Professional employer organizations: What are they, who uses them, and why should we care?

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Introduction and summary

A growing number of U.S. workers are counted as employees of firms that they do not actually work for. Some of these workers are from temporary help services (THS) agencies and some are leased employees, who are on the payrolls of professional employer organizations (PEOs) but work for PEOs' client firms. Several studies have looked at firms' use of THS, but few have examined the use of PEO services. In this article, we use data from the U.S. Census Bureau to shed some light on PEOs—how they operate, what types of companies employ them, and why.

PEOs provide various services related to human resources (HR) management, such as payroll processing, benefit management, and regulation compliance. Unlike consultant firms that only provide recommendations on these functions, PEOs operate in a co-employment relationship with their clients, by including the clients' workers on their own payrolls. In such a relationship, PEOs become employers of record for tax and insurance purposes. PEOs exercise some decision-making in HR management; at the same time, they share legal responsibilities as co-employers. By pooling the workers of its clients on its payroll, a PEO gains economies of scale in performing its required tasks.

The workers whose payrolls are moved to PEOs are often referred to as "leased employees" because, on paper, they work for the PEO and are leased back to the client firm. Since leased employees are not accounted for on clients' payrolls, the payroll-based labor statistics underestimate labor used by the industries of PEO client firms. In the 2002 *Economic Census*'s subject series on Administrative and Support and Waste Management and Remediation Services,[1] the PEO industry consisted of about 5,000 establishments. It employed 1.7 million leased employees. The PEO industry achieved rapid growth through the 1990s, with a growth rate of 386 percent from 1992 to 2002, subtracting an increasing number of workers from the payroll records of other industries.[2]

In this article, we first review the history and current nature of PEO services. Next, we use publicly available data to show that the distribution of the use of PEO services is not uniform across industries or geographical areas. We then use confidential microdata from the U.S. Census Bureau's 2002 *Census of Manufactures* to examine how characteristics other than location and industry may influence companies' use of PEO services and, therefore, why certain types of companies are more likely to use PEO services than others. This also sheds some light on the issues researchers face in interpreting payroll-based labor statistics.

Dey, Houseman, and Polivka (2006) provide a review of the issues related to payroll-based labor statistics. They also assess the effect of firms' use of employment services as a whole, including PEO services and THS, focusing on the manufacturing sector. Between 1989 and 2000, employment in manufacturing reportedly fell by 4.1 percent. Dey, Houseman, and Polivka (2006) show, however, that manufacturing employment would have actually increased by 1.4 percent if employment services workers had been included.[3] They also estimate that the use of these employment

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services added 0.5 percentage points to the annual growth rate of labor productivity as measured by output per worker in the manufacturing sector between 1989 and 2000, equaling approximately 14 percent of the overall growth.[4] Houseman (2006) also shows that the multifactor productivity measure for manufacturing would also overestimate productivity growth as the data do not allow us to fully capture employment services input to manufacturing.

The existing literature (Houseman, 2006; Estavao and Lach, 1999; and Segal and Sullivan, 1997) relies mostly on data on firms' use of THS industries, partly reflecting data availability. We complement this literature here by examining firms' use of PEOs.

History and activities of PEOs

PEOs started out in the early 1980s, conducting payroll processing for client firms. Payrolling involved preparing and distributing payroll checks; depositing wages directly to bank accounts; maintaining payroll data; filing local, state, and federal government paperwork; and tracking vacation and sick leave. To perform such services, the PEO grouped its client firms' workers on the PEO's own payroll and processed tasks at the same time. Small- and medium-sized companies, in particular, benefited through cost efficiencies gained from the PEO's economy of scale.

Outsourcing payroll processing to PEOs, however, caused some confusion about the employer status of the PEO versus that of the client firms (Drucker, 2002; and Greening, Barringer, and Macy, 1996). Having transferred clients' workers to the PEO's payroll, PEOs appeared as employers on paper. Some client firms took advantage of this confusion about employer status[5] and tried to reduce their legal responsibilities (Houseman, 2003). As these practices became more prevalent, regulatory agencies and insurance companies tried to clarify the situation by creating new regulations and policies. As a result, the PEO officially became accountable for the performance of HR responsibilities as a joint employer under contractual agreement with its client firms, in essence acting as an outsourced HR department for client firms (Klaas, McClendon, and Gainey, 2000).

As regulations affecting HR management have increased over time, the kinds of services that PEOs provide have also expanded. Between 1980 and 2000, the number of employment laws applying to employers grew by 60 percent, and between 1991 and 2001, the number of lawsuits, in particular sexual harassment cases, more than doubled, according to the U.S. Equal Employment Opportunity Commission (Drucker, 2002). The growth in the number of regulations and lawsuits has generated higher time and monetary costs for firms and increased the firms' liabilities to both their workers and enforcement agencies. Adding to the complexity of HR management, some regulations have different rules and enforcement requirements based on firm size[6] and/or location.[7] In addition to the changing regulatory landscape, the increasing cost of employment-based benefits, especially health care, continues to add to firms' administrative costs (Bodenheimer, 2005). Reflecting these changes, PEOs began to expand their services to further support the management of their clients' work forces with such duties as ensuring compliance with regulatory issues, as well as providing and administering benefits packages (Cook, 1999).

In addition to the aforementioned HR tasks, these days many PEOs offer additional HR activities to provide a more integrated overall HR management service, including relocation administration, employee handbooks and background checks, physicals, and job descriptions (Gilley, Greer, and Rasheed, 2004; and Cline, 1997). Some PEOs also provide potentially high-liability HR management functions to differentiate themselves from the rest of the market. One of the more complex tasks that firms outsource to PEOs is the administration of their retirement plans, which have intricate requirements to be compliant with the Employee Retirement Income Security Act (ERISA)[8] (Greer, Youngblood, and Gray, 1999). Some PEOs also support the administration of Employee Assistance Programs (EAPs),[9] which provide support services to client firms' workers and their families (Greer, Youngblood, and Gray, 1999). Some firms outsource the responsibility of processing drug testing to PEOs to minimize confidentiality issues regarding personal employee information (Greer, Youngblood, and Gray, 1999). And some firms also use PEOs to facilitate the centralization of HR functions (Greer, Youngblood, and Gray, 1999).

