Analysis of Employer of Last Resort in the United States: Implications of Educational Attainment and Wage Rates

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Abstract:

This paper examines the feasibility and impact of an Employer of Last Resort (ELR) program in the United States. ELR could provide the US with a new policy direction in curbing poverty and creating growth. An ELR growth program would be run by the government to employ millions of unemployed and underemployed people in skilled and unskilled positions. This study aims to show that a well developed and administered ELR program could address the important issues facing the American economy and could lead to a significant economic impact. Using an ordinary least squared model the study establishes factors affecting the wage of ELR workers, and determines a wage for both skilled and unskilled workers. In addition, the impact of the program as a percentage of GDP will test if the project is realistic. Previous studies have found that the program would be beneficial as well as financially feasible and even reducing government expenditures on social programs; however, these studies did not undergo testing in developed nations.

JEL Classification: O11, O23, E24, H63

Key Words: Poverty, Full Employment, Development

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The author thanks Integrated Public Use Microdata Series, Current Population Survey for providing data and gratefully acknowledges the help/guidance from Professor Ramesh Mohan and Professor Jongsung Kim.

1.0 Introduction

Employment is an important aspect of life that leads to both a financial and emotional reward. Lack of employment strongly correlates with both poverty and a higher degree of social isolation. Access to jobs, especially to formal sector jobs, not only integrates individuals into networks linked to the workplace, but also into the social and political environment more generally. (Harvey, 2004, 2007; Mitchell and Wray 2005; Wray, 2007; Tcherneva, 2003; Forstater, 1999) The effects of unemployment can be damaging to the individual as well as. A policy that offers jobs to those desiring to work has the potential to realize personal, societal, and economic benefits. The United Nations Universal Declaration of Human Rights includes the right to work not only because it is important in its own right, but also because many of the other economic and social entitlements proclaimed to be human rights cannot be secured without paying jobs. (Harvey, 2004)

The private sector has natural peaks and valleys in employment rates that are related to the business cycle. Furthermore, the private sector does not have the incentive or desire to obtain full employment in the economy because their incentives include minimizing cost and increasing productivity. For this reason, reaching a level of total employment for all willing and capable workers is unobtainable without government assistance. A government-controlled Employer of Last Resort (ELR) program will put to work people that are willing to work but are currently are not participating in the private sector. With stagnating job growth and increased unemployment levels, it may be necessary to have some sort of government guarantee for employment in a struggling economy in attempt to curb a massive economic decline. It also adds value to the communities by working on meaningful tasks that may have gone overlooked (Wray, 2007). At the same time, it will help to reduce the effects of long standing social issues such as unemployment, the poverty cycle, health care, crime, income inequality, and others. Critics of ELR argue that it detracts from the pool of unemployment from the private sector. Forstater (1999) argues that the pool of unemployment is unchanged because workers move between public sector and private sector

rather than between employment and unemployment, thus retaining flexibility in labor markets without unemployment. ELR has the potential to provide the US economy many benefits, with few costs to society.

This study aims to analyze the feasibility of an ELR program in the United States. By looking at the costs of ELR as a percentage of GDP, an assessment about the attainability of the program can be established. Furthermore, analysis about the effects that the program will have on tax revenues, consumption, savings, social spending such as unemployment and welfare, along with other affects that will be considered. An ELR program could have a significant impact on the current social structures of the nation since it benefits the people at the bottom of the economic system. This study is relevant because of its potential to alter the socioeconomic structure, while developing new policy actions to address social issues.

Utilizing the research of several previous studies, distinctions will be made from this study in comparison to others. This study differs from other assessments of ELR due to three alterations to compare to other studies: First, it develops two different classes of ELR workers, skilled and unskilled; secondly, it is a quantitative theoretical analysis of a highly developed country; finally, it includes both urban and rural workers, and no limitations to ELR access. This paper successfully fills the void of current research by conducting a quantitative analysis of ELR in the United States.

This study will be arranged by the following: Section 2 discusses the current situation in the US economy, especially looking at current trends and issues. It will also look at the effect that ELR had on the Argentine economy. Section 3 will provide a brief review of the literature. The data and empirical methods will be outlined in section 4, with the results being interpreted in section 5. Section 6 will contain the conclusion, which will offer a policy recommendation of the ELR program.

2.0 Trends

This section of the research intends to depict the current situation of the United States' job market and poverty statistics, as well as the results of the Argentine *Jefes de Hogar* program (*Jefes*). Figure 1 shows U6 Unemployment rate in the United States over the past ten years. The Bureau of Labor Statistics measures U6 unemployment by including, total unemployment,

people who are not looking for work but would like to be working, people employed part-time for economic reasons, and discouraged workers. U6 is a much broader look at unemployment than what is commonly used, and can be used to capture the full effect of a downturn in the economy. It measures many more groups of people than other measures of unemployment. The people that are measured in the U6 unemployment rate will be the principal beneficiaries of ELR. Instead of workers losing their jobs and taking part time work or giving up on finding work, they will enter the pool of ELR workers that expands during a recession. Prior to the recession, the U6 rate was wavering around eight to ten percent. Throughout the length of the recent economic downturn, the rate jumped up to around 17.5%. It is very important to keep people in the labor force because as Tcherneva (2003) notes that the effects of joblessness can include social, political, and economic costs. ELR hires the people affected by joblessness helping to prevent the costs associated with unemployment.

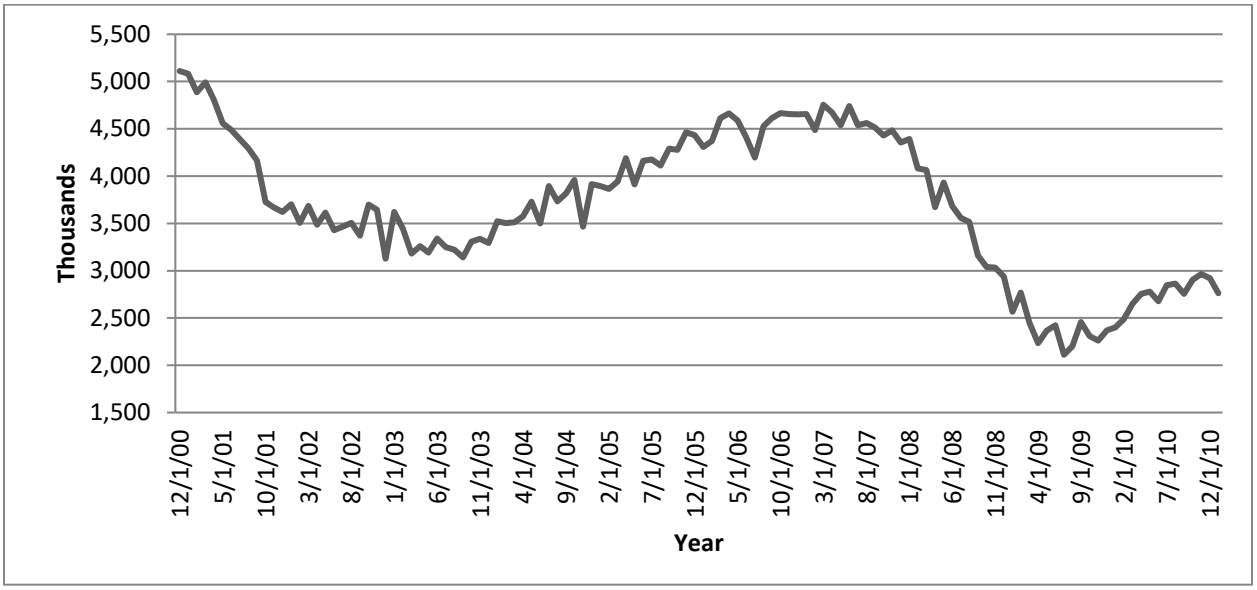
Figure 1: U6 Unemployment Rates in the United States, 2001-2011

