Here or There?
A Survey on the Factors in Multinational R&D Location and IP Protection

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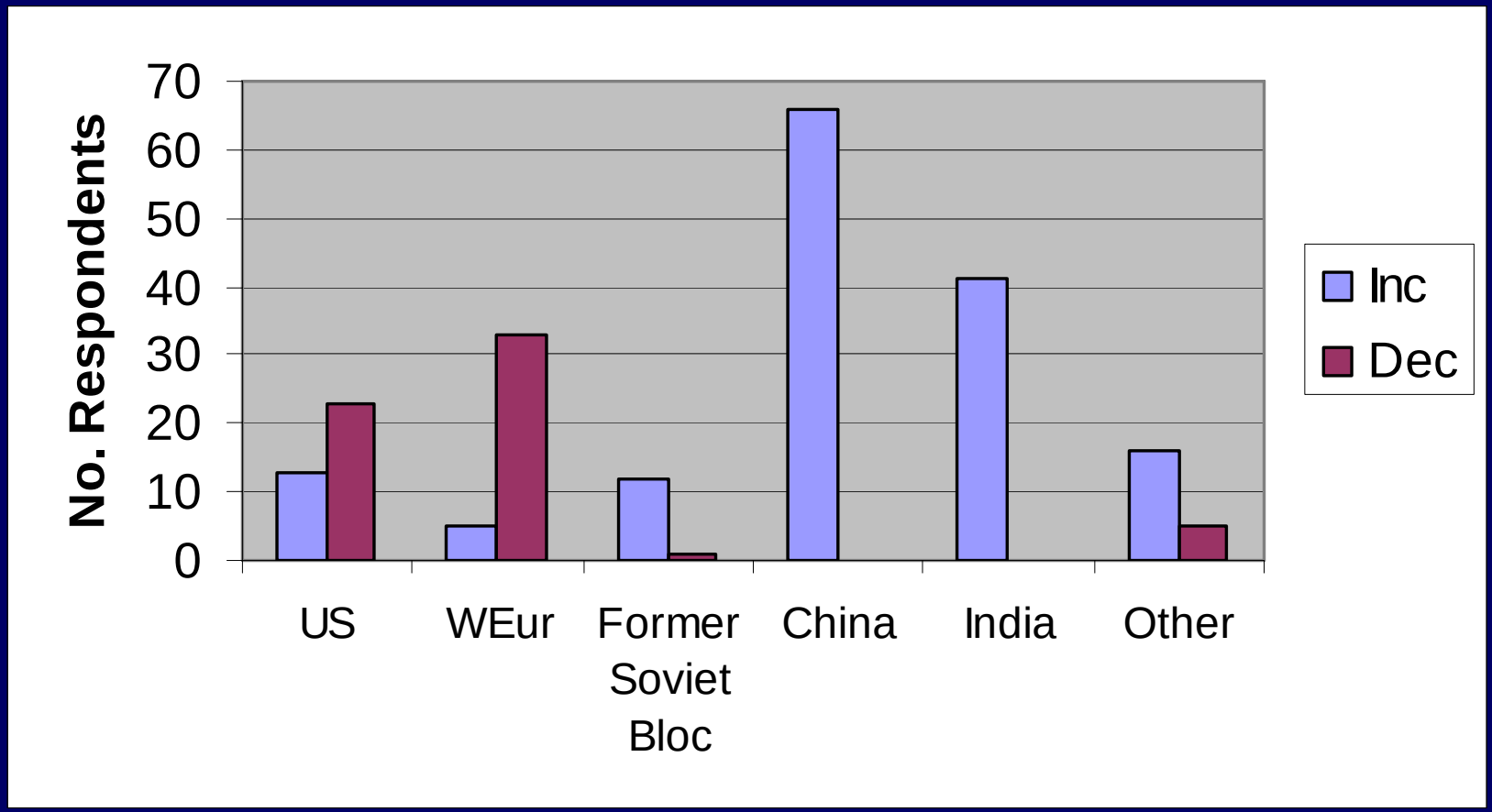
Origin of Survey

- Government University Industry Research Roundtable (GUIRR)
  - Industry member discussion on planned R&D location
  - Desire for data to inform policy discussions
  - Relative importance of factors involved in decisions
- Industrial Research Institute, European Industrial Research Management Association, American Chemical Society Corporate Partners
  - Upfront interviews with CTO level MNCs in US & Europe
  - Beta Test
  - Sample frame

Survey Stats

- 250 respondents in 15 industry classes
  - Primarily US and European home country respondents
  - 15% conduct all R&D at home
  - 20% employ > 1/2 technical R&D staff elsewhere
- Do you anticipate a substantial change in your worldwide distribution of R&D employment in the next 3 years?
  - 38% Yes
  - 62% No

If anticipate increase (decrease) in technical employment: What is the location(s)?



