



STANFORD
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工業技術研究院
Industrial Technology
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Next Generation Leaders in the Semiconductor Industry?

- Chinese Professionals & Their Location Decisions

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Research Background

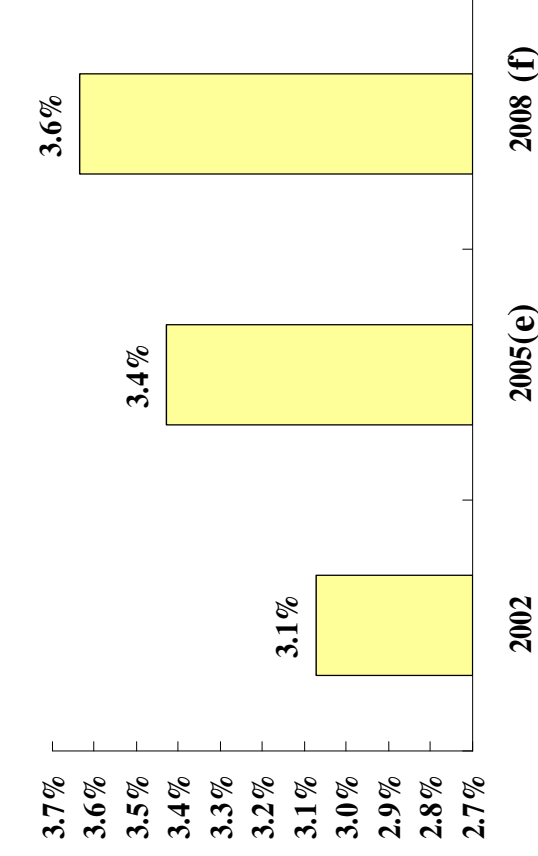
- The Increasing Role of Asia
- The Significance of Chinese Professionals
- The Connection of Silicon Valley's Professionals to Great China

 **The 2005 CASPA Members Survey**

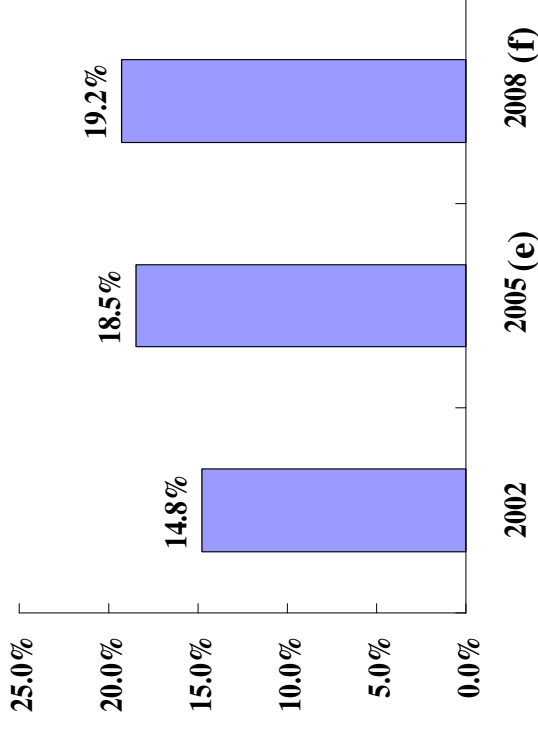


The Worldwide Semiconductor Industry

Electronics Production/Worldwide GDP



Semiconductor Production/Electronics Production



\$ Billion

Worldwide GDP	<u>2002</u>	<u>2005(e)</u>	<u>2008(f)</u>
Electronics Production	32,400	35,967	39,000
Semiconductor Production	996	1,233	1,418
Capital Spending	147.7	228.0	272.9
	26.9	41.3	61.5

Development Spotlight on Asia-Pacific

- Electronic System Manufacturing shifts to Asia
- Semiconductor Manufacturing Shifts to Asia

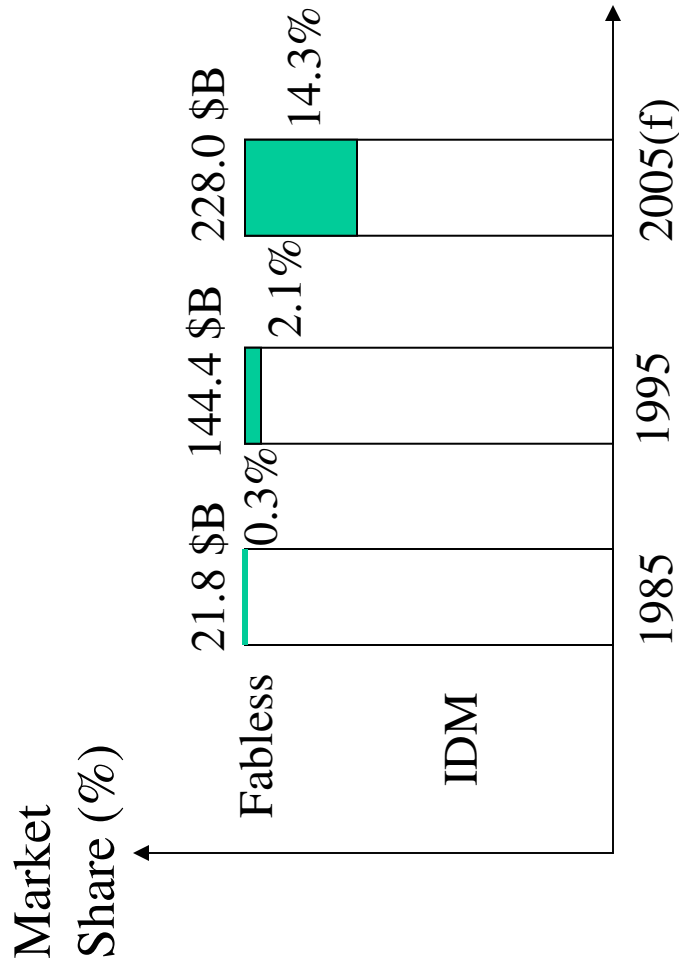
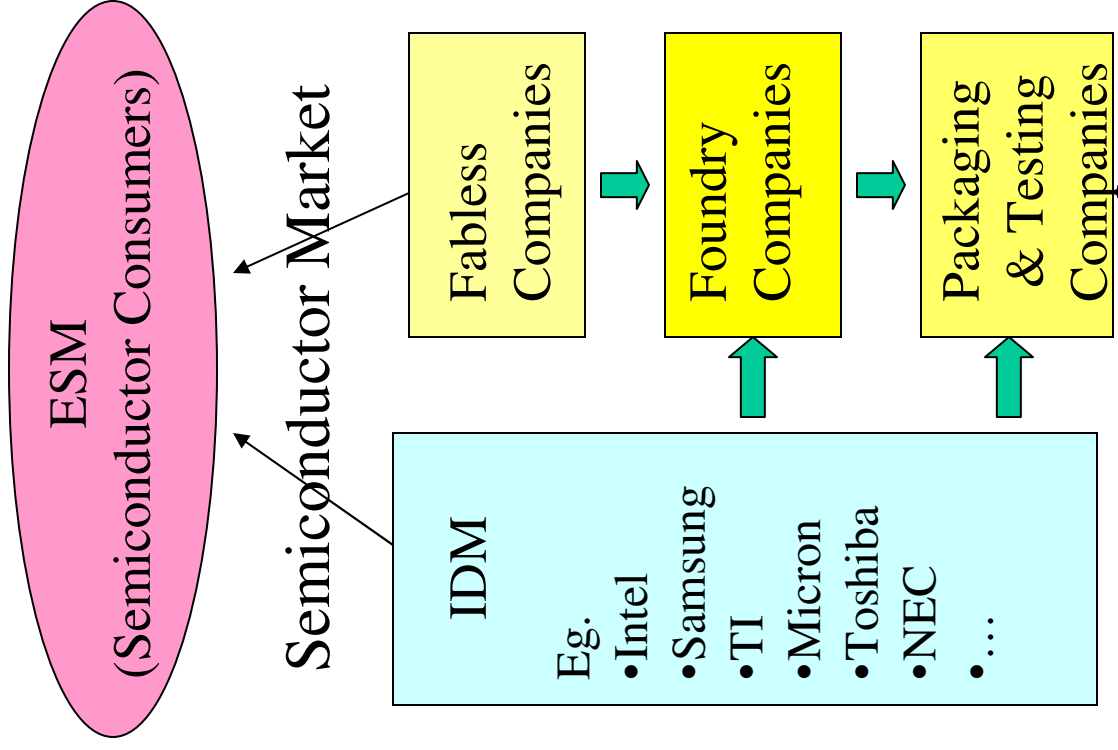
	1985	2000	2005(e)	2008(f)
WW Market (\$ Billion)	21.8	204.4	228.0	272.9