Source: Bureau of Labor Statistics (Data adapted from St. Louis Federal Reserve Bank)

As Figure 2 shows, the total number of job openings has been decreasing over the past ten years. The recession between 2007-2009 has heavily affected the total number of job openings. Recently, there have been some gains in the total number of job openings. Nevertheless, the problem remains that job creation and job opportunities are not rising fast enough to combat the desire to work. This chart is a visualization of the business cycle with

peaks and valleys during recession and growth, respectively. With an ELR program, all citizens are guaranteed a job, diminishing, diminishing the effects of a recession by keeping people employed through economic downturns. Keeping people employed, regardless of pay, during a period of time when they would not normally be employed directly provides an appreciation of human capital through education and training. (Forstater, 1999; Tcherneva, 2003; Wray, 2007) By keeping people employed, there will be an overall benefit to society and the workers will be more trained to enter the private sector.

Figure 2: Total Non-Farm Job Openings in the United States, 2000-2010

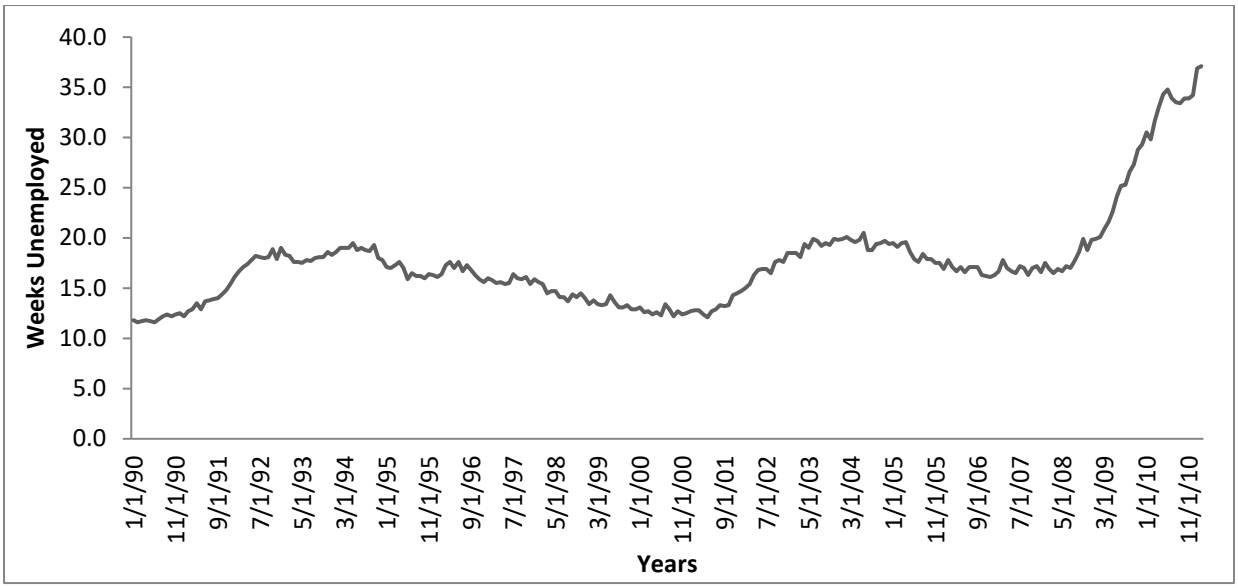


Source: Bureau of Labor Statistics (Adapted from St. Louis Federal Reserve Bank)

As well as a lack of available job openings and high unemployment rates, there are more negative impacts of a heavy reliance on private sector employment. Figure 3 shows the average duration of unemployment for the past twenty years. Through the recent economic downturn, the average number of weeks unemployed nearly doubled in four years. Longer-term unemployment has both negative social impacts and economic. It leads to a notable increase unemployment benefits that have many undesirable effects and added costs to the government. Figure 4 displays the current level of people covered by unemployment benefits through the recent recession. This graph shows a clear and sharp uptick in claims during the hardest economic times with a slow and steady eventual decrease. The decrease in the number of people uninsured however is more indicative of the benefits running out and does not necessarily

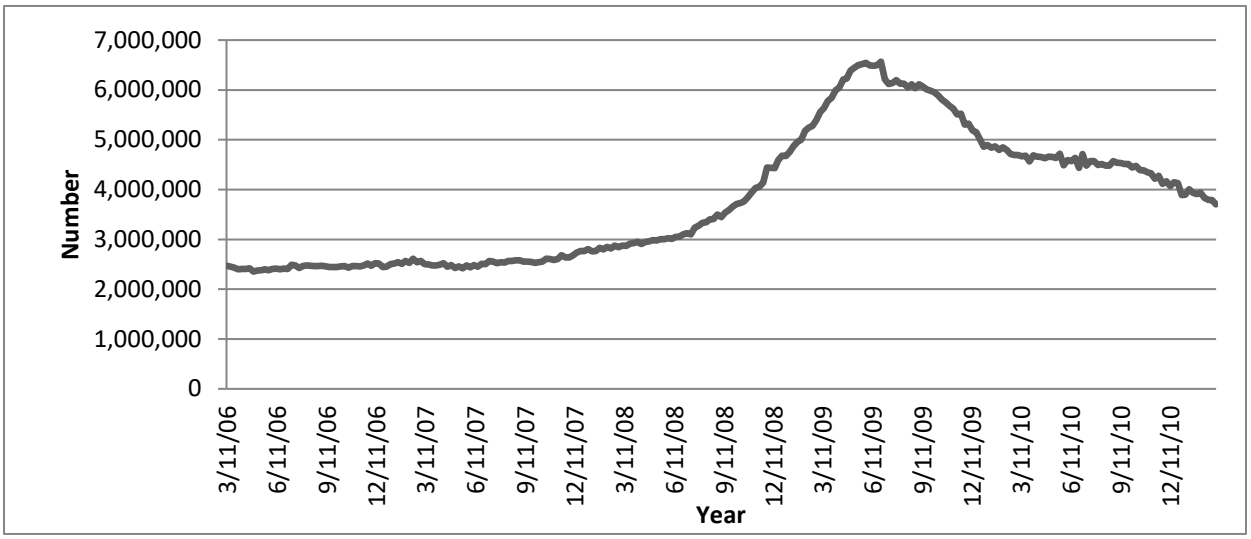
represent people finding employment. This means that people are not receiving benefits and are still unemployed. Although ELR cannot completely eliminate unemployment benefits and other social programs because some people simply cannot work, it will greatly reduce the uncertainty of unemployment and the chance that people are left with neither benefits nor employment. Finally, the impact of unemployment insurance is notable, they damage productivity, savings, lengthen the duration of unemployment, and cause undesired economic impacts since states must replenish trust funds through increased payroll taxes on businesses, in turn discouraging hiring (Norcross and Washington, 2010). Unemployment insurance is a temporary 'band-aid' to a structural problem, while ELR is a long-term program with lasting benefits.

