Profit Sharing and Workplace Productivity: Does Teamwork Play a Role?

Tony Fang
Stephen Jarislowsky Chair
Memorial University, University of Toronto, and IZA

Rick Long
Edwards School of Business, University of Saskatchewan

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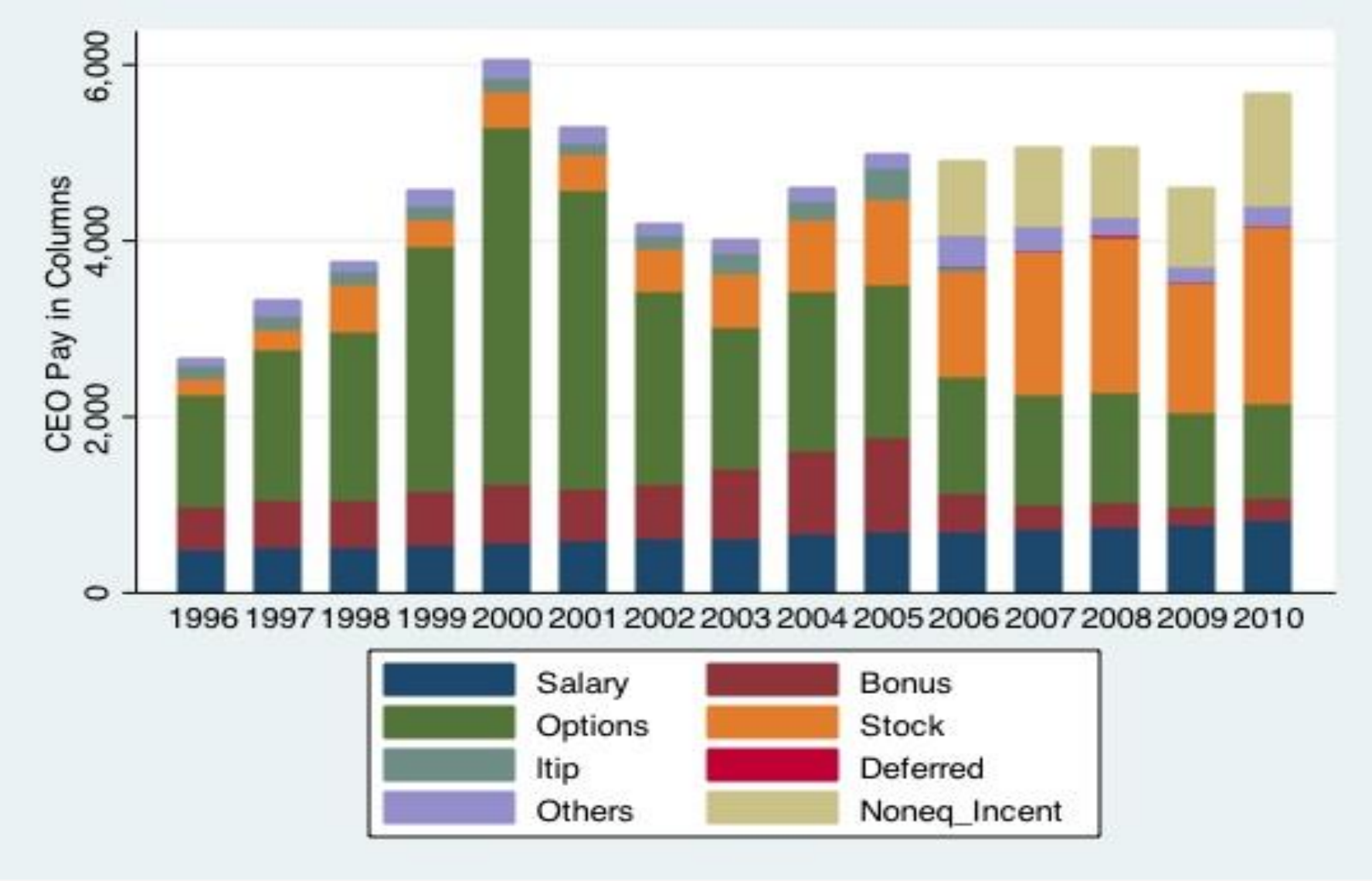
Agenda