Asia-Pacific (Excluding Japan)/WW

Semiconductor Consumption ¹	7%	25%	42%	51%
Semiconductor Production	1%	11%	21%	27%

1: Including purchases used for Systems export to worldwide consumers

Paradigm Shift in Semiconductor Industry



ESM: Electronic Systems Manufacturers
IDM: Integrated Device Manufacturers

Chinese Professionals Made an Obvious Contribution in IC Design

Worldwide Top 30 Fabless Design Company

Rank	Company	Region	2004(e)		
			Sales (\$ Million)	Growth Rate	Market Share
1	Qualcomm	US	3,360	36.3%	12.1%
2	Broadcom	US	2,480	54.0%	9.0%
3	Nvidia	US	1,985	9.1%	7.2%
4	ATI	Canada	1,740	53.3%	6.3%
5	Xilinx	US	1,585	21.5%	5.7%
6	SanDisk	US	1,445	47.4%	5.2%
7	Marvell	US	1,200	53.8%	4.3%
8	聯發科技/MediaTek	Taiwan	1,199	8.4%	4.3%
9	Altera	US	1,015	23.0%	3.7%
10	Conexant	US	915	40.8%	3.3%
11	威盛電子/VIA	Taiwan	580	-2.1%	2.1%
12	凌陽科技/Sumplus	Taiwan	567	75.8%	2.0%
13	Qlogic	US	525	5.0%	1.9%
14	聯發科技/Novatek	Taiwan	524	65.2%	1.9%
15	Silicon Lab	US	480	47.7%	1.7%
16	SST	US	405	58.8%	1.5%
17	Zoran	US	370	85.0%	1.3%
18	矽統科技/SiS	Taiwan	319	-34.4%	1.2%
19	PMC_Sierra	US	305	22.0%	1.1%
20	奇景光電/HiMAX	Taiwan	302	130.6%	1.1%
21	瑞昱半導體/Realtek	Taiwan	279	4.3%	1.0%
22	ESS	US	265	35.9%	1.0%
23	Cambridge Silicon	Europe	265	278.6%	1.0%
24	晶豪/ESMT	Taiwan	261	68.2%	0.9%
25	ICS	US	240	4.3%	0.9%
26	晶門/Solomon	China	240	118.2%	0.9%
27	Lattice	US	230	9.5%	0.8%
28	Semtech	US	225	36.4%	0.8%
29	Zarlink	Canada	215	7.5%	0.8%
30	Cirrus Logic	US	205	2.5%	0.7%

Top 30 Market Share : 85.8%
Chinese Professionals Dominance : 42.5%

Chinese Professionals Dominate Foundry Business

Enter

Business future

Worldwide Top 10 Foundry Company

Rank	Company	Region	2004 (e)		
			Sales (\$ Million)	Growth Rate	Market Share
1	TSMC	Taiwan	7,648	31%	45.5%
2	UMC Group	Taiwan	3,900	42%	23.2%
3	Chartered	Singapore	1,103	52%	6.6%
4	SMIC	China	978	167%	5.8%
5	Vanguard	Taiwan	480	68%	2.9%
6	Dongbu Anam	S. Korea	440	33%	2.6%
7	HHNEC	China	275	62%	1.6%
8	SSMIC	Singapore	270	74%	1.6%
9	Jazz	U.S.	235	27%	1.4%
10	ASMC	China	200	60%	1.2%

Top 10 Market Share : 92.3%

Chinese Professionals Dominance : 88.3%

Chinese Professionals Controlled Major Packaging & Testing Service

Enter

Business future

Worldwide Top 10 Package & Testing Service Company

Rank	Company	Region	2004 (e)		
			Sales (\$ Million)	Growth Rate	Market Share
1	日月光集團 (ASE)	Taiwan	2,421	44.0%	20.2%
2	Amkor Technology	US	1,916	19.5%	16.0%
3	STATS ChipPAC	Singapore	1,030	27.2%	8.6%
4	矽品 (SPIIL)	Taiwan	1,030	28.0%	8.6%
5	南茂 (ChipMos)	Taiwan	448	70.3%	3.7%
6	京元 (KYEC)	Taiwan	297	48.5%	2.5%
7	Carsem	Malaysia	275	27.9%	2.3%
8	力成 (Powertech)	Taiwan	224	73.6%	1.9%
9	華泰 (OSE)	Taiwan	218	4.3%	1.8%
10	ASAT	China	217	20.6%	1.8%

