

# Inter-linkages between Educational Institutions and White Collar Labor Mobility: A Comparative Study in Japan, Germany, and the U.S.A.

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## Abstract

In this study, we examine how institutions and business practices are interlinked within institutional systems, towards helping explain differences among business systems in Japan, Germany, and the USA. More specifically, we explore how educational institutions and institutionalized corporate practices are inter-related within each of these systems, drawing on data from 2993 managers from large firms in Japan, Germany, and the USA to explore the relationship between educational institutions and institutionalized career path trajectories in firms in these countries. Results showed that business practices and career paths vary in these three countries, and that they are linked with educational institutions, in that managers with various professional certifications are more likely to have worked for multiple firms over their careers, while those with university degrees are not.

**Keywords:** *comparative business systems, systems dynamics, labor mobility, education systems, institutional theory*

## INTRODUCTION

Business practices continue to vary across countries (Lim et al., 2010; Morgan et al., 2001). Might one reason for this variety of business practices be due to the way institutions are interlinked with business practices? This study examines how business practices and institutions might be inter-linked within business systems, as a way of explaining why business practices have not converged despite the prevalence of multinational companies (Whitley, 2003).

This linkage between national institutions and

business practices has important implications for why national economies cannot respond more quickly to global economic and technological change. The comparative business systems literature would argue that the interdependent nature of the institutions in a country make it difficult for one institution or set of institutionalized practices to change without having the other interlinked institutions change at the same time, which would cause other practices to change as well. While economists have examined economic change and the interlinkage of institutions in Japan as they

relate to banking and other practices (Aoki, 2001), very little research explores the linkage between educational institutions and the labor practices.

To our knowledge, this is the first comparative study on inter-linkages of educational institutions and white collar labor mobility in these three countries. This study contributes to the comparative business literature by exploring the relationship between institutionalized business practices to another institution in the business system—here, education. We explore the different ways similar institutions and practices are linked across business systems. We argue that not only do countries take a variety of approaches when addressing similar types of issues, but institutions within business systems interact differently with each other, from country to country. This is because systems are complex. We explore how this complexity makes each system address issues differently by exploring inter-linkages between education and white collar labor mobility of major firms in Japan, Germany, and the USA. These three countries make for a good starting point for the comparative explanation because they are three prominent exemplars among advanced market economies. The education and training systems in these three countries are also argued to vary considerably in ways that affect the kinds of skills developed, social identities, and organizational commitments (Whitley, 2003). By exploring linkages between educational institutions and white collar labor mobility in Japan, Germany, and the USA, we contribute to the comparative business systems literature by analyzing the inter-linkages between education and white collar labor mobility in three countries, using a large primary data sample derived from managers of large firms in these three countries.

## LITERATURE REVIEW

### *Comparative business systems*

The comparative business systems literature argues that business practices and organizational behavior vary across countries in part because they are shaped by differing institutional arrangements across countries (e.g., Aguilera & Jackson, 2003; Dobbin, 1994; Guillen, 1994; Hollingsworth,

Schmitter & Streeck 1994; Morgan, Campbell, Crouch, Pedersen, & Whitley, 2010; Orru, Biggart, & Hamilton 1997; Smelser & Swedberg, 2005; Streeck, 2001; Whitley, 1992). This literature views organizations as well as organizational practices as part of a larger national system that is shaped by a number of institutions, including governmental agencies, banking arrangements, union configurations, venture capital markets, labor markets, social contracts, and societal norms around activities such as cross-shareholding. This raises the question of how institutions are inter-linked with organizational practices, toward explaining how different countries undertake common business practices using different approaches.

Institutions shape organizations and organizational practices in various ways that can be positive or negative, and restrictive or expansive. For example, governmental laws and regulations constrain organizations and organizational practices. Further, educational institutions shape the norms, knowledge base, and practices of organizations, and shared norms and unconscious notions of legitimate behavior shape organizational interactions (e.g., Biggart & Guillen, 1999; Fligstein, 2001; Granovetter, 1985). Distinct national customs and practices are also reinforced when institutions pursue patterns that reinforce their power (Bebchuk & Roe, 1999), existing notions of legitimate behavior are strongly held (Biggart & Guillen, 1999), or the complementarities between institutions make the system self-reinforcing (Aoki, 2001). Guillen (2001) documents how newly industrialized countries such as Argentina and South Korea, and the companies in these countries, excel at different activities in the global economy based on their social organization. This perspective has its roots in several classic comparative analyses of work: *Work and Authority in Industry* (Bendix, 1956), *Peddlers and Princes* (Geertz, 1963), and *British Factory—Japanese Factory* (Dore, 1973).

Awareness has been growing around the variety of institutional arrangements found in different market economies and their varying influence on firms' structure and behavior (Granovetter, 1990; Whitley, 1992). This awareness is reflected in the varieties of capitalism research in political science, which underscores the multiplicities of political

approaches to solving similar problems (Hollingsworth, Schmitter, & Streeck 1994; Polanyi, 1957; Streeck, 1991, 1995). The variety of effective forms of business organizations and their interdependencies with key government, financial, educational and social institutions across countries imply that a single rationality or logic of business efficiency is inadequate to explain the development of successful managerial structures and processes in market economies. There is an increasingly widely shared view of economic activities as socially embedded (e.g., Granovetter, 1985; Smelser & Swedberg, 1994; Mizuchi & Fein, 1999; Whitley 1992, 2003). Economic efficiency and success, in this latter view, are socially constructed, and so vary significantly across social contexts. Consequently, a key task in organizational analysis is to understand how different kinds of business organizations and economic rationalities develop and become effective in different institutional contexts.

