

## **Taylorism, Efficiency, and the Minimum Wage: *Implications for a High Road Economy***

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## ***Implications for a High Road Economy***

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### **Abstract**

Early supporters of the minimum wage couched their arguments in terms of achieving greater productivity and efficiency. Some of the early management theorists like Frederick Winslow Taylor talked about how overall efficiency could be improved if management undertook to make second class workers into first class workers. The efficiency wage argument put forth by Sidney Webb held that a minimum wage would actually encourage managers to invest in their workers' human capital. This paper seeks to elevate the debate and refocus it on the issues that the minimum wage really speaks to: the type of society that we want to be. On the basis of CPS data, I show that the effective minimum wage population is considerably larger than commonly supposed, and that today's unskilled workers are no different than the unskilled industrial workers during Taylor's time. Therefore, Taylor's argument about making second class workers into first class workers through efficiency wages still has application to today's growing low-wage labor market.

**Keywords:** efficiency wage, low-wage workers, unskilled workers, minimum wage, efficiency, productivity, Frederick Winslow Taylor, Taylorism.

**JEL codes:** J00, J1, J3, N3

### **Introduction**

The minimum wage debate has in recent years centered on whether it hurts teenage employment or assists the working poor. This debate has really, however, been nothing more than a sideshow that misses what the issue is really about. Historically, the minimum wage was framed within the larger context of labor-management relations. Early supporters of the minimum wage couched their arguments in terms of achieving greater productivity and efficiency. At the same time, early management theorists like Frederick Winslow Taylor believed overall efficiency could be improved if management made second-class workers first-class workers through the minimum wage. The efficiency wage argument put forth by Sidney Webb held that a minimum wage would actually encourage managers to invest in their workers' human capital.

In this paper I seek to elevate the debate and refocus it on the issue the minimum wage debate is really about, namely, the type of society we want to create. If we follow through on the early arguments over the minimum wage it becomes clear that its proponents' intentions were to build a society of more skilled, more productive, and more efficient workers. In other words, the intent was to encourage the "high-road" over the "low-road" whereby more would be invested in human capital. This argument is relevant today because the ranks of the low-wage labor market have only increased.

I will start by reviewing Taylor's argument and show how it mirrors the efficiency wage argument postulated by Sidney Webb. Taylor made clear that the workers who would benefit from principles of scientific management weren't really skilled workers, and I argue that this argument similarly applies to the low-wage and low-skilled market today. Using data from the IPUMS-CPS for 1982-2013, I show that the ranks of the low-wage labor market — what can be referred to as the "effective" minimum wage population — has grown. As we will see, the growth of this segment of the labor market, which has been initiated by the general transformation from an industrial to post-industrial service sector economy, owes as much to the failure of management. By refocusing the minimum wage debate in this way, we are ultimately forced to address issues that the more conventional way of looking at the minimum wage has conveniently enabled us to neglect.

## **I. Taylorism**

Frederick Winslow Taylor is considered the founder of the school of "scientific management." Conducting time and motion studies at the Bethlehem Steel Plant in Pennsylvania, Taylor sought to ascertain just what would make for a more efficient operation of the firm, especially at a time when most production occurred in the form of Fordist assembly line production. Taylor's philosophical interest in his projects had as much to do with "knowledge" and what managers could "do" with knowledge as they did with simply increasing efficiency. He looked at how managers could use knowledge to make their enterprises more productive, and how they could get more product out of their workers. In his well-known 1911 *Principles of Scientific Management* (2013), Taylor sets out to illustrate the great loss suffered by the United States due to inefficiency. The answer to this problem lies in systematic management, not in the search for some unusual or extraordinary man. The principal object of management should be to secure maximum prosperity, coupled with the maximum prosperity for each worker. But the greatest prosperity can only exist as the result of the greatest productivity of the new machines of the establishment — when each man and each machine are "turning out" the largest possible output:

If the above reasoning is correct, it follows that the most important object of both the workmen and the management should be the training and development of each individual in the establishment, so that he can do (at his fastest pace and with the maximum efficiency) the highest class of work for which his natural abilities fit him (p.11)

In other words, it is management's responsibility to take workers who naturally tend to laziness and are otherwise second-class workers and transform them into first-class workers, the optimum

type of worker. Taylor uses the term “soldiering” to describe the laziness of second-class workers, and it is this soldiering that scientific management intends to eliminate. To do this, management must provide their workers with the resources for their own transformation. That managers must provide their workers the necessary resources would imply, at a minimum, that managers must provide the materials needed to perform their tasks. But it would also imply the need to provide workers the necessary training to perform their tasks.

Taylor’s principles of scientific management and his “carrot-and-stick” attitude toward the worker have been commonly misinterpreted as “anti-worker.” According to Chris Nyland (1998), most industrial relations analysts continue to equate Taylorism with anti-worker and mechanistic job tasks and with the exclusion of employees from workplace decision-making. In reality, Taylor and his main circle advocated policies that closely resembled those proposed by mutual gains theorists. Taylor remained forever constant in his belief that management must be based on scientific principles and that the benefits of his system of management would accrue to both employees and workers. The rigorous commitment to measurement and scientific method was key to effective management. He also believed that the independence of the technician was a second factor that was critical to the scientific development of management. This individual must strive to be an expert of the highest order, a professional who could be trusted to make nonpartisan and informed decisions. Taylor’s claims that his system of management would benefit both workers and employers was only accompanied by a call for parties in production to work together to enhance the output of the firm. Scholars now acknowledge that Taylor insisted that scientific management required managers to systematically train, assist, and teach workers so that each could perform “the highest grade of work for which his natural abilities fit him, and it further means giving him, when possible, this class of work to do” (p.522). Management trains and supplies employees with the information they need to do their jobs, but managers must in turn listen to their workers and react with respect.