Since PEOs manage various HR and regulatory issues as joint employers, it would be instructive to summarize a typical contractual relationship between a PEO and a client firm. First, to define the joint relationship, both the PEO and the client firm enter into a contract to document which firm takes on the legal and administrative responsibilities of the firm's employees (Lenz, 2003, p. 10). Under this agreement, the client firm purchases the PEO's assistance by compensating the PEO an amount that covers the client's total human resources costs plus an additional service fee. Many times when a PEO agrees to administer payroll and benefits to the workers, the PEO also becomes responsible under the law for the liabilities associated with these administrative duties. Such duties include issuing workers' compensation for employees

accidentally injured on the job.[10] Health and pension benefits that some PEOs offer fall under another set of state regulations (Lenz, 2003, p. 10).[11]

While a PEO plays a significant role as a joint employer as mentioned previously, its role and responsibilities are limited to those involving HR management. The PEO does not provide daily supervision to workers for their production activities. In addition, it does not typically get involved with interviewing and hiring. (However, it may offer guidance on job postings and skill matching, and it may take care of regulatory issues or conduct basic functions such as background checks and drug tests.) Thus, it would be natural to consider leased employees on the PEO's payroll as part of the work force for the production activity of the PEO's client firm. However, the payroll-based labor statistics do not take this into account, and the greater use of PEO services by an establishment or an industry would cause the underestimation of the labor used for its production. In the next section, we examine the distribution of the use of PEO services across industries and geographical areas.

Cross-sectional distribution of the use of PEO services

In what follows, we use publicly available data of leased employees from the U.S. Census Bureau. In particular, we study the distributions of leased employees versus payroll employees across clients' industries and geographical areas, using data from the 1992, 1997, and 2002 *Economic Censuses*. Note that another source often used for employment data is the *Current Employment Statistics*. However, there is a concern about using the CES data for our purpose. The CES's sampling frame, the *Quarterly Census of Employment and Wages*, seems to be undergoing changes regarding whether or not the leased employees are counted in the PEO industry or client firm's industry, and the practice varies across states (Dey, Houseman, and Polivka, 2006). Here we focus on using the *Economic Census* data for consistency to make year-to-year, industry, and location comparisons.

Based on the 1997 *Economic Census*'s subject series on Administrative and Support and Waste Management and Remediation Services,[12] table 1 shows that the intensity of use of PEO services varies across industries. The first column shows the number of leased employees used in each industry as reported by PEOs. The second column shows payroll employment by industry, which does not include leased employees or THS workers.[13] The third column shows the share of leased employees of total workers who work on a regular basis for an industry; we divide the number of leased employees (first column) by the sum of the leased and payroll employees by industry (the first column plus second column). The transportation industry uses leased employees most intensively. Leased employees represent 4.6 percent of employees working regularly for this industry. Transportation is followed by repair services with 2.9 percent, educational services with 2.3 percent, and construction with 1.8 percent, while mining has a very low share of leased employees with 0.2 percent. The index values in the fourth column show the intensity of use of leased employees in each industry relative to the U.S. average (0.84 percent). The intensity of use of PEO services seems to vary a lot across industries. The transportation industry uses leased employees at a rate a little over 20 times that of mining. The transportation industry also represents the highest share of national total leased employees with 15.2 percent (fifth column). While various reasons would explain the intensive use of leased employees in the transportation industry, one factor may be a high injury rate reported by the transportation industry;[14] this high injury rate may prompt firms in that industry to seek more efficient or lower-cost ways to insure their workers.

To see whether industry distribution of leased employees changes over time, we make a comparison between the distributions in the 1992 and 1997 *Economic Censuses*.[15] Taking into account that the intensity of use of leased employees varies over time nationally, we compare the index values as calculated in the fourth column in table 1 in both years. The industry categories included in the questionnaires of the 1992 and 1997 subject series on Administrative and Support and Waste Management and Remediation Services are not identical, so we only compare the index values for the industry categories that are common to both years. These industries include mining; construction; manufacturing; wholesale trade; retail trade; and finance, insurance, and real estate. We found a similar pattern in the use of leased employees in both years. The index values for 1992 show that the construction sector used leased employees 1.6 times more intensively than the U.S. average (0.4 percent), whereas in 1997, the multiple for the construction sector was 2.1 times the national average of 0.84 percent. For manufacturing, the index was 0.72 for 1992 and 0.73 for 1997. For retail trade, the index was 0.48 for 1992 and 0.49 for 1997.

Next, we examine whether the intensity of use of PEO services differs across geographical areas. Table 2 illustrates the variation across states. The first four columns show 1997 data, while the fifth column shows 2002 data. The first column shows the number of leased employees reported by PEOs located in each state. The second column is the total payroll employment of all

TABLE 1

Leased employees, by client industry category, 1997

Industry	Employees leased to firms by PEOs[a]	Payroll employees[b] (not including leased employees and THS workers)	Leased employees as share of leased plus payroll employees	Index,[c] U.S.=1.00	Industry share of national leased employees[d]
			(percent)		*(percent)*
Mining	1,065	509,006	0.21	0.25	0.12
Construction	102,123	5,664,840	1.77	2.11	11.55
Manufacturing	104,415	16,888,016	0.61	0.73	11.81
Transportation	134,760	2,811,017	4.57	5.45	15.24
Utilities except waste management	2,052	702,703	0.29	0.35	0.23
Information services	12,839	3,066,167	0.42	0.50	1.45
Wholesale trade	29,615	5,796,557	0.51	0.61	3.35
Retail trade	57,236	13,991,103	0.41	0.49	6.47
Accommodation and food services	77,311	9,451,226	0.81	0.97	8.75
Finance and insurance	15,593	5,835,214	0.27	0.32	1.76
Real estate and rental/leasing	16,243	1,702,420	0.95	1.13	1.84
Professional, scientific, and technical services	47,987	5,361,210	0.89	1.06	5.43
Administrative and support services including waste management	48,304	n.a.	n.a.	n.a.	n.a.
Health and social services	58,363	13,561,579	0.43	0.51	6.60
Educational services	7,565	321,073	2.30	2.74	0.86
Arts, entertainment, and recreational services	13,316	1,587,660	0.83	0.99	1.51
Personal care and laundry services	13,447	1,217,185	1.09	1.30	1.52
Repair services	38,016	1,276,389	2.89	3.45	4.30

