



Human Resources and Diversification Strategies in Financial Services

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OVERVIEW

- Deregulation in Fin Services provides new opportunities for diversification
- Human resources predict changes in diversification
- Why? Resource-based view of firm



THE RESOURCE-BASED VIEW OF THE FIRM

- Firms are heterogeneous with respect to resources and capabilities.
- Resources are stocks of available factors; physical, intangible, and financial resources.
- Capabilities refer to the capacity to deploy resources to affect a desired end.
- Competitive advantage occurs when resources and capabilities are valuable, relatively rare, and relatively immobile
- Underused resources create firm-specific opportunities for exploitation.



DIVERSIFICATION AND THE RESOURCE BASED VIEW

- Diversification is one strategy for exploiting existing firm-specific resources
- Resources are deployed to product markets where the highest rents can be earned.



DIVERSIFICATION AND *HUMAN RESOURCES*

- Intangible resources, e.g. knowledge, more likely to produce competitive advantage.
 - ◆ Difficult to imitate firm-specific processes based on intangible resources;
 - ◆ External market failures
- Intangible resources are linked to human resources
- Human resources create knowledge and can be exploited profitably by firms



Human Resources in Internal Labor Markets (ILMs) and Diversification

- Firm-level ILMs (Doeringer and Piore 1971) exist in contrast to buying labor on the spot market
- Diversifying firms are likely to have robust ILMs:
 - ◆ ILMs encourage the development of firm-specific skills that diversification seeks to exploit.
 - ◆ ILMs enable the development of capabilities beyond the skills of the workers themselves: e.g. teams



DATA SOURCES

- The Longitudinal Business Database (LBD)
 - ◆ Establishment employment, payroll, location, industrial classification and firm affiliation
- The Longitudinal Employer-Household Dynamics (LEHD) Program
 - ◆ High quality data on firm workforce composition over time
 - ◆ This is novel / unique



SAMPLE

- Financial establishments in 4 digit SIC
 - ◆ SICs are listed in table 1
- Time period is 1992-2000, though the analysis will focus on diversification over the period 1997-2000

Table 1. SIC codes in financial services

1987 SIC Code	Description	1987 SIC Code	Description
6021	National Commercial Banks	6211	Security Brokers and Dealers
6022	State Commercial Banks	6221	Commodity Contracts Brokers and Dealers
6029	Commercial Banks NEC	6231	Security and Commodity Exchanges
6035	Savings Institutions (Fed)	6282	Investment Advice
6036	Savings Inst (Not Fed)	6289	Securities Exchange Services
6061	Credit Unions (Fed)	6311	Life Insurance
6062	Credit Unions (Not Fed)	6321	Accident and Health Insurance
6081	Branches of Foreign Banks	6324	Hospital & Medical Service Plans
6099	Functions Related to Deposit Banking	6331	Fire Marine and Casualty Insurance
6111	Federal Credit Agencies	6351	Surety Insurance
6141	Personal Credit Inst	6361	Title Insurance
6153	Short Term Business Credit Inst	6371	Pension, Health and Welfare Funds
6159	Miscellaneous Business Credit	6399	Insurance Carriers
6162	Mortgage Bankers & Loan Correspondents	6411	Insurance Agents, Brokers, and Service
6163	Loan Brokers	6712	Offices of Bank Holding Companies

DIVERSIFICATION MEASURES

- 3 measures of overall diversification
 - ◆ Defined as 1 minus a Herfindahl index:
 - ◆ industry diversification (*ind_div*);
 - ◆ county diversification (*county_div*);
 - ◆ state diversification (*state_div*)
- 2 measures of “distance” relatedness;
 - ◆ geographic diversification; *geog_dist_div*
 - ◆ industry diversification; *ind_dist_div*

DIVERSIFICATION MEASURES

- Example; industry diversification (*ind_div*) measure;

$$s_{jit} = \frac{pay_{jit}}{pay_{it}} \quad H_{it}^{industry} = \sum_{j \in i} (s_{jit})^2$$

$$ind_div_{it} = 1 - H_{it}^{industry}$$

DIVERSIFICATION MEASURES

■ *geog_dist_div*, geographic diversification

◆ d_{ce} is 1 + the distance from the center of the county where est. e is located and the “core” county c .

$$H_{it}^{county} = \sum_{e \in i} (1/d_{ce}) (s_{eit})^2 \quad \text{geog_dist_div}_{it} = 1 - H_{it}^{county}$$