*Interlinkages, “Reinforcing Loops” and “Unintended Fit” Between Institutions*

The idea of interlinkages between institutions, or between institutions and practices, bears some similarity to reinforcing loops in systems thinking, which looks at the whole system of institutions, practices, and other elements, and the relationships between all of these things, specifically how changing one element of a system affects other elements. Reinforcing loops occur when two or more aspects of a system reinforce each other in a vicious/virtuous cycle (e.g., Kim & Anderson 1998; Sterman, 2000; Sterman, Repenning, & Kofman 1997). Interlinkages also complement the idea that institutional arrangements are path dependent, that is decisions in Time 1 limit decisions in Time 2, so that once institutional arrangements are set on a path, it is hard to go back and change course to a completely new direction. Underlying path dependence is observation that the variety of choices for change depend in large part on supporting institutions in the environment. Reinforcing loops reinforce these choices. For example, secondary labor markets may require post-graduate education for workers if there is no incentive for firms to provide training internally. Where there is no post-graduate education, it may be difficult for employees to change

jobs mid-career because they may need to learn new skills, which somebody needs to teach them. Whitley (1992: 240-247) notes: “Cohesive and mutually reinforcing nature of many characteristics of East Asian business systems...suggest that, once established in particular institutional contexts, effective business systems may develop considerable cohesion and become resistant to major changes.” Thus, “once a particular business system has become established and certain rules of the game are institutionalized, major changes in firm type and patterns of behavior are unlikely to occur in the absence of substantial institutional changes” (Whitley 1992: 240-247).

Alternatively, interlinkages may also be a result of unintended fit. Aoki (1996) argues that, because Japanese institutions tend to complement each other, and their functioning is often contingent on fitting with other institutions, their effects on firms often interact to influence firms with more concerted force than they would individually. Aoki also argues that the institutional framework inherited from the war period in Japan started to work in the high growth period of the 1950s and 1960s, only when it was found to fit with an evolutionary tendency that had been taking place in the private sector. During the postwar period, “a unique organizational coordination mechanism evolved within and across enterprises, one that would eventually have a significant impact on productivity” (Aoki 1996: 235). Aoki’s work here stresses the “unintended complementarity between the evolving organizational mode and the institutional framework” (Aoki 1996: 236). Consequently, “the possible reform of institutions in Japan seems to lie only in an extension of its own evolutionary path and that should be the way for Japan to contribute to the gains from system diversity on a global scale” (Aoki 1996; 235).

In the case of Japan, as documented by Gordon (1985) and Aoki (1996), seniority-based compensation and promotion systems, as well as “lifetime” employment were not just the result of a unilateral rationalistic design by management to prevent the frequent mobility of skilled workers. It was the result of “trilateral interactions involving the government aiming to pacify labor disputes and eliciting workers’ cooperation toward war production,

management, and workers who aspired to be members of the enterprise” (Aoki 1996: 240). Ad hoc adaptation to severe labor shortages led to job sharing and ambiguous job demarcations. After the war, workers often took over the factory, and management did not have the authority to break up workers and reassign them to different tasks. The “methods of quality control techniques and time-and-motion studies were introduced to the shop floor with the participation of the works as a group rather than by relying exclusively upon the research of industrial engineers and imposing their findings on individual workers” (Aoki 1996: 242; Mantzavinos, 2004; North, 1991). Eventually, there emerged an unintended fit between evolving organizational practices and the institutional framework the government had initially developed for a different purpose, i.e. the centralized control of resource allocation.

### ***Institutionalized Career Path Trajectories across Countries and the Role of Education in Shaping Them***

The nature of work differs considerably across countries in terms of career trajectories, labor mobility, and the importance of certification for advancement (e.g., Aguilera & Jackson, 2003; Guillen, 2001; Hall & Soskice, 2001; Hamilton & Biggart, 1988; Hollingsworth, Schmitter, & Streeck 1994; Kalleberg & Stark, 1993; Streeck, 2000; Whitley, 1992, 2003). As Kalleberg and Stark (1993: 182) note, the nature of work and work values are “rooted in, and largely shaped by the work structures and social institutions in which workers participate and are embedded in.” In this study, we argue that the divergent work practices are shaped in part by varying educational systems, which is also related to the norms as well as the skills and expectations of employees.

Two key institutions shaping business systems and the nature of work across countries are formal educational institutions and the structure of labor markets. Education systems shape the expectations of graduates around work. Labor markets, in turn, shape their career paths. For example, in business systems with internal labor markets, employees are more likely to work for fewer firms. In some business systems, this results in working across multiple functions. Also, where there is long-term employ-

ment, there are more incentives for the company to provide internal formal, or on-the-job training (OJT) (Dore, 1973; Whitley, 2003; Witt, 2014). For example, Witt (2014) proposes that Japanese-style OJT is expensive, and that firms only afford to engage in it if they can be reasonably certain that employees will stay within the firm long enough for there to be a positive return on the training investment. The presence of secondary labor markets also shapes the nature of competition in the work place, as employees can find other companies to advance their careers, where employees in systems with largely internal labor markets have very limited options for advancing their careers.