Top 10 Market Share : 67.3%

Chinese Professionals Dominance : 49.0%

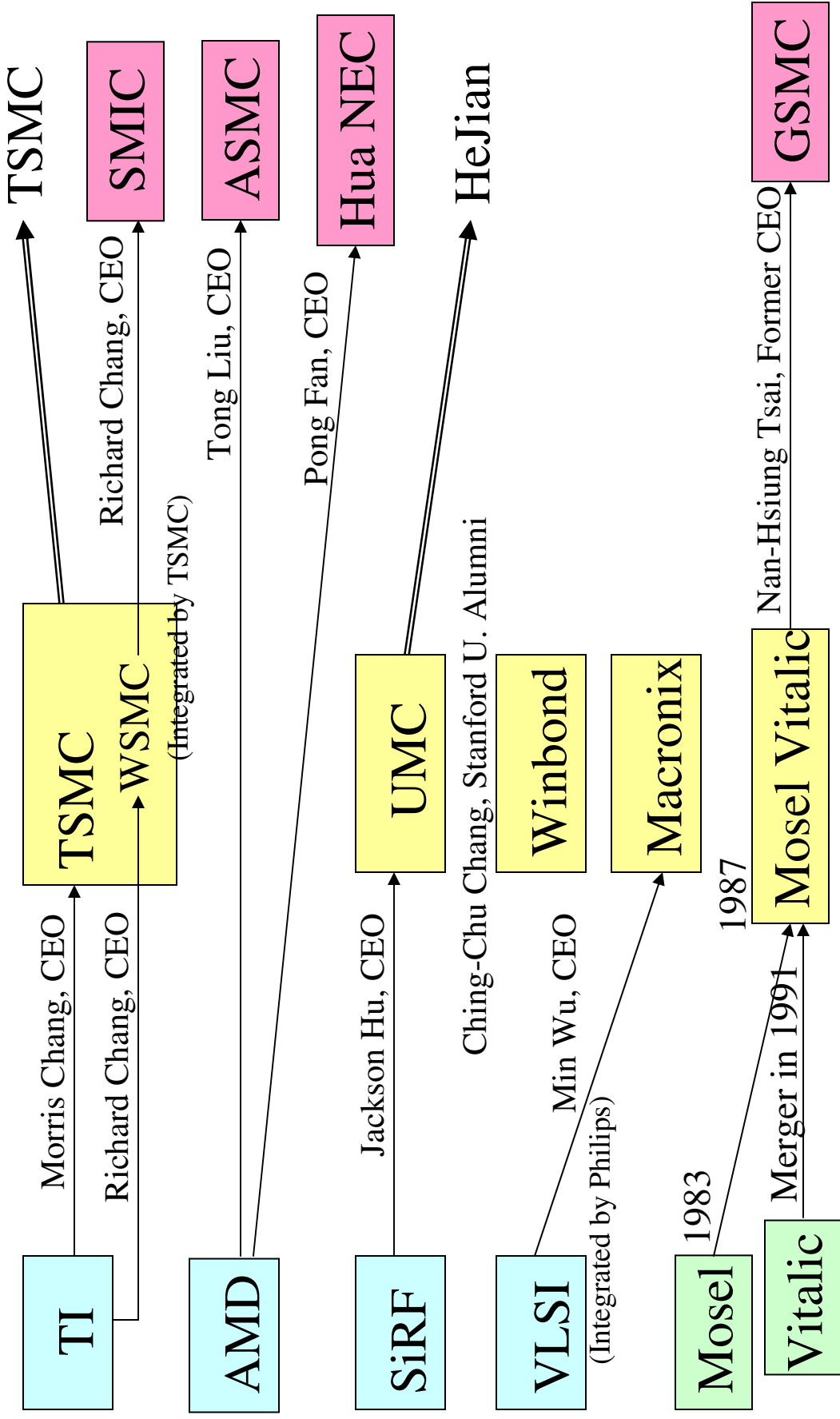
The Connection of Silicon Valley's Professionals to Great China



Silicon Valley

Taiwan

Mainland China





The 2005 CASPA Members Survey



Background

- Assess Chinese professionals' perceptions about movement and career progress among US and Greater China regions.
- Definition of regions:
 - Silicon Valley, Rest of US, Beijing, Shanghai, Pearl river delta (including Hong Kong), Taiwan
- Chinese American Semiconductor Professionals Association (CASPA)
 - Largest Chinese professional association in the semiconductor industry
 - More than 3500 members in US and Asia, mostly in Silicon Valley.
- Data collected through a web-based survey. (Number of responses: 176, valid responses: 171)
- Supplemented by some selected interviews (5 seniors, 5 juniors)



Major Questions

Enter

Business *future*

Cross Regional Experiences

- Select regions in which you have worked for more than 6 months

Cross Regional Career Prospects

- How do you perceive the growth potential of your career progress in next 3 years, in each region?
 - Silicon Valley, Rest of US, Beijing, Shanghai, Pearl river delta (including Hong Kong), Taiwan

Job Movement

- Will you consider working permanently in a region different from your current location?
 - No, Maybe in 5/3/1 years, Already
- And where do you think you are most likely to move?

Major Questions

Enter

Business *future*

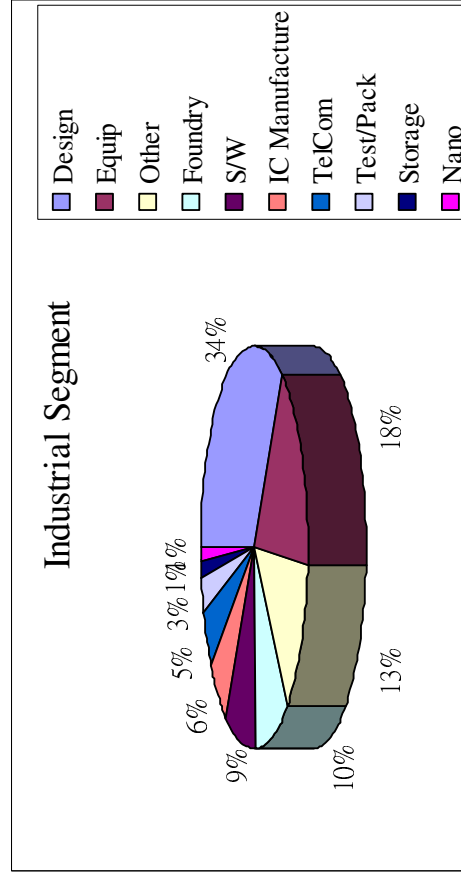
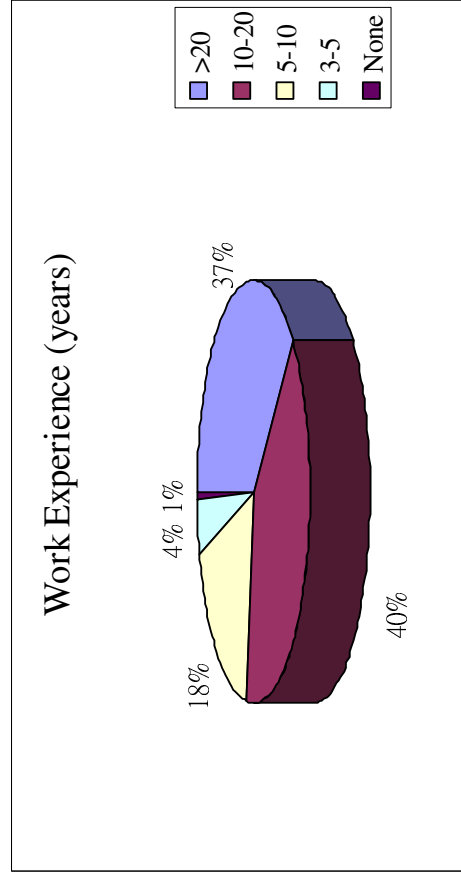
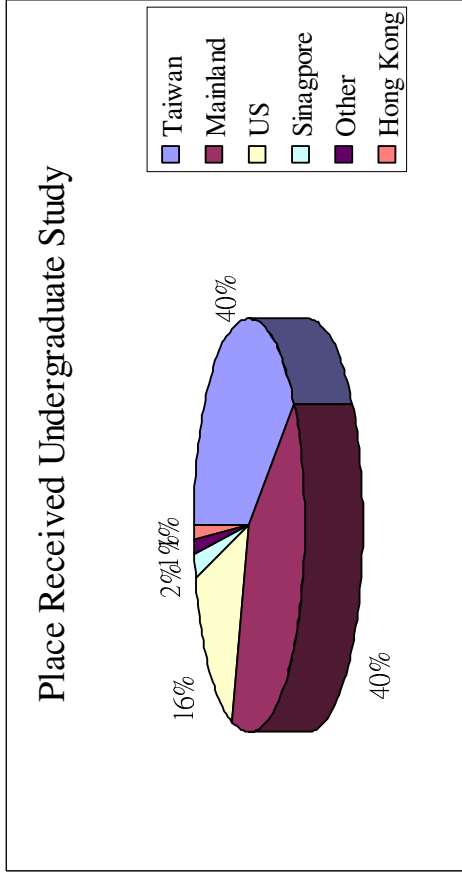
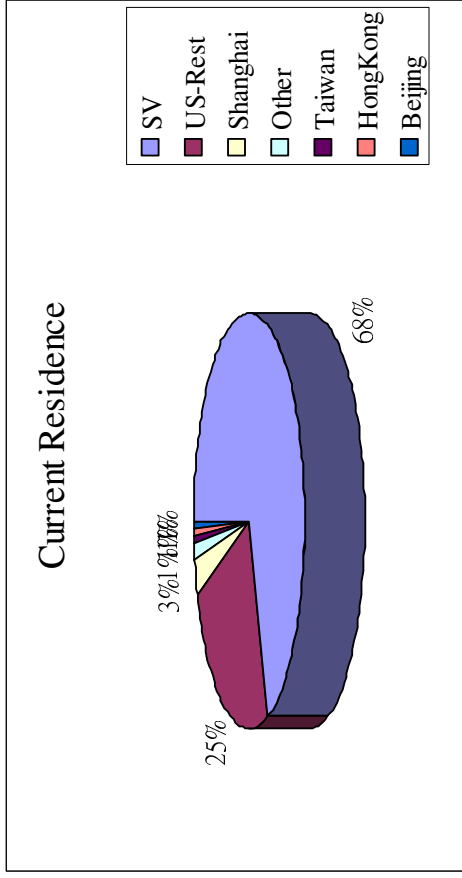
Preferred Strategy

