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Journal of Participation and Employee Ownership

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Article information:

To cite this document:

Derek C. Jones, (2018) "The economics of Participation and Employee Ownership (PEO): an assessment", Journal of Participation and Employee Ownership, Vol. 1 Issue: 1, pp.4-37, <https://doi.org/10.1108/JPEO-02-2018-0004>

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The economics of Participation and Employee Ownership (PEO): an assessment

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Received 21 February 2018
Revised 30 April 2018
Accepted 2 May 2018

Abstract

Purpose – The purpose of this paper is to discuss diverse matters concerning the field of Participation and Employee Ownership (PEO) coinciding with the launch of the *JPEO*.

Design/methodology/approach – This paper used mixed methods including bibliometric analysis.

Findings – Significant gaps exist in our knowledge of the scope and nature of PEO. Citation counts illustrate both the changing composition of research within PEO and faster relative growth than terms used to describe related fields such as labor unions and trade unions. Based on manually collected citation data I identify the most highly cited studies within PEO. Few of these studies attain a “home-run” citation count. However, PEO scholars are cited 19 percent more than economists in top 30 schools and the median C5 (total citations for the author’s five most highly cited papers) is more than 260 percent of the median for economists in “top 30” institutions. There is also some weak evidence that the citation bias in economics against female scholars is not as marked in PEO as elsewhere. A qualitative assessment of PEO studies suggests markedly uneven progress in empirical work across types of PEO.

Originality/value – No similar review has been done before.

Keywords Participation, Cooperatives, Citations, Employee ownership, Profit sharing, Labour managed firm, Shared capitalism

Paper type General review

1. Introduction

The inaugural edition of this journal provides an opportunity to assess Participation and Employee Ownership (PEO), I do so by discussing several matters. First, are issues relating to the field of PEO. Is there in fact a separate field of PEO or is it rather a sub-field of another area? When did the field/area emerge and how has it evolved? How is it defined? What is the actual scope of concrete forms of PEO? How important is PEO within economics and how has the composition of PEO changed? To facilitate discussion of some of these issues I draw on a typology that appeared some time ago (Ben-ner and Jones, 1995). While researchers in PEO use many terms, most agree that the field is characterized by a focus on arrangements in organizations that emphasize participation in control (several terms are used such as employee involvement (EI) and employee participation (EP) and/or arrangements that emphasize participation in economic returns (we encounter terms such as financial participation (FP) or employee ownership (EO)). The typology illustrates the breadth of examples of PEO, including labor managed firms, firms with profit sharing and codetermined firms. For some of these cases I also try to assess what is known about their changing scope around the world. To investigate the importance of PEO within economics and how its composition has changed, I mainly use data from Google Scholar (GS) and Web of Science (WOS). For key terms such as EI, EP, FP and EO as well as for actual cases of PEO such as worker cooperative and self-managed teams, I document the changing composition of research within PEO. To provide illustrations of the changing importance of the field of PEO relative to related fields such as industrial relations, I also assemble some comparative data.

The second main task is to identify major studies in PEO and to assess the impact of these studies. To make the task manageable, I look only at works by economists[1] and concentrate on empirical contributions. One way the exercise is undertaken is by using citation data. A list of the 52 most influential studies by economists in the field of PEO is



identified from manual searches. Then for these “highly cited scholars within PEO,” but scholars whose body of work may not be concentrated within PEO, I gauge their impact relative to economists who have not published within PEO by calculating the citation count for a scholar’s five most cited works (C5) and comparing it with similar measures for economists in “top 30” schools.

While this citation way of assessing individual studies and the contributions of individual authors may be considered as largely market driven, since the world is riddled with market failure I use a second and more traditional of assessment. I identify what represent some of the more important advances in the state of knowledge in empirical work in the field during the last 40 years or so and highlight the contributions made by some of these studies, where influence is not always measured by citations.

In a concluding section, I offer interpretation and discuss implications of some of the findings. I note various challenges to PEO concerning both defining the field and to gaining a better understanding of the scope and nature of PEO. Compared to “first cousin” fields, such as industrial relations, I conclude that PEO has come a long way, become an established field and has done so without much in the way of support infrastructure, such as teaching and research programs devoted to the area. However, for the field of PEO to be self-sustaining and capable of supporting an on-going community of scholars, keen challenges remain. While the record of individual scholars within PEO is found to be quite strong, I offer some tentative suggestions as to where we might best encourage resources to be allocated within PEO going forward.

2. Origins and development

The pioneering work in the field of PEO is the first theoretical analysis of the LMF by Ward (1958). As such, PEO originated as part of the field of comparative economic systems attracting scholars interested in “third-way” alternatives to capitalism and state-ownership. However, when Jaroslav Vanek established a doctoral specialization on participation and labor management Cornell in the late 1960s under Jaroslav the field began to really take off. Vanek’s program on participation and labor management (PPLMS) was very strong on economic theory, or at least on one way of theorizing about participatory and LMFs. Vanek’s *The General Theory of Labor Managed Firms* published in 1970 is a key milestone in the field (though afterwards other important work emanated from Cornell, especially Vanek, 1977, 1971)[2]. Equally, PPLMS gave the field an institutional identity. While this program at Cornell in principle covered a range of firms with varying degrees of EI and FP, the main focus was firmly on firms that were labor managed or worker/producer cooperatives[3].

In the late 1960s and into the 1970s, the other key figure in the field was Branko Horvat. Like Jaroslav Vanek, Branko Horvat was a prolific author. Both pioneers did not restrict their writing to narrow technical questions but took on big issues—they investigated the functioning of labor managed economies[4]. Unsurprisingly, Horvat was strongly influenced by events and practice in the country in which he lived, the FR Yugoslavia which arguably represented a labor managed economy. Importantly, Horvat established the first journal devoted to the broad area, *Economic Analysis and Workers Management*[5].

The key early works by Ward, Vanek and Horvat were mainly theoretical contributions. In the early 1970s, there was essentially an empirical void in the field of PEO; apart from the case of Yugoslavia, basically the empirical landscape had not been mapped at all[6]. Economists were completely ignorant of the scope and nature of actual forms of participation, EO, labor management, LMF past and present. For example, the famous Mondragon model was not “discovered” until the mid-1970s (Oakeshott, 1973). For many, the piece subsequently published in Vanek (1975) was a milestone—Oakeshott showed that there was a significant contemporary cases of labor management besides the FR Yugoslavia and the US plywood mills[7]. And in the early days most of analytical

empirical work in the field came from qualitative cases (rather than econometric studies or inferences drawn from large-scale surveys).

While the seminal works in PEO by economists were theoretical and concerned the case of the LMF, the field evolved dramatically during the 1970s and 1980s. One key development was the appearance of important theoretical work that analyzed organizational arrangements within PEO besides the LMF. Most influential was Weitzman's (1984) analysis of a profit sharing economy, though Aoki (1984) exerted a powerful pull and James Meade's (1985) work on labor-capital partnerships has continued to inspire and stimulate[8].

But perhaps the biggest developments in the evolution of the field were the emergence of hypothesis-testing empirical work and the influence of legislative initiatives, especially concerning EO in the USA. While an assessment of selected empirical work is the focus of later sections of this paper, I note that it was not until 1982 that the first volume appeared that included several original econometric studies of types of PEO in several countries (Jones and Svejnar, 1982)[9]. In the legislative sphere, particularly noteworthy is the invention of the ESOP by Kelso in 1956 and the role played by Senator Long to amend the ERISA legislation in 1973 to provide various advantages and protections to ESOPs. Also of note was the start in 1985 of the *Advances* series—*Advances in the Economic Analysis of Participatory and Labor Managed Firms*, originally co-edited by Jones and Svejnar. By appearing alongside similar series for other established fields such as labor economics and industrial relations, the field was no longer for rebels outside the mainstream, but the discipline had become mainstream. Together these developments led to PEO increasingly attracting a broader range of scholars than those whose primary focus was within comparative economic systems. Increasingly, the bulk of researchers attracted to the field had a labor economics and/or industrial relations background and a special interest in issues surrounding EO.

Particularly during the 1990s one of the main influences on the development of the field was the implosion of the USSR and the possibility for organizational forms within PEO to be established in transition economies. This sparked a huge intellectual effort with a major focus on the opportunities presented by privatization for firms, mainly with FP. In the main, outcomes for PEO were disappointing (see e.g. Blasi *et al.*, 1997; Brown *et al.*, 2006; Estrin *et al.*, 2009). Another key development has been the appearance of bigger and better data sets which, in a much altered political environment, have helped nurture an emerging body of increasingly high-quality empirical work (some of which will be assessed later in this paper). Also, the start and steady growth of the initiative at Rutgers under the leadership of Blasi and Kruse (and subsequently Freeman) is an important event in helping to and sustain the field. Lastly, and perhaps more strongly than in other areas in economics, PEO is very responsive to the on-going interest shown by policy makers in the field. In the USA, since the invention of the ESOP, there have been diverse initiatives at both the state and federal level over the last 60 years. Undoubtedly this has had a keen influence on research. Similar feedback processes between public policy and research appear to be underway elsewhere, including the UK with publications such as Nuttall report and various initiatives introduced to foster employee share ownership.

3. Definitions

In part because the field of PEO attracts scholars of diverse stripes, it is apparent that there is no consensus as to what exactly constitutes the field of PEO and if it even represents a unique field. Besides EO and EP, the interests of scholars are revealed by diverse and commonly recurring descriptors such as shared capitalism, FP, performance-based pay and EP, as well as interest in actual cases including labor



managed firms, teams and producer cooperatives. However, I believe that there is a field of PEO. Fundamentally, it is defined by the study of issues surrounding organizations in which workers in their organization have, to a greater degree than in an investor owned firm/capital managed firm, at least one of the following two rights, namely: the right to participate in enterprise decision making, hereafter control rights/EI; the right to participate in any net returns/surplus (after costs), hereafter return rights/FP. For many scholars within PEO the focus is on cases where both rights coexist; indeed, for many this is a requirement for defining the field. While there are related fields where these two rights for non-managerial workers sometimes are discussed and included in organizational analysis (e.g. high performance workplace practices, human management resource practices, social enterprises and personnel economics) in none of these related fields are these two rights for workers placed at center stage.

In Ben-ner and Jones (1995), we used a definition that focused on variation in those two fundamental rights to illustrate the diverse world of actual forms of PEO. By drawing on studies of actual cases of PEO we developed a typology of forms of PEO. An adapted version of that typology (Table I) enables five types of firm to be identified. A worker in an investor owned firm has zero control and return rights. This is the prototypical capitalist firm with no EI or FP (OA₁)—the default case firm that is normally the exclusive focus in a microeconomics text. But as the typology illustrates, there are four other types of firms; in all these other four cases workers have varying degrees of EI and/or FP. Scholars in PEO believe that the institutional arrangements in such organizations matter and frequently create important outcomes for both workers and firms.



		Control rights held by employees		
Return rights held by employees	Control rights held by employees			
	None	Participation in control	Sharing of control	Dominant control
None	OA ₁ Conventional firms	OA ₂ Quality circles; online teams; offline teams	OA ₃ Employee representation on board of directors	OA ₄ British Industrial Common OwnerShip, e.g., Scott Bader
Small	OA ₅ Modest Profit sharing or employee ownership, U.S. auto 1980's; Huawei	OA ₆ Profit sharing with participation programs	OA ₇ Co-determination with another financial participation program, e.g., Sweden	OA ₈ British Retail Coops ^a
Moderate	OA ₉ ESOPS, e.g., Publix, King Arthur Flour, Chobani, Corning	OA ₁₀ Golden Artist Colors John Lewis; Lincoln Electronics. Japanese listed firms	OA ₁₁ Worker Cooperatives ^b , e.g., UK clothing, Denmark	OA ₁₂ Worker cooperatives ^c , e.g., UK footwear
Majority	OA ₁₃ ESOPS, e.g. W.W. Norton, Lifetouch, DPR construction Broad-based options	OA ₁₄ ESOPS, e.g., New Belgium Brewing, Hyatt Clark, Ruddick	OA ₁₅ ESOPS, e.g. Once again nut butter, French building PCs	OA ₁₆ Worker cooperatives, e.g., Mondragon, Italy, Namaste solar, Uruguay

Notes: ^aIn some cases workers constitute a majority of the decision-making board and employees have tiny amounts of profit sharing and ownership; ^bworkers share control with other organizations, such as labor unions and consumer cooperatives; ^cworkers have majority control of decision-making bodies, but modest amounts of profit sharing and/or individual ownership

Source: ^aAdapted from Ben-ner and Jones (1995) where references to cases are provided

Table I.
Typology of employee ownership according to control and return rights and examples

One of these four sets of firms that lie within the domain of PEO is the labor managed firm (such as the Mondragon worker cooperative) where the representative worker enjoys full return and control rights (OA₁₆). In Participatory firms, workers have some degree of participation in control (EI) alone but no FP (OA₂–OA₄). Workers in return sharing firms have some degree of FP but no EI (e.g. a firm with limited EO and no provision for participation in control) as in OA₃, OA₉, OA₁₃. Workers in all other cells in the typology have varying degrees of combinations of EI and FP, such as in many large Japanese manufacturing firms where EI and FP coexist (OA₁₀).

A second distinguishing feature of the field of PEO is that in addition to the focus on these two rights, none of the related fields typically include organizational arrangements where there is majority employee control and ownership as the central focus. This sustained interest in firms whose structure and objectives are fundamentally different from capitalist firms sets PEO apart from other fields.

