The Positive Impact on the Labor Market from Alternatively Organized Firms

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This paper studies firms with nonprofit objectives from a theoretical prospective to determine their impact on the labor market. The perspectives of profit maximization versus social responsibility yield differing goals and divergent models. Alternative firms are shown to have equal or superior employment prospects. If these alternative firms have some pricing power due to advertising or branding, then the potential impact on employment can be significant. Currently alternatively organized firms are a very small part of our economic landscape, but since these firms can support increased employment public policy options should be considered to support the growth of alternative firms.

INTRODUCTION

The pressing economic problem throughout the world today is that of employment. Baker and Hassett state (2012, para.1), "The American economy is experiencing a crisis in long-term unemployment that has enormous human and economic costs". Spence tells us (2013, para. 5), "The structural evolution of the global economy today and its effects on the U.S. economy mean that, for the first time, growth and employment in the United States are starting to diverge." Western Europe and more recently the U.S. seem to have internalized high unemployment levels. Structural unemployment has resulted from the introduction of modern technology and a rapidly evolving economy (Levine, 2013; Burtless, 2012; Diamond, 2013) and unemployment has even crept into China's boom economy and is often systemic in developing nations. Global youth unemployment is a particular concern. A recent article in the Economist (2013) reports that the share of idle youth is 31% in South Asian, 22% in sub-Sahara Africa, 40% in the Middle East & North Africa and 24% in Europe & Central Asia. Unemployment is responsible for adding to terrorism, social unrest and poverty around the world. World Bank Senior Director for Jobs, Nigel Towse said (2014, para.7), "Current projections are dim. Challenging times loom large."

A key trend evolving in both western and developing economies is alternative ownership of industrial organizations. Cooperatives and non-profits are growing. The United Nations declared 2012 the year of the cooperative. Charles Gould, Director-general of the International Cooperative Alliance said that cooperatives are poised to be the fastest growing business model by 2020 (Reeder 2012). The consulting firm, McKinsey reports that cooperatives grow as fast as public companies and grow market share at greater rates (Berube, et. al., 2012). The Wisconsin Center for Cooperatives identifies almost 30,000 cooperative organizations with 652 Billion dollars of sales and over 2 million employees in the United States alone (Deller, et. al., 2009). In the EU cooperatives have over a 50 percent share of agriculture, in Singapore consumer cooperatives have a 55 percent share of the supermarket business; and these kinds of impressive statistics can be cited for many countries around the world (Hansen, 2013).

While cooperatives have been around since the utopian movement in the early 1800s, it has only been since Benjamin Ward presented his seminal work on alternative industrial structures that the economic theory behind nonprofit, cooperative and other social industrial organizations has rapidly developed. In economic literature these organizations are often referred to as labor-managed firms or LMFs.
We now understand that:

- Labor can hire capital (Vanek, 1970)
- LMF can be Pareto efficient and have high productivity (Doucouliagos, 1995)
- Capital is difficult for these firms to raise (Craig and Pencavel, 1992; Dreze, 1989)
- LMF can have a positive impact on technical efficiency (Leibenstein, 1966)

Of course there are alternatively organized firms that are not labor-managed firms. Some are closely held and operated by a board (museums, community hospitals, nursing homes etc.). In addressing these alternatively structured organizations this paper will identify the broader category as AOS (alternative organizational structures) to represent the total of organizations not following the traditional capitalistic for-profit model.

Because AOS are and continue to be a growing important part of the world economy, and given that employment is the pressing economic problem of the 21st century, this paper will analyze, from a theoretical basis, alternative industrial organizations for their impact on employment. While a discussion of the impact of maximizing profit per employee has been previously conducted by Ward (1958) and Vanek (1970), this paper will add several additional objectives to the discussion which have not previously been included. In addition, this paper specifically focuses on the labor market and the key role that alternative industrial organizations can play in addressing current issues.

DIFFERENT OBJECTIVES

Traditionally economists think of capitalist investing in a firm and demanding the maximum return possible, thus forcing an economically efficient process choice and quantity of labor. The perspectives of profit maximization versus social responsibility yield differing goals and divergent models (Giacalone, Jurkiewicz and Dunn, 2005). In the most basic profit maximizing model labor is seen as the "cost" and the input which varies in order to ensure efficient quantity of output.

$$\max \pi = p * y(l) - w * l \quad (1)$$

In Equation 1 profit is a function of price multiplied by output less labor multiplied by wage. When maximized with respect to labor, wage will equal the marginal output of labor and specify the optimum quantity of labor a firm will employ. However, a cooperative may likely have objectives different than simply maximizing total profits. As such, the calculation of the optimal level of employment within the firm will be driven to maximize these other objectives. Four alternative objectives are considered in this paper.

