

LABOR MARKET OUTCOMES AND EMPLOYMENT POLICY

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# LABOR MARKET OUTCOMES AND EMPLOYMENT POLICY

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## ABSTRACT

The first chapter contains an empirical analysis of labor market outcomes. Using the Quarterly Census of Employment and Wages microdata, individual labor market experiences are tracked over time. Not only is the employment relationship unstable, but the instability is concentrated among a subset of the population and is strongly correlated with earnings. There exist two explanations for the observed segmentation of the labor market: feedbacks from fluctuations across the business cycle and segmentation of labor divides workers and thus strengthens the relative power of capital over labor. The last two chapters focus on employment policy, addressing each of the two explanations of segmentation in turn. The second chapter develops a stock-flow consistent model that considers how the Employer of Last Resort policy, which guarantees jobs to all those who are willing and able, and increases stability by reducing fluctuations and uncertainty across the business cycle. The third chapter examines the institutional structure from which power emerges and argues that the Employer of Last Resort would displace the problematic institutions and facilitate an institutional adjustment towards a more inclusive provisioning process.

## APPROVAL PAGE

The faculty listed below, appointed by the Dean of the School of Graduate Studies, have examined a dissertation titled “Labor Market Outcomes and Employment Policy,” presented by Brandon Oakley McCoy, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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In memory of my father, Oak McCoy, who instilled in me the confidence and courage to undertake anything and who taught me the work ethic and perseverance to finish everything.

“Great oaks from little acorns grow.”

## CHAPTER 1

### AN UNSTABLE AND SEGMENTED LABOR MARKET: EVIDENCE FROM THE QUARTERLY CENSUS OF EMPLOYMENT AND WAGES MICRODATA

#### **Abstract**

This inquiry seeks to provide empirical evidence for the existence of an unstable and segmented labor market and to provide insight on the determinants of cyclical unemployment. Utilizing the Quarterly Census of Employment and Wages (QCEW) microdata from the state of Missouri facilitated the identification and documentation of employee-employer job-matches. The job-match histories painted a vivid picture of the dynamics occurring in the labor market. Analyzing worker flows which result from the creation and destruction of job-matches elucidated the degree to which the labor market remains in a state of constant change. Decomposing the flows and considering how the dynamics change during the recession<sup>1</sup> of 2007-09 elucidated the determinants of cyclical unemployment. Tracking individual employees over time clarified the extent of concentration in the distribution of the flows. The data suggests that in any given quarter, approximately one third of the existing job-matches will have been created or will be destroyed. Moreover, most worker flows are not necessary to accommodate changes in firm employment (job flows) but result from labor churning (churning flows). Of the substantial quarterly worker flows documented, nearly 7/10 remain unaccounted for by the creation and destruction of jobs. After tracking the individual employees' job-match histories, the analysis considers the cross-sectional distribution of the flows. The data supports the claim that there exists a segmented labor market, partitioned according to stable, high paying and unstable, low

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<sup>1</sup> A recession is defined as consecutive quarters of economic contraction.

paying jobs. Considering separations elucidates the degree of concentration in the labor market: a subgroup consisting of 14.19% of the observed population experienced 43.1% of documented separations.

Keywords: Job Flows, Worker Flows, Labor Reallocation

JEL-codes: E32, J20, J62

## **Introduction**

This inquiry seeks to provide empirical evidence for the existence of an unstable and segmented labor market. In so doing, the analysis utilizes the Quarterly Census of Employment and Wages (QCEW) microdata from the state of Missouri ranging from the first quarter of 2005 through the third quarter of 2014. Utilizing longitudinal microdata elucidates the magnitude of and concentration of labor market flows, consisting of worker flows arising from the creation and destruction of job-matches and job flows resulting from changes in firm level employment. Often, analyses of the labor market and discussion of its overall health focus primarily upon the stock of those unfortunate enough to find themselves unemployed and the flow of jobs that may raise or lower the level of this stock.<sup>2</sup> However, this restricted level of analysis obscures important underlying dynamics, particularly those of a highly unstable and segmented labor market.

The posited characteristics of labor markets are observable empirically when documenting the magnitude, composition, and cross-sectional distribution of labor market flows. This analysis focuses on worker flows (the formation and dissolution of employee-employer job-matches) and their relation to job flows (the creation and destruction of jobs). The unstable

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<sup>2</sup> See the most recent Employment Situation Summary released by the Bureau of Labor Statistics (2020b) <https://www.bls.gov/news.release/empsit.nr0.htm>

nature of the labor market becomes clear by the magnitude and composition of the measured flows; the labor market remains in a state of constant change, consistently churning labor. This characteristic of labor markets, acknowledged very early on by Blanchard and Diamond (1990), appears in the QCEW microdata through the significant magnitude of worker flows. Further evidence exacerbating this instability is found when decomposing worker flows into its underlying elements. The decomposition illuminates a significant excess of worker flows beyond what is necessary to accommodate job flows. The analysis also considers the concentration of these flows among a subset of the labor force. Focusing on the destruction of job-matches provides compelling evidence for the existence of a segmented labor market: a labor market divided according to stable, high paying and unstable, low paying labor market experiences.

This inquiry commences with a brief presentation of the existing literature concerning labor market flows. The literature developed along several lines. The early work focused exclusively on either job flows or worker flows. Later work fleshed out the interrelation between these two flows while others used this framework to understand recessionary dynamics and the driving factors behind cyclical unemployment. After reviewing the literature, the analysis describes the QCEW microdata. The third section considers the measurement of variables that allows this analysis to provide empirical support in favor of an unstable and segmented labor market. The measures created in this analysis provide additional support to claim that job loss serves as a driving factor in the observed variation in cyclical unemployment. The final two sections present the results of this empirical inquiry. The first focuses on the magnitude and composition of labor market flows over time and provides evidence for an unstable labor market., This section also provides insight into the dynamics driving the cyclical variation in unemployment. The penultimate section considers the cross-sectional distribution of these flows

and finds a high degree of concentration. These findings lend credence to the segmented labor market theory, which posits a labor market divided according to stable and high paying experiences contrasted with unstable and low paying experiences. The last section contains conclusions.

### **On the Existing Literature**

The following empirical analysis draws on the previous studies that considered job flows<sup>3</sup>, those that consider worker flows<sup>4</sup>, and those that synthesize the two strands and consider labor reallocation.<sup>5</sup> The previous studies on job flows sought to discern the dynamics driving the creation and destruction of jobs. Earlier studies on worker flows focused their analysis on transition of workers across labor market states. The studies which synthesize the two approaches, considering the interaction between job and worker flows, demonstrate the complexity of labor market dynamics at the micro level. In considering labor market flows and the associated dynamics, three key results have been established: labor market flows in a dynamic and complex private enterprise market system are large, persistent, and concentrated.

The observed persistence transpires from the permanence of both newly created and destroyed jobs. Davis, Schuh, and Haltiwanger (1997, 17) state that job creation and destruction is concentrated at establishments experiencing large changes in employment levels and that a significant portion of job destruction occurs at establishments that are shutting down. Anderson

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<sup>3</sup> Job flow literature includes studies by Davis and Haltiwanger (1990, 1992) and Davis, Schuh, and Haltiwanger (1997).

<sup>4</sup> Worker flow literature that motivated the development of the search and match model includes Pissarides (1985, 2000), Mortensen and Pissarides (1994), and Blanchard and Diamond (1989, 1990).

<sup>5</sup> Studies that synthesize these two approaches include those by Anderson and Meyer (1994) and Burgess, Lane, and Stevens (2000).

and Meyer (1994, 179) and Burgess, Lane, and Stevens (2000, 484), through use of employee wage data, revealed that the associated turnover remains concentrated not only at establishments, but also among a subset of individuals. This analysis updates these earlier works using wage data and extends them by considering the evolving dynamics and structural shifts in response to the “Great Recession.”

The Great Recession, according to Elsby, Hobijn, and Sahin (2010, 2), animated the most severe deterioration of the labor market in the post-war era. These authors’ analysis, utilizing Job Openings and Labor Turnover Survey (JOLTS) data, reaffirmed a widely agreed upon<sup>6</sup> accord that both inflows and outflows significantly impact the stock of unemployment, particularly its variation during recessions. In seeking to understand the nature of the adjustment which occurred in the labor market in response to the Great Recession, Elsby, Hobijn, and Sahin (2010, 22) asked the question: What role did job loss have during the Great Recession? The authors decomposed the separation rate and found that layoffs (separations initiated by the employer) dominate the unemployment inflow. This finding, according to the authors, suggests that job loss remains integral in understanding cyclical variations in unemployment.

### **On the Data**

The QCEW microdata is an administrative dataset comprised of the tax accounting records from the unemployment insurance (UI) system. Mandatory reporting of these records ensures a high rate of compliance, and its source being tax records ensures a high degree of reliability. This analysis utilizes the administrative records from the state of Missouri. Specifically, this microdata set is comprised of two files, each of which is an unbalanced panel

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<sup>6</sup> Notable exceptions include Hall (2005) and Shimer (2007), who find that it is a reduced outflow from unemployment that drives the increase in the stock as well as the duration of labor remaining idle during recessions.

with quarterly observations at the level of the individual on all UI covered employees (wage file) and their respective employers at the level of the establishment (employer file). The data utilized in this analysis ranges from the first quarter of 2005 to the third quarter of 2014.

The wage file contains information on employees and includes total wages paid for each firm where they are employed, a personal identification key that is unique and consistent across time, and the unemployment insurance number of the firm that paid the wages. The employer file includes a firm unemployment insurance number, average monthly employment levels, NAICS code, and address information for employers at the level of establishments.<sup>7</sup> While the employer data actually occurs at the level of the establishment, reporting requirements in Missouri do not allow linking of this dataset to the wage dataset without aggregating to the level of the firm. Specifically, while the employer file includes observations at the level of the establishment, the wage data set only includes the UI number of the firm without any manner to link employees to establishments.

The unique identifiers present in both files enable quarterly matching of every employee to the firm that employed them. Linking employees to their respective places of employment creates a job-match history. Tracking this history over time facilitates the identification and documentation of worker flows that arise from the creation and destruction of employee-employer job-matches (hereafter job-matches). Linking the two files allows the analysis to

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<sup>7</sup> According to the U.S. Census Bureau (n.d.), establishment refers to “a business or industrial unit at a *single location* that distributes goods or performs services. It is not necessarily identical with a company or enterprise, which may consist of one or more establishments. When two or more activities are carried on at a single location under a single ownership, all activities generally are grouped together as a single establishment. The entire establishment is classified on the basis of its major activity, and all data are included in that classification.” A firm is “a business organization or entity consisting of one domestic establishment (location) or more under common ownership or control. All establishments of subsidiary firms are included as part of the owning or controlling firm” (para. 1).

consider the relation of job and worker flows. Specifically, worker flows can be decomposed into those that are driven by the creation and destruction of jobs at the level of the firm (job flows) and those that result from the heterogeneity and uncertainty that plagues the employment relationship (churning flows).

A recent update to the data also includes a predecessor-successor identification number in the employer file that is not currently utilized in this analysis. Incorporating this information will lead to more accurate measures as the current measures are overstated. Currently, mergers are misclassified as both a simultaneous job and job-match creation and destruction. The QCEW microdata wage file contains observations at the level of the individual employee-employer job-match on a quarterly basis. The fine-level information contained in the QCEW microdata wage file allows this analysis to provide a very accurate account of job-match creation and destruction rates. However, this level of detailed information for all UI covered workers in the state of Missouri, while allowing accurate depictions of labor market dynamics, also places restrictions derived from the computing power necessary to analyze such a large dataset. These restrictions are explicitly stated when describing the measurement of variables below.

The Missouri QCEW microdata wage file contains 228,760,810 employee-firm job-match quarter observations, and the employer file contains 6,779,555 establishment quarter observations. The dataset includes all UI-covered workers and their employers in Missouri. According to the U.S. Bureau of Labor Statistics QCEW Handbook of Methods (2020c, 1-3), national data covers over 90% of jobs in the formal market with slight variation from state to state. The principal exclusions are the unincorporated self-employed, unpaid family members, certain domestic and farm workers, many elected officials at the local, state, and federal level, members of the armed forces, student workers at schools, and those working in the informal



market. Nationally, in 2019, the QCEW covered slightly more than 148 million workers while excluding approximately 11 million formal market workers. The largest group of excluded formal market workers are the unincorporated self-employed, who constitute about 80% of the excluded. Significant work is performed outside the formal market as well; according to Anat Bracha and Mary Burke (2016), about 37% of non-retired adults in the U.S. engage in some form of informal work<sup>8</sup>.

The QCEW microdata employer file contains both industry and geographic information with observations at the level of the establishment. However, the unique identifiers for employers, present in both the employer and wage file, occur at the level of the firm. This discrepancy becomes problematic as some firms operate multiple establishments across industries and locations under a single firm identifier. Even though the employer file contains industry and geographic information at the level of establishments, there is no way to link an employee to the establishment: employees can only be linked to the firm. This shortcoming prevents the analysis from incorporating industry and geographic information without having to exclude all firms who operate multiple establishments which would be detrimental to the analysis. According to the U.S. Bureau of Labor Statistics (2020a), single (multiple) establishment firms represent approximately 95% (5%) of businesses and 44% (56%) of employment.

### **On the Measurement of Variables**

The first step in seeking to understand the dynamics and nature of labor market flows requires documenting the rate of worker flows. Worker flows result from the formation and

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<sup>8</sup> The informal work as defined in this study covers activities ranging from dog walking and babysitting to renting and selling property and goods and responding to surveys.

dissolution of employee-employer job-matches. Identifying and documenting these flows constitutes a key element of this study. This inquiry utilizes the unique identifiers for both firms and individuals present in the wage records to detect the formation and dissolution of job-matches.