Figure 3: Average Duration of Unemployment in the United States, 1990-2011



Source: Source: Bureau of Labor Statistics (Adapted from St. Louis Federal Reserve Bank)

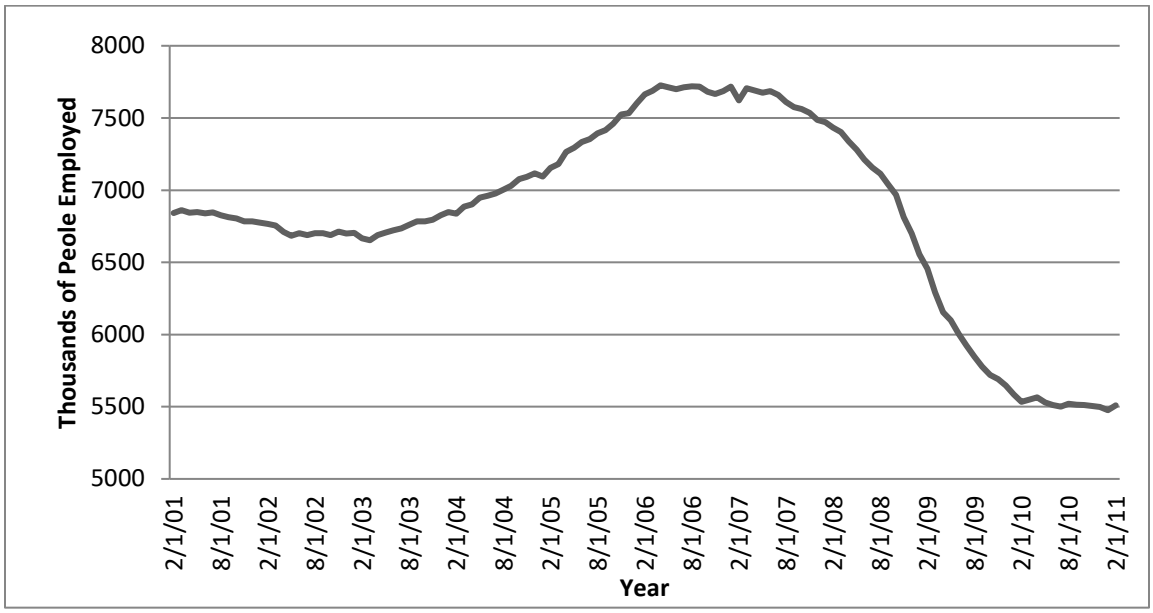
Figure 4: Total United States Population Covered by Unemployment Insurance, 2006-2010



Source: Department of Labor: Employment and Training Administration (Adapted from St. Louis Federal Reserve)

Figure 5 shows the current employment situation for construction workers, which includes workers with a variety of skills. It is evident that the housing collapse experienced in 2007 has had disastrous effects on the construction industry. After the collapse, the demand for construction workers in the private sector greatly depreciated. This leaves the US with approximately two million construction workers depending on unemployment benefits or other less productive sources. Meanwhile, the American Society of Civil Engineers produces a report every few years on the state of the American infrastructure. The results that were derived in the most recent report show little improvement and the continued degradation of the American infrastructure. ASCE grades the overall infrastructure and individual aspects of the infrastructure. The overall grade of the infrastructure was given a "D" in quality. Several crucial aspects of our infrastructure such as levees, schools, roads, dams, hazardous waste and others were graded dangerously close to failing. Instead of paying all of these experienced construction workers to not work, they should be allocated many of the infrastructure projects that need immediate attention. ELR would supply these types of jobs at less cost to the American people. It would also prove that an economy does not have to completely shut down during a recession and continue to be productive. This is an example of how ELR could stabilize an economy during a recession.

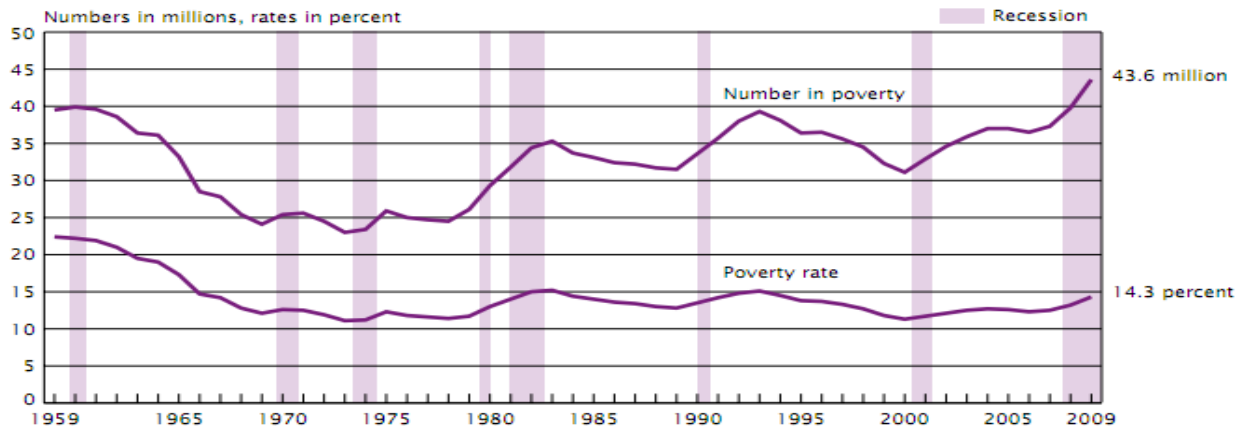
Figure 5: Employment in the Construction Industry



Source: Department of Labor: Bureau of Labor Statistics (Adapted from the St. Louis Federal Reserve)

Looking back at the previous figures, the poverty figures depicted in Figure 6 should come as no surprise. Looking at the *number in poverty* line on the graph, it clearly shows that the number of people in poverty was significantly higher in 2009 than numbers since 2000. DeNavas-Walt et al. (2009) notes a rising level of poverty since 2007, up to the point of 43.6 million people living below the poverty line. Over time, we can see that the number of people in poverty and the poverty rate have remained stable, with slight decreases and rapid increases during recessions, as shown in Table 1. This shows that despite the installments of social programs aimed directly at the most impoverished people, the status quo remains the same. There has been no long-term decrease in the poverty rate. ELR has the potential to change the status quo by giving people work, education, training, and benefits to those most in need. Figure 6 and Table 1 make it clear that the programs that are currently in place are ineffective at reducing poverty and changing the existing conditions.

