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## THE PUSH FOR A U.S. LIVING WAGE: MODELING FOR INFLATION, UNEMPLOYMENT, BOTH, OR NEITHER

Few U.S. economic issues in the last half-century have engendered as frequent political controversies as the minimum wage. This article looks at both the politics behind efforts to make the minimum wage a “living wage” in recent elections, and the many relevant economic effects, such as inflation and unemployment, from both a macro- and a microeconomic perspective. The paper offers several original conceptual models, in various economic situations, which examine the regressions of eight U.S. states over the 1996-2016 period. The results show that high minimum wages can harm employment, but that moderation can aid stagnant wages in economically-improving inflationary settings without drastically reducing employment short-term

JEL: J31; J32; E24; E31, E32

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The minimum wage is a quickly changing issue, as states and cities are now precipitously changing their laws across the United States, while the federal minimum wage, which is a base, has remained low for a decade. Many states rely solely upon the federal minimum wage alone, while others trump it. Political leaders are divided by party lines, each following interest groups, while economists are still disagreeing, as they have since the law’s creation in the 1938, with no clear consensus as to its effects on unemployment or inflation, and when or why each is affected. Part of the political arguments center around income inequality, which is one of the greatest social mysteries of our time.

The current federal minimum wage is USD 7.25/hr. The research questions of this paper are, as follows: how does the minimum wage affect employment and inflation, and their relationship, and what should be the United States policy given other goals in the current political-economic climate. The hypothesis is that, in general, the minimum wage hurts employment, but that under certain circumstances, the minimum wage can be beneficial to employment and wages, provided it is kept in moderation and close to free market equilibriums. The findings indicate that extremism can misemploy, but boldness can bolster, depending on the state of the economy at the time. A moderate increase of the federal minimum wage should be feasible politically in the United States.

Different researchers have used a variety of methodologies to argue for or against the minimum wage, which are complex, because economists do not truly know the “market rate” for wages in the economy, nor the elasticities of supply and demand curves across scores of different industries and millions of different products

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and jobs. Some scholars have used surveys of small businesses, others using complex math. This article offers several original conceptual models and then uses an Ordinary Least Squares regression with several original control variables to test for their accuracies.

### **Where Do We Stand? The 2016 Election and Its Aftermath**

President Obama, immediately after taking office in 2009, fruitlessly proposed raising the minimum wage to USD 9 per hour. In his second term, he made a proposition for USD 10.10 per hour that was supported by some in Congress, which was controlled by the Republicans at the time. In the 2016 U.S. presidential election, Senator Bernie Sanders (VT) introduced legislation running up to the primaries to raise the federal minimum wage, which trumps state minimum wages, to USD 15 per hour, but the bill never came to a House vote. Former Governor Martin O'Malley (MD) quickly endorsed this proposal, without giving it much thought, but also talked about overtime pay. Governor Lincoln Chafee proposed to raise it to USD 10.10 per hour, and then indexing it to inflation every subsequent year. Secretary Clinton (NY) was somewhat vague but supported a five-year phase-in to USD 12, and proposed raising it to USD 15 for cities and certain workers in Los Angeles and New York. California and New York State have the third and fifth highest cost of living standards in the U.S., respectively (Seitz-Weld, 2015, p. 1).

One reason for this push is the rift in Congress over the past decades. Democrats are now emboldened, while Republicans are divided. Again, President Obama supported first raising the minimum wage to USD 10.10, the so-called "Fair Minimum Wage Act" which was proposed in his second term after his initial minimum wage proposal for USD 9.00 upon taking office failed. In February 2014, he signed an Executive Order raising the minimum wage to USD 10.10 for federal contractor employees (Kurtzelben, 2015, p. 1).

In a 2015 poll, 63% of Americans favored raising the minimum wage to USD 15 by 2020, and 75% supported raising it to USD 12.50, or even higher (Ferrer 2015, p. 2). However, only a year later, a poll in 2016 found that only 52% favored raising it to USD 15, perhaps because the economy had improved. President Trump has opposed the measure and desires for it to be a state issue.<sup>1</sup>

Nevertheless, increasing the minimum wage to USD 15 would raise the wages of the 15 million workers below the current minimum wage, as well as even leading to wage increases to those above it, or in other words, raising the wages of 40 million Americans in total (Pramuk, 2019, p. 3). In the 2016 election, all of the 18 Republicans opposed raising the minimum wage, except for two – Ben Carson, who emphasized that he still believed in hard work, and Rick Santorum, who said

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<sup>1</sup> It is estimated that only 3% of U.S. workers work at or for less than the U.S. federal minimum wage (Selyukh, 2019).

that it was a “worker protection device” which, if done at 50 cents over the span of three years, would not raise inflation or unemployment. Some of the candidates were governors who had actually signed into law increases within their respective states (Ferrer, 2015, p. 2-5).

In 2019, so far, almost all Democratic 2020 candidates support a USD 15 minimum wage, with a couple who have yet to take a public stance on the issue. Most recently, in November 2018, Missouri’s electorate voted for a minimum wage increase to USD 12 per hour by 2023, and Arkansas voted to raise its minimum wage to USD 11 by 2021, with the latter being a huge increase given Arkansas’ low living standard. This was a bold stance, as these are two historically moderate to conservative states (Long, 2018, p. 1-2).

### **Background**

The U.S. minimum wage, first passed by President Franklin D. Roosevelt in 1938 as part of The Fair Labor Standards Act, was a noble effort and a good general policy, but there are caveats, especially since different states have different standards of living. Immediately, in 1938, 30,000-50,000 workers lost their jobs on the continent, and 120,000 lost their jobs in Puerto Rico and the Virgin Islands, raising the unemployment rates there to 50%. The Labor Department then formed a commission to consider a lower rate for these commonwealths (Tennent, 2014, p. 12). Ensuing wage hikes have hurt American Samoa, with its low prices, greatly.

There are approximately 3 million workers on the minimum wage, and 20.6 million “near” the minimum. Raising the federal minimum wage hurts poor states the worst, because employers struggle to afford the cost. Five of these states are in the South that do not even have state minimum wage laws. These include Alabama, Louisiana, Mississippi, South Carolina, and Tennessee, where living standards are low, but where the federal wage applies (Strekal, 2015, p. 1). Twenty-nine states plus D.C. have minimum wages higher than the one set by the federal governments (Desilver, 2015, p. 3). Washington, Oregon, and Connecticut have the highest minimum wages in the country. In general, states and even firms such as Walmart and McDonalds are quickly increasing their minimum wages, which they should be encouraged to do. Still, there needs to be some federal minimum wage to bolster against market deficiencies. Historically, market wages sometimes have been so low that working wages may have been close to next to nothing.

In addition to helping struggling citizens, the minimum wage can pump more spending into the economy. Nevertheless, this can cause long-term, and even short-term, inflation. Furthermore, the higher cost to companies can result in layoffs or less hiring, which is shown later in this analysis. It may simply be a coincidence, but there may be causation in that states that were the first to enact high state minimums, such as Washington and Oregon, are the ones that currently have some of the highest unemployment rates in the country (Garthwaite, 2003, p. 1). However, the minimum wage can positively spur employees to work harder, it can inspire entrepreneurship, called a positive “shock” (Stigler, 1946), or it can lead to

worker longevity, reducing worker turnover and the costs associated with hiring. Increasing the minimum wage would also remove several million employees from public assistance programs, who would then be earning above minimum wage. These workers would pay into Social Security and other social safety net plans, but only if the wage does not create greater unemployment.

### **Economic Literature Review**

Based on the writings of Sobel (1999), the minimum wage debate has been political since the start, when various interest groups pushed for the first wage increase which happened to occur just eight days before the 1938 election. It was not intended to be a “living wage” at the time. Some scholars then, as do some now, believe the minimum wage law to be unconstitutional, beyond Congressional boundaries and free market principles. These principles were attacked by socially oriented economists like John Maynard Keynes in the 1930s for being slow to adjust to market forces. Originally, the 1938 bill had intended to create a “Wage and Hours Board” that would determine the increases, which was later dropped, thankfully, for it would have turned the U.S. into a British-type parliamentary system whereby the party in power dominates and determines labor laws.

