Investigation of Regional Differences in VET-Industry integration in China
---Development of a Midrange theory

Dr. Zhilei TIAN
China Institute of Education Finance Research
Peking University
Associate Prof. Dr. Jun LI
Institute of Vocational and Technical Education
Tongji University
Jun ZHU
Zhongshan Torch Polytechnic

田志磊
北京大学中国教育财政科学研究所
李俊
同济大学职业技术教育学院
朱俊
中山火炬职业技术学院

Structure

- A few facts about the industry-VET integration
- Review of literature
- Research design
- Case studies
- Basic findings

Overall developments of Chinese VET

Decline in enrolment in VET in late 1990s.

- Enrolments in technical schools declines in 1997,coincide with first wave of SOEs laid-offs.

- Vocational high school declines in 1998.

- Secondary specialized schools declines in 1999 after college expansion.

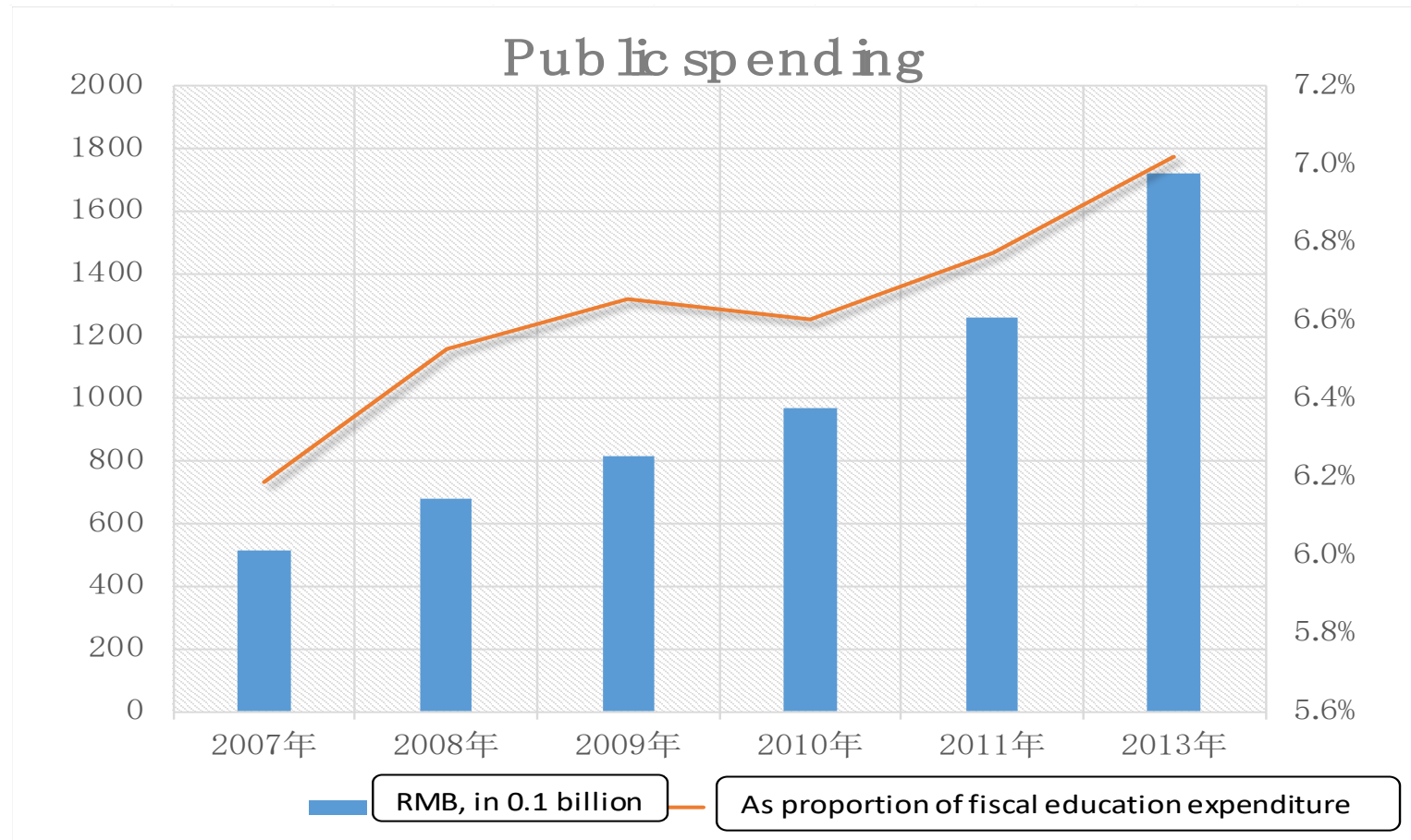# Regional differences appeared from beginning