Because of the significance of the characteristics of individual firms and the immense range of alternative career paths in the full labor force, much of the conceptual development and empirical research on work careers has been focused on more limited structures, such as “internal labor markets” (Althausser, 1989; Doeringer & Piore, 1985). However, even internal labor markets are defined in different ways, such as job ladders in a single firm, within an occupational category, and/or in an industry. It is very unlikely that the more refined categories of internal labor markets can be useful in studies of the full labor force, and clusters of occupations may need to be used to avoid overwhelming complexity (Haller et al., 1985). However, Kerkhoff (1995) notes that the internal labor market suggests some form of orderliness in careers.

Where external labor markets are present, indicated by mid-career “job hopping,” educational institutions are also more likely to be present. Educational institutions provide Masters of Business Administration (MBA) degrees or professional certificates of some kind, such as the Chartered Professional Accountant (CPA) certification and financial analyst certifications, allowing employees to retrain themselves or advance their skills for other jobs (Whitley, 2003). These “certified skills” tend to be “owned” and developed by individuals who invest in particular external training programs without much involvement by employers.

However, in countries that lack external labor markets or where external labor markets are not well developed, there are often deeply held social contracts reflected in labor law, the lack of a fully

developed social welfare system, or the lack of small business financing to provide alternative employment options. In some countries that lack well-developed labor markets, education is undertaken internally within the firm. For example, in the case of post-World War II Japan, there has been an emphasis on rotations across functions with the goal of creating broad exposure to the company, with the effect of producing generalists who lack skill specialization and whose company-specific knowledge is not very marketable in external labor markets (Ono, 2010; Witt, 2014). Intentionally or not, this reflects post-war employer concerns around maintaining employees and developing employee loyalty. Developed during a period of extended economic growth, “life-time” employment was premised on a pyramidal structure that required constant growth to continually expand its base through the annual hiring of new graduates as life-time employees. Yet, even as the economic conditions have changed, the practices have been slow to change with them.

#### *Labor mobility in Japan, Germany, and the USA*

By international comparison, labor mobility in Japan has remained strikingly low due to various institutional factors and related business practices, such as internal labor markets, firm-specific training, portability of pensions, labor laws, etc. As such, there is a weaker link between white-collar job content and undergraduate education in Japan than in the U.S. Instead, in Japan, undergraduate education is not necessarily professional preparation for a career, and training in the firm is often firm and job-specific. In 2016, the labor separation rate in Japan was 2.04% (Japanese Ministry of Health, Labor and Welfare, 2016). The average tenure of regular male employees continued to hover around 12.8 years for college and university graduates, and the average number of jobs held by men aged 45 to 54 was around 2.1 (Ono, 2010). For regular male employees in Japan, such low mobility is a rational response to the economic incentives of the labor market. Seniority-based wages, internal labor markets, firm-specific training and pension plans make changing jobs economically disadvantageous to employees (Holbrow, 2015; Ono, 2010). Further, good midcareer jobs are hard to find, as

almost half of firms hire no regular employees at the midcareer level (Recruit Works Institute, 2010), and often employ explicit/implicit age cut-offs in hiring (Rebick, 2005). While some full-time job mobility does exist in Japan, it is highest among white-collar employees when they are in their 20s and decreases markedly after age 35. In addition to age playing a factor, labor laws also reduce labor mobility among full-time white-collar employees. Specifically, labor laws make it difficult to fire employees, and pension plans are only now becoming portable (Ono, 2010). Second, salaries are often negotiated *en masse*, and many Japanese firms still utilize some form of seniority pay (Witt, 2014). Third, large Japanese firms average around 5-8 levels of management, ranging from 4 to 11 levels (McCann, Hassard, & Morris, 2010). Fourth, job descriptions are very general, and rotations across functions still exist, although firms are increasingly pursuing specialist career tracks for technical employees up to middle upper manager level with the same compensation and potential for advancement as their management track counterparts. Finally, employee training is still largely done within the firm, and while there are MBA programs in Japan, the number of applicants has not increased noticeably.

In contrast to Japan, in Germany, job vacancies peaked in 2016 at 1.6% (OECD, 2016). Labor mobility has continued to be highest among white collar employees when they are in their 20s (Zimmermann, 1998). Employees in this age bracket often move around a lot to get experience and tend to do so until they find a family-oriented employer that provides for working parents and offers job security, at which point, they settle down. On the average, employees changed firms 7.8 times in their careers in the early 1990s (Zimmermann, 1998). In Germany, labor laws make it difficult for firms to fire employees, except in situations of demonstrable profit loss. Also, there are strong legal restraints on unilateral employer actions and strategies: the expansion of codetermination has encouraged continuous retraining and redeployment of the quite stable labor force as employees become more committed to the success of the firm and internal labor markets dominate external ones (Whitley, 2003). German firms have relatively few ranks and

salary grades, and employers use individual contracts for white-collar employees with specific, detailed job descriptions, although salaries for blue collar employees are negotiated through the labor union. Unlike Japan, there is a strong link between education and functional assignment. For example, those who study engineering tend to become engineers or take related jobs in sales involving engineering knowledge, etc. Those who study business often become managers or join the Personnel Department. Those who pursue a PhD signal their efficiency in completing the PhD in the prescribed 3 years (after completing the BA in 2 years, and the MA in 2 years), which can lead to an assistantship to a director or eventually to a directorship around age 45.