A third feature of the field of PEO concerns methods and evaluative criteria. Compared to most mainstream fields within economics, there is both an acceptance of the value of inter-disciplinary inquiry and a recognition that there is often more than one way to skin a cat. Informed institutional analysis may play an important role, as does experimental economics and, as in many circumstances, do mainstream theoretical and empirical approaches. Related to this point is the recognition that, at least for some forms of PEO such as cooperatives, a definition of PEO that focuses on control and return rights may serve to de-emphasize cooperative values. Thus, Novkovic (2008) notes that this approach leads to insufficient attention being paid to the roles cooperatives play in market economies, such as internalizing market externalities.

While many might accept these three features as sufficient to define the field of PEO, equally for several reasons it can be argued that that this does not provide a complete definition for the field, but rather that the field remains loosely defined. One area of fuzziness concerns the nature of programs that provide for FP. My preference is to adopt a narrower definition that includes group incentive schemes, but excludes firms with schemes that provide only for individual performance compensation, such as piece rates, commissions and merit pay[10]. Another issue concerns the nature of organizational features concerning top managers, including their compensation schemes and the manager's involvement in corporate governance. When such arrangements for managers are broad based (and at least extend beyond executives) they intimately affect the arrangements for non-managerial workers (e.g. as they bear on pay relativities and potential impacts on the resolution of agency issues for managers and workers). My predilection would be to adopt such a more expansive definition and include such matters within PEO[11]. A third matter includes identifying clearer and tighter delineations between PEO and related fields such as the high performance workplace literature and, more generally, human resource management. Fourth, is the universe of interest to PEO scholars restricted to organizations that pursue profits or surplus, or is a wider compass permissible? For example, where are the boundaries to be drawn with respect to social enterprises? Is the impact of teachers' group performance incentives on pupil achievement (Lavy, 2002) a topic that lies within the domain PEO?

4. The scope of PEO

There is abundant evidence that in most economies, both developed and emerging, there are many organizations that have PEO arrangements. Such firms range from public to private and for profit and not for profit. At the same time, it is also apparent that hard evidence on the nature and scope of firms with varying degrees of PEO is quite uneven. In the main this state of affairs reflects the fact that for most types of PEO there are no on-going censuses or reliable on-going surveys. Often the scope and nature of types of

firms with PEO must rely on ad hoc surveys, such as the PEPPER reports for European countries (e.g. Uvalic, 1991). Consequently, in many instances we do not know with great reliability the incidence of particular cases of PEO or whether particular types of PEO are becoming more commonplace.

That being said, there are some cases and some countries for which we do have reasonably expansive data on incidence. The better data seem to be for cases that emphasize FP. These include firms with “shared capitalism” features in the USA (see Kruse *et al.*, 2010) and firms with EO in Japan (see Kato and Morishima, 2002). Also the data for firms with performance-based compensation in developed economies are reasonably good (e.g. Bryson *et al.*, 2012). But even for FP these are many exceptions and limitations. For example, even in developed economies, for many FP schemes such as profit sharing or EO, while reasonable data exist on coverage (the extensive margin), much less is known about the extent of (say) profit sharing—the value of profit shares (the intensive margin).

For most kinds of participation in control typically the data are even weaker. The last couple of decades or so have seen the introduction of workplace surveys such as WERS in the UK (see e.g. Bryson *et al.*, 2002) and similar surveys in Canada. Again these tend to provide pretty good data on issues such as the incidence of teams, but much less detail on issues that are theoretically important including team composition. Even for developed economies there are many obvious gaps in mapping the terrain. For example, for the USA the best available data are those obtained by the addition of customized questions including shared capitalism questions in surveys such as GSS (as reported in Kruse *et al.*, 2010)[12]. Again such data, while most useful, are not as nuanced as one might wish.

But for developing economies and emerging markets economies the picture is even murkier. For many countries such as India and most of Latin America it appears that we know next to nothing about the scope and extent of nearly all forms of PEO. While there is an awareness of the incidence of some forms, including EO in China (see Mygind and Faigen, 2017) and WCs in Uruguay (e.g. Burdin and Dean, 2009), in the main the empirical base for developing economies and emerging markets economies is quite slim.

That being said, I believe we can tentatively come to conclusions about trends in the size and scope of the participatory sector and some sub parts, especially for mature capitalist economies. My sense is that there is no strong evidence that, in most countries, the WC part of the participatory sector is growing. By most measures such as the share of WC employment in the total labor force or total WC sales/GDP, it was a larger share in the past. For example, the recent census of US WCs points to a total labor force that suggests a fall in the WC share of the labor force compared to earlier periods[13]. The incidence of other forms of EI at more strategic levels, notably discretionary participation at board-level participation, also does not appear to be growing[14]. But for some forms of PEO that focus on EI there is evidence of growth—diverse studies point to this for teams in the North America, the UK and Japan. Also for many forms of FP there is evidence of growth as in European surveys subsequent to the original PEPPER report (Uvalic, 1991) and group-based performance plans in Europe (Bryson *et al.*, 2012). Also there is suggestive evidence that bundles/combinations of EI and FP are more prevalent than in the past—various studies point to net additions over time, though there is attrition (e.g. works that use survey data on Finland, Japan as well as successive PEPPER reports and the WERS (and formerly WIRS) data for the UK).

5. Changing importance of the field of PEO

While firms with EO and/or EP may be a growing feature around the world, is this reflected in the influence of work by economists on PEO? Is the influence of particular types of PEO changing? To get a sense of the changing nature and influence of academic

work in the area of PEO one might compare the cases identified in Table I with the original typology in Ben-ner and Jones (1995) where all cases were for studies published before the early 1990s. In part because of subsequent academic work in the area, the main cases of interest today are often quite different than those spotlighted in the earlier typology. For WCs besides Mondragon now we see references to Uruguayan PCs (e.g. Burdin and Dean, 2009) and more recent studies for France (e.g. Fakhfakh *et al.*, 2012) and US plywood firms (e.g. Craig and Pencavel, 1992). But bigger changes have also occurred concerning other participatory forms; the deeper institutional base is reflected in many more numerous examples of FP. Now there are more examples of knowledge and studies of EO including US cases (e.g. Kruse *et al.*, 2010). There has also been lots of work in the last 20 years on group incentives, e.g. Lemieux *et al.* (2009) and Song *et al.* (2015). Also, reflecting the significant growth in the importance of teams, there has been an outpouring of work by economists (e.g. Hamilton *et al.*, 2003). Newer studies seem to have appeared on what were once viewed as the most significant forms of participation—e.g., on works councils in Germany and their performance impact, see Hübler and Jirjahn (2003) and Addison *et al.* (2001). Equally the literature on PEO has changed as certain descriptors, such as shared capitalism, have become more commonplace than in the past.

To get more objective information on some of these trends concerning the changing nature and influence of types of PEO I draw on the two most widely used citation databases, namely, those compiled by WOS and GS[15]. These sources can be used to generate simple counts of citations as well as to generate other metrics such as the h-index.

To investigate the changing nature and influence of types of PEO since 1960[16] I use WOS and GS[17] to report overall and decadal citations for 12 widely used terms to describe key aspects of PEO[18]. Six of these are labels for participation in aspects of economic returns, namely, EO, performance-based pay[19], profit sharing, equity compensation, FP and shared capitalism. Two are labels for participation in control, namely, EI and EP. The remaining labels are for important cases or types of PEO, namely, labor managed firm, producer cooperative, self-managed team and worker cooperative. The results of this exercise are reported in Tables II–III and Figures 1–4[20].

Some interesting observations are apparent. Using this approach, we see evidence of a field for which the contours are changing as are its particular components. Specifically:

- (1) From Tables II and III, we see that while citation counts using WOS are much smaller than for GS (typically counts using GS are about four to seven times as large as for WOS, e.g., see for profit sharing and EI during comparable periods); hence, the main findings are similar whether using GS or WOS[21]. (This finding is similar to findings from previous studies, such as Hammermesh, 2018)[22].
- (2) Particular labels matter. Typically, the most common terms that emphasize participation in control are clustered much more closely than those that focus on participation in economic returns (e.g. compare Figures 1 and 2). Also, counts for profit sharing typically are more 100 times as high as for shared capitalism and four to seven times that for EO (e.g. Figure 4).
- (3) Over the years some terms have risen in relative prominence (e.g. self-managed teams) while others have not grown as fast and for some terms citation counts may have even diminished (e.g. Figure 4 for labor managed firm).
- (4) From Figure 4, we see that in the earlier years in particular, the citation counts for some terms were perhaps surprisingly low (e.g. labor managed firm and performance-based compensation).
- (5) It appears that the label “worker cooperative” is displacing “producer cooperative” (see Figures 3 and 4, in particular)[23].

	Participation in economic return					Participation in control				Other			
	Employee ownership	Shared capitalism	Performance-based pay	Financial participation	Profit sharing	Equity compensation	Employee involvement	Employee participation	Self-managed teams	Codetermination	Labor managed firm	Producer cooperative	Worker cooperative
1960-1969	28	6	2	6	3,260	1	49	329	3	169	1	63	8
1970-1979	164	1	11	743	5,520	12	349	1,740	6	619	102	151	31
1980-1989	170	2	221	1,050	9,020	57	2,610	4,480	30	1,360	422	429	219
1990-1999	3,520	24	951	2,200	15,600	207	12,000	10,300	1,530	2,710	418	486	396
2000-2009	5,780	244	4,010	5,050	23,300	2,640	17,400	16,300	3,730	4,810	341	938	762
2010-2017	6,400	735	6,100	6,190	18,800	4,640	17,500	15,600	4,670	4,920	286	1,220	1,520
Total	17,900	1,070	12,200	17,000	134,000	7,760	73,000	69,800	10,300	16,000	1,620	3,490	3,090

Source: Google Scholar (accessed December 23, 2017-January 10, 2018)

Table III.
Citations for key
terms using
Web of Science

	Profit sharing	Employee ownership	Equity compensation	Financial participation	Shared capitalism	Employee participation	Employee involvement	Labor managed firm	Codetermination	Performance-based pay	Producer cooperative	Worker cooperative
Total citations	9,148	2,807	1,076	1,038	9	13,113	13,035	471	2,001	1,489	214	145
Total no self-citations	7,887	2,437	1,033	767	9	12,246	12,268	406	1,777	1,474	214	141
Total publications	891	288	65	148	9	857	856	68	200	120	18	42
Average citations per item	10.27	9.75	16.55	7.01	1.00	15.30	15.23	6.93	10.01	12.41	11.89	3.45
h-index	47	29	13	20	2	52	57	10	25	21	7	7

Sources: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018). Entries cover the period of 1984–2017

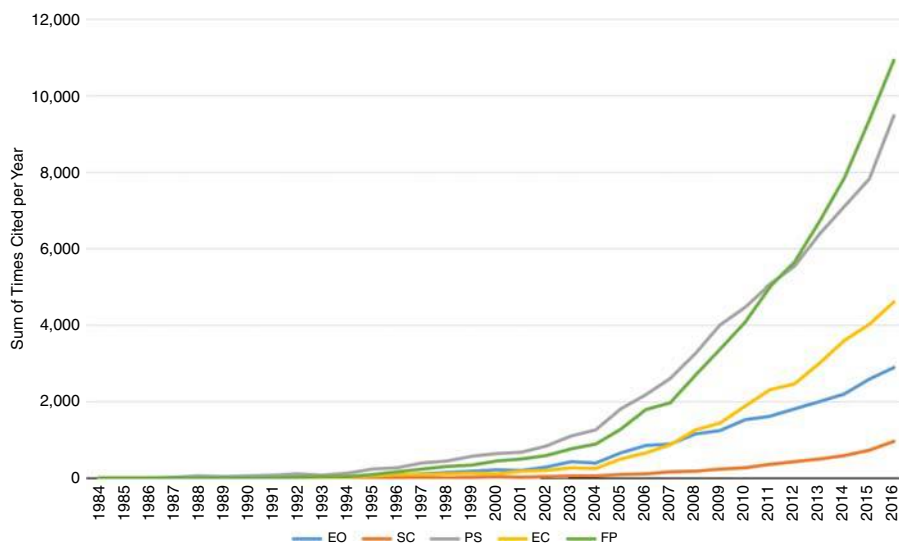


Figure 1.
Participation in
economic returns:
annual changes in
citations

Source: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018)

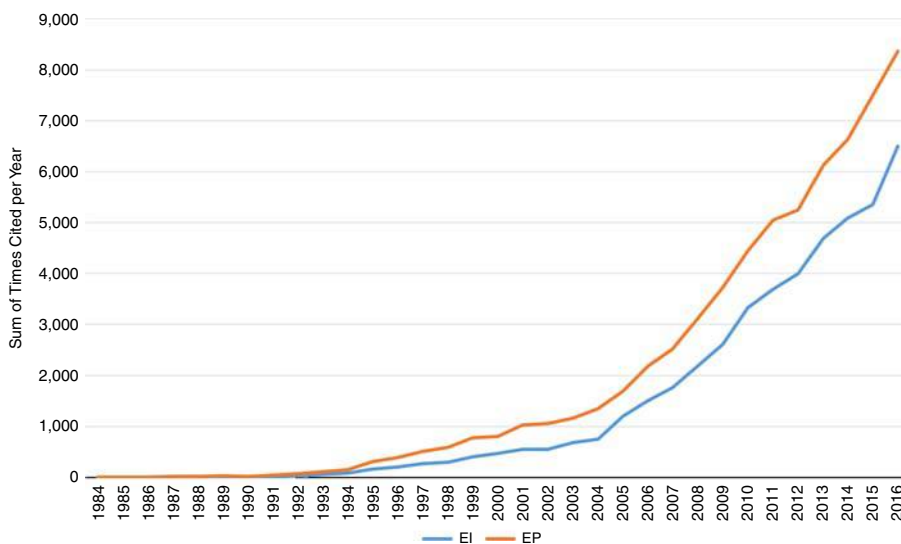


Figure 2.
Participation in
control: annual
changes in citations

Source: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018)