Figure 6: Total Number in Poverty and Poverty Rate, 1959-2009



Source: Adapted from DeNavas-Walt et al., 2009

Table 1: Change in Poverty during Years Surrounding Recessions, 1969-2009

Recessions[1]	Income years	Change in number of people in poverty	Change in poverty rate	Change in number of children in poverty	Change in child poverty rate
December 2007, trough not yet defined	2007 to 2009	*6,293	*1.9	*2,127	*2.7
March 2001 to November 2001	1999 to 2002	*1,779	0.2	−147	−0.4
July 1990 to March 1991	1989[2] to 1991	*3,293	*1.2	*1,187	*1.7
January 1980 to July 1980 and July 1981 to November 1982	1978 to 1983	*10,806	*3.9	*3,980	*6.4
November 1973 to March 1975	1973 to 1975	*2,904	*1.2	*1,462	*2.7
December 1969 to November 1970	1969 to 1971	*1,412	0.4	*860	*1.3

Source: Adapted from DeNavas-Walt et al., 2009

In order to fully understand the effects that an ELR program could have, it is helpful to look at the impacts of the Jefes de Hogar (Jefes) program that was instituted in Argentina. The Jefes program is not a full ELR program, as it limited participation to the head of the household and therefore, the benefits are not as noticeable as they could be. Despite this, the overall gains from the Jefes program are very recognizable. Table 2 shows the drastic changes in poverty in which the restricted Jefes program is supported by Figure 7, which shows the unemployment rate in Argentina both before and during Jefes. Table 2 shows the change in indigence and poverty, where indigence is defined as extreme poverty and measured by the level of income required to purchase a minimum amount of food necessary to survive (Tcherneva and Wray, 2005). Looking at the figures, it is clear that Jefes has had a large impact on extreme poverty and a smaller effect on poverty rates. This is somewhat expected as the extremely poor will be making more overall income gains where the people who were just poor are still not making enough in the short run to completely escape poverty. In the long run with savings and job training the

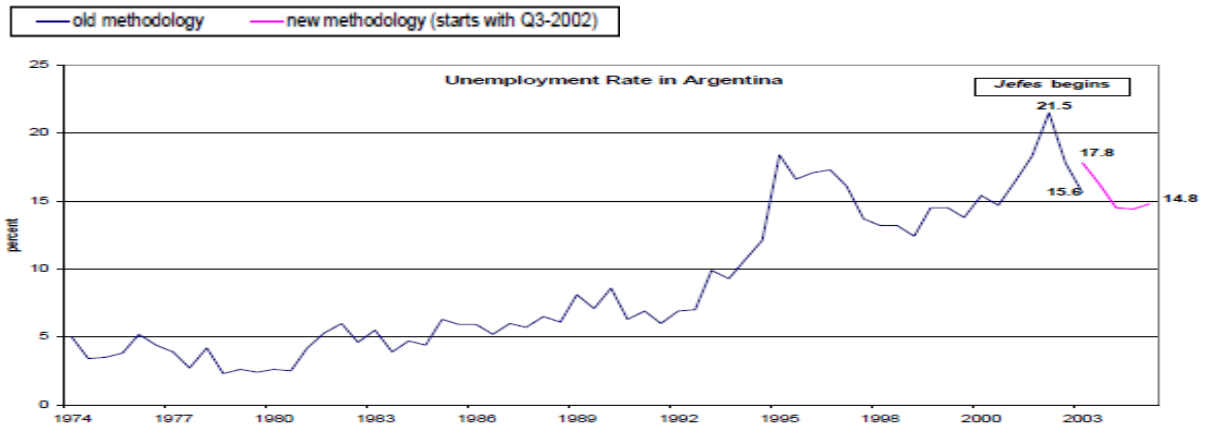
poverty rate would see a continued decrease. Furthermore, as was previously stated, Jefes is a limited ELR program, and it could be expected to see further decreases in poverty with fewer limitations on participation. The most important aspect to note about these figures is the fact they have effectively changed the status quo in poverty, unlike current US social programs, poverty and indigence had been growing prior to Jefes. Thus, in the United States, an unrestricted ELR program has the potential to set a course to lowering poverty in the long run. Although Argentina had more room for improvement as far as poverty reduction, their limited participation rates and significant decreases in extreme poverty can be seen as a model for the potential affect in the US.

	% of households below the line of indigence and poverty		
Households	without *Jefes*	with *Jefes* (Aug 2002)	percent change
indigence	86.4	61.8	-24.6
poverty	98.3	95.4	-2.9

	% of individuals below the line of indigence and poverty		
Individuals	without *Jefes*	with *Jefes* (Aug 2002)	percent change
indigence	87	68.6	-18.4
poverty	98.6	96.7	-1.8