In the USA, labor mobility among white-collar employees is higher at every age than in Japan and Germany. In 2016, the labor separation rate in the USA was 3.5% (OECD, 2016; Kambourov & Manovskii, 2008), and over time, men in the 45 to 54 age group had held 5.6 jobs on average (Ono, 2010). These figures are substantially higher than in Japan and Germany. In contrast to Japan and Germany, labor laws make it relatively easy to lay off employees and 401(k) pension plans are portable, which contributes to higher labor mobility. White-collar employees are often functional specialists who advance their careers by changing jobs and companies. Because these employees tend to owe their primary loyalty to their profession, they are reluctant to invest in developing firm-specific skills and acquiring firm-specific knowledge (e.g., Whitley, 2003). This functional specialization and identity decreases organizational commitment and increases labor mobility. In comparison to Japan, US firms have up to 13 layers of general management grades (McCann et al., 2010). Although US firms provide internal training, external training is well developed and exists in the form of professional schools such as business schools, law schools, and certifications such as public accountancy and financial analysis. In part, this may be because there is a weak link between white-collar job content and undergraduate education, and graduates are not necessarily hired on the basis of their undergraduate major.

### ***Historical Perspective of Higher Education in Japan, Germany, and the USA***

In Japan, the present education system was put in place after World War II on the basis of the US model. Japanese education thus reflects both German and American influences: Students go through six years of primary school, three years of junior high school, and three years of high school before moving on to two-year or four-year college, followed by graduate degree programs. There are two types of public four-year colleges: the 96 national universities and the 39 local public universities, founded by prefectures and municipalities. The 372 remaining four-year colleges are private. As of 2005, more than 2.8 million students were enrolled in 726 universities (Japanese Ministry of Education, 2006). In 2008, the average costs (tuition, fees, and living expenses) for a year of higher education in a public university were 6 million yen (US\$6000) (Japanese Ministry of Education, 2009). Because large, prestigious Japanese firms often hire only from the top-tier universities, competition for those universities is stiff (Witt, 2014). As a result, entrance examinations are an important part of the education system.

In Germany, while number of university students has more than tripled since World War II, university attendance in Germany lags behind many other European nations. Universities in Germany are part of the free-state education system, which means that there are very few private universities and colleges. German universities focus more on education and less on research, but bear a strong resemblance to American universities. Student selection practices, however, are novel: German university students largely choose their own program of study and students can change universities according to their interests and the strengths of each university. Sometimes students attend two or more universities in the course of their studies. This mobility means that at German universities there is a freedom unknown in Japan or the USA. Setting the stage for career path tracking, there are 50 ways to get into college in Germany. One such way is the *Abitur*, or final examination following secondary school, which can be attained at a Gymnasium, Abendgymnasium or Gesamtschule, and which opens the way to any university. Another way to

gain access to a university is via a *Berufsoberschule*. University placement is usually decided by the *Abiturdurchschnittsnote* (similar to GPA in the USA). Additionally, an institution may quote an entry requirement for a particular course or require entrance exams. In some cases students need to write essays or motivational letters (Haerder, 2009).

In the USA, religious denominations established most early universities in order to train ministers, and most of the universities which opened between 1640 and 1750 form the contemporary Ivy League, including Harvard, Yale, Columbia, and Princeton, and other universities (NCSU, 2009). At the beginning of the 20th century, fewer than 1,000 colleges with 160,000 students existed in the USA. Explosive growth in the number of colleges occurred at the end of the 19th and early 20th century. Today, education in the USA is mainly provided by the public sector, with control and funding coming from three levels: federal, state, and local. Public education is universal at the primary and secondary levels (known inside the USA as the elementary and high school levels). Post-secondary education, (better known as “college” in the USA), is generally governed separately from the elementary and high school system, and there are 4,352 colleges, universities, and junior colleges in the country (Neuharth, 2009). Among the country’s adult population, over 85% have completed high school and 27% have received a bachelor’s degree or higher (US Census, 2000). Each state in the USA maintains its own public university system, which is always non-profit. Unlike many other nations, there are no public universities at the national level outside of the military service academies.

## HYPOTHESES

The above discussion suggests that two key institutions shaping business systems and the nature of work across countries are formal educational institutions and the structure of labor markets. Education systems shape the expectations of graduates around work. Labor markets, in turn, shape their career paths. We thus expect inter-linkages between educational institutions and white-collar labor mobility in Japan, Germany, and the USA. For

example, more coordinated institutional frameworks tend to restrict labor movement more in Japan and Germany than in the USA. Therefore, the task undertaken in this study is to understand how different organizational rationalities and organizational practices are affected by institutional arrangements in those three countries. Briefly, this study’s argument follows two steps. First, although issues facing business systems across the world are similar, institutions are structured differently to deal with them in those countries. Second, institutions and institutionalized business practices have intended or unintended fit. Following the above arguments, we derive six hypotheses to be tested.