To investigate the changing influence of PEO within economics I report data for selected key terms in PEO alongside similar data but for other sub-fields within economics, namely, trade unions, labor unions, human resource management, cooperatives and industrial relations. From Figures 5–7 we see from h-index and citation data evidence that typically the field of PEO is at least holding its own and in some cases gaining in importance relative to these comparison areas. For example, from Figure 5 we see that the h-index for EI and EP exceeds that for labor union, trade union and HRM. While from Figure 6 total cites for

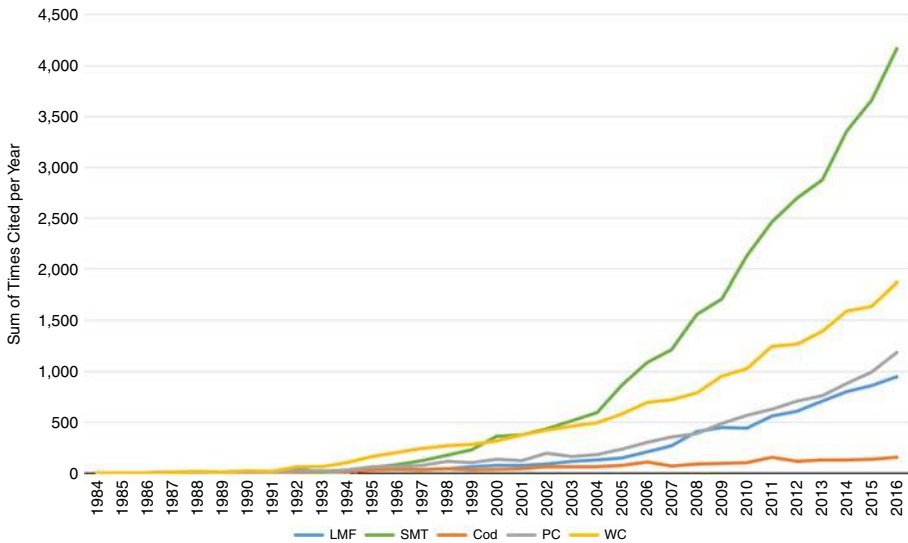


Figure 3.
Cases: annual changes
in citations

Source: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018)

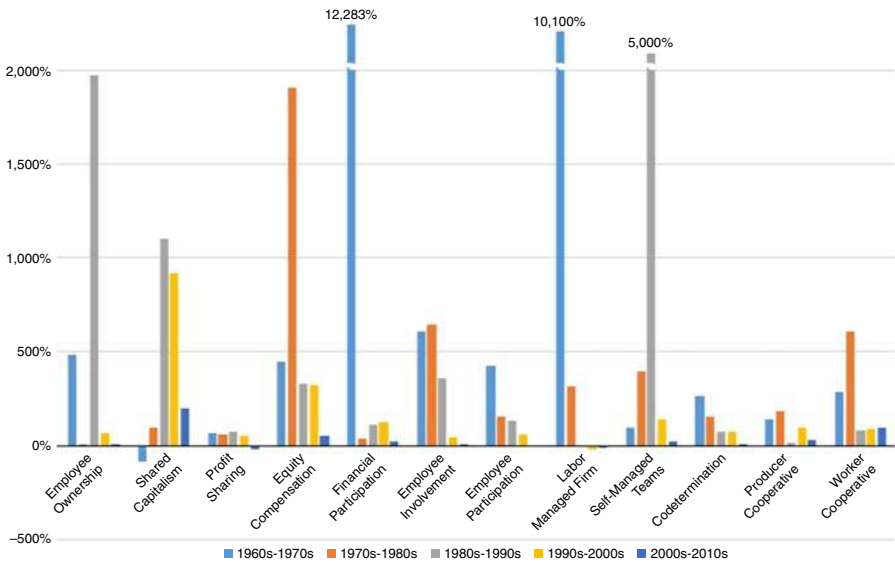
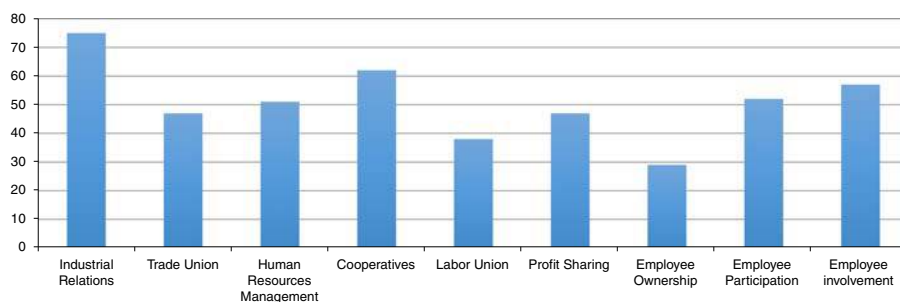


Figure 4.
Percent change in
citation by decades for
key terms

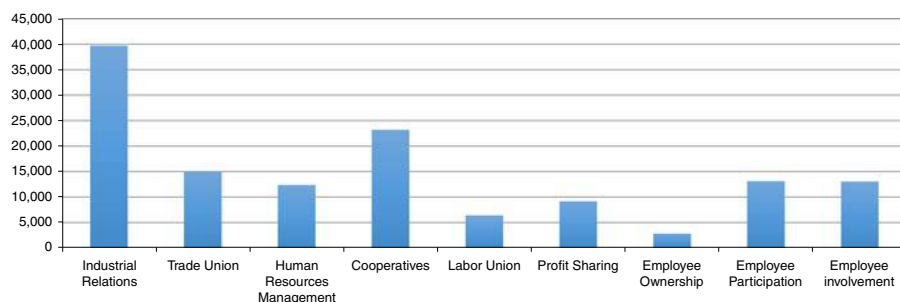
Source: Google Scholar (accessed December 23, 2017–January 10, 2018)

industrial relations and cooperatives are much higher than most terms in PEO, Figure 7 often indicates a catch-up underway for some PEO terms, especially EI and EP. Other commentators have noted in recent years the challenges facing long established fields such as industrial relations (e.g. Kaufman, 1993, 2004), as well as the opportunities presented to other newer fields, such as HRM. The data reported in Figures 1–7 perhaps imply that the growth of PEO may have been insufficiently appreciated in previous analyses that have



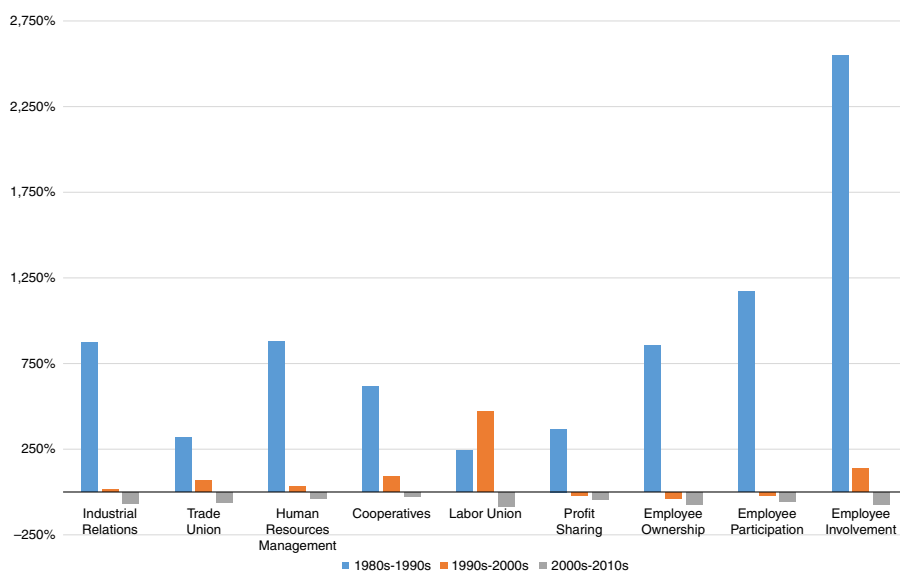
Sources: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018). To calculate the h-index, the key term appears in at least h papers each of which has been cited in other papers at least h times

Figure 5.
1984–2017 h-index for comparison terms



Source: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018)

Figure 6.
1984–2017 citations for comparison terms



Source: Web of Science Core Collection (accessed December 23, 2017–January 10, 2018)

Figure 7.
Percent change in citations by decades for comparison terms

focused on the difficulties in maintaining traction that some field such as IR may have experienced in recent years; of course, it is possible that the growth in PEO may also have perhaps contributed to the relative decline of traditional IR.

6. Influential studies and scholars within PEO

To identify the most influential studies and scholars within PEO in this section I mainly rely on manually collected citation data[24]. To identify the most influential individual studies I compile a citation-driven list of the most cited empirical works where, to appear in the list of the most cited scholarship in PEO, normally a GS citation count that exceeds 250 is required. While I exclude all influential theoretical papers such as Ward (1958), Freeman and Lazear (1995), Holmström and Milgrom (1994), Kandel and Lazear(1992), because of their wider impact during earlier years in other fields, I do include some of the more influential books written by economists such as Vanek (1970), Horvat (1982), Ellerman (1993) and Dow (2003) and the review by Meade (1972) which do not contain original empirical work[25]. Likewise I include influential surveys which also may not contain original empirical work, e.g. Bonin *et al.* (1993). In relying on a procedure that uses cumulative citations I recognize that such an approach that is clearly biased against younger scholars. In particular, the more recent work by younger scholars is de-emphasized, if not ignored[26]. By implementing this procedure, 52 studies are identified. These 52 studies are listed in Table IV together with their GS counts. Based on these count data for individual studies I make six observations.

Authors(s)	GS	Authors(s)	GS
Addison <i>et al.</i> (2001)	265	Ichniowski <i>et al.</i> (1996)	1,013
Applebaum and Batt (1994)	1,747	Ichniowski <i>et al.</i> (1997)	3,589
Applebaum <i>et al.</i> (2000)	2,861	Jones and Svejnar (1982)	367
Bartel (2004)	350	Jones and Kato (1995)	428
Ben-ner and Jones (1995)	420	Kato and Morishima (2002)	218
Black and Lynch (2001)	1,704	Kruse (1993)	429
Black and Lynch (2004)	862	Kruse and Blasi (1995)	318
Blair (1995)	2,166	Kruse <i>et al.</i> (2010)	220
Blasi <i>et al.</i> (1996)	340	Lemieux <i>et al.</i> (2009)	552
Blasi <i>et al.</i> (1997)	586	Levine (1990)	998
Bloom and Van Reenen (2007)	2,063	Meade (1972)	594
Bloom and Van-Reenen (2010)	877	Oakeshott (1978)	298
Bonin and Putterman (1987)	304	Osterman (1994)	2,283
Bonin <i>et al.</i> (1993)	561	Osterman (2000)	1,011
Brown <i>et al.</i> (2006)	338	Oyer and Schaefer (2005)	553
Bryson <i>et al.</i> (2002)	650	Thomas and Logan (1982)	440
Cappelli and Neumark (2001)	1,251	Vanek (1970)	1,160
Craig and Pencavel (1992)	286	Vanek (1975)	243
Doucouliaagos (1995)	426	Weitzman (1984)	645
Dow (2003)	433	Weitzman and Kruse (1990)	672
Ellerman (1992)	257	Wilson and Peel (1991)	231
Eriksson (1999)	572		
Estrin <i>et al.</i> (1987)	211		
Estrin <i>et al.</i> (2009)	518		
Fitzroy and Kraft (1987)	379		
Freeman and Rogers (2006)	823		
Gittleman <i>et al.</i> (1998)	392		
Hamilton <i>et al.</i> (2003)	791		
Horvat (1982)	350		
Hübler and Jirjahn (2003)	314		
Ichniowski and Shaw (1999)	524		

Table IV.
Authors of 52 most
cited studies

First, there are some interesting observations to be made about the overall nature of this body of scholarship. Despite books typically not being viewed as the most effective way to communicate scholarship in economics, more than 30 percent (16/52) of these studies are books. In addition, six of the most highly cited papers are essentially review pieces, though three do appear in top outlets, namely, the *JEL* and the *JEP*. Perhaps, compared to other fields in economics, the appearance of so many books and review articles is evidence of PEO taking a different tack to disseminate scholarship? Relatedly, relatively few articles in the list appear in what are generally considered the very top journals in economics—for example, only three articles were published in the *AER*, three in the *JPE* and two in the *QJE*.

Second, if a “superstar” paper based on a citation count is (say) 5,000, then this means that there no such paper within PEO written by an economist. As such this contrasts with the case for other fields within economics where this benchmark is broken and some papers that break 10,000 cites[27]. This situation also differs from PEO scholarship in other social sciences where there are papers with more than 5,000 cites (e.g. work by Lawler). This observation for citations for individual studies reinforces the observation that PEO is not as yet having an enormous impact within economics. Third, if a convenient benchmark for a strongly influential work is $GS > 1,000$, a small number—only eight—studies within PEO written by economists have attained that mark. Together these last two observations suggest that PEO remains a niche field within economics. With no “home-run” papers ($GS > 5,000$) and a relatively low number of papers exceeding 1,000 cites PEO to some extent may constitute a relatively small group of scholars citing each other’s work[28].