Indicators of Human Resources in ILMs

- Establishment-level measures, aggregated to firm-level using employment weights
- 3 Indicators
 - ◆ Worker turnover rates in excess of net changes—churning
 - ◆ Extent to which wage-tenure profiles slope upward
 - ◆ Dispersion of wages

CHURNING (turnover)

- *Lower* churn rates imply skill development that can be leveraged through diversification.

$$\frac{(\textit{Accessions} + \textit{Separations} - |\Delta\textit{Employment}|)}{\textit{Average_Employment}(t, t - 1)}$$

- Captures worker turnover in excess of required for net changes in the number of workers in the business.



WAGE-TENURE PROFILE

- Wage-tenure profiles that slope more sharply upward imply skill development within ILMs
- Measured through growth of workers' wages with at least 5 years of tenure



DISPERSION OF WAGES

- Wage compression is positively related to worker cooperation
- Builds routines and skills for leveraging diversification
- Log of ratio of earnings of the worker at the 90th percentile to the worker at the 10th percentile
- *Less* dispersion leads to more diversification



COMPLEMENTARITY

- Each ILM indicator may have effects on diversification that depend on the other indicators
- Example: within-job-wage growth has a stronger effect in companies with low churning
- Measured through multiplicative interactions



OTHER CONTROLS

- Firm age
- Firm size (# of workers)
- Home state
- Home sub-industry (4 digit)
- Net employment growth
- Share of high-skill workers
- Share of female workers

Table 6. Summary of variable definitions

Independent Variable	Definition
<i>firmage1997</i>	Firm age in 1997
<i>growth</i>	Average net employment growth
<i>size</i>	Average number of full quarter workers
<i>lnsize</i>	Average log number of full quarter workers
<i>shr_fem</i>	Average share of female workers
<i>shr_low</i>	Average share of low human capital workers
<i>shr_high</i>	Average share of high human capital workers
<i>shr_hw</i>	Average share of high wage workers
<i>wjwg</i>	Average within job wage growth (five years) for new hires
<i>chr</i>	Average churning
<i>diff</i>	Average within firm 90-10 log wage differential
Dependent Variable	Definition
<i>county_div</i>	Change in geographic diversification at county level
<i>state_div</i>	Change in geographic diversification at state level
<i>ind_div</i>	Change in diversification at industry level
<i>geog_dist_div</i>	Change in geographic diversification at county level, weighted by distance
<i>ind_dist_div</i>	Change in diversification at industry level, weighted by relatedness

- The independent variables in this table are five-year (1992-1996) averages.
- The dependent variables indicate the change in the indices (construction described in the text) from 1997 to 2000.



EMPIRICAL APPROACH

- Use the average level of ILM variables over 1992-1996 period at the firm level to predict change over 1997-2000 in firm-level diversification measures
- Control model
- Study variables: main effects
- Study variables: interactions

Table 9. Ordinary least squares regression results for control model

	(1) <i>county_div</i>	(2) <i>state_div</i>	(3) <i>ind_div</i>	(4) <i>geog_dist_div</i>	(5) <i>ind_dist_div</i>
<i>(Constant)</i>	0.132** (0.024)	0.237** (0.025)	0.008 (0.025)	0.090** (0.023)	0.052** (0.014)
<i>firmage1997^b</i>					
<i>1-6 years</i>	-0.026 (0.025)	-0.020 (0.025)	-0.039 (0.026)	-0.010 (0.023)	-0.007 (0.014)
<i>7-10 years</i>	-0.021 (0.020)	-0.031 (0.020)	-0.038 (0.020)	-0.006 (0.018)	0.011 (0.011)
<i>11-20 years</i>	0.018* (0.009)	0.005 (0.009)	0.085** (0.009)	-0.007 (0.008)	-0.007 (0.005)
<i>lnsize</i>	-0.019** (0.001)	-0.025** (0.001)	-0.007** (0.001)	-0.011** (0.001)	-0.007** (0.001)
<i>Growth</i>	0.054* (0.025)	-0.057* (0.025)	0.044 (0.026)	0.078** (0.023)	0.103** (0.014)
<i>shr_fem</i>	0.109** (0.024)	0.143** (0.024)	0.025 (0.024)	0.099** (0.022)	0.048** (0.014)
<i>shr_high</i>	-0.018 (0.022)	0.019 (0.023)	-0.012 (0.023)	-0.136** (0.021)	-0.052** (0.013)
N	4818	4818	4818	4818	4818
R²	0.21	0.27	0.14	0.20	0.21

- Industry dummies and state dummies are not reported.
- Standard errors are in parentheses; b over 20 years old is omitted; * $p < 0.05$, ** $p < 0.01$

Table 10.

