69.3)	155.1 (91.1)	170.2 (100.0)
Per person technology markert	5380.8 (373)	4771 (33.1)	9138.9 (63.3)	3302.4 (22.9)	8688 (60.2)	14436.5 (100.0)

bargain number of technology workers						
International papers of myriad technology workers(piece)	79.6(98.9)	84.3 (104.7)	3.0 (3.7)	1.4 (1.7)	9.9 (12.3)	80.5 (100.0)
Per person technology expenditure of technology workers(yuan)	1.24 (144.2)	0.62 (71.1)	0.54 (62.8)	0.7 (81.4)	0.74 (86.0)	0.86 (100.0)

Append: the percentage in bracket is the number of each province accounting for that of the whole country.

Data origin:Sustaining Development Research Team of CAS, 2000,<<Sustaining Development Stratagem Report of China in 2000>, Science Press.

These data reflect there are some technology human resources in western regions , but the output efficiency of technology is largely different from the whole country average level and the condition of research and experiment is lagged , the technology system having vivid planned economy character and technology route having no market guidance restrict the exertion of potential of technology workers .

If what is reflected in table 6 is that production of technology creativity is “output ” , the important reason resulting in the low output is “low investment ” showed in table 7 and table 8.

Table 7 Technology outlay expenditure instance of each region in 1999

Region	Technology outlay expenditure number (a hundred million yuan)	Increase(yuan)	Per person technology workers outlay(myriad yuan)
Sum	1183. 0	13. 6	5. 0
East	783. 2	14. 4	6. 5
Middle	216. 3	14. 2	3. 3
West	183. 7	9. 1	3. 6

Data origin :Development and Planning department of Science and Technology Ministry, 2000,<<Technology Statistic Report >> Collection(inner information).

Table 8 R&D outlay expenditure instance of each region in 1999

Region	R&D outlay expenditure (a hundred million yuan)	Per person R&D outlay of research and development personnel)
Sum	583. 4	8. 1
East	388. 5	9. 9
Middle	100. 0	5. 7
West	95. 0	6. 2

Data origin : Development and Planning department of Science and Technology Ministry , 2000, <<Technology Statistic Report >> Collection(inner information).

<< regional creativity capacity report of China (2001)>>(Technology development stratagem research team of China ,2002)shows that the province is arrayed by regional creativity capacity before 3 as following: Shanghai , Beijing, Guangdong and the score of each province is as following :58.33, 58.27 and 49.68 in the appraisalment of Chinese regional creativity capacity . Apart from Shanxi , Sichuan and Chongqing , the other provinces is arrayed at rear:Xinjiang, 22th, 19.38;Gansu, 23th, 19.24;Guangxi, 24th,19.06;Yunnan,25th,18.92;Inner Mongolia ,27th,17.74;Ningxia,28th,17.48;Guizhou,29th,16.89;Xizang,30th,15.96;Qinghai,31th,15.01.

3. Several questions relative to development of education and technology in western regions

3.1. The exploitation of the human resources and the development of the human capital in the west

All the people that benefit for the society called the manpower of the society, including the manager、 technician and other labor. The capability of all these people is the human capital of the society. So human resource is a general designation of the manifold ability of the people who can impulse the development of the economy and society. We can change the human resource into human capital by investing in the former and developing in it. For people are the most important factor of the productivity, education is the first impetus of the development of the human resource. Therefore, the first thing of the great west development is develops the human resource and the education.

3.1.1 Develop the basic education

Based on the basal data, in the west many workers are the illiteracy or the people who just graduated from the elementary school because the basic education of the west drops behind. So we should energetically develop the basic education in the west regional. The basic education makes the people be familiar with the society, adapt to the society and have the ability to live an independence life when they are children. The aim of the education is not only to impart the necessary knowledge but to cultivate the spirit of civilization, the consciousness of citizen, the conscience and the liability of the society, the comprehension to the human rights and the obligation to others. By this token, the basic education has the “overflow effect”.