Despite his call for cooperation for its own sake and in the interests of greater efficiency, Taylor received scathing criticism for his concept of man as a total economic being motivated by money alone. Most of Taylor’s theories were developed during the “Progressive Era” and gave rise to the efficiency wage in which a gospel of efficiency was possible without embarrassment. Taylor was criticized for emphasizing only the economic nature of people, but at the same time understood that economic initiatives were the prime motivation of the industrial worker. Taylor did see people as naturally lazy, identifying two forms of loafing or soldiering. The first is a “natural” human instinct to be lazy, whereas the second was “systemic soldiering” which resulted from the collusion of workers to restrict productivity. But instead of taking the totally “Theory X” perspective that held that workers needed to be controlled by managers and dealt with harshly, Taylor was really somewhere along the continuum between Theory X and Theory Y extremes — the idea that workers as people needed to be positively motivated. As Louis Fry (1976) points out, Taylor’s views of human nature are pessimistic, but not without hope of improvement. Another criticism leveled against Taylor has been his failure to recognize the potential functional aspects of informal groups. He took the position that the only solution was to destroy the very nucleus of these groups in order to assure worker accountability for outcomes and reduce opportunities for workers to collude with one another to restrict outputs.

To work according to scientific laws, management must take over and perform much of the work that is now left to men. Almost every act of the workman should be preceded by one or more preparatory acts of management that enables him to perform better. Therefore, in order to encourage workers to demonstrate initiative, managers must give them some special incentive that extends beyond that which is given to the average of the trade. In other words, if the average among low-wage workers could be said to revolve around the statutory minimum wage, then managers who seek to obtain more from their workers must in fact pay more. Taylor writes that “this incentive can be given in several different ways, as, for example, the hope of rapid promotion or advancement; higher wages, either in the form of generous piece-work prices or a premium or bonus of some kind for good and rapid work; shorter hours of labor; better surroundings and working conditions that are ordinarily given...” (p. 30). The general adoption of scientific management would eventually, Taylor claims, double the productivity of the average man engaged in industrial work. More importantly, however, society as a whole will benefit from these measures:

But while the whole world would profit by this increase in production, the manufacturer and the workman will be far more interested in the especial local gain that comes to them and to the people immediately around them. Scientific management will mean, for the employers and the workmen who adopt it — and particularly for those who adopt it first — the elimination of almost all causes of dispute and disagreement between them (pp.123-124).

Moreover, the higher wages that accompany this type of management will ultimately eliminate the wage question as the source of dispute. But it will also foster intimate cooperation between managers and workers, which in turn will reduce friction and discontent. Consequently, society will prosper because the low cost of production accompanying a doubling of output will enable companies who adopt this management to compete far more effectively than before. It means an increase in prosperity and a diminution in poverty, not only for those workers, but for the communities in which they live. At the same time, it becomes clear that if workers are not transformed into first-class workers, the fault really lies with management. It is therefore the fault of businesses and their management that society is not a high-wage society.

Sigmund Wagner-Tsukamoto (2007) suggests that Taylor was actually an early pioneer of institutional economics. Institutional structures are conceptualized as incentive structures, and the goal of conflict resolution is to generate mutual advantages. Taylor pointed out the potential dilemma threatening cooperation. If the increased rewards that had been given to workers who were responsible for increased work performance were to be taken back, lower performance in turn could be expected. Consequently, productivity would decrease. Both worker opportunism and managerial opportunism creates conflicts — “specifically ‘antagonism’ in organizational behavior, which would lead to ‘loss for both parties’” (p. 106). Taylor was particularly critical of a reward and distribution system that did not take into account levels of individual contribution of organization members and rewarded individual over-performance or under-performance in the same way. Therefore, he recommended changing the system of management so that the interests of workmen and management would be aligned rather than antagonistic. He further argued that profit increases achieved through scientific management were to be shared among all who had

contributed to generating them, including the worker in the form of higher wages. This “sharing” of profits through higher wages has long been a fundamental assumption of neoclassical economics; workers earn higher wages when their marginal revenue product increases. In a competitive market each worker receives the value of his or her marginal revenue product, which is the amount of an increase in e.g. a unit of labor. The marginal revenue product of labor is often the criterion for determining how many more workers to hire because the firm is able to calculate how much more output it can expect based on the number of added units. But if the marginal revenue product can be increased from the greater efforts of workers without having to increase their number, it then becomes feasible to raise their wages without eating into the profits of the firm. It is on this basis that higher wages are justifiable.