- *However, the decline of VET did not take place simultaneously nationwide.*

- *Some regions in south and east China are witnessing a clearly growing VET system that fits in the local industry*

年份	顺德区	全国
1978年		
1979年	自发产生，百花齐放，以镇为主	恢复阶段。允许办学，多部门、多行业共办，社会力量可参与办学
1981年		
1984年		
1985年		
1992年		发展阶段。规模发展和内涵发展并重，引入市场机制
1993年	转型阶段。区级统筹，集约办学，资源共享	
1996年		
1997年		
1998年	体系形成阶段。中专、中技与职业中学界限消除。高职为龙头，中职为主体，成人继续教育及岗位培训为延伸。一镇一校，一校一品，优质均衡	转型滑坡阶段。矛盾重重，生源减少，学生与就业联动少，课程滞后，政策支持力度下降
1999年		
2000年		
2001年		
2002年		
2003年		
2004年		
2008年		重振阶段。扩大规模，提高质量。建立学生资助体系，示范校建设，基础能力建设，生均拨款机制等
2009年		
2011年		
2012年—至今	政策集权化背景下的体系重塑	

Central Government investment in VET: 2005-2013

- National Demonstrative Secondary Vocational School Construction Program
  - 10 billion Yuan, distributed among 1000 secondary vocational schools
- Student Financial Aid
  - 2006-2013, 47.2 billion Yuan spent on student grant
  - 2009-2013, 28.9 billion Yuan spent on Tuition-Free Policy
- Basic Capacity-Building Program
  - 7.8 billion Yuan, distributed among 4556 practical training bases
  - 2007-2013,2.1 billion Yuan spent on teacher training
- Comprehensive Awards Program
  - 2013,central government spend 6.4 billion Yuan on rewarding local governments who do well in vocational education

Relative importance in fiscal allocation increases

Public spending

- ☐ Public spending on secondary VET has been increasing
- ☐ Public spending on secondary VET accounted for about 7% of total fiscal education expenditure (ministry budget) in 2013
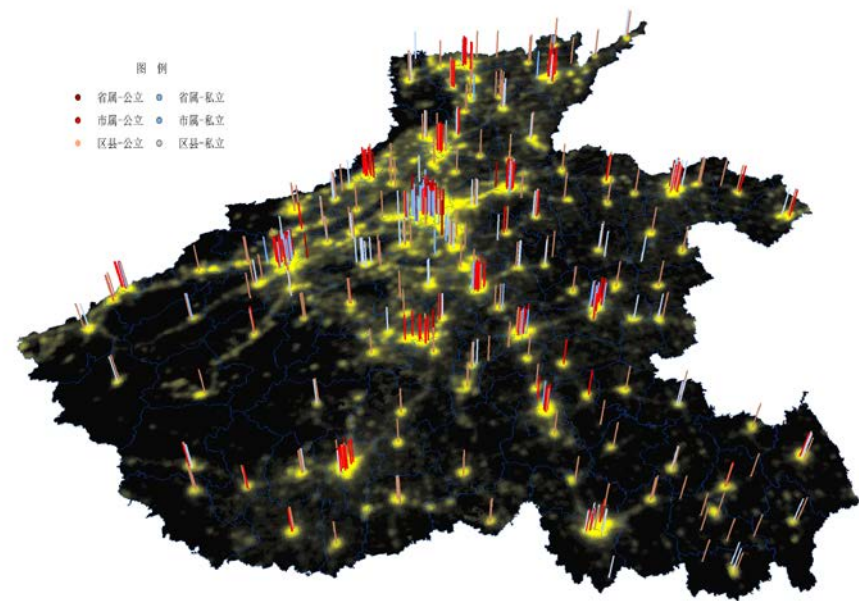- ☐ The proportion has been increasing over time