209 respondents

Factors in Locating Outside the Home Country

Think about some of the more recent R&D facilities established by your firm. This can include facilities you are in the process of building or staffing or which are only in the planning phase. Choose one of these that is OUTSIDE the home country and that is both considered to be central to your firm's current R&D strategy and about which you are familiar.

This questions is repeated for facilities

INSIDE the home country

Home Cntry/Region & Location of Recent or Planned Outside Facility

	Destination					
Home	**US**	**WEur**	**China**	**India**	**Other**	**Row Total**
US	**0**	**19**	**30**	**9**	**13**	**71**
WEur	**14**	**10**	**23**	**9**	**12**	**68**
Other	**0**	**0**	**2**	**0**	**2**	**4**
Column Total	**14**	**29**	**55**	**18**	**27**	**143**

Table entries are # of respondents

Home Cntry/Region of Recent or Planned Inside Facility

Home Country	
US	34
Western Europe	51
Other	7
Column Total	92

Table entries are # of respondents

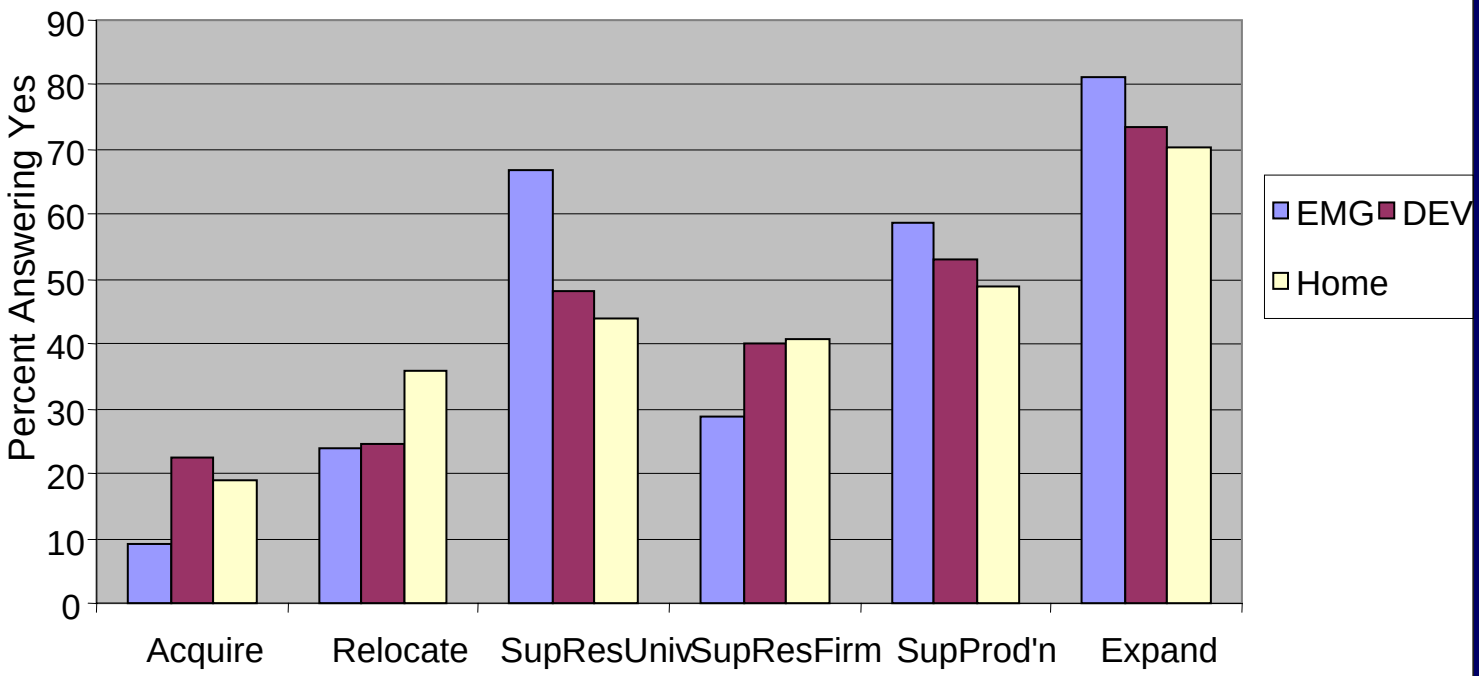
Mean/Median Number of Technical Employees