The costs of the basic education are low and can be divided into direct costs and overhead costs. The direct costs are the money paid for the education. The overhead costs are the opportunity costs that mean the income the students give up when they are study. This latter cost will grow with the increase of the student's age.

It should be the government who invests in and develops the basic education in the west because the investment of the basic education of a family to their children is based on the yield of it and this yield is mostly benefit to the society.

3.1.2. Develop the higher education that content to the economic and society development in the west

The higher education develops rapidly in the west since the opening-up policy. But it is so slow compare with the east region that the gap of the higher education development between the west and the east is bigger and bigger. The development of the economic in the east makes it possible that hold out the higher education energetically. In the west, on the contrary, the income of the finance cannot sustain that development and the social capital cannot invest more in the higher education because the slow speed of the development in the west.

One side of the higher education is science education and scientific research. The other is engineering education that connects the students with the economic activity. It is important to develop the higher education in the west especially the engineering education that is seemed as the support of the economic development in the west. The higher education should face the regional economic construction and accord with the change of the industrial structure, moreover, should adapt to the environment construction.

3.1.3. Reform and develop the basic establishment actively

Not only the basic education but the higher education cannot apart from the basic establishment construction. The basic establishment drops behind, the houses of the elementary school are dilapidated, and the laboratories of the higher school straggle much compare to that of the east. All of these are the main reason of the education straggling in the west. So if we want to develop the education we should rebuild the schoolhouses and the laboratories and update the equipment. Based on these we can give a nicer environment to the education development and can increase the power of the regional economic development.

3.2. How to cognize the leaving and the attraction of the talent

At present the problem the west region faces is similar with that of the china. It would be surprising if there have not the high-tech company of Chinese in the Silicon Valley. China educated its children from kindergarten to college. It is a hard work need reclaiming, planting and cultivating. But the American harvest the best fruit easily without the hard work because Chinese has done. It is same to the west region that is short of condition to carving out and a well talent manages system, that make it lacks the attraction to the talents. That means this place cannot attract the talent and its talent flow to the east and other countries. For exempla, there are many talents who come from the west in the Zhongguancun of Beijing. Thousands of the students that graduate from the university of electronic science and technology of china are making research in the field of high-tech in Silicon Valley or other place. None of the first passel of graduate students whose major is insurance and accountant cultivated by the southwest university of finance and

economics and the -----company stayed in china, and none of the MBA that cultivated by them stayed in the west region---all of them work at the seaboard or study aboard. There are many people including academicians, the tutor of doctor and the youthful talent leaving from the Lanzhou University. The percentage of obtaining employment of the students who graduate from the colleges in 1998 in the east is 91% and in the west is 9%. In 1999 the percentage of the students that graduate from the universities of the national departments in 7 provinces in the east who work in the 12 provinces in the west is only 6.2%. The percentage of the students who study in the east and work in the west is 50.5%. The percentage of the students who study in the west and work in the west is 54.5%. The data of graduate students is 2.7%, 26.5% and 59%.

The leaving of the talents in the west is seriously. Basic education improves the people's ability, that makes these people more easier to go from place to place. Special education gives more special skill to the people, that makes them more easier to drift than the former. It is critical to solve the two problems. So the central government and the west regional government should take action to prevent the leaving of the talent and attract the intellectual capital.

In the market economy the principle of the resource arrangement is that productive factor flows to the region and the department which has higher income. It is not surprising that many talents flow to the east because the slow growing of the economic and the low income. That is the law of the market. Obviously, the west is at the disadvantageous position compared to the east and more and more talents flow to the east. Many provinces and companies try to keep their talents by all kinds of ways even detaining the files or giving political punishment but the effect is little. So many talents still leave and break from his work although they have not the files or have a political punishment. Every special talent has an active circle (in the field of science and business intercourse), so if he deteriorated the relationship with any one in this circle there should be a chain reaction. Therefore the west government should recognize this law when deals with the problem of talent. However, it is inadequate that recognize it and the important thing is serve the west development with the law. Although talent leaving is adverse, if we could recognize the law we should serve the west with it.