Source: Adapted from Tcherneva and Wray, 2005

Figure 7: Unemployment Rate: Argentina

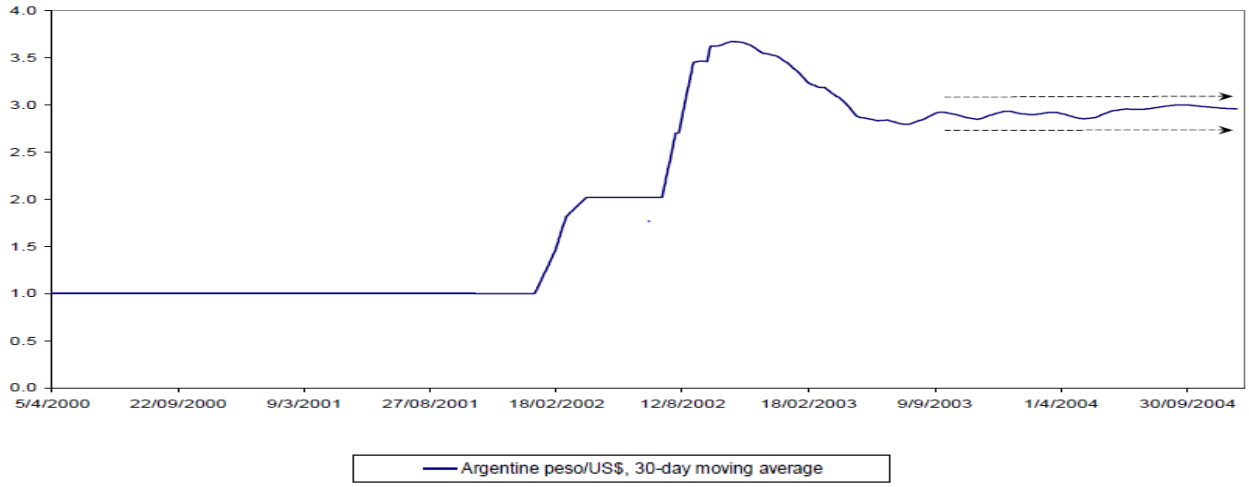


Source: Adapted from Tcherneva and Wray 2005

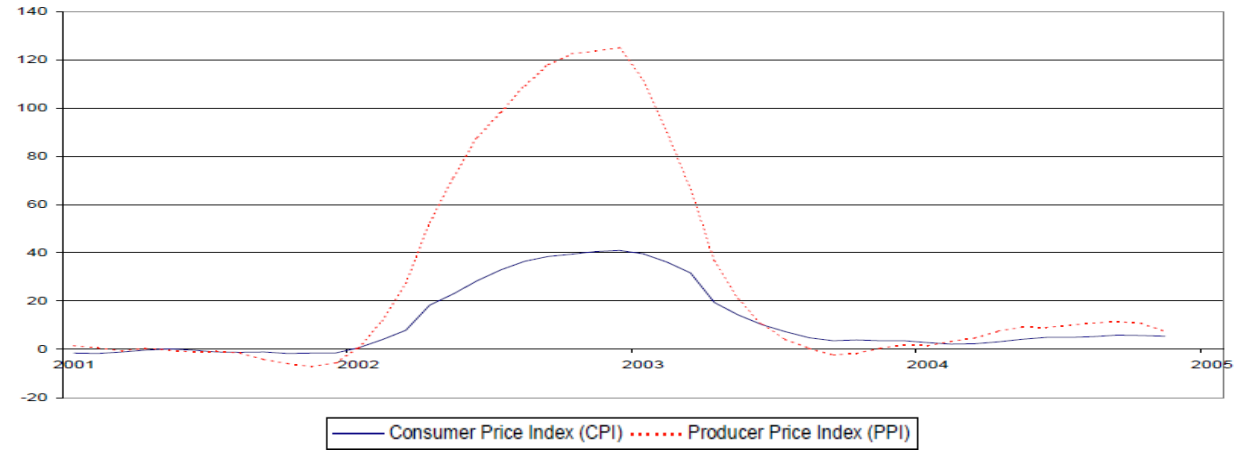
Two of the main concerns associated with ELR relate to the stability of the exchange rate and inflation. The case of Argentina can refute the skeptics of full employment. Figures 8 and 9

show that concerns over stabilization of inflation and the exchange rate are unfounded, proved by the results of Jefes. These two figures show that since the Jefes program was instituted both inflation and the exchange rate stabilized. Prior to the Argentine financial collapse, the Peso was fixed to the US dollar. The recession led a change to a floating exchange rate, shown with sharp upticks in the exchange rate and inflation, starting in 2002. After Jefes was installed, both rates stabilized. Figure 8 proves that inflation may see a one-time jump, but then lead to long term stability (Wray, 2007).

Figure 8: Argentine Exchange Rate



Source: Adapted From Tcherneva and Wray, 2005



Source: Adapted From Tcherneva, 2005

3.0 LITERATURE REVIEW

Employer of last resort would effectively create a system of full employment, alleviating some of the ailments of joblessness. A policy of full employment has the potential to solve many problems that are associated with poverty and joblessness. Forstater (1999) notes that some of the effects of poverty include damage to social status and self-respect, adverse psychological and physical health effects, stress, suicide, crime and other anti-social behavior. Additionally, unemployment causes permanent losses in potential output of goods and services; losses of tax revenues; higher government spending in the form of public assistance and deterioration of labor skills and productivity; and more (Forstater, 1999). There are several more impacts on society as direct result unemployment, thus justifying the need for a full employment policy. The United Nations Universal Declaration of Human Rights includes the right to work, not only because it is important in its own right, but also because many of the other economic and social entitlements proclaimed to be human rights cannot be secured without paying jobs (Harvey, 2004). ELR gives all people the opportunity to work regardless of their training or education. This policy allows people to decide if they want to work, they are given the choice, and have the right to work. Wray (2007) notes that a universal ELR program—which takes anyone who is ready and willing to work—is the only type of program that can ensure that the human right to employment is continuously met. It provides a sufficient income for those who are willing and able to participate, which in turn increases the quality of life. A properly designed ELR program will not only produce socially useful goods and services, but it will also promote feelings of self-worth and accomplishment among program participants. Poverty and joblessness have notable costs to society; ELR reduces some of the effect of these issues.

Unemployment is inherently linked to public policy and economic growth. Unemployment is seen as a necessary cost of maintaining price and exchange rate stability. However, ELR offers uniform wage compensation, fixing labor costs, which might lead to a one-time increase in prices, but not to an increasing inflation rate (Forstater, 1999; Wray, 2007). ELR is a policy that creates nearly full employment and all of the benefits associated with it, without jeopardizing macroeconomic stability. Flexible economies are able to sustain higher growth rates and higher levels of employment without inflation. Currently this flexibility is realized through reserve labor pools, which has been targeted through the tightening of monetary

and fiscal policy. This pool of labor is employed during expansion and is shed in times of recession. In an ELR full employment strategy, the economy works in the same way, but rather with the pool of unemployed moving from the private sector to the public sector in recession and from the public sector to the private sector in expansion. Thus, ELR maintains the unemployment pool, while reducing social benefits, maintaining flexibility, stability and productivity (Forstater, 1999). An issue of this new unemployment pool will lead to a reduced ability to search for employment but certainly, workers will have time available to move back to the private sector. Wray (2007) notes that this works best with a low-wage level for highly skilled workers because there will be high incentives to return to the private sector. In the current structure, unemployment and poverty are seen as a necessary cost of society, because of macroeconomic stability and flexibility. ELR does not jeopardize stability or flexibility and has an overall social benefit. ELR may also produce more stable and consistent economic growth. Emphasis on accelerating growth though devices that induce capital-intensive private investment may not grow may be increasingly inequitable in income distribution and may be overall unstable. A full employment economy is bound to expand without the instability that is seen in investment driven markets (Minsky, 1986). These authors are suggesting that the common beliefs of full employment regarding inflation and stability are solved through and ELR system. In addition, despite the controversy surrounding the topic of full employment, it must be noted that attempts to fine-tune the economy through Keynesian style aggregate demand manipulation has been largely ineffective (Wray, 2007). A policy of ELR can prove to be very beneficial, more effective, and stable. However, this all comes at a cost to governments that implement this policy. By analyzing, a program similar to ELR an assessment about the cost and effectiveness can be made in relation to the United States.

A well-targeted ELR program has the potential to provide many benefits to both labor and to the overall economy. In the early 1970's India instituted the Maharashtra Employment Guarantee Scheme (MEGS), which was an attempt at an ELR program. The program was not acting as a true Employment Guarantee System (EGS) since access was highly rationed (Murgai and Ravallion, 2005; Ravallion et al., 1993). The limitations to the system limited the success of MEGS. India has the greatest quantity of impoverished people in the world, largely in the rural sector and thus could realize large social benefits from a well-targeted full employment program. Murgai and Ravallion (2005) predict with a true EGS system in India the cost would be around

3.7% of GDP, with a wage of 40 rupees per day. Kaboub (2007) looked to determine the cost of an ELR program in Tunisia, which also has a large portion of their population in poverty with a weak economy. The author argues that an ELR program in Tunisia would be vastly superior to the traditional economic growth models of, import substitution industrialization, export led growth, and FDI-led models all of which Tunisia has adopted with limited success. It is predicted that an ELR program in Tunisia would cost 2.7% of GDP while providing an increase to GDP of about 3.6%.

