The Personnel Economics Approach to Public Workforce Research

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This article argues that the relatively new field of personnel economics (PE) holds strong potential as a tool for studying public sector workforces. This subfield of labor economics is based on a strong foundation of microeconomics, which provides a robust theoretical foundation for studying workforce and organizational design issues. PE has evolved on this foundation to a strong practical emphasis, with theoretical insights designed for practical use and with strong focus on empirical research. The field is also characterized by creative data entrepreneurship. The types of datasets that personnel economists use are described. If similar datasets can be obtained for public sector workforces, PE should be a very useful approach for studying them.

KEY WORDS: human resources, personnel, public sector workforce

In this short article, I argue that personnel economics (PE), a relatively new but very active branch of labor economics, holds great promise as an approach to research on public sector workforces. PE research has a distinctive flavor in terms of theory, topics, and empiricism. This makes it ideal for studying workforce issues in public agencies. The field is highly practical, yet draws on a deep body of standard economic theory. The field has developed many ideas about workforce management and optimal personnel policies. In addition, the field is highly empirical. For these reasons, its methods and insights should be readily applicable to public workforce contexts.

I begin by describing the focus of the field, which is distinct from labor economics and makes it a promising fit for public sector research. I then briefly describe the theoretical and empirical methodology of PE. Finally, the field has developed its own sources of data that are different from those in labor economics. This has been a healthy development for the field, and one that is valuable when thinking about research on public sector workforces. I describe several types of datasets that might be collected and analyzed to study public sector workforces. That section is relatively lengthy compared with the other parts of this article, with the goal of spurring researchers to collect and analyze such data from the public sector.

PE is a relatively new subfield of labor economics. This field has grown greatly in importance in the past 20 years, to the point where personnel research constitutes perhaps a third of papers presented at labor economics conferences. The term PE has become widely used within economics. Courses devoted to this topic are becoming more common, especially at business schools. There are now several comprehensive textbooks devoted to the field or related areas of organizational economics.1–4

What is PE? A typical definition would describe it as the subfield of labor economics that analyzes the design and effects of personnel policies. A broader definition would recognize the strong complementarity of PE with the economics of organizations. The economics of organizations emphasizes the boundaries of the firm, organizational structure, and decision making. These are closely related to personnel policies and involve similar economic trade-offs. Moreover, they are all of relevance to an executive responsible for setting or overseeing organizational policies. For these reasons, I use the broader idea of PE as the field of economics that studies organizational design and policies, including but

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not limited to what would traditionally be thought of as personnel policies.

PE derives from labor economics research on the public sector beginning in the 1960s. The earliest work of this kind used data from government agencies, especially the Department of Defense, to study the design and effects of specific personnel policies. For example, Walter Oi's research was fundamental in the debate on instituting an all-volunteer army. Other studies from the 1960s through the 1990s analyzed the effects of government personnel policies such as early retirement programs, incentives for Navy recruiters, or compensation of federal employees. While these studies formed the base for PE, the field really came into its own when economists developed and refined the application of microeconomic theory to personnel applications. More recently, the field has become highly empirical, using personnel datasets similar to the early work but from the private sector and expanding to other types of data. While some public sector work in PE continues, most of the work done now studies the private sector.

● Focus

An important characteristic of PE research, both theoretical and empirical, is its focus. Traditional labor economics focuses on overall labor markets, individual workers embedded in those markets (not just in a single firm at a point in the career), or public policies. PE research, by contrast, more often than not takes the perspective of the employer. The typical objective in PE is to understand the optimal design and effects of personnel policies. Instead of analyzing wage levels for the whole economy, a personnel economist might think about how to design a firm’s salary system, and whether that system enables the firm to meet its personnel objectives of recruitment, retention, training, or incentives. Empirical work in this area often uses personnel records from a single firm or collects information on the design of personnel policies across a set of firms, precisely because the interest is in how to design those policies.

This focus is one of the primary reasons why the field of PE holds promise as an important tool for research on public workforce policies. Much of that research is intended to shed light on optimal employment policies for public agencies. Theoretical and empirical research on optimal personnel policy design is obviously a good fit with that agenda. Moreover, public agencies have access to a great deal of data inside their own organizations, much of which could be usefully studied using the methods of PE. It seems likely that the kinds of empirical research now being done in PE with private sector data could easily and quickly be adapted to study public sector and public health workforce policies. Indeed that would be returning to PE’s roots.