Job-match creation refers to the appearance of an employee-employer match that did not exist in the previous quarter. As such, job-match creation constitutes accessions at both newly created and previously existing jobs as well as the accessions involving the restoration of matches that had been previously dissolved: job-match creation represents total quarterly accessions to a firm. In a similar fashion, job-match destruction refers to the identification of an employee-employer match that ceases to exist in the following quarter and includes separations that are both temporary and permanent: job-match destruction represents total quarterly separations from a firm. Permanent separations can result from either the destruction of a job or a re-evaluation of the job-match by either party involved. Temporary separations, which are not distinguished at this stage of the analysis are the dissolved matches that are later restored. These measures only represent jobs and job-matches created and destroyed in the state of Missouri. Since the data only covers employment in Missouri, the measures are overstated as an intra-state transfer either into or out of Missouri, and thus would be misclassified as a job and job-match creation or destruction, respectively.

Documenting job-match creation and destruction generates quarterly job-match histories, linking individual employees to the firms that employ them. The employee-employer job-match is identified as being created in the quarter that it appears (the match did not exist in the preceding quarter) and is identified as being destroyed in the last quarter it appears (the match does not appear in the succeeding quarter). Considering the quarter immediately preceding or

succeeding the existence of a job-match prevents the analysis from distinguishing accessions that are a restoration of a previously existing match and from distinguishing separations that are only temporary. These limitations do not prevent this analysis from discerning the evidence originally sought: the magnitude and concentration of the total flows remains the focus of this study, not the distinction of these flows as permanent or temporary. However, making this distinction is possible given the information that is available in the microdata and provides avenues for future research which further investigates the nature of these labor market flows.

Calculating job-match creation and destruction rates requires dropping the first and last quarter of the data. The first quarter must be dropped, since it cannot be known whether the observed job-matches existed before or were created that quarter. Likewise, the last quarter must be dropped, since it cannot be known whether the observed job-matches continue or are destroyed. Before identifying and documenting the individual job-matches that are created and destroyed, all existing job-matches are partitioned into terciles based on the total quarterly wages paid relative to all existing job-matches that quarter. However, it is important to note that these quarterly earning indicators do not provide any information on hourly earnings, only the ranking of total quarterly earnings relative to all existing job-matches. With job-matches partitioned into low, mid, and high quarterly earning partitions, the analysis documents the creation and destruction of individual employee-employer job-matches. After documenting the creation and destruction of employee-employer job-matches, it becomes possible to determine the extent to which labor reallocates and the extent to which these reallocation flows are concentrated.

The job-match histories paint a vivid picture of the dynamics occurring within the labor market. Specifically, labor market dynamics can be described by three distinct flows occurring at the level of the employer and as outlined in Burgess, Lane, and Stevens (2000, 474): worker

flows  $W_{ft}$ , job flows  $JF_{ft}$ , and churning flows  $CF_{ft}$ . Worker flows, as noted above, arise from the creation and destruction of employee-employer job-matches and represent the movement of labor into and out of relationships with firms. These worker flows represent total turnover, which is the sum of total accessions and total separations in each quarter. Job flows consist of changes in the firm level of employment; these flows are described by Davis, Schuh, and Haltiwanger (1997) as gross job creation and destruction. Job flows are the sum of job creation and job destruction in each quarter. This concept is directly related to the traditional discussion of economy adding or destroying jobs, which is derived by the difference between job creation and job destruction. Churning flows, referred to as excessive reallocation by Abowd and Vilhuber (2011), constitutes the numerical difference between worker flows and job flows and represents the dynamics arising from the heterogeneity and uncertainty plaguing the labor market and employment relations. Heterogeneity and uncertainty within the labor market and associated employment processes may animate a reevaluation by either employee or employer of the job-match. However, it is not possible to determine who initiated the separation: the separation may emerge as labor churning firms (employee quits and the firm hires a replacement) or as firms churning labor (employer lays off employee and hires a replacement). All the flow measures are transformed into rates by dividing them by the average quarterly employment,  $N_{ft}$ .<sup>9</sup>

The analysis has defined job-match creation as an accession to a firm which occurs when an employee-employer job-match is identified after having not existed in the previous quarter. These accessions comprise the creation of new jobs (an element of job flows) as well as the

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<sup>9</sup> The employment level used in the analysis is calculated from establishment size, which according to the U.S. Bureau of Labor Statistics QCEW Handbook of Methods (2020b, 2) is the number of employees reported by the establishment, and then aggregated to the firm level.

filling of previously existing jobs (an element of churning flows). While it is not possible to determine which of the two categories the newly identified employee-employer job-match belongs in at the level of the individual, it is possible to approximate at the level of the firm. To decompose the worker flows into those driven by job reallocation and those driven by churning requires calculating average quarterly employment from the average monthly employment variable in the employer file. If a firm is expanding—average quarterly employment is greater this period than the previous—job creation constitutes the difference between the level of employment at quarter  $t$  and quarter  $t - 1$ . Like accessions, total separations can be further decomposed at the level of the firm into those resulting from job destruction (job flows) and from separations at continuing positions (churning flows). When a firm is shrinking—average quarterly employment is less this period than in the previous—job destruction is conceived of as the difference in the level of employment at quarter  $t$  and  $t - 1$ . The remaining job-match dissolutions at a given firm can be attributed to separations from continuing positions.

Closely related to the conception of job creation and destruction in Davis and Haltiwanger (1990, 1992) are the definitions of job creation and destruction utilized in this analysis. Let  $N_{ft}$  be the average quarterly level of employment at firm  $f$  in quarter  $t$ . The job creation rate,  $JCR_{ft}$ , (when  $N_{ft} - N_{ft-1} > 0$ ) and job destruction rate,  $JDR_{ft}$ , (when  $N_{ft} - N_{ft-1} < 0$ ) for firm  $f$  in quarter  $t$  are defined as:

- $JCR_{ft} = (N_{ft} - N_{ft-1}) / (N_{ft})$
- $JDR_{ft} = |(N_{ft} - N_{ft-1})| / (N_{ft})$

Once the firm level job creation and destruction rates are known, summing both measures across all firms yields the aggregate job flow rate in quarter  $t$ ,  $JFR_t$ .

- $JFR_t = \sum_f JCR_{ft} + JDR_{ft}$

With all the measures presented, it is possible to explicitly state the relation between the three measures. Recalling that worker flows constitutes the sum of all the accessions and separations of job-matches:  $WF_{ft} = A_{ft} + S_{ft}$ . Job flows represent the absolute value of change in employment at the level of the firm:  $JF_{ft} = |N_{ft} - N_{ft-1}| = |A_{ft} - S_{ft}|$ . When the job flows are negative, the firm is engaging in job destruction. When the job flows are positive, the firm is engaging in job creation. Churning flows,  $CF_{ft}$ , refers to the excess of worker flows beyond what is necessary to accommodate the job flows. Now we have  $WF_{ft} = JF_{ft} + CF_{ft}$ .

Lastly, it is possible that there exist reporting irregularities including, but not limited to, misreported wages and levels of employment. However, this data is comprised of administrative data with mandatory reporting for tax purposes such that these irregularities are deemed insignificant.

### **On the Magnitude and Composition of Labor Market Flows**

In seeking to measure the magnitude of labor market flows and to illuminate the significant magnitude of worker flows unaccounted for by the creation and destruction of jobs, this analysis follows Burgess, Lane, and Stevens (2000, 480-485) in presenting four measures: worker flow rate, job flow rate, churning rate, and the ratio of churning flows to worker flows. The final measure, the ratio of churning flows to total worker flows, provides insight into the importance of churning flows. The range of the data utilized in this analysis spans the recession of 2007-09, during which the dynamics change; as such, graphs<sup>10</sup> (the recession is denoted by

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<sup>10</sup> All graphs have been smoothed using Loess method to clarify visualization of the trends.

darker gray area) and actual measures (seen in Tables 1.1-1.3) are presented in a manner which attempts to elucidate this evolving behavior.

Table 1.1. Mean rates before, during, and after the recession

	Mean- whole range	Mean- pre recession	Mean- recession	Mean- post recession
Worker Flow Rate	35.51%	40.40%	36.36%	32.61%
Job Flow Rate	11.40%	11.15%	12.81%	10.99%
Churning Rate	24.11%	29.26%	23.56%	21.62%
Churning / Worker Flow Rate	67.90%	72.36%	64.63%	66.33%
Job / Worker Flow Rate	32.10%	27.64%	35.37%	33.67%

Table 1.2. Max and Min Labor Market Flows and Employment Level

	Max- pre recession	Max- recession	Max- post recession	Min- pre recession	Min- recession	Min- post recession
Worker flow	362,283	437,591	366,541	219,551	275,319	191,777
Job Flow	1,183,400	1,077,844	989,663	915,755	760,196	654,709
Churning Flow	882,020	1,077,844	691,681	661,314	760,196	423,516
Employment Level	2,694,908	2,694,479	2,641,829	2,600,460	2,552,946	2,478,896

Table 1.3. Max and Min Values of the Components of Flows

	Max- pre recession	Max- recession	Max- post recession	Min- pre recession	Min- recession	Min- post recession
Job Creation	183,093	192,569	185,614	119,403	124,792	103,245
Job Destruction	179,190	257,011	191,962	100,148	128,006	86,352
Job-match Creation	627,013	570,108	523,135	475,535	396,039	337,250
Job-match Destruction	578,307	568,443	475,803	440,220	364,157	317,459

All the flow rates are calculated by dividing the measures by the stock of employment. Since the employment level also changes, the employment stock and all the measures of flows are also presented in absolute terms as well as decomposed into their parts. The employment level (presented in Figure 1.1) behaves in a predictable manner across the range of data. The stock of employment increases until the onset of the recession of 2007-09 then declines by approximately 10% of its pre- Great Recession peak before beginning a very gradual recovery.



However, unlike some of the flow measures presented below, the stock of employment recovers to its pre-Great Recession levels by the end of the data range.

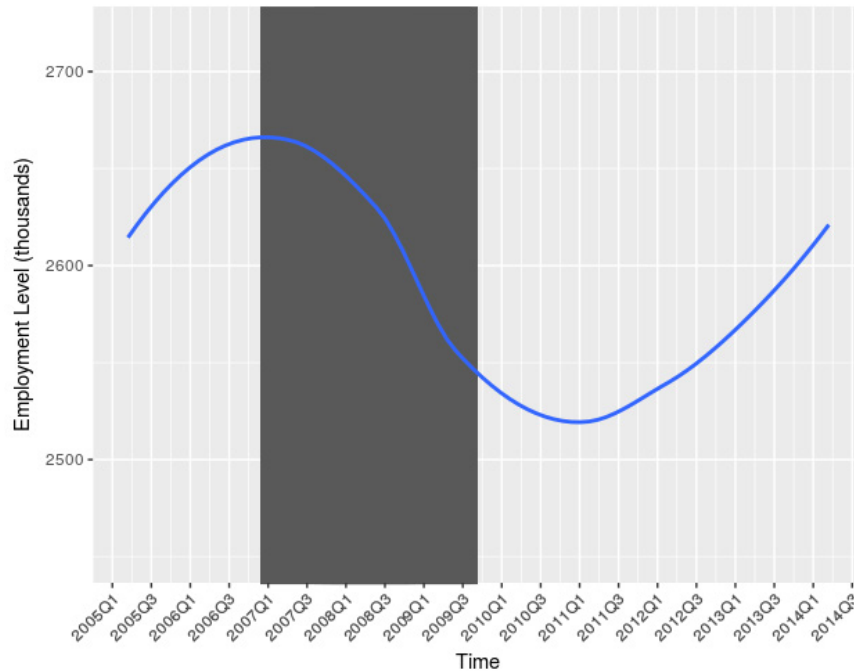


Figure 1.1. Employment level

The worker flow rate (presented in Figures 1.2-1.4), representing the total movement of workers into and out of relations with firms and which is identifiable in the wage file as the creation and destruction of employee-employer job-matches, has a mean of 35.5% across the whole range. This flow can be interpreted as more than one third of the existing job-matches can be expected to either have been created or to be destroyed in any given quarter. The mean rate declines across the observed range, from greater than 40% initially, down to below 33% after the recession; although, as is visible in Figures 1.2-1.4, the worker flow rate has been gradually recovering after bottoming out shortly after the recession officially ended. Worker flows can be decomposed into job-match creation and job-match destruction. As seen in Figure 1.3, both components of worker flows move in tandem across the observed range and decline

precipitously during the recession. The post-recession minimum value of the worker flow bottomed at 55.32% of its pre-recession maximum.