A fourth observation is that for some cases of PEO, the total cites are especially low. Note in particular that only one study on PCs or WCs attains more than 500 cites (several do not come close to reaching this bar despite their being published in top journals such as Craig and Pencavel, 1992 published in the *AER*). This suggests that the citation payoff to work within PEO varies by the specific case. Typically, the higher counts are for papers that investigate issues for cases where EI and FP coexist (as in Ichniowski *et al.*, 1997), but do so in situations that are less than majority employee owned or where employees have majority control. It appears that such minority ownership and control cases are of more interest to the general profession than investigations of the LMF. This is the case for highly cited studies of teams (e.g. Hamilton *et al.*, 2003) and work on incidence (e.g. Osterman, 1994). Most of the highly cited survey papers and books (including Applebaum *et al.*, 2000; Applebaum and Batt, 1994; Ichniowski *et al.*, 1996) also deal with types of PEO that do not investigate alternatives to capitalist arrangements, whereas Dow’s (2003) excellent survey of LMFs receives far fewer cites. Among instances of FP, the most highly cited papers are for profit sharing (e.g. Weitzman and Kruse, 1990) rather than studies of EO (e.g. with fewer than 450 cites Jones and Kato is the highest cited paper for that case).

Fifth, citation data suggest that many highly cited papers are not a “flash in the pan.” For example, for works published on or before 1995, typically 15–25 percent of total citations have appeared since 2010. In some cases, perhaps reflecting cycles of interest in particular types of PEO, there is some evidence of a recent acceleration of interest, with citations per year increasing (compared to some earlier periods). For example, the number of citations for Fitzroy and Kraft’s (1987) study of profit sharing increased by about 22 percent during the last ten years for which data are available (i.e. 2008–2017) compared to 1998–2007[29].

Finally, the most cited empirical work is for US cases. For other countries the most highly cited papers are those that investigated relevant issues within transition economies, such as the study of four East European countries by Brown *et al.* (2006) and the study by Blasi *et al.* (1997) on Russia. For other cases, including German works councils (Hübler and Jirjahn, 2003) citation counts are usually lower. Fifth, and finally, in 8/52 studies at least one author is female. Arguably this rate suggests that the citation bias against women in economics that has been identified (*Economist*, 2017) is not as evident within PEO as in the

rest of the profession and that PEO is more like some other sub-fields within economics that have proved to be relatively attractive to women (e.g. family economics).

To identify the most influential (cited) scholars I compile a citation-driven list. One way to appear in the list of the most cited scholars in PEO is for the scholar to have a total GS count that exceeds 4,000 and for at least one of the published works to appear in that scholar's top 10 of most cited works[30]. Another way to identify "highly cited scholars within PEO" is to calculate C5[31], the citation count for a scholar's five most cited works. To be deemed "highly cited" somewhat arbitrarily I chose a C5 score that exceeds 1,000. Again, while recognizing that the body of work of such scholars may not be concentrated within PEO, a requirement is that at least one of the scholars' top 10 most cited papers is published within PEO. Implementing this procedure identifies a list of 48 scholars that are judged as highly influential and information drawn from their citations is presented in Table V[32].

To better gauge the impact of PEO scholars within economics in Table V I compare total citations and C5 with similar measures for other economists who typically will not have published within PEO. A convenient comparison is with economists in top 30 schools, for whom Hammermesh (2018) has recently reported such data[33]. From Part A, we see that the mean value for scholars who publish in PEO is about 20 percent higher than for the corresponding numbers for top 30 schools (3,616/3,013). But more striking are the comparative values for the median C5—compared to the top 30 reference group the median C5 for PEO scholars is more than 260 percent as great (2,830/1,078). This finding suggests

	PEO scholars	Top 30 Econ Depts
<i>A. Distribution of C5</i>		
≥10,000	1	
9,000–9,999	1	
8,000–8,999	2	
7,000–7,999	1	
6,000–6,999	2	
5,000–5,999	5	
4,000–4,999	5	
3,000–3,999	6	
2,000–2,999	9	
1,000–1,999	14	
< 1,000	2	
Mean	3,616	3,013
Median	2,830	1,078
<i>B. Distribution of total cites on GS</i>		
≥50,000	1	
30,000–49,999	1	
20,000–29,999	4	
15,000–19,999	1	
10,000–14,999	6	
5,000–9,999	18	
4,000–4,999	5	
< 4,000	12	
Mean	9,424	8,395
Median	6,953	2,101

Table V. Individual scholars: distribution of C5 and total citations

Notes: $n=48$ (where either GS total $>4,000$ or C5 $>1,000$). C5=five most cited papers using GS; top 30 data from Hammermesh (2018); PEO scholars from Table IV

Source: Accurate data for total citations require an author be registered with Google Scholar and thus in some cases must be generated from manual searches (accessed December 23, 2017–January 10, 2018)

that there are some very productive scholars who publish in PEO. At the same time, Hammermesh reports that for the top 10 scholars in his sample (the “one-per-cent”), the average C5 was 38,818 whereas for the top 2 scholars in my sample the average C5 is 10,043 reinforcing the previous observation that, by this measure, it might be hard to judge any PEO scholars as “superstars.” However, Part B, which uses total citation data, suggests a slightly different picture. At least one PEO scholar has over 50,000 citations. Since Hammermesh (2018) finds that for the 95th percentile total citations average 39,844, and for the 99th percentile the corresponding number is more than 103,000, this PEO scholar is in very select company. Finally, among the 48 highly cited scholars there are seven women. I suspect this rate of representation is at least comparable to the situation in most other fields within economics. Moreover the average C5 for these women is 4,577[34]. This exceeds the corresponding number for men within PEO and is another snippet of evidence that the citation bias against women in economics is not as apparent in PEO as in other fields.

7. Qualitative assessment

While the citation way of assessing individual studies and the contributions of individual authors may be considered as largely market driven, since the world is riddled with market failure using another and more qualitative way to assess studies by reading them is a useful complementary procedure. To this end I review the contributions of several of the most influential and mainly empirical studies in the field of PEO. I take a sweeping look at the hypothesis-testing literature written by economists in the last 40 years or so. I try to assess what represent some of the more important advances and milestone studies in the field of PEO and try to answer questions such as: For which types of PEO and for which matters is the impact the greatest? What is the state of knowledge in empirical work in this field?

To facilitate the process of evaluating this empirical literature, I organize my remarks in two ways. By drawing on the typology of cases in Table I four distinct types of relevant firms (such as firms with some employee ownership (EOFs) but with limited or no EP) are identified. But the main organizing principle for this review will be driven by a selected list of issues with which the bulk of empirical work has been concerned. In the main many of these matters first appeared on the agenda as empirical work for the case of LMFs/WCs. Thus, the bulk of work that has appeared has been concerned with the issue of the impact of EI and/or FP on economic performance and I spend most time in reporting and assessing that work. Other empirical work in PEO investigates several other issues including: several issues relating to incidence, including entry, exit and attrition; the alleged tendency to degenerate; employment adjustment, both compared to IOFs and over the cycle; investment behavior; selection and matching of workers and participatory firms including links with absenteeism/retention; inequality. There is also a much more limited literature that examines outcomes or workers, where a key issue is the link between programs that provide for PEO and job satisfaction.

In selecting what I judge to be “milestones” in the broader field, I will mainly rely on citation counts for deciding which among the lists of potentially influential works have had an impact. In addition I will also include works that are often viewed as influential independent of citation count. To that end I also reference some studies by “emerging” scholars and some studies that have not been as well cited but which, in this author’s opinion, are important to students of PEO. This is of course a hugely ambitious and necessarily idiosyncratic process and I apologize for what undoubtedly will be serious omissions and failings of mine in this exercise.

7.1 Performance

The conventional wisdom is that because of phenomena such as free riding and the inability of firms with PEO arrangements to resolve agency issues, PEO firms will underperform.

At the outset it should be noted that this stands in sharp contrast to the published record. For many forms of PEO, individual studies have been extensively reviewed including for LMFs in Dow (2003) and Pencavel (2013) and for firms with more limited forms of EI and or FP by Applebaum and Batt (1994), Applebaum *et al.* (2000) as well as Ichniowski *et al.* (1996). Nearly all these reviews point to positive effects of PEO.

Turning to individual studies, for PCs (WCs), the early work was often restricted by the limited size and duration of the data and, in particular, by being confined to information for only PCs. Nevertheless this did not prevent some significant contributions from being made. For example, on the matter of business performance the first published example of using augmented production functions to investigate the impact of participation and ownership on performance is Jones and Backus (1977). Augmented production functions have continued to be a workhorse technique within PEO empirical work more broadly and also subsequently in other fields within economics. Another useful contribution is Estrin *et al.* (1987) while only PCs are investigated, this paper reports some of the first econometric evidence on the important influence of organizational characteristics (such as the member stake and membership ratios) that vary within and across samples of PCs and based upon separate estimates for the three different countries. It points to the importance of institutional make up and organizational features such as collective capital and individual ownership for business performance. An important implication is that the design of the optimal PC is far more nuanced than early theory (e.g. Ward, 1958; Vanek, 1970) might assume and that there are important roles for organizational features of both the primary PC and supporting structure.

In more recent years, there have been several important contributions for WCs. Arguably this process has accelerated as scholars have gained access to better data, a difficult matter when rigorous hypothesis testing preferably demands panel data for LMFs and conventional firms. By using new data for LMFs and capitalist twins for plywood PCs and IOFs (Craig and Pencavel, 1992), establish that plywood PCs outperform their capitalist counterparts. Similar findings have emerged for other cases where authors include emerging young scholars, e.g., for Urugyan PCs (Burdin, 2014) and French WCs (Fakhfakh *et al.*, 2012). In both cases large representative samples of firms in a range of industries including services are used and generate more robust findings than contained in earlier work and, in both cases, WCs are found to be either as or more productive than conventional firms. The contention that LMFs produce at inefficiently low scales is also refuted[35].

For firms with only FP there have been several key contributions that have investigated the impact on performance for firms with FP alone[36]. During the last 30 years or so several of these articles do seem to have left a bigger mark within the broader economics profession than has work on LMFs. Studies of FP alone include studies that investigate cases of profit sharing, EO and other group incentives[37].

For profit sharing, while the theoretical book by Weitzman (1984) had a large impact within the economics profession, the key studies are Weitzman and Kruse (1990) and Kruse (1993). The latter develops a database from 500 public US firms over the period of 1979–1991 and finds evidence of superior business performance by firms with PS. While the co-authored piece does not present fresh evidence, a comprehensive survey of the literature to that date is provided. The authors calculate that the average effect of profit sharing on productivity (for average amounts of profit sharing) is 7.4 percent and the median effect is 4.4 percent.

For EO, most work on performance–PEO links have investigated US firms though there have also been useful studies for the UK and influential studies for both Japanese ESOPs and firms with EO in transition economies. Arguably, Jones and Kato (1995) is the milestone study. They investigate public firms in Japan and assemble a new panel data set. By estimating fixed effects production functions with diverse specifications they find that

the introduction of an ESOP will lead to a 4–5 percent increase in productivity on ESOPs and that the productivity payoff takes three to four years. The inclusion of firm fixed effects arguably produces some of the first causal evidence on the performance–EO link.

For EO in the USA the most prominent early paper was Blasi *et al.* (1996). By several measures (including growth and profitability) they find that their sample of 562 public companies with at least 5 percent of stock owned by employees typically had stronger performance than other listed firms. However, the availability of EO data for one point in time limits the reliability of the findings. More recently, the most influential study in this area is Kruse *et al.* (2010). The authors undertook a survey of over 40,000 employees in 14 companies and 323 worksites that had a variety of shared capitalism programs. This is a large data set for a case study, although the firms do not constitute a representative sample of firms with arrangements for shared capitalism. One of the more interesting findings was evidence that workers with FP were more likely than other workers to act against “shirking” by fellow workers. Moreover, worker co-monitoring or anti-shirking behavior is associated with higher worker effort and better workplace performance. As such this represents some of the strongest evidence to date for this key mechanism by which EO enhances business performance and against the “free-rider” problem. In a more recent study Kim and Oiumet (2014) investigate broad-based employee share ownership plans. They find that when ESOPs comprise less than 5 percent of shares granted by firms with moderate employee size, there are benefits to both employees and shareholders. However, this effect is dissipated in larger firms perhaps because of enhanced free-riding. They also note that, unsurprisingly, because ESOPs are often implemented for non-incentive purposes such as forming a worker–management alliance to thwart a hostile takeover, average impacts are small.

There was also an important strand of literature on the potential performance effects of EO for transition economies. It was widely believed that providing employees with either free or heavily discounted shares during privatization would not benefit firm performance, either because corollary measures were needed or EO would prove to be transient. The bulk of work did produce findings along these lines (e.g. for Russia, Blasi *et al.*, 1997). However, most studies were unable to effectively disentangle the various forms of private ownership, including EO. For example, perhaps the most comprehensive study is Brown *et al.* (2006). They assembled data for most manufacturing firms inherited from the former planned economies for Hungary, Romania, Russia and Ukraine, and could distinguish between firms privatized to foreign investors and those privatized to domestic companies and individuals, but not to employees. Most studies discussed in Estrin *et al.* (2009) had similar restrictions, though Estrin *et al.* do note that in the few cases when EO could be identified there was evidence of a promising impact on business performance.