- Hypothesis 1: White-collar labor mobility demonstrates distinctively different trends across countries, such that the number of companies employees work for in their career differs across Japan, Germany, and the USA, controlling for employee age.
- Hypothesis 2: Institutionalized education is linked to white-collar labor mobility, such that employees with public qualifications and certifications, other than educational degrees, tend to have worked for a larger number of companies in their career.
- Hypothesis 3: Employees who have work experience in a greater number of functional areas tend to have worked for a smaller number of companies in their career.
- Hypothesis 4: Institutionalized education is linked to white-collar labor mobility, such that employees with a college degree tend to have worked for more companies in their career.
- Hypothesis 5: Institutionalized education is linked to white-collar labor mobility, such that employees with an MBA degree tend to have worked for more companies in their career.
- Hypothesis 6: Trends in labor mobility and innovation have stayed fairly consistent over the past several decades.

## METHOD

### *Sample*

The data was collected by the Japan Institute of Labor in Japan, Germany, and the USA. A similar sampling procedure was used in these countries. In Japan, the largest 1000 companies (by employee size) were targeted in this study as listed in the *Diamond Company Directory*. In the US, the largest 1000 companies (by employee size) were targeted as listed in the *Ward's Business Directory* (The Reference Press) and *Compustat II* (Standard and Poor's). In Germany, the largest 1000 companies (by employee size) were targeted as listed in the *Index of Deutsche Gesellschaft fuer Grosunternehmen*.

In Japan, Germany, and U.S., chiefs in the Human Resources/Personnel, Management, and Accounting departments or divisions in the company were surveyed. The sample consisted of 2993 managers in total, with 1567 managers from Japan, 674 managers from Germany, and 752 managers from the US, with respective response rates of 38%, 19%, and 21%. Each chief of division/section was asked about his/her career and the evaluation of his/her career. Questions regarding systems to develop talented persons and labor management systems and their operation were included in the survey of the managerial class (aimed toward division chief for U.S. and Japan, and section chief for Germany) responsible for personnel affairs.

### *Dependent Variable*

The dependent variable, *Number # of Companies* worked at, was based on a survey question that asked the total number of companies the employee worked for (from one to five or more). The data is thus censored, where values over five are all reported as five. To address the issue of censoring, we report results using both ordinary least square (OLS) and the Tobit estimation procedures.

### *Independent Variables*

We used two dichotomous independent variables to test H1. *U.S.* takes the value of 1 if the employee is in U.S., and 0 otherwise. *Germany* takes the value of 1 if the employee is in Germany, and 0 otherwise.

To test H2, we use *Certificate*, which is a dichotomous variable that takes the value of 1 if the employee has any public qualifications and/or certifications, other than educational degrees, and 0 otherwise. To test H3, we use *Function*, which is the total number of all the functional areas the employee has experienced in his/her career. To test H4, we use *College*, which is an indicator variable, taking the value of 1 if the employee has a college degree, and 0 otherwise. Similarly, to test H5, we use *MBA*, which is an indicator variable, taking the value of 1 if the employee has an MBA degree, and 0 otherwise.

### *Control Variables*

We included two control variables to rule out alternative explanations for our results. *Gender* is the employee's gender, which takes the value of 1 if the employee is male, and 0 for female. *Age* is the age of the employee.

## RESULTS

Table 1 summarizes the correlations and descriptive statistics among study variables. Table 2 shows the estimated OLS and Tobit regression coefficients with all data from Japan, Germany, and U.S. The two models produce consistent decisions, which suggest that there is an appealing robustness to the results. The highest variance inflation factor (VIF) for the main variables in the first two columns is 2.02, which is well below the recommended ceiling of 10 (Hair, Anseron, Tatham, & Black, 1998), suggesting that multicollinearity does not have a serious impact on the estimation process.

Hypothesis 1 states that white-collar labor mobility demonstrates distinctively different trends across countries, such that the number of companies employees work for in their career differs across Japan, Germany, and the U.S.A., controlling for employee age. As shown in Table 2, the *U.S.* variable is positively and significantly related to the total number of companies the employee worked for in both models ( $p < 0.01$ ). This result suggests that the U.S. managers on the average work for 1.58 and 1.64 more companies in their career, based on OLS and Tobit estimates, respectively, than Japanese employees. Further, the *Germany* variable is posi-

**Table 1: Means (M), Standard Deviations (SD), and Correlations**

		M	SD	1	2	3	4	5	6	7	8
1.	U.S.	0.28	0.45								
2.	Germany	0.12	0.32	-.23							
3.	Certificate	0.33	0.47	.16	-.05						
4.	Function	3.15	2.01	.16	.09	-.06					
5.	College	0.89	0.31	.11	-.00	-.01	-.04				
6.	MBA	0.17	0.37	.34	.32	.00	.08	.15			
7.	Gender	0.91	0.29	-.36	-.06	-.07	-.00	.00	-.11		
8.	Age	46.63	7.52	-.22	-.14	-.06	.09	-.11	-.17	.31	
9.	# of Companies	1.85	1.21	.51	.21	.11	.20	.02	.30	-.24	-.09