Thus it can be show that we should rebuild the talent view. The west region should give up the conventional ideal that "department possess" and "local possess" when attract the talent. The new view should be "work for us without stay with us, you can fly like a bird if you can contribute to the west development." Talent leaving is one of the bottlenecks of the west development since the bad environment and the relative lagging development of economy and society. The west should redefine the talent environment and timely put forward the new policies that "hold the registered permanent residence, free to come and go and build a favorable work condition" as the main method of attract talent. Moreover, it is important to deal with the relationship correctly that between the existing talent and the attracted ones. The first thing is making use of the existing ones and keep them staying. At the same time attract the excellent ones external by all kinds of methods. In the view of economics, making use of the external talent is the most economical. There is a series of problems should be handle if the talents entirely enter such as the house, the children, the spouses, all kinds of social insurance and so on. If the west take advantage of the external talent with high salary, apparently the cost is high but it is more low than the entirely entrance. In addition, it is difficult to inspect if the entirely entered talent work effectively because of the restriction of information and the limitation of policy. On the contrary with the entirely entrance the efficiency will be higher because it is easy to supervise and it has more competition

that makes people work more hard.

Based on the comprehension above, we should attract more talent that is like the migratory bird. The attraction of the external talent has considerable advantage compare to the education and science research. It is a long time that a talent comes on and it need high cost. According to the analysis of the experts, every one is a synthesis of physique, skill and intelligence. Commonly, the relative social cost of physique, skill and intelligence is 1:3:9. Videlicet, if the cost of the health physique is 1, the relative costs of skill and intelligence education is 3 and 9. If compare them on the level of the contribution to the social, the ratio is 1:10:100. Videlicet, if the contribution to the social of one who only has the health physique is 1, the person who also has the skill can give as 10 times as that, and the person also with the intelligence can give 100 times. Therefore if we can effectively attract the external talent with skill and intelligence, we can gain more talents with skill and intelligence with fewer costs and can gain more grows in 10 times or 100 times. The west should try the best to draw more external talents into the great west development. There is an important problem should be clarified: if it is a “bad” thing that the west people who were born in the west and grow in the west work in the east? In fact, the same as the people who work in the east can take back much capital (the salary of them) to the west, the west talents who work in the east can also take back the capital and skill. If the talent who is the rural population settles in the east with his family, he is subservient to the urbanization of the west by transferring the rural population.

There should be an external environment that is benefit for the growing and development of the talent because all kinds of specialist is always lacking to the economic grow. The east has more attraction to the talent than the west because it is more developed and has a more flexible mechanism of employ persons. It may be a long time to build a talent growing mechanism in the west because of the lagging economy and the capital lacking. That is disadvantage to developing the west and making the harmonious growth of civil economy in every region. So it is an unequal competition in attracting talent between the west and the east because the start bit is different. That means there need the modulation of the central government. One side, the realization of some management systems need the reform of the whole administrative system because the former is one part of the latter. .On the other hand, the government should also make some talent policy inclined to western region, so as to attract the talents from east-middle region or abroad to participate in the construction of economy in western region.

3.3 Suggestions for the western region to introduce talents from the measures taken by Beijing Normal University to introduce and encourage talents

Beijing Normal University is a high normal university with long history and good school spirit. It is a key university directly affiliated to the ministry of education. In the history of a century, Beijing Normal University has gradually developed a discipline structure with its own advantages and characteristics, gathered a good number of excellent scholars and specialists, accumulated rich experience in schooling. Now the university has become a national base for training excellent teachers and specialists, gained governmental focus for investment during the “seventh Five Year Plan”, was designated as a member University of the "Project 211 " in 1996.