- Background
- Rationale and Purpose
- Research Overview and Hypotheses
- Sample and Measures
- Results
- Discussion
- Conclusions

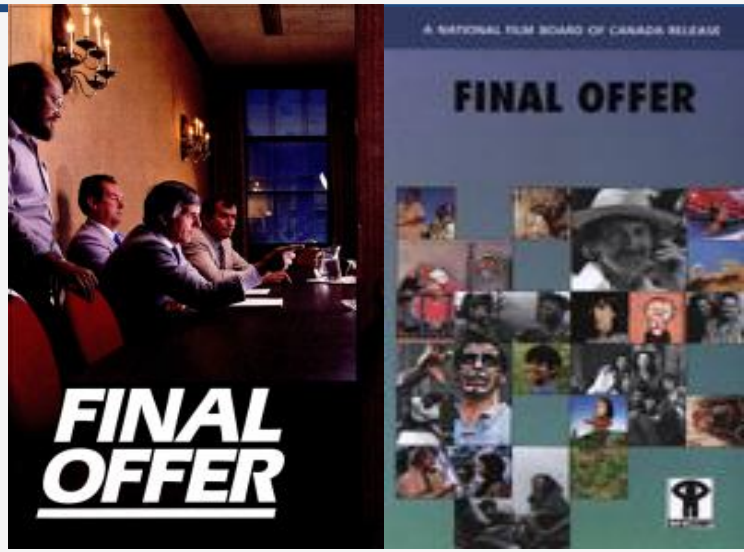
Background

- Widening Income inequality across the Globe: China, Canada, United States
- Not only an economic problem hindering long-term economic growth, but also a social one: occupying movement in the US, labor disputes and social unrest in China
- Need mechanisms to mitigate the problem
- Public policies: income redistribution, progressive taxation, minimum wages etc.
- Enterprise policies and programs: Profit-sharing, Gain-sharing, Employee Stock Ownership Plan (ESOP), Stock Options etc. open to ordinary employees, not just the senior executives

Pay at top related to incentive pay via capital income.



Profit-sharing at GM…



GM Posts Record $7.6-Billion Profit

http://abcnews.go.com/blogs/business/2012/02/gm-posts-record-7-6-billion-profit/

PS was exactly the issue why the Canadian chapter of UAW broke away from its American brother in the 1980s ("Final Offer"): http://www.nfb.ca/film/final_offer

Switching to the profit-sharing model makes the most sense…

- *Switching to the profit-sharing model makes the most sense. In tough times, when profits are down and reductions in labor costs save jobs, profit sharing stabilizes labor costs. By the same token, when the economy turns around, such an arrangement guarantees that workers will share in the prosperity.*

Richard B. Freeman

Harvard & NBER

ESOPs and Profit sharing plans…

Organizational Performance Plans

Employee Stock Plans

Summary: Employees acquire shares in the firm – perhaps purchase or granted

Pros:

1) Ownership mentality
2) Fosters long term commitment
3) Risk mitigation
4) Mechanics in place

Primary Cons:

1) Administration costs
2) Unhealthy behaviour
3) Market perception implications
4) False expectations
5) Problematic in non-growth firms

Profit Sharing

Summary: Formal "Bonus" program based on firm profitability. Derivatives include current and deferred profit sharing.

Pros:

1) Employee motivation
2) Reduces supervisor costs
3) Risk mitigation
4) Reduce need for layoffs

Primary Cons:

1) Free riding
2) Poor line of sight
3) Negative link between unionization & profit sharing

Other Org Plan

Summary: Catch all category of programs linked to variable pay including:

- RSUs
- Phantom equity
- LTIPs
- Capital efficiency plans

Pros:

- Varies depending on plan but generally similar to profit sharing and employee stock plans

Primary Cons:

- Same as above

How to Calculate the Profit-sharing Bonus?