**Table 2: Regression Results (Dependent Variable: Total Number of Companies Each Employee Has Worked for in His/Her Career)**

	OLS			Tobit (5)			OLS			Tobit (5)		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Constant	0.64	.15	**	0.59	.16	**	0.68	.16	**	0.64	.17	**
Certificate	0.10	.04	*	0.10	.04	*	0.14	.05	*	0.14	.06	*
US x Certificate							-0.17	.09	†	-0.19	.10	†
Germany x Certificate							0.24	.14	†	0.27	.15	†
Function	0.04	.01	**	0.05	.01	**	0.02	.02		0.02	.02	
US x Function							0.03	.02		0.03	.02	
Germany x Function							0.04	.03		0.04	.03	
College	-0.12	.06	†	-0.12	.07	†	-0.12	.07	†	-0.12	.07	
US x College							0.07	.18		0.04	.19	
Germany x College							0.10	.20		0.09	.21	
MBA	-0.01	.06		-0.01	.06		-0.06	.27		-0.06	.29	
US x MBA							0.10	.28		0.10	.30	
Germany x MBA							-0.07	.30		-0.08	.32	
Gender	-0.13	.07	†	-0.13	.08	†	-0.12	.07		-0.13	.08	
Age	0.01	.00	**	0.02	.00	**	0.01	.00	**	0.02	.00	**
US	1.58	.05	**	1.64	.06	**	1.49	.20	**	1.56	.21	**
Germany	1.33	.07	**	1.37	.07	**	1.13	.22	**	1.13	.24	**
n	2508			2508			2508			2508		
(pseudo) R <sup>2</sup>	.390			.358			.393			.467		

Note: \*\* $p < .01$ , \* $p < .05$ , † $p < .10$

tive and significant for both models ( $p < 0.01$ ), suggesting that the German employees on the average work for 1.33 and 1.37 more companies in their career, based on OLS and Tobit estimates, respectively, than the Japanese employees. To test a joint hypothesis that the *U.S.* and *German* variables are equal, we conducted the test of linear restriction using the F statistics and Wald test for OLS and Tobit results, respectively. The test results show that

they are statistically different ( $p < 0.01$ ) for both models, lending support for Hypothesis 1; the managers in three countries work for different number of companies in their career.

Hypothesis 2 states that institutionalized education is linked to white collar labor mobility, such that employees with public qualifications and certifications, other than educational degrees, tend to have worked for a larger number of companies in

their career. The *Certificate* variable is positively and significantly ( $p < 0.05$ ) related to the dependent variable for both OLS and Tobit models, providing support for Hypothesis 2.

Hypothesis 3 states that employees who have work experience in a greater number of functional areas tend to have worked for a smaller number of companies in their career. The *Function* variable is positive and significant ( $p < 0.01$ ) for both OLS and Tobit models. However, this result is contradictory to Hypothesis 3, suggesting that the number of functions the employee experienced is positively related to the number of companies he/she worked.

Hypothesis 4 states that institutionalized education is linked to white-collar labor mobility, such that employees with a college degree tend to have worked for more companies in their career. The education-related variables do not lend support to Hypothesis 4. The *College* variable is negatively and marginally significantly ( $p < 0.10$ ) related to the number of companies the employee worked for both OLS and Tobit models.

Hypothesis 5 states that institutionalized education is linked to white-collar labor mobility, such that employees with an MBA degree tend to have worked for more companies in their career. The *MBA* variable is not significantly related to the total number of companies the employee worked for ( $p > 0.10$ ) for both OLS and Tobit models, and therefore does not lend support for H5. This result suggests that the MBA degree is not related to the number of companies the employee worked, after controlling for the other variables in the model.

Hypothesis 6 states that trends in labor mobility and innovation have stayed fairly consistent over time. As the data in Table 3 show, employee turnover and patent rate tended to be consistent within countries over time, that is, they did not change dramatically.

#### *Additional Analyses*

Among the control variables, *Gender* is negative and marginally significant ( $p < 0.10$ ), suggesting that male employees tend to work for fewer total companies. The *Age* variable is positive and significant ( $p < 0.01$ ), suggesting that older employees tend to work for a greater number of companies, as

we expected.

In Table 2, the third and fourth columns show the estimated OLS and Tobit regression coefficients with all data from three countries with interaction effects. Pooling the data across all three countries, there were significant interaction effects found for US\*Certificate and Germany\*Certificate variables ( $p < 0.10$ ), i.e., they are statistically different from Japan\*Certificate, and the first two variables are also statistically different from each other ( $p < 0.10$ ).

#### DISCUSSION

Hypothesis 1 and 2 are supported, suggesting that white-collar labor mobility demonstrates distinctively different trends across countries, and that institutionalized education is linked to white collar labor mobility.