In contrast to the attempted EGS program in India, Argentina's *Jefes de Hogar (Jefes)* has seen different results since being instituted in 2002. Throughout the 1990's Argentina had been the poster child for Washington Consensus-led development strategy. Argentina downsized the government, opened their markets, and fixed the Argentine Peso to the US dollar. Following the collapse of their economy and elevated unemployment rates, the Jefes program was instituted (Tcherneva and Wray, 2005). The success of this program is easily seen through unemployment rates, a stabilized inflation rate, and the overall satisfaction of Jefes workers. Jefes is not a complete ELR program limiting the participation of the program to the head of the household. With nearly 2 million participants, or 13% of the labor force, it costs Argentina less than 1% of GDP. While it was calculated to raise GDP by around 2.5%, it shows a net gain in GDP from the Jefes program. Even with the restricted access to the program, it has reduced the unemployment levels by almost 50% of the levels they were at prior to implementation. One of the main concerns about an ELR program is inflation; however, the Argentinean case proves that with a well-set ELR wage rate inflation can actually be stabilized (Tcherneva and Wray, 2005). Despite all of the success of the Jefes program, Argentina is still a very different politically and economically than the US. The US has low levels of inflation, relatively low levels of unemployment, a stable currency, and consistent GDP growth. However, the impoverished urban areas are not reflective of the overall snapshot of the U.S. economy. Many of the inhabitants of these areas are not counted as part of the labor force and do not influence the unemployment level. Tcherneva and Wray (2005) note that people in these areas in Argentina can see jobless rates around 50% or more. Although there are several social programs and political reforms to aid the poor in America, it does not change the status quo as they are stuck in a poverty trap. If an ELR program were adapted for this area a real benefit to the community and the people would be realized. Current attempts in America to reach the poor have been wildly

unsuccessful; with a well-targeted ELR program, the poorest Americans could finally find their way out of poverty, by working for their community, and earning other important benefits. Tcherneva and Wray (2005) prove that ELR can have a large impact on the poorest people; Jefes has significantly reduced the levels of extreme poverty allowing people to afford food and shelter. With this proven success a program such as Jefes, a less restrictive program could have a greater impact with the impoverished Americans.

4.0 Data and Empirical Methodology

4.1 Data

The data utilized in this study came from the Integrated Public Use Microdata Series (IPUMS) extraction tool for the US Census Bureau. Specifically, the data obtained is 2010 Current Population Survey (CPS), which is a compliment to the decennial census collecting data monthly from the American public. All of the data used in this research is derived from the CPS survey and does not contain data from any other source. Summary statistics for the data are provided in Table 3.

Table 3 Summary Statistics

Variable	Observations	Mean	Standard Deviation	Min	Max
INCWAGE	103445	41402.92	48631.38	2	567,699
SEX	103445	.47498	.4990	0	1
MARST	103445	.3923	.4882	0	1
RACE	103445	.7422	.43742	0	1
METRO	103445	.8939	.3078	0	1
AGE	103445	33.69	21.4270	0	85
AGE^2	103445	1594.69	1646.198	0	7225
NCHIL5	103445	.1321	.4490	0	5
HIGHUP	103445	.6020	.48946	0	1
ASUP	103445	.2867	.4522	0	1
BACHUP	103445	.2180	.4129	0	1

MASUP	103445	.0709	.25666	0	1
DOC	103445	.0139	.1171	0	1

4.2 Empirical Model

Following Murgai and Ravallion (2005), this study adopted some of the characteristics of the model to determine the wages of ELR workers. This study looks to achieve the same goal of establishing wage rates but with alterations to the empirical model. Since Murgai and Ravallion (2005) conducted their study in India, only a few of their variables are relevant when conducting a study in America. Five similar regressions will be used to test the how each level of educational attainment affects wages. In each regression, the educ variable changes for each level of education. This study is focusing on the difference between associates degree attainment and higher compared to lower levels of education. Different levels of education are tested to single out each levels affect on wages. The model that was adopted for this study can be written as follows:

$$incwage = B_0 + B_1 age + B_2 age^2 + B_3 sex + B_4 marst + B_5 metro + B_6 educ + B_7 nchil + B_8 Race + \mathcal{E}$$

Educ is the variable with the most relevance to the study and the conclusion will be derived from these results. This regression analysis is attempting to differentiate the monetary value of high educational attainment compared to those with less education. This study is different from the others because it determines two classes of ELR workers, the educated, and less educated. Therefore, this distinction must be made in order to test the financial burden of ELR. Also, testing the varying levels of education will test their respective effect on wage. Previously, people only needed to obtain a high school diploma in order to achieve successful careers, which is not as true today. As we continue to enter the global economy with more global competition, it may be necessary to obtain higher levels of education. Thus, these levels of education need to be tested to understand their impact on wages, and their implications can be used if the natures of employment changes prompting a change in the ELR wage rates.

Appendix A provides data source, acronyms, and descriptions of the variables. Appendix B shows the expected sign and what the variable captures. The dependant variable *incwage* is defined as the total pre-tax wage and salary income of each respondent. The independent variable *age* shows the age of the respondents of the survey, and is used to see the effect of age on the level of income. Age^2 is used to show diminishing gains in wages the older a person gets. There comes a point when being older does not lead to more wages and this effect is displayed with the age^2 variable. *Highup* is a dummy variable that explains the effect of earning a high school diploma on wages. *Asup* is a dummy variable that looks to explain the effect of earning an associate's degree on wages. *Bachup, Masup* and *Doc* show how earning a bachelor's, master's and doctorate degrees respectively impact wages. Minsky (1986) suggests that ELR should not form separate wage scales, stating that ELR should take workers as they come. However, the American people are both highly educated and at the same time under-educated. If the wage rate were the same for both groups, participation in the program for those with a high educational attainment would be low, limiting the effectiveness of the program. This study looks to include those dealing with structural employment, as well as rewarding them for their educational attainment. Furthermore, the educated people are expected to form more supervisory and managerial roles that require higher wages. The definition of educated as defined by this study is people with at least an associate's degree from a vocational school or from an educational institution. Whereas, a high school diploma and less falls into the other category and thus receives a different ELR wage rate. *Metro* is a dummy independent variable that looks to see the effect that living in a city has on the level of income that people make. The variable separates those who do live in metro areas and those who are not considered to be in a metro area. *Marst* is a dummy variable defined as marital status and gives each person's marital status at the time of the survey. Any person who has never been married, or that has been divorced is labeled as not married. Only if the marriage is current are they counted as married. The independent variable *sex* is defined as the gender of the people involved in the study. It is a dummy variable attempting to look at the impact of gender on wages. The goal of *Nchil5* is to determine how the wages of people with young children are paid. Also, the dummy variable *race* separates people into two groups: white and non-white, to determine if race is a determinant of wage. The next section shows the regression analysis and the following GDP calculations.

5.0 Empirical Results

The goal of this study is to determine if an ELR program is economically feasible in the United States. This will be done by calculating the cost of the program in terms of GDP as well as an estimation of the total benefit to GDP from the reduction of various other social programs. The purpose of the regression is to show a difference in wages between those who are educated and those who are less educated. The other variables will also be analyzed for their effect on wages. This will help to define wage rates for both groups of people. Once the wage rate and a participation rate is determined then the test on the GDP will be conducted. Table 4 presents the regression results, showing how the independent variables influence the wage rate.