- Profit sharing (commonly referred to as "Bonus") plans are generally of two similar elks:

Additive

Company performance	+	Divisional performance	+	Personal performance	=	Total Payout

or

Multiplicative

Company performance	+	Divisional performance	*	Personal performance	=	Total Payout

An example of an additive plan…

Additive

	Company performance	+	Divisional performance	+	Personal performance	=	Total Payout
Potential	50	+	25	+	25		100%
Results	50	+	25	+	37.5		112.5%

Annual Salary		Target Bonus		Achievement	Total Payout
$100,000	*	10%	*	112.5%	**$11,250**

An example of a multiplicative plan…

Multiplicative

(Company performance + Divisional performance) * Personal performance = Total Payout

Potential	**(**50	+	50**)**	*	0~2		100%
Results	**(**50	+	50**)**	*	1.25		125%

Multiplicative is easier to reward with higher upside

Annual Salary		Target Bonus		Achievement	Total Payout
$100,000	*	10%	*	125%	**$12,500**

Rationale and Purpose of Research

- Employee profit sharing (PS) as a pay practice has a long history and continues to be adopted by firms
- One of the important motifs of PS adoption is the belief that PS increases workplace productivity (Long, 1997)
- While research evidence is quite clear that PS does increase company productivity on average, evidence is equally clear that it does not do so in all cases (Kruse 1993; Magnan and St-Onge 2005; Robinson and Wilson 2006)

Rationale and Purpose of Research

- Using panel data from a large sample of Canadian establishments, this paper examines whether adoption of profit sharing affects workplace productivity in both 3-year (2001-2004) and 5-year (2001-2006) periods subsequent to PS adoption
- We also examine whether it does so to a great extent in workplaces that utilize more team-based production
- Our estimation models also control for a wide array of variables that may influence these results such as firm size, union status, and pre-existing compensation level and their interactions with the PS adoption

Research Overview

- PS is thought to affect firm productivity by serving as a mechanism for aligning the interests of workers with the firm, which can bring a number of benefits to the firm, such as increased employee motivation, enhanced cooperation between employees and management, increased self and mutual monitoring of worker behaviour, and positive workgroup norms.
- However, some scholars argued that its effectiveness in motivating workers may be limited by the free rider or 1/N problem (Olson 1971; Heywood and Jirjahn, 2009): the larger the organization, the less clear is the “line of sight” b/w individual performance and PS awards

Research Overview

- Given this, larger firms are expected to avoid using PS because of the 1/N problem. Yes virtually no studies find either no links or positive links b/w firm size and presence of PS, casting doubt on the free-riding hypothesis
- While fixed costs in PS adoption might explain these results, Adams (2002, 2006) suggests an alternative explanation. He argues that the higher the degree of worker interdependence in the production process, the greater the value of the common goals created by PS, and the extent of this interdependency may grow with firm size.

Research Overview

- As such, an increase in firm size may have two opposing incentives effects (1/N problem and shirking; interdependency and higher cost of shirking)
- Arguably, teamwork may encourage anti-shirking behaviour in a variety of ways. **First,** shirking behaviour is more apparent in a team context. **Second,** in an interdependent context, shirking has the potential to impede the productivity of co-workers (multiplier effects). **Third,** this may cause teams to develop group norms to discourage shirking. **Fourth,** workers in a team context have potential incentive to support an intervention by members to deter shirking behaviours.

Other Contextual Variables

- Company size
- Union status
- Pre-existing employee compensation level
- Industry: 13 dummy variables
- Other types of performance pay: individual incentives, merit pay, gain sharing, and employee stock plans

Sample

- Drawn from the WES 1999, 2001, 2004, and 2006 workplace data sets, with response rates of 95.2%, 85.9%, 81.7%, and 74.9% respectively.
- The panel was constructed by taking the 1999 WES and eliminating all workplaces with less than 10 employees, not-for-profit workplaces, those reporting profit sharing in 1999, those adopted PS 2002-2003, and those workplaces that are not included in the 2001 and 2004 surveys (resulting in 1,690 workplaces) and 1,540 establishments for the 2001-2006 panel.