	Mean	Median
Worldwide	3788	700
Outside/Emerging	205	50
Outside/Developed	127	44.5
Inside	219	90

General Characteristics of Site

1. This was part of an overall expansion of my firm's R&D effort
2. This was an acquisition of an existing R&D site.
3. This was to establish or support research relationships with other firms.
4. This was to establish or support research relationships with local universities or research institutes.
5. This was to support needs of existing production facilities.
6. This was a relocation of my firm's R&D effort.

General Characteristics of Site



(Observations: EMG=86-90, DEV=50-53, Home=92-94)

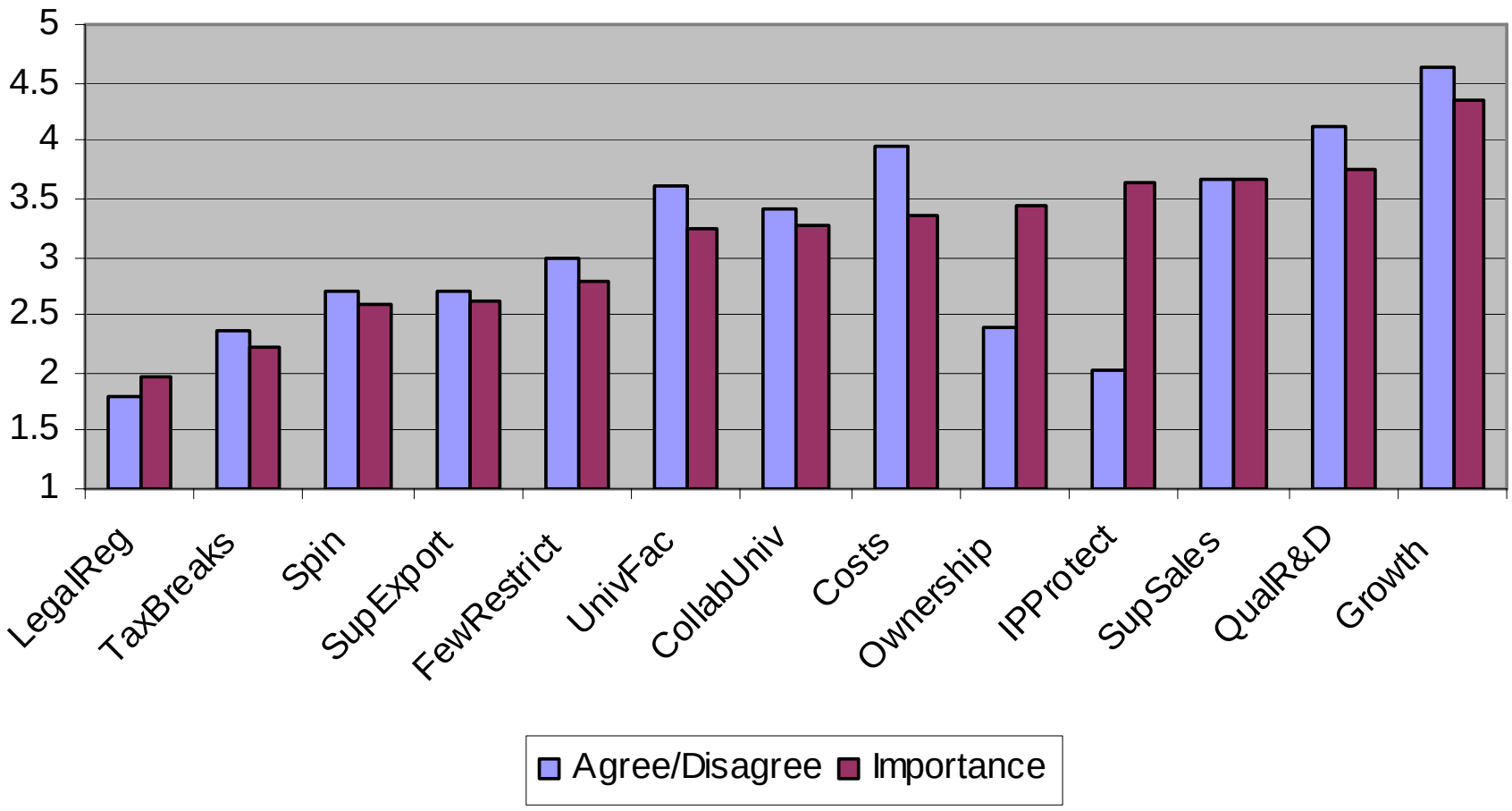
Factors in Locating OUTSIDE the Home Country