- What are your preferred strategies if you decide to move to other regions?
 - Startup/Acquire a company
 - Work in local subsidiary of a multinational
 - Work in existing local company
 - Follow company's decision

Influential factors

- If you move to another region, how important are these factors to your decision?
 - Growth potential of destination region
 - Life style
 - Lack of opportunity in present region
 - Family matters
 - Success/Failure from other's examples
 - Follow company's decision

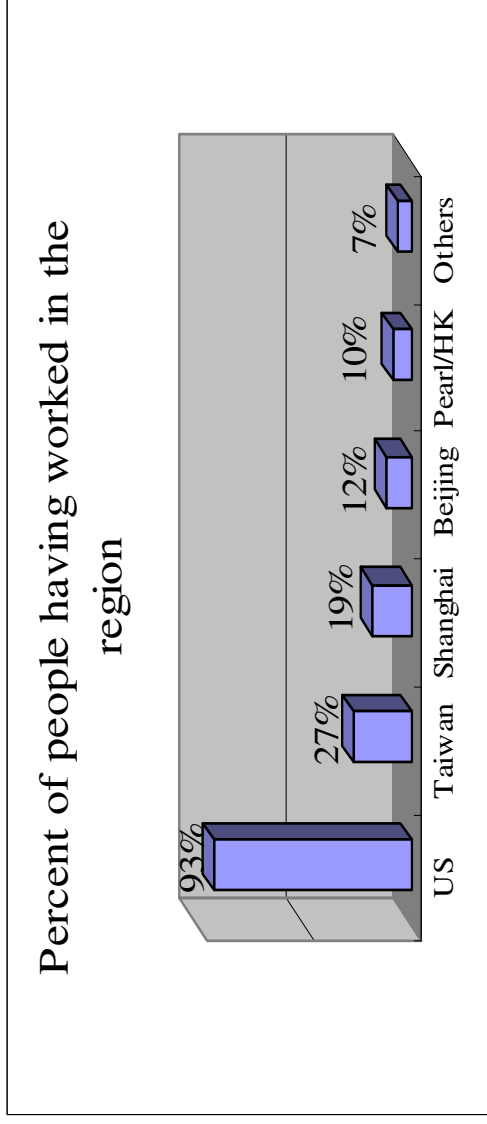
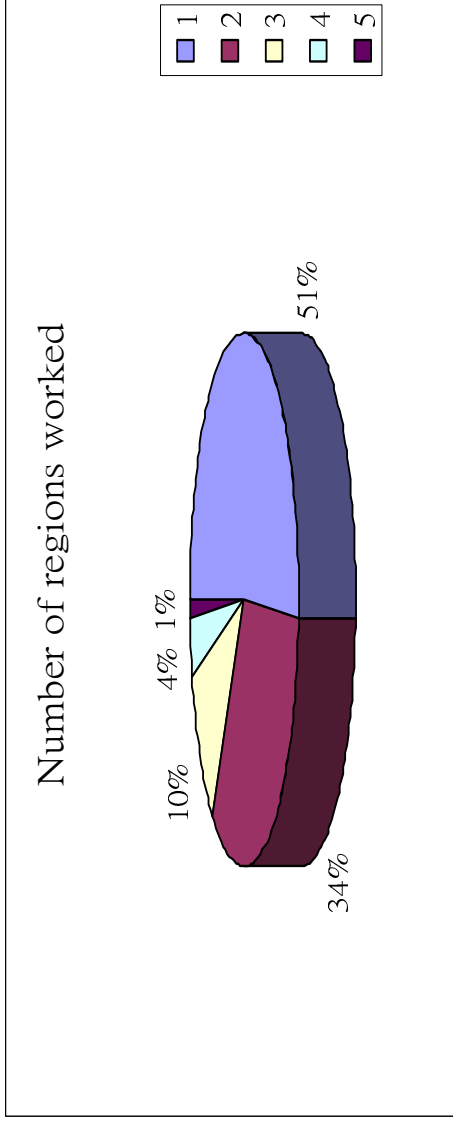
Responder's Profile