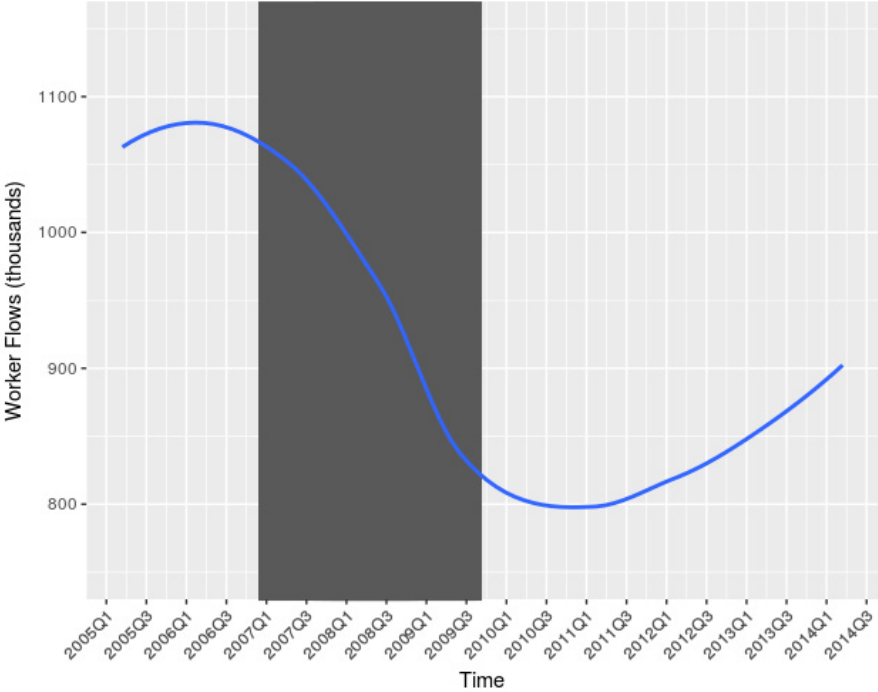


Figure 1.2. Worker flows

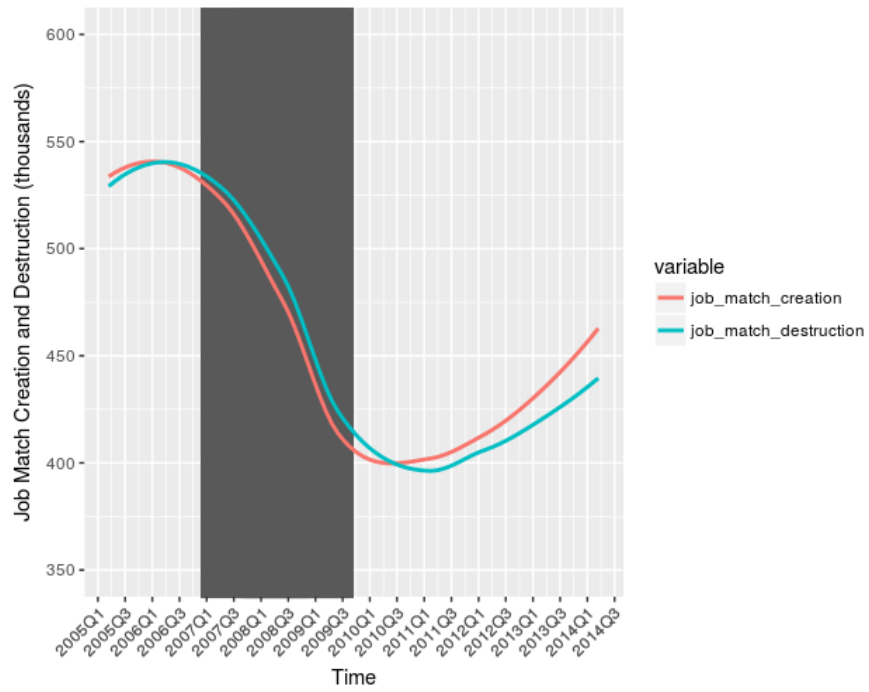


Figure 1.3. Components of worker flows

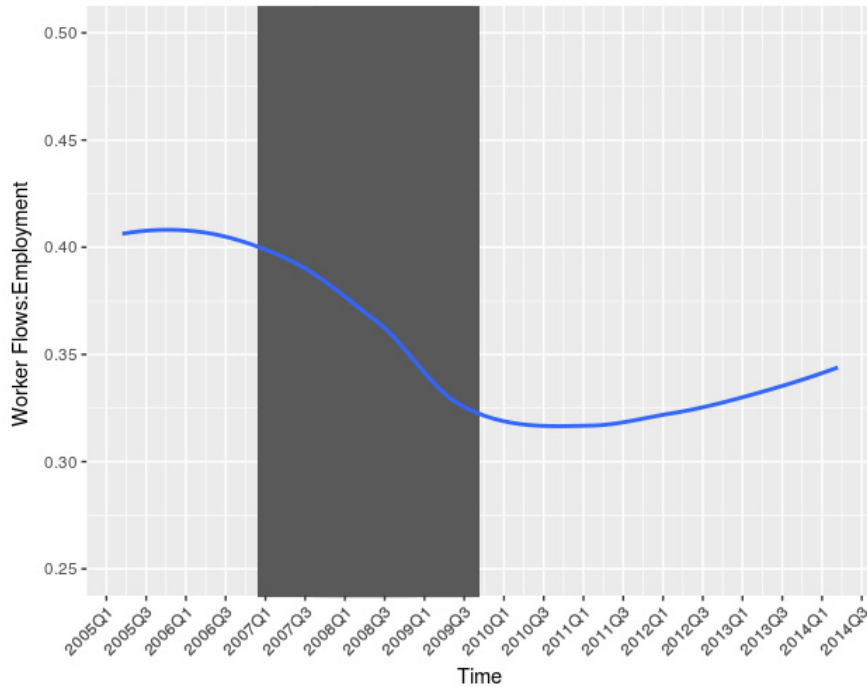


Figure 1.4. Worker flows as percent of employment level

Hall (2005) observed that separation rates decline during recessions. This analysis confirms Hall’s finding; as seen in Figure 1.3, job-match destruction declines as the economy enters the recession. The initial decline of job-match destruction precedes the onset of the recession. However, the focus on total separations by Hall (2005) and Shimer (2007) lead them to the misguided conclusion that reduced outflow from unemployment alone drives cyclical employment dynamics. Elsby, Hobjin, and Sahin (2010, 25) use JOLTS data to decompose the separation rate and find that separations initiated by the employer dominate the inflow to unemployment during the recession. Their finding suggests the inflow to unemployment also matters. While the QCEW does not permit identification of who initiated the separation, it is possible to determine the share of separations occurring at firms engaged in job destruction. As seen in Figure 1.5, the share of job-match destruction associated with declining firm employment (job destruction) thrusts upwards during the recession. The finding that job loss is increasingly

associated with job destruction during the economic downturn supports the conclusion that the inflow to unemployment remains an important determinant of the cyclical variation in employment.

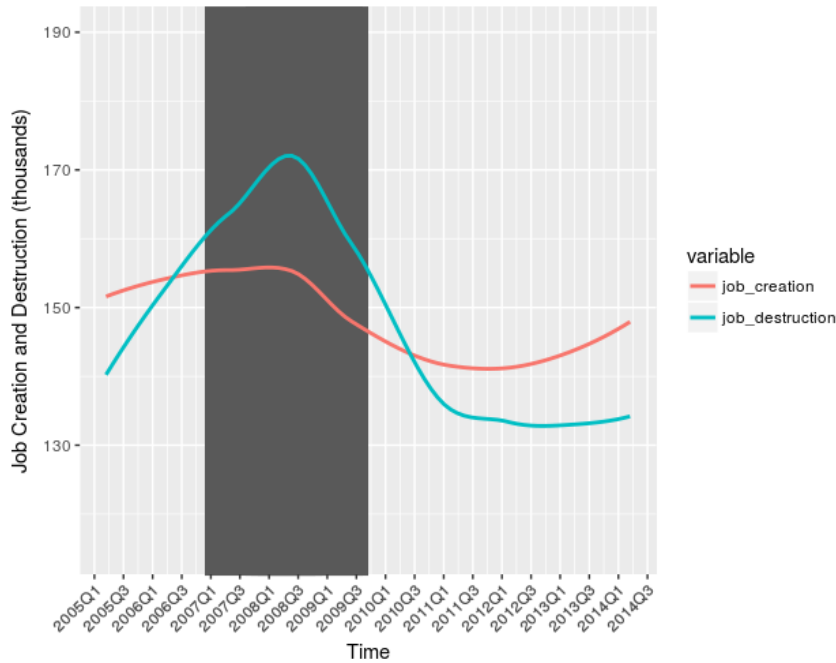


Figure 1.5. Components of job flows

The job flow rate (presented in Figures 1.5-1.7), representing the share of the worker flows that are driven by the creation and destruction of jobs at the firm level, is much less volatile than the worker flow rate. The mean for the job flow rate across the entire range is 11.4%; this rate increased slightly during the Great Recession before receding back to near pre-Great Recession values. Like the worker flow rate, the job flow rate can be decomposed into two components: job creation and job destruction. However, unlike the worker flow rate, the two components do not move in tandem as seen in Figure 1.5. Job creation continues to grow modestly into the recession before a sudden, albeit relatively moderate, decline. The second

component of job flows, job destruction, spikes during the recession and at almost the same time that job creation drops, so too does job destruction before eventually bottoming out and remaining relatively stagnant.

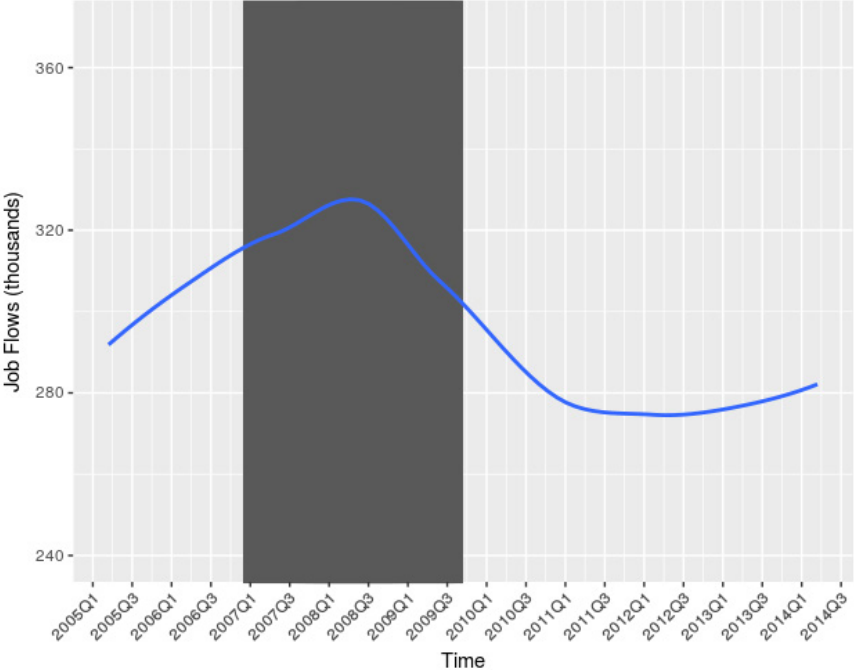


Figure 1.6. Job flows

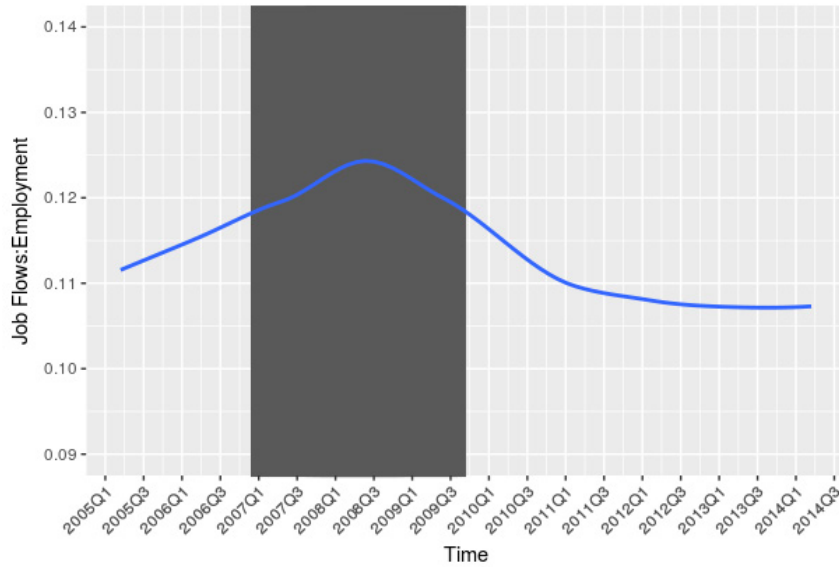


Figure 1.7. Job flows as percent of employment level

As noted above, there are unique firm identifiers present in both the QCEW microdata wage and employer files which allow linking the two files. This linking facilitates a decomposition of the worker flows resulting from job-match creation and destruction into two distinct flows: the job flow and the churning flow. The churning flow (presented in Figures 1.8-1.9) constitutes the difference between total worker flows and the share attributable to the creation and destruction of jobs. Across the entire range of data, the flow takes a mean value of 24% but has been in steady decline. Comparing the proportion of total worker flows that are unaccounted for by the creation and destruction of jobs yields some very interesting insights into labor market dynamics. The ratio of means of churning to worker flows is approximately 68%: nearly 7/10 of the employment relations that are created and terminated quarterly are not

accounted for by changes in desired firm level employment, but rather are driven by a reevaluation of the job-match by one or both parties.<sup>11</sup>

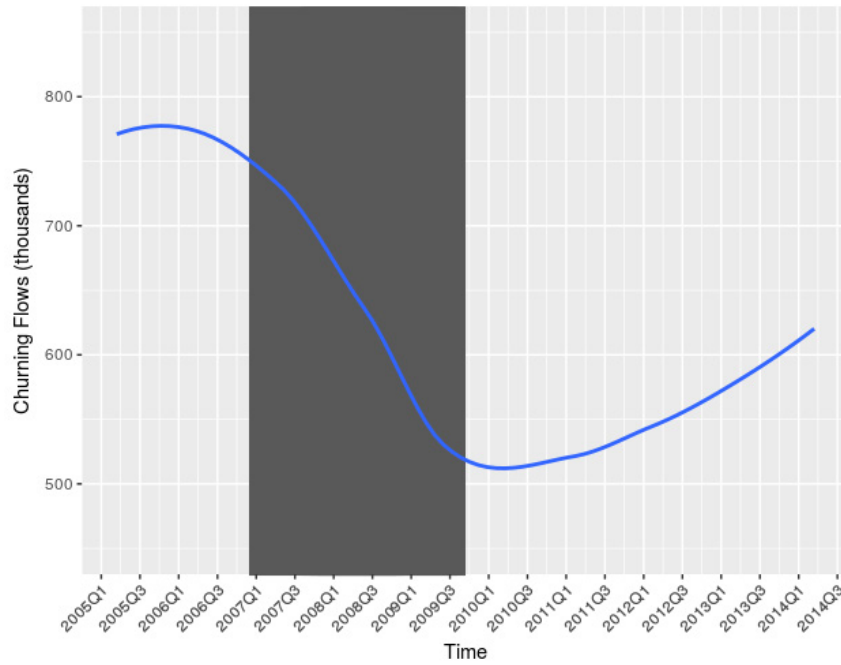


Figure 1.8. Churning flows

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<sup>11</sup> The results of the means across the entire range are similar to those found in Burgess, Lane, and Stevens (2000).