A few facts about the **industry-VET integration**

Several government policies have emphasized the integration of industry and vocational education.
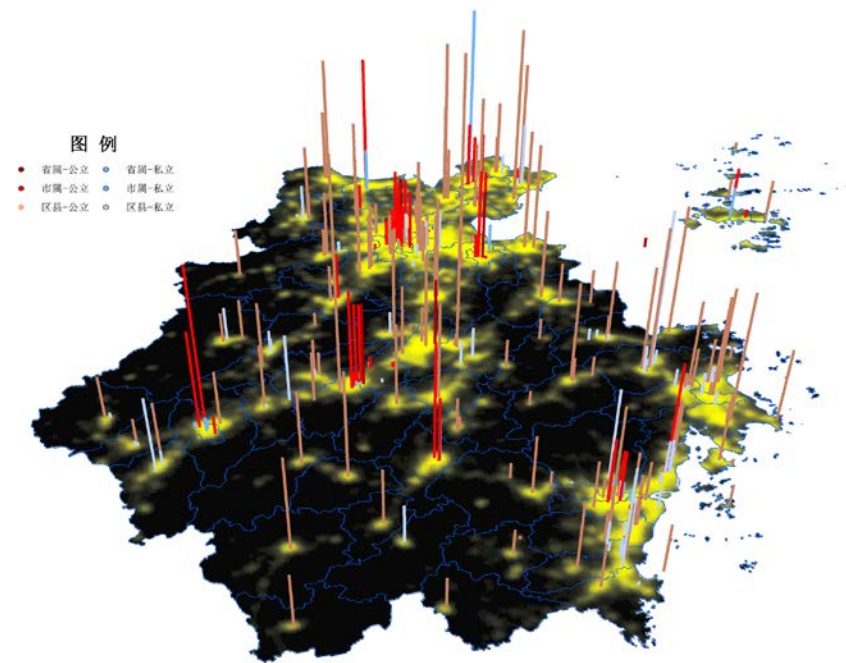
This indicates that the integration between industry and VET is not functioning very well.

In the central region, the correlation between secondary vocational education and regional economic development has improved;
in the eastern region, the correlation between secondary vocational education and regional economy has declined.

2011年河南中职学校招生地图

2010年浙江中职学校招生地图

A few facts about the industry-VET integration

- The integration of higher vocational colleges into regional industries is better than that of secondary vocational schools. This situation has been strengthened in recent years.

- It is not just the result of industry upgrading, some factories say they prefer vocational school graduates to the college graduates, but find it increasingly difficult to recruit.

The relationship between school and government has been strengthened, and the relationship between school and enterprise has formally increased but weakened in terms of content.

School-government relationship

School-industry integration

A few facts about the industry-VET integration

- The industry-school integration in some areas is going well, whereas in some other areas has been really bad.

- The supply of skilled/semi skilled workers is replaced by short term training provided by private training agencies, but this has bad impact on the upgrading of local industry.

Initial summary

- Despite the steady increase of government spending and policy efforts, the school-industry integration remains a difficult problem for Chinese VET.

- Clear regional differences exist in the degree of school-industry integration.

- To a certain degree, the government policy seems to have negative and various influences.

What are the main reasons for these regional differences?

Review of literature

- Explanation from vocational pedagogy: more normative studies than empirical studies which focus on the curriculum-didactic level.

- Grand theory/Explanation from other discipline (sociology and economics): successfully explain the difficulties, especially in international comparison (for instance with German speaking countries).

- Recently, more empirical studies have paid attention to the willingness of companies to invest in training, which is one major challenge in China.

Research question

- Grand theory can largely explain the difficulties on national level.

- However, the following questions remain unanswered:
    - Why the VET-industry integration differ so greatly among regions?
    - What are the mechanism for this integration?
    - Why do public policies have such a heterogeneous impact on the integration of VET and industry in different regions?

- Zeitgeist of contemporary Chinese VET

- Before we establish the suitable national institution (?), the richness of the realities in the transitional period gives us the opportunity to explore the midrange theory to explain these questions.

- It is also crucial to understand the regional differences, otherwise we cannot have reasonable public policies.