1. Maximize profit per employee with price determined by market. This is the traditional view of cooperatives, as developed by Vanek (1970).
2. Maximize profit per employee with price determined by output. This variation of option one allows for the firm to have some pricing power and to adjust quantity along a downward sloping demand curve. The discussion of this objective will lead to additional alternative objectives.
3. Maximize employment given a minimum wage constraint. Cooperatives may have the objective of employing as much labor as possible in order to benefit workers, but will be limited by some minimum amount of wage deemed reasonable for the workers benefit.
4. Maximize output given a resource constraint. This is a common objective for service organizations and non-profits. They will produce as much service as they can, given their resources. Resource limits could be either funding or labor availability.

Profit per Worker

Profit per worker has been used as the traditional objective function for worker managed firms (Ward, 1958; Vanek, 1970) which would transform the standard capitalist equation (equation 1) into:

$$\max \frac{\pi}{l} = (p * y(l) - w * l)/l \quad (2)$$

Here the variable of choice "*l"* are the number of members of the firm and the hours that each work. Solving the maximized function with respect to *l* gives the following result.

$$0 = pl^{-1}\frac{dy}{dl} - pl^{-2}y(l) \quad (3)$$

Notice that wage disappears from the maximized equation because wages are extracted from profit and labor owns both wages and profit.

Equation 3 can also be stated as:

$$\frac{dy}{dl}\frac{l}{y} = 1 \quad (4)$$

Equation 4 can be read as the elasticity of output with respect to labor equals 1. This is in reference to the quantity of labor not the cost of labor. This tells us when labor is maximized the average output of labor will equal the marginal output of labor. This definition means that the firm will operate at the minimum point on the average cost curve, which is the most efficient point of production. When input and output markets are competitive and when there is freedom of entry and exit, researchers agree this model reveals a long-run equilibrium for AOS on par with competitive capitalist firms. Assuming the restrictive assumptions associated with pure competition this outcome will provides for maximum social efficiency (Vanek, 1970). This condition can be demonstrated by multiplying equation 4 by price.

$$\frac{dy}{dl}P = \frac{yp}{l} \quad (5)$$

Since $\frac{yp}{l}$ is equal to wage, a maximized Equation 1 and Equation 2 give the same result (both assuming a competitive input and output market). "In many cases- most notably with standardized industrial goods and farm produce – these requirements are reasonably well satisfied" (Hansmann, 1980, p. 843).

However, a prominent feature of the literature on AOS is inefficient utilization of labor in the short run due to an inelastic supply curve. If an AOS has a lower marginal productivity of labor than a capitalist firm in the short-run then assuming labor has diminishing productivity this would likely result in some additional quantity of labor employed in the short-run. While theoretically supported, an empirical test by Berman and Berman (1989) does not find any evidence for the increased labor hypothesis even though an inelastic supply curve is found. Despite Berman and Berman's test there are examples of labor-managed firms reducing hours instead of laying-off workers (Smith and Ye, 1987).

The larger question here is will an AOS adjust the quantity of labor in the short run similar to a capitalist firm or will the culture and working agreement prohibit the expulsion of "members". Berman (1977) shows that oligopoly game theory can apply as workers cooperate to reach a joint optimum choice of hours. If the same percentage reduction is applied across all workers, the AOS is fully efficient for resource-allocation in the short run.

The overall theoretical expectation for an AOS operating under the constraint of maximizing profit per worker would be an equivalent level of employees as a capitalist firm, however with possibly less short-term unemployment.

Profit per Worker with Pricing Power

If the AOS has pricing power the previous discussion must be modified. Some level of pricing power is quite common in modern economies with product differentiation, brands, advertising and distribution agreements. Even cooperative agricultural markets regularly create brand names and advertise (Sunkist, Ocean Spray etc.) and hence have some pricing power.

If pricing power is evident, then equation 2 must be modified to show that the amount of labor will impact output which will affect price, as follows:

$$\max \frac{\pi}{l} = (p(l) * y(l) - w * l)/l \quad (6)$$

Which results in a maximized form of:

$$0 = l^{-1}\left[p(l)\left(\frac{dy}{dl} - l^{-1}y(l)\right) + y(l)\frac{dy}{dl}\right] \quad (7)$$

Again, wage disappears from the maximized equation because wages are extracted from profit and labor owns both wages and profit.