We want to know the factors that you considered in locating R&D in this country. First, we will ask if you agree or disagree with a statement about this location as it affects your firm. We use a 5 point scale where 5 indicates that you strongly agree and 1 indicates that you strongly disagree. 3 will indicate that you neither agree nor disagree. Second, we will ask how important or central the factor was in deliberations on whether to locate in this country. Use a scale of 1 to 5 where 5 is very important and 1 is not important at all.

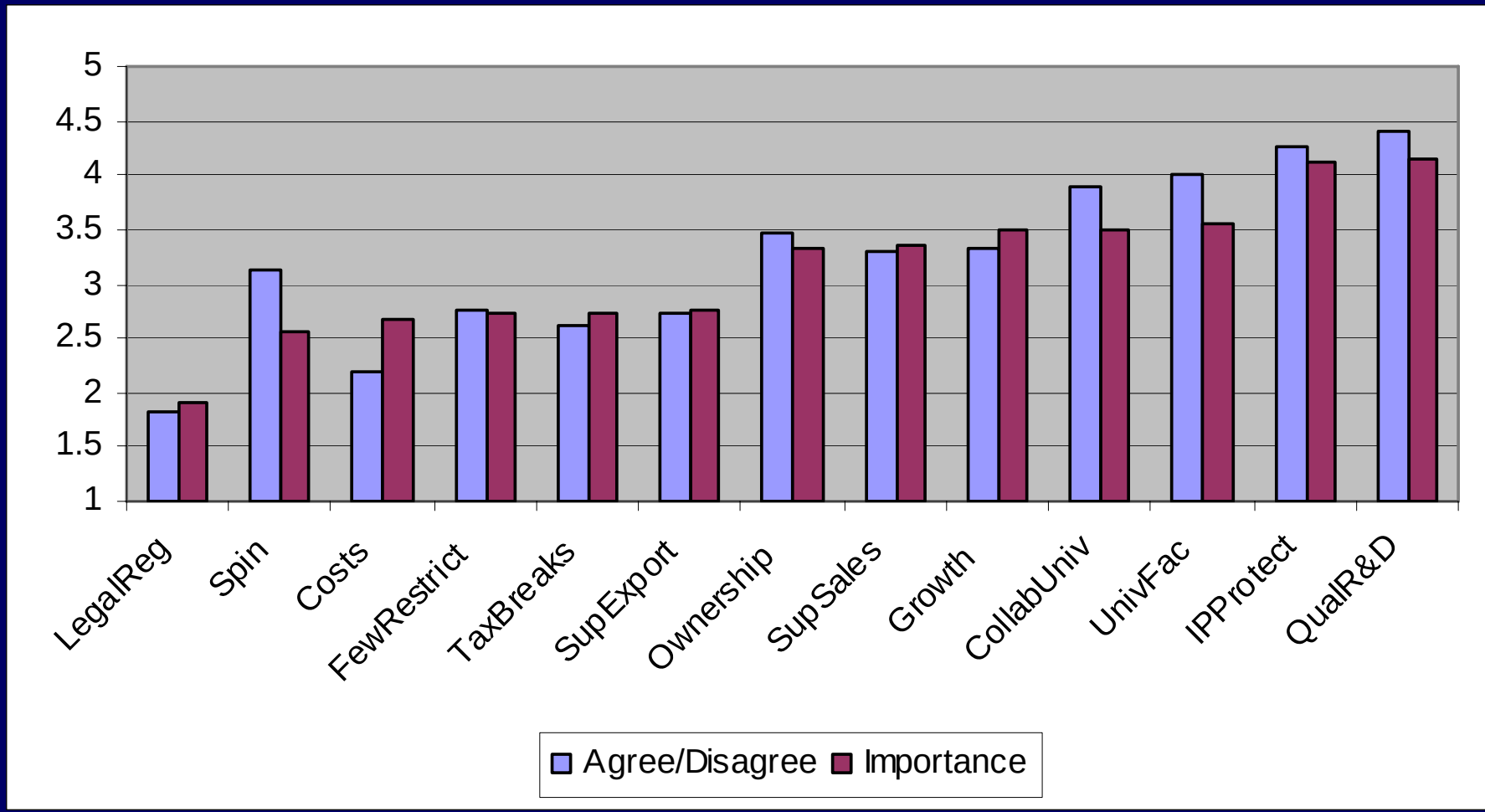
Factors in Location Decision

1. **There are highly qualified R&D personnel in this country.**
2. **There are university faculty with special scientific or engineering expertise in this country.**
3. **We were offered tax breaks and/or direct government assistance.**
4. **In this country it is easy to negotiate ownership of intellectual property from research relationships**
5. **Exclusive of tax breaks and direct government assistance, the costs of R&D are low in this country.**
6. **The cultural and regulatory environment in this country is conducive to spinning off or spinning in new businesses.**
7. **It is easy to collaborate with universities in this country.**
8. **There is good protection of intellectual property in this country.**
9. **There are few regulatory and/or research restrictions in this country.**
10. **The R&D facility was established to support sales to foreign customers.**
11. **This country has high growth potential.**
12. **The R&D facility was established to support production for export to other countries.**
13. **The establishment of an R&D facility was a regulatory or legal prerequisite for access to the local market.**