Table 4: Regression Results

	INCWAGE				
	I	II	III	IV	V
AGE	3995.229*** (67.68)	4694.788*** (82.78)	4652.943*** (82.25)	4250.511*** (76.35)	4640.115*** (82.44)
AGE^2	-39.5131*** (-58.00)	-46.627 *** (-70.57)	-46.21116*** (-70.12)	-42.822*** (-66.17)	-46.71835*** (-71.25)
SEX	-8965.195*** (-31.75)	-8635.19*** (-30.57)	- 8628.56*** (-30.63)	-8770.07 *** (-31.78)	-8073.002*** (-28.77)
MARST	6543.296*** (22.65)	2337.36*** (7.56)	2232.96*** (7.33)	6470.473*** (22.93)	6163.827*** (21.49)
METROS	12105.41*** (25.82)	10253.94*** (21.85)	9771.221*** (20.85)	9430.293*** (20.57)	10342.72*** (22.23)
NCHIL5	7420.953*** (28.50)	8573.84*** (33.03)	8363.85*** (32.31)	5890.632*** (23.07)	6968.676 *** (26.95)
RACE	1034.018*** (29.77)	9442.85*** (29.01)	9151.117*** (28.18)	8194.945*** (25.73)	9085.876 (28.12)
HIGHUP	18518.16*** (-42.11)				
ASUP		13802.62*** (41.70)			
BACHUP			16991.8*** (47.84)		
MASUP				36329.44*** (82.02)	
DOC					53179.34*** (58.14)
R^2	.1380	.1377	.1422	0.1767	.1509
F-Statistic	2069.59***	2064.74***	2143.01***	2775.87***	2298.67***
Number of Obs.	103445	103445	103445	103445	103445

Notes: *** stars denote significance at 1.0%, * star Denotes significance at 10.0%. T-values in parenthesis

After running the regression analysis, we can make several interpretations from the results. It is important to note that all of variables in all regressions are statistically significant at the 1% level. These variables consist of sex, race, marital status, all educational attainment variables, age, age^2, metro, nchil5.

Following the Murgai and Ravallion, (2005) model, some of the results do overlap while others do not. When dealing with gender this study also finds that men earn less overall then women. This regression shows that gender does in fact matter when dealing with wages. This variable is statistically significant but the results are not expected many previous studies and reports have shown that women earn less than men.

The age variable in relation to wages shows that with each additional year people earn less money. These results are consistent with Murgai and Ravallion since their study also predicts increasing wages with age. Each regression shows that when a person ages by one year they earn about 4,000 to 4,500 dollars more. *Age*^{2} captures this turnaround point of where people will begin to start earning less money. The average turnaround age for each regression is calculated to be 43. These results show that around the age of 43 people start to earn less money as they get older.

The regression shows that married people earn more wages than single or divorced people do. It also, shows that people living in the city generally earn more than those living outside the city. This is due to the increased demand on money because of higher living costs within cities. Furthermore, it notes that people who have more young children earn more than those that do not. Finally, the race variable shows that white people generally earn more than non-whites.

Marriage, metro status, sex, age and race may be true in the private sector but this studies' definition of an ELR program these variables will not affect the overall wage rate of a participant. These wages can be seen as discriminatory when dealing with gender, age and race. In order to keep the ELR program as efficient as possible, minute differences, in workers, such

as metropolitan status will not change the level of wages, even though it may be more expensive to live in the city.

The only effective way to differentiate between wages is to split the groups by educational attainment. Relative to the less educated, the associates degree and higher participants should earn $13,802.62 more than the less educated under the ELR program. This is the wage level that is going to be analyzed in this study. People who do not at least achieve a high school diploma earn significantly less than those who do. A person with at least a high school diploma or higher earns $18,518.16 more than those who do not. By earning a bachelor's degree, people will earn $16,991.80 more than those people who achieve less educationally. Masters and Doctorates will respectively earn $36,329.44and $53,179.34more wages than those with less educational attainment. Since these jobs command significantly more wages in the private sector it could be foreseeable to change the educational attainment requirement to a higher wage rate. Currently, a wage rate split at the associate degree level would be the best way to introduce the program and to keep participation rates high with relatively low costs. If the educational attainment is set at the masters or doctorate settings then only a small number of people would benefit from the higher wages while creating disincentives for the larger number of people who have bachelors and associates degrees, since they would not be receiving benefits from their educational attainment.

For the less educated people a wage needs to be set that allows them to benefit from the program and not draw jobs away from the private sector and limiting the one time inflationary reaction. The wage level I suggest would be around $8/hour for unskilled, untrained labor. This then becomes the new minimum wage with workers earning $16,640 per year. Previous studies also set an ELR wage rate around the current minimum wage at the time of the study. With the regression analysis factored in, educated workers would earn around $30,442.62/ per year. Wages are generally sticky and are not quickly affected by inflation; ELR will put upward pressure on wages in the public and private sector. As noted by the Argentine case study, inflation will see a onetime increase that will eventually lead to stabilization.

Many studies have tried to estimate the cost of ELR as a percentage of GDP, looking at the actual cost of the program, and the reduction of social programs such as unemployment benefits. The figures that were obtained from the regression regarding wages will be used in the

calculation of the impact on GDP. As of March 2011, the total number of counted unemployed was 13.5 million with 2.4 million not officially counted as unemployed, 8.4 million working part time involuntarily and .921 million discouraged workers. The real total number of unemployment is actually 25.221 million. Of these unemployed 4.791 million of them, qualify for the higher educational attainment wage rate of at least having an associate's degree, and 20.43 million falling below those qualifications (Economic News Release, 2011). ELR is designed to fluctuate between the good and bad economic times with more workers during the bad times and less during the good. In addition, not all unemployed workers will choose to resort to ELR work and will choose to stay unemployed or continue to collect benefits without working. In the good economic times the size of ELR will shrink due to more workers entering the private sector, it can be estimated that there will be 7.5 million people that qualify to work. Within this, it can be estimated that 1.5 million workers will fall into the highly educated wage level and 6 million less educated.

Table 5: Cost of ELR during a Recession

Participation Rate	Uneducated Participation	Educated Participation	Total Cost Uneducated	Total Cost Educated	Total Cost	%of GDP
20%	4,086,000	958,200	67,991,040,000	29,169,773,532	97,160,813,532	0.65334
40%	8,172,000	1,916,400	135,982,080,000	58,339,547,064	194,321,627,064	1.30668
60%	12,258,000	2,874,600	203,973,120,000	87,509,320,596	291,482,440,596	1.96002
80%	16,344,000	3,832,800	271,964,160,000	116,679,094,128	388,643,254,128	2.61336
90%	18,387,000	4,311,900	305,959,680,000	131,263,980,894	437,223,660,894	2.94003
100%	20,530,000	4,791,000	341,619,200,000	145,848,867,660	487,468,067,660	3.27789

Sources: Bureau of Labor Statistics, Bureau of Economic Analysis

Table 6: Cost of ELR during Strong Growth

Participation Rate	Uneducated Participation	Educated Participation	Total Cost Uneducated	Total Cost Educated	Total Cost	%of GDP
20%	1,200,000	300,000	19,968,000,000	9,132,678,000	29,100,678,000	0.19568
40%	2,400,000	600,000	39,936,000,000	18,265,356,000	58,201,356,000	0.39136
60%	3,600,000	900,000	59,904,000,000	27,398,034,000	87,302,034,000	0.58705
80%	4,800,000	1,200,000	79,872,000,000	36,530,712,000	116,402,712,000	0.78273
90%	5,400,000	1,350,000	89,856,000,000	41,097,051,000	130,953,051,000	0.88057
100%	6,000,000	1,500,000	99,840,000,000	45,663,390,000	145,503,390,000	0.97841