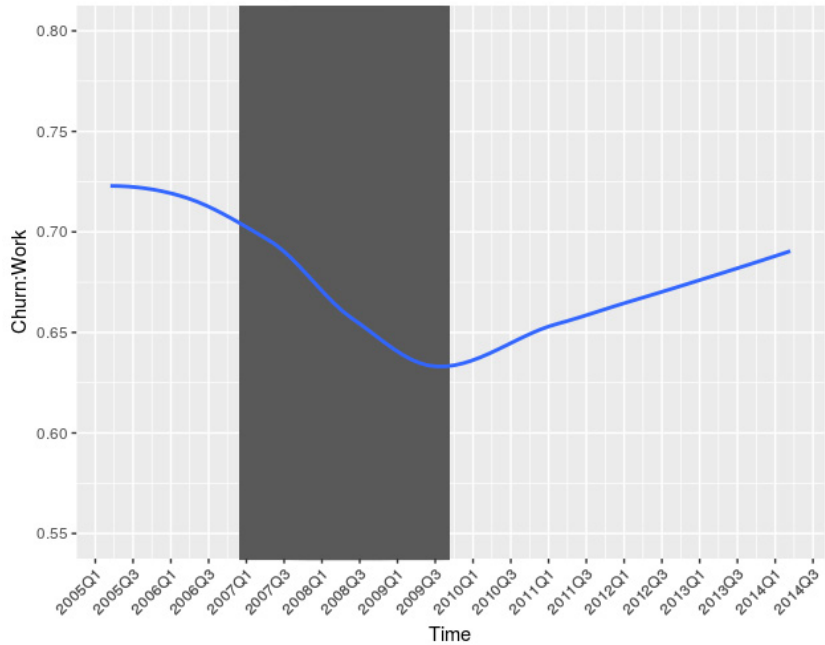


Figure 1.9. Churning flows as percent of worker flows

### On the Distribution of Labor Market Flows

With the magnitude of labor market flows documented, the analysis now considers the distribution of turnover across workers. Specifically, this section considers whether separations are concentrated among a subset of the labor force. To study the distribution of turnover among workers, the analysis utilizes the job-match histories created from the individual wage records and considers the cross-sectional distribution of the documented flows. The first aspect considered are the quarterly separation rates. While informative, the quarterly rates do not fully elucidate the division that exists. In seeking to further elucidate this phenomenon, the analysis focuses on the number of separations experienced by every individual in the wage file. Focusing on total separations experienced by each individual involves partitioning the employees according to separations and considering the percent of individuals in each bin as well as determining the shares of the total number of separations experienced by each partition. These

final measures provide a great deal of insight on the degree to which the labor market is segmented.

From the second quarter of 2005 through the second quarter of 2014, the wage file contains 228,760,810 employee-employer job-match quarter observations. In an attempt to remove bias resulting from transcription errors and to focus the study on employees that are more attached to the labor market in Missouri, the data is filtered to remove any employees who were only present for a single quarter.<sup>12</sup> After filtering the data to require at least two observations, employee-employer job-match quarter observations drop to 228,640,416, a relatively modest reduction. In total, 17,362,432 job-match dissolutions were identified in the data and 5,025,883 employees, approximately 89% of all observed employees, experienced at least one separation.

In studying the number of separations, the analysis considers the cross-sectional distribution of the flows. The first measure derives from the number of separations experienced on a quarterly basis. The number of separations per quarter is divided into series of intervals; the analysis then presents the number of person quarters falling into each bin. These results are presented in the histogram in Figure 1.10. Most of the observed employees experience less than one separation every ten quarters, indicative of a fairly stable labor market experience. There is a steep drop off to the next partition and then a gradual decline until an upward spike in the partition representing 0.4-0.5 separations per quarter, roughly one separation every two quarters or twice a year, suggestive of a much less stable labor market experience. While informative of

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<sup>12</sup> This is similar, yet less restrictive to the approach of Burgess, Lane, and Stevens (2000), who filtered the data to remove job-match observations of less than three quarters. The impact to the measures is relatively modest as well; it causes a slight increase in both the percentage of employees falling into the partition representing the most unstable labor market experience as well as their share of total turnover.

the potential divide that exists in labor market experiences between stable and unstable, the quarterly separation rate fails to illustrate the extent to which the turnover is concentrated. In seeking to understand the true extent of concentration, the analysis explores the individual experiences of employees, paying particular attention to employees who separate from their employers.

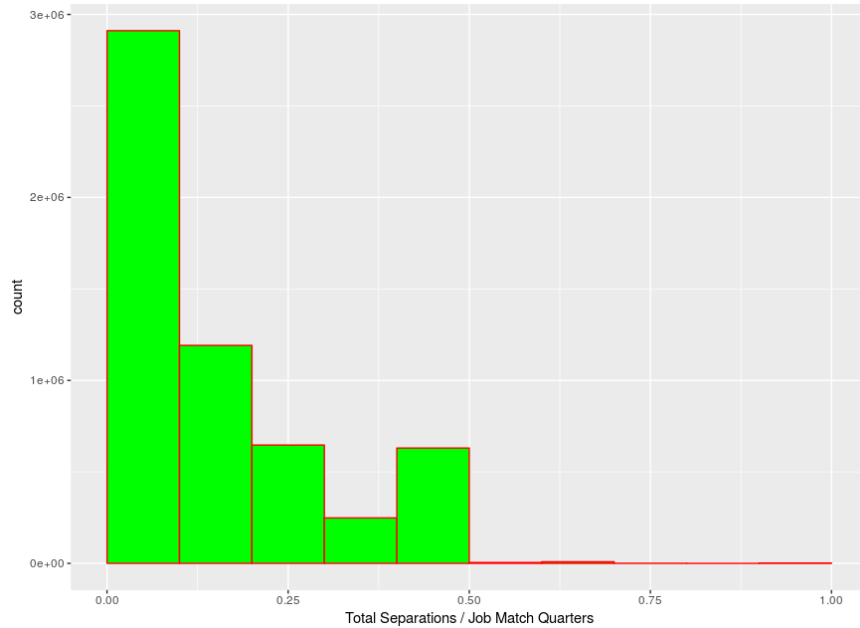


Figure 1.10. Histogram for quarterly job-match destruction

The final element elucidating the concentration of turnover considers what percent of turnover is accounted for by select individuals. In accordance with segmented labor market theory, it is posited that a subset of the labor force participates in a much more unstable labor market and experiences a disproportionate share of turnover. In so doing, the analysis documents the number of separations over the entire observed range and creates a series of intervals according to the number of separations. The analysis then considers the share of individuals that fall into each bin. As seen in Figure 1.11, over 70% of the observed employees experienced less

than three separations over the nine years of data. Of all the employees who experienced at least one separation, 14.19% experienced more than seven separations, and approximately half of these employees experienced more than nine separations over the observable range. Table 1.4 presents the breakdown of the employees who experienced at least one separation.

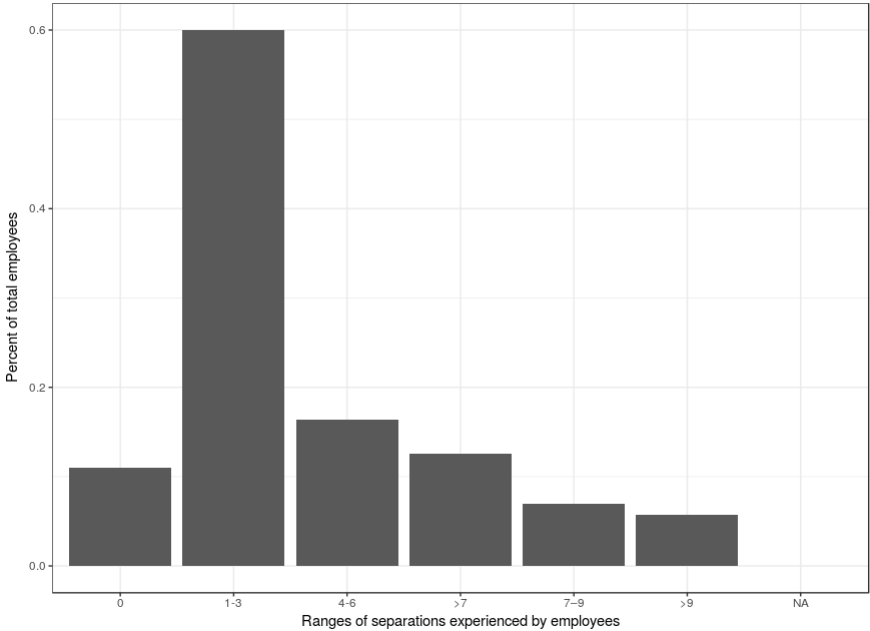


Figure 1.11. Percent of total employees grouped according to number of separations

Table 1.4. Employees who Experienced at Least One Separation

Separations	% of Employees	% low wage	% mid wage	% high wage	total
1-3	67.40%	20.46%	6.48%	4.34%	31.30%
4-6	18.41%	19.08%	4.45%	2.05%	25.60%
7-9	7.78%	14.09%	2.56%	0.98%	17.60%
>9	6.41%	21.76%	2.81%	0.90%	25.50%
total	100.00%	75.38%	16.31%	8.26%	100.00%

After having stated how many individuals fall into each partition, the analysis now compares the total percent of the observed separations experienced by each partition (presented visually in Figure 1.12). The 14.19% of individuals who experienced more than seven separations account for 43.1% of all separations. The 6.4% of the employees who experienced

more than nine separations account for 25.5% of all separations.<sup>13</sup> Moreover, these employees who experienced a disproportionate share of the turnover, do so earning at the lowest tercile for quarterly wages. Specifically, for the employees who experienced more than seven separations, more than 83% of these jobs were in the bottom tercile of wages paid. Comparing the total number of separations experienced by those employees who are classified as having a more unstable labor market experience elucidates the segmentation of the labor market that exists, indicating that a subset of the labor force experiences a significant portion of total turnover.

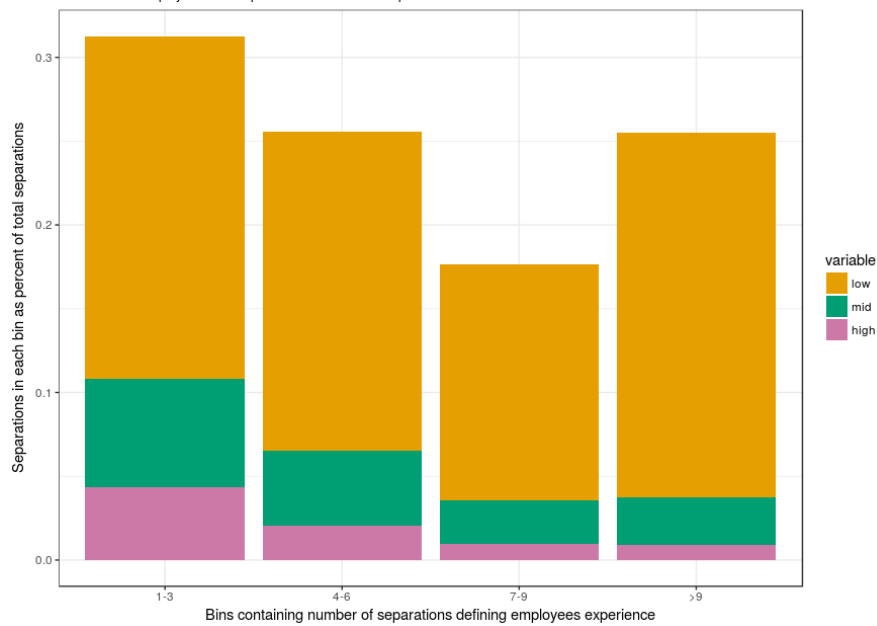


Figure 1.12. Percent of separations according to individual employee's experience for individual employees who experienced at least one separation

## Conclusion

This inquiry has sought to provide empirical evidence for the existence of an unstable and segmented labor market. In so doing, the analysis utilized the Quarterly Census of Employment

<sup>13</sup> These results are similar to those found by Anderson and Meyer (1994, 198), who found that 55% of the turnover was experienced by 21% of their sample.

and Wages (QCEW) microdata from the state of Missouri ranging from the first quarter of 2005 through the third quarter of 2014. Utilizing longitudinal microdata elucidated the magnitude of and concentration of labor market flows. Evidence which supported the posited characteristics was provided in the above analysis. The unstable nature of the labor market was elucidated when considering the magnitude and composition of labor market flows. More than one third of the existing job-matches in any given quarter can be expected to have been created or to be destroyed. Nearly 7/10 of newly created or destroyed employee-employer job-matches cannot be accounted for by desired changes in firm level employment; rather, this churning of workers appears to be a factor of either the heterogeneity and uncertainty that plagues the employment relationship. The time series measure of labor market flows also provided support to the falsely challenged empirical regularity that job loss remains an integral component in determining the cyclical variation in unemployment. The final part of this quantitative analysis considered the cross-sectional distribution of the job-match destruction in an attempt to provide evidence for the existence of a segmented labor market. It was discovered that approximately 14% of the observed employees who had experienced a separation accounted for over 43% of all documented separations. Compounding this concentration of job-match destruction was the extremely high likelihood that the destroyed job-match was in the lowest quarterly earning tercile.