Variable Measures
Workplace Productivity Growth

- We measured *workplace productivity growth* for the 3-year panel by dividing the gross workplace revenues reported in 2001 and 2004 by the number of full-time equivalent employees in each year, and then dividing the 2004 revenue per employee by the 2001 revenue per employee.
- We used the same procedure for calculating productivity growth for the five-year panel, except that the comparisons were between revenue per employee in 2006 and revenue per employee in 2001.

Variable Measures
Profit Sharing Plan Adoption

- Based on whether the compensation system at the workplace included a “profit sharing plan adoption” (No = “0”, Yes = “1”) in 2001
- Of the 1,717 establishments, 247 workplaces (14.4% of the panel) adopted profit sharing between 1999 and 2001.

Variable Measures
Work Teams

- Respondents were asked to indicate whether the workplace utilized, for their non-managerial employees, on a formal basis, “Self-directed Work Groups.”
- These were described as “Semi-autonomous work groups or mini-enterprise work groups that have a high level of responsibility for a wide range of decisions/issues.”
- Responses were coded as either “1” (yes) or “0” (no).

Variable Measures

Pre-existing Employee Compensation Level

Pre-existing employee compensation level is constructed by dividing total gross payroll or total gross payroll by number of employees at workplace in year 2001

Variable Measures
Company Size and Union Density

- Company size is measured as the total number of employees at the business location
- Union density is calculated as the proportion of workers covered by a collective bargaining agreement

Variable Measures

Control Variables

- Thirteen dummy variables are created, representing all of the sectors in the survey, with the exception of retailing, which serves as the omitted (comparison) variable.
- A further set of controls is used to control for the possible effect of performance pay other than profit sharing. We control for the presence of *individual incentives, merit pay, gain sharing, and employee stock plans.*
- These controls are used in all multivariate analysis.

Robustness Check

- There is a potential endogeneity issue between PS adoption and productivity changes
- To formally address the issue, we have adopted Heckman two-stage selection model
- To do so, we applied 2SLS estimation techniques where we used profit sharing adoption rate at the detailed industry level (14) in the first year (1999) as our main Instrument Variable (IV), which is positive and highly significant in predicting profit sharing adoption at workplace level in 2001 (we have published a paper for this first-stage estimation of profit sharing adoptions in IJHRM, 2014).

Robustness Check

- We then plugged the estimated profit sharing probability into the second-stage regression (the effects of profit sharing adoption on workplace productivity growth) and we found positive and significant main effects, as well as the interaction effects between profit sharing and team production on workplace productivity growth.
- we find that this procedure confirms our original findings of a significant interaction between profit sharing adoption and teamwork on productivity growth, and in fact strengthens them.

Results

Table 1 shows summary statistics for the sample

Table 2 shows first-stage multiple regression results

Table 3 shows results of second-stage multiple regression

Figure 1 shows the interaction graph

Table 4 shows results of second-stage multiple regression with interaction between PS adoption and work team

Table 1
Means, Standard Deviations, and Correlations

Variable	Mean	s.d.	1	2	3	4	5	7	8	9	10
1. Profit Sharing Adoption	.14	.35	-								
2. Work Team	.07	.21	.12***	-							
3. Union Density	.22	.35	-.10***	.09***	-						
4. Establishment Size (00's of emps.)	.45	.13	.03	.11**	.12***	-					
5. Cash Emp. Earnings 2001 ($000's)	40.58	22.53	.11***	-.03	.03	.03	-				
7. Individual Incentives	.44	.50	.20***	.15***	-.06***	.05**	.08***	-			
8. Merit Pay	.31	.46	.08***	.04*	-.02	.08***	-.01	.36***	-		
9. Gain Sharing	.20	.40	.17***	.15***	.03	.03	.01	.33***	.10***	-	
10. Employee Stock Plan	.11	.32	.09***	.18***	.11***	.09***	.01	.29***	.31***	.21**	-
11. Productivity Growth 2001-04	.17	.91	.01	.02	-.07**	.00	-.08**	.00	.09**	.04	.08**
12. Productivity Growth 2001-06	.20	.83	.06**	.06**	-.07**	.02	-.09**	.08**	.12**	-.00	.19**