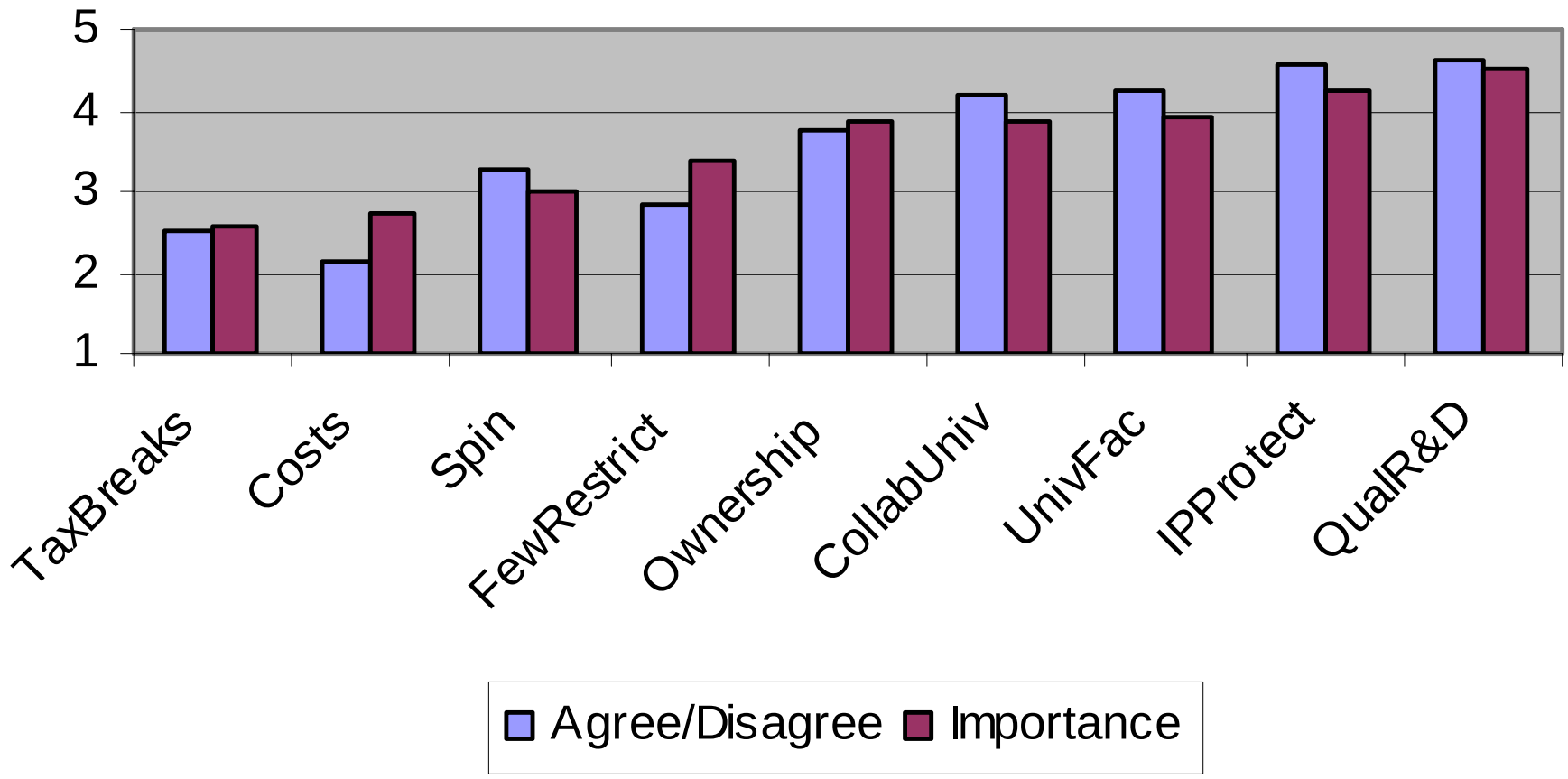
Factors in Locating in Emerging Economy



Factors in Locating in Developed Economy Outside Home



Factors in Locating in the Home Country



Attractor & Detractor Factors

Attractor:

Average agree/disagree > 3

Average importance > 3

Detractor:

Average agree/disagree < 3

Average importance > 3

Factor Summary: Attractors & Detractors

	Attractors	Detractors
Emerging	**Output Markets**	**IP Factors**
	Quality of R&D Personnel	
	Costs = University Factors	
Developed/Home	**Quality of R&D Personnel = IP Protection**	***No Detractors***
	University Factors	
	Output Markets	

Output Markets are Growth & SupSales
University Factors are CollabUniv and UnivFac
Intellectual Property Factors are IPProtect and Ownership