The seminal economic statistical work comes from Brown, Gilroy, and Koehn (1982), who found that a 10% minimum wage hike reduces teen employment by 1-3%. Today, this finding is controversial, since most modern economists now believe employment is not affected as much. Wellington (1991), for instance, found that a 10% minimum wage increase reduces teen employment by 0.6%, although this was statistically insignificant (Krueger, 2001). Sobel writes of the time it takes for supply to adjust to the market, but demand must adjust also. Sobel cites Hamermesh (1993) as finding that it takes 3.6- 4.2 months for employment to adjust to changes in minimum wage laws. This adjustment occurs if employment is either increasing or decreasing. Short-term labor demand elasticity, as most elasticities, such as with individual goods or capital, is much lower than long-term elasticity, during which time more resources are available to make switches or for changes to occur. Albeit this, job security should make labor demand more inelastic to an extent. With more resources, the more flexible inflation and employment are to price determines which one is more greatly changed.

Politically, Sobel also writes how the 1996 federal minimum wage increase occurred just one month prior to a presidential election, and that each subsequent portion was set to increase in an election year. In 1974, the last upward step, as wage hikes often come in stages, was scheduled right before an election year, and it was higher than the step before it (Sobel, 1999, p. 761-766). Levin-Waldman (1998) concurs that political leaders are more likely to raise the minimum wage right before elections. Levin-Waldman (1998) also argues that the minimum wage is a political beast, as it is supported by most Congress members who come from “blue collar” states, and not by those who come from rural, or conversely, more corporate states. He says the main goal of political leaders has been to keep the minimum wage

close to the average of the U.S. working wage, compared to which it has fallen quickly.

Economically, in the 1970s and 1980s, a number of papers argued that the minimum wage encourages employees to work harder, and to do less shirking (or disregarding their duties). Collectively called the “Keynesian efficiency-wage theory,” after the liberal (in the modern sense) economist John Maynard Keynes, they included works by: Stiglitz (1974), who argued that firms do not like to replace workers and thus keep them even when the minimum wage is increased, which he (Stiglitz, 1997) then reasserted, stating that firms will be motivated to increase productivity once costs increase, through retraining efforts (Krueger, 2001, p. 255).

Lazear (1979) argued that workers are paid less than the expected marginal productivity but eventually surpass it. Later Lazear (1981) also found that when workers earn a reputation for hard work, it can obviate the need for close monitoring. Lazear and Moore (1984) discovered that incentives cause employees to work harder, leading to greater productivity; Akerlof (1982), concluded that employees work as hard as their sociological norms stipulate they should; and Akerlof and Yellen (1990) found that employees work as hard as is the extent to which they believe their wage is “fair.” Perhaps Keynes himself, who is a representative of an earlier era, may have disagreed with these theories, believing that sticky wages lead to unemployment, and thus may have held that high minimum wages would too result in wage rigidity. More recent works have studied switching America from wage pay to commission-based pay.

In the 1980s, Levin-Waldman cites Card and Krueger as finding that the Californian unemployment rate fell from 5.8% to 5.1% over the 1987-1989 period after the minimum wage was raised. On the other hand, teenage employment fell by 3% (Levin-Waldman 1998, p. 782). According to one of these authors, Alan Krueger, who is the current guru on the entire subject, it was the great macroeconomist George Stigler (1946) who first predicted in a 1946 paper that “the higher the minimum wage, the greater will be the number of covered workers who are discharged” (Krueger, 2001, p. 250).

In the early 1990s, Krueger’s now infamous study of restaurants in New Jersey found that employment improved, and that there was only a mild wage/inflation increase. However, he and co-author Card admit that some of the wage increase may have been due to seasonal affects and employers cutting back on fringe benefits (Card and Krueger, 1994, p. 779, 786). Krueger and Card found that after a minimum wage hike in New Jersey, from USD 4.25 to USD 5.05 per hour, employment increased amongst stores that were paying the minimum wage and rose by 14%. And while their supply-drive model predicted that prices would rise by 2.2%, they ultimately rose by 4%, greater than those in Pennsylvania, having in mind that the economy of the latter was supposedly stronger. This last fact was their greatest puzzle, which the author of the present article attributes to the eventual increase in demand. In addition, teenage unemployment within New Jersey did in fact suffer, falling by 0.7%. This study will be discussed more later on.

A second study by Krueger which focused on Texas fast-food joints found that raising the minimum wage from USD 3.35 to USD 3.80 in 1991, again during a recession, had little effect upon unemployment. And, prices remained fairly constant. The alternative explanation, because Krueger and Katz provide few, is that the going rate was already below the market rate, or that the companies were able to attract better workers. The authors do note, though, that 41% of the firms kept their wage structures, meaning that the managers paid, or those who had been working there for several years, may have also seen a pay increase. Also, most managers were unaware of teenage work laws. The only theoretical analysis is that, "some monopsony (single payer) models predict that a small increase in the minimum wage will increase industry employment and output and reduce industry product prices" (Katz and Krueger, 1992, p. 19). Finally, in response to a Castillo-Freeman and Freeman (1992) study in Puerto Rico which discovered massive employment losses, Krueger and Katz write, "Under certain conditions ... a small increase ... leads to an increase in employment, whereas a large increase ... leads to a decrease in unemployment" (Katz and Krueger, 1992, p. 20). While empiricism, or looking at the facts, certainly is important, a word can be said about the importance of theory, that is, the reasons behind the facts, as well.

According to a brilliant work by Brigitte Sellekaerts (1982), the minimum wage can have a "spillover" or "pass through effect" in which other, higher level wages are also increased, though other authors have found this to be inconclusive. Sellekaerts cites Fortin (1978) as finding that in Canada a 10% minimum wage increase would have an immediate wage effect of 0.4%, but would have a much larger "ripple effect," such that inflation would increase by between 0.3% and 0.5%. Sellekaerts also writes that most studies find that lagged effects are inconclusive (Sellekaerts, 1982, p. 180), which does not corroborate with the findings that are presented later in this study. Sellekaerts writes that the minimum wage could cause a greater substitution of capital equipment for workers, and that raising the minimum wage during times of inflation, such as was done in 1974, will only exacerbate inflation. She found that labor contracts often lasted for long periods of time, and that oil prices were high in the 1970s, which caused the inflation effects of the minimum wage to be mitigated by these other factors. However, the minimum did in-fact raise wages in the 1950s and 1960s, although the minimum wage, she finds statistically, increases inflation by only a fraction of one percent. She argues that productivity can sometimes mollify inflation (Sellekaerts, 1982, p. 181, 185-189). On the other hand, Pettinger (2019) points out that there are two types of inflation – spending by workers, which multiplies (demand pulls inflation), and higher costs to firms (wage-push inflation).

In 1977, upon Congress considering again a raise from USD 2.30 to USD 2.85, and subsequently thereafter, Jack Carlson, the Chief Economist for the U.S. Chamber of Commerce, argued that full-time jobs would be cut more quickly than part-time jobs, and that the unemployment that would result would create social conflict. He also argued that certain U.S. industries would become less internationally competitive,

and that the “tip credit” would be taken away, which would hurt the elderly who frequent restaurants, and would discourage restaurant employees from reporting tips correctly (Carlson, 1977, p. 149). The Chief Economist also added that the law would create a disadvantage for smaller firms, that low-wage portions of the country would be hurt most, and that inflation would increase by 2.9% over several years, thus creating the need for another minimum wage hike (Carlson, 1977, p. 151).

Krueger (2001) and others frequently make an argument for a monopsony model, stating that the market power of large firms can cause them to hire more workers, and that they can absorb the wage increases. Similarly, Levin-Waldman (1998) argues that efficiency and unemployment are not affected by the minimum wage since the turnover rate of low paying jobs is as high as 12-15% (Levin-Waldman, 1998, p. 783). The minimum wage can also cause a greater hiring of public workers, whose wages may be more set, such as by union contracts, and that such union contracts could provide a “cushion” in negotiations such that they need not worry about their wages falling too much (Levin-Waldman, 1998, p. 787). Some claim the minimum wage encourages more low-level employees to work rather than go on the dole, such as Social Security, or welfare programs. Levin-Waldman (1998) adds that a higher minimum wage can help workers better take care of themselves physically, which was one of the arguments in favor of the initial bill in 1938 (Levin-Waldman 1998, p. 777).