Andrew Sum and Joseph McLaughlin (2010), for instance, note that since the Great Recession ended in 2009, productivity has been steadily increasing, but those productivity gains have not been shared among workers in the form of higher wages. For Taylor this would clearly be an example of poor management because in such a scenario cooperation is unlikely to materialize. Employer prosperity is, in the long run, impossible without employee prosperity. In this regard, Taylor’s suggestion of mutually beneficial interaction outcomes reflects a non-zero-sum model of social exchange. An accurate reading of Taylor actually suggests that he was actually quite humanistic in that although management does not need to offer special incentives to his workers above and beyond the trade average, when these incentives are offered it must be accompanied by personal consideration for and friendly contact with the worker. This process can only come about from a genuine interest in the welfare of the employee. While the purpose of scientific management is to serve management, it also enhances the welfare of all parties in the firm.

Under scientific management, managers direct workers in the “one best way,” but Taylor identified the “very essence” of this management: cooperation between managers and workers. It was Taylor’s philosophy that science and reason, driven by data, would allow management and workers to collaborate. Efficiency thus became the key goal of scientific management. Roland E. Kidwell and Philip Scherer (2001) note the similarity between scientific management and quality management, where the workforce is involved in process improvement while management is conspicuously more “up-front” with employees. Because of the specialization of the factory system and the labor-intensive nature of mass production during the first half of the 20<sup>th</sup> century, scientific management was readily applicable. But as they point out, scientific management from a utilitarian perspective is ethical in its focus on economic outcomes, greater productivity, higher quality, lower cost, greater profit and lower prices. Of the two systems, however, quality management is considered more ethical than scientific management.

But it must be recalled that in Taylor’s time most factories operated according to a two-rate system. One “low rate” applied to all workers who did not attain standard, and a higher rate was given to those who attained or exceeded standard. The higher rate was also known as a task-and-bonus system. The daily task was set for a first-class worker who was expected to perform the tasks most of the time and to improve regularly. The first-class worker received anywhere from 33% to 100% more in wages than the trade average. Taylor tended to emphasize the task rather than the piece (Boddewyn 1961).

Still, much of the literature portrays Taylor as the typical authoritarian who viewed workers as appendages of their machines motivated solely by money. But as Hindy Laurer Schacter (1989) argues, Taylor's scientific management actually prefigured the idea of increased worker participation in decision making. Citing Peter Drucker's brief note in the 1970s, Taylor's motivational strategy actually provided the worker an opportunity for full personality development. Taylor viewed training as a means to long-term worker development. Through scientific management, unskilled laborers had the opportunity to learn time-study and job analysis. A review of the literature actually shows that Taylor anticipated several key motivational strategies generally associated with the human relations movement. Taylor himself understood the importance of higher motivation. In offering workers the opportunity to name acceptable suggestions after the workers who originated the process, he effectively used esteem as a tool of motivation. By urging employers to develop unskilled laborers, he was offering workers a chance at self-actualization.

Maarten Derksen (2014) too notes that Taylor's introduction of technological thinking into shop management spurred articulation of what was sometimes referred to as "the human factor." His thinking about the workers' mentality and about the "right way" for managers to work together anticipate the human relations school of the 1930s. The history of management from Taylor to human relations isn't one of progressive humanization, but rather one of successive redefinition and realignment of the human and mechanical factors of production and their management. Large-scale industrial unrest often arose out of conflicts between foremen and workers. The core of Taylor's shop management could be said to consist of four elements: a focus on industrial workmen; strict separation of planning and execution of work; the exact timing of constituent parts or the elementary units of a job; and the differential piece rate. For Taylor, managing labor scientifically meant that labor had to be individualized and management concentrated in a dedicated department. This would allow workers to understand the science behind their work.

Still, not everyone was enthusiastic about scientific management. The bonus and other wage systems were long met with resistance, as they were seen as forms of "driving" or "speeding." Samuel Gompers, in particular, led the charge against scientific management. In an editorial in the *American Federationist*, he called it a "machinery to perfect the living machine" (p. 151). He claimed that Taylor wanted to turn workers into high-speed automatons. Separating planning from execution only robbed men of "initiative" in a system that "preys upon the independence, the development, and the character of the worker," and "his individuality, initiative, and vitality" (p. 152). This ignores the fact that Taylor went to great lengths to point out that there was more to scientific management than mechanism and efficiency. He showed that strife had been the main organizing principle in industry. Whereas employers want low labor costs, workers want high wages, and it is from this apparent incompatibility that the main traits of industrial life during his time became all too obvious: labor unions and strikes, soldiering by the workers, wage-cutting by the employers as driven by foremen. For Taylor, this strife was inefficient and unnecessary. Low labor costs and high wages are not incompatible at all. On the contrary, if the work is done in the scientifically determined, most efficient way, the employer would be able to pay higher wages to fewer workers and still raise production. At the same time, the workers would be able to earn more without being driven to exhaustion. Taylor's perspective on the mind of the worker was arguably broader than that of many early industrial psychologists and psycho-

technicians, suggesting that the later influence of psychology on management theory and practice continued a development Taylor initiated. Put simply, an employer who shows an interest in his or her employees will ultimately get more product from them.

### **Efficiency Wage**

The broader reading of Taylor, then, would appear to suggest symmetry with efficiency wage theories both expressed by Sidney Webb and the later neoclassical arguments presenting higher wages as means to avoid shirking on the job. And yet, at the same time, to the extent that Taylor is talking about worker development there may also be symmetry with Amartya Sen's notion that whatever serves to lift people out of poverty, like higher wages, also enables them to develop their capabilities.