There are fewer studies that investigate the impact on performance of EI arrangements alone. However, there have been a lot of innovations in recent years with the more rigorous studies often employing insider-econometrics methods that are focused on particular type of PEO[38]. On teams, the milestone study is Hamilton *et al.* that investigates the impact of team composition in self-managed online teams on productivity using data from a garment plant that shifted from individual piece rates and individual production to team production and group piece rates. They find the adoption of teams at the plant improved worker productivity by 14 percent on average[39]. Productivity improvement was greatest for the earliest teams and diminished as more workers engaged in team production, providing support for the view that teams utilize collaborative skills, which are less valuable in individual production. High-productivity workers tended to join teams first, despite a loss in earnings in many cases, suggesting nonpecuniary benefits associated with teamwork. Finally, more heterogeneous teams were more productive, with average ability held constant, which is consistent with explanations emphasizing mutual team learning and intra-team bargaining[40].

The other institutional form of PEO for which focused work has appeared is for codetermination and works councils in Germany. For codetermination, an early study is Svejnar (1982). He uses industrial-level data and finds either an insignificant or slightly negative impact of codetermination on productivity. But by using establishment-level data, Hübler and Jirjahn (2003) find that works councils have productivity-enhancing impacts when compared to establishments without works councils. Also, works councils are found to be less engaged in rent-seeking activities than uncovered establishments. In a more recent paper Mueller and Stegmaier (2017) estimate the dynamic effects of works councils on labor productivity. While during the first five years after the introduction of a council there is an adverse impact on productivity, subsequently (and consistent with a learning hypothesis) there is a steady and substantial increase in the councils' productivity effect. Overall their findings underscore previous work that finds a positive relationship between council existence and plant productivity.

When EI and FP coexist the empirical literature typically focuses on the idea of complementarities. This has produced some of the most interesting and influential work for PEOs on performance[41]. From the typology identified in Table I it is clear that performance studies potentially span cases for many cells in the body of the grid. There have been many influential reviews of work that focuses on synergies between EI and FP. These include Applebaum and Batt (1994), Applebaum *et al.* (2000), Ichniowski *et al.* (1996) and Bloom and Van Reenen (2010). At the same time, most of these studies also point to other HR factors that are hypothesized to reinforce the performance effects of EI and FP, such as worker training and other management practices. In addition, Doucouliagos (1995) used meta-analytic techniques to synthesize the results of 43 published studies concerning the effects on productivity of various cases of PEO. While his findings do not relate explicitly to the complementarity hypothesis he finds that the impact on productivity is “[...] stronger among labor-managed firms (firms owned and controlled by workers) than among participatory capitalist firms (firms adopting one or more participation schemes involving employees, such as ESOPs or quality circles)” (p. 58)[42].

The most influential individual study in this genre is Ichniowski *et al.* (1997). The authors personally collect data from 36 homogeneous steel production lines in 17 US steel mills and undertake an econometric case study. Of particular note is the authors attempt to construct in a systematic way systems of HR practices, some of which include EI and FP practices (and alongside other HR practices such as training). Table II describes four systems. The traditional HRM System (4) is characterized by: “close supervision by foremen; strict work rules and narrow job responsibilities; incentive pay based on quantity of output and not quality of output; no work teams; no practice of managers sharing financial information or meeting regularly off-line with workers; no screening; and no off-line or other formal training.” The other systems move away from this benchmark with HRM System 3 including weak teams (but no FP) while HRM System 2 includes strong teams and some provision for “multiattribute incentive pay (including profit sharing)” and, finally, HRM System 1 that incorporates an incentive pay system and high levels of EI in multiple problem-solving teams. Their findings support the complementarity hypothesis—lines using the more innovative work practices, including incentive pay, and teams have substantially higher levels of productivity than do lines without these features. They also consider, albeit in a more preliminary way, other key issues including the evolution of the four systems and why if the HRM System 1 generates the highest productivity it is not adopted by all mills. On the latter issue, they conjecture that there may have been information failures—managers had limited knowledge about the effects of HRM. The other explanation is that “nonpecuniary barriers” to change may have existed. These might arise from the reluctance of managers and workers to acquire new skills and to establish different work relationships.

In a subsequent study the focus is on the comparative productivity of US and Japanese plants and the parts that EI and FP might play in accounting for any differences (Ichniowski and Shaw, 1999) as in the study of US mills alone the authors personally collect the data. They find that the range of HR practices in the typical Japanese mill includes profit sharing and teams and is more comprehensive[43] than in the comparable US case. They find that the Japanese lines are much more productive than the US lines but when US manufacturers adopted a system of practices comparable to those in Japan (and including EI and FP) levels of productivity and quality equal to the performance of the Japanese manufacturers are attained.

While Bartel (2004) does not focus on a specific type of PEO, her study is important since it is one of the first in the area to venture outside manufacturing. As part of her investigation of the relationship between HRM and performance for a retail bank, she sees, as do others in the HRM field (e.g. Applebaum *et al.*, 2000) that the core of a high-performance work system, is when the organization enables non-managerial employees to participate in substantive decisions. One of the HR indices she constructs (opportunity to participate) builds off that perspective and is included in her branch-level production function estimates. She also attempts to capture the impact of incentive systems. While the author does not explicitly test for complementarities some of the reported fixed effects results reveal a positive effect on bank performance of: a component of the “opportunity to participate” dimension of the high-performance work system; and the incentives dimension of a high-performance work system.

Kato and Morishima (2002) build on the systems approach developed by Ichniowski *et al.* (1997) but do so for a larger firm-level sample and for firms in multiple Japanese industries. Their clusters of participatory employment practices include participation/EI at the top level as well as at the grassroots level. They also include a broader measure of FP measures than was used in the study of US steel mills though their empirical work does not distinguish between different kinds of FP. They find that the introduction of a group of complementary practices will lead to a significant 8–9 percent increase in productivity but that this effect is evident only after some time.

Another body of work that has been highly influential in this space is Black and Lynch (2001, 2004). In both papers the authors find that workplace innovations, including teams, EI in decision making and incentive pay have helped to generate large and sustained productivity improvements. In the later paper they establish such findings based on US data during 1993–1996 and by estimating production functions for two years, namely, 1993 and 1996. Interestingly, they find that higher productivity was not always associated with adoption but rather the particular way of implementing a particular work practice. For example, “[...] simply adopting a Total Quality Management system has an insignificant or negative impact on productivity unless the proportion of workers involved in regular decision making within the plant is also high” (2004, F102). Also the way labor unions worked mattered. Unionized plants that had adopted new workplace practices, such as greater EP in decision making, performed much better than even non-union plants that had adopted similar workplace practices when the union was believed to protect job security[44].

Finally, note that not all empirical work finds evidence for complementarities. In their study of UK firms Pendleton and Robinson (2010) provide a more nuanced picture of the relationship between EO and EI with productivity. Their results show that when there is minority participation in the EO plan, such plans seem to need other forms of EI in the firm to be effective. However, majority participation in the EO plan has an independent effect on productivity. And in their recent study of Finnish firms, Jones *et al.* (2017) find weak evidence for complementarities. Also there is some literature for transition economies that investigates the potential performance effects of EI and FP together,

though it does not appear that there are firm-level studies of the complementarity hypothesis for transition economies. One example is Jones *et al.* (1998) who use Bulgarian data to estimate stochastic frontier models and find that enterprise performance typically was unaffected by labor management relations and unionization though it was enhanced by incentive compensation arrangements.

7.2 *Issues on incidence, entry and exit, and degeneration*

One set of issues surrounds aspects of the life cycle for the form of PEO. The most influential work in this area investigates the determinants of the incidence of particular types of EI and or FP—e.g. which firms have EO and why (and when does a particular practice work especially well)? Related matters include understanding the adoption of particular practices and when the practice might disappear (attrition). For the case of the LMF/WC the comparable issues include those of the determinants of the entry and exit of LMFs and also understanding whether and why real-world LMFs “degenerate”—change from firms with substantial worker-membership ratios into organizations where a few worker members exert most power.

On incidence the earliest and most influential work is that of Osterman (1994). This was the first survey (for 1992) to provide evidence for the USA on the incidence of innovative work practices. Some of these practices included forms of EI such as quality circles and Osterman estimated that about one in three US establishments made significant use of flexible workplace practices. In addition, the study had some but more limited information on FP schemes but there was no econometric attempt to investigate the determinants of incidence for either FP or EI. In a later study, Osterman (2000) revisits the issue and employs a different way of looking at incidence. In the main there has been limited econometric work subsequently to investigate incidence issues in more rigorous ways. Exceptions include Jones and Pliskin (1997) who use Canadian data to examine the determinants of the probability that a firm offers four group incentive schemes to non-managerial workers, Kruse (1996) who investigates the adoption of profit sharing, and Jones and Takao (1993) who investigate the rapid diffusion of ESOPs in Japan and find, amongst other things, that ESOPs were apt to be introduced when recent business performance was sub-par.

So far as adoption and attrition are concerned there appears to have been even less work to date than for incidence. One of the few papers that investigates the issue of attrition for any form of PEO, in this case EI, is Chi *et al.* (2011). Eriksson and Ortega (2006) undertake one of the few studies for why firms adopt job rotation. By merging information from a detailed survey of Danish private sector firms with linked employer–employee panel data, allowing firm characteristics, work force characteristics and firms’ human resource management practices to be included as explanatory variables, they find supportive evidence for hypotheses based on employee and employer learning. Some work in this general area was also undertaken for transition economies. In some economies the demise of the state sector and the rise of privatization provided for a wide array of non-state ownership forms to emerge and the dynamics of these diverse ownership structures (including firms with majority ownership by non-managerial employees) to be investigated. Using new panel data for a large random sample of Estonian firms, Jones and Mygind (1999) do not find evidence of a rapid movement away from the initial ownership structures (supposedly toward more efficient ownership structures), the view that underlay much of the conventional theory on privatization.

Some of these issues have also attracted the attention of researchers on LMFs. Here an enduring puzzle is, given the findings on the pronounced productivity edge for LMFs, why do so few WCs exist. Some of the better work has been undertaken for French PCs. Perotin (2006) using French data for co-ops and investor owned firms finds that entry is

the problem—cooperative creations are more countercyclical compared to the formation of capitalist firms. Once established, the exit rate for WCs is found to be similar to that for other firms. These findings reinforce the results in an earlier paper (Estrin and Jones, 1992) which provides persuasive evidence against the degeneration thesis for a sample of French PCs.

7.3 *Employment adjustment*

The issue of how LMFs adjusted over the cycle was of central interest to theorists (e.g. Vanek, 1970) and also captured the attention of theorists of economies where firms practiced profit sharing (e.g. Weitzman, 1984). That being said and given persistent concerns about policy issues such as the impact of technology on employment, it is surprising how little empirical work exists in this area for cases of PEO. Most studies find evidence that profit sharing dampens employment fluctuations. An early attempt to gauge the employment effects of PS was Kruse (1991). Based on a large panel of US firm-level data he finds that profit-sharing manufacturing firms had smaller employment decreases than other manufacturing firms during business downturns. Using a sample of British firms, Jones and Jeffrey (1989) also find modest effects in most cases.

In more recent years, empirical work on this matter has begun to appear for other forms of PEO. For works councils in Germany, Addison and Teixeira (2006) find evidence of a small negative effect on employment growth. However, for firms with EO, and as for profit sharing, the typical finding is one of the PEO feature promoting employment stability. Note in particular, Kurtulus and Kruse (2017). In that book and based on diverse specifications, they provide evidence that EO firms have more employment stability and are better equipped to survive recessions than investor owned firms.

7.4 *Investment*

A recurring claim for some theorists was that LMFs would underinvest. While this issue has not attracted nearly so much attention from theorists concerned with other forms of PEO, for all types of PEO it is conspicuous how little empirical work exists. Equally, it is striking how the available evidence refutes the underinvestment proposition. For LMFs, Estrin and Jones (1998) find convincing evidence against underinvestment in a sample of French PCs. For German works councils, Addison *et al.* (2007) use establishment panel data for the years 1998–2003, and find no evidence that a works council's formation adversely affected investment or that its dissolution favorably affected investment. In their study of valve manufacturing, Bartel *et al.* (2007) provide indirect evidence of a positive link between some forms of EI and one form of investment. Specifically, adoption of new IT-enhanced capital equipment is found to require increases in the skill requirements of operators, notably technical and problem-solving skills (i.e. increased investment). In turn, to support these skills, this leads to the adoption of new human resource practices (including the adoption of teams and the need for more frequent shop floor meetings).

7.5 *Selection and matching of workers and PEO firms including links with recruitment, turnover, absenteeism/retention*

While this is another issue which one might have expected to garner much empirical work, it appears that in fact not many rigorous studies exist. One exception is Wilson and Peel (1991). While their data are a small sample (52 firms) and span only two years, they find that firms with diverse schemes for EI and or FP participation schemes had significantly lower average absenteeism and quit rates than firms without such schemes. Fakhfakh (2004) also uses a small panel (129 French firms) but for a longer, ten year period. He investigates the effects of

profit sharing and employee share ownership on voluntary quits. Unlike previous studies he finds that profit sharing has no significant effect on quits. By contrast, employee share ownership reduces voluntary quits significantly.