	(1) <i>county_div</i>	(2) <i>state_div</i>	(3) <i>ind_div</i>	(4) <i>geog_dist_div</i>	(5) <i>ind_dist_div</i>
<i>(Constant)</i>	0.206** (0.024)	0.294** (0.025)	0.074** (0.025)	0.155** (0.023)	0.097** (0.014)
<i>firmage1997^b</i>					
<i>1-6 years</i>	-0.054* (0.024)	-0.032 (0.025)	-0.052* (0.025)	-0.031 (0.023)	-0.023 (0.014)
<i>7-10 years</i>	-0.056** (0.019)	-0.052** (0.020)	-0.060** (0.020)	-0.032 (0.018)	-0.009 (0.011)
<i>11-20 years</i>	0.000 (0.008)	-0.011 (0.009)	0.065** (0.009)	-0.024** (0.008)	-0.019** (0.005)
<i>lnsize</i>	-0.021** (0.001)	-0.027** (0.001)	-0.009** (0.001)	-0.014** (0.001)	-0.008** (0.001)
<i>Growth</i>	0.011 (0.024)	-0.091** (0.025)	0.013 (0.025)	0.045 (0.023)	0.080** (0.014)
<i>shr_fem</i>	0.071** (0.023)	0.105** (0.024)	-0.028 (0.024)	0.057** (0.022)	0.020 (0.014)
<i>shr_high</i>	-0.069** (0.023)	0.005 (0.024)	0.013 (0.024)	-0.148** (0.022)	-0.065** (0.013)
<i>chr</i>	-0.473** (0.057)	-0.412** (0.059)	-0.075 (0.060)	-0.178** (0.054)	-0.132** (0.033)
<i>diff</i>	-0.044** (0.006)	-0.055** (0.007)	-0.076** (0.007)	-0.052** (0.006)	-0.033** (0.004)
<i>wjwg</i>	0.721** (0.049)	0.345** (0.050)	0.387** (0.051)	0.568** (0.046)	0.425** (0.028)
N	4818	4818	4818	4818	4818
R²	0.26	0.30	0.17	0.24	0.26
Δ R²	0.05**	0.03**	0.03**	0.04**	0.05**

Table 11.

	(1) <i>county_div</i>	(2) <i>state_div</i>	(3) <i>ind_div</i>	(4) <i>geog_dist_div</i>	(5) <i>ind_dist_div</i>
<i>(Constant)</i>	0.203** (0.024)	0.296** (0.025)	0.061* (0.025)	0.141** (0.023)	0.086** (0.014)
<i>firmage1997^b</i>					
<i>1-6 years</i>	-0.054* (0.024)	-0.032 (0.025)	-0.048 (0.025)	-0.024 (0.023)	-0.019 (0.014)
<i>7-10 years</i>	-0.057** (0.019)	-0.053** (0.020)	-0.057** (0.020)	-0.030 (0.018)	-0.007 (0.011)
<i>11-20 years</i>	-0.000 (0.009)	-0.011 (0.009)	0.067** (0.009)	-0.020* (0.008)	-0.017** (0.005)
<i>lnsize</i>	-0.021** (0.001)	-0.027** (0.001)	-0.010** (0.001)	-0.014** (0.001)	-0.009** (0.001)
<i>Growth</i>	0.009 (0.024)	-0.089** (0.025)	-0.000 (0.025)	0.033 (0.023)	0.070** (0.014)
<i>shr_fem</i>	0.076** (0.023)	0.103** (0.024)	-0.010 (0.024)	0.073** (0.022)	0.034* (0.014)
<i>shr_high</i>	-0.074** (0.023)	0.001 (0.024)	0.028 (0.024)	-0.132** (0.022)	-0.055** (0.014)
<i>chr</i>	-0.468** (0.059)	-0.396** (0.061)	-0.147* (0.062)	-0.256** (0.056)	-0.189** (0.034)
<i>diff</i>	-0.044** (0.006)	-0.056** (0.007)	-0.074** (0.007)	-0.053** (0.006)	-0.033** (0.004)
<i>wjwg</i>	0.767** (0.063)	0.292** (0.065)	0.598** (0.066)	0.649** (0.060)	0.545** (0.037)
<i>chr×wjwg</i>	-3.372** (0.788)	-1.682* (0.816)	0.472 (0.821)	-1.761* (0.745)	-1.471** (0.455)
<i>chr×diff</i>	0.118 (0.107)	-0.002 (0.110)	0.385** (0.111)	0.575** (0.101)	0.408** (0.062)
<i>wjwg×diff</i>	0.026 (0.061)	0.133* (0.063)	-0.346** (0.063)	-0.078 (0.057)	-0.148** (0.035)
N	4818	4818	4818	4818	4818
R²	0.26	0.30	0.18	0.25	0.27