Early economic arguments for the minimum wage revolved around achieving greater efficiency because it would allow workers to better maintain themselves. Webb (1912) was foremost among these early proponents. He argued that a wage floor would be beneficial to employees and employers alike because better paid workers would be able to work harder, having greater energy and self-sustainability. Moreover, higher morale among employees would lead to greater loyalty to the firm. A legal minimum wage, then, would positively increase the productivity of the nation's industry by ensuring that those who are left unemployed would be the least productive members of the workforce. Not only would employers be forced to look for the best workers to increase their overall productivity, employees would be forced to develop their skills so that they could be counted among the better class of workers.

Ironically, the logic of this efficiency was perhaps best summed up by George Stigler (1946), who argued that an effective minimum wage either results in the layoff of those workers whose value is less than the minimum, or in an increase in productivity among low-efficiency workers. The contemporary neoclassical economist usually couches the efficiency wage in terms of shirking, and not of the Webb effect. In other words, workers will, in a competitive market, take steps to avoid shirking their duties when employers pay them higher wages. When paid a higher wage, workers have an incentive to hold onto their jobs because the cost associated with job loss is now higher. Because workers will seek to avoid shirking, their employers will benefit from savings on monitoring costs as well. These savings actually offset higher wage costs and simultaneously provide positive inducement to work. Consequently, workers work harder and become more productive (Shapiro and Stiglitz 1984).

Early neoclassical economist John Bates Clark (1913) made a similar argument when he argued that the absence of a minimum wage essentially triggers a process whereby employers pick from the ranks of the most necessitous men and women. As he put it:

Mere need and helplessness give citizens a certain valid claim on the state, even though it has done nothing to cause their troubles. Privation that is traceable to social defects makes a more cogent claim. This, in fact, is the basis of the demand for minimum wage laws, since the ill-paid workers are regarded as victims of social arrangements (p. 294).



Echoing this line of thought, businessman Edward Filene (1923) maintained that higher wages would result in higher quality workers. Whereas neoclassical arguments hold that paying low-skilled workers more than their worth is inefficient, and that it is further inefficient to invest in their training because they may leave and take their newly acquired skills and training elsewhere, the earlier arguments for the minimum wage simply maintained the inefficiency of not paying a higher wage. Employers simply would not be able to get effective organization out of those who were not intelligent, and they could not be intelligent if they did not have enough to live on properly.

Jozef Korning and Patrick Walsh (1993) note that contemporary efficiency wage theories have been proposed as attractive ways of explaining involuntary unemployment and other aspects of the labor market. Most efficiency wage theories predict a positive relationship between a wage premium and performance. Looking at efficiency wages in Chili, e.g., Omer Gokcekus and Edward Tower (2003) found that higher wages did draw more people into the labor market. The minimum wage attracted high-reservation wage workers into the minimum wage sector. If the labor demand curve in the free sector is quite flat, the vast majority of workers displaced by the minimum wage will find employment in the free sector – thereby raising aggregate employment. At the same time, the displacement of workers by only a slightly binding minimum wage has only negligible effects on the utility of labor, which comes to be employed or is displaced by the minimum wage because the new minimum wage is close to both the wage in the free sector and the reservation price these workers attach to their leisure. An efficiency wage also assumes costs savings to employers from higher wages. These employers now experience lower turnover and therefore save on recruitment and training costs as a result (Howes 2002; Fairris 2003; Reich *et.al.* 2003).

## **Personal Development**

A higher income would also enable workers to develop their capabilities. Amartya Sen (1999) points out that income deprivations and capability deprivations are correlated. To the extent that individuals at the bottom of the income distribution could be said to be poor, Sen argues that poverty deprives individuals of their capabilities. Poverty should thus be viewed as a deprivation of basic capabilities rather than just a state of low income. Sen defines “capabilities” as the alternative combinations of functioning that are feasible for a person. A capability is a kind of freedom. He therefore suggests that there is a strong case to be made for judging individual advantage in terms of the capability that a person has — “the substantive freedoms he or she enjoys to lead the kind of life he or she has reason to value” (p. 87). Sen takes the argument further:

The problem of inequality, in fact, gets magnified as the attention is shifted from income inequality to the inequality in the *distribution of substantive freedoms and capabilities*. This is mainly because of the possibility of some “coupling” of income inequality, on the one hand, with unequal advantage in connecting incomes into capabilities, on the other (p. 119)

A society that pays its workers low wages deprives them of their capabilities. By extension, then, a society that fails to maintain a reasonable minimum wage, or allows the size of the effective

minimum wage population to grow, is not only aiding and abetting the deprivation of capabilities, but is also aiding and abetting the diminution of their capabilities. This suggests that the choice of the “low road” over the “high road” was facilitated by public policy while being a deliberate choice of American management as well (Sabel and Piore 1984; Hacker and Pierson 2010; Smith 2012; Stiglitz 2012).