[a]Apart from the leased employees, the PEO industry hires 11,409 management and administrative employees in the U.S. See the 1997 *Economic Census*, subject series on Administrative and Support and Waste Management and Remediation Services, available at www.census.gov/prod/ec97/97s56-sb.pdf.

[b]See the appendix for definitions of the number of employees on payroll by industry. Note that the 1997 *Economic Census* does not provide the North American Industry Classification System code of each industry to which leased employees are allocated. We obtain the payroll employment of a corresponding industry based on the industry title.

[c]The index is calculated by dividing the value in the third column by 0.84 percent (the U.S. average share of leased employees in 1997).

[d]This column does not sum to 100 because we do not include leased employees in the agriculture, administrative and support services including waste management, and "other" industries.

Notes: PEO means professional employer organization. THS means temporary help services. n.a. means not applicable.

Source: Authors' calculations based on data from the U.S. Census Bureau, 1997 *Economic Census*.

private industries in each state, which is often used as state employment in economic research. Unlike industry payroll employment (the second column in table 1), the state payroll employment number includes both leased employees and THS workers on the payrolls of PEOs and THS agencies located in each state. The third column shows the leased employee share of state payroll employment. Of the top five states with the highest percentage of leased employees, Florida comes in first with 3.6 percent, followed by Arizona with 3.3 percent, Utah with 2.3 percent, Georgia with 2.1 percent, and Texas with 1.4 percent. One might think that these states have higher shares of industries that tend to use more PEO services. This is not necessarily the case. We evaluate this potential explanation for Florida and Arizona. To isolate the effect of the industry mix,

we assume that the use of leased employees by industry for Florida and Arizona is the same as that for the U.S.; we then take the weighted average of the U.S. shares of leased employees (the third column of table 1) and weight it by each industry's share in state employment. Implied shares of leased employees in Florida and Arizona are similar to the U.S. average and not nearly as high as the numbers in the third column of table 2. The industry mix does not explain the high share of leased employees in Florida and Arizona. There may be some location-specific factors that could further explain these states' use of PEO services.

In order to view the geographical distribution of leased employees over time, we again calculate an index, dividing a state's share of leased employees by the U.S. average, and compare the index's values for 1997 and 2002.[16] We observe similar patterns of geographical distribution across years. Out of the states with data disclosed for both years, seven out of the top ten states with the highest use of leased employees in 1997 remained in the top ten in 2002. Seven out of ten of the states with the lowest use of leased employees in 1997 remained in the bottom ten in 2002.

Finally, we note that the patterns of distribution in the use of PEOs across industries and states are different from the patterns for THS workers. Using the contingent work supplement of the 1997 *Current Population Survey*, we calculate each industry's share of THS workers. Among the industries using higher shares of THS workers are manufacturing (31.8 percent) and administrative and support services and waste management (21.3 percent). This contrasts with the industry distribution for leased employees, where the transportation industry represents the highest share at 15.2 percent and the manufacturing and construction industries represent about 12 percent each. The different geographical distributions between leased employees and THS workers are summarized in table 3. The top and bottom ten states are quite different for leased employees versus THS workers. Only four states appear in the top ten and three in the bottom ten for both leased employees and THS workers. The intensity of use of leased employees is also more varied across states, reflected in the larger range of index values between the top and bottom states compared with the results for THS workers.

Characteristics of manufacturing plants that use PEOs

In this section, we summarize how the use of PEO services varies across establishments depending on their characteristics. In particular, we use the establishment-level data of the 2002 *Census of Manufactures* compiled by the U.S. Census Bureau. In the census's questionnaire, a representative of a plant (that is, a manufacturing establishment) is asked to answer "yes" or "no" to a question on whether the plant uses any leased employees; thus, a plant with a representative that answered "yes" uses workers whose payroll is managed by a PEO. Prior to 2002, the U.S. Census Bureau only collected information about PEOs' client firms by asking PEOs about their clients as part of the *Economic Census*. To obtain a more detailed picture of where PEO "employees" actually work, the U.S. Census Bureau attempted to collect information directly from PEO users by including questions about their PEO use in the 2002 *Economic Census* for the first time.

In this article, we examine through probit analyses which plant characteristics are associated with a plant's likelihood to use any amount of PEO services.[17] Our analyses suggest that some plant characteristics play important roles, even after controlling for a plant's industry and the plant's location-specific or state-specific factors. Note that it is possible that the firm rather than the plant decides whether or not to use PEO services. Even if a firm were the decision-maker, however, its decision may be made for each of its plants based on each plant's individual characteristics. In fact, based on our data, the use of PEO services tends to vary across plants within the same firm. We explore the effects of both plant-level and firm-level variables. Note that a plant or an establishment is the smallest unit for which individual responses are collected in most of the *Economic Censuses*, in the sense that the U.S. Census Bureau typically creates industry-level or state-level data by aggregating establishment-level data. Establishment-level analyses inform us of establishment attributes that may help in the interpretation of such aggregate data.