While we hypothesized that employees with a college degree (H4) and an MBA degree (H5) tend to have worked for more companies in their career, our empirical results do not lend support for this. However, our results indicate that a college degree may afford managers more stability. A recent survey by the US Bureau of Labor Statistics (2016) indicates that employees with college and MBA degrees have longer tenure in the US, suggesting that higher degree holders work for fewer companies in their career. This is contrary to the common perception that they tend to change jobs more often. This perception may stem from the fact that traditional job turnover research has not focused on less educated, minimum wage-type workers who tend to change jobs more often than managers with college degrees.

Interlinkages may offer one explanation for this. Specifically, educational institutions provide benefits that are realized in the form of more stable employment for college graduates. For minimally educated workers, employment may be unstable, due to the part-time, contract, or irregular nature of their work. In contrast, having a college education may afford managers more stability than their less educated counterparts. In addition, our study indicates some areas of research that are important to explore in the future. For example, it may be useful to gather more finely stratified labor market

**Table 3: Trends in Innovation & Labor Mobility in Japan, USA, and Germany 1990-2016**

Year	GDP GROWTH (%)			CHANGE IN PATENTS (%)			Labor Separations (US & Japan) & Job Vacancies (Germany)			Change in Labor Separations & Job Vacancies from previous year (5)		
	JAPAN	US	GER-MANY	JAPAN	US	GER-MANY	JAPAN Rate of labor separations	US Rate of labor separations	GER-MANY Job Vacancies	JAPAN	US	GER-MANY
1990	5.57	1.92	5.26						0.80			
1991	3.32	-0.07	5.11	-4.56	0.84	2.56			0.91			14.05
1992	0.82	3.56	1.92	25.83	3.61	3.10			0.90			-1.34
1993	0.17	2.75	-0.96	14.33	4.03	3.52			0.71			-20.79
1994	0.86	4.04	2.46	-16.71	13.87	3.30	1.92		0.74			3.99
1995	2.74	2.72	1.74	3.64	17.38	1.69	1.93		0.83	0.52		11.95
1996	3.10	3.80	0.82	1.84	0.05	7.70	1.92		0.85	-0.52		2.56
1997	1.08	4.49	1.85	2.61	17.06	4.69	2		0.88	4.17		3.60
1998	-1.13	4.45	1.98	2.13	-0.30	2.37	1.96		1.08	-2.00		23.15
1999	-0.25	4.69	1.99	-0.14	7.23	1.74	2.04		1.17	4.08		8.38
2000	2.78	4.09	2.96	6.11	9.99	1.20	2.09		1.25	2.45		6.42
2001	0.41	0.98	1.70	2.01	32.29	-5.02	2.15	4.0	1.19	2.87		-4.96
2002	0.12	1.79	0.00	-2.17	5.02	-9.85	2.23	3.9	1.03	3.72	-2.50	-12.90
2003	1.53	2.81	-0.71	-1.49	7.25	-4.86	2.17	3.6	0.74	-2.69	-7.69	-27.89
2004	2.20	3.79	1.17	1.40	6.22	-6.57	2.14	3.7	0.57	-1.38	2.78	-22.89
2005	1.66	3.35	0.71	0.64	5.67	-5.87	2.18	3.7	0.70	1.87	0.00	22.48
2006	1.42	2.67	3.70	-5.47	1.76	-6.98	2.14	3.8	0.95	-1.83	2.70	35.51
2007	1.65	1.78	3.26	-5.66	0.33	-3.54	2.1	3.7	1.11	-1.87	-2.63	16.95
2008	-1.09	-0.29	1.08	-2.73	-3.46	1.46	2.07	3.4	1.01	-1.43	-8.11	-9.44
2009	-5.42	-2.78	-5.62	-9.75	-6.72	-5.06	2.13	3.3	0.78	2.90	-2.94	-22.58
2010	4.19	2.53	4.08	-3.13	4.27	1.64	1.97	3.3	0.95	-7.51	0.00	21.03
2011	-0.12	1.60	3.66	-1.58	7.38	-0.15	1.97	3.1	1.20	0.00	-6.06	27.10
2012	1.50	2.22	0.49	-0.24	6.94	-6.30	2.04	3.1	1.22	3.55	0.00	1.52
2013	2.00	1.68	0.49	-6.29	4.73	-18.62	2.05	3.2	1.16	0.49	3.23	-5.28
2014	0.34	2.37	1.60	-7.00	0.81	10.19	1.98	3.4	1.23	-3.41	6.25	6.38
2015	1.22	2.60	1.72	-16.12	-8.40	15.04	2.03	3.4	1.41	2.53	0.00	15.02
2016	1.00	1.62	1.87	-68.35	-31.24	-45.91	2.04	3.5	1.59	0.49		12.30

data by education level (more data on less educated workforce) and type of education (in orders to compare MBAs, M.A.s, and M.S.s) with respect to job turnover.