Sources: Bureau of Labor Statistics, Bureau of Economic Analysis

These figures were calculated using the unemployment figures provided by the BLS and the GDP figures provided by the BEA. By using different levels of participation and calculating the cost during both a strong and weak economy, the real effect of the program can be realized. These calculations predict with full participation during an economic boom, the cost of ELR will be around 1% of GDP. But full participation is very unlikely and the cost would actually be much less than 1%. Furthermore, it is predicted that even with over 25 million people or full participation in ELR, the total cost will be 500 billion dollars or 3.27% of GDP. ELR would never be at full capacity, as some people will opt out of the program or are not capable of working. A participation rate of 100% is rather ambitious and not completely likely. These calculated results are consistent with other findings, when compared to more realistic participation rates. In Argentina with restricted participation, only 13% of people opted for ELR. At 20% following these calculations, the cost would be less than 1% of GDP during a recession and only .2% during economic growth. Forstater (1999) predicted that the cost of the program would peak at 50 billion during strong growth. The program may not have a very large impact on the national government budget since many of the costs of the program would be absorbed at the state level. Also, Wray (2007) states the costs for any materials or other goods are significantly less than one percent of GDP (Wray, 2007). The predicted EGS system costs in India were set at 3.7% of GDP (Murgai and Ravallion, 2005). Kaboub (2007) adds that a similar program in Tunisia would cost 2.7% of GDP. Along with this, the spending of the ELR workers would act to offset the costs and lead to a net increase in GDP of 3.6%. This study has found similar results to several other studies despite the higher wages for the educated.

In February 2011, the BEA reported that 113 billion dollars were spent on unemployment benefits. At the peak of the most recent recession, unemployment insurance was costing 150 billion dollars per month. This money spent does not help people to improve their situation it only allows them to remain at the status quo or do worse than they were before. Instead of working, the unemployed were collecting benefits and contributing very little to society. By putting these people to work much, more can be accomplished at cheaper costs. At low levels of participation a year of ELR could be cheaper than a month of unemployment. In the Jefes program in Argentina, many of the projects were focused around the failing infrastructure in the poorest neighborhoods. In addition, workers received the most satisfaction from the program when they were working on community projects (Tcherneva and Wray, 2005). ELR will help to

alleviate much of the money that is wasted on these social programs that do not benefit society or help to reduce poverty. It leads to a decrease in crime an increase in productivity and makes people feel like they are part of something bigger than themselves (Wray, 2007).

6.0 Conclusion

Since ELR is not a policy that is currently in effect in the United States, there are not actual costs to look over. This study does note that current social programs do not have a significant impact on the people that need help the most. The US poverty rate has remained stable since 1965, clearly showing that changes need to be made to the social programs currently in place. Putting people to work will have a significant impact on this figure, as was seen in the Jefes program in Argentina. Many benefits have been noted to people working such as, crime reduction, increased consumption, poverty reduction, reduced anxiety, stress, increased tax revenue, productivity, increased output, community improvements, and many others. In addition, the American infrastructure is failing and falling apart, instead of hiring expensive contractors, unemployed construction workers could start the long process of re-building the country. ELR has the potential to benefit the United States in many ways, and is a policy that is capable of being pursued.

Although the aim of this study is not intending to show that ELR is politically feasible in the US, an argument can be made that ELR could be adapted to several political views. Those who oppose certain social programs will appreciate the fact that ELR reduces the cost of social programs while increasing the efficiency of the government. Also, those who favor equal opportunities and social programs could also back ELR. The program leads to a reduction in poverty, income inequality, increases education for all and restores crumbling communities which will have a visible benefit to those who would oppose the cost and size of the program This study was aiming to find the financial feasibility of ELR but a not about the political implications is important to note.

This study attempts to show that an ELR program is both economically possible, and is a policy that will prove to be beneficial. This is shown through the various other studies that discuss how the benefits of ELR could be obtained. Also by looking at a few case studies, the actual benefits from ELR can be realized and adapted to the case of the U.S. The regression

analysis shows that there are many factors that affect private sector wages. The most relevant piece of analysis is the difference between the attaining an associate's degree and higher compared to less educational attainment. Although higher educational attainment leads to higher wages this level was chosen to keep costs down and to provide incentives for the people who have some education. This study created two wage rates based on this gap. Predictions and calculations about the impact on GDP prove that an ELR program is economically feasible in the United States. This program would have many positive impacts to the economy and society. Many of the concerns with an ELR program can be debunked. Concerns over inflation, exchange rates, and employment flexibility are not valid with this system. This study shows that the United States and other highly industrialized nations should consider adding a full employment scheme to their methods of growth and development.

Appendix A: Variable Descriptions and Data Sources

Acronym	Description	Source
INCWAGE	Total pre-tax wage and salary income	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
SEX	Gender Male: 1 Female: 0	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
MARST	Current marital status Married: 1 Non-Married: 0	Integrated Public Use Microdata Series, Current

		Population Survey: Version 3.0
RACE	Ethnicity of individuals White: 1 Non-White: 0	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
METRO	Indicates whether a household is located inside of a metro area In Metropolitan area: 1 Outside Metro area: 0	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
AGE	Person's age at last birthday	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
AGE^2	Square root of the age variable in order to account for a diminishing return to wages	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
NCHIL5	Number of Children in household below the age of 5	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
HIGHUP	Divides educational achievement of each individual between less than a high school diploma and below and a high school diploma and higher	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
ASUP	Divides educational achievement of each individual between high school and below and associates degree and higher At least Associates :1 Less Than Associates: 0	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
BACHUP	Divides educational achievement of each individual between associates degree and below and bachelors degree and higher At Least Bachelors: 1	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0

	Less than Bachelors: 0	
MASUP	Divides educational attainment of each individual between bachelors degree and lower and masters degree and higher At Least Masters: 1 Less than Masters: 0	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0
DOC	Divides educational attainment between those with a Doctorate degree and those without At Least Doctorate: 0 Less Than Doctorate: 1	Integrated Public Use Microdata Series, Current Population Survey: Version 3.0

Appendix B: Variables and Expected Signs

Acronym	Variable Description	What it captures	Expected sign
SEX	Gender	Sex looks to see how gender influences total wages earned	+/-
MARST	Marital Status	Shows how marriage effects wages	+
RACE	Race	Shows the effect of race on wages	+

METRO	Metropolitan Status	Metropolitan status captures the disparity of wages between those living in cities compared to those who do not.	+
AGE	Age	Captures the Effect of age on the level of income	+/-
AGE^2	Age^2	Age^2 captures the diminishing returns of wages as people get older.	+
NCHIL5	Number of Children under 5 in household	Shows the impact of having young children on wages	+
HIGHUP	High School educational attainment and higher	Establishes wage difference between those with an high school diploma and higher compared to those with less educational attainment and the impact on wage	-
ASUP	Associates degree attainment and higher	Establishes wage difference between those with an associate's degree and higher compared to those with less educational attainment and the impact on wage	+
BACHUP	Bachelors degree attainment and higher	Establishes wage difference between those with a Bachelors degree and higher compared to those with less educational attainment and the impact on wage	+
MASUP	Masters degree attainment and higher	Establishes wage difference between those with a Masters degree and higher compared to those with less educational attainment and the impact on wage	+
DOC	Doctorate Degree attained	Establishes wage difference between those with a Doctorate and higher compared to those with less educational attainment and the impact on wage	+

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