In our analyses, we include various plant characteristics. One such variable is plant size measured by the log value of shipments. Larger plants seem to face more regulations; for example, the Worker Adjustment and Retraining Notification Act applies to businesses with 100 or more employees. The federal law states that a firm must provide written notice of plant closings or massive layoffs, defined as 50 or more employees at a single establishment, 60 days in advance. Facing more regulations, larger plants may rely on PEOs to comply with relevant regulations. However, larger plants may have more economies of scale in complying with regulations. We include the squared term of plant size to allow a quadratic relationship between plant size and the plant's probability of using PEO services.

Note that, as we mentioned previously, the decision to use PEOs may be made by a firm rather than a

TABLE 2

Leased employees, by state, 1997 and 2002

State	1997				2002
	Employees leased to firms by PEOs[a]	Employees of all private industries, including leased employees and THS workers	Leased employees as share of total employees	Index,[c] U.S.=1.00	Index,[d] U.S.=1.00
			(percent)		
Alabama	14,644	1,591,179	0.92	1.10	1.45
Alaska	459	188,923	0.24	0.29	0.39
Arizona	55,457	1,701,357	3.26	3.88	1.74–3.48[b]
Arkansas	11,894	925,498	1.29	1.54	0.12
California	67,804	11,565,015	0.59	0.70	0.52
Colorado	9,575	1,675,514	0.57	0.68	4.60
Connecticut	1,535	1,471,970	0.10	0.12	0.12
Delaware	219	348,009	0.06	0.07	0.06
District of Columbia	n.a.	396,328	n.a.	n.a.	0.05
Florida	197,632	5,550,307	3.56	4.24	5.31
Georgia	63,730	3,106,872	2.05	2.44	1.33
Hawaii	5,520	426,129	1.30	1.55	0.70
Idaho	848	404,670	0.21	0.25	1.71
Illinois	39,214	5,089,899	0.77	0.92	0.51
Indiana	15,497	2,487,609	0.62	0.74	0.76
Iowa	4,191	1,179,660	0.36	0.43	0.10
Kansas	n.a.	1,049,359	n.a.	n.a.	0.37
Kentucky	1,860	1,422,605	0.13	0.15	0.10
Louisiana	4,943	1,531,663	0.32	0.38	0.54
Maine	893	447,063	0.20	0.24	0.39
Maryland	7,595	1,906,880	0.40	0.48	0.44
Massachusetts	7,891	2,859,594	0.28	0.33	0.32
Michigan	39,021	3,844,460	1.01	1.20	1.16
Minnesota	11,085	2,195,621	0.50	0.60	0.33
Mississippi	6,135	909,746	0.67	0.80	0.57
Missouri	6,132	2,281,643	0.27	0.32	0.40
Montana	204	273,746	0.07	0.08	0.06
Nebraska	9,493	701,132	1.35	1.61	1.40
Nevada	3,415	768,708	0.44	0.52	0.68
New Hampshire	6,641	497,878	1.33	1.58	1.32
New Jersey	13,617	3,300,923	0.41	0.49	0.87
New Mexico	4,584	533,858	0.86	1.02	0.88
New York	25,000	6,895,924	0.36	0.43	0.35
North Carolina	13,186	3,167,303	0.42	0.50	0.36
North Dakota	108	242,047	0.04	0.05	0.005–0.002[b]
Ohio	22,384	4,709,180	0.48	0.57	0.57
Oklahoma	5,921	1,127,734	0.53	0.63	0.96
Oregon	12,124	1,292,579	0.94	1.12	0.43
Pennsylvania	10,072	4,840,877	0.21	0.25	0.23
Rhode Island	n.a.	390,914	n.a.	n.a.	0.41–0.81[b]
South Carolina	19,548	1,473,831	1.33	1.58	1.73
South Dakota	n.a.	279,187	n.a.	n.a.	0.02
Tennessee	15,327	2,247,944	0.68	0.81	0.81
Texas	104,533	7,250,925	1.44	1.71	1.52
Utah	18,788	824,120	2.28	2.71	2.48
Vermont	n.a.	232,476	n.a.	n.a.	0.01
Virginia	9,341	2,626,844	0.36	0.43	0.41
Washington	2,139	2,081,017	0.10	0.12	0.08
West Virginia	1,141	542,782	0.21	0.25	0.26
Wisconsin	4,214	2,277,849	0.18	0.21	0.14
Wyoming	n.a.	161,772	n.a.	n.a.	0.03
Total/U.S.	884,002	105,299,123	0.84	1.00	1.00

[a]Number of leased employees reported by PEOs located in each state.

[b]Due to disclosure concerns, only a range of the number of leased employees was given for these states; our calculated index range is based on the highest and lowest values of this given range.

[c]The index is calculated by taking the value in the third column and dividing it by 0.84 percent (the U.S. average share of leased employees in 1997).

[d]The index is calculated by taking the value of leased employees as a share of total employees in 2002 (not shown) and dividing it by 1.48 percent (the U.S. average share of leased employees in 2002).

Notes: PEO means professional employer organization. THS means temporary help services. n.a. means not available (undisclosed). The total value at the bottom of the first column includes the undisclosed data.

Sources: Authors' calculations based on data from the U.S. Census Bureau, 1997 and 2002 *Economic Censuses* and 1997 and 2002 *County Business Patterns*.

TABLE 3

Geographical distribution of leased employees and temporary help services workers, 1997

Leased employees		Temporary help services workers	
Top ten	**Index, U.S.=1.00**	**Top ten**	**Index, U.S.=1.00**
Florida	4.24	Maryland	1.62
Arizona	3.88	Arizona	1.33
Utah	2.71	California	1.27
Georgia	2.44	Michigan	1.25
Texas	1.71	Georgia	1.24
Nebraska	1.61	Texas	1.22
New Hampshire	1.58	South Carolina	1.18
South Carolina	1.58	Delaware	1.18
Hawaii	1.55	Colorado	1.12
Arkansas	1.54	Illinois	1.09
Bottom ten		**Bottom ten**	
Pennsylvania	0.25	Idaho	0.59
West Virginia	0.25	Iowa	0.56
Maine	0.24	Nebraska	0.54
Wisconsin	0.21	West Virginia	0.50
Kentucky	0.15	Montana	0.48
Connecticut	0.12	Mississippi	0.46
Washington	0.12	Wyoming	0.35
Montana	0.08	Hawaii	0.26
Delaware	0.07	North Dakota	0.26
North Dakota	0.05	Alaska	0.23

Notes: The index values for leased employees here are the same as those shown in the fourth column of table 2. Analogously, we calculate the index values for temporary help services workers by dividing each state's temporary help services workers percentage of total payroll employment (not shown) by 2.48 percent (the U.S. average).