Table 2
First Stage Estimation of PS Adoption Probability

	2001-2004	2001-2006
Establishment Context		
Industry PS penetration rate	0.021**(0.009)	0.020**(0.010)
Prior profitability	0.000 (0.000)	-0.000 (0.000)
Prior employee Earnings ($000's)	0.042 (0.039)	0.056 (0.038)
Industry Controls		
Establishment characteristics		
Establishment Size (00's)	0.0001 (0.0002)	0.0001 (0.0002)
Prior employment growth	0.0382 (0.0505)	-0.004 (0.041)
Union Density	-0.125 *** (0.046)	-0.113** (0.048)
Participation Index	0.046*** (0.015)	0.047*** (0.015)
Training Intensity	0.0001 (0.0001)	0.0001 (0.0001)
Business Strategy		
Innovator Strategy	0.020 (0.022)	0.027 (0.022)
Cost Strategy	0.014 (0.026)	0.006 (0.025)
Cases	1652	1505
R^2	.148***	0.154***

Table 3
Second Stage: Predicting Workplace Productivity Growth Using Estimated PS Adoption Probability

	2001-2004	2001-2006
Performance Pay Controls		
Individual Incentives	-.075 (.134)	0.017 (0.017)
Merit Pay	-0.137 (0.084)	0.107 (0.125)
Gain Sharing	0.161 (0.204)	-0.077 (0.085
Employee Stock Plan	0.140 (0.182)	0.404**(0.203)
Establishment Controls		
Team	-0.033 (0.220)	-0.073 (0.236)
Union Density	-0.041 (0.109)	-0.087 (0.111)
Establishment Size (00's)	-0.0003 (0.0004)	-0.0002 (0.0003)
Employee Earnings 2001 ($000's)	-0.000004*(-0.000003)	-0.000005* (-0.000003)
Profit Sharing Adoption	1.114* (0.593)	0.999** (0.494)
Cases	1652	1505
R^2	.093***	0.122***