Research design: building theory from case studies

- Building theory from case studies is a research strategy that involves using one or more cases to create theoretical constructs, propositions and/or midrange theory from case-based, empirical evidence (Eisenhardt, 1989、2007)

- For start, focusing on manufacturing and east China.

- Extreme case method according to Seawright and Gerring（2008）

- We want to have dialogue with the regional study researchers such as Jianjun Zhang (2005, 2006).

- Methods: literature (education records, school-company agreement...), analysis of industrial and local economic data etc., in-depth interview with stakeholders

行业大类代码	规模以上企业数					规模以上企业从业人数（亿元）					规模以上企业工业总产值（亿元）				
	中山	太仓	柯桥	永嘉	瑞安	中山	太仓	柯桥	永嘉	瑞安	中山	太仓	柯桥	永嘉	瑞安
黑色金属矿采选业	0	0	1	0	0	0	0	1324	0	0	0.0	0.0	8.0	0.0	0.0
有色金属矿采选业	0	0	1	0	0	0	0	964	0	0	0.0	0.0	1.0	0.0	0.0
非金属矿采选业	3	0	1	0	0	1562	0	400	0	0	2.2	0.0	0.5	0.0	0.0
农副食品加工业	27	8	10	0	12	8747	3399	2903	0	3971	54.4	17.2	33.3	0.0	10.0
食品制造业	30	4	3	0	8	16869	1795	850	0	2494	153.5	4.0	3.3	0.0	6.0
酒、饮料和精制茶制造	15	1	18	2	0	7749	298	7745	230	0	77.0	3.6	33.2	1.0	0.0
烟草制品业	0	1	0	0	0	0	343	0	0	0	0.0	1.5	0.0	0.0	0.0
纺织业	116	63	654	1	51	56487	22752	277717	428	20068	154.9	60.3	1437.9	0.4	41.3
纺织服装、服饰业	315	51	52	24	23	194686	23461	21219	15641	7489	294.6	78.4	65.6	62.2	11.1
皮革、毛皮、羽毛及其	85	14	7	57	172	92781	8966	2513	39818	68178	129.5	5.8	8.3	123.7	101.2
木材加工和木、竹、藤	14	2	0	0	1	6082	296	0	0	509	23.3	0.8	0.0	0.0	0.3
家具制造业	103	11	3	1	0	49437	4570	3350	404	0	109.7	6.6	15.3	0.2	0.0
造纸和纸制品业	89	14	14	1	4	41504	8349	4899	134	1433	128.3	91.3	21.9	0.7	2.8
印刷和记录媒介复制业	43	14	8	2	12	16321	5273	2592	786	4374	70.4	8.7	9.1	1.1	10.2
文教、工美、体育和娱	80	20	59	13	6	66747	8576	19607	4387	3308	116.6	15.6	143.4	14.3	6.4
石油加工、炼焦和核燃	3	4	0	0	0	457	1060	0	0	0	48.1	107.3	0.0	0.0	0.0
化学原料和化学制品制	131	84	30	8	16	45436	27140	12507	2381	5995	223.4	146.2	427.5	6.9	100.0
医药制造业	23	15	4	1	1	9726	5174	1615	213	886	167.3	30.0	7.9	0.3	4.9
化学纤维制造业	3	269	86	1	1	935	64334	36382	226	1519	1.5	305.2	543.0	1.2	23.4
橡胶和塑料制品业	233	53	31	5	54	113983	17963	14389	2228	15782	306.2	77.1	135.0	5.0	48.2
非金属矿物制品业	69	41	42	5	9	30357	13247	16285	1088	2837	115.5	44.4	100.3	2.8	9.3
黑色金属冶炼和压延加	16	19	28	13	10	6493	5164	10350	3003	3469	40.8	38.0	88.3	6.2	7.8
有色金属冶炼和压延加	27	16	12	3	12	13290	7295	4846	566	3678	153.0	82.3	91.3	2.6	15.7
金属制品业	228	66	15	7	39	102629	24975	10397	2761	12273	284.7	84.1	112.2	5.4	20.2
通用设备制造业	120	62	28	99	77	63742	26026	8640	38599	31086	268.0	138.4	31.2	95.3	68.3
专用设备制造业	82	43	35	8	48	36396	15145	11450	3211	14226	106.1	32.4	52.6	15.2	23.6
汽车制造业	29	40	20	0	112	15139	16686	7432	0	39663	122.4	65.9	48.5	0.0	79.0
铁路、船舶、航空航天	12	31	0	0	19	4357	14004	0	0	7955	52.1	25.8	0.0	0.0	11.6
电气机械和器材制造业	526	68	16	18	52	278995	28988	6301	5686	22523	1134.2	216.0	52.2	10.9	64.1
计算机、通信和其他电	154	39	9	5	0	141735	22855	3250	1522	0	887.3	99.0	7.7	2.0	####
仪器仪表制造业	24	21	2	10	14	23496	6706	1426	4300	9024	40.4	27.3	4.3	10.0	32.5
其他制造业	23	2	0	29	1	13839	672	0	10684	168	39.7	1.2	0.0	14.0	0.3
废弃资源综合利用业	2	20	1	0	0	735	5591	50	0	0	4.4	19.2	0.6	0.0	0.0
金属制品、机械和设备	0	0	0	0	1	0	0	0	0	153	0.0	0.0	0.0	0.0	0.7
电力、热力生产和供应	8	4	11	3	1	3133	1611	5496	714	323	47.1	103.2	53.6	14.8	44.0
燃气生产和供应业	5	3	1	0	1	1611	814	196	0	168	70.9	11.7	2.1	0.0	0.3
水的生产和供应业	18	1	4	1	4	6147	63	1746	90	835	22.9	1.9	9.3	0.4	2.0
合计	2,656	1,104	1,206	317	761	1471603	393591	498841	139100	284387	5450.3	1950.3	3548.2	396.4	745.2