## CHAPTER 2

### THE EMPLOYER OF LAST RESORT AND ECONOMIC STABILITY:

#### A STOCK-FLOW CONSISTENT MODEL

##### **Abstract**

This inquiry seeks to establish that an Employer of Last Resort (ELR) policy will increase stability across key economic outcomes related to output, employment, and prices. The analysis begins with a brief introduction. The ELR policy is described and then contrasted with contemporary policy responses that primarily rely on unemployment to control inflation. The theoretical framework utilized in this analysis, outlined in the theoretical framework, originates from Hyman Minsky's ([1986] 2008) description of a capitalist economy. The section entitled The Model describes a four sector Stock-Flow Consistent Model that is used to support the thesis statement—the ELR provides a stabilizing influence on output, employment, and prices. After describing the conditions under which the sectors interact, the outcome of the interactions is solved numerically with the use of computer simulation in the fourth section. Finding the steady-state equilibrium solutions allows the analysis to provide insight into the impact of an ELR by introducing change and studying key outcomes across two hypothetical economies—with and without an ELR. The analysis concludes in the section entitled Future Developments by addressing shortcomings and discussing future developments.

## Introduction

It is possible to achieve full employment<sup>14</sup> with greater economic stability. The most effective method to generate stable full employment, this analysis argues, remains the implementation of an ELR. An ELR, in the most basic sense, is a government sponsored job guarantee program that takes workers where they are and as they are—like FDR’s New Deal employment programs in response to the Great Depression. As evidenced in Figure 2.1, the current macroeconomic paradigm has continually demonstrated difficulty achieving, let alone sustaining, full employment and an ineptness at promoting economic growth without simultaneously amplifying the instability-prone nature of the current financial structure and employment strategy.

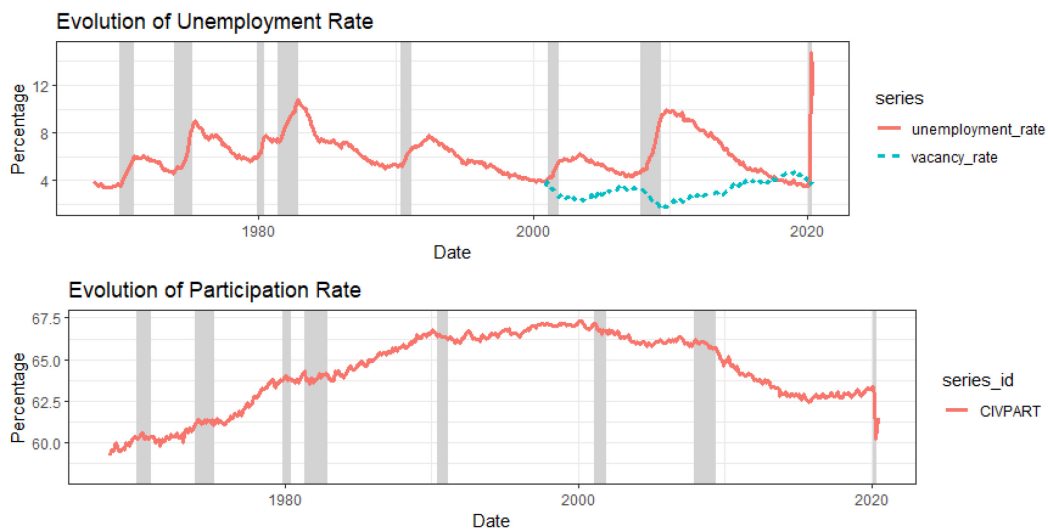


Figure 2.1. Evolution of Unemployment Rate and Labor Force Participation

Source: National Bureau of Economic Research and U.S. Bureau of Labor Statistics (n.d.a., n.d.b.)

<sup>14</sup> A widely accepted notion of full employment was succinctly stated by Nobel Laureate William S. Vickrey (1993) in his presidential address to the American Economic Association; according to Vickrey, full employment is defined “as a situation wherein there are at least as many unfilled job openings as there are unemployed individuals seeking work.”



According to The National Bureau of Economic Research, there have been eight recessions over the previous five decades; across that same time span, the unemployment rate has averaged 6.1%. While the Job Opening and Labor Turnover Survey (JOLTS) data only dates to December of 2000, since its inception, the average of total non-farm job openings rate (NFJORATE) has been 3.1% and remains entirely below the unemployment rate across the available range until very recently; however, it was a very short-lived period of full employment. During the extended recovery from the 2007-09 recession, which recently ended with the current pandemic-induced recession, the unemployment rate fell, but it was accompanied by a simultaneous decline in the labor force participation rate; in fact, the labor force participation rate reached a low unseen since the late 1970s (U.S. Bureau of Labor Statistics, n.d.a.). It should be noted, however, that the unemployment rate presented in Figure 2.1 grossly understates the problem. The official unemployment rate does not include discouraged workers—the long-term unemployed who have become discouraged and given up their search. An increase in discouraged workers helps explain the declining labor force participation rate. Moreover, the story told by the unemployment rate fails to take into account the underemployed, including both workers who desire full-time work, but can only procure part-time work, employees who are overqualified, and as presented in Figure 2.2, the youths and historically disadvantaged groups who experience significantly higher unemployment rates.

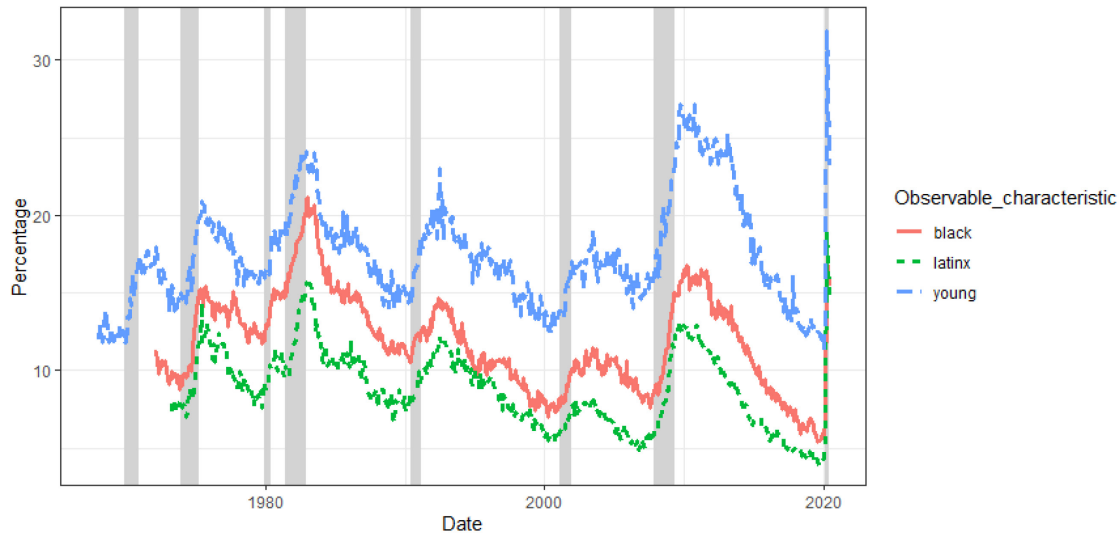


Figure 2.2. Evolution of Unemployment Rate by Race  
 Source: U.S. Bureau of Labor Statistics (n.d.a.)

If policy makers truly desire full employment, then there remains no doubt that contemporary policy has failed. At the root of this failure has been the gradual encroachment of ideas that, over the last several decades, has shifted the main concern of policy from full employment to controlling inflation. As a result of this transition, unemployment has developed into a chronic problem. Further compounding this problem, unemployment has been identified as a contributing factor to many other social problems (Harvey 2000; Mitchell and Muysken 2008). As Keynes acknowledged many years ago, “it is ideas, not vested interests, which are dangerous for good or evil” (Keynes, [1936] 1964, 351).

### Theoretical Framework

Minsky’s framework begins with the claim made by Keynes (1964, 372) in *The General Theory of Employment, Interest, and Money* that our economic system has two major faults: it fails to provide full employment and it fails to provide an equitable distribution of wealth and income. After acknowledging these two faults, Minsky continues his analysis by recognizing how “the structure of the economy affects economic performance, including the volume of, and

nature of, employment, growth, and inflation (Wray 2007). Acknowledging how structure affects economic performance allows a comprehensive understanding of the macro implications of two employment strategies explored by Minsky (1973): private investment and public employment.

Before examining the two employment strategies, this inquiry considers the structure of the capitalist economic system as described by Minsky (2008) in *Stabilizing an Unstable Economy*. The economy, according to Minsky, exists as a dynamic system moving through historical time in pursuit of profit. The institutional structure necessitates the utilization of expensive capital in production. The modern structure of production requires financing which emerges as a commitment on expected future cash flows: the financing of investment acts as an exchange of cash now for cash in the future. Current investment directly influences current profits; whereas future profits validate previous investments through an ability to meet associated cash commitments. It follows that current investment depends upon future investment: investment takes place today because agents expect that investment will take place in the future (Minsky, 2008).

Kalecki's (1971) profit equation further illustrates the importance of investment in determining profit.

$$\Pi = I - S_w + (G - T) + NX$$

Kalecki's profit equation states that aggregate monetary profit,  $\Pi$ , equals domestic private investment,  $I$ , minus aggregate savings of wage earners,  $S_w$ , plus the government's fiscal deficit,  $(G - T)$ , and net exports,  $NX$ . Given that the capitalists, those who earn profit, can decide to invest more, but cannot decide to earn more in any given period, Kalecki (1971) concludes that investment determines profit and not the inverse.

The private investment strategy, according to Minsky (1973, 2008), relies upon inducing investment to promote employment. This approach requires increasing the size and certainty of capital income. As capital income increases, it causes asset values to increase. The increase in income and asset values animates an increasing income capitalization rate. Increasing capitalization rates leads to increasing returns on capital and ultimately creates “a speculative, debt-financed investment boom.” The private investment strategy depends upon various means to subsidize demand, including favorable financing conditions, fiscal inducements to invest, government contracts, transfer payments, and taxes. According to Minsky’s analysis, the private investment strategy results in increased inequality and leverage, inflationary pressures, investment booms, and instability.

Following Minsky (2008), a simple skeletal model and some strong assumptions demonstrate how Minsky arrives at his conclusions for a strategy that relies upon increasing investment to generate employment and sustain profits. Let  $P_C$  be the price and  $Q_C$  the quantity of a representative consumer good,  $W_C$  the money wage rate and  $N_C$  the level of employment for the production of a representative consumer good, and  $W_I$  the money wage rate and  $N_I$  the level of employment for the production of a representative investment good. Assume there are only workers whose labor is directly related to the production of consumer and investment goods and the capitalists who receive profit; furthermore, assume that workers spend all of their wages on consumption goods while capitalists spend none of their profits. The simple equation used by Minsky to illustrate the dynamics of prices and profits takes the following form:

$$P_C Q_C = W_C N_C + W_I N_I$$

Let  $A_C = N_C / Q_C$  and  $\mu = W_I / W_C$ , then simple algebra leads to:

$$P_c = \frac{W_c}{A_c} \left(1 + \mu \frac{N_I}{N_c}\right)$$

Manipulation of the skeletal model suggests that, *ceteris paribus*, the price of the consumer good moves in the same direction as the level of employment in the investment good sector. When holding everything else constant, an increase in investment increases the level of employment in the investment sector. As employment in the investment sector increases, the price of consumer goods also increases. Thus, given the assumptions of Minsky's simple model, relying upon investment to promote employment creates inflationary pressures

The assumptions that labor is the only input and that workers spend all their wages means that profit in the consumption goods sector,  $\pi_c$ , appears as the difference between total spending on consumption and the wage bill in the production of consumption goods. Reinforcing Kalecki's (1971) conclusion, it becomes evident from the simple model that higher investment produces higher profits.

$$\pi_c = P_c Q_c - W_c N_c = W_I N_I$$

Introducing a temporal element and conceptualizing the investment-profit dynamic as a positive feedback loop elucidates how instability arises. Capital acquisition requires financing, which leaves a residue in the form of future financial commitments. Expectations of future profitability influences current investment, which in turn determines profits and thus the ability to meet financial commitments from previous investments. It follows that previous investment decisions are validated by current profit, and future profits determine the validity of current investment decisions. After this recognition, Minsky (2008, 163) concludes that investment happens today because it is expected to happen in the future. The self-reinforcing relation between investment and profit contributes to instability—an increase in investment boosts

profits, which causes further increases in investment. The ensuing investment boom drives asset prices up, encouraging speculation and Ponzi financing positions. All it takes is a change in expectations for the process to reverse course and trigger a contraction. The alternative strategy proposed by Minsky (1965, 1973, 2008) emphasizes public employment. The creation of an ELR serves as the key feature of this strategy. According to Minsky, an ELR provides full employment and increases both economic and price stability. It remains a monetarily sovereign government's ability to divorce the profit constraint from the employment decision that allows the achievement of full employment. An ELR creates an infinitely elastic demand for labor at an exogenously determined wage<sup>15</sup>. Minsky (1973, 99) then considers how an ELR increases economic stability: the public employment strategy remains “consistent with constraints upon private speculative finance.” These constraints reduce the source of investment booms and impart “a strong underpinning to demand [which will] allow technical progress to induce investment and [will] not foster speculative booms.” Moreover, this strategy results in a steady pace of investment and increased stability. As the economy transitions away from its reliance on private investment to stimulate economic activity, it reduces the inflationary pressures identified in the skeletal profit equation model above. Lastly, the ELR would promote price stability by acting as an anchor for the price of labor.