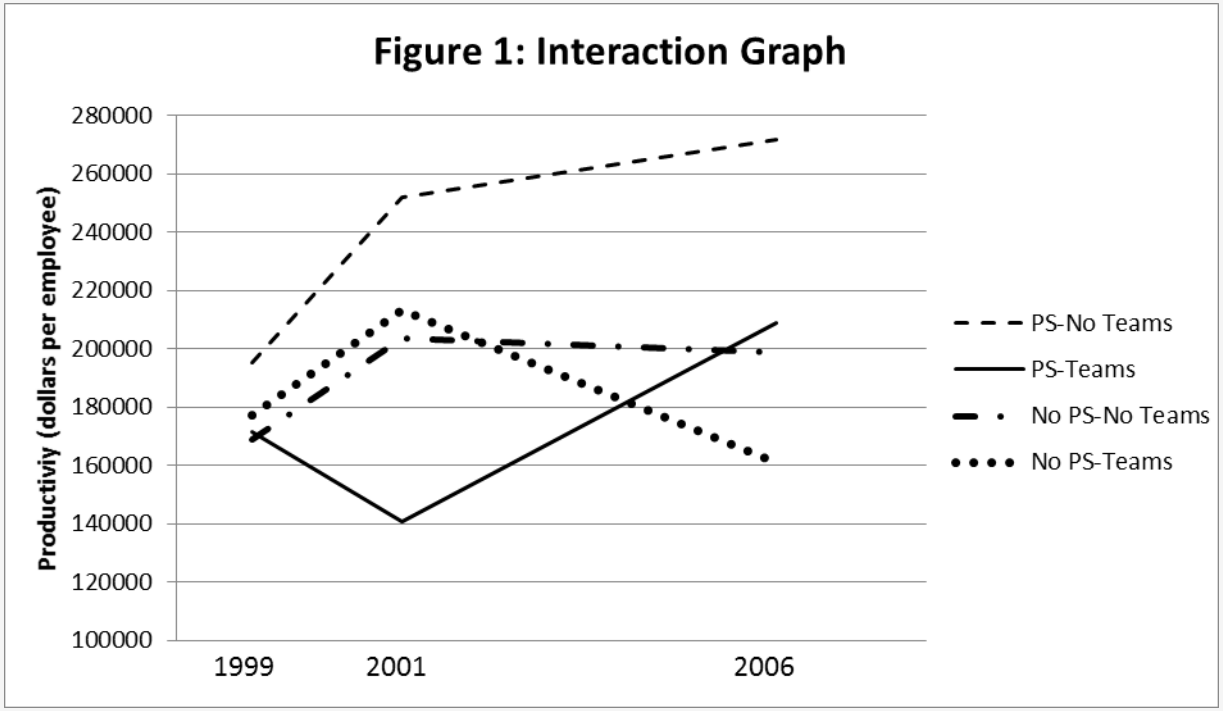


Figure 1: Interaction Graph
Productiviy (dollars per employee)
280000
260000
240000
220000
200000
180000
160000
140000
120000
100000
1999
2001
2006
PS-No Teams
PS-Teams
No PS-No Teams
No PS-Teams

Table 4
Multiple Regressions Predicting Workplace Productivity Growth

	2001-2004	2001-2006
Performance Pay Controls		
Individual Incentives	-0.089 (0.131)	0.004 (0.097)
Merit Pay	0.153 (0.208)	0.101 (0.129)
Gain Sharing	-0.141 (0.083)	-0.083 (0.084)
Employee Stock Plan	0.150 (0.177)	0.413** (0.205)
Establishment Controls		
Team	-0.455** (0.199)	-0.493**(0.235)
Union Density	-0.059 (0.126)	-0.076 (0.131)
Establishment Size (00's)	0.00008 (0.0006)	-0.00001 (0.0005)
Employee Earnings 2001 ($000's)	-0.0005 (0.0004)	-0.0006 (0.0004)
Profit Sharing Adoption	0.983 (0.615)	0.811* (0.481)
Interaction Terms		
PS X Team	2.554* (1.354)	2.649**(1.194)
PS X Union	0.315 (0.675)	0.021 (.754)
PS X Size	-0.002 (0.0016)	-0.001 (0.002)
PS X Earnings	0.000 (0.000)	0.0002 (0.0004)
Cases	1652	1505
R^2	0.102	0.135

Discussion and Conclusions

- Overall our results suggest that use of team plays an important role in the success of PS- at least in terms of productivity
- Establishments with teamwork that adopted PS showed a substantial and highly significant increase in workplace productivity over both 3-yr and 5-yr period
- Those without teamwork that adopted PS showed no significant improvement in productivity
- Findings are in line with the notion that work teams help to mitigate potential shirking in PS firms

Discussion and Conclusions

- Findings are also in line with the arguments that work teams serve as an effective mechanism to translate the purported motivational benefits of PS into tangible productivity gains
- There is no evidence of “freeriding”: no significant interaction effect of PS adoption and workplace size on productivity growth
- This suggests that either shirking is not a problem for PS firms or the use of teams alleviate the size effects for PS adopters: indeed establishments with teams were significantly larger, and more likely to adopt PS that those without teams

Discussion and Conclusions

- But we don't know the specific drivers of productivity increases: either teams provide a better context for containing shirking behaviour ("working harder") or teams provide a context for more cooperative and more innovative work behaviours ("working smarter"), or some of each.
- The negative interaction b/w adoption of PS and union density on productivity growth (5-yr) suggests unions may constrain anti-shirking behaviour-and possibly also constrain increase in productive behaviours. This is consistent with the fact that firms with high union density are much less likely to adopt PS

Discussion and Conclusions

- There is no sig. interaction b/w PS and employee earnings: high earnings derive no particular productivity advantage from PS adoption- either PS has no utility from high human capital
- Nevertheless, PS adoption is beneficial to establishment such as allowing firm to maintain high employee earnings while gaining a greater degree of pay flexibility

Discussion and Conclusions

- One rather intriguing finding is that establishments with teams but didn't adopt PS showed a substantial decrease in productivity
- Those firms without teams that did not adopt PS experiences no significant change in productivity
- Finding is consistent with the argument that team-based work needs to be combined with some type of organizational performance pay to ensure that teams are working towards organizational goals (Lawler, 1992) and the sig. positive interaction b/w PS adoption and teamwork is in line with the argument