Major investigated companies

瑞安，汽摩

	地区	行业	_乡	_登记注册类型	_主要业务活动1	~总产值	工业~名	_从业~数
6	瑞安	汽摩行业	温塘下镇	股份有限公司	制造汽车发动机关	1156677	2	2342
74	瑞安	汽摩行业	浙?塘下镇	股份有限公司	微电机及其他电机	1261797	1	2735
84	瑞安	汽摩行业	浙塘下镇	私营有限责任公司	汽车零部件制造	385484	10	704
86	瑞安	汽摩行业	华尔达集团有限公司	其他有限责任公司	漆包线生产	729353	3	307
149	瑞安	汽摩行业	塘下镇	其他有限责任公司	滤清器制造	472971	5	707
153	瑞安	汽摩行业	浙江通力重型齿轮股份有限公	股份有限公司	减速机制造	395082	9	571
163	瑞安	汽摩行业	塘下镇	私营有限责任公司	螺栓制造	622177	4	1398
173	瑞安	汽摩行业	浙江长城换向器有限公司	私营有限责任公司	制造换向器	404561	8	1540
270	瑞安	汽摩行业	塘下镇	私营有限责任公司	滤清器制造	467194	6	983
274	瑞安	汽摩行业	塘下镇	中外合资经营企业	流程泵高压泵制造	457513	7	505

中山，服鞋行业

	地区	行业	_单位详细名称	_乡
44.	中山	服鞋行业	中山市长城制衣有限公	沙溪镇
55.	中山	服鞋行业	中山国泰染整有限公	三角镇
143.	中山	服鞋行业	中山百佳染整有限公	三角镇
199.	中山	服鞋行业	中山通佳鞋业有限公	南朗镇
203.	中山	服鞋行业	中山市永顺升毛织有限	东升镇
226.	中山	服鞋行业	中山欣锝鞋业有限公	坦洲镇
357.	中山	服鞋行业	中山基业鞋类制品有限	板芙镇
416.	中山	服鞋行业	中山益达服装有限公	板芙镇
501.	中山	服鞋行业	中山市霞湖世家服饰不	沙溪镇
505.	中山	服鞋行业	广东圣玛田服饰有限公	沙溪镇