Coefficients for main effects and interactions of ILM variables from Table 11

	(1) <i>county_div</i>	(2) <i>state_div</i>	(3) <i>ind_div</i>	(4) <i>geog_dist_div</i>	(5) <i>ind_dist_div</i>
<i>chr</i>	-0.468** (0.059)	-0.396** (0.061)	-0.147* (0.062)	-0.256** (0.056)	-0.189** (0.034)
<i>diff</i>	-0.044** (0.006)	-0.056** (0.007)	-0.074** (0.007)	-0.053** (0.006)	-0.033** (0.004)
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<i>chr</i> × <i>diff</i>	0.118 (0.107)	-0.002 (0.110)	0.385** (0.111)	0.575** (0.101)	0.408** (0.062)
<i>wjwg</i> × <i>diff</i>	0.026 (0.061)	0.133* (0.063)	-0.346** (0.063)	-0.078 (0.057)	-0.148** (0.035)



RESULTS

- Each of the three indicators of ILM strength is significantly associated with changes in the diversification measures.
- The relationships between ILM strength and diversification activity are in the hypothesized direction.



MORE SPECIFICALLY ...

- Churning is negatively associated with changes in diversification.
- Steepness of wage profiles is positively associated with changes in diversification.
- More extensive wage differentials are negatively associated with diversification.



EFFECT SIZES

- Change of .05 in *churn rate* associated with 4-15% of s.d. change in diversification indices
- One s.d. change in *wage dispersion* associated with 10-25% of s.d. change in diversification indices
- One s.d. change in *wage growth* associated with 10-20% of s.d. change in diversification indices
- In general, effects are modest



COMPLEMENTARITIES?

- Support for complementarity mixed
- Overall, some interactions are as hypothesized
- Non-parametric results even less clear than linear interactions
 - ◆ grouped by “high” and “low”
 - ◆ more investigation required

Coefficients for main effects and interactions of ILM variables

	(1) <i>county_div</i>	(2) <i>state_div</i>	(3) <i>ind_div</i>	(4) <i>geog_dist_div</i>	(5) <i>ind_dist_div</i>
<i>chr</i>	-0.468** (0.059)	-0.396** (0.061)	-0.147* (0.062)	-0.256** (0.056)	-0.189** (0.034)
<i>diff</i>	-0.044** (0.006)	-0.056** (0.007)	-0.074** (0.007)	-0.053** (0.006)	-0.033** (0.004)
<i>wjwg</i>	0.767** (0.063)	0.292** (0.065)	0.598** (0.066)	0.649** (0.060)	0.545** (0.037)
<i>chr</i> × <i>wjwg</i>	-3.372** (0.788)	-1.682* (0.816)	0.472 (0.821)	-1.761* (0.745)	-1.471** (0.455)
<i>chr</i> × <i>diff</i>	0.118 (0.107)	-0.002 (0.110)	0.385** (0.111)	0.575** (0.101)	0.408** (0.062)
<i>wjwg</i> × <i>diff</i>	0.026 (0.061)	0.133* (0.063)	-0.346** (0.063)	-0.078 (0.057)	-0.148** (0.035)



Discussion points

- Overall conclusion is that human resources are associated with diversification
 - ◆ A surprise to industry analysts?
- ILM indicators all matter but do not make up “bundles”
- Further analyses could look at
 - ◆ Complementarities, more carefully
 - ◆ Firm “types”
 - ◆ Mode of diversification
 - ◆ Splitting out positive and negative changers
 - ◆ Possible moderators