When Taylor was writing he was specifically talking about the application of scientific management to the nation’s factory system at the heyday of the industrial revolution. Industrial factories modeled on the Fordist system were the largest employers of what we would today call “unskilled labor.” Organized labor gave dignity to wage workers and over time, through the raising of wages, effectively transformed the way society viewed the worker (Glickman 1997). Those in manufacturing were considered to possess “skill” while those in low-paying service jobs were not. In the post-industrial service economy, the hamburger flipper is the prototypical unskilled worker. As much of the criticism of minimum wage increases revolves around the argument that low-skilled workers simply are not worth the higher wage, one wonders just how applicable either Webb’s efficiency wage or Taylor’s scientific management would be. Taylor (2013) addresses this very question:

...the average man would question whether there is much of any science in the work of shoveling. Yet there is little doubt, if any intelligent reader of this paper were deliberately to set out to find what may be called the foundation of the science of shoveling, that with perhaps 15 to 20 hours of thought and analysis he would be almost sure to have answered as the essence of this science. On the other hand, so compellingly are the rule-of-thumb ideas still dominant that the writer has never met a single shovel contractor to whom it had ever occurred that there was such a thing as the science of shoveling. This science is so elementary as to be almost self-evident (p.56).

The Bethlehem Steel Company employed 600 shovelers and laborers of this general class. The low-skilled work of the shoveler is no different from the low-skilled work of the hamburger flipper, but Taylor shows that through scientific management, this low-skilled worker can be made more productive. Of course Webb’s response to Taylor might have been that a higher wage in and of itself would make the low-skilled worker feel better about his job, resulting in a natural tendency to put more effort into the work and greater productivity.

### **Effective Minimum Wage Population**

A key reason for resurrecting Taylorism and its application to the low-wage labor market is because of the changing nature of the labor market as a whole. Because the concern is with the general low-wage labor market, it really serves no useful purpose to conceive of the minimum wage labor market as only those earning the statutory minimum wage. The statutory minimum wage is really more symbolic — a reference point for the general low-wage labor market whose wages hover around the statutory minimum wage (Spriggs and Klein 1994). It therefore makes more sense to define the low-wage labor market as those earning what can be referred to as an “effective minimum wage,” which for our purposes can be defined as those earning between the statutory minimum and 50 percent of average annual earnings. This definition is in line with an

historical tendency to set the minimum wage at about 50 percent of average annual hourly earnings. Using data from the IPUMS–Current Population Survey (CPS) from 1982 to 2013, we will look at the demographics of the low-wage labor market. For the purposes of our analysis we will focus on the effective minimum wage labor market because it is increasing in size as a percentage of the overall labor market. Table 1 presents labor force figures for full time working adults over the age of 18, the number of effective minimum wage earners in each year, their percentage of the CPS sample labor market, the minimum wage for each year, the average annual hourly earnings for each year and the 50 percent of average annual hourly earnings

**Table 1: Labor Force Figures**

Year	Minimum Wage	50 % of Average Annual Hourly Wage	Average Annual Hourly Wage <sup>1</sup>	Number Employed	Number of Effective Minimum Wage Earners	Percentage of Effective Minimum Wage Earners
1982	\$3.35	\$3.73	\$7.46	54,936	1,803	3.3
1992	\$4.25	\$5.91	\$11.82	56,284	5,522	9.8
2002	\$5.15	\$9.52	\$19.04	81,486	12,102	14.9
2003	\$5.15	\$9.72	\$19.44	80,034	13,840	17.2
2004	\$5.15	\$9.94	\$19.88	78,569	13,041	16.6
2005	\$5.15	\$10.15	\$20.30	78,062	13,546	17.4
2006	\$5.15	\$10.50	\$21.00	78,362	13,535	17.3
2007	\$5.85	\$10.95	\$21.90	78,846	12,484	15.8
2008	\$6.55	\$11.19	\$22.38	78,515	11,550	14.7
2009	\$7.25	\$11.25	\$22.50	74,988	8,469	11.3
2010	\$7.25	\$11.86	\$23.72	73,296	9,484	12.9
2011	\$7.25	\$11.95	\$23.90	71,486	9,186	12.9
2012	\$7.25	\$12.39	\$24.78	71,053	10,702	15.1
2013	\$7.25	\$12.70	\$25.40	71,646	11,718	16.4

Source: Miriam King, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick. Integrated Public Use Microdata Series, Current Population Survey: Version 3.0 [Machine-readable database]. Minneapolis: University of Minnesota, 2010. Files 1982, 1992, 2002-2013.

As we can see, in 1982, the effective minimum wage population was only 3.3 percent of the full-time working labor market. By 2013 it was 16.4 percent – an increase of 497 percent. Just between 1982 and 2002 the effective minimum wage labor market increased by 521 percent.

<sup>1</sup> These wages are based on the average annual hourly wage of those in full-time work in the CPS data set.

Much of the criticism of minimum wage increases centers around the claim that only a very small segment of the labor market earns the minimum wage — usually around 2 percent — and that of this small segment most are either teenagers or other secondary earners. Therefore, it is claimed, the benefits of an increase in the minimum wage will be so small that the cost is unjustified. But as Table 1 makes clear, when we take the “effective” minimum wage labor market into consideration, we are suddenly talking about a huge segment of the working population. Moreover, as the demographics in Table 2 show, most of these workers are not teenagers or secondary earners!