永嘉，服鞋

	地区	行业	_乡	_登记注册类型	_主要业务~1	~总产值	工业~名	_从业~数
7	永嘉	服鞋行业	浙江红蜻蜓鞋业股份有限公	股份有限公司	皮鞋制造	3588489	1	4499
12	永嘉	服鞋行业	永嘉县东方日泰鞋业有限公	私营有限责任公司	皮鞋生产	458109	7	1398
14	永嘉	服鞋行业	佰纳鞋业有限公司	私营有限责任公司	皮鞋生产	368333	9	1598
15	永嘉	服鞋行业	杰豪集团有限公司	私营有限责任公司	皮鞋生产	382469	8	1719
22	永嘉	服鞋行业	奥康集团有限公司	其他有限责任公司	皮鞋制造	2215753	2	2799
32	永嘉	服鞋行业	报喜鸟集团有限公司	其他有限责任公司	纺织服装生产	2063272	3	939
39	永嘉	服鞋行业	蜘蛛王集团有限公司	其他有限责任公司	皮鞋制造	641881	6	2360
48	永嘉	服鞋行业	浙江奥康鞋业股份有限公司	股份有限公司	皮鞋生产	903461	5	2497
51	永嘉	服鞋行业	浙江鲍斯高服饰有限公司	其他有限责任公司	纺织服装生产	350279	10	1684
64	永嘉	服鞋行业	浙江报喜鸟服饰股份有限公	股份有限公司	纺织服装生产	1356643	4	1838

太仓，汽摩

	地区	行业	_单位详细名称	_登记注册类型	_主要业务活动1
1404	太仓		和承汽车配件（太仓）有限公司		
1413	太仓		特灵空调系统（中国）有限公司		
1414	太仓		舍弗勒（中国）有限公司		
1430	太仓		苏州巨能发电配套设备 浏河镇		
1436	太仓		保利协鑫太阳能电力系 浮桥镇		
1504	太仓		法可赛（太仓）汽车配件有限公司		
1506	太仓		奥特斯维能源（太仓）~ 浮桥镇		
1533	太仓		太仓协鑫光伏科技有限公 浮桥镇		
1571	太仓		天顺（苏州）金属制品有限公司		
1581	太仓		太仓海润太阳能有限公 浮桥镇		

Vocational school descriptions

永嘉职业学校专业情况						
学校	A		B		C	
年份	2010	2013	2010	2013	2010	2013
数控技术	133	88			112	145
电子电气			304	223		
机电技术			64	49		
文体艺术类	332	255	114	155		
金融商务	417	350	889	655	273	282
计算机	200	150	141		143	158
服务类			117	79		

school-company agreement

合作方案

甲方：　　　　　　　　　（以下简称甲方）

法人代表：

公司地址：

乙方：　　　　　　　　　（以下简称乙方）

法人代表：

学校地址：

为进一步加强学校与用人单位的合作，共同做好毕业生的就业工作，不断向企业输入应用型人才，优化企业的人力资源，建立长期的人力资源供需协作关系，本着"面向市场、适应需要"、"平等协商、互惠互利"、"优势互补、共同发展"的原则，甲乙双方建立校企合作关系，经双方友好协商，达成以下协议：

一、合作总则

双方本着互惠互利的原则，乙方根据甲方发展需要，设置相关专业的订单班。甲方为学生提供奖学金、按到厂顶岗实习学生人数支付乙方培训费，乙方按甲方职业岗位的知识技能要求和职业资格准入相关条件制定实施教学计划，按需施教并输送到企业工作。同时双方可成立专业建设委员会，对相关内容进行指导及管理，指导专业建设和教学工作。

二、合作方式

学制为 2+1 教学模式，即学生先在乙方学习 2 年，再进入甲方实习 1 年。招生对象：初、高中毕业生（乙方负责招生）。

三、实施方案

1、合作人数：由乙方招收选拔 30 名学生组成专业班级。实习结束后企业与学生双向选择确定预就业人数。

2、实习岗位与预就业岗位：

岗位类别	招募人数	实习岗位	预就业岗位
门店销售	30	形象顾问	形象顾问及店长

甲方（学校）：　鹿城区职业技术学校

乙方（实习单位）：

丙方（实习生）：

为提高实习效果，加强实习管理，明确各方责任，保障各方权益，在平等自愿的基础上，各方就学生顶岗实习有关事项达成以下协议：

一、顶岗实习期限、岗位及内容：

三方同意丙方在 _____年____月____日至_____年____月____日期间在乙方进行顶岗实习，实习岗位为_____，具体实习内容为_____，工作地点为_____。