Cross Regional Experiences



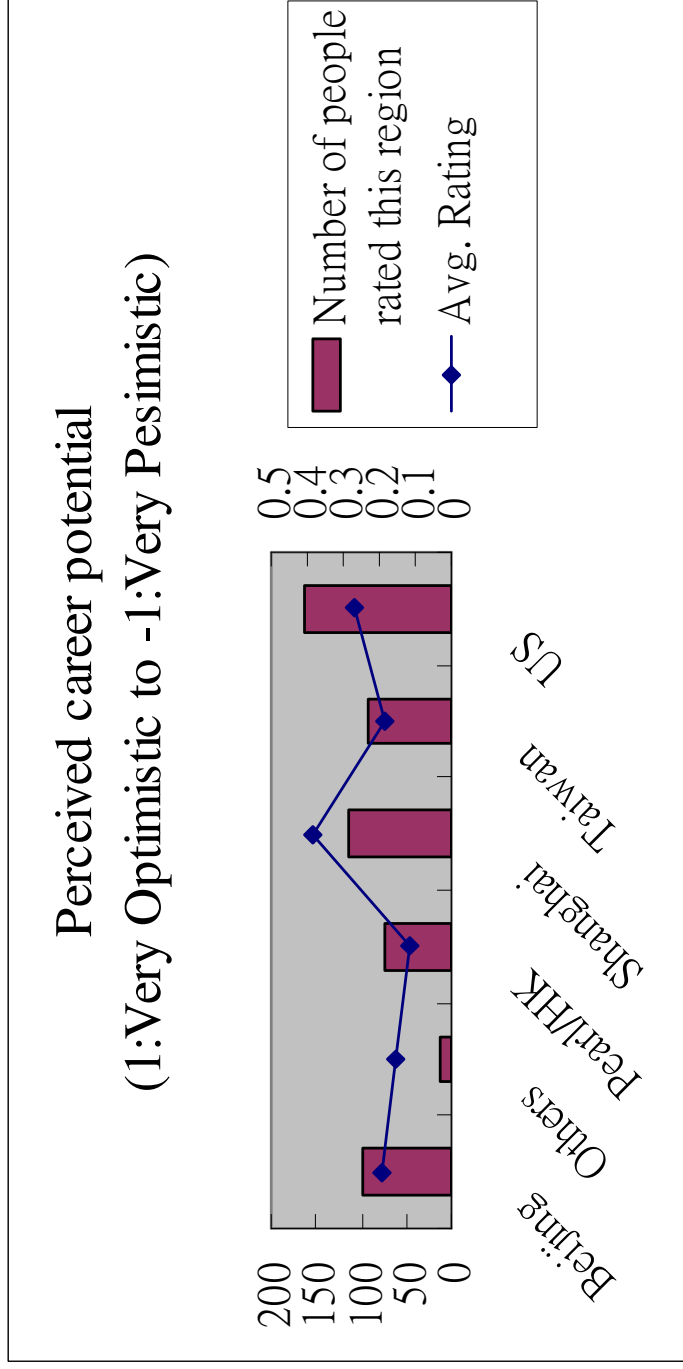
Half of the responders have worked in at least 2 regions. 93% have worked in US.



Career Prospects



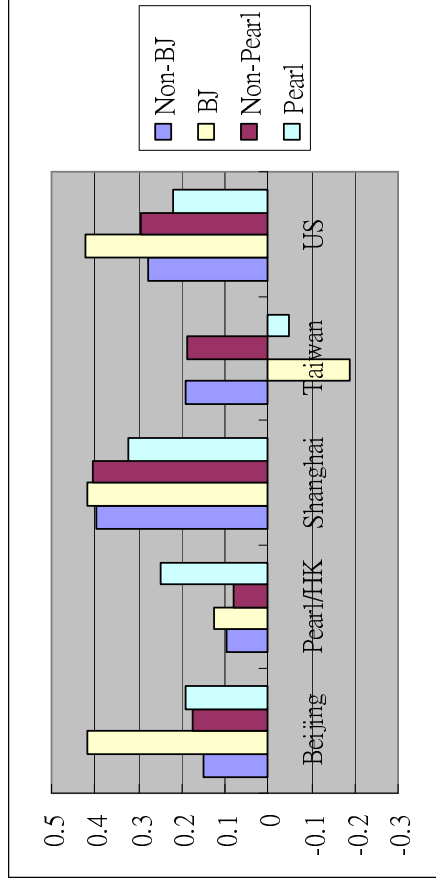
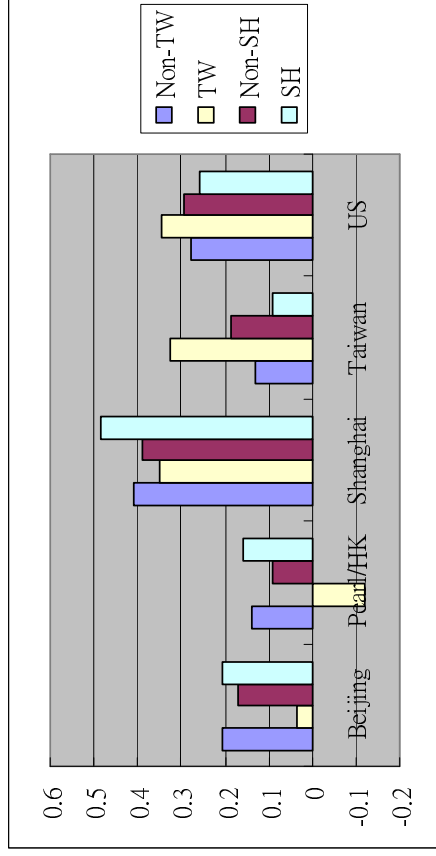
Shanghai is the most prospective region to the responders, following by the US, Taiwan and Beijing.



- Question: How do you perceive the growth potential of your career progress in next 3 years, in each region?

Career Prospects: by experiences in regions

Work experiences in some specific regions may affect the perception of prospects of other regions.