### **The Model**

The following model seeks to demonstrate that the ELR increases economic stability in terms of output, employment, and prices. The model is Stock-Flow Consistent and utilizes System Dynamics to aid in understanding results of the simulations. System Dynamics allows an

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<sup>15</sup> A discussion about the exogeneity of the ELR wage and other policy variables are discussed in the section 3.1. Moreover, the relation between the ELR wage and price stability is considered in section 4.4.

understanding of complex systems moving through time with delays that result from the accumulation and dissipation of stocks through flows (Sterman 2000). The key variables are identified, and the feedback loops assigned a positive or negative sign. To verify the stock-flow consistency, an accounting matrix is utilized to demonstrate the implications of each economic transaction (Godley and Lavoie 2007). Stock-flow consistency is achieved when every column and row for financial assets and transactions sums to zero. The exception are the rows that deal with tangible inventories and capital; real assets appear in the matrix as an asset that, unlike financial assets, are not counterbalanced by an offsetting liability.

### The Institutional Setting and Key Assumptions

The first section describes elements of the institutional setting for the modeled economy—key features of the economic structure and processes associated with society’s pursuit of social provisioning are outlined. After describing some of the most pertinent actions available to agents in the model and the rules which govern those actions, key assumptions of the model are explicitly stated in the second section. Due to the complexity of economic phenomena emerging from society’s pursuit of social provisioning, it becomes necessary to distinguish the essential features most relevant to the question at hand. Simplifications achieved through assumptions are a feature of the model, not a flaw.

#### **Key Elements of the Institutional Setting**

1. The economy of the model is demand-led. Consumption, investment, and government expenditure determine the targeted level of employment. The level of employment is determined by a matching function and impacts the nominal wage demands of labor.
2. In a world of uncertainty, firms are required to form expectations and make decisions about production. Expectations are often wrong, and production takes time, both of

which necessitate the need for endogenously created credit money—the need for a banking sector (Godley and Lavoie 2007, 2). In this model, banks create money endogenously; money does not, as Friedman ([1969] 2005, 4) hypothesized, enter the economy exogenously as if dropped by a helicopter.

3. Labor is heterogenous and viscous, a key departure from previous SFC models which assume labor homogeneity.<sup>16</sup> The microeconomic dimensions of unemployment arising from labor heterogeneity generates flows of workers into and out of unemployment at a rate beyond what is necessary to accommodate desired changes in firm level employment (a more detailed discussion on this topic can be found in Discussion of Labor Market Flows). Moreover, the micro dimension creates frictions in the job-matching process, which act as a constraint on production. Firms circumvent these frictions through two mechanisms:
  - a. Firms hold inventories which equate the quantity demanded with the quantity supplied when discrepancies exist between quantity demanded and what is produced or equivalently when discrepancies exist between expected and realized sales.
  - b. Firms allow actual labor productivity to fluctuate across the business cycle—productivity is procyclical. During downturns capitalists hoard labor and

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<sup>16</sup> Under the standard assumption of labor homogeneity, Minsky (2013, 13-14) states that, any unemployment causes an infinitely elastic supply of labor at the going wage to all occupations. A key implication for labor market outcomes is that “it does not matter how demand is increased: no matter where or what kind of initial impact occurs and no matter what the pattern of final output may be, the employment and wage effects are the same.” Minsky continues, stating that “labor is not homogenous and fluid. The gestation period of a worker with particular skills in a particular place may be quite time consuming and the gestation process quite costly. At every date there is a need [...] to generate the right kinds of labor...” Simply assuming away the heterogeneous and viscous nature of labor greatly downplays the benefits afforded by the ELR.



during upswings they increase the intensity of effort required by labor (Fay and Medoff 1985).

4. The government in the model finances all expenditures through the creation of high-powered money; more specifically, the government credits reserves held by commercial banks at the central bank which, for simplicity, is amalgamated with the government. While there is no sale of bonds *ex-post* to drain excess reserves, it is assumed that the government pays interest on reserves to target its interest rate. It suffices to say that the government, which is monetarily sovereign, can afford to purchase whatever is for sale in the currency it issues.
5. Wage dynamics: the wage for those employed in the ELR is fixed while the wage for those employed in the private sector is determined as a markup over the ELR wage. The markup depends on the tightness of the labor market. The approach to wage dynamics adopted in this analysis parallels the NAIBER presented by Mitchell (1998).
6. Price dynamics: firms set prices as a markup over costs so that they may capture a portion of sales as profit.
7. Prices do not adjust to clear markets and equate the quantity supplied with quantity demanded; rather, the adjustment process occurs through what Zezza (2016, 439) describes as an error correction mechanism where one or more variables acts as a buffer.

### **Key Assumptions of the Model**

1. Policy variables, including the policy interest rate and the ELR wage, are assumed to be exogenous. Policy makers and the economists who influence them are both

observers of and participants in the economy (Lee 2017, 10). As participants in the economy, their decision about how to set these policy variables cannot be truly exogenous; their view of the processes and outcomes is shaped by the specific socio-historical forces that determine their interpretation of the social reality. However, as observers, the policy makers can manipulate economic outcomes by exercising control over policy variables: they have the power to affect causality. Likewise, by assuming these variables are exogenous, causality is implied running from the policy variables to the dependent variables of import in the model (Dobb 1975, 7-9)

- a. The policy interest rate paid on reserves is a decision made by the central bank (Federal Reserve 2020). The interest rate is adjusted according to central bankers' interpretation of economic outcomes and processes; however, it remains a policy decision. The Federal Reserve uses the policy interest rate as a tool to achieve maximum employment and average inflation of two percent. Using the interest rate as a tool to achieve their mandate implies in causality running from interest rate to output, employment, and prices.
- b. Setting the ELR wage is a policy choice. The ELR wage is meant to serve as a price floor that remains independent of labor market tightness as it does not chase private sector wages upward. Independence from labor market conditions can be achieved because the ELR does not target a level of employment, but rather absorbs and releases workers according to the demand of the private sector—policy makers set the ELR wage and let the market determine the size of the program.

The rate at which the ELR wage is set impacts distributional outcomes and prices. A higher ELR wage, *ceteris paribus*, increases incomes for workers at the bottom of the wage ladder. Moreover, the ELR wage rate affects wages in the private sector and thus impacts prices through its influence on costs. The literature has established price stability as a primary goal of the ELR. The ability to impart price stability requires that the ELR wage not be directly influenced by market conditions. The wage must be determined as a policy decision and not allowed to fluctuate according to market outcomes; however, independence from market outcomes does not mean that the wage cannot be revised over time.

In the literature, causality runs from the ELR wage (i.e., the policy variable) to output, employment, and prices (i.e., the dependent variables of import), a dynamic which is reproduced in the model by assuming the ELR wage is exogenous.

2. The economy of the model excludes the foreign sector.
3. Matching frictions in the labor market are the only endogenous constraint to the supply process: production occurs instantaneously according to expected sales.

### The Accounting Framework

The model has four sectors: households, firms, government, and banks. Households have been decomposed according to their source of income: workers receive wages while capitalists receive dividends and interest payments. The accounting matrix forms the core of the model and is presented in Tables 2.1 and 2.2. The matrix is broken down into two sections, which closely parallels the National Income and Flow of Funds methodology. The purpose of this framework is

to describe “each sector’s stock of assets and liabilities and their logical inter-relationship with those of other sectors” (Godley and Lavoie 2007, 59).

Table 2.1, titled “Behavioral Transactions Matrix,” contains two parts. The upper part presents the income and outlays of each sector and resembles the National Income and Product Accounts. Incomes and outlays are labeled with a “+” and “-” respectively. This section of the matrix describes the behavior of each sector at the time of the transactions (Godley and Lavoie 2007, 63). The lower portion of this table, resembling the Flow of Funds, serves to differentiate between sources (negative variation in assets and positive variation in liabilities) and uses (positive variation of assets and negative variation of liabilities) of funds, labeled with a “+” and “-” respectively. This section is interesting in that it reveals the flow of finance across sectors that are a result of the economic transactions described in the upper portion of this table.

Furthermore, it is extremely useful when defining behavioral equations and formalizing the model (Godley and Lavoie 2007, 33). The subscripts  $d$ ,  $s$ ,  $w$ ,  $c$ ,  $f$ ,  $b$ ,  $elr$ , and  $-1$  utilized in this table and in the specification of the model below denote demanded, supplied, workers, capitalists, firms, banks, ELR, and a lagged variable or parameter value, respectively.

Table 2.2 is titled “Balance Sheet” and serves to differentiate between assets and liabilities denoted by a “+” and “-” respectively. In this model, there are four assets, three of which are financial and have an off-setting liability. The non-financial asset is the inventories held by firms which do not have any offsetting liability.

The rows of the upper part of the Behavioral Transactions Matrix identify all monetary transactions for each of the four sectors. The sum of these transactions is represented in the lower rows of the matrix. This result follows from the logic implied by the consistency of the model, it

must be the case that the difference between a sector's income and outlays is equal to the change in each sector's stocks.

Table 2.1. Behavioral Transactions Matrix

	Household		Firm		Bank	Government	$\Sigma$
	Workers	Capitalists	Current	Capital			
Consumption	$-C_w$	$-C_c$	$+C_s$				0
$\Delta$ in value of Inventory			$+\Delta IN$	$-\Delta IN$			0
Investment			$+I_s$	$-I_d$			0
Govt. Expenditure			$+G_s$			$-G_d$	0
[Output]			[Y]				
Wages	$+WB$		$-WB_f$			$-WB_g$	0
Profit		$+\Pi$	$-\Pi_f$		$-\Pi_b$		0
Depreciation Allowance			$-Af$	$+Af$			0
Interest on Time Deposits		$+r_{d-1}DD_{-1}$			$-r_{d-1}DD_{-1}$		0
Interest on Loans			$-r_{l-1}L_{-1}$		$+r_{l-1}L_{-1}$		0
Interest on Reserves					$+r_{r-1}R_{-1}$	$-r_{r-1}R_{-1}$	0
Taxes	$-T_w$	$-T_c$				$+T_d$	0
[Net Lending]	$[NL_w]$	$[NL_c]$	0	$[NL_f]$	$[NL_b]$	$[NL_g]$	0
Change in Demand Deposits		$-\Delta DD$			$+\Delta DD$		0
Change in Time Deposits		$-\Delta TD$			$+\Delta TD$		0
Change in Loans				$+\Delta L_d$	$-\Delta L_s$		0
Change in Reserves					$-\Delta R_d$	$+\Delta R_s$	0
$\Sigma$		0	0	0	0	0	0

Table 2.2. Balance Sheet

	Household		Firm	Bank	Government	$\Sigma$
	Workers	Capitalists				
Demand Deposits		$+DD$		$-DD$		0
Time Deposits		$+TD$		$-TD$		0
Loans			$-L$	$+L$		0
Reserves				$+R$	$-R$	0
Inventories			$+IN$			$+IN$
Capital			$+K$			$+K$
(Net Worth)		$(NW_h)$	$(NW_f)$		0 $NW_g$	
$\Sigma$	0	0	0	0	0	$IN+K$

The summing of the rows is ensured with the introduction of several equalizing equations. These equations ensure that quantity supplied is equal to quantity demanded. There are four equalizing mechanisms identified in Godley and Lavoie (2007, 63-65). The first is the fictional Walrasian auctioneer that allows markets to continuously clear through price adjustments. The second mechanism is found in constrained equilibrium theory, which involves rigid prices, such that there is a short-side market adjustment. The third approach, which is adopted in this model, is to use inventories and is referred to as the general disequilibrium approach. This approach utilizes inventories to equate quantities supplied and demanded. The final approach is an instantaneous adjustment of production often utilized in Keynesian and Kaleckian models.

It follows that equations (1), (2), and (3) below equate the quantities supplied and demanded of consumption, investment, and government purchases of goods and services. Equation (4) states that the quantity of taxes demanded equals the quantity of taxes supplied by both subsectors of the household and assumes an effective tax collection system. Equation (5) states that the wage bill paid to working households equals the sum of wages paid to those employed in the private sector and those employed in the ELR, respectively. The final equalizing equation states that capitalist households receive distributed profits from firms and banks.

$$C_D = C_w + C_c = C_S \quad (1)$$

$$I_D = I_S \quad (2)$$

$$G_D = G_S \quad (3)$$

$$T_D = T_S = T_w + T_c \quad (4)$$

$$WB = WB_f + WB_{elr} \quad (5)$$

$$\Pi = \Pi_f + \Pi_b \quad (6)$$

The equation for GDP and national income identity is given below. For simplicity, it is assumed that the ELR strictly produces non-market goods and services and thus its contribution to GDP on the expenditure side is measured at cost.<sup>17</sup>

$$GDP \equiv C_S + I_S + \Delta IN + G_S + WB_{elr} \equiv WB_f + \Pi_f + WB_{elr} + AF + r_{L-1}L_{-1} \quad (7)$$

In what follows, the superscript  $e$  denotes expected and the superscript  $T$  denotes targeted; lower case variables are in real terms and upper-case variables in nominal terms.