二、实习报酬及食宿安排

乙方参照本单位相同岗位的报酬标准和丙方的工作量、工作强度、工作时间等情况，支付丙方劳动报酬如下：_____

食宿安排如下：_____

以_____形式及时、足额支付给丙方。

三、各方的权利和义务

（一）甲方的权利和义务

1.甲方的权利

（1）根据丙方在乙方的实习内容和表现，联合乙方评定丙方实习考核成绩，给予相应学分；

（2）在不影响乙方正常工作的前提前往实习单位对丙方进行指导或管理，有权向乙方了解学生实习情况。

2.甲方的义务

（1）对丙方做好实习前的动员与培训工作，实习中的联络、检查、协调工作，实习后的考核和其他工作；

（2）选派经验丰富、责任心强的实习班主任对丙方实习期间的行为予以监督和管理，特别是有关安全方面的教育管理；

（3）在实习期间如发生意外事故时，协助丙方获得相关赔偿。

（二）乙方的权利和义务

1. 乙方的权利

（1）可以根据其需要和丙方的工作能力在实习范围内对实习内容进行调整；

（2）有权利参照公司有关规章制度和甲方实习管理制度对丙方进行管理；

（3）根据丙方在实习期间的表现，实习结束后，乙方有权优先录用丙方，经双方协商一致可签订正式劳动合同。

2. 乙方的义务

（1）不安排丙方从事高空、井下、放射性、有毒、易燃易爆、以及其他具有较高风险的实习工作；

（2）按照本协议规定的时间和内容为丙方提供相应实习岗位，所安排的工作应该符合法律的规定和不损害丙方的身心健康；
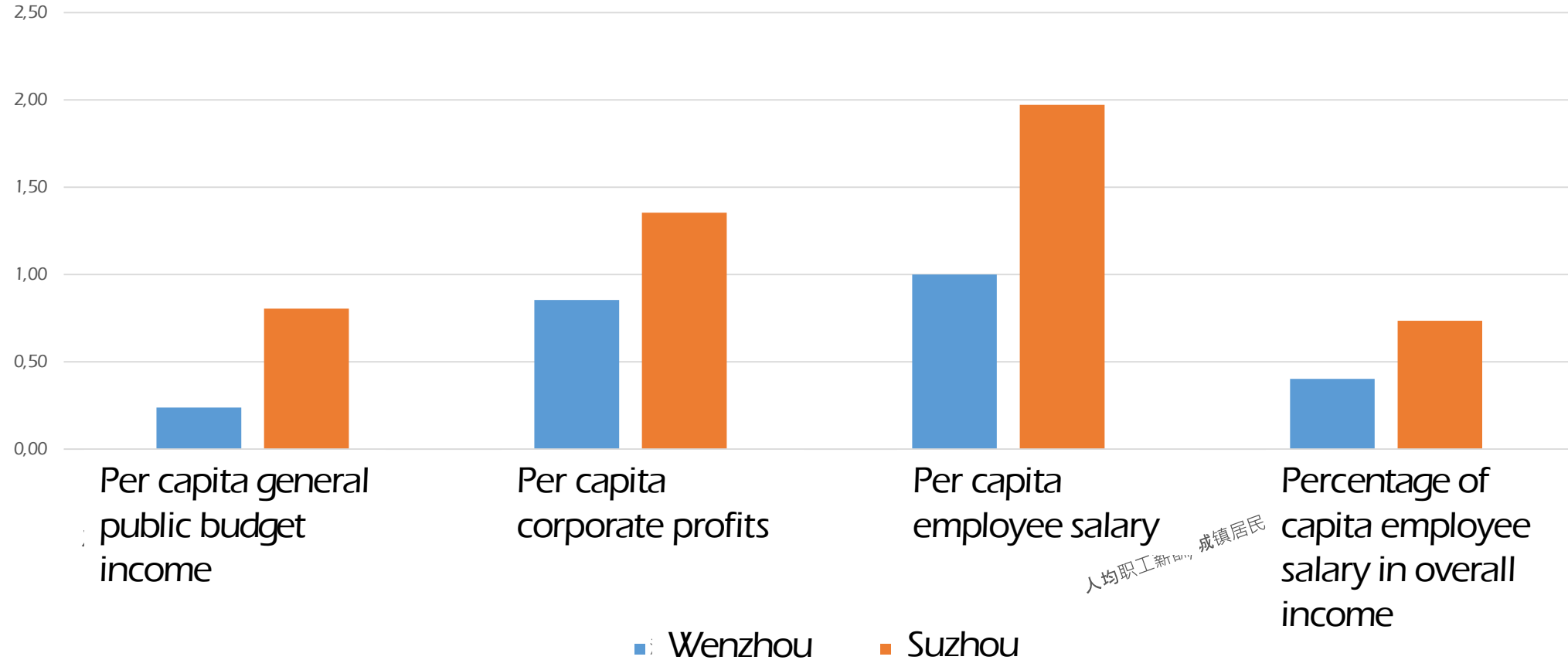
Wenzhou case