Sources: Authors' calculations based on data from the U.S. Census Bureau, 1997 *Economic Census* and 1997 *County Business Patterns*.

plant. The relevant economies of scale for performing the HR management services may be at the firm level rather than the plant level. Therefore, we also examine how firm size is associated with a plant's use of PEO services. We include the total value of manufacturing shipments of the parent firm with which each plant is affiliated.[18] It is not appropriate to use the number of employees as a measure of plant or firm size because the number of employees reported in the *Census of Manufactures* does not usually include leased employees and is endogenous to the plant's use of PEO services.[19]

We include a dummy variable indicating newly constructed plants. It is possible that start-up plants may want to use PEOs to outsource any noncore HR activities until their businesses take off. We also include the average rates of work-related injury and illness at four- or five-digit North American Industry Classification System levels provided by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA). OSHA collects such information in order to provide reliable data to employers, policymakers, and health and safety specialists to help determine priorities of workplace safety. Establishments are asked to report all injuries and illnesses of all workers on site.

We examine the effects of firm characteristics other than firm size as well. Two additional firm-level variables are the firm's degree of diversity across locations and across industries. A firm that has plants in multiple states would face different regulations in each state. A firm producing multiple products would also have to deal with various regulations. A diversified firm may rely on a PEO to take advantage of the PEO's economies of scale to keep up with all the regulatory updates within different states and/or industries. For a plant affiliated with a firm with at least one other plant, we measure the geographical diversification by the number of states where the firm has manufacturing plants, as well as the Herfindahl–Hirschman Index (HHI)[20] based on the firm's manufacturing shipments by state. The HHI is the sum of the squared terms of each state's share; we define firm i's HHI for geographical concentration as $HHI_i^{states} \equiv \sum_{i \in A_i} share_{is}^2$, where $share_{is}$ is the share of state s in firm i's total value of manufacturing shipments, and A_i is a set of states where firm i operates. The HHI is greater when the market concentration is higher. Analogously, to measure industrial diversification, we calculate the number of industries (three-digit NAICS manufacturing industries) in which the firm's plants operate and the HHI based on the firm's value of shipments by each of its three-digit NAICS manufacturing industries; we define firm i's HHI for industry concentration as $HHI_i^{industries} \equiv \sum_{i \in B_i} share_{ij}^2$, where $share_{ij}$ is the share of industry j in firm i's total value of manufacturing shipments, and B_i is a set of manufacturing industries in which firm i operates.

As panel A of table 4 shows, our sample contains 145,534 plants reporting either "yes" or "no" to the question on the use of leased employees, which is 42 percent of the plants with positive shipments included in the 2002 *Census of Manufactures*. While the response rate for the newly added question is not high, our analyses using the data of respondents show systematic relationships between some of their characteristics and whether or not they used leased employees. Among

TABLE 4

Summary statistics of variables

	Our sample		All plants in the 2002 *Census of Manufactures*	
	Mean	Standard deviation	Mean	Standard deviation
A. All plants				
Number of plants	145,534		348,295	
Plant size: log value of shipments	8.1	1.7	6.9	2.0
Injury and illness rate (four- or five-digit NAICS industry level)	6.8	2.7	6.7	2.7
Percentage of newly constructed plants	3.8		7.2	
Percentage of plants affiliated with multi-establishment firms	32		19	
Percentage of plants affiliated with firms that have other manufacturing plant(s)	28		16	
B. Plants affiliated with firms that have other manufacturing plant(s)				
Number of plants affiliated with firms that have other manufacturing plant(s)	40,251		56,914	
Firm size: log value of shipments of a firm's manufacturing plants	12.4	2.4	12.1	2.4
Number of states with parent firm's plants	9.8	10.2	9.1	10.1
Number of NAICS three-digit manufacturing industries of all plants owned by a parent firm	2.7	2.4	2.6	2.3
HHI for firm's state concentration (in terms of value of shipments)	0.45	0.33	0.47	0.34
HHI for firm's manufacturing industries concentration (in terms of value of shipments)	0.78	0.25	0.80	0.25

Notes: NAICS means North American Industry Classification System. HHI means the Herfindahl–Hirschman Index, a commonly accepted measure of market concentration (see www.usdoj.gov/atr/public/testimony/hhi.htm).
Source: Authors' calculations based on microdata from the U.S. Census Bureau, 2002 *Census of Manufactures*.

respondents, the newly constructed plants represent 3.8 percent of our sample. Plants that responded to the question about their leased employee use are, on average, larger and more likely to belong to multi-establishment firms than plants that did not respond to the question. Of the respondent plants, the average value of shipments is $3.6 million, 32 percent of them are affiliated with multi-establishment firms (firms that own multiple establishments), and 28 percent are affiliated with firms that have other manufacturing plant(s). For plants affiliated with firms that have other manufacturing plant(s) (panel B of table 4), the average number of states in which those firms operate is 9.8 and the average number of three-digit NAICS manufacturing industries is 2.7, which are similar to the numbers based on the overall *Census of Manufactures* sample.