7.6 *Inequality*

Recent years have observed huge increases in diverse measure of income inequality, including within-firm wage differences, in part reflecting soaring CEO pay. In investigating the impact on inequality for PEO firms, most studies have focused on firms with various kinds of performance pay. Lemieux *et al.*'s (2009) study is perhaps the best known study. By using data from the Panel Study of Income Dynamics, they show a potential link between performance pay (which may include group incentive pay) and higher wage inequality, accounting for as much as one-fifth of the growth in the variance of male wages between the late 1970s and the early 1990s[45]. Song *et al.* (2015) develop a very large matched employer–employee database for US firms between 1978 and 2013. Much of the observed growth in inequality reflects within-firm (as opposed to between-firm) inequality, with high earnings workers benefitting especially from incentive payments, presumably including group incentive schemes[46].

7.7 *Worker outcomes*

For workers, the key outcome issue arguably is the link between programs that provide for PEO and job satisfaction. My sense is that there is surprisingly little reliable evidence on this matter for various cases of PEO. Often findings square with predictions—e.g. in Kruse *et al.* (2010) and the findings of a positive impact on job satisfaction of enhanced shared capitalism. However, sometimes findings are at odds with simple expectations and may require more nuanced interpretations. For the case of Mondragon, for example, Arando *et al.* (2015) find that workers in cooperatively owned retail stores do not have higher levels of job satisfaction than do workers in retail stores with no or little EO.

8. Conclusions and implications

This paper begins by discussing the evolution of PEO and arguing that indeed there is a field of PEO, rather than PEO representing a subfield of something else. At the same time, PEO has been characterized by markedly changing contours, especially a marked movement away from its origins when the overwhelming focus was restricted to the theory of the LMF. However, by various indicators, the tilt toward an emphasis on FP rather than EI has not been as pronounced as some might have expected. While as noted earlier there are several issues concerning the precise nature of the field, one should also note that this is not a remarkably different situation than for other related interdisciplinary fields such as HRM and industrial relations[47]. It is trite to remark that more work is needed in pinpointing the precise parameters of the field and how it is distinguished from related areas of study[48].

Perhaps unsurprisingly I noted that there are significant gaps in our knowledge of the scope and nature of PEO around the world, past and present. While things have improved in our knowledge of the terrain, one thing we need to be doing more of is improving the range of basic facts for a broader range of cases of PEO. It would be serendipitous if a scholar of the nature and mettle of Angus Maddison could appear and undertake the task of assembling the historical data! Going forward, not only does a need exist for better mapping of the landscape, but there is a need for an enhanced inventory of types of EI and FP and devices/typologies to distinguish the myriad forms of EO and EI. More opportunities exist for influencing the nature of on-going administered surveys in various countries to insert questions and modules so that we better understand the scope and nature of PEO[49].

Also, in various countries, there may be openings for researchers to gain access to data which are not publically available. That is, when well thought out proposals are presented and the potential policy uses of fresh empirical analysis are demonstrated, this will result access to these data being granted. Relatedly, some opportunities to try to undertake cross-national collaboration in the development of useful databases for firms with PEO might exist[50].

By using citation data I also concluded that there is some evidence that the field of PEO is growing relative to other areas. In part this is explained by the modest build-out of supporting infrastructure, notably the twice-annual meetings at Rutgers and La Jolla driven by the efforts of colleagues at Rutgers. Hopefully the launch of this journal will add to that push. But as we try to build a community of scholars in PEO there are a couple of simple steps that might pay dividends. For economists, one suggestion is that we should agitate for a JEL code that uses this label. (My sense is that this has been done for other related fields, such as personnel economics, and earlier for the labor managed firm and producer cooperative). Relatedly, to further promote identification of a the field, all who publish in this journal, not just economists, should be encouraged to register with GS and to identify one of their areas of interest as “PEO.”

In attempting to identify influential studies and scholars in PEO and then assess the impact of this work I use manually collected citation data. I am keenly aware that such an exercise faces large measurement error and huge selection issues. The exercise is necessarily a work in progress and I apologize in advance for scholars who have been inadvertently excluded and perhaps some who have been inadvertently included, not wishing to bear the moniker of “economist”! Using these citation data I conclude that there are few “home-run” studies in PEO; the bulk of the most influential (highly cited) studies would be viewed in the broader profession as singles with the occasional double or triple. However, many of these early studies have proved to have staying power—they do not appear to have merely transitory influence. Moreover, by using the C5 measure it appears that many economists who publish in PEO do relatively well—by this metric many PEO scholars are highly productive and their names appear on the radar within the broader profession. I make some specific comparisons with scholars at top 30 schools. There is also evidence that PEO scholars stay the course—compared to scholars in finance, they appear to keep publishing at a good clip well beyond tenure (perhaps distinct from the average finance economist based on the evidence presented in Brogaard *et al.*, 2018) also compared to their experiences in other fields within economics (Sarsons, 2017) there is some evidence that female scholars in PEO do relatively well.

Based on the qualitative assessment my main observation is that, in two senses, progress with empirical work has been very uneven. For some participatory forms there has been extensive progress in knowledge, i.e., strong publications have appeared on many issues for some forms of PEO. In my judgment, this is most evident for the LMF[51]. For other forms of PEO, advances have been more limited, though for some forms of PEO high-quality work on a range of issues has begun to appear in recent years (e.g. for works councils and employee owned firms). Relatedly, the scope/range of issues that have been addressed for these various types of participatory firm is quite uneven. The overwhelming bulk of the better studies are focused on the issue of performance. On that matter there have been many solid studies for which plausible findings of positive impacts of arrangements providing for PEO on business performance are found.

But on other matters for most cases of PEO the empirical surface has been barely scratched. Notwithstanding promising studies on some issues, arguably there are larger returns to empirical work on these other questions for which empirical work is slim. Thus, on the set of issues surrounding incidence, exit and entry, and attrition, it is clear that for most cases for most countries there is an enormous way to go to enhancing

understanding of both incidence and attrition and termination of cases of PEO[52]. There are also a raft of matters surrounding gender and ethnicity that are deserving of additional attention[53]. Of course the big constraint for this has been and will continue to be the difficulty in obtaining adequate data. Compared to many other fields my sense is that these data constraint has been a particularly pressing matter in PEO. It has meant that much empirical work has required scholars to assemble their own data. Going forward it is hoped that the constraint will soften for various reasons including PEO scholars gaining access to public data that requires permission to be used.

Acknowledgment

The author thanks Douglas Kruse, Andrew Pendleton, Jeffrey Pliskin, participants at the Kelso Workshop, Rutgers, January 2018 and the IAFEP Conference Copenhagen, June 2016 and an Editor for helpful suggestions. Neema Lema, Lynn Mayo, Teddy McKenna and Haoxiang Yang provided valuable research assistance. The paper was completed while the author held a COFUND Senior International Research Fellowship at Durham University's Institute of Advanced Study and a visitor at Durham University Business School for which the author is grateful.

Notes

1. Thus, unless their work is co-authored with economists, from the get-go I omit the contributions of many influential scholars in other social sciences such as Pendleton, Ramsay, Poutsma, Russell, Rothschild-Witt and Gospel.
2. Also significant was an edited collection of articles, Vanek (1975). This volume also indicates the early importance in stimulating the field of works by non-economists. Most notable was Pateman (1970) but several others exerted important influences including Blumberg (1969), Emery and Thorsrud (1969) and Greenberg (1986).
3. However, at the Cornell ILR school under the leadership of Bill Whyte, there was a parallel initiative. While it too was heavily influenced by the case of Mondragon, it had a broader focus than just the LMF.
4. For Horvat see especially his *The Political Economy of Socialism* (1982). For Vanek see *The Participatory Economy and Development Hypothesis* (1971).
5. In its day this was quite an influential journal. Unfortunately it suffered and then closed after the disintegration of the FR Yugoslavia; an attempt at revival was also short-lived.
6. One important exception is the US plywood firms and the volume by Berman (1967).
7. Even by the early 1970s the Mondragon set-up included many first degree cooperatives and supporting institutions such as a bank, the Caja Laboral Popular.
8. Also Meade's (1972) review article in the *Economic Journal* of Vanek's General Theory was very influential, especially in Europe.
9. Of course there had been empirical work on PEOs of various kinds before. One good example is Melman (1958). And in their monumental work on industrial democracy, the Webbs's (1897) argued that PCs were not a viable organizational form. But since such studies had few statistical controls their empirical findings are unreliable.
10. This would mean excluding influential studies such as Lazear (2000) where the change from time to piece rates is investigated. This focus on group incentives together with the focus on participation in control differentiates PEO from many topics at the core of standard personnel economics.
11. One example of a study that examines these sorts of implications for executive compensation is Eriksson (1999). In turn, this means that the typology outlined in Table I for workers alone may be a necessary but not a sufficient way of defining the field of PEO.

The arrangements outlined in Table I would be usefully complemented by a comparable typology for top managers. Then the two sets of arrangements would be documented and their interactions investigated.

12. Customized shared capitalism questions have been included in 2002, 2006, 2010, 2014, and 2018, and it is expected will be included every four years in the future.
13. Thus, Schlacter (2018) estimates for total employment in the population of US WCs in recent years is far below what the comparable estimates imply for earlier periods. For the UK Labor (2017) reports that in 2012 there were 80,000 members employed in WCs (and a further 75,000 non-member workers were employed by WCs). However, the bulk of these “members” worked at John Lewis. Even so this represents only 0.27 percent of total employment and around 2 percent of UK GDP. Contrast this picture with that portrayed for the UK for earlier periods, as in Jones and Backus (1977).
14. For the case of Finland see, for example, Jones *et al.* (2010, 2017).
15. There are other metrics such as Research gate and Social Science index. For a good discussion of the pros and cons of different measures see Hammermesh (2018). It does not appear that either much information is lost or the reliability of findings is significantly undermined by restricting the analysis to WOS and GS.
16. I restrict the analysis to the period since 1960 since the seminal article in the economic analysis of PEO was written shortly before then, namely, Ward (1958) GS data normally cover the period since 1960. However, my data using WOS are not available until 1984 owing to restrictions on the subscription service I have access to.
17. These data sources have many well-known weaknesses. A useful general discussion of some of these is contained in Neuhaus *et al.* (2006). For applications to economics, see the informative discussion by Hammermesh (2018) who concludes that using either GS or WOS does not introduce any significant bias in citation studies in economics, though GS has the advantage that, unlike WOS, cites are pulled from working papers and books as well as articles. The potential complications surrounding the handling of multiple authorship and self-citations are also discussed and, essentially, dismissed.
18. Unfortunately WOS and GS searches are not restricted to economics and cover all the social sciences. However, it is likely that economics has become the dominant field within the social sciences in the area of PEO.
19. Note that while PEO studies will focus on group incentive forms of PBC, the term itself is bound to catch studies that include individual PBC.
20. In these figures for key terms each “cite” is when that term appears in a publication. Thus, the h-index in this case for a key term (rather than is the norm for an individual scholar) is calculated when “The key term appears in at least h papers each of which has been cited in other papers at least h times.”
21. However, there are some exceptions. Most noticeable is shared capitalism.
22. By comparison, when counting citations for articles, Hammermesh (2018) finds that WOS totals are about one-fifth for those using GS.
23. A historical footnote. The author may have been largely responsible for PC in the earlier years. My British roots led me to be wary of identifying any organization with the label “WC”.
24. This manual approach is clearly a laborious procedure and, as such, prone to measurement error.
25. But I exclude largely theoretical work by others whom I judge to be peripheral to PEO. This includes much highly cited work including contributions by Sam Bowles, Herb Gintis and Ernest Fehr. Perhaps a stronger case could be made for including the work of others including Jensen and Meckling.
26. To some degree this bias is redressed in the qualitative section of the paper where I take account of selected works by younger scholars including Young-Hyman, Bova, *et al.*, 2015,

Kalmi and Kauhanen as well as the coterie of younger female scholars, including Ouimet, Gaga, Arando, Kurtulus and Gregoric. If one computes citations per year (rather than total citations) already some of these studies by younger scholars are faring very well, see, for example, Kim and Ouimet (2014).

27. For example, at least two papers by Stiglitz exceed 10,000 cites in GS.
28. Moreover, following what appear to be customary practices in other citation studies (e.g. Hammermesh, 2018) the underlying data are not adjusted when there are multiple authors or for self-citation.
29. The corresponding number for a study of employee ownership, Jones and Kato (1995) is more than 30 percent (i.e. 2008–2017 compared to 1998–2007), while for Jones and Svejnar (1982) the corresponding number is more than 25 percent.
30. Such an approach includes highly influential scholars such as Freeman who would not qualify if a criterion based only on C5, for example, was adopted. At the same time, it excludes scholars who have published in PEO but whose contributions have not fared as well according to GS as their contributions in other areas. For example, by this criterion some excluded scholars are Jacques Defourny, Carlo Borzaga, Danny Blanchflower and David Backus.
31. An alternative statistic is “h”. Unfortunately, this is not as reliable since its computation requires scholars to register on GS.
32. The data are presented anonymously in Table V. The underlying raw data can be obtained upon request from the author.
33. I recognize that this kind of comparison has selectivity issues—I compare the most productive scholars in PEO with all scholars who are at major research institutes. At the same time, the selectivity issue may be alleviated somewhat since many highly cited scholars in PEO are not at top 30 institutions but elsewhere where opportunities and rewards for research are not as great.
34. In computing the average C5 for women I count citations for the papers written by Black and Lynch and Prenushi and Shaw twice.
35. There is also a promising line of research that uses econometric case studies to investigate similar matters. Co-authors also include promising young scholars, e.g., on Mondragon see Arando *et al.* (2015).
36. Note also that influential theoretical pieces have sometimes documented features of interesting FP cases, e.g., Milgrom and Roberts (1995). They make extensive references to Lincoln Electric and note in the inclusion of that firm’s structure bonuses and piece rates, as well as other features including permanent employment, high levels of inventory, high rate of innovation, flexible work rules, lack of a union, hiring only at limited entry level positions.
37. Since my narrow definition of PEO excludes individual incentives this means that studies such as Lazear (2000), Mas and Moretti (2009) and Bandiera *et al.* (2005) are omitted. However, where studies appear to include group incentives (e.g. Lemieux *et al.*, 2009) they are included.
38. Other and potentially more influential studies in their disciplines are not reviewed here since they were not written by economists (e.g. studies by Macduffie and Batt).
39. While Hamilton *et al.*’s (2003) paper investigates the productivity effects of online teams, in a complementary econometric case study, Jones and Kato (2011) investigate offline teams. They use daily data on rejection, production and downtime rates for both team and non-team member operators to investigate the direct impact of offline teams on productivity. Findings indicate that membership in offline teams initially increases individual productivity by about 3 percent and lowers rejection rates by about 27 percent. These improvements dissipate, however, typically at a rate of 10–16 percent per 100 days in a team. Separately, de Varo (2008) using the British WERS cross-sectional data finds that while team production improves financial performance for the typical establishment, autonomous teams do no better than closely supervised or non-autonomous teams.