- Weak industry-VET integration, for example, vocational school in a town with many car supplier companies has no major in car and electronics (just on CNC major).

- Small government, big society.

- General public budget per capita: 4795 yuan (2017).

- City of entrepreuners: urban per capita disposable income 47785 yuan, among which wages income is less than 50%.

- In terms of the type of corporate capital, local capital dominates.

- Average profits of industrial enterprises: 17251 yuan (2013).

- Low Industry Concentration Ratio.

- Training occupations are not always the manufacturing positions.

Suzhou case

- Strong industry-VET integration, several modern apprenticeship programs.

- Big government, small society.

- General public budget per capita: 16272 yuan (2017).

- Urban per capita disposable income 54341 yuan, among which wages income is less than 73%.

- In terms of the type of corporate capital, foreign capital plays important role (many German companies in one of the towns).

- Average profits of industrial enterprises: 27382 yuan (2013).

- High Industry Concentration Ratio.

- Relatively high skill requirements on the manufacturing occupations where major training takes place.

Findings

Income distribution pattern in the case area

For the convenience of presentation and comparison, the data in the figure is standardized based on Wenzhou per capita employee salary, that is, all indicators are divided by Wenzhou per capita employee salary.

Pattern of regional wealth distribution

- **The wealth distribution among government, enterprises and residents has the greatest importance.**

- The income of local government affects the willingness of local government to supply vocational education. The income of enterprises affects the willingness of enterprises to participate in school-enterprise cooperation and cost sharing. The income and its structure of residents affect the educational choices of residents.

- Among the distribution of wealth, the wealth created, the more local government gets, the stronger its willingness to supply vocational education; the more the company obtains, the stronger its willingness to participate in VET.

- The higher the income of residents, the lower the willingness to choose vocational education; and the larger the proportion of residents' income comes from salary, the higher the demand for vocational education.

Industry characteristics

Dimensions of Industry characteristics	Suzhou	Wenzhou
Industry Concentration Ratio	high	Low (Pump valve) High (shoe making)
Added value to occupations	high	High (shoe sales) Low (shoe production)
Degree of skill specificity	high	Low
Type/source of corporate capital	All three types: Foreign, state-owned and private	Private companies dominate

Industry characteristics: empirical evidence

- Among the industrial characteristics, capital type, industrial concentration ratio, skill specificity, and added value have the strongest explanatory power in understanding the willingness of industry to participate in VET.

- In the region, with the higher the industrial concentration ratio and the stronger the skill specificity, the smaller the spillover of corporate participation in training, therefore the stronger the willingness to participate.

- Within the company, the difference in the added value of design, production and sales positions determines the priority of the company in participating in VET.

- The industrial clusters dominated by foreign-funded enterprises are more willing to participate in VET compared to those dominated by domestic-funded enterprises.

Industry characteristics: abstract analysis

- The root behind these characteristics: the way production is organized.

- Productivity distribution between machines and laborers in the production process - the distribution between technology and skills.

- This distribution is influenced not only by the far-reaching influence of technology and its transformation, but also by the relationship between the employers and employees (which is related to engineer and worker).

Midrange theory of industry-VET integration

The crucial actors：enterprise, government, resident

Two distribution: the distribution of wealth among the actors and the distribution of productivity between technology and skill

Policy: significant influence but its impact is affected by the factors above

Danke für Ihre Aufmerksamkeit!

Your comments and suggestions are welcome!