Since 1992, in order to establish itself as a first-class comprehensive university with a focus on research, Beijing Normal University started to introduce distinguished scholars and experts. And the measures she takes are mainly as follows:

—As to the domestic first academicians, we follows the principle of “just being here, but

not the ownership”. As to the international academic backbone, We follows the principle of “pursue what they are doing, but not theirs being here”. This is to say, as to the domestic first academicians, We only require them to be here and work for the teaching and research of our school, but not the ownership of them, no matter their records or relationships are here or not. As to the international academic backbone, We only require them to work for our school, no matter where they are. Just under such a principle, Beijing normal university attracts a number of outstanding talents in china or abroad, and they have done a great contribute to the development of Beijing normal university.

—To establish a “research platform” for all kinds of talents. We must establish a “research platform” for all kinds of talents to exert their ability, and this is an important foundation for cooperative research. In the past, the intellectuals work has a characteristic of “individual work”, but now, “individual work” can not fit into the development of modern science and technology. Cooperation has become a precondition for intellectuals to carry through their research, and a good “research platform” is the requirement to “cooperation labor”. For example, Beijing normal university has constructed research institutions with the focus on resource and environment, social development, or public policy etc, which recruit all kinds of special talents, and offer many advantages for their “cooperation labor”, so as to make them engage in their research comfortably.

—Create a fair competition circumstance and reform distribution system. In order to exert the ability of talents, a well academia and rational distribution system is also necessary. Except for the well academia environment, Beijing normal university also established scientific research allowance distribution reform scheme, so as to mobilize the enthusiasm of researchers. And the scientific research allowance include: research project allowance, research achievement allowance, research reward allowance, science and technology transform allowance, research labor reward allowance, SCI citation papers allowance. Research project allowance, research achievement allowance, research reward allowance are sent out according to the average of the first 3 years. science and technology transform allowance, research labor reward allowance are chosen out yearly and are send out at one time. The amount of allowance is decided by emcee declaring system. At first, the chief undertaker of project, the first author of paper, the first person who fulfill the prize project declare all kinds of allowance. And at the same time, deciding the allowance share of everyone by the participator’s real workload.

As a aphorism has said different profession has a common principle. From the means of Beijing normal university to recruit talents, we can find a way for the western region to abstract and encourage talents.

4. Several suggestions to the education and the development of science and technology in western region.

4.1 Increase the finance aid of central government, help the popularization program of civil education in local district.

Increase the finance aid of central government, and help the popularization program of civil education in local district, so as to realize the popularization of basic education in western region with less time. Presently, the feasible means mainly are: encourage the large and middle coastal city in eastern region to help the poor children in the western rural areas to continue their education by all kinds of means. Because of the decline of the number of preschool children, there

are a lot of equipment are left unused, which we can use to set up schools for the poor areas. Encourage undergraduates to go there and support the compulsory education voluntarily in their winter or summer holidays. Make all junior high school grads have an opportunity to receive senior high school education, senior profession high school education or secondary technique education. Set up agriculture profession schools fitted for agriculture production and rural industry in rural areas. The government should support the poor areas with profession technique education and medium profession technique education, so as to make the students master professional skill ,and become applied technicians.

In order to implement the popularization program of civil education, we must reform the administrative management system and make it fitted into the socialistic market economy system. During the implementation of civil education popularization program, we must ensure that the operation of all the aids from central government and the “helping the poor program through education” is open and within the law. Owing to the voluntarism characteristic of the eastern region to help the poor, it is very important to set up an open system and operation mechanism, which is a kind of responsibility and respect.

4.2 Suggestion to set up the westward education special program

At present time, the education base in the western region is very weak, and talents are flowing out very badly. It is urgent to change this situation in the development of western region. So it is better to set up westward education special program. It includes “talent rooted” program, “talent westward” program, “spring-sunshine westward” program, “bridge tower” program, “diathesis education in western poverty rural area” program, “teachers development in western minority district” program.