Waltman et al. (1998) found that an increase in the minimum wage did not immediately cause businesses to fail, although it did so with a lag – in the year following an increase, the average of business failures rose somewhat to 48.4 out of 10,000 business, as compared to the overall average of 47.5 out of 10,000. With an even greater lag, the market smoothed out and did not result in more business failures. Regarding the size of the minimum wage increase, large increases have a strong direct effect, however, after a lagged period the magnitude of the effect on businesses becomes minimal. Levin-Walman (2000) studied the effects minimum wage increases have on small businesses, as almost half of all businesses are small. He cites a Levy Institute Survey in which firms were asked about how the 1997 minimum wage hike, in normal/inflationary times, affected their hiring and wage choices. And, what the effect would have been if the minimum wage had been increased more, to USD 6 per hour? The rate of business failures, as published by Dunn and Bradstreet, was not affected. The small increase to USD 5.15 an hour had little effect on businesses, according to the survey, impacting only 6.6% of them, but if the minimum wage had been raised to USD 6, it would have affected 20.7%, which is actually a somewhat large percent.

But, in his survey, instead of firing workers in these cases, the firms simply would have halted hiring. Here, out of the 6.6%, only 10.8% laid off workers, but 16.2% hired fewer additional workers. If raised to USD 6, 10.3% would have laid off workers, but 25.0% would have hired fewer. This shows that once hired, firms like to keep employees because they have already learned “the ropes” of the business. The survey also showed that some companies would cut benefits or raise prices. In

total, only 3% of businesses would have cut workers, showing that the demand for small business labor is very inelastic, not changing much, and is estimated to be very low at 0.1. The industries that were affected the greatest were food services, services in general, and sales and trade. Blue collar jobs (or union jobs) were the least affected, most likely because they already pay higher. The USD 6 increase represents what some scholars call a “tipping point” – it is too high of a minimum wage (Levin-Waldman, 2000, p. 723-728). A recent working paper by Luca found that restaurants with lower Yelp scores go out of business more often, presumably because they have cheaper labor (The Economist, 2017, p. 21).

Regarding recent calls for a raise, the studies are mixed. Tennent (2014) writes that an American Action Forum in 2013 found that a USD 1 increase in state minimum wages above the national level increased employment by 1.48%, mostly for teenagers. A 2012 study by Sabia, Burkhauser and Hansen found that New York’s wage increase in 2004-2006 lessened unemployment by 20.2%-21.8% amongst uneducated workers (mostly teenagers). In February 2014, the Congressional Budget Office, which is typically conservative, predicted that one million jobs could be lost by a hike to USD 10.10. Express Employment Professionals, a staffing company, estimated that 19% of small firms would cut jobs and 39% would cut-back hiring. The Employment Policy Institute found that women would be most hurt, since 57% of jobs lost currently belong to women. Another study found that a 10% minimum wage hike increases food prices by 4% and all prices by 0.4%. In Seattle, a non-profit study found that raising the city rate to USD 15 per hour was met with disapproval by 21 out of 29 non-profit firms, who would have to cut back on offerings or else close. According to Tennent (2014, p. 14), the minimum wage affects entry level jobs the most, and those jobs typically see increases in the first year regardless of minimum wage laws. Union workers may benefit because, since they typically earn more, if other jobs are forced to pay more, then the unions are on the same competitive level. Such studies adhere to economic theory. Some firms like Walmart, Amazon, Costco and Stride Rite are increasing pay without minimum wage hikes (President’s Plan, 2013, p. 12-13).

Pollin (2007) cites Lawrence Glickman’s (1997) book about a “living wage” according to which the poverty line is inaccurate, particularly because it does not consider regional differences, such that it is 40-50% too low, and does not consider family size. Pollin also cites studies showing that “living wages” in various large cities across the country have not affected employment, although it did so in Santa Fe, New Mexico for example, where it caused business owners to raise prices by 3%. The minimum wage is a more effective tool than the Earned Income Tax Credit, he opines, because it rewards work (Pollin, 2007, p. 103-107). Teulings (2003) disagrees, citing a study by Dinardo et al. (1996), who found that the failure of the minimum wage to maintain its historical pace led to wage inequality of 25%, and another study by Lee (1999), who found that failure to maintain minimum wage increases can account for nearly all of income equality, though this seems spurious. Teulings (2000) himself blames income inequality in the lower half of the wage earnings scale on

the failure of the minimum wage to keep pace with other wages (Teulings, 2003, p. 801-802). Levin-Waldman (2009) also found that the minimum wage causes inflation, normatively saying that it is not a “bad thing.” Thus, the debate over the minimum wage is complex, substantial, and can be based on values.

Other more recent works reflect on how the minimum wage affects certain parts of society and the labor force. For instance, Warren and Hamroc (2010) write that it does not affect the high school dropout rate, or how it has failed or succeeded in achieving income equality in different countries. Another example is Gokcekus and Tower (2010), who found that “the minimum wage attracts high-reservation wage workers into the minimum wage sector.” A MaCurdy (2012) study found that the minimum wage has a “value added” effect, raising wages for upper tier workers. Globally, a Stewart (2012) study in the UK found a similar “spillover effect.” Hanke found that in the European Union, states with a minimum wage had an unemployment rate of 11.8% in 2012, much higher than the average in the seven countries that did not, at 7.9% (President’s Plan 2013, p. 12-13). Tzanov and Shopov (2017) looked at how GDP and productivity were calculated in Bulgaria after minimum wages increases.

Some nations, such as Japan and India, have such rigid wage and employment laws that it is not possible for firms to cut wages and enable the aggregate supply curve to shift right in economic downturns, which most economists, especially “supply-siders,” agree is a necessary evil. Less unionized work is making this flexibility easier in the United States and may prevent wages from recovering soon after downturns.

### Methodology I: Models

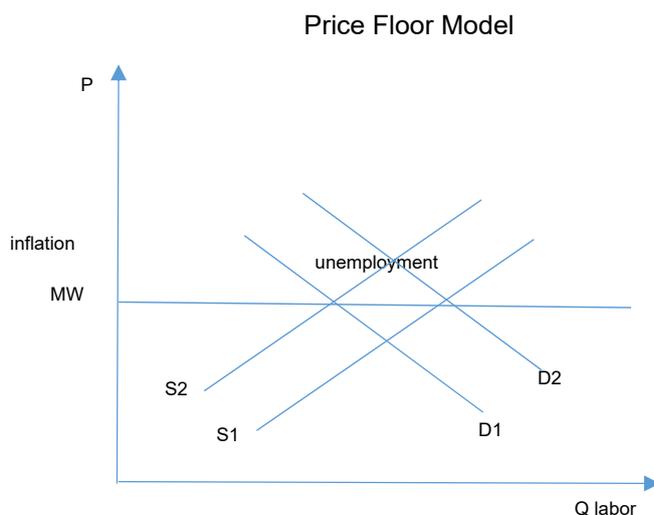
The traditional “price floor” of the minimum wage graph below shows that if the minimum wage (MW) is set above the market price (P) for labor (or wages), then a surplus of unemployment will result (see Figure 1). However, it does not consider that if everyone else is making greater wages, over time, the economic activity will result in the demand for labor increasing, also shown below. Unemployment will occur initially, until the economy adjusts, and then output and employment will increase, until firms have to cut-back on work if the minimum wage is too high, such that supply will decrease, and inflation could be the long-term result. This inflation, though, is only what Milton Friedman would have called “one shot inflation,” because it does not continue indefinitely, but only until the next minimum wage increase.

This is interesting, because some lawmakers propose linking the minimum wage to inflation itself, such that this could cause repeated inflation. Inflation would bring the minimum wage, provided that the economy had adjusted, back to the market rate itself. This action would suggest that if the minimum wage is indeed set to inflation, which will be discussed more later, that it only be done so once every several years, especially since the market needs time to self-adjust during recessions or inflationary gaps. To tie the minimum wage to inflation would also mean that it would not be just

The push for a U.S. living wage: Modeling for inflation, unemployment, both, or neither

“one shot” inflation, but continuous inflation, however, by increasing it in a predictable way, for example in every three to four years, it would give firms the chance to make expectations, such that employment changes would be less volatile.