40. Young-Hyman (2016) is an excellent example of innovative scholarship by a young scholar in PEO. He investigates different distributions of ownership and governance rights in firms affect the optimal organization of cross-functional project teams for knowledge-intensive work.
41. Clearly some of the studies discussed earlier in this section are for cases in which either EI or FP does not exist alone—for example, in Japan, EO coexists with forms of EI such as quality circles and labor management committees. But in Jones and Kato (1995) the focus was on arrangements for FP alone.
42. O'Boyle *et al.* (2016) report findings from a more recent meta-analysis that focuses on EO in 102 samples representing 56,984 firms. They find that “[...] Employee ownership has a small, but positive and statistically significant relation to firm performance.” The effect is generally robust for studies with different sampling designs, varying ways of measuring performance and type of firm. They also find evidence that the effects of EO are increasing over time and stronger for firms from outside the USA compared to those within the USA.
43. Surprisingly, there is no discussion of share ownership nor of involvement in labor management committees.
44. There are other less well cited but studies that employ innovative methods. See, for example, one of the first applications of time series econometrics in PEO is an econometric case study of a food processing plant (Jones *et al.*, 2010) where the co-authors include two emerging young scholars Kalmi and Kauhanen (2010). See also Jones *et al.* (2017) where earlier work on HR systems is extended and applied to Finnish data and co-authors include Kalmi and Makinen.
45. Other studies investigate links between performance pay and inequality for other countries (e.g. such as Bryan and Bryson, 2016 for the UK). One complication in interpreting findings is that seldom are individual and group incentive schemes cleanly differentiated in the data.
46. There is some work on the links between PEO and inequality for other countries. Eriksson (1999) uses Danish data for 260 firms and his principal concern is to test diverse propositions from tournament theory. One key prediction concerning the efficiency of tournament pay structures is that a wider pay dispersion enhances the economic performance of firms. His finding of a weak relationship between enhanced pay dispersion and firm performance among Danish firms, which are widely considered to be highly participatory, gives pause for thought.
47. See, for example, Kaufman (1993) for industrial relations.
48. While the focus of this paper is empirical work, it is also clear that there are major challenges confronting theoretical questions and PEO. Among the cases of PEO the most promising theoretical work is for the LMF with important innovations continuing to be made (e.g. Dow, 2017), but for most forms of PEO no well-developed theories exist and progress has been far slower.
49. This has been done in the USA, for the GSS. Results are reported in Kruse *et al.* (2010).
50. Also opportunities may exist to augment existing data collection efforts (e.g. those managed by Bloom and Van Reenen on managerial practices) for cases of PEO.
51. By looking at influential surveys including Bonin *et al.* (1993), Pencavel (2013) and Dow (2003) this assessment seems to be broadly supported.
52. One issue to be addressed more thoroughly is that of endogeneity. Note how as part of his investigation of the effects on performance of teams in the UK, de Varo (2008) shows that standard methodological approaches that treat teams and autonomy as exogenous induces biases.
53. For example, recent years have witnessed strong pressures for enhanced female representation on corporate boards, especially in Europe. One of the first studies to investigate diverse matters surrounding the appointment of female directors to boards of directors is Gregorič *et al.* (2017). They use institutional theory and Nordic data to highlight various social pressures that act to maintain established practices and constitute potential barriers to institutional change.

References

- Addison, J.T. and Teixeira, P. (2006), "The effect of works councils on employment change", *Industrial Relations*, Vol. 45 No. 1, pp. 1-25.
- Addison, J.T., Schnabel, C. and Wagner, J. (2001), "Works councils in Germany: their effects on establishment performance", *Oxford Economic Papers*, Vol. 53 No. 4, pp. 659-694.
- Addison, J.T., Schank, T., Schnabel, C. and Wagner, J. (2007), "Do works councils inhibit investment?", *Industrial and Labor Relations Review*, Vol. 60 No. 2, pp. 187-203.
- Aoki, M. (1984), *The Cooperative Game Theory of the Firm*, Oxford, UK, Clarendon Press.
- Applebaum, E. and Batt, R. (1994), *The New American Workplace*, ILR Press, Ithaca NY.
- Applebaum, E., Bailey, T., Berg, P. and Kalleberg, A.L. (2000), *Manufacturing Advantage: Why High Performance Work Systems Pay Off*, ILR Press, Cornell, WI.
- Arando, S., Gago, M., Jones, D.C. and Kato, T. (2015), "Productive efficiency in the Mondragon cooperatives: evidence from an econometric case study", *Industrial and Labor Relations Review*, Vol. 68 No. 2, pp. 398-425.
- Bandiera, O., Barankay, I. and Rasul, I. (2005), "Social preferences and the response to incentives: evidence from personnel data", *Quarterly Journal of Economics*, Vol. 120 No. 3, pp. 917-962.
- Bartel, A., Ichniowski, C. and Shaw, K. (2007), "How does information technology affect productivity? Plant-level comparisons of product innovation, process improvement, and worker skills", *Quarterly Journal of Economics*, Vol. 122 No. 4, pp. 1721-1758.
- Bartel, A.P. (2004), "Resource management and organizational performance: evidence from retail banking", *Industrial and Labor Relations Review*, Vol. 57 No. 2, pp. 181-203.
- Ben-ner, A. and Jones, D.C. (1995), "Productivity effects of employee ownership: a theoretical framework", *Industrial Relations*, Vol. 34 No. 4, pp. 532-554.
- Berman, K. (1967), *Worker Owned Plywood Companies: An Economic Analysis*, Washington State University Press, Pullman, WA.
- Black, S.E. and Lynch, L.M. (2001), "How to compete: the impact of workplace practices and information technology on productivity", *Review of Economics and Statistics*, Vol. 88 No. 3, pp. 434-445.
- Black, S.E. and Lynch, L.M. (2004), "What's driving the new economy? The benefits of workplace innovation", *The Economic Journal*, Vol. 114 No. 493, pp. F97-F116.
- Blair, M.M. (1995), *Ownership and Control: Rethinking Corporate Governance for the Twenty-first Century*, Brookings Institute, Washington, DC.
- Blasi, J.R., Conte, M. and Kruse, D. (1996), "Employee stock ownership and corporate performance among public companies", *Industrial and Labor Relations Review*, Vol. 50 No. 1, pp. 60-79.
- Blasi, J.R., Kroumova, M. and Kruse, D. (1997), *Kremlin Capitalism: The Privatization of the Russian Economy*, Cornell University Press, Ithaca.
- Bloom, N. and Van Reenen, J. (2007), "Measuring and explaining management practices across firms and countries", *The Quarterly Journal of Economics*, Vol. 122 No. 4, pp. 1351-1408.
- Bloom, N. and Van Reenen, J. (2010), "Why do management practices differ across firms and countries?", *Journal of Economic Perspectives*, Vol. 24 No. 1, pp. 203-224.
- Blumberg, P. (1969), *Industrial Democracy: The Sociology of Participation*, Schocken Books, New York, NY.
- Bonin, J. and Putterman, L. (1987), *Economics of Cooperation and the Labor Managed Economy*, Harwood Academic Publishers, Chur.
- Bonin, J., Jones, D.C. and Putterman, L. (1993), "Theoretical and empirical studies of producer cooperatives: will the twain ever meet?", *Journal of Economic Literature*, Vol. 31, September, pp. 1290-1320.
- Bova, F., Dou, Y. and Hope, O.-K. (2015), "Employee ownership and firm disclosure", *Contemporary Accounting Research*, Vol. 32 No. 2, pp. 639-673.

- Brogaard, J., Engelberg, J. and Van Wesepe, E. (2018), "Do economists swing for the fences after tenure?", *Journal of Economic Perspectives*, Vol. 32 No. 1, pp. 179-194.
- Brown, J.D., Earle, J. and Telegedy, A. (2006), "The productivity effects of privatization: longitudinal estimates from Hungary, Romania, Russia and Ukraine", *Journal of Political Economy*, Vol. 114 No. 1, pp. 61-99.
- Bryan, M. and Bryson, A. (2016), "Has performance pay increased wage inequality in Britain?", *Labour Economics*, August, Vol. 41, August, pp. 149-161.
- Bryson, A., Forth, J.A., Neil, M. (2002), *Change at Work? British Employment Relations 1980-1998 Portrayed by the Workplace Industrial Relations Survey Series*, Taylor and Francis, London.
- Bryson, A., Freeman, R., Lucifora, C., Pellizzari, M. and Perotin, V. (2012), "Paying for performance: incentive pay schemes and employees' financial participation", CEP Discussion Paper No. 1112, January, London School of Economics.
- Burdin, G. (2014), "Are worker managed firms more likely to fail than conventional companies? Evidence from Uruguay", *Industrial and Labor Relations Review*, Vol. 67 No. 1, pp. 202-238.
- Burdin, G. and Dean, A. (2009), "New evidence on wages and employment in worker cooperatives compared with capitalist firms", *Journal of Comparative Economics*, Vol. 37 No. 4, pp. 517-533.
- Cappelli, P. and Neumark, D. (2001), "Do 'high performance' work practices improve establishment-level outcomes", *Industrial and Labor Relations Review*, No. 54, pp. 737-775.
- Chi, W., Freeman, R.B. and Kleiner, M.M. (2011), "Adoption and termination of employee involvement programs", *Labour*, Vol. 25 No. 1, pp. 45-62.
- Craig, B. and Pencavel, J. (1992), "The behavior of worker cooperatives: the plywood companies of the Pacific Northwest", *American Economic Review*, Vol. 82 No. 5, pp. 1083-1105.
- DeVaro, J. (2008), "The effects of self-managed and closely managed teams on labor productivity and product quality: an empirical analysis of a cross-section of establishments", *Industrial Relations*, Vol. 47 No. 4, pp. 659-697.
- Doucouliagos, C. (1995), "Worker participation and productivity in labor-managed and participatory capitalist firms: a meta-analysis", *Industrial and Labor Relations Review*, Vol. 49 No. 1, pp. 58-77.
- Dow, G. (2003), *Governing the Firm: Worker's Control in Theory and Practice*, Cambridge University Press, Cambridge.
- Dow, G. (2017), *The Labor-Managed Firm: Theoretical Foundations*, Cambridge University Press, Cambridge.
- Economist* (2017), "Inefficient equilibrium: women and economics", December 19, available at: <https://economist.com/christmas-specials/2017/12/19/women-and-economics>
- Ellerman, D. (1992), *Property and Contract in Economics: The Case for Economic Democracy*, Blackwell, Oxford.
- Emery, F.E. and Thorsrud, E. (1969), *Form and Content in Industrial Democracy*, Tavistock, London.
- Eriksson, T. (1999), "Executive compensation and tournament theory: empirical tests on Danish data", *Journal of Labor Economics*, Vol. 17 No. 2, pp. 262-280.
- Eriksson, T. and Ortega, J. (2006), "The adoption of job rotation: testing the theories", *Industrial and Labor Relations Review*, Vol. 59 No. 4, pp. 653-666.
- Estrin, S. and Jones, D.C. (1992), "The viability of employee-owned firms: evidence from France", *Industrial and Labor Relations Review*, Vol. 45 No. 2, pp. 323-338.
- Estrin, S. and Jones, D.C. (1998), "The determinants of investment in employee-owned firms: evidence from France", *Economic Analysis*, Vol. 1 No. 1, pp. 17-28.
- Estrin, S., Jones, D.C. and Svejnar, J. (1987), "The productivity effects of worker participation: producer cooperatives in western economies", *Journal of Comparative Economics*, No. 1, pp. 40-61.