Note that it is possible that nonrespondent plants—those without responses of either "yes" or "no"—are plants that did not use leased employees. We compare characteristics of the nonrespondent plants and the respondent plants answering "no" to see if they are similar. We find that those that indicated explicitly that they do not use leased employees are more similar to other respondents answering "yes" than to nonrespondents. For example, the average log shipments is 8.02 for respondents answering "no" and 8.7 for respondents answering "yes," but 6.1 for nonrespondents. The percentage of plants affiliated with firms that have other manufacturing plant(s) is almost the same between those who answered "yes" and those who answered "no" at about 30 percent, but it is 20 percent for nonrespondents. On average, nonrespondents do not seem to have similar characteristics as those that indicated they do not use leased employees. We also performed analyses where we treat nonrespondents as plants that did not use leased employees; we obtain less precise coefficients than those we obtain by limiting our sample to respondents. Next, we report the results of our analyses based on the data of respondent plants.

Table 5 shows the results of the probit analyses. The first, second, and third columns show the results based on the specifications that do not control for

state- and industry-specific effects, while the fourth, fifth, and sixth columns show the results when we control for these effects. From the first column, we can see that plant size, on average, has positive effects on a plant's use of PEO services. Our results may be capturing a statistical artifact that a plant with more workers has a higher probability to have at least one leased employee. As we mentioned before, however, larger plants seem to face more regulation, which might also lead them to rely on specialists for compliance concerns. As we see in the fourth column, the effect is qualitatively the same even after controlling for state- and industry-specific effects. Based on calculations using the fourth column, a one standard deviation increase in plant size increases the plant's probability of using PEO services by 1.9 percentage points, which is equivalent to 40 percent of the actual percentage of plants using PEO services (4.7 percent). Note that when we include the squared term of plant size, the result seems to show that the effect of plant size is quadratic; the positive marginal effect of plant size is smaller for larger plants, possibly because of their greater economies of scale in managing regulatory compliance themselves.

Plants facing a higher potential rate of work-related injuries and illnesses are also more likely to use PEO services. Such plants may be able to benefit from better insurance premiums and health care benefits by using a PEO, since the PEO can pool its injury and illness risks across all its client firms. Also, PEOs may be the employer responsible for paying workers' compensation, which would protect both the PEO and the client firm from lawsuits related to work-related injuries or illnesses. The magnitude of the effect is small, however. Based on the fourth column of table 5, a one standard deviation increase in the injury and illness rate raises a plant's probability of using PEOs by only 0.3 percentage points. We also investigated whether the effect of the injury and illness rate changes with plant size by including an interaction term. Based on our sample, however, we did not find a statistically significant difference.

Newly constructed plants are more likely to use PEOs than older plants. This is consistent with the view that new plants, which face various uncertainties in their business environment, may want to focus on their core activity first in order to secure their survival. The magnitude of the effect is large. Based on the fifth column of table 5, a new plant's probability of using PEO services is greater than others' by 6 percentage points, which is equivalent to 130 percent of the actual percentage of plants using PEO services.

We also find that for plants affiliated with multi-establishment firms, the probability of using PEOs is slightly greater. Of those plants, the plants whose parent firms have other manufacturing plants have a much greater likelihood of using PEOs than those whose parent firms have no other manufacturing plants. The difference in the likelihood is, on average, as large as 7.0 percentage points. Having multiple manufacturing plants may make it more challenging for a firm to comply with the increased number of regulations and laws. This might have led these firms to be more likely to rely on PEO services.

Some firm-level variables are also systematically associated with a plant's use of PEOs. For plants affiliated with firms that have at least one other manufacturing plant, the overall manufacturing size of the firm is negatively associated with a plant's likelihood of using PEO services. The negative correlation seems to show the existence of firm-level economies of scale in the firms performing the HR services themselves. We also include the squared term of the firm-level size. The coefficient of this term turns insignificant.

Finally, it seems that more diversified firms are more likely to use PEO services. In the first, second, fourth, and fifth columns of table 5, we report the results including the HHI variables, which represent the degree of a firm's concentration across states and across industries. As you can see, both HHIs obtain negative and significant signs in most specifications. Firms that are geographically diversified across different states are more likely to use PEO services. Such firms may rely on PEOs in order to make sure they comply with the different regulations of all the states in which they have plants. We also find the same tendency for firms with multiple industries. The coefficients, however, lose significance once we control for state- and industry-specific effects. In the sixth column, we perform the same analysis where we measure a firm's industry diversity by the number of three-digit NAICS manufacturing industries of all of a firm's plants instead of the HHI. We find that the coefficient for the number of three-digit NAICS manufacturing industries is positive and significant—evidence that a firm's industry diversification may matter for its decision to use PEO services.

Conclusion

Using both public and confidential data, we summarize how the intensity of use of PEO services varies across industries, geographical areas, and establishment characteristics. The uneven distribution of the use of PEO services gives us an insight into how, to varying degrees, the payroll-based labor measure

TABLE 5

Probit analysis

Dependent variable = 1 if a plant uses any leased employees

	1	2	3	4	5	6
Plant size: log value of shipments	0.132*** (21.89)	0.301*** (6.88)	0.292*** (6.59)	0.123*** (20.37)	0.287*** (6.55)	0.279*** (6.28)
Squared term of plant size		–0.00997*** (–3.73)	–0.00933*** (–3.42)		–0.00970*** (–3.67)	–0.00915*** (–3.38)
Injury and illness rate (4- or 5-digit NAICS industry level)	0.0147*** (4.76)	0.0138*** (4.43)	0.0139*** (4.45)	0.0117*** (2.58)	0.0103** (2.25)	0.0106** (2.34)
dbirth=1 if a plant is newly constructed in 2002	0.445*** (15.80)	0.477*** (16.41)	0.477*** (16.36)	0.437*** (15.24)	0.468*** (15.69)	0.468*** (15.63)
dmulti=1 if a plant is affiliated with a firm with multiple establishments	0.0708** (2.54)	0.0783*** (2.80)	0.0747*** (2.65)	0.0816*** (2.87)	0 .0890*** (3.12)	0.0855*** (2.97)
dmulti_mfg=1 if a plant is affiliated with a firm with other manufacturing plant(s)	0.977*** (4.50)	0.727*** (3.39)	0.682*** (3.59)	0.838*** (3.78)	0.605*** (2.76)	0.599*** (3.19)
dmulti_mfg × firm manufacturing size	–0.0679*** (–4.78)	–0.0503*** (–3.59)	–0.0645*** (–4.43)	–0.0624*** (–4.44)	–0.0459*** (–3.30)	–0.0583*** (–3.91)
dmulti_mfg × HHI of a firm's state concentration (in terms of total value of shipments)	–0.257** (–2.12)	–0.204* (–1.80)	–0.207* (–1.88)	–0.231** (–1.98)	–0.182* (–1.66)	–0.180* (–1.69)
dmulti_mfg × HHI of a firm's manufacturing industries concentration (in terms of total value of shipments)	–0.199* (–1.67)	–0.174 (–1.46)		–0.138 (–1.10)	–0.115 (–0.92)	
dmulti_mfg × number of NAICS three-digit manufacturing industries of parent firm's plants			0.0304** (2.19)			0.0247* (1.73)
State dummies	No	No	No	Yes	Yes	Yes
NAICS three-digit manufacturing industry dummies	No	No	No	Yes	Yes	Yes