Equation 7 can be simplified as:

$$\frac{dy}{dl} = \frac{y}{l} - \frac{y}{p}\frac{dp}{dl} \quad (8)$$

Equation 8 can be interpreted as the marginal output of labor will equal the average output of labor less the marginal change in price factored by the number y/p. This specific amount of labor will satisfy the constraint of maximizing profit per worker when the AOS has pricing power. This can be compared to the previously discussed constraint. Equation 8 is simply equation 4 with an additional term. However, assuming the law of demand holds, the additional term will be negative, and being subtracted, will result in a higher marginal output for labor than equation 8. With the standard assumption of diminishing returns to labor there will be less labor employed given the pricing power than without it. The reduced amount of labor employed is consistent with the long understood principal that pricing power results in firms reducing output from a competitive equilibrium. However, there is a key difference in the impact of pricing power between a capitalist firm and an AOS firm on wage and labor. When a capitalist monopolistic firm reduces output to increase profit, it sets output at a quantity where marginal revenue equals marginal costs independent of the demand curve. The wage for a capitalist firm is determined by the overall labor market and is not dependent directly on the firm's price decision. After the maximized quantity output is determined for this traditional monopolist, the price is then determined based on what the demand curve will support.

An AOS firm will behave differently. As an AOS firm reduces output it will raise the price which will also raise the wage as long as it has reduced labor consistent with the lower output. Wage is not set independently by the market and so there is a perverse incentive to reduce output in order to raise the wage (simply a different version of the perverse incentive found in traditional monopolies). To truly maximize wage per worker would require reducing output to the very low point where marginal product of labor starts to decline. This is unrealistic for many reasons. First, a firm needs to maintain a large size to be efficient and competitive. For AOS firms pricing power usually comes from advertising and branding, both of which have significant economies of scale. Second, if firms reduce size, competitors will piggyback off the pricing power without contributing to building it. For example, if a farm cooperative selling dairy products, limits membership, those outside dairy farmers will still benefit from the advertising, lobbying and research of the dairy cooperative. Third, cooperative organizations often have their quantity set by individual members instead of a top-down decision. This perverse incentive found in the mathematics is extreme and is not realistic. A more reasonable objective for an AOS with pricing power is to either maximize total wage for the firm, or to continue to produce until wage is equal to the market wage.

Total wage for an AOS firm will be maximized where revenue is maximized which is at the quantity where price elasticity equals 1 and where marginal revenue equals 0. This will be a quantity very different than where a capitalist monopolist operates and if marginal costs are increasing (a simple assumption) the AOS firm will out produce and hire more workers than a capitalist firm. If an AOS firm choses the objective of continuing to produce until the revenue divided by labor is equal to the market wage rate, then a significantly higher output and labor will be achieved. This is a result of the additional producer surplus obtained through pricing power being added back into the wage pool. An example of theses maximizing options is shown in table 1 and table 2. Table 1 shows a sample demand curve and associated cost data. Table 2 shows the resulting profit or revenue per worker. Notice that in this example the monopolist will optimize profit at a quantity of four units which is where marginal cost equals marginal revenue. Table 2 shows that the AOS firm has options which are more favorable for employment. In this example those quantities are found at seven units to maximize total wage, and nine units to match the current market wage. In this example an AOS firm with pricing power can produce

almost double the output and still pay the same market wage. As a result, it is expected that an AOS with pricing power will produce output and hire workers above and beyond a profit maximizing firm with pricing power.

Figure 1 shows these results graphically with point A being the level of quantity a traditional monopolist would produce and point B and higher, showing the potential level of quantity an AOS firm would produce.

TABLE 1
EXAMPLE OF A FIRM WITH PRICING POWER

DEMAND	
Price	QTY
115	0
100	1
85	2
73	3
63	4
55	5
48	6
42	7
37	8
32.5	9
29	10

COST DATA					
Product QTY	QTY of Labor	AFC$	AVC$	ATC$	MC$
0					
1	9	60	45	105	45
2	17	30	42.5	72.5	40
3	24	20	40	60	35
4	30	15	37.5	52.5	30
5	37	12	37	49	35
6	45	10	37.5	47.5	40
7	54	8.57	38.57	47.14	45
8	65	7.5	40.63	48.13	55
9	78	6.67	43.33	50	65
10	93	6	46.5	52.5	75