- Estrin, S., Hanousek, J., Kocenda, E. and Svejnar, J. (2009), "The effects of privatization and ownership in transition economies", *Journal of Economic Literature*, Vol. 47 No. 3, pp. 1-30.
- Fakhfakh, F. (2004), "The effects of profit sharing and employee share ownership on quits: evidence from a panel of French firms", in Perotin, V. and Robinson, A. (Eds), *Employee Participation, Firm Performance and Survival 9 Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, Vol. 8, pp. 129-147.
- Fakhfakh, F., Pérotin, V. and Gago, M. (2012), "Productivity, capital, and labor in labor-managed and conventional firms: an investigation on French data", *Industrial and Labor Relations Review*, Vol. 65 No. 4, pp. 847-879.
- Fitzroy, F. and Kraft, K. (1987), "Cooperation, productivity and profit sharing", *Quarterly Journal of Economics*, Vol. 102 No. 1, pp. 23-36.
- Freeman, R. and Lazear, E. (1995), "An economic analysis of works councils", in Rogers, J. and Streek, W. (Eds), *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*, University of Chicago, Chicago, IL.
- Freeman, R. and Rogers, J. (2006), *What Workers Want*, ILR Press, Cornell, WI.
- Gittleman, M., Horrigan, M. and Joyce, M. (1998), "'Flexible' workplace practices: evidence from a nationally representative survey", *Industrial and Labor Relations Review*, Vol. 52 No. 1, pp. 99-115.
- Greenberg, E.S. (1986), *Workplace Democracy: The Political Effects of Participation*, Cornell University Press, Ithaca, NY.
- Gregorič, A., Oxelheim, L., Randøy, T. and Thomsen, S. (2017), "Resistance to change in the corporate elite: female directors' appointments onto Nordic boards", *Journal of Business Ethics*, Vol. 141 No. 2, pp. 267-287.
- Hamilton, B.H., Nickerson, J.A. and Owan, H. (2003), "Team incentives and worker heterogeneity: an empirical analysis of the impact of teams on productivity and participation", *Journal of Political Economy*, Vol. 111 No. 3, pp. 465-497.
- Hammermesh, D.S. (2018), "Citations in economics: measurement, uses and impacts", *Journal of Economic Literature*, Vol. 56 No. 1, pp. 115-156.
- Holmström, B. and Milgrom, P. (1994), "The firm as an incentive system", *American Economic Review*, Vol. 84 No. 4, pp. 972-91.
- Horvat, B. (1982), *The Political Economy of Socialism: A Marxist Social Theory*, M.E. Sharpe, Armonk, NY.
- Hübler, O. and Jirjahn, U. (2003), "Works councils and collective bargaining in Germany: the impact on productivity and wages", *Scottish Journal of Political Economy*, Vol. 50 No. 4, pp. 471-491.
- Ichniowski, C. and Shaw, K. (1999), "The effects of human resource management systems on economic performance: an international comparison of US and Japanese plants", *Management Science*, Vol. 45 No. 5, pp. 704-721.
- Ichniowski, C., Shaw, K. and Prennushi, G. (1997), "The effects of human resource management practices on productivity: a study of steel finishing lines", *American Economic Review*, Vol. 87 No. 3, pp. 291-313.
- Ichniowski, C., Kochan, T.A., Levine, D., Olson, C. and Strauss, G. (1996), "What works at work: overview and assessment", *Industrial Relations*, Vol. 35 No. 3, pp. 299-333.
- Jones, D. and Pliskin, J. (1997), "The determinants of the incidence of group incentives: evidence from Canada", *Canadian Journal of Economics*, Vol. 30, November, pp. 1027-1045.
- Jones, D., Klinedinst, M. and Rock, C. (1998), "Productive efficiency during transition: evidence from Bulgarian panel data", *Journal of Comparative Economics*, Vol. 26 No. 3, pp. 446-464.
- Jones, D.C. and Backus, D. (1977), "British producer cooperatives in the footwear industry: an empirical evaluation of the theory of financing", *Economic Journal*, Vol. 87 No. 347, pp. 488-510.
- Jones, D.C. and Jeffrey, P. (1989), "British Evidence on the Employment Effects of Profit Sharing", *Industrial Relations*, Vol. 28 No. 2, pp. 276-298.

- Jones, D.C. and Kato, T. (1995), "The productivity effects of employee stock-ownership plans and bonuses: evidence from Japanese panel data", *American Economic Review*, Vol. 85 No. 3, pp. 391-414.
- Jones, D.C. and Kato, T. (2011), "The effects of offline teams on firm performance: evidence from an econometric case study", *Industrial and Labor Relations Review*, No 2, January, pp. 1-26.
- Jones, D.C. and Mygind, N. (1999), "The nature and determinants of ownership changes after privatization: evidence from Estonia", *Journal of Comparative Economics*, Vol. 27 No. 3, pp. 422-441.
- Jones, D.C. and Svejnar, J. (Eds) (1982), *Participatory and Self-Managed Firms: Evaluating Economic Performance*, Lexington Books, Cambridge, MA.
- Jones, D.C. and Takao, K. (1993) "The scope nature and effects of employee stock ownership plans in Japan", *Industrial and Labor Relations Review*, Vol. 46 No. 2, pp. 352-367.
- Jones, D.C., Kato, T. and Kauhanen, A. (2010), "Teams, performance-related pay, profit-sharing and productive efficiency: evidence from a food-processing plant", *Industrial and Labor Relations Review*, Vol. 63 No. 4, pp. 606-626.
- Jones, D.C., Kalmi, P., Mäkinen, M. and Kato, T. (2017), "Complementarities between employee involvement and financial participation: do institutional context, differing measures, and empirical methods matter?", *Industrial and Labor Relations Review*, Vol. 70 No. 2, pp. 395-418.
- Kandel, E. and Lazear, E. (1992), "Peer pressure and partnerships", *Journal of Political Economy*, Vol. 100 No. 4, pp. 801-817.
- Kato, T. and Morishima, M. (2002), "The productivity effects of participatory employment practices: evidence from new Japanese panel data", *Industrial Relations*, Vol. 41 No. 4, pp. 487-520.
- Kaufman, B.E. (1993), *The Origins and Evolution of the Field of Industrial Relations in the United States*, ILR Press, Ithaca, NY.
- Kaufman, B.E. (2004), *The Global Evolution of Industrial Relations*, ILO, Geneva.
- Kim, E.H. and Oiumet, P. (2014), "Broad based employee stock ownership: motives and outcomes", *Journal of Finance*, Vol. 69 No. 3, pp. 1273-1319.
- Kruse, D. (1991), "Profit-sharing and employment variability: microeconomic evidence on the Weitzman theory", *Industrial and Labor Relations Review*, Vol. 44 No. 3, pp. 437-453.
- Kruse, D. (1993), *Profit Sharing Does it Make a Difference*, Upjohn, Kalamazoo, MI.
- Kruse, D. (1996), "Why do firms adopt profit-sharing and employee ownership plans?", *British Journal of Industrial Relations*, Vol. 4 No. 4, pp. 515-538.
- Kruse, D. and Blasi, J. (1995), "Employee ownership, employee attitudes and firm performance", NBER WP No. 5277, Cambridge, MA.
- Kruse, D., Freeman, R.B. and Blasi, J. (2010), *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing and Broad-Based Stock Options*, University of Chicago, Chicago, IL.
- Kurtulus, F. and Kruse, D. (2017), *How Did Employee Ownership Firms Weather the Last Two Recessions*, Upjohn, Kalamazoo, MI.
- Lavy, V. (2002), "Evaluating the effect of teachers' group performance incentives on pupil achievement", *Journal of Political Economy*, Vol. 110 No. 6, pp. 1286-1317.
- Lazear, E.P. (2000), "Performance pay and productivity", *American Economic Review*, Vol. 90 No. 5, pp. 1346-1361.
- Lemieux, T., MacLeod, W.B. and Parent, D. (2009), "Performance pay and wage inequality", *Quarterly Journal of Economics*, Vol. 124 No. 1, pp. 1-49.
- Levine, D.I. (1990), "Participation, productivity, and the firm's environment", *California Management Review*, Vol. 32 No. 4, pp. 86-100.
- Mas, A. and Moretti, E. (2009), "Peer effects at work", *American Economic Review*, Vol. 99 No. 1, pp. 112-145.

- Meade, J.E. (1972), "The theory of labour-managed firms and of profit sharing", *The Economic Journal*, Vol. 82 No. 325, pp. 402-428.
- Meade, J.E. (1985), *Alternative Systems of Business Organization and of Workers' Remuneration*, Routledge, London.
- Melman, S. (1958), *Decision-Making and Productivity*, Wiley, New York, NY.
- Milgrom, P. and Roberts, J. (1995), "Complementarities and fit strategy, structure and organizational change in manufacturing", *Journal of Accounting and Economics*, Vol. 19 Nos 2-3, pp. 179-208.
- Mueller, S. and Stegmaier, J. (2017), "The dynamic effects of works councils on labour productivity: first evidence from panel data", *British Journal of Industrial Relations*, Vol. 55 No. 2, pp. 372-395.
- Mygind, N. and Faigen, B. (2017), "The development of employee ownership in China", *International Journal of Emerging Markets*, Vol. 12 No. 3, pp. 464-487.
- Neuhaus, C., Henhaus, E., Asher, A. and Wrede, C. (2006), "The depth and Breadth of Google Scholar: an empirical study", *Libraries and the Academy*, Vol. 6 No. 2, pp. 127-141.
- Novkovic, S. (2008), "Defining the co-operative difference", *The Journal of Socio-Economics*, Vol. 37 No. 6, pp. 2168-2177.
- Oakeshott, R. (1973), "Mondragon, Spain's oasis of democracy", in Vanek, J. (Ed.), *Self-Management: Economic Liberation of Man*, Penguin, London, pp. 290-296.
- Oakeshott, R. (1978), *The Case for Workers' Co-ops*, Routledge and Kegan Paul, London.
- O'Boyle, E., Patel, P.C. and Gonzalez-Mulé, E. (2016), "Employee ownership and firm performance: a meta-analysis", *Human Resource Management Journal*, Vol. 26 No. 4, pp. 425-448.
- Osterman, P. (1994), "How common is workplace transformation and who adopts it?", *Industrial and Labor Relations Review*, Vol. 47 No. 2, pp. 173-188.
- Osterman, P. (2000), "Work reorganization in an era of restructuring: trends in diffusion and effects on employee welfare", *Industrial and Labor Relations Review*, Vol. 53 No. 2, pp. 179-196.
- Oyer, P. and Schaefer, S. (2005), "Why do some firms give stock options to all employees? An empirical examination of alternative theories", *Journal of Financial Economics*, Vol. 76 No. 1, pp. 99-133.
- Pateman, C. (1970), *Participation and Democratic Theory*, Cambridge University Press, Cambridge.
- Pencavel, J.H. (2013), *The Economics of Worker Coops*, Elgar, Cheltenham.
- Pendleton, A. and Robinson, A. (2010), "Employee stock ownership, involvement and productivity: an interaction based approach", *Industrial and Labor Relations Review*, Vol. 64 No. 1, pp. 3-29.
- Perotin, V. (2006), "Entry, exit and the business cycle: are cooperatives different", *Journal of Comparative Economics*, Vol. 34, June, pp. 295-316.
- Sarsons, H. (2017), "Recognition for gender differences in academia", *American Economic Review*, Vol. 107 No. 5, pp. 141-145.
- Schlacter, L. (2018), "Democracy at work: key takeaways from DAWI's National Worker Co-op Census Survey", Rutgers University School of Management and Labor Relations Kelso Workshop, New Brunswick, NJ, January.
- Song, J., Price, D.J., Guvenen, F., Bloom, N. and von Wachter, T. (2015), "Firming up inequality", NBER Working Paper No. 21199, Cambridge, MA.
- Svejnar, J. (1982), "Codetermination and productivity: empirical evidence from the federal republic of Germany", in Jones and Svejnar (Eds), *Participatory and Self-Managed Firms: Evaluating Economic Performance*, Lexington Books, Cambridge MA.
- Thomas, H. and Logan, C. (1982), *Mondragon: An Economic Analysis*, Allen and Unwin, Winchester, MA.
- Uvalic, M. (1991), *The PEPPER Report: Promotion of Employee Participation in Profits and Enterprise Results in the Member States of the European Community*, European University Institute, Florence, available at: <http://hdl.handle.net/1814/36915>
- Vanek, J. (1970), *The General Theory of Labor Managed Firms*, Cornell University Press, Ithaca, NY.

-
- Vanek, J. (1971), *The Participatory Economy: An Evolutionary Hypothesis and a Strategy for Development*, Cornell University Press, Ithaca, NY.
- Vanek, J. (1975), *Self-Management Economic Liberation of Man Selected Readings*, Puffin, Baltimore, MD.
- Vanek, J. (1977), *The Labor-Managed Economy: Essays*, Cornell University Press, Ithaca, NY.
- Ward, B. (1958), "The firm in Illyria: market syndicalism", *The American Economic Review*, Vol. 48 No. 4, pp. 566-589.
- Webb, S. and Webb, B. (1897), *Industrial Democracy*, Longmans, London.
- Weitzman, M. (1984), *The Share Economy*, Harvard University Press, Cambridge, MA.
- Weitzman, M. and Kruse, D. (1990), *Profit Sharing and Productivity*, Chapter 20 in Blinder, A. Paying for Productivity, Brookings, Washington, DC.
- Wilson, N. and Peel, M.J. (1991), "The impact on absenteeism and quits of profit sharing and other forms of participation", *Industrial and Labor Relations Review*, Vol. 44 No. 3, pp. 454-468.
- Young-Hyman, T. (2016), "Cooperating without co-laboring: how formal organizational power moderates cross functional interaction in project teams", *Administrative Science Quarterly*, Vol. 62 No. 1, pp. 179-214.

Further reading

Labour (2017), "Alternative models of ownership: report to the shadow chancellor of the exchequer and shadow secretary of state for business, energy and industrial strategy", available at: Labour.org.uk

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