● Methods

PE became a strong subfield in its own right, somewhat separate from labor economics, with two developments. The first was the adaptation of the economics of information and other ideas from economic theory to applications inside organizations. As the theoretical ideas advanced, economists (especially those employed in business schools) began applying the ideas to understand the policies that a firm uses for its internal design and management of personnel. Much of this early work was highly theoretical. However, the focus gradually evolved to a more practical focus. A leader in this development was Edward Lazear, who is generally credited as the primary founder of the field of PE. Two excellent examples of his applied theoretical approach are his articles on salaries versus piece rate compensation plans and tournaments. Both provided empirically testable predictions and practically implementable prescriptions.

Methodologically, the field reflects this history. The standard tools used in PE are the familiar ones used in much of microeconomics, including labor economics. These include screening and signaling; information and coordination; specialization and human capital; and agency theory. Because PE uses standard microeconomic tools, it has a rich and well-developed theoretical structure to draw upon. However, PE has evolved away from more abstract and formal modeling toward greater emphasis on theory designed to shed light on practical application.

For example, personnel economists explore how the tools of sorting, signaling, and investments in human capital might be used by a firm to improve the quality of its workforce. They have used the idea of signaling to analyze how a firm can improve recruiting quality by structuring the job offer so that workers who believe themselves to be a good fit are more likely to accept the offer, while those who do not are more likely to reject the offer. Application of economic ideas of sorting can be used to model how to structure a firm’s promotion system. Economists have studied the effects of various kinds of promotion systems on the incentives for workers to invest in firm-specific human capital (skills that are valuable to the current employer) or general human capital (skills that are valuable to many employers).

Much of economic theory explores the creation and use of information. These tools are being applied by personnel economists to better understand organizational structures and decision making. Economists have
developed models of hierarchical decision making to understand the determinants and effects of various structures, such as fewer or more hierarchical levels, span of control, centralization, or the effects of information technology on optimal hierarchies.\textsuperscript{14,15} This area is relatively new and less explored but holds exciting promise to provide better understanding of organizational structure. In addition, it is likely that this research will evolve toward modeling methods of decision making. Such a development would be highly relevant to organizational design, as well as amenable to empirical research.

As a final example of the application of microeconomic tools within PE, consider the important issue of employee motivation. It is often said that incentives are the essence of economics, and certainly one of the largest and best developed areas of economics is agency theory, which studies methods by which a principal (eg, an owner or a director of an organization) can motivate an agent such as an employee. This body of theoretical work has been applied in what is probably the most extensive area of PE research, incentive compensation.\textsuperscript{16} It analyzes the design and effects of optimal incentive plans, performance measurement and evaluation, bonus schemes, and promotions as incentives. PE has a great deal to offer researchers and practitioners in the area of incentive management. These include insights into general trade-offs in incentive plan design, structured thinking about components of incentive plans, and ideas about practical implementation.

Of course, by its nature, PE uses the standard approach of economics, focusing on budgets, opportunities, imperfect information, and incentives rather than on psychology or group norms. Despite this, the field is not incompatible with other approaches to organizational research. On the contrary, researchers in this area have taken a relatively eclectic approach, such as studying the role of norms,\textsuperscript{17} or integrating psychological and economic approaches to job design.\textsuperscript{18,19} These research streams enrich the more extensive work on incentives by adding consideration of intrinsic motivation. The strong practical emphasis in this research area makes it more amenable to interdisciplinary work. PE should be viewed as a strong complement to psychological, sociological, or human resource approaches to workforce research.

The second important development for PE as a research field was a strong movement toward empirical research. Initially, the field was almost completely theoretical in focus, because of lack of datasets appropriate to the topics. Most datasets in labor economics are nationally representative samples of individuals. These datasets usually have little or no information on firm policies and few observations from a specific firm. That makes it quite difficult to study firm policies in depth (though there have been a few important exceptions).

In response, researchers gradually began obtaining access to new datasets. Since the early 1990s, there has been a flood of empirical research in PE. Much of that research uses unique, specialized datasets that researchers constructed or obtained to study special topics of interest. PE has evolved to the point that it is now a very active, primarily empirical field that involves a good deal of creative data entrepreneurship. Next, I discuss the types of data that personnel economists are collecting.

\section*{Data Used in PE}

PE researchers have used several types of new datasets. In this section, I briefly describe each kind. Understanding the unique and varied types of data used in this field is important when thinking about how to apply PE methods and insights to public workforces.