Figure 1



*Microeconomics Model: MR= MC*

It is a truism in microeconomics, favored by such people as Alfred Marshal, the marginalists, and the representatives of the Neoclassical revolution of the 1880s, that profits are greatest for firms when marginal revenue (MR) equals marginal cost (MC). If a waitress at a restaurant brings in USD 10 per hour, but costs USD 15 to pay, then she will be laid off, or not be hired in the first place, if expectations are used. If the waitress were to produce USD 20 per hour, then her pay would be increased, until a point at which the restaurant would hire more workers. This is a “cost versus benefit” analysis, which should reach equilibrium when both of them match. However, over time, those who earn a USD 15 minimum wage would come more often to the restaurant to eat, thus increasing demand and circulating in the economy. One problem with expectations, and why they are not included in the model, is because firms cannot expect the random nature of lawmakers in passing minimum wage laws.

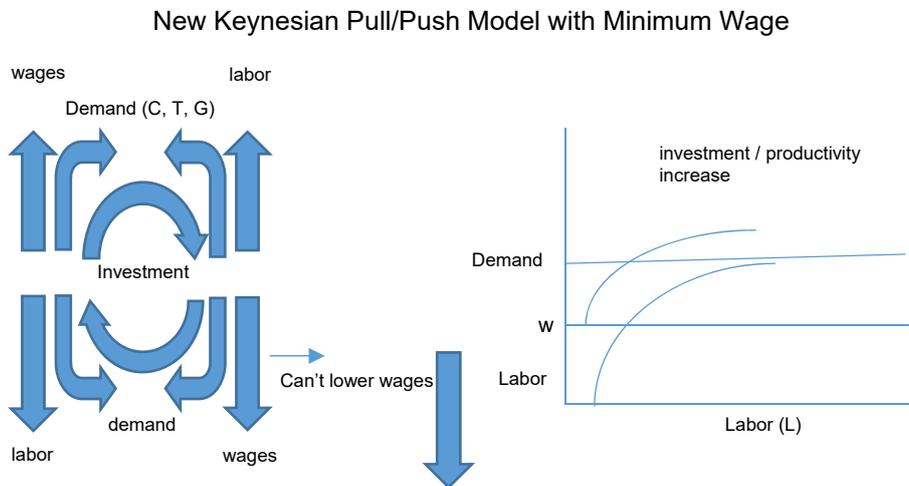
*Macroeconomic Models*

As is reflected in the Figure 2, demand is affected mostly by consumption, but also by trade and government spending, according to Barry (2018). The model suggests that consumption (C) is volatile in high-tech economies like the United States

because of tech sales, as are trade (T) and state financing (G). Barry (2018) made an attempt to explain why the Phillips Curve relationship of unemployment and wages pivots and shifts. While the historical reasons for shifting are traditionally known, (that of inflation and expectation of wage increases, through the works of those like Milton Friedman and Robert Lucas) Barry brings new insight, particularly to pivots in the curve. Using regression, the study found that the curve pivots away from wages and towards employment due to the lack of investment, which would traditionally go for wages, for research and development, or for capital. The fact that after the 2008 financial crisis wages were not increasing but that employment was provided further insight, in that many firms in developed economies are not investing, because of the uncertainty regarding the future of technology.

This leads us to further understand the model below (see Figure 2), which shows that investment, whether increasing or decreasing, along with whether demand is increasing or decreasing (since the model is Keynesian, not supply-driven), ultimately affects whether firms choose to hire more workers or pay higher wages. The right-hand side of Figure 2 shows that labor hinges on demand, while the wages hinge on investment. While, in the regressions, productivity was not significant, investments raise productivity long-term. Further research could shed light on this aspect of the model. (The “Keynesian efficiency-wage theory” might hold that productivity increases wages, and vice-versa.)

Figure 2

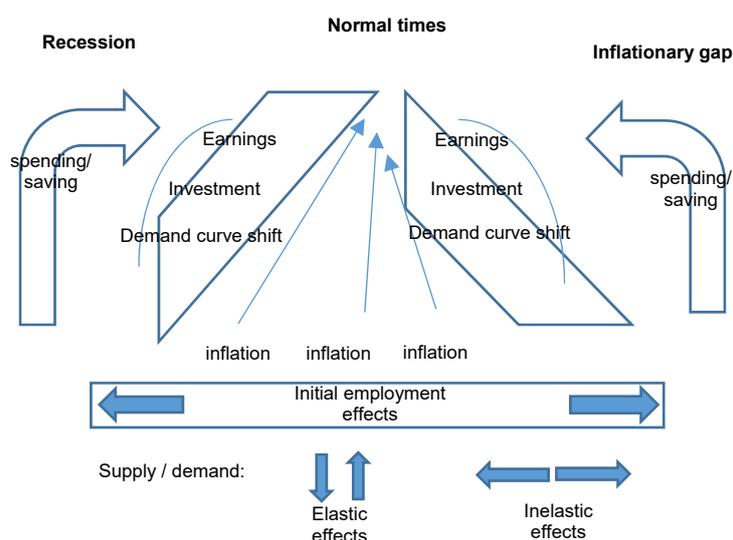


This so-named Pull/Push Model ultimately shows that demand, chiefly from consumption, can pull investments, which are constantly circling up or down, leading to four possibilities about whether or not labor or wages would be affected. Barry

analyzed what would happen if these outcomes occurred in different periods in the economic histories of the United States and Japan, two high-tech countries with volatile consumption over new iterations of iPhones, and found that, in general, the model held. Regarding the minimum wage, in two out of the four possibilities, with expectations of demand based on investment, the amount of labor employed falls, and there is no situation in which wages or inflation go down. However, the minimum wage, specifically, needs a supply driven model, in-part because expectations of the whims of lawmakers cannot be anticipated. Furthermore, the minimum wage impacts firms first, and then it affects the demand in the entire economy later, as opposed to investment in this New Keynesian model in which demand is affected first.

Figure 3

Minimum Wage Effects: Supply-Driven Model



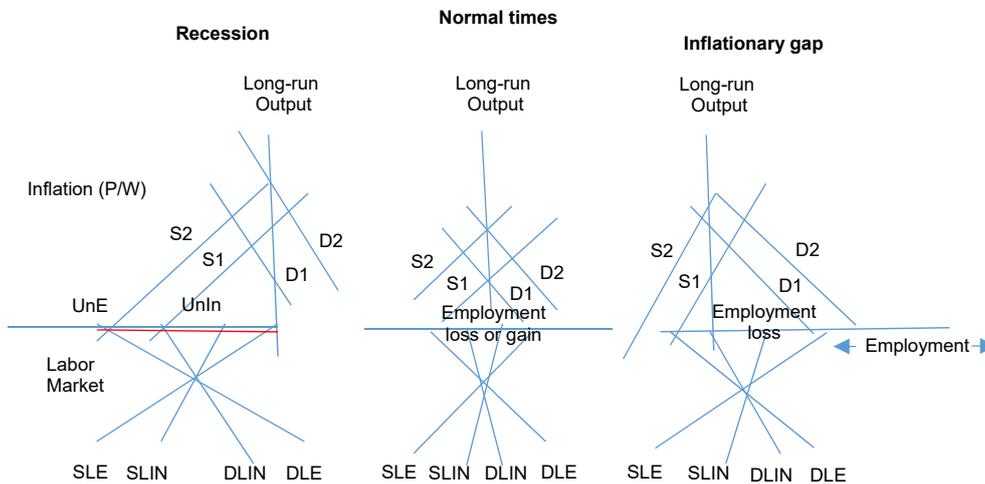
As can be seen in the Supply-Driven Model (see Figure 3), the economy can start in any one of three positions: an inflationary gap, normal times, or a recession. The first consequence of a minimum wage hike is that supply is affected, which also depends on earnings and investment. All three situations of the economy witness inflation, but particularly more-so for recessions, because wages are not being cut and aggregate supply is not shifting rightward. Whether or to what extent employment and inflation are affected depend in part on the spending level of the economy, on whether consumers save or spend their newfound money, on additional growth factors in the economy, and on the elasticity of the aggregate supply and demand curves. In recessions, employment may be temporarily decreased, but aggregate

demand will shift rightward, leading to full employment or improved employment over time, although this would have occurred anyway without the minimum affect because aggregate supply would have shifted right. But, since employers cannot cut wages, aggregate supply may hover around the same level. Thus, the greatest effect is that wages will largely increase, but that inflation will as well, considerably, since the supply is changing little. Traditionally, wages fall during recessions, so this could be a useful policy tool if wages in a recession fail to adjust, though inflation will be increased substantially since the wages were supposed to fall.