**Table 2: Demographics**

	1982	1992	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b><i>Age</i></b>														
15-17	.2	.2	.4	.2	.3	.3	.3	.3	.3	.2	.2	.2	.1	.2
18-24	27.3	21.9	18.2	17.4	17.8	17.6	18.8	17.1	17.3	14.7	14.1	13.3	13.0	13.8
23-34	26.6	31.0	26.6	25.7	25.8	25.8	25.4	26.3	25.8	25.3	26.9	27.0	26.4	26.5
35-44	18.4	22.3	25.5	26.4	24.9	24.6	23.6	23.7	22.4	23.0	22.1	22.7	22.6	22.2
45-54	15.0	14.7	19.0	19.7	20.1	19.8	20.0	20.0	20.3	22.3	22.0	22.3	21.9	21.1
55-64	11.2	8.0	8.5	8.9	8.9	9.8	9.6	10.1	11.2	11.5	12.2	11.8	12.6	13.1
65=74	.9	1.6	1.5	1.3	1.6	1.7	1.9	1.9	2.1	2.1	2.0	2.1	2.4	2.4
75+	.2	.3	.4	.4	.5	.5	.5	.6	.6	.7	.5	.7	.9	.7
<b><i>Education</i></b>														
Up to 12 years	75.0	23.8	22.1	21.5	22.0	21.5	22.0	21.6	19.4	18.3	17.5	17.1	16.3	16.7
HS Diploma	2.7	44.6	42.2	41.6	40.4	41.3	40.7	40.6	40.6	39.7	40.6	41.1	39.2	37.9
Some College, No Degree	22.3	16.8	18.5	18.5	18.7	18.3	18.6	18.1	19.6	20.4	18.9	19.2	19.5	19.9
Associate Degree		4.9	7.4	7.1	7.7	7.7	7.6	8.3	8.6	9.1	9.4	9.6	10.5	10.6
BA Degree		7.8	7.9	8.9	9.0	8.9	8.9	9.1	9.4	10.3	11.1	10.1	11.7	12.0
Professional Degree		2.1	2.0	2.4	2.3	2.3	7.6	2.2	2.4	2.2	2.5	2.8	2.8	2.8
<b><i>Sex</i></b>														
Male	35.7	43.2	42.6	43.5	45.0	45.7	45.1	45.3	44.3	42.0	44.1	44.5	44.9	46.6
Female	64.3	56.8	57.4	56.5	55.0	54.3	54.9	54.7	55.7	58.0	55.9	55.5	55.1	53.4

<b><i>Race</i></b>														
White	82.5	84.4	79.6	78.6	77.7	78.7	78.2	78.5	76.7	77.3	77.0	76.5	76.1	76.9
Black	13.4	11.3	13.8	13.6	13.6	12.7	12.7	12.7	14.0	14.0	13.3	14.0	13.7	13.6
<b><i>Industry</i></b>														
Agriculture, Forestry, Fishing	2.7	3.1	3.2	3.0	3.6	3.4	3.8	3.5	3.5	2.7	2.9	3.3	3.5	3.5
Mining	.3	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3
Construction	4.2	5.3	7.2	6.9	7.6	8.1	8.5	8.5	7.4	6.6	5.7	6.0	5.4	6.5
Manufacturing	20.3	17.5	14.6	13.8	13.0	13.1	12.3	12.8	12.11	11.2	12.0	11.8	11.5	11.8
Transportation, Communication & Other Utilities	3.9	3.4	4.0	3.8	3.6	3.4	3.7	3.9	3.8	4.4	4.3	4.4	4.0	4.4
Wholesale Trade	3.2	3.1	2.8	2.7	2.8	2.5	2.7	2.4	2.6	2.5	2.6	2.9	1.9	2.4
Retail Trade	20.2	24.2	22.9	23.1	23.9	23.7	24.5	23.2	24.4	24.2	24.0	23.1	23.8	23.0
Finance, Insurance & Real Estate	6.4	6.0	5.3	5.3	5.0	5.0	4.6	4.6	4.8	5.3	5.0	4.5	4.9	5.3
Business & Repair Services	5.0	6.0	7.1	7.3	7.8	7.0	6.7	7.4	7.6	7.3	7.7	7.7	8.2	8.0
Personal Services	4.9	5.6	4.9	5.4	4.8	4.5	4.6	4.8	4.5	4.2	4.7	5.1	4.8	4.7
Entertainment & Recreation	1.2	2.0	2.2	2.4	2.1	2.4	2.6	2.2	2.5	2.3	2.4	2.2	2.2	2.2
Professional & Related	24.9	20.9	22.9	23.3	23.2	24.1	23.5	23.7	23.9	26.0	25.5	25.9	26.7	25.1
Public Administration	2.8	2.4	2.5	2.6	2.4	2.5	2.4	2.8	2.5	2.8	2.8	2.7	2.7	2.8

<i>Occupation</i>														
Professional, Technical	9.7	9.2	10.7	11.7	11.4	11.6	10.9	11.4	11.4	12.2	12.0	12.4	13.1	12.9
Farmers	.1	.5	.4	.3	.3	.2	.3	.2	.3	.3	.3	.3	.2	.3
Managers, Officials, Proprietors	4.5	7.7	7.6	6.9	6.2	5.8	6.3	5.9	6.0	6.9	7.1	7.1	7.3	7.7
Clerical and Kindred	24.1	22.3	20.6	22.1	20.5	20.8	21.2	21.4	22.2	23.2	21.9	21.1	20.9	21.5
Sales Workers	4.5	5.2	4.8	4.9	5.3	5.0	5.1	5.0	5.0	5.0	4.7	4.5	4.2	4.5
Craftsmen	7.6	8.1	8.5	8.9	9.2	9.5	9.3	8.9	8.9	7.8	7.2	8.3	7.4	8.3
Operatives	20.1	17.7	15.6	15.6	15.2	15.3	14.8	15.2	14.4	14.2	15.6	14.1	14.3	14.1
Service Workers (private household)	.7	.6	.6	2.7	2.3	2.3	2.5	2.2	2.2	2.0	2.3	2.8	2.7	1.8
Service Workers (non- private household)	21.2	20.7	22.0	20.4	21.6	21.8	21.5	21.6	21.7	21.5	22.9	22.4	23.0	21.7
Farm Laborers	1.9	1.5	1.4	1.2	1.4	1.5	1.5	1.5	1.4	1.2	1.0	1.3	1.5	1.4
Laborers	4.7	6.6	7.9	5.2	6.5	6.3	6.6	6.8	6.7	5.6	4.9	5.8	5.4	5.8