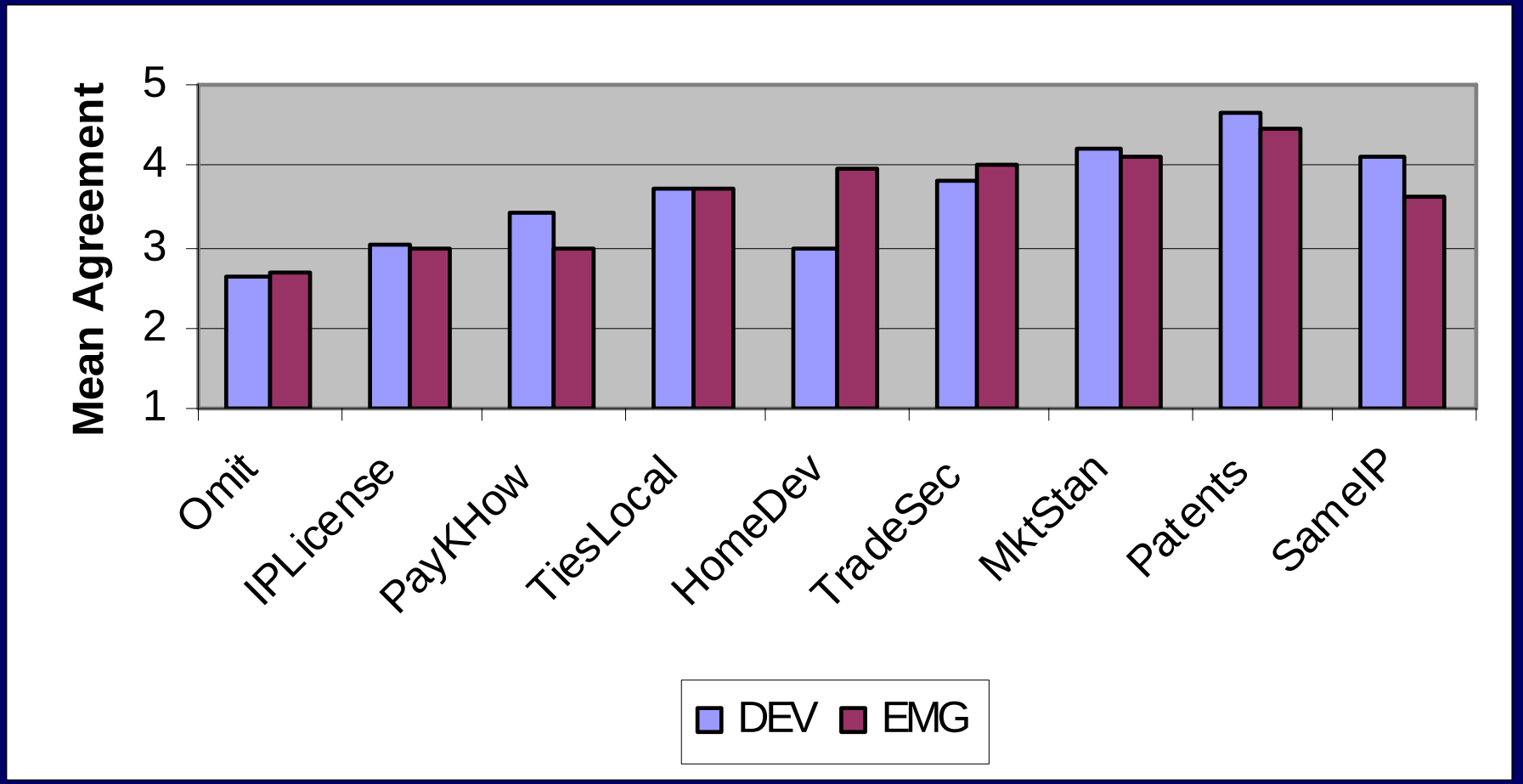
Protecting & Capitalizing on IP

We want to know the approaches used to protect and capitalize on intellectual property either developed in this facility or transferred to it. First we will ask whether you agree or disagree that you use an approach. We will use a 5 point scale where 5 is strongly agree and 1 is strongly disagree. Second, we will ask how important the approach is for this facility. We will use a 5 point scale where 5 is extremely important and 1 is not important at all.

Protecting & Capitalizing on IP

1. Essential elements will be omitted from documents to make it more costly to copy or design around.
2. We license-out intellectual property
3. We require payments for know-how transferred.
4. We establish strong ties to local authorities
5. The potentially important intellectual property is developed in the home country.
6. We use trade secrets.
7. We try to establish our products as the market standard.
8. We use patents
9. We use the same intellectual property strategies at home and abroad

Protecting & Capitalizing on IP Outside Home Country



Types of Research

A NEW TECHNOLOGY is a novel application of science as an output of the R&D. It may be patentable or not.

Improving FAMILIAR TECHNOLOGY refers to an application of science currently used by you and/or your competitors.

R&D for NEW MARKETS is designed to create products or services that are new to your firm.

R&D for FAMILIAR MARKETS refers to improvement of products or services that you already offer your customers or where you have a good understanding of the end use.