4.3 Develop higher education in western region with different forms

Open the higher education market, develop the higher education and higher profession education with great efforts, adopt various ways to run colleges, develop open colleges with scale benefits over regions. Ministry of education, national broadcast and television bureau should provide conditions for the western region to set up open college, which include television education, network education and suppositional college. That is to say, using satellite and internet to give lessons and make the students distributed in different regions to share with resources. National library and colleges in coastal cities should set up digital libraries as soon as possible, and provide prompt information and teaching service to the western region. Encourage top-ranking colleges in the eastern region to increase students recruited from western region, and pay their expenses by central finance if they go back home after graduation. In the province without subjected college, set up a key university subordinated to the province with efforts under the help of central and local government. Increase the investment to higher education in minority district, implement free or part-free policy, and increase the investment to the construction of teacher’s group of colleges there.

4.4 Increase the investment to the infrastructure construction of colleges, encourage colleges to take part in the construction of infrastructure in the development of western region

During the infrastructure construction in the development of western region, we should firstly ensure the development of strong subject, the construction of backbone teacher group, and the construction of infrastructure for talent training (such as schoolhouse and laboratory in dire need of repair). And after the fully demonstrability, carry through a series of backbone project with all efforts. Develop those specialty oriented to the development of western region, which is urgently needed by the protection and construction of environment, such as, agriculture science, resource and environment science, ecology science etc. Set up a series of key laboratories of state or education department and teaching and research talents training base for these subjects.

4.5 Accelerate the science and technology system reform in western region, improve the science and technology innovative capability

Science and technology system with a characteristic of planned economy restricts the potentiality of researches. So firstly, a scientific research system with various forms should be set up. Continue to maintain and support the public research institutions, and at the same time, encourage some research institutions to adopt the operation fashion of enterprise, or change them into company, ally with corporation group, and encourage enterprise ran by local people to set up scientific research institutions. Secondly, exert the potentiality and function of researchers, encourage innovation of knowledge, especially the innovation of technology, which is because that the technology innovation has the practical significance to the western region. Thirdly, implement the high and new technology development strategy which is mainly focus on buying and utilizing the high and new technology, utilize the after advantage of oneself to develop the high and new technology selectively, and make it fitted to the demand of local development and the domestic and international market. Lastly, make full use of the exterior resources of science , technology and labors. In eastern region and even abroad, there is a lot of academicians, professors, high-ranking engineers, enterprisers who come from western region and would go back aperiodically. We should make full use of these opportunities and provide the condition for them to transmit knowledge, transfer technology, communicate information, give lectures, invest and make trading. Encourage them participate in the technology innovation program of local. In a word, science and technology system reform is to make the traditional science and technology management, i.e. the management of scientific research, turned into a service to scientific research.

4.6 The importance of education and training to the western region

Training is of great importance to the construction of western region, which includes management training and skill-worker training and no-skill worker training etc.. Comparing with eastern region, the western region also have advantage in its cheaper labors, except for its material resource and ecology capital. That is to say, the development of former industry and new industry here will have a cheaper cost of labor than eastern region, and the low earnings in western region due to its un-development economy. The un-development economy of this region restricts the choice scope of works, and decreases the opportunity cost of labors. In the past 20 years, the

economy of the eastern coastal region obtained quickly development. This is mainly because it has a lower cost of labors than the developed countries in the world. With the much cheaper elists and such an open environment, enterprises and capitals from many countries are attracted here and make great contribute to its development.

Now, the development of western region in China means that the western region would play the same role that eastern region had played in the past, so it must adapt to the situation actively. At the same time, it is very important for the development of western region to strengthen the training of labors in management, finance, production and market, so as to make them master necessary knowledge and change them into labor capital from labor resource. Therefore, in order to improve the abilities of whole labors to fit into modern production, it is necessary for the local government to develop the occupation education and skill training. When labors receive fully training, they would absorb more investors to invest in the western region. On the other hand, more training force should be put on service industries, such as banks, tourism and public organizations, so as to increase the labor capital of these departments and provide a well vestment environment for the inflow of capitals.

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