*Significant at the 10 percent level.
**Significant at the 5 percent level.
***Significant at the 1 percent level.

Notes: NAICS means North American Industry Classification System. HHI means the Herfindahl–Hirschman Index, a commonly accepted measure of market concentration (see www.usdoj.gov/atr/public/testimony/hhi.htm). Robust *z* statistics are in parentheses; errors are clustered for plants in the same firm. See the text for further details.

Source: Authors' calculations based on microdata from the U.S. Census Bureau, 2002 *Census of Manufactures*.

may be underestimated. Among the industries, transportation and repair services have particularly high intensity of use of PEO services. Florida and Arizona are two states with particularly high intensity of use of PEO services. We also find that the patterns of use of leased employees across industries and across states are different from the patterns of use of THS workers. Finally, our analyses using microdata of manufacturing establishments suggest that various establishment-level characteristics are associated with establishments' use of leased employees and thus the degree that the payroll employment number underestimates the actual number of workers. We found that, for plants in our sample, the use of PEO services depends on the size of the establishment and of its parent firm. The use of PEO services is greater for newly constructed plants and for plants with a potentially high injury and illness rate. The greater diversification across industries and geographical areas of a parent firm may also increase an establishment's use of PEO services. As the use of PEO services increases over time, in order to better estimate the amount of labor regularly used for production, it will become more important to incorporate leased employees into the labor statistics of establishments or industries for which they work.

NOTES

[1]The U.S. Census Bureau conducts the *Economic Census* every five years to profile the U.S. economy, from the national to local level. The subject series on Administrative and Support and Waste Management and Remediation Services covers employment in the NAICS (North American Industry Classification System) sector 56 (for details, see www.census.gov/econ/census02/naics/sector56/56.htm).

[2]While 2007 *Economic Census* data are not yet available, the U.S. Bureau of Labor Statistics' *Current Employment Statistics* (CES) data indicate that the PEO share began to level off from about 2004. (For the years prior to 2003, the CES used a fixed ratio to create the THS and PEO industry payroll employment data.) A few possible reasons exist. According to Dey, Houseman, and Polivka (2006), the CES's sampling frame—namely, the U.S. Bureau of Labor Statistics' *Quarterly Census of Employment and Wages* (QCEW)—somewhat underestimates leased employees in the PEO industry. At the same time, the CES data could reflect stricter regulation on using PEO services. For example, the State Unemployment Tax Act (SUTA) Dumping Prevention Act of 2004 requires all states to enact anti-SUTA-dumping legislation, thereby potentially decreasing the opportunity to use PEO services to sidestep tax rate modification procedures.

[3]Dey, Houseman, and Polivka (2006) use the contingent work supplements to the U.S. Census Bureau's *Current Population Survey* (CPS), as well as the U.S. Bureau of Labor Statistics' *Occupational Employment Statistics* (OES) program, for their estimation.

[4]The labor productivity measure here is calculated based on the U.S. Bureau of Labor Statistics' manufacturing output indexes and the CES manufacturing employment data.

[5]One possible advantage was the manipulation of the experience rating modification factor for insurance premiums by basing the adjustment on the PEO's past claim history rather than on that of the client firm to receive lower rates (NAIC/IAIABC Joint Working Group, 2002). Also, a client firm might use a PEO to misrepresent its physical location as being in a state with lower insurance rates. Other concerns included misrepresented payrolls and misclassified occupations, as well as confusion about which firm was responsible for providing workers' compensation (NAIC/IAIABC Joint Working Group, 2002; and Houseman, 2003).

[6]For many laws protecting workers from discrimination and harassment, enforcement varies by the number of employees in a firm: for example, the Worker Adjustment and Retraining Notification (WARN) Act, the Civil Rights Act of 1991, the Americans with Disabilities Act of 1990, the Uniform Guidelines on Employee Selection Procedures (1978), and the Pregnancy Discrimination Act.

[7]For example, state and local taxes and workers' compensation requirements differ across states. Also, sometimes state requirements or benefits supersede federal regulations.

[8]ERISA regulates how a pension plan can be funded, vested, disclosed, and eventually paid out to the employee.

[9]EAPs provide supporting services for substance abuse, work relationship issues, emotional distress, mental health concerns, and other issues that may adversely affect an employee's work performance.

[10]Workers' compensation is considered the employee's only way (in legal terms, the *exclusive remedy*) to receive benefits for a workplace injury; workers' compensation protects the PEO and the client firm from injury-related lawsuits except under special circumstances (Lenz, 2003, p. 25).

[11]Although not the main PEO function, the PEO reserves the right to hire, reassign, and fire employees and maintains some control or direction over the joint employees with its client firm. By retaining such decision-making control, the PEO has an ability to manage its liabilities and earn protection from some lawsuits under state and federal laws (Lenz, 2003, p. 10).

[12]For further details on this series, see note 1.