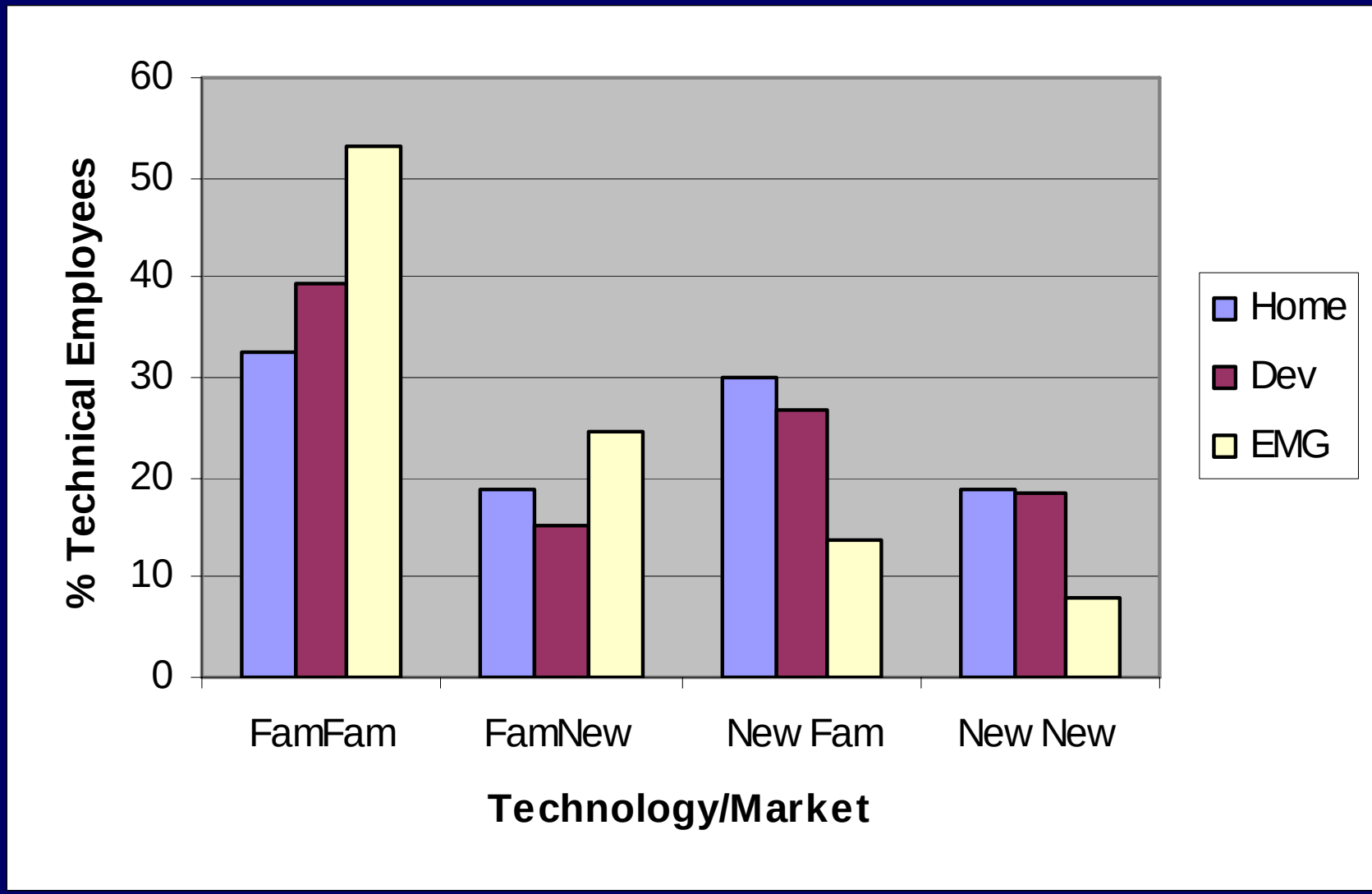
Type of Research Conducted in Recent/Planned Facility

Technology

Market

	Familiar	New
New	%	%
Familiar	%	%

Research Type:
Home & Developed Outside *versus* Emerging



What Have We Learned?

	WSJ & NYTimes	This Survey	
Factor	# Articles	DEV/Home	Emerging
Cost	38	Not Ranked	3
QualR&D	29	1	2
Output	10	4	1
IP	4	1	Detractor
Universities	3	3	3

61 WSJ & NYTimes Articles 2002-2005

Ranked in descending order with #1 as most important attractor

Concluding Remarks

- Qualitative data linked to actual sites
  - Considered central to R&D strategy
  - Avoids general perceptions of markets where no experience
  - Avoids listening posts
  - Not necessarily representative of aggregate R&D efforts
- Definition of R&D
  - Fits company view of their R&D
  - High response rate
  - Link to other data
  - Correspondence with basic, applied, development?