#### The Real Production Decision

The decision to produce is described below. Let  $y$  be real output;  $s$  real sales;  $in$  real inventories.

$$y = s^e + in^e - in_{-1} = s^e + \Delta in^e \quad (8)$$

Let  $\sigma^T$  be the desired long-run ratio of inventory to expected sales and  $in^T$  the long-run inventory target.

$$in^T = \sigma^T \cdot s^e \quad (9)$$

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<sup>17</sup> Assuming that the ELR provides non-market goods and services is consistent with much of the literature—the ELR is not intended to compete with for-profit firms in the provision of goods and services. Rather, ELR activity should be strategically directed to activities with socially desirable outcomes. This assumption can be relaxed by assuming that the ELR sells consumption goods; the expenditure side of the GDP equation would be adjusted by replacing the ELR wage bill with the market value of the goods and services sold. The consumption decision by households would have to be adjusted to include a share of expenditures on ELR goods and services. If the share of consumption to the ELR reduces the sales of the firms, private employment would fall as would price pressures. The final aspect requiring consideration is setting the price of ELR goods and services. Given that ELR is not motivated by the pursuit of profit, the easiest method for determining price would be to set it equal to cost, which would be determined the same way it is for private sector firms. A markup to the cost could be added if so desired; this addition would generate profit for the ELR and thus inclusion of ELR profit to income side of the GDP equation. Similar reasoning would apply if the ELR sold investment goods.

Let  $\gamma$  represent the partial adjustment between the targeted and actual level of inventory. At the end of the period, the desired inventory level that firms wish to hold is:

$$in^e = in_{-1} + \gamma(in^T - in_{-1}) \quad (10)$$

The change in the stock of inventory is equal to the difference between production and sales.

$$in = in_{-1} + (y - s) \quad (11)$$

Substitution of  $y$  from (8) into (11) yields equation (11a).

$$in - in^e = s^e - s \quad (11a)$$

Equation (11a) states that the difference of realized to expected inventories is equal to the discrepancy between expected and actual sales.

Expected sales are assumed to be adaptive and are determined according to equation (12) where  $\beta$  is the partial adjustment parameter between actual and realized sales.

$$s^e = \beta s_{-1} + (1 - \beta)s_{-1}^e \quad (12)$$

Realized sales are equal to real consumption demanded, real investment, and real government expenditure.

$$s = c + i + g \quad (13)$$

Let  $N_f$ ,  $JM$ , and  $JD$  be the level of employment in the private sector, the job-matches formed, and the job-matches destroyed, respectively.

$$\Delta N_f = JM - JD \quad (14)$$

$$JM = \psi_1 \cdot (N^t - N_{f,-1}) \quad (15)$$

Job-matches are a function of the discrepancy between targeted,  $N^T$ , and actual level of employment. The partial adjustment of the discrepancy between targeted and actual employment is  $\psi_1$  and  $pr$  is the average productivity of labor.



$$N^T = \frac{y}{pr} \quad (16)$$

The endogenously determined job-match destruction is a share of actual employment in the preceding period and the exogenous job destruction rate  $\psi_2$ .

$$JD = \psi_2 \cdot N_{f,-1} \quad (17)$$

The wage bill  $WB_f$  is equal to the level of employment  $N_f$  times the nominal wage  $W_f$ .

$$WB_f = W_f \cdot N_f \quad (18)$$

To determine the value of the stock of goods held as inventory ( $IN$  measured in nominal terms and  $in$  measured in real terms), firms rely on the unit cost of production,  $UC$ , which is a determined by the wage bill and interest ( $r_l$ ) on loans ( $L_d$ ) used to finance investment and inventories and private sector output.

$$UC = \frac{WB_f + r_l \cdot L_d}{y} \quad (19)$$

$$IN = in \cdot UC \quad (20)$$

#### Prices

Firms seek to capture a proportion,  $\frac{\varphi}{1+\varphi}$ , of nominal sales,  $S$  where  $\varphi$  represents the markup over cost. Nominal sales are defined in equation 21.

$$S = P \cdot s \quad (21)$$

Price is determined as a percentage mark-up over normal historical unit cost,  $NHUC$ . Recall that  $\sigma^T$  is the long-run desired ratio of inventories to sales. Normal cost pricing assumes the following form:

$$P = (1 + \varphi)NHUC \quad (22)$$

$$NHUC = (1 - \sigma^T)UC + \sigma^T(1 + r_{L-1})UC_{-1} \quad (23)$$

Prices are set to ensure firms realize a profit which is given in equation 24 where  $AF$  represents the amortization funds set aside to replace depreciating capital.

$$\Pi_f = S + \Delta IN - WB_f - AF - r_{l-1} \cdot L_{-1} > 0 \quad (24)$$

### Banks, Loans, and Inside Money

Banks serve two purposes: to provide the means of payments and to create the loans which finance the production of inventories and investment in capital goods. We assume banks are passive and are not constrained in creating and instantaneously providing loans demanded; as such, a description of their operations flows easily from the accounting matrices. The stock of loans outstanding derives from firms' need to finance investment and inventories.

$$L_D = L_{D,-1} + I_D - AF + (IN - IN_{-1}) \quad (25)$$

This can also be written as a difference equation.

$$\Delta L_D = I_D - AF + \Delta IN \quad (25a)$$

Banks passively supply loans demanded by firms: this simplification is equivalent to the entire firm sector possessing an open line of credit that can be drawn upon at will. However, it should be noted that this simplification ignores all forms of credit rationing related to the creditworthiness of borrowers. While this treatment of finance preserves the Keynesian “veil of money” where, according to Minsky (1992, 3), “money is connected with financing through time,” it greatly diminishes the impact that the structure of financial relations has on economic performance.

$$L_S = L_D \quad (26)$$

Banks, like production firms, strive to generate a profit. The profit of banks emerges from the interest rate differential between what they charge and pay<sup>18</sup>. Banks charge a current interest rate,  $r_L$ , on loans,  $L$ , pay an interest rate,  $r_{td}$ , on time deposits,  $TD$ , and receive an exogenously determined interest rate,  $r_R$ , on reserves,  $R$ . In accordance with Godley (1999), albeit in simplified manner and lacking dynamics, banks are price makers for the rates charged on loans and paid on deposits, where  $add$  represents the interest rate differential banks use to set the price, but are price takers for the rates received on reserves—interest rates are administered prices. The sum of these interest payments constitutes the profit of banks,  $\Pi_b$ , which is assumed to be distributed entirely to the capitalist households.

$$r_l = r_r + add \quad (27)$$

$$r_{td} = r_r - add \quad (28)$$

$$\Pi_b = r_{l,-1} \cdot L_{-1} + r_{r,-1} \cdot R_{-1} - r_{TD,-1} \cdot TD_{-1} \quad (29)$$

The quantity of inside money outstanding (the sum of deposits) is equivalent to the stock of loans plus the accumulated government liability  $R_S$ . The following equation serves as the redundant equation, which is omitted from the determination of the stationary states below.

$$\Delta DD_S + \Delta TD_S = \Delta L + \Delta R_S \quad (30)$$

The presentation of the banking sector is a simplification; specifically, there are more than two assets and two liabilities found on balance sheets of the banking sector, and there exists dynamics which influence the administration of prices. Including additional entries on the balance sheet of the banking sector would make the model more realistic, but it would do so at

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<sup>18</sup> Banks also generate revenue from fees and other sources; however, these exclusions do not directly impact the outcomes studied. Given that banks distribute profits to capitalists' households, this assumption reduces the upward transfer of wealth that would result from banks charging fees to working households.

the cost of greater complexity and with no impact to the causal relationship between variables of interest. Following a similar line of reasoning, price setting dynamics by the banking sector could be further developed by endogenizing the markup banks charge over the policy rate. This extension would impact distributional outcomes and may prove interesting for future work; however, distributional outcomes lies outside the current scope of this inquiry, which focuses on how employment policy affects stability across output, employment, and prices.<sup>19</sup> Finally, while the balance sheet and behavior of the banking sector has been simplified, the most important role of this sector has been developed. The real and financial sectors are integrated consistently—loans to finance capital acquisition and to hold inventories and the deposits created by those loans are included.

### Households

Households are decomposed into two classes according to the source of income: wages and profits. The working class does not own income-bearing assets and must sell their labor power for a wage; the capitalist class receives income in the form of profit originating from ownership of assets.

### Workers' Income

Workers have a single source of income: the wage bill  $WB$ . As stated above in equation (5), the wage bill consists of two components: wages earned working for firms in the private sector,  $WB_f = W_f \cdot N_f$ , and from working in the employer of last resort,  $WB_{elr} = W_{elr} \cdot (\bar{N} - N_f)$  where  $\bar{N}$  is the labor force. For firms to induce a shift out of public sector

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<sup>19</sup> Distributional outcomes do impact the outcomes of output, employment, and prices; specifically, interest rate dynamics would affect financial flows and the consumption out of these flows. Endogenizing the interest rate would affect bank and firm profits, both of which are distributed to capitalists' households whose consumption is relatively insensitive to income. Thus, any affect from this extension will be insignificant for the outcomes studied here.

employment, it must be the case that  $W_{elr} < W_f$ . Moreover, the level of employment in the job guarantee are members of the household sector that the firm sector has failed to employ and is equal to  $\bar{N} - N$ ; that is, the sum of those employed in the private sector and the ELR equals the total labor force. It follows from the definition that once the ELR is operational, involuntary unemployment goes to zero. However, the question remains—how does the ELR impact the level of employment working for firms.

$$WB = W_f \cdot N_f + W_{elr} \cdot N_{elr} \quad (5)$$

The government imposes a tax liability on working households,  $T_w$ , which is equal to a fraction,  $\theta_w$ , of the wage bill.

$$T_w = \theta_w \cdot (WB_f + WB_{elr}) \quad (31)$$

Where  $0 < \theta_c < \theta_w < 1$ .

The wage bill net of taxes constitutes workers' disposable income in nominal terms,  $YD_w$ .

$$YD_w = WB - T_w \quad (32)$$

Substitution of (31) into (32) and some simple algebra yields:

$$YD_w = (1 - \theta_w) \cdot WB \quad (32a)$$

### Capitalists' Income

The capitalist class, who own assets, receive their income from two sources: the distributed profits of firms and banks  $\Pi_f$  and  $\Pi_b$  respectively, and interest on the share of accumulated wealth,  $V_c$ , held in interest-bearing time deposit accounts  $r_{TD,-1} \cdot TD_{-1}$ .

Firms are assumed to distribute all their profits,  $\Pi_f$ , to capitalist households. Reproducing equation (24) from above:

$$\Pi_f = S + \Delta IN - WB_f - AF - r_{l-1} \cdot L_{-1} \quad (24)$$

Capitalist households also receive distributed profits from banks, who are assumed to distribute all their profits,  $\Pi_B$ . Reproducing equation (29) from above:

$$\Pi_b = r_{l,-1} \cdot L_{-1} + r_{r,-1} \cdot R_{-1} - r_{TD,-1} \cdot TD_{-1} \quad (29)$$

The final inflow for capitalist households is the interest payments, at the rate of  $r_{td}$ , received from their accumulated wealth,  $TD$ . Disposable income,  $YD_c$ , derives directly from the transaction-flow matrix.

$$YD_c = \Pi_f + \Pi_b + r_{td} \cdot TD_{-1} - T_c \quad (33)$$

The tax liability imposed on households by the Government sector is:

$$T_c = \theta_c \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1}) \quad (34)$$

We assume taxes,  $T_c$ , are levied on all capitalist's household inflows at the exogenous rate  $\theta_c$ , where  $0 < \theta_c < \theta_w < 1$ .

With the tax liability known, we can rewrite equation (33).

$$YD_c = (1 - \theta) \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1}) \quad (33a)$$

The difference between their disposable income,  $YD_c$ , and consumption,  $C_c$ , gives the change in capitalist households accumulated wealth.

$$\Delta V_c = YD_c - C_c \quad (35)$$

Capitalists face a decision about how to allocate their accumulated wealth. The portfolio decision confronting capitalists follows:

$$\begin{bmatrix} DD \\ TD \end{bmatrix} = \begin{bmatrix} \lambda_{10} \\ \lambda_{20} \end{bmatrix} V + \begin{bmatrix} \lambda_{11} & \lambda_{12} \\ \lambda_{21} & \lambda_{22} \end{bmatrix} \times \begin{bmatrix} 0 \\ r_{TD} \end{bmatrix} + \begin{bmatrix} \lambda_{13} \\ \lambda_{23} \end{bmatrix} YD_c \quad (36)$$

And, in accordance with Tobin (1969), the adding up constraints presented below hold.

$$\lambda_{10} + \lambda_{20} = 1 \quad (36a)$$

$$\lambda_{11} + \lambda_{21} = 0 \quad (36b)$$

$$\lambda_{12} + \lambda_{22} = 0 \quad (36c)$$

$\lambda_{i0}$  for  $i \in [1,2]$  represents the share of wealth desired to be held in the form of asset  $i$ .  $\lambda_{ij}$  for  $i, j \in [1,2]$  modifies the demand for asset  $i$  based off the return asset  $j$  yields.  $\lambda_{i3}$  for  $i \in [1,2]$  modifies the demand for asset  $i$  based off changes in disposable income.