The model in Figure 4 shows essentially the same concepts as the model in Figure 3 – that three settings are possible, and that employment may initially increase or decrease at the bottom of the model while the inflation will increase. However, in Figure 3, the amount that the supply curve shifts depends not only on changes to the minimum wage but also on the earnings and profits of the firms, and the amount of savings in society, which causes less spending and less change in demand (above). Elasticity, or run over rise, indicates that when both supply and demand curves (for the aggregate market or the labor market) are inelastic inflation is most affected; that when both curves are inelastic employment is affected; that when supply is elastic and demand is inelastic the supply curve affects inflation and the demand curve affects employment; and that when demand is elastic and supply is inelastic the changes in the supply curve affect employment and the changes in the demand curve affect inflation.

Figure 4

Supply/Demand Changes during Three Settings of Minimum Wage Hikes



As can be seen in Figure 4, regarding unemployment, “Okun’s rule” holds that for every 1% change in employment, there is a 3% change in output, therefore, demand

may change more or less depending on how much employment is affected, due to their elasticities. These difference are shown between “UnE” (Unemployment Elastic) and “UnIn” (Unemployment Inelastic). The labor market as a whole is shown as different possibilities referred to as Demand Inelastic (DLIN), Supply Inelastic (SLIN), Demand Elastic (DLE), and SLE (Supply Elastic). The inelastic curves look more like an “I.” Inflation in wages (W) or prices (P) is also noted on the left. As can be seen in the graph on the left, during a recession, behind the long-run output, an increase in wages causes a decrease in supply (to S2), until demand picks up from any extra spending, shifting the model to the long-run equilibrium. The initial loss in jobs, shown along the bottom axis, is restored. In the “normal times,” again, supply shifts left first, then demand shifts right, and the only change is to inflation, which is possibly greater percent agewise than the other models because the number of goods is fixed. In the inflationary gap, the model starts out to the right of long-term equilibrium, and supply shifts left to bring the equilibrium back to normal, but demand picks up from extra spending, leading to a temporary increase in employment, which is picked up by the regression analysis (later in the paper) after a one-year period and is also depicted in the previous figure. The degree to which employment is affected by these changes also depends on elasticity – large changes in supply and demand will typically lead to large changes in employment if employment is elastic, as opposed to being inelastic (see the bottom of Figure 4).

In 1981, during the middle of a recession and inflation, the federal minimum wage was increased and unemployment declined, although there were many other factors, such a more hands-on Federal Reserve policy and increased government spending on defense. President George H. W. Bush’s veto of the 1989 minimum wage increase, at a time when the economy was sputtering and as there had been no minimum wage increase for 8 years, may have been able to stimulate demand in the economy at a time when President Bush was chastising the Federal Reserve for not cutting interest rates.

Earnings and Investment also affect the supply curve. If profits are going up, then firms can supply more, and wages will decrease, but if demand (Gross Domestic Product) [GDP] is going up, wages will increase, and inflation will balance out. If profits and investment are going down, and demand is still strong, then inflation will likely increase. If profits are going down, and demand is going down, then there will not be as much of an increase in inflation. And, if profits are going up, but demand is going down, then inflation will decrease.

During the inflationary period, aggregate supply will shift leftwards from the wage hike, but it would have done so anyway due to periodic wage increases. Therefore, the amount that it shifts will depend on other factors in the economy, and certain upper wages may increase while others may fall. If the minimum wage increase is less than what employers would regularly pay, then employment may actually increase temporarily once demand picks up. Employment, though, will naturally fall, which it normally would have, but increased money in people’s pockets will shift demand rightward, leading to possible improved employment, with higher

wages over time, though with increased inflation. Supply is increasing, but the economy is now producing fewer goods for money to chase. In a “normal times” period, employment will either increase or decrease based on all of the above-mentioned concerns. Most likely employment would increase temporarily, but wages will rise, and so will inflation. Thus, as some other authors have noted, the minimum wage can be a policy tool based on the state of the economy, but also based on how much (from the “Keynesian” notion) the supply, demand, and prices may or may not be sticky and slow to adjust to traditional market forces. The best use of the tool might be to increase real wages when market forces are slow to adjust.

### Methodology II: Regressions

In this section, OLS regressions are used to test for the effects of the minimum wage on inflation and unemployment, in 8 semi-randomly chosen U.S. states. They are random, but they are selected to represent each of four regions across the country, using the annual consecutive years of 1996-2016 (plus 2017-2018 with lags), for which new data on the Gross Domestic Product (GDP) is available from the Bureau of Economic Analysis (BEA). The analyzed states were Connecticut, New York, Texas, North Carolina, Ohio, Wisconsin, Washington, and Arizona. These minimum wages did not include city minimum wages. The GDP, individualized for the separate states, was used as a control variable, which may not have been available to researchers writing papers before 1997. The national saving rate was also used as a control variable, as there are no known metrics on individual state saving rates. Most of the data comes from the St. Louis Federal Reserve Bank, also known as the “FRED.”

An example equation is, as follows: all variables (B1, B2, etc.) are hypothesized to be > or < than 0:

$$\text{Unemployment (FRED)} = \text{minimum wage (from the FRED)} + \text{GDP (from the BEA)}$$

A 95% significance level was used in all cases, and is indicated by a (\*) symbol.

Table 1

Dependent variable: Unemployment  
(Prob > F = 0.0000\* R2 = 0.2371)

	Coefficient	t	p
Minimum Wage	0.7017	6.98	0.000*
GDP	0.0837	1.73	0.085
Constant	1.0107	1.35	0.180

In Table 1 the minimum wage had a significant effect upon increasing unemployment.

With a one-year lag, that follows, the minimum wage still has an effect on raising unemployment, although not as strong as without the lag, while in this case, the GDP has a significant negative lagged effect on unemployment.

The push for a U.S. living wage: Modeling for inflation, unemployment, both, or neither

Table 2

Dependent variable: Unemployment with lag  
(F > p = 0.0000\* R2 = .2149)

	Coefficient	t	p
Minimum Wage	0.4917	4.81	0.000*
GDP	-0.1419	-2.89	0.004*
Constant	3.3087	4.33	0.000*

With a two year lag (Table 3) the effects of the minimum wage diminishes over time, while the GDP has an even stronger affect.

Table 3

Dependent Variable: Unemployment with two lags  
(F > p: 0.0000\* R2 = 0.3309)

	Coefficient	t	p
Minimum Wage	0.2204	2.34	0.021*
GDP	-0.3384	-7.47	0.000*
Constant	5.9024	9.37	0.000*

For inflation, a sample equation is, as follows:

$$\text{Inflation (regional)} = \text{minimum wage (FRED)} + \text{savings rate (World Bank)}$$

Table 4

Dependent Variable: Inflation  
(F > p= 0.0000\* R2= 0.8094)

	Coefficient	t	p
Minimum Wage	17.2132	21.55	0.000*
GDP	-1.7737	-3.14	0.002*
Constant	120.6196	8.91	0.000*

In Table 4 the minimum wage and the national saving rate both have a strong, significant effect upon inflation, as the R squared value, the strength of the model, is extremely high. The coefficient of the minimum wage term simply reflects the unit used for inflation, which is between 150-250, using the indexed state data, rendering an effect on inflation from the minimum wage near 1 tenth of one percent, consistent with Sellekaerts (1982). In the first lag of inflation, the minimum wage's effect declines slightly, while saving has an even stronger effect, likely because a large sum of money has multiplied (Table 5).

Table 5

Dependent Variable: Inflation with lag 9  
(F > p= 0.0000\* R2= 0.8070)

	Coefficient	t	p
Minimum Wage	17.0669	21.18	0.000*
GDP	-1.9910	-3.49	0.001*
Constant	129.8386	9.50	0.000*

Surprisingly, the same occurs in the presence of two lags, as can be seen in Table 6.

Table 6

Dependent variable: Inflation with two lags  
(F > p= 0.0000\* R2= 0.8004)

	Coefficient	t	p
Minimum Wage	16.8938	20.63	0.000*
GDP	-2.0893	-3.61	0.000*
Constant	137.1636	9.88	0.000*

The author ran all three economic conditions together (Table 7). At 95%, the minimum wage has the greatest effect on inflation during normal times, possibly because the number of goods produced does not change. Saving once again reduces inflation, taking money out of the system.