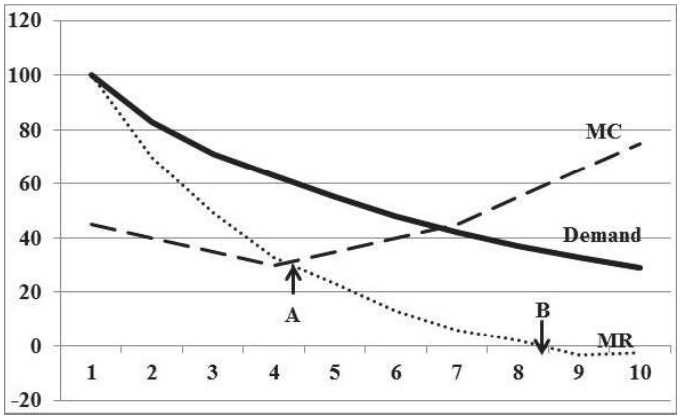
This example is calculated with labor paid at $5.00

TABLE 2
MAXIMIZED OUTPUT OF THE EXAMPLE IN TABLE 1

Output QTY	Monopoly Profit
0	
1	-5
2	25
3	39
4	**42**
5	30
6	3
7	-36
8	-89
9	-158
10	-235

AOS		
Rev/L	Max Rev	WAGE
11.1	100	11.11
10.0	170	10.00
9.1	219	9.13
8.4	252	8.40
7.4	275	7.43
6.4	288	6.40
5.4	294	**5.44**
4.6	296	4.55
3.8	**292**	3.75
3.1	290	3.12

FIGURE 1
A COMPARISON OF OPERATING VOLUMES FOR A TRADITIONAL AND AN AOS FIRM WITH PRICING POWER



Maximize Employment Given a Wage Constraint

Some organizations have goals of helping disadvantaged workers gain employment and providing skills training. For example, Goodwill Industries mission states they are "eliminating barriers to opportunity, and helping people in need reach their full potential through learning and the power of work." These organizations are often classified as non-profits and charitable organizations.

This operating objective can be expressed as:

$$\max l \text{ for } \$ + p * y(l) = w * l \quad (9)$$

This equation states that the dollars "$" (donated) + *p*y(l)* (dollars earned) equals the wage times labor. This is exactly the same as equation 1 with the addition of the donated dollars. This implies that the firm can hire until the marginal output of labor is the same as the wage and in addition can further hire workers to the amount of donated dollars divided by the wage. This firm will be able to hire more workers than the capitalist firm but only by the amount of donations the firm receives.

A twist on this discussion is the idea that the AOS is a non-profit and pays a market wage but is competing with for-profit competitors. Given this situation Lui and Weingber show that there is no advantage to the nonprofit (2004). It will not undercut prices to assume a Stackelberg price leadership position. The nonprofit equilibrium is the same Nash equilibrium regardless of the level of competitive intensity.

Maximize Output

The objective to maximize output is common for service firms and nonprofits (i.e. Red Cross, many nursing homes). For example, Feeding America (formerly America's Second Harvest) has a mission which calls for "eliminating hunger". These kinds of nonprofit organizations are limited by their resources and so they seek capacity building and have individuals dedicated to soliciting donations and raising funds. As such, employment is a diversion of funds from the mission and paid employment will be minimized. These kinds of organizations seek to use volunteers as much as possible in order to save funds for their operating objective. However, these organizations are also incremental to a market economy and so any employment they do generate will be an additional to the labor market. Of the four objectives analyzed, theoretically there should be the following impact on employment:

1. **Maximize profit per employee**: should result in equivalent employment to a profit maximizing firm but possibly have less short term unemployment, i.e. positive impact on labor.
2. **Maximize profit per employee with pricing power**: the AOS structure will result in more labor employed than a capitalist firm.

3. **Maximize employment given a minimum wage constraint**: the AOS hire more workers than a capitalist firm by the amount of donations available.
4. **Maximizing mission objective**: will minimize hiring and seek to be supported by volunteers. However, these firms are unlikely to compete with traditional firms but instead be incremental to the market, and if so will have a positive impact on labor.

In order to understand the overall impact on the workforce from AOS, a view of the distribution by type of AOS organizations within these varying objectives is helpful.

PROFILE OF ALTERNATIVE ORGANIZATIONAL STRUCTURES

Both incorporation and taxation status help define an organization. Cooperatives can be either nonprofit or have a profit motive. Employee control can be wide spread or concentrated. Nonprofits can also be managed by a board rather than employee owned and managed.