Capitalists face a decision about how to allocate their accumulated wealth. One major shortcoming of the portfolio decision in this analysis is the lack of expectations. A more realistic treatment would introduce expectations to disposable income and wealth. Uncertainty about the actual value of income and wealth when the portfolio decision is made would require one of the stocks (traditionally the most liquid, which in this case are demand deposits) to act as a buffer, absorbing the discrepancy between expected and actual income and wealth values. To account for the role of demand deposits as a buffer stock simply re-write the decision for the share of wealth allocated to demand deposits as presented in equation (37).

$$DD = V_c - TD \quad (37)$$

#### Households Real Decisions

Wage and price dynamics require households to make decision in real terms to avoid suffering from money illusion. The aggregate consumption for households in real and nominal terms respectively are stated below.

$$c = c_w + c_c \quad (38)$$

$$C = C_w + C_c \quad (39)$$

#### Real Decisions Workers

Households do not suffer from the money illusion when making the expenditure decision: they make their consumption decision in real terms. Thus, it is necessary to introduce the real value of workers' disposable income. The real value of disposable income for workers is:

$$yd_w = \frac{YD_w}{P} \quad (40)$$

Consumption at current prices is the product of the real consumption decision  $c_w$  and prices  $P$ .

$$C_w = c_w \cdot P \quad (41)$$

Following Kalecki (1971, 78), it is assumed that workers consume all their income: workers' marginal propensity to consume from income ( $\alpha_1$ ) is 1.

$$c_w = \alpha_1 yd_w \quad (42)$$

### Real Decision Capitalists

While workers' consumption is a function of their income, capitalists' consumption decision is a function of their accumulated wealth. The real value of accumulated wealth for capitalists follows:

$$v_c = \frac{V_c}{P} \quad (43)$$

Capitalists' real consumption is a function of the marginal propensity to consume from wealth,  $\alpha_2$ , where  $\alpha_2 < 1$  and the real value of accumulated wealth.

$$c_c = \alpha_2 v_{c,-1} \quad (44)$$

The nominal consumption is the product of real consumption and prices.

$$C_c = c_c \cdot P \quad (45)$$

### The Inflation Process

Prices are determined as a markup over cost and do not fluctuate to equate supply and demand. Rather, as noted by Hicks (1965, 79), the stock of inventories can serve the same role as Walrasian price mechanism in equating the quantities demanded and supplied. Without the auctioneer to set prices, the decision falls to firms. According to Lee (1998, 10), firms face two decisions when setting the price: first the firm must determine the cost, then determine the



margin over the cost to set the price. Labor and capital serve as the two inputs into production; however, much like the acquisition of capital must be financed, so too must the holding of inventories. As presented earlier, the unit costs ( $UC$ ) represents the cost of production and is a function of both the wage bill and the interest on loans which financed investment and inventories.

The inflation process herein is cost-push and driven primarily through wage dynamics. This treatment of inflation follows the tradition of political economy: inflation results from a conflict over the product. The private sector wage,  $W$ , is endogenously determined and is a function of tightness of the labor market,  $t$ , as well as the policy decision concerning the minimum wage ( $MW$ ).

$$t = \frac{N}{\bar{N}} \quad (46)$$

In accordance with Keynes (1964, 9), workers negotiate for a nominal wage; labor sells their capacity to perform labor for a nominal wage, which is strongly influenced by their wage aspiration,  $\omega^T$ . Unlike the expenditure decision, workers do suffer from the money illusion in wage negotiations. Let  $\Omega_0$  be the autonomous component of their wage aspiration,  $\Omega_1$  the markup over the policy determined minimum wage, and  $\Omega_2$  the coefficient on labor market tightness

$$\omega^T = \Omega_0 + \Omega_1 \cdot MW + \Omega_2 \cdot t \quad (47)$$

Moreover, the policy determined minimum wage depends on whether a job guarantee is in place.

Thus, we have:

$$MW = \begin{cases} \overline{MW}, & \text{without ELR} \\ W_{jg}, & \text{with ELR} \end{cases} \quad (48)$$

The nominal wage received adjusts partially, by the rate of  $\Omega_3$ , to the discrepancy between what they aspire for and what they received last period.

$$W = W_{-1} + \Omega_3(\omega^T - W_{-1}) \quad (49)$$

With wage and price dynamics fully specified, we can now introduce the cost and price inflation rates,  $\pi_c$  and  $\pi_p$ , respectively.

$$\pi_c = \frac{UC - UC_{-1}}{UC_{-1}} \quad (50)$$

$$\pi_p = \frac{P - P_{-1}}{P_{-1}} \quad (51)$$

The Government

The government of the model is representative of the pure government sector and the central bank. This simplifying assumption obscures the money creation process, but it does not impact any key results. In this model, the government creates money through crediting the accounts of commercial banks at the central bank, which, for simplicity, is amalgamated with the government. High powered money,  $R$ , is a liability of the government and its creation is how the government finances all expenditures. Expenditures of the government include the purchase of goods from production firms,  $G_D$ , the respective wage bill paid to those employed in the ELR,  $W_{jg} \cdot (\bar{N} - N)$ , and interest paid on reserves,  $r_{R-1} \cdot R_{-1}$ . Government expenditure is assumed to be exogenous without an ELR and a function of the size of the ELR when it is implemented.

$$G = \begin{cases} \bar{G} & , \quad \text{without ELR} \\ \bar{G} + \eta \cdot (\bar{N} - N_f) & , \quad \text{with ELR} \end{cases} \quad (52)$$

The government spends according to the quantity rule: it sets the nominal value of its spending and allows the market to determine the quantity as seen in equation (38) (Mitchell and Mosler

2001, 230). The interest rate is a policy decision and is set exogenously according to equation (54).

$$g = \frac{G}{P} \quad (53)$$

$$r_r = \bar{r}_r \quad (54)$$

The government only employs through the ELR. The wage bill is a function of the exogenously determined wage and the endogenously determined level of employment. The level of employment in the ELR is a residual, determined *ex-post* of the desired level of employment in the production firm sector. The ELR is in no manner restricted by sales, taxes, or the profit motive; the primary function of the ELR is to employ those who the private sector has failed to employ. The exogenous determination of the wage is an important feature for price stability; it remains imperative that the ELR wage does not chase the private sector wage up, as that may create an inflationary wage-price spiral. According to Mitchell and Mosler (2001, 230) the exogenous determination of the wage is referred to as spending on the price rule: the government sets the price of labor and lets the market determined the level of spending.

$$WB_{elr} = W_{elr} \cdot (\bar{N} - N_f) = W_{elr} \cdot N_{elr} \quad (55)$$

Tax revenues,  $T$ , is the only channel available for extinguishing the government's liability. Tax revenue is a function of the exogenously determined tax rates,  $\theta_w$  and  $\theta_c$ , and the income of households. In regard to the tax rates, the following holds:  $0 < \theta_c < \theta_w < 1$ . Total tax revenue is derived from three previous equations: (4), (31), and (34).

$$T = \theta_w \cdot (WB_f + WB_{elr}) + \theta_c \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1}) \quad (56)$$

With the government's inlays and outlays fully specified, we can now derive the change in the stock of reserves issued to fund expenditures and which are held exclusively by banks.

Equation (41) states that the stock of liabilities issued by the federal government is equal to the difference between its outlays and inlays.

$$\Delta R_s = G + WB_{elr} + r_r \cdot R_{-1} - T \quad (57)$$

This is a simplified representation of the public sector as many aspects are ignored; specifically, there are no transfers of any kind from the public sector, and taxes are only levied on income. Since the only inlay of the government is endogenously determined, it follows that the total fiscal stance of the government, determined by the difference between inlays and outlays, will be endogenously determined. We can further illustrate this by considering an income approach to GDP like that presented by Kalecki (1971). Let price be given by,  $P$ , and quantity by  $Q$ . Direct from the accounting matrices we have:

$$PQ \equiv C + I + \Delta IN + G \equiv W_f N_f + r_L \cdot L + \Pi_f + AF \quad (58)$$

From here, add the wage bill from the ELR ( $WB_{elr}$ ), interest paid on reserves ( $r_{r,-1} \cdot R_{-1}$ ), and interest paid on time deposits ( $r_{td,-1} \cdot TD_{-1}$ ) and subtract consumption ( $C$ ), investment ( $I$ ), change in inventories ( $\Delta IN$ ), interest paid on reserves ( $r_{r,-1} \cdot R_{-1}$ ), and taxes ( $T$ ). From here, simple algebra yields a very important conclusion. Recall from equations (29), (32), (33), (35), (57), and (25a) that:

$$\Pi_b = r_l \cdot L_{-1} + r_r \cdot R_{-1} - r_{td} \cdot TD_{-1} \quad (29)$$

$$YD = YD_w + YD_c = (WB_f + WB_{elr} - T_w) + (\Pi_b + \Pi_f + r_d \cdot TD_{-1} - T_c) \quad (32) + (33)$$

$$YD_c - C_c = \Delta DD + \Delta TD = \Delta V \quad (35)$$

$$\Delta R_s = G + WB_{elr} + r_r \cdot R_{-1} - T \quad (57)$$

$$\Delta IN + I_d - AF = \Delta L \quad (25a)$$

With the appropriate substitutions we end up with the following result.

$$\Delta R \equiv \Delta V - \Delta L \quad (59)$$

Most importantly, it becomes clear that the change in high-powered money which results from a change in the public sectors inlays and outlays equals the change in the net worth of the private sector. This is a well-known macroeconomic identity that applies regardless of the theoretical framework and traditionally takes the following form:  $(S - I) \equiv (G - T)$ . Stated explicitly, in a closed economy, the net saving of the private sector must be equal to the government deficit. The principal implication is that if the private sector desires to accumulate savings, the government must deficit spend. If the government does not adjust its spending to match the desired level of saving in the private sector, then income will adjust through a decline in profit and employment.

The primary implication just discussed links nicely to Lerner's Functional Finance. In his 1943 article "Functional Finance and the Federal Debt," Lerner states, "the first financial responsibility of the government (since nobody else can undertake that responsibility) is to keep the total rate of spending in the country on goods and services neither greater nor less than that rate which at the current prices would buy all the goods that it is possible to produce. If total spending is allowed to go above this, there will be inflation, and if it is allowed to go below this there will be unemployment" (39).

### **Simulating the Model**

The model is simulated using the PK-SFC package in R. However, before simulations can be run, values for parameters and initial endogenous variables must be determined. There are two possible methods for determining values: econometric estimation and calibration. The benefits and drawbacks of both methods are explored by Caverzasi and Godin (2014). Following the most common approach by Post-Keynesian scholars, this analysis relies on the methodology of calibration to determine parameter and initial endogenous variable values. To overcome the

arbitrary nature of this methodology, a sensitivity analysis was performed. A future opportunity for development emerges from the method used to check for robustness; Ciuffio and Rosenbaum (2015) suggest using Monte Carlo simulations to examine combinations of parameter and starting values to analyze the impact that calibration has for stability and in producing economically meaningful results.

The first step in running the simulations is to solve for the stationary states. In a steady state, both flows and stocks remain in constant relationship with each other. Stationary states are steady states without growth; that is, the level of the stocks remain constant, as the inflows are equal to the outflows. The constancy of the stationary states allows us to ignore time subscripts. Furthermore, the stationary states enable the discussion of long-run solutions (Godley and Lavoie 2007, 71); these solutions are important because once the long-run solutions are found, external shocks can be added, and implications can be identified. Allowing the software to solve for the stationary states, in the long run equilibrium (stock equilibriums denoted by \*) we have the following results:

$$\Delta R^* = 0 \quad (60)$$

$$\Delta IN^* + I_d - AF = \Delta L^* = 0 \quad (61)$$

$$\Delta DD^* + \Delta TD^* = \Delta V^* = 0 \quad (62)$$

$$\Delta N^* = 0 \quad (63)$$

There is a total of three simulations that are considered in this analysis. The first simulation considers output, employment, and price dynamics that result from introducing an ELR. In this simulation, two scenarios are treated and differ according to how high the ELR wage is set. In the final two simulations, the ELR wage is set at the lower value from the first simulation. This first simulation also provides us with the baseline solutions from which the

analysis compares the changes in key outcomes that result from the addition of shocks to the model's parameters and exogenous variables. The first of these final two simulations involves a shock to the markup that firms use to set the price above their cost. The final simulation introduces a negative shock to the autonomous component of government expenditure.

#### Simulation 1: Introducing the ELR

The first simulation introduces the ELR into a hypothetical economy without guaranteed employment. This is achieved by solving for the stationary state with the ELR wage set to zero and then adding an external shock, increasing the ELR wage. The first simulation involves two scenarios. The first scenario sets the ELR wage significantly higher than the minimum wage, while the second scenario sets the ELR wage equal to the minimum wage. Figure 2.3 demonstrates the dynamics of output, prices, and employment that result from introducing the ELR. Introducing the ELR causes a temporary increase in the rate of inflation. The increased inflation results from increased cost of production, particularly through higher wage demands. For firms to motivate workers to exercise their capacity to perform labor, they must pay a wage that is greater than what they would receive in the ELR. To induce a shift from the ELR to the private sector, firms must pay a premium over the ELR wage, which effectively becomes the reservation option. The second channel through which the ELR induces a temporary rise in inflation is also evident in Figure 2.3. Providing a wage to the unemployed increases aggregate demand, which drives private sector employment and output higher. The wage aspiration of labor is a positive function of labor market tightness. As employment levels rise, so too does the wage, and thus prices, which are determined as a markup over cost, also increase. However, this inflation erodes the real purchasing power of households, which reduces aggregate demand and

ultimately causes private sector employment and output to drop approximately three per cent lower than its pre-ELR value.