Without work experience in-

Non-BJ: Beijing

Non-Pearl: Pearl/Delta/Hong Kong

Non-SH: Shanghai

Non-TW: Taiwan

With work experience in-

BJ: Beijing

Pearl: Pearl/Delta/Hong Kong

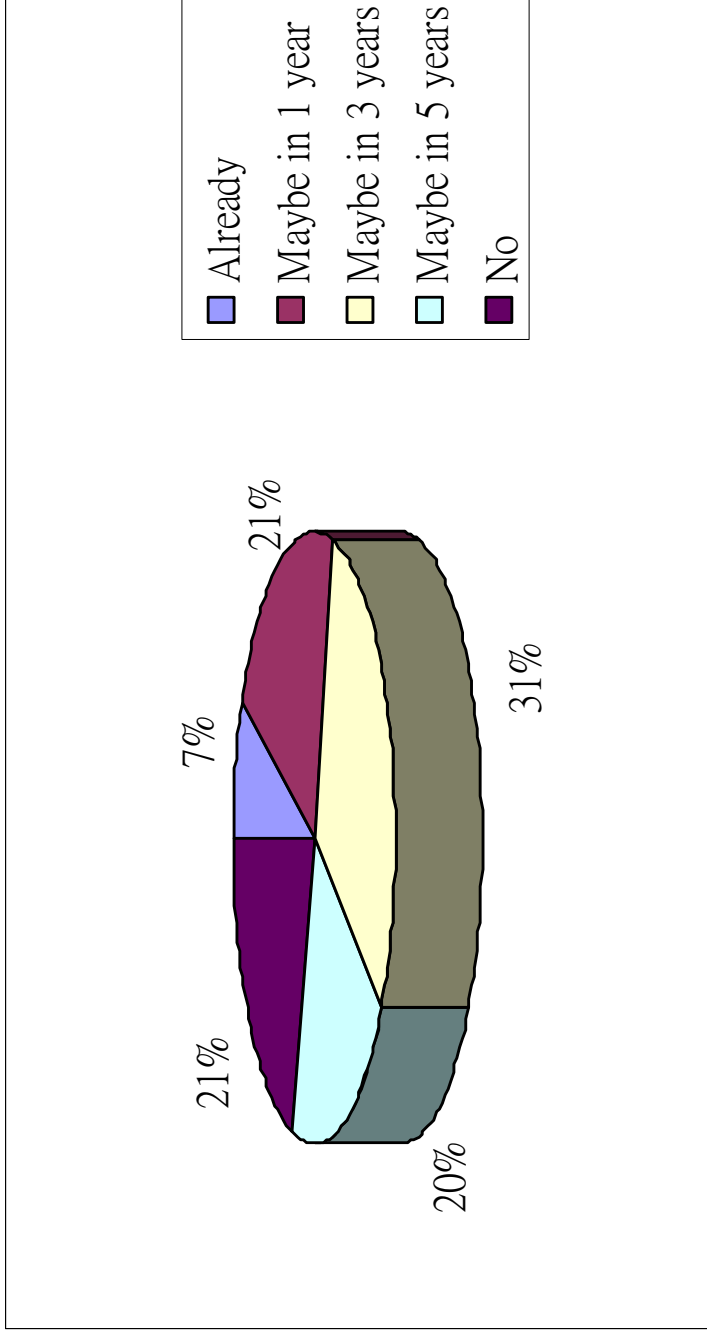
SH: Shanghai

TW: Taiwan

Job Movement



59% of responders moved or very likely to move in 3 years.



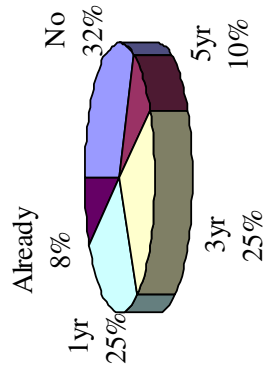
- Question: Will you consider working permanently in a region different from your current location?

Job Movement: by Work Experiences

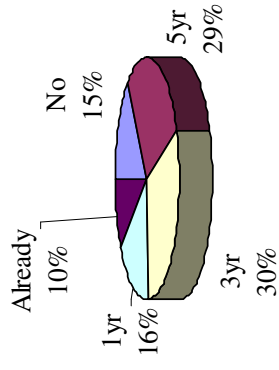
Business *future*

Senior responders are less likely to move.