During the 31 year period under consideration, there was among the effective minimum wage labor market a 49.5 percent decrease in the 18-24 year old cohort, a 20.7 percent increase in the 35-44 age cohort and 40.1 percent increase in the 45-54 age cohort. In other words, effective minimum wage earners are older in 2013 than they were in 1982. In 1982, the vast majority of effective minimum wage earners (75 percent) had not even completed a high school education. By 2013 only 16.7 percent of the effective minimum wage population had less than a high school education, a decrease of 77.7 percent. Meanwhile, the percentage of effective minimum wage earners with a high school diploma increased 303.7 percent from 2.7 percent to 37.9 percent in 2013. On the surface, these changes alone may tell us quite a bit about the changing nature of the U.S. economy. That only 3.3 percent of the labor market in 1982 were effective minimum wage earners and of that 3.3 percent the vast majority had not completed high school suggests that the effective minimum wage labor market — what can be referred to as the low-wage labor market — was comprised of predominantly low-skilled workers. Prior to the decline of manufacturing, a high school graduate could more or less count on securing a decent middle class job in a factory. These demographics actually make clear that not only has the low-wage labor market grown, it now appears to include those who were previously considered “skilled” (to the extent that educational attainment serves as a proxy for worker skill level at all). Over this same period, there was also a decrease in the percentage of women who were effective minimum wage earners and an increase in the percentage of men who were minimum wage earners.

Over this period there were significant changes in industrial and occupational composition; these speak to the changing nature of the economy. Manufacturing declined 41.9 percent from 20.3 percent in 1982 to 11.8 percent in 2013. At the same time, construction increased 54.8 percent from 4.2 percent in 1982 to 6.5, and business and repair services increased by 37.5 percent from 5.0 percent to 8.0 percent. Meanwhile, there was a 77.8 percent increase in “Managers,” “Officials,” and “Proprietors” – from 4.5 percent in 1982 to 7.7 percent in 2013. There was a 144.3 percent increase in service workers in private households from .7 percent to 1.8 percent. Laborers also increased 23.4 percent from 4.7 percent in 1982 to 5.8 percent in 2013. At the same time, craftsmen increased by 9.2 percent from 7.6 percent in 1982 to 8.3 percent in 2013 while operatives declined by 29.9 percent from 20.1 percent in 1982 to 14.1 percent in 2013.

Peripherally, then, it is clear that higher-paying middle-class jobs have decreased and have been replaced by lower-paying, lower-skilled jobs at the bottom end of the market on the one hand and higher-paying, higher-skilled jobs at the top of the market on the other. These trends do, to some extent, only support the claims of those who argue that there is a mismatch between the skills of workers and the skills needs of employers (Katz and Murphy 1992; Katz and Krueger 1992; Juhn, Murphy and Pierce 1993). A logistical regression analysis on the dependent variable of who is more likely to be an effective minimum wage worker may bear this out. But it may also suggest that Taylor’s formula still has application in the changing economy. In the following logistical regression, I test for the effects of being female, having less than a 12<sup>th</sup> grade education, being black, being between the ages of 18 and 24, 35 and 44, and 45-54, being in manufacturing, having a high school diploma, being in retail trade, being in business and repair services, being an operative, being a laborer, and being a service worker in non-private



household on being an effective minimum wage earner. Regression coefficients and their statistical significance can be seen in Table 3. All variables are set to a value of 1.

The regression coefficients suggest that over time, skills do become an issue. In 1982, women had the highest probability of being effective minimum wage earners. The size of the female coefficient declines by 2013, but the size of the less than 12<sup>th</sup> grade education coefficient increases dramatically, and that does indeed appear to be the most important factor in accounting for one's likelihood of being an effective minimum wage earner. At the same time, it is worth noting that the size of the high school graduate coefficient also increases dramatically by 2013, suggesting that high school graduates with no further education also have an increased likelihood of being effective minimum wage earners. We also see an increase in the size of the coefficients for retail trade and laborers. That the size of the coefficient decreases for women does suggest that more and more men are finding themselves among the ranks of the effective minimum wage labor market. Again, all of this would appear to speak to the changing structure of the overall labor market and the low-wage labor market in particular.