Table 7

Dependent Variable: Inflation  
(F > p= 0.0000\* R2= 0.3319)

	Coefficient	t	p
Inflationary Gap	12.1452	1.80	0.073
Normal	15.9747	3.57	0.000*
Recession	-10.3427	-1.72	0.088
Saving	-8.1223	-7.99	0.000*
Constant	346.0094	18.22	0.000*

Unemployment was affected most strongly during inflationary gaps, when unemployment declined, though it was slightly insignificant, whereas it increased slightly during normal times at a significant level, and was insignificant during recessions (Table 8).

Table 8

Dependent Variable: Unemployment  
(F > p = 0.0380\* R2 = 0.0630)

	Coefficient	t	p
Inflationary Gap	-0.9161	-1.70	0.091
Normal	0.8465	2.38	0.019*
Recession	0.1767	0.36	-0.716
Saving	-0.01976	-0.36	-0.1294
Constant	5.8921	18.61	5.2665

After a one-year lag, following a minimum wage increase in different economic settings, unemployment declined during an inflationary gap, it was insignificant during normal times, and it increased during recessions. However, this finding may simply reflect the natural course of economics adjusting within this period, as the GDP was highly significant as well, but the inflationary setting had almost as high of a beta, which standardizes units to make their strengths comparable (see Table 9).

Table 9

Dependent Variable: Unemployment with lag  
(F > p = 0.0000\* R2 = 0.1969)

	Coefficient	t	p	beta
Inflationary Gap	-1.0664	-2.14	0.034*	-0.1576
Normal	0.2096	0.63	0.527	0.0469
Recession	1.5130	3.36	0.001*	0.2649
Saving	-0.1527	-2.96	0.004*	-0.2296
Constant	6.4228	21.85	0.000*	N/A

*Inflation/unemployment = minimum wage + GDP + savings rate (national),  
expected  $B_0 > 1$*

In the same period (see Table 10), the minimum wage had no significant effect upon the relationship between inflation and unemployment. However, as can be seen below, with a one-year lag, the long-term relationship was that the minimum wage had a much greater effect upon inflation, as was expected by the earlier conceptual models. The savings number is unusual, and can be explained as contributing to investment, which affects unemployment.

Table 10

Dependent Variable: Inflation/Unemployment  
(F > p = 0.0000\* R2 = 0.2563)

	Coefficient	t	p
Inflationary Gap	0.5675	1.04	0.301
Normal	-1.0308	-4.21	0.000*
Recession	2.5400	6.59	0.000*
Saving	-9.7481	-1.07	0.268
Constant	0.5675	1.04	0.301

The greatest effect of the minimum wage is upon inflation – in a 2.3 to 1 margin as when compared to unemployment, which is shown in Table 11.

Table 11

Dependent Variable: Inflation/Unemployment with lag  
(F > p = 0.0000\* R2 = 0.3931)

	Coefficient	t	p
Inflationary Gap	2.3180	4.40	0.000*
Normal	0.2183	0.93	0.356
Recession	3.6029	9.69	0.000*
Saving	-44.8687	-5.11	0.000*
Constant	2.3180	4.40	0.000*

Table 11 relates to the Phillips Curve, which is the trade-off between inflation and unemployment. The change in employment seems large, as we have seen that a USD 1 increase can affect the unemployment rate by 0.7%. However, since inflation has been low for the last three decades, the effect upon inflation, although small, is actually greater than the effect upon unemployment, though more nuanced data (quarterly rather than yearly) would be helpful. It would be difficult to conjecture a hypothesis about this relationship lagged many years ahead, so such a regression is not attempted. In general, the statistics show that state and federal minimum wage hikes increase unemployment, although the effects are temporary and wear off over time, and the same can be said for inflation and wages. The greatest effect upon unemployment and inflation both occurred during “normal” economic times, when both unemployment and inflation/wages increased, though the effects were non-lasting. The largest impact on unemployment occurred during inflationary gaps, when employment usually declines, but here, after a year, it was unemployment which declined and was significant. Still, not many of the years used in the data can be said to be truly “inflationary” – they were judged as such by the author based on the U.S. Federal Reserve policy of increasing interest rates, because the purpose of rate hikes is to fight inflation. The number of lags when using this method was limited, which could be further researched. Overall, the largest impact was on inflation, and not on unemployment, which was mostly to be expected based on the models.

Table 12

Stationarity

(expressed through the equation  $Y_t = a + B1Y_{t-1} + B2Y_{t-2} + \omega Et + \omega Et-1 + \omega 1Et-2$ , etc.)

Tables 1, 2, 3	Unemployment = 1.08Un_lag1 (0.000) - 0.375Un_lag2 (0.000) + 0.374Un-error (0.056) - 0.885Un-error_lag1 (0.006) + 0.774Un-error_lag2 (0.000) + 1.626 (0.000)
Tables 4, 5, 6	Inflation = 2.957Infla_lag1 (0.000) - 1.969 (0.000) + 0.999Infl_er(0.000) - 2.957Infl_er_lag1 + 1.969Infl_er_lag2 (0.000) + 6.752 (0.000)
Tables 8, 9	Unem = 0.777Un_lag1 (0.000) - 0.402Uner(0.026) + Uner_lag1 (0.000) + 1.258(0.000)
Tables 10, 11	Infla/Un = 0.571Inf/Un_lag1 (0.000) + 1.0Inf/Un_er1 (0.000) -0.571 Inf/Un_er2 (0.000) + 14.9 (0.000)

As can be seen in Table 12, with the use of an ARIMA (Auto Regressive Integrated Moving Average), Table 12 checks if the data stayed stationary during the lagged periods. That is: does the mean and variance stay similar, by regressing variables by their lags and errors terms, to test for significance; and are there any displays of unusual patterns attributed to correlation, through observation and a correlation test? All regressions yielded significant values, although the 0.056 p value in Tables 1-3 is slightly non-significant at 95%, and the second equation had an unusually perfect R2 value of 1.000, but there was little correlation between variables with the same coefficient. The data is stationary. However, those who are dubious of the methods used here would be wise to take natural logarithms of the original variables to smooth out rough data for the future.

## **Discussion**

### *Policy Options*

Some believe that the minimum wage is a panacea to the drastic increase in income inequality in the United States and around the world, which may be caused by: globalization, international trade, lack of good education, demographics, the flattening of company hierarchies, less competition, or the “digital” technological divide. But in short, the federal minimum wage has not been raised from USD 7.25 in ten years. It has since fallen over 10% due to inflation, and 25% from its super highs in the 1960s (Cooper 2014, p. 1), by which standard the 1968 level would be USD 11.83 today (Pramuk 2019, p. 3). In 2006, 650 economists sent a petition to the government suggesting a 40% increase in the U.S. minimum wage (MaCurdy, 2015, p. 497) But raising it too high holds dangers. One plan in Congress is to increase the minimum wage to USD 15 by 2024, which would also be applied to tipped workers, and allow for lower wages for those with disabilities. This last provision seems unfair in terms of social justice, yet it could help improve employment amongst this group according the economic concept of the marginal product (Selyukh, 2019, p. 2). However, the whole bill could also engender higher unemployment. The prior “Raise the Wage Act of 2015,” whose aim was to increase the federal amount to USD 12 by 2020, seems a more reasonable thought – more-so than the “Fight for Fifteen” by 2020. This bill would allow the Secretary of Labor to decide how much to raise it after 2020, which seems irresponsible and similar to the original idea proposed in 1938. Independent estimates show that this bill would inject about USD 60 billion into spending into the economy over several years, which is a moderate amount in an economy of over USD 17 trillion in GDP (Selyukh, 2019, p. 2).

Still, a more gradual path than a steep USD 1 per year, such as for example USD 0.50-0.75 cents per year over the span of five years, might have a greater chance of passing than this increase of 68% in 5 years. Indexing wages to inflation, which many states do, and which another version of the “Raise the Wage Act” does to the median U.S. wage, is also plausible. Still, discretion and the ability for leaders to change policies based on fluctuating future circumstances is always preferable to

such hard-fast rules. In a sense, indexing could be inflation-begetting policies begetting inflation. Contrary to this argument, one study did find that indexing by states led to increases in youth employment from 0.4% to 1.1%, likely since this policy helps improve expectations (Hernandez, 2017, p. 1). City proposals of USD 15 for workers just in the fast food industry, even in high cost cities like New York and Los Angeles, appear high, especially considering that New York and California only have USD 8.75 and USD 9.00 minimums for all workers, respectively. The cost of living in New York City is high, but it is not twice as high as that in the rest of New York. According to Expatistan.com, it is only 1.69 times that in Ithaca, or 1.82 times that in Providence, Rhode Island. Plus, some 60% of all New York restaurants are modest “mom and pop” shops, and, it could set off an unfair wage “race” across different industries. New York’s plan to raise its city minimum wage for all to USD 15.00 per hour by this year is more sound (“City,” 2015, p. 3). Such policies reflect the much higher prices in cities due to greater demand from more buyers, and a lack of supply of housing and other goods in such cramped areas.