The University of Wisconsin Center for Cooperatives provides some insight into the types of AOS in the United States. While this Cooperative study may not include some nonprofit charitable groups, it provides a very good understanding of the types of AOS in the United States.

In this study, forty-two percent of cooperatives are legally incorporated as nonprofit. Thirteen percent of total cooperatives file a for profit tax return. The others file a tax exemption to pass profit on to their members. Table 3 shows a breakdown of U.S. cooperatives.

TABLE 3
COOPERATIVES BY TYPE OF OPERATION

Type	Revenue Billion	Example
Commercial Sales and Marketing	$175.6	Farmers, grocery
Social & Public Services	$4.4	Child care, health care
Financial Services	$265.0	Credit Union, Mutual Insurance
Utilities	$36.4	Water, Rural Electric

Source: University of Wisconsin Center for Cooperatives 2009 Report.

All of these categories except for social and public services would be expected to maximize objectives such as those described in this paper as objectives 1 and 2. Objectives 3 and 4 would largely be found in the category of Social and Public Services which represents less than one percent of this grouping. As such we can assume that Objectives 1 and 2 provide the bulk of impact of AOSs on the labor market.

This implies that AOS should be expected to have a positive impact on employment.

Obtaining Capital for Alternative Organizational Structures

Capitalist are expected to invest capital where it will be maximized. If an objective other than maximizing the return to capital is pursued, the organization will be a second choice for investment capital. And if equity investment is limited, then traditional loans will be harder to obtain, as required down payment and collateral are missing. Some researchers have also suggested that banks may be dis-incentivized to support AOS firms because the communication and ability to influence those who control the AOS is more difficult than working with a traditional management. The difficulties in obtaining capital have been the primary explanation for the low occurrence of AOS for many years. Some theorists have argued that despite its popular acceptance this is not a true weakness of AOS (Schwartz, 2012). They point out the popularity of ESOP and the fact that significant capital was raised to buy out United Airlines and Avis. However, empirical studies are confirming the long held belief that raising capital for AOS firms is a real problem. Craig and Pencavel (1992) find evidence that the co-op plywood companies

of the pacific northwest had difficulty in raising capital. Podivinsky and Steward (2006) use an empirical statistical test in the UK and find strong support that AOS firms have had trouble raising capital.

This barrier seems to be more of a psychological and procedural barrier than one based in economic reality and as a result AOS are currently a very small part of our economic landscape. If AOS can support employment which is a critical problem in both developed and undeveloped economies, then understanding what limits AOS from flourishing, and solving this constraint, should become a key point of action in policy debates.

CONCLUSION

As public policy seeks to improve the labor market conditions, alternative organizational structures must be considered not only for their current role in the economy but also for their untapped potential. Surveys show public psychology provides little faith that profit will maximize social outcomes (Caplan, 2010). As such the public could readily support initiatives to support AOS. While AOS are currently a small part of the total market they are growing and with proper support could be established at a much higher rate. This paper has shown that theoretically AOS are likely to improve employment conditions. When analyzing the employment impact of the four listed organizational objectives all have the potential to increase employment over a traditional capitalist model.

As shown in table 3 the vast majority of AOS are those which are employee managed firms with pricing power. Cooperatives such as Sunkist, Ocean Spray, ACE, REI and many others fit cleanly into the monopolistic competition market structure and do have some limited pricing power. The pricing power is not only in the brand name and advertising, but is likely to be supported by goodwill and social support from the community. This is great news for employment because theoretically this model will increase employment above the traditional capitalist counterpart.

There are public policy options which should be considered to support the establishment and growth of AOS. Overcoming the barriers to raising capital in AOS is the first major point of discussion found in the literature. There are currently a number of public agencies and philanthropies which are willing to support AOS financing such as community development financial institutions, community development block grants, and government training programs and tax credits. Options and ideas have been discussed by many proponents including: a presentation by the Princeton Woodrow Wilson School of Public & International Affairs (2013), by Friedman (2011) and in the Manual: Think Outside the boss (2013). Providing various AOS consulting services is the other major point of discussion in the literature. This includes supporting the legal set up of AOS and providing training and access to additional support services. Many government agencies have programs set up to provide support for AOS. These should be reviewed for effectiveness as well as their breadth of reach.

With additional support AOS firms will increase in number and grow in size and thereby can contribute significantly to improving the current job market crisis.

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