Still, the fact remains that a much larger proportion of the workers fall into the effective minimum wage labor market. It thus may no longer be reasonable to suggest these workers merely "retrain" to acquire more marketable skills. Rather, one wonders whether the skills level of this labor market is significantly different from the skills level of the labor market that Taylor believed would benefit from application of scientific management. Even if there are limits to the application of scientific management, the Webb effect should still be applicable. If nothing else, Taylor seems to imply that good management would have implemented the Webb effect as a component part of scientific management. Perhaps when we look at the efficiency argument as formulated by both Taylor and Webb within the context of the data on the growing "effective" minimum wage labor market, we need to conclude that this growth and the failure to ensure higher wages for this segment of the labor market does represent an overall failure of management. That low-skilled workers, as exemplified by the growing significance of the less than a 12<sup>th</sup>-grade education variable, comprise the bulk of this labor market is perhaps suggests a failure to make first-class workers out of second-class workers.

**Table 3: Regression Coefficients**

	1982	2002	2003	2005	2006	2007	2008	2009	2010	2012	2013
Female	1.094	.907	.866	.783	.836	.797	.799	.828	.738	.725	.696
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Less than 12 <sup>th</sup> Grade	.636	1.245	1.394	1.414	1.440	1.364	1.265	1.187	1.129	1.171	1.307
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Black	.416	.145	.214	.167	.153	.115	.241	.235	.147	.236	.285
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
18-24 Years Old	.619	.735	.897	.906	.973	.796	.790	.692	.701	.714	.841
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Manufacturing	-.251	-.026	-.044	-.057	-.144	-.019	-.023	-.076	.059	-.003	.038
	.001	.336	.172	.088	.000	.585	.519	.072	.141	.940	.294
High School Diploma	.097	.738	.740	.764	.753	.721	.704	.684	.714	.719	.731
	.532	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Retail Trade	.347	.458	.536	.545	.619	.565	.636	.593	.628	.607	.574
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Business & Repair Services	.284	-.004	.109	.112	.025	.059	.137	.062	.156	.141	.068
	.013	.903	.005	.005	.539	.137	.001	.184	.000	.001	.086
Operatives	.625	-.640	.609	.608	.612	.623	.605	.644	.782	.630	.583

	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Laborers	.576	1.031	.732	.809	.850	.882	.891	.758	.723	.754	.772
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Service Workers (non-private household)	.747	.688	.623	.777	.713	.727	.695	.556	.733	.760	.664
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
35-44 Years Old	-.085	-.246	-.169	-.243	-.244	-.229	-.284	-.186	-.236	-.190	-.191
	.211	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
45-54 Years Old	-.112	-.328	-.273	-.354	-.319	-.348	.344	-.224	-.258	-.259	-.270
	.129	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Constant	4.750	2.154	2.740	2.681	2.726	2.774	2.848	3.139	2.790	2.759	2.633
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

## Conclusion

We have seen that Taylor's theory of scientific management, particularly management's responsibility to transform second-class workers into first-class workers, actually supports, if not altogether assumes the efficiency wage arguments made by other economists of his generation. Given the growth of the low wage labor market over the last few decades, these theories might well be applicable today, especially if we as a society would like to grab the "high road." It has to be remembered that the second-class workers of Taylor's time were no more skilled than the low-skilled workers in today's low-wage labor market. Taylor recognized that management at least had a responsibility to make the effort to create an overall prosperous society. Webb added on to this by recognizing that management may tend to the same laziness as Taylor's second-class workers, justifying a little "push" through public policy. The overall point is that by refocusing the minimum wage debate away from contemporary arguments of "needs," "fairness," and "morality" toward the earlier arguments of efficiency, the idea of a higher minimum wage could attain a broader appeal. In that vein, it can become the basis for a collaborative effort between public officials, labor, and business towards a achieving a higher wage society predicated on the "high road."

It can also serve as a basis for restoring the middle class. In an examination of data from 1962 to 2008, Levin-Waldman (2011) created wage contours beginning from the statutory minimum wage in each year to 25 percent above it. Each successive contour ranged an additional 25 percent until 10 contours were created.<sup>2</sup> He found that in each year that the statutory minimum wage increased, the median wage in each of the ten contours increased, and in each year that it did not, the median wages in each of the ten contours remained flat. The construction of the ten contours in 2008 encompassed up to 70 percent of the labor force, and those earning at the top of the tenth contour were earning in the area of \$100,000 a year. Because median wages were rising following increases in the statutory minimum wage, it appears that the minimum wage did indeed have positive welfare effects for the middle class—the minimum wage benefits the middle class, not just the poor. Moreover, logistical regressions for each year that there was a minimum wage increase showed there to be no adverse employment consequences.

To the extent that the minimum wage benefits the middle class, it also must be viewed as but one tool in a larger policy arsenal aimed at achieving job creation and economic growth. By increasing the wages of a broader swath of the labor market, a greater number of people have increased purchasing power, enabling them to increase their demand for goods and services in the aggregate (Levin-Waldman 2012). Therefore, by refocusing the minimum wage debate toward the efficiency wage aspect, the entire concept of the minimum wage is cast in a new light. Not only is the minimum wage restored to its rightful place in history as a labor-management

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<sup>2</sup> Wage contours were initially defined by John Dunlop (1957) to explain how a firm's internal wage structure might be affected by external or internal forces. Wage contours were defined as a group of workers with similar characteristics working in similar industries and earning similar wages. For each group there would be a group of rates surrounding a key rate, and these group rates would be affected by changes in the key rate. Within an industry, the key rate would essentially be defined as any rate serving as the reference point for that industry.

issue, but it also becomes a key measure aimed at achieving fair and equitable growth for all of society.

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