This study has some limitations. First, while our analysis draws on rich primary data, we were not able to provide a longitudinal analysis of white-collar labor mobility in these three countries. Sec-

ond, several additional factors can influence white-collar job mobility. For example, job stability (unemployment rates) that influences labor mobility varies in these three countries. In particular, various institutional factors embed employees in their organizations and limit labor mobility in Japan. In addition, we have data only from managers in large firms. Thus, it would be interesting to

**Patents**

Overview	Count of patent applications per country per year
Source	World Intellectual Property Organization (WIPO), PATENTSCOPE database Japan patent office
Data contained within PATENTSCOPE	Patent applications under the Patent Cooperation Treaty, the global patent system which WIPO operates Patent documents from participating regional patent offices, including ARIPO, EAPO, and EPO Patent documents from many national patent collections, including China, Japan, Korea, and the United States
Data from Japan Patent Office	Supplemental patent totals for Japan, 1990-1993 (WIPO Japan only available from 1993-)
Link	<a href="https://patentscope.wipo.int/search/en/search.jsf">https://patentscope.wipo.int/search/en/search.jsf</a> <a href="https://www19.j-platpat.inpit.go.jp/PA1/cgi-bin/PA1SEARCH">https://www19.j-platpat.inpit.go.jp/PA1/cgi-bin/PA1SEARCH</a>

**Labor Turnover, Separations**

Overview	Rate of separations, seasonally adjusted, noted from July of each year; The separations rate is computed by dividing the number of workers separated from their jobs by the number of people employed and multiplying the resulting quotient by 100
Sources	Japan Ministry of Health, labour, and welfare Monthly Labour Survey, table TBL-T-4, Labour Turn Over USA Bureau of Labor Statistics, Job Openings and Labor Turnover Survey, Total separations, non-farm
Links	<a href="http://www.mhlw.go.jp/english/database/db-l/monthly-labour.html">http://www.mhlw.go.jp/english/database/db-l/monthly-labour.html</a> <a href="https://data.bls.gov/pdq/SurveyOutputServlet">https://data.bls.gov/pdq/SurveyOutputServlet</a>
Notes	UNAVAILABLE FOR GERMANY US data only available from 2001-

**Labor Turnover, Job Vacancies**

Overview	Total unfilled job vacancies, reported yearly for Germany and monthly for US; US figures are obtained for July Job vacancy rates for Germany are calculated by dividing the number of job vacancies by the number of people employed and multiplying by 100
Sources	US Bureau of Labor Statistics, Job Openings and Labor Turnover Survey, Job openings, total nonfarm, level, seasonally adjusted OECD.stat; job vacancies, total, unfilled vacancies (stock), Germany, 1990-2016 OECD.stat; employed population, aged 15 and over, all persons, Germany, 1990-2016
Links	<a href="https://data.bls.gov/timeseries/JTS00000000.JOL">https://data.bls.gov/timeseries/JTS00000000.JOL</a> <a href="https://stats.oecd.org/Index.aspx?DataSetCode=LAB_REG_VAC#">https://stats.oecd.org/Index.aspx?DataSetCode=LAB_REG_VAC#</a>
Notes	UNAVAILABLE FOR JAPAN US data only available from 2007-

include data from smaller firms, and from lower organizational levels. Finally, it would be interesting to explore the relationship between “what employees studied in college” and their turnover.

**CONCLUSION**

A key task in organizational analysis is to under-

stand why different kinds of business organizations and organizational rationalities operate in different institutional contexts. This study examined how institutions are interlinked within institutional systems, towards helping explain differences among business systems in Japan, Germany, and U.S. Specifically, in this research, we analyzed the relationship between institutionalized career paths and

educational institutions in Japan, Germany, and U.S. We found that career paths vary across countries, and that they are linked with educational institutions, in that employees with MBAs, college degrees, and various professional certifications are more likely to have worked for multiple companies over their careers. The results of our OLS and Tobit regression analysis indicate that the total number of companies that employees work for in their career is related to institutional factors associated with social and educational systems. In Japan, Germany, and U.S., we observe different relationships between specific institutional factors and employment patterns, i.e. it appears that our results are mostly consistent with the notion that institutional systems in different countries have different interactions with business practices and employment patterns. This issue has been theorized in the literature, but it has not been explored in depth across business systems in the empirical literature.

In this way, this research explores the “fit” between institutions and business practices within institutional systems (Aoki 1996). In the U.S., for example, external labor markets appear to be supported by certification programs external to the firm that help employees advance their skills to change jobs. Drawing on the results here, we argue that the interaction between institutions underlies phenomena such as internal labor markets. Were there more external opportunities for training in Japan, for example, this might support a transition to create secondary labor markets for mid-career managers to change jobs.

Systemic differences highlight the interlinked nature of institutional systems. Exemplifying this, over time, many national employment systems have evolved to be internally consistent, with many individual practices and policies fitting together and becoming tightly linked. Thus, in Japan, for example, long-term employment and internal training are closely linked, as is teamwork and rotation across functions and seniority employment, and cross share-holding and long-term investment. Thus, in addressing the need to reduce labor costs, for instance, Japanese firms have not resorted to massive layoffs like their western counterparts have. In contrast to American and German systems, Japanese institutions experience impediments to down-

sizing, such as those provided by social norms, labor law, and the lack of external labor markets. Instead, large Japanese firms have resorted to reduced hiring of new college graduates and increased hiring of part-time and temporary contract employees to achieve flexibility. As a result, the evolution of organizational change in Japan continues on a different path than that of western firms, due to the differing environmental pressures and institutional arrangements in these two business environments.

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