Whereas Senator Sanders’ policies are extremist, Secretary Clinton’s prior plans for income inequality did not go far enough. Clinton proposed tax credits for firms that share their profits with workers, and she suggested other tax credits for hiring apprenticeships, but her sharing levels and tax credits were so low that they would not make much difference to wages or employment. Large, bold tax credits could incentivize hiring, which would not cost the government very much since hired workers will pay into the tax system, and greater employment will increase growth. These tax credits could only be short-term, as well, as the economy improves. A modest form of the “Buffet Rule,” in which if a taxpayer earns USD 2-3 million in income, they should have to pay at least some minimum (20-30%) in taxes, is somewhat related to income inequality. But, thinking ethically, taxes should not be raised to persecute wealth, but rather they should be used to propel it, to balance the budget and to aid government programs. If wealth is thought of as being about pride, perhaps it should also be about giving back to one’s great country. Furthermore, the already mentioned Earned Income Tax Credit provides a subsidy to low income earners, the lowest income bracket of which President Trump increased, essentially raising taxes on the poor and everyone above, since tax brackets are marginal. All of these programs could be paid for by lifting the cap on the amounts of Social Security income that is being taxed, as favored by Senator Sanders, which is very passable since many Republicans do not oppose it. Connecticut Congressman John Larson has a bill to do just that. Secretary Clinton favored eliminating tax deductions for the wealthy, which is a reasonable policy, but it has been debated before without political success.

#### *Additional Policies*

Older, female, and even minority workers, make up a large percent of those on the minimum wage. This group does not include just young adults but also older adults as well. When Governor Chris Christie of New Jersey said that he opposed

raising the minimum wage because parents do not care about their teenager earning a dollar more he showed a certain level of naivety. Half (51.8%) of those on the minimum wage are above the 16-24 age group (Desilver, 2015, p. 2). Still, a comprehensive 1981 study showed that a 10% increase in the minimum wage reduces teenage employment by 1-3% (Wilson, 2012, p. 6).

With talk amongst states of raising the minimum wage for fast-food workers, there is the possibility that the U.S. could have a different minimum wage for each industry. Already, “tipped” workers like waiters and waitresses must be paid a minimum wage that equals their wages plus tips. Despite this, varying policies for more sectors would become too unfair and confusing, with too much government involvement. However, one could have a tiered minimum wage for documented and undocumented farm workers out West. This policy could allow those documented workers to opt-in at the lower, undocumented rate if they wish. This might keep more plants in the United States in operation, with greater job availabilities for middle-income workers, but may be criticized socially.

In truth, however, employment should be the best minimum wage. Bad policies have the potential of pushing workers towards “under the counter” jobs, or even causing teenagers to quit high school to take higher paying jobs when the minimum wage is increased.

The U.S. needs to deal with income inequality, but it must do so through other additional means. Dutch economist Jan Tinbergen said inequality results when education does not catch-up with technology. Education, especially in the technological fields, is very important, and is something which the government can boost through AmeriCorps type programs. Making research and development tax credits permanent could lead to improved worker technology and output, since service-oriented economies, which the U.S. is becoming, can suffer from lower productivity. Tax credits for employees who relocate to other states would help workers find better-suited jobs as well as help underdeveloped states. On the international level, the U.S. needs to push for fairer playing standards to keep U.S. workers equally competitive. Secretary Clinton courageously advocated for paid sick leave, on top of the Family and Medical Leave Act passed by President William J. Clinton. President Trump and his daughter have also proposed greater childcare policies but, as of yet, they have not pushed for them nor addressed how they will be paid for.

#### *Why Is Too High a Minimum Wage Bad Policy Option?*

Having too high a minimum wage can be economically risky. Though wages rose, a Department of Labor study after the 1938 implementation shows a loss of tens of thousands of jobs (Wilson, 2012, p. 5). In a recession, as has been discussed, wages should ideally fall so that firms have more money and the aggregate goods/market supply curve shifts rightward, leading to full employment. When firms have lower wages to pay, they can hire more and supply more output. These are not normative statements, because all resources are being fully utilized. If you have a high minimum wage, this adjustment fails and a recession can last longer, unless

demand increases. In an inflationary gap, or “good” times, wages will rise by themselves, although a minimum wage can help to keep them high should adjustment be slow through “stickiness,” as the great British economist Keynes called it.

Also, as stated above, the marginal cost of exceeding the marginal benefits has been shown in numerous studies, some by the famous late liberal economist Gary Becker. Some of these studies were of Puerto Rico. There, the federal minimum wage has left less-skilled poorer workers unemployed. The minimum wage can also increase inflation, but it does so in the short-term, and inflation in 2019 (standing at near 1.9%) is not a problem, however it is growing. Unemployment is still near 4%, not including the long-term unemployed. If one views this as “normal,” raising the minimum wage would increase wages and inflation, but the effects on output and employment would depend on aggregate elasticities, spending (which is now high), and investment (which is relatively low). If one views it as “inflationary,” a minimum wage increase would not greatly harm employment. If the U.S. were to enter a recession, the issue might hold more political appeal given popular sentiments.

#### *What Does the Economic Community Think of the Policies?*

While the political appeal of minimum wages seems strongest in recessions, economists are currently divided over policies, many having penned letters to President Obama. Alan Krueger was President Obama’s first Head of the Council of Economic Advisors, which is more research-oriented than the National Economic Council, which is political and policy-based. Coming from Princeton University, Krueger was chosen in-part because of his data in New Jersey showing that the minimum wage helps employment, as already discussed. Most questioned his numbers and agree with studies by those such as Becker. And, if the minimum wage is raised too high, it can make the U.S. less competitive because foreign workers, who have lower standards, are cheaper for production. However, one needs to find a balance. There definitely should be a higher minimum wage at some level, most economists agree, or else, as liberal economists would show, employers would take huge advantages from workers. Hundreds (120) of cities have enacted “living wages” amounting to between USD 10 and USD 14, and the push regarding this has now reached the federal level.

Some conservative, “Neoclassicist” economists would probably talk about rational expectations and that wage levels will change fluidly without affecting unemployment because supply and demand are more stable due to anticipations. But this fails to consider why unemployment rates changed drastically during the “Great Recession” with little changes to wages, which is better explained by the “new” Keynesians who consider both expectations and wage “stickiness.” This is a failure of prices, wages, and employment to adjust that stems from numerous factors, such as lack of competition in the marketplaces and employee contracts, and a lack of investment. Also, productivity has been low for decades, which means less output from workers. Wages, therefore, do not and should not, from a theoretical point of view, keep exact pace without productivity improvements.

### *Addressing Krueger*

As was already mentioned, the most controversial of all papers have come from Princeton economist Alan Krueger and his co-author, Card (1994). In their most famous study, they found that unemployment in New Jersey declined and that wages rose after a minimum wage hike, compared to Pennsylvania. However, in order to debate Krueger, it should be noted that states that are geographically close (which Krueger tried to use in his studies, having Pennsylvania serve as a “control group” for comparison) can nevertheless have very different economic conditions. Following a recession, jobs should in time, naturally increase. And, with the increase in the minimum wage, we would expect to see prices and inflation increase as well. This price increase should be larger than those in states where the minimum wage was not increased. Price increases should occur because the minimum wage increases demand over a period, as well as because Krueger did use a several-year long time period for his study.