As noted above, the earliest empirical work with a PE focus used data from the Department of Defense or federal government. Other than those few studies, empirical research in PE used standard labor market surveys (eg, the National Longitudinal Survey of Youth or the Census). Unfortunately, such datasets tend to lack the kind of information that would be of interest to personnel economists. Such surveys could be modified to include such variables in the future, but they have not been to date.

The modern wave of empirical research stemmed from the rediscovery of personnel databases, but from private sector firms. Early examples were used to shed light on classic labor economics questions such as the importance of human capital to earnings.\textsuperscript{20} More recent work turned the focus to organizational design and personnel policies. The most comprehensive example is probably the articles by Baker et al.\textsuperscript{21,22} They provided a detailed description of a single firm’s hierarchy and how it evolved over time, defined and described job ladders, analyzed career structures, and explored the relationships between all of those and compensation. These were largely new questions that were difficult or impossible to study with traditional labor market datasets. Those articles created a set of stylized facts about the internal personnel policies of firms that many subsequent articles have sought to replicate and extend.

Once such data are obtained, the researcher has a wealth of information on which to base research, especially if the personnel records cover a long period. These records usually include all important personnel events as well as demographic information for all employees. They allow the researcher to study the structure of an
organization, compare people within the firm, and follow individuals over time. An additional benefit of personnel records is that they tend to be very accurate since the organization uses them for calculating compensation and complying with tax and employment agency regulations.

There are important drawbacks to using personnel records for empirical research. Although they usually have large sample sizes in one sense, in another sense, they constitute only a single observation. One must be cautious about generalization of findings. Fortunately, we are gradually accumulating studies from many firms, and the results so far suggest that the findings tend to be reasonably robust across firms. A common concern is that access to confidential personnel records is often limited. That makes replication difficult. In some cases, researchers have been able to share data (at least after a few years have gone by) or disguise or omit a few sensitive variables and then share it with others.

An interesting development in this literature is that in a few cases, economists have been able to convince firms to conduct controlled experiments that vary personnel policies to see how outcomes differ. Such studies are rare and hard to come by, but provide a nice way to control for a great deal of variation in arriving at inferences. One way to conduct such experiments would be to find organizations with a large number of branch offices and implement different policies at different locations. Such an approach might be feasible and of interest to certain types of public sector organizations, especially those with large-scale and geographic coverage.

The obvious next step would be to collect personnel records from many firms, resulting in a dataset that is deep but generalizable. Unfortunately, such an approach is quite difficult. Many firms would need to agree to share confidential records. Firms use different methods of collecting data and define and collect variables in different ways. The third type of data that personnel economists use attempts to enjoy the benefits of personnel records from a large set of firms despite the costs. Industry studies collect relatively comprehensive data using consistent methods across a sample of firms. Researchers typically limit themselves to a set of firms from the same industry. This homogeneity makes it easier to collect consistently defined data across firms and controls for a great deal of heterogeneity. An additional advantage to this approach is that researchers are able to collect data beyond simple personnel records, by writing surveys or conducting field interviews. Therefore, this type of dataset tends to provide the most thorough information on a multifirm sample. Unfortunately, this research method is probably the most costly and, therefore, rare.

The best examples of industry studies are the articles by Ichniowski et al. They collected detailed data on human resource policies and productivity from a set of steel production lines. All of the firms’ studies used a specific type of manufacturing process. They were able to study the effects of various human resource policies, singly and in combination, on productivity. They were also able to study adoption of policies over time. These studies were some of the first to be able to collect detailed productivity data and link it to a variety of policies.

A variant of industry studies that has been used by a few researchers is data from human resource consulting or outsourcing firms. Such firms sometimes collect data from their clients, which when combined constitutes a multifirm personnel database. Unfortunately, their clients are not a random sample, and they do not necessarily collect the right type or necessary depth of data required by academic researchers. Nevertheless, there have been several interesting articles using this approach. This approach is likely to continue to produce a steady but small stream of interesting empirical work in the future. Consulting firms may begin to collect better data as they become more familiar with the field of PE, further improving the possibilities for this type of data.

A fourth type of data that PE researchers have used is surveys that they design and send to a set of firms. This provides for data across firms, but tends to lack the depth of personnel records. One advantage of such an approach is that surveys allow the researcher to collect data on variables the firm would not normally keep records on, such as the formal design of personnel policies (personnel records focus on outcomes and not on design) and perceptual variables (such as subjective performance evaluations). Of course, survey data suffer from being noisy because of errors in variables and the measurement of qualitative concepts. One example of this approach is the articles by Gibbs et al. They used surveys of auto dealerships to gather data on the complete design of incentive plans (most studies analyze one specific piece such as intensity of incentives on one performance measure) and were able to study qualitative issues including subjective performance evaluation and implicit incentives that largely eluded prior study.