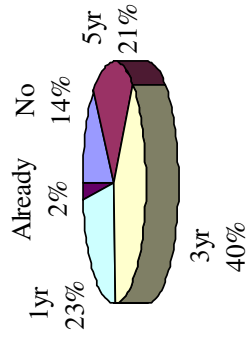
Work experiences > 20 years



Work experiences between 10-20 years



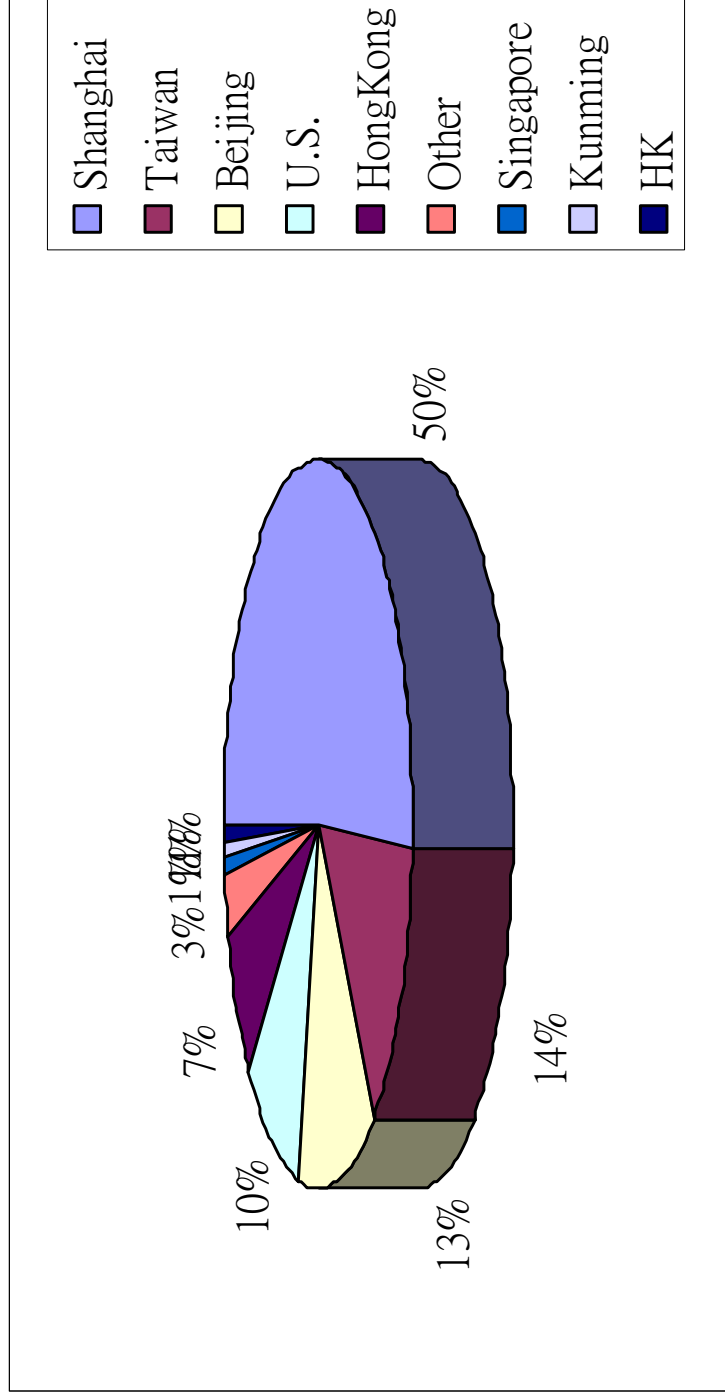
Work experiences < 10 years



Job Movement: Destination



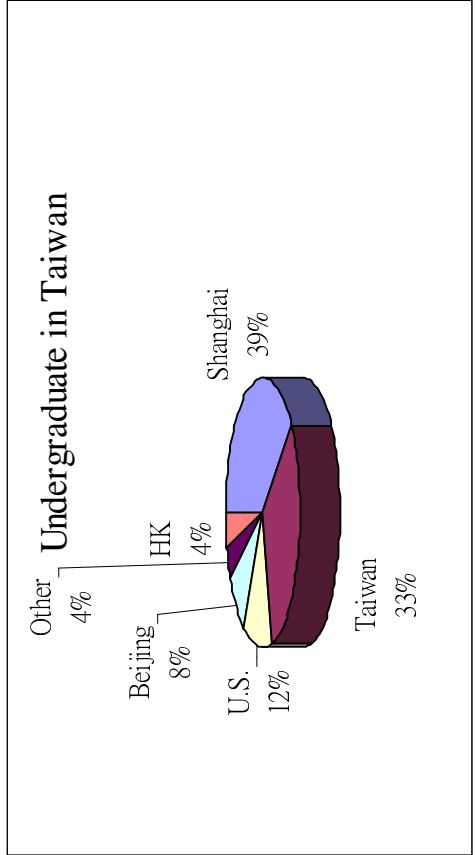
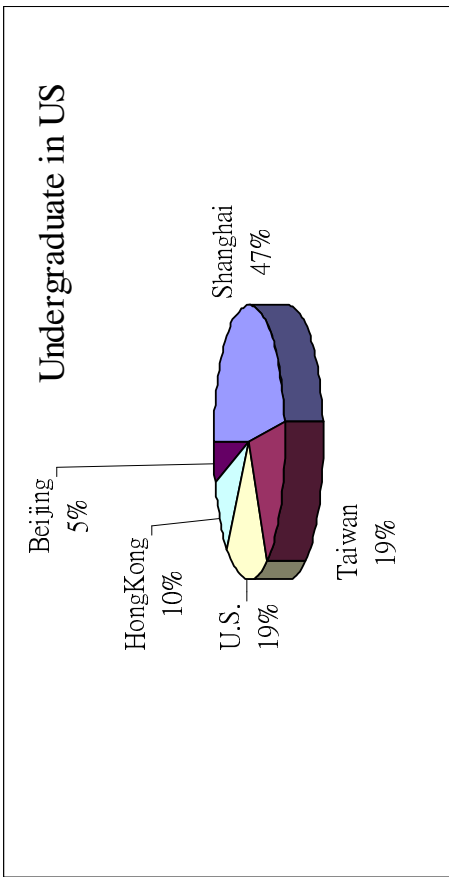
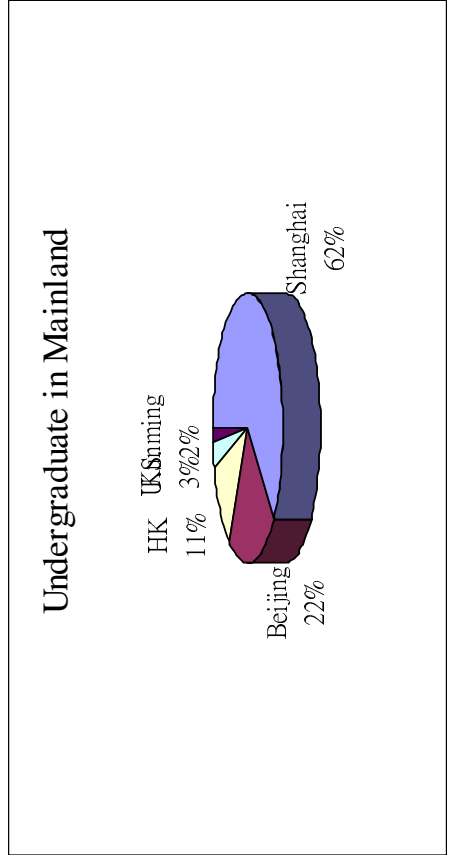
Half of the responders regard Shanghai as the most likely destination, followed by Taiwan and Beijing.



- Question: Where do you think your are most likely to move?

Job Movement: Destination by Origin

Shanghai dominates the preference of responders with undergraduate study in Mainland and US. None of the responders from Mainland regard Taiwan as an option.



Preferred Strategy



Responders do not have significant preference differences among Startup/acquire a company, Work in subsidiary of multinational, and Work in existing local company.

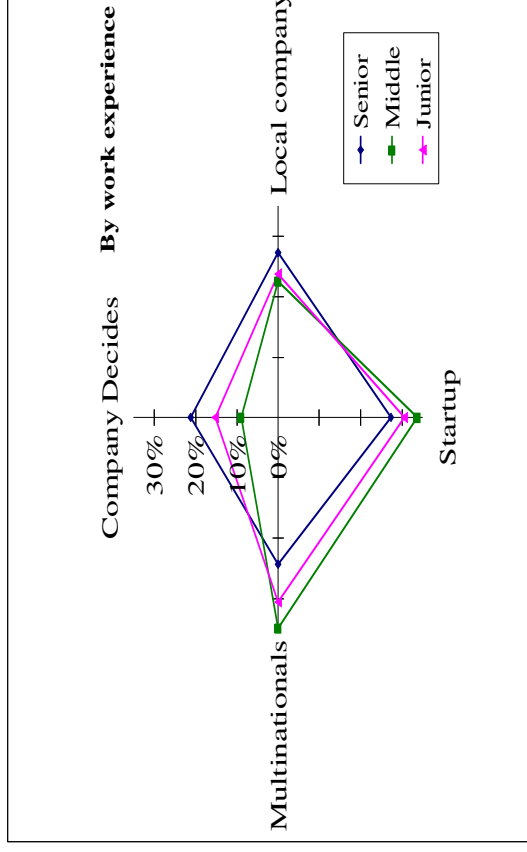
Strategy	Number of responder
Startup/Acquire a local company	66
Work in local subsidiary of a multinational	65
Work in existing local company	52
Follow company's decision	31
Consultant	2
Leave the semiconductor industry	1

- Question: What are your preferred strategies if your decide to move to other regions?

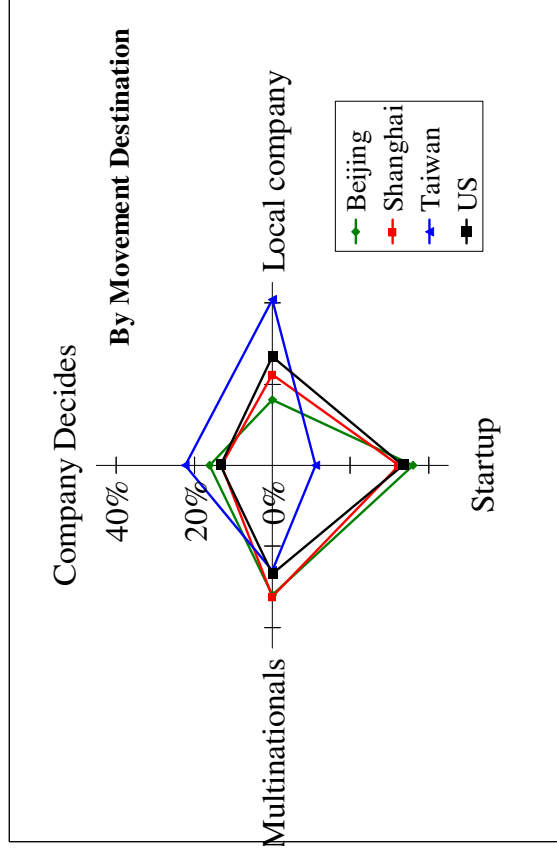
Preferred Strategy:

by work experiences and destination

Responders with different level of work experiences differs more on their preferences to Work in subsidiary in multinational and Follow company's decision.