Krueger does not use any variables for the GDP, even though economies can vary even in neighboring states. Certain sources today show that the economy in New Jersey at the time was stronger than the national average and job losses after the 1991 recession were fewer in New Jersey than nationally (Federal Reserve Bank of Philadelphia, 2019, p. 2). Some reports claim that Pennsylvania had a weak economy at the time, growing at less than the Philadelphia/New Jersey area by a difference of 1.9% following the recession (Brookings Institution, p. 39). New Jersey’s economy actually accelerated in the late 1980s and in the early 1990s (Reseeding, 2017, p. 7). The 1990s was a time when the service sector was growing strongly (Brookings Institution, p. 39), as it still is today (Marcus, 2002, p. 2), and more workers may look for jobs in the service sector during times when the economy is weak. Furthermore, transportation may be better in New Jersey, which is a smaller state (and thus easier to get around), and also, some Pennsylvanians may have moved to New Jersey.

Burkhauser et al. (1996) criticize Krueger for his all-inclusive 1995 book with Card, since it classifies workers into individual wage brackets instead of looking at how the minimum wage affects families. Writing in 1996, Burkhauser et al. say that workers in poor families are actually helped by a factor of a 3.6 times as compared to the average worker. However, they write that the poorest individuals will not be helped by the minimum wage since many already earn levels above it. Only 19.3% of the minimum wages go towards helping the poor, as defined by a poverty line, mainly since two-thirds of adults living in poverty actually do not even work. Furthermore, about a quarter of poor families do not have a working adult. Instead, these authors call for an increase in the Earned Income Tax Credit (Burkhauser et al., 1996, p. 550-551). Other authors called out Krueger and Card’s data as being deceptive, whether or not it was intentional.

Still, Krueger (2001) claims that his works can be useful in teaching college students about empirical economics, as this is the direction that the discipline is moving in. He also writes that journals should not be afraid to publish statistically

insignificant or unorthodox results. Krueger claims this happens frequently. He writes that most textbooks are out of date and that even prominent economists rely on ancient facts on the subject, claiming that new economics holds that jobs lost to the minimum wage can be regained in other sectors. Finally, he cites an NBC-*Wall Street Journal* survey, conducted during normal or somewhat inflationary economic times in 1994, which found that 73% of Americans favored an increase. Most of the support came from youths, women, and minorities (Krueger, 2001, p. 250).

Stunningly, in 2015, Alan Krueger changed his tone and penned an Op-Ed in *The New York Times* in which he (yes, even he) claimed that USD 15 per hour was too high a federal minimum wage for market forces. Krueger now said that it should be more of a state issue. Sixty percent of the U.S. public work in states where there is no state minimum wage, and the federal wage serves as the base. He admitted that his earlier research was meant to be a push for a moderate increase in the minimum wage, and not for extremism, and noted that the minimum wage in the United Kingdom is approximately USD 12 per hour, adjusting for exchange rates, which has not hurt their economy. This amount would therefore be reasonable for the United States. This USD 12 federal minimum wage was proposed in a bill offered by Senator Patty Murray (D-WA) and Rep. Robert C. Scott (D-VA) (Krueger, 2015, p. 1-3).

### **Conclusion: Political and Economic Thoughts**

Normative economics is defined as the branch of economics providing feelings and opinions, but positive economics is analytical, and tries to offer solutions to economic problems by making full use of economic resources. In this sense, if we are asked as a society to choose between more people working for less, or fewer people working for more, we would choose the former, because labor is a resource, while wages (even though money may be) are not. Deadweight loss is transferred from producer to consumer surplus, that is, to consumers (employees) who remain working. But, right now in the United States, the demand curve in the overall goods market is highly inelastic, most likely due to insufficient competition amongst very large firms. This is one reason why wages have remained so flat as compared to unemployment, which has been very volatile. In addition, investment has been low, going more towards machinery (capital) than workers, which is further exacerbated by the fact that workers are taxed while capital, and the growing use of technological production, is not.

Many states and commonwealths, such as American Samoa and the Virgin Islands, have much lower standards of living, compelling one to reason that the federal minimum wage should be a base and that states should be the primary deciders. If the federal minimum wage is indeed set to inflation, it should be set to the region with the lowest inflation levels. And, indexing it after every 4-6 years would give Congress the chance to act on their own in the case of recessions or other economic circumstances, as human discretion usually supersedes that of hard rules. You could have a policy whereby, if Congress were to raise the minimum wage

below the next inflation increase, the next scheduled inflation increase would be based on the original value before the hike – unless that would make the minimum wage lower, in which case the hike should be tied to inflation and cost of living standards. If Congress were to raise it above the next inflation-scheduled increase, then it would only increase the next time by tying it to inflation.

Through the conceptual models and the statistics, which did in-fact vary slightly, because “self-adjustment” and the effects of the minimum wage may have become serially correlated in the statistics, we see that the minimum wage can actually be a policy tool. It can be used to raise wages, if they are “sticky” during periods of recession, although unemployment may be slightly affected. Therefore, allowing wages to fall naturally could be for the best. The minimum wage, seen here, may not affect unemployment during inflationary periods of economic improvement, such as the one that took place historically in the early 1980s. However, the main effect of the minimum wage proportionately and in the long-term is on inflation itself. And, during “normal” times, if the nation and the people desire higher wages, despite losing a little in terms of the levels of employment, then this will have to be a choice which well-informed leaders will have to make in a traditional style trade-off.

One of the most thoughtful quotes on the subject comes from President Bill Clinton, who in his 1995 State of the Union Address said, “a modest increase does not cost jobs” (Burkhauser et al., 1996, p. 547). Another great quote comes from Howard Schultz, the liberal CEO of Starbucks, who has been and still is contemplating a future third-party bid for the White House: “On balance I am a supporter of the minimum wage going up. We’ve got to be very careful about what we wish for because some employers – and there could be a lot of them – will be scared away from hiring new people or creating incremental hours for part-time people as a result of that wage going up.” Another quote, from Klamer (1984), comes from a young Alan Blinder, an actually very liberal economist at the time who would go on to become the Vice-Chair of the Federal Reserve under President Clinton: “They (the politicians) think that minimum wages are a good way to help poor people: that’s wrong. What you want to do is to help poor people. If that means sweeping away the minimum wage, even though that brands you as a right-winger, then you support that. And I always have (supported the right means to the ends)” (Klamer, 1984, p. 157). In his study, Wilson (2012) cites Governor Togiola Tulafono of American Samoa who said in 2012: “We are watching our economy burn down. We know what to do to stop it. We need to bring the aggressive wage costs decreed by the Federal Government under control... Our job market is being torched. Our businesses are being depressed. Our hope for growth has been driven away.”

The above statements would make the case for a more state-based minimum wage system, as most states do seemingly seem to raise their state rates after federal hikes, most likely so as to attract workers from neighboring states, but that is a question for spatial dynamics.

To make the minimum wage a “living wage” would seemingly mean increasing it to where it meets the poverty line, which is currently USD 15,140 for one person,

or around USD 7.50 per hour for a full-time, single worker. However, for a family of 5-6, the poverty line is closer to USD 30,000, which would be the amount earned by a single worker employed at USD 15 per hour. A minimum wage of USD 12 per hour comes closer to the poverty line for a family of 4 (“2018 Poverty Guidelines”, 2018). This would be a reasonable living wage at this time.

In short, the U.S. should raise the federal minimum wage, but do so gently – such as to USD 11-USD 12 per hour, over a short span – at least until the economy stabilizes further and does not go into recession, and if free-market wages do not continue to rise, as they are doing so slightly despite low productivity. This wage rate could pass politically. In a recession, a minimum wage can help to raise wages if they are slow to adjust, as they have been over the past decade, with some effects on employment, but with lesser long-term effects overall. In economically strong times with some inflation, such as the present, unemployment is affected less. These are the surprising findings of this study. With a moderate raise being passable, the future should be left up to the Congress’ discretion, and not to definite “rules.” The majority of Americans, as high as 73% in 2015, favored a modest increase (Pew), but if done so too quickly, there is a risk of unemployment, specifically in the short-term, or inflation in the longer-term, as the regressions show. There is no perfect, mathematical fix which can satisfy everyone when such different tradeoffs exist. While some politicians tout a “guaranteed minimum income,” they ignore the fact that such policies discourage work, and have failed overseas, while conversely, U.S. states that tie entitlements to work deny the truism that some individuals are unable to work. Relying on sound policies in related policy areas can better help workers and reduce income inequality, such as through tax credits for hiring, education, research and development, taxing capital to create worker-technological parity, expanding the Earned Income Tax Credit, and providing better child care for women workers. Future research should apply more data to the conceptual models offered in this article.

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