A final type of data used in PE is a relatively new and exciting development: matched worker-firm datasets. An excellent survey of this approach is the article by Abowd and Kramarz. Datasets of this type include detailed information on both firms and employees and not just on one or the other. They often sample only a set of employees from each firm, but in some cases include information on all workers. Indeed, some of these datasets include information on all firms in a country’s economy as well. These datasets usually come from two
sources. The first and most common are government records. Government agencies collect detailed data on both firms and individuals (for censuses, tax collection, and other government functions). In some cases, the agencies are able to link their databases together. In other cases, especially in smaller or more centralized governments, a single agency is in charge of collecting such data. A second potential source for these kinds of datasets is an industry group (either of firms or of unions). Such groups sometimes collect detailed data from their members (say, to manage centralized wage bargaining in Sweden or Italy).

Such datasets now exist for many countries in western Europe. In the United States, there is growing availability of similar datasets, notably the Census Department’s “Longitudinal Research Database.” The United States has tended to lag behind in constructing these datasets due to its size and decentralized government structure, but is gradually catching up.

Matched worker-firm datasets are exciting because they can provide detailed information on both firms and individuals and at low cost to researchers once the datasets are set up. Moreover, they are often available to all researchers without confidentiality restrictions. On the firm side, such datasets often include information on firm performance (sales, accounting earnings, or stock price), allowing measurement of productivity and effects of personnel policies on firm performance. Unfortunately, details of personnel policy design are usually not available, so the researcher must infer as much as possible from patterns in personnel outcomes (e.g., dispersion in wages or turnover rates).

These datasets often include more demographic information on individuals than would firm personnel records. They may include information on the worker’s family members, schooling and academic performance, and possibly even on health history. An interesting feature of matched worker-firm datasets is that researchers can follow individuals as they move from one firm to another. While not the traditional focus of PE researchers, this does open up new research possibilities. For example, it provides the researcher with more information on the quality of new hires or those who leave a firm. It provides information on the labor pool from which the firm recruited the person. This feature of these new datasets means that PE research is now becoming more closely aligned with research by traditional labor economists. In some sense, PE is coming full circle.

As can be seen, personnel economists use a variety of sources for empirical research. This data entrepreneurship continues to be one of the most exciting aspects of the field. I expect this entrepreneurship to continue, as there are many interesting questions that have been explored theoretically but not yet subjected to much (if any) empirical work. Government databases are gradually evolving to recognize and accommodate the questions that PE focuses on, though there is much progress yet to be made. All of these types of datasets are likely to be available or collectable and useful for studying public sector workforces.

● Conclusions

PE developed as a subfield of labor economics over the last 20 years. While labor economics tends to focus on labor markets—what happens across firms—PE focuses on what happens within firms. PE has developed to such an extent that it has become recognized as an important subfield distinct from labor economics. PE has a large group of researchers and has been very successful in theoretical and empirical research. This line of research has many practical applications for how firms structure themselves and manage their workforces.

PE holds great promise for contributing to research on public sector workforces. It is based on the very strong foundation of classical microeconomic theory. This foundation has enabled PE to develop a relatively comprehensive and rigorous way of thinking about organizational design. This way of thinking does not replace traditional ways of studying organizations. However, it does provide a systematic framework for studying many issues using a consistent and tested toolbox. The PE approach is complementary to other approaches but brings many new insights to the study of human resources.

The focus of PE is generally on the firm’s perspective and on the design and effects of personnel policies. Emphasis has usually been on practical theory that lends itself to empirics. This approach is ideal for studying personnel records or similar data from public sector organizations and for helping such organizations figure out more effective methods of managing their workforces. While public sector organizations have different objectives and constraints than those of private sector organizations, most of the trade-offs that they face are largely the same.

PE researchers have become increasingly creative at collecting unique datasets to study open questions. They have found that various kinds of datasets are useful in studying firm organization and personnel policies. These data types and empirical methods can be very useful to those studying public sector workforces. The methods of PE can be applied to public sector contexts quite easily; many already have. Public sector research can benefit from collecting and analyzing all of the different types of data that personnel economists use, in combination. Putting together these various strands, and combining them with the insights from
other organizational research disciplines, is likely to yield high returns for public sector workforce research.

REFERENCES