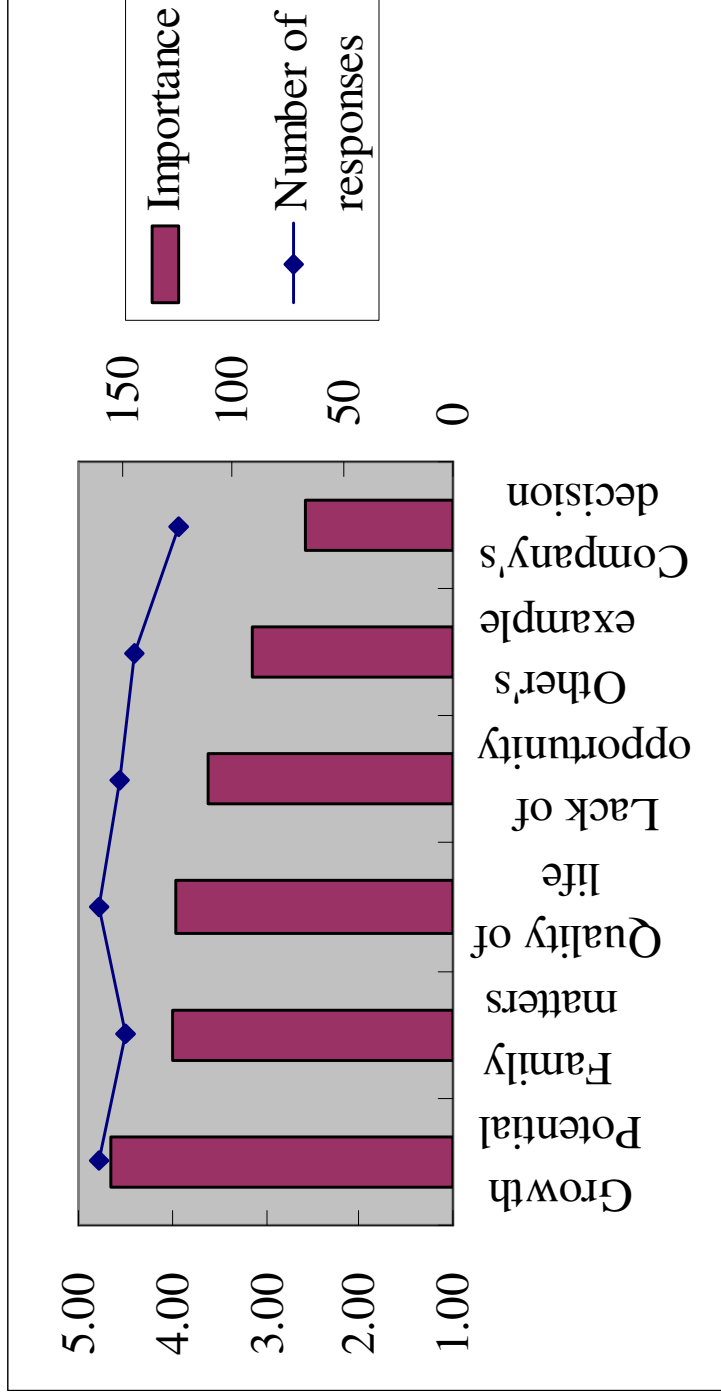
Responders most likely moving to Taiwan prefer to work in existing local company and less prefer to startup.



Influential Factors on Movement Decisions



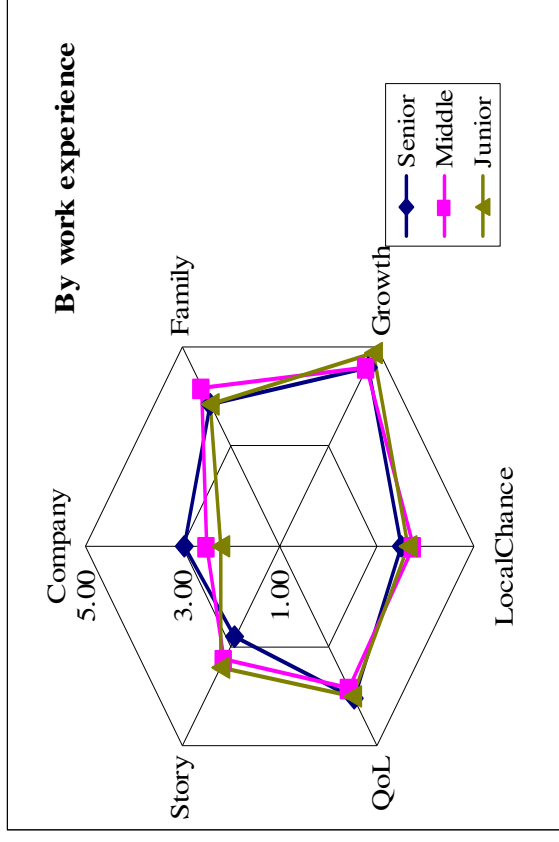
Growth potential is the most important factor to responders' decisions, Other's example of success/failure and Company's decision are relatively less important.



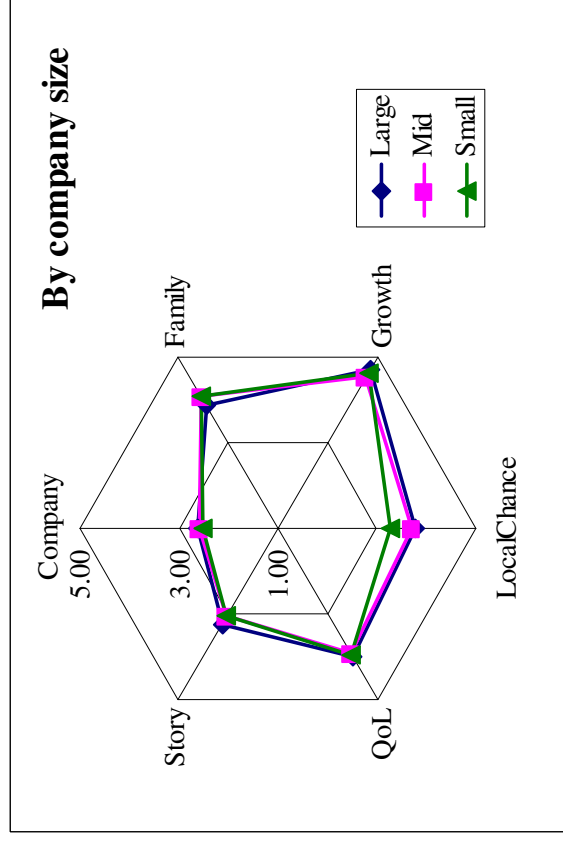
- Question: If you are to move to other regions, how important are these factors to your decision? (5:high to 1:low)

Factors: by work experience and company size

Responders with different work experience differ more on factor Follow Company's Decision and Other's success/failure example than other factors.



There seems no significant difference between difference company size groups.





Some Issues from Interviews

- Shanghai: Heterogeneous like Silicon Valley?
- “Golden ratio” of 1:25, ideal ratio of staff?
- Competing for higher positions: How to leverage the advantage of cross-regional experiences?
- Family issues caused by cross-regional working models: How much does it cost?



Thank you for your attention