[13]Leased employees and THS workers are reported on the payroll of employment service establishments. To avoid confusion, we do not include the employment service industry in table 1.

[14]See the data from the U.S. Bureau of Labor Statistics' Injuries, Illnesses, and Fatalities (IIF) program, available at www.bls.gov/iif/oshwc/osh/os/ostb0770.txt.

[15]The industry distribution of leased employees is not available in the 2002 *Economic Census*.

[16]A division of leased employees across states is not available for 1992.

[17]The U.S. Census also asks a question about the number of leased employees. However, many plants did not provide the actual number of leased employees.

[18]The data sets we have access to in this study provide the information on the value of shipments only for manufacturing plants.

[19]Because of the high nonresponse rate for the number of leased employees, even in the 2002 *Census of Manufactures*, it is difficult to capture the total number of employees.

[20]For details on the HHI, a commonly accepted measure of market concentration, see www.usdoj.gov/atr/public/testimony/hhi.htm.

General definition

Paid employees are full-time and part-time employees, including salaried officers and executives of corporations. Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors and partners of unincorporated businesses. The definition of paid employees is the same as that used on Internal Revenue Service (IRS) Form 941.

Sector-specific information

Construction and Manufacturing sectors—comprise all full-time and part-time employees, on the payrolls of establishments, who worked or received pay for any part of the pay period including the 12th of March, May, August, and November, divided by four.

Finance and Insurance sector—comprises all employees who were on the payroll during the pay period including March 12. Excludes independent (nonemployee) agents.

Information; Professional, Scientific, and Technical Services; Administrative and Support and Waste Management and Remediation Services; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; and Other Services (Except Public Administration) sectors—comprise all employees who were on the payroll during the pay period including March 12. Include members of a professional service organization or association that operates under state professional corporation statutes and files a corporate federal income tax return. Exclude employees of departments or concessions operated by other companies at the establishment.

Management of Companies and Enterprises sector—comprises all employees who were on the payroll during the pay period including March 12.

Mining sector—comprises all employees who were on the payroll during the pay period including March 12. Includes employees working for miners, paid on a per ton, car, or yard basis. Excluded are employees at the mine but on the payroll of another employer (such as employees of contractors) and employees at company stores, boardinghouses, bunkhouses, and recreational centers. Also excluded are members of the armed forces and pensioners carried on the active rolls but not working during the period.

Real Estate and Rental and Leasing sector—comprises all employees who were on the payroll during the pay period including March 12. Excludes independent (nonemployee) agents.

Retail Trade and Accommodation and Food Services sectors—comprise all employees on the payroll during the pay period including March 12. Exclude employees of departments or concessions operated by other companies at the establishment.

Transportation and Warehousing sector—comprises all employees who were on the payroll during the pay period including March 12.

Utilities sector—comprises all employees who were on the payroll during the pay period including March 12.

Source: U.S. Census Bureau, 1997 *Economic Census*.

REFERENCES

Bodenheimer, Thomas, 2005, "High and rising health care costs. Part 1: Seeking an explanation," *Annals of Internal Medicine*, Vol. 142, No. 10, May, pp. 847–854.

Cline, Sandra B., 1997, "Prosper with no employees?" *Indiana Business Review*, Vol. 41, No. 8, pp. 29–31.

Cook, M. F., 1999, *Outsourcing Human Resource Functions,* New York: American Management Association.

Dey, Matthew, Susan Houseman, and Anne Polivka, 2006, "Manufacturers' outsourcing to employment services," W. E. Upjohn Institute for Employment Research, working paper, No. 07-132, December.

Drucker, Peter F., 2002, "They're not employees, they're people," *Harvard Business Review*, February, pp. 70–77.

Estavao, Marcello, and Saul Lach, 1999, "Measuring temporary labor outsourcing in U.S. manufacturing," National Bureau of Economic Research, working paper, No. 7421, November.

Gilley, Matthew K., Charles R. Greer, and Abdul A. Rasheed, 2004, "Human resource outsourcing and organizational performance in manufacturing firms," *Journal of Business Research*, Vol. 57, No. 3, March, pp. 232–240.

Greening, Daniel, Bruce Barringer, and Granger Macy, 1996, "A qualitative study of managerial challenges facing small business geographic expansion," *Journal of Business Venturing*, Vol. 11, No. 4, July, pp. 233–256.

Greer, Charles R., Stuart A. Youngblood, and David A. Gray, 1999, "Human resource management outsourcing: The make or buy decision," *Academy of Management Executive*, Vol. 13, No. 3, August, pp. 85–96.

Houseman, Susan N., 2006, "Outsourcing, offshoring, and productivity measurement in manufacturing," W. E. Upjohn Institute for Employment Research, working paper, No. 06-130, revised September 2006.

_____, 2003, "The benefits implications of recent trends in flexible staffing arrangements," in *Benefits for the Workplace of the Future*, Olivia S. Mitchell, David S. Blitzstein, Michael Gordon, and Judith F. Mazo (eds.), Philadelphia: University of Pennsylvania Press, pp. 89–109.

Klaas, Brian S., John McClendon, and Thomas W. Gainey, 2000, "Managing HR in the small and medium enterprise: The impact of professional employer organizations," *Entrepreneurship: Theory and Practice*, Vol. 25, pp. 107–124.

Lenz, Edward A., 2003, *Co-employment: Employer Liability Issues in Third-Party Staffing Arrangements*, 5th ed., Alexandria, VA: American Staffing Association.

National Association of Insurance Commissioners (NAIC)/International Association of Industrial Accident Boards and Commissions (IAIABC) Joint Working Group, 2002, "Summary: Report on employee leasing and professional employer organizations," *Journal of Insurance Regulation*, Vol. 21, No. 2, Winter, pp. 95–101.

Segal, Lewis M., and Daniel Sullivan, 1997, "The growth of temporary services work," *Journal of Economic Perspectives*, Vol. 11, No. 2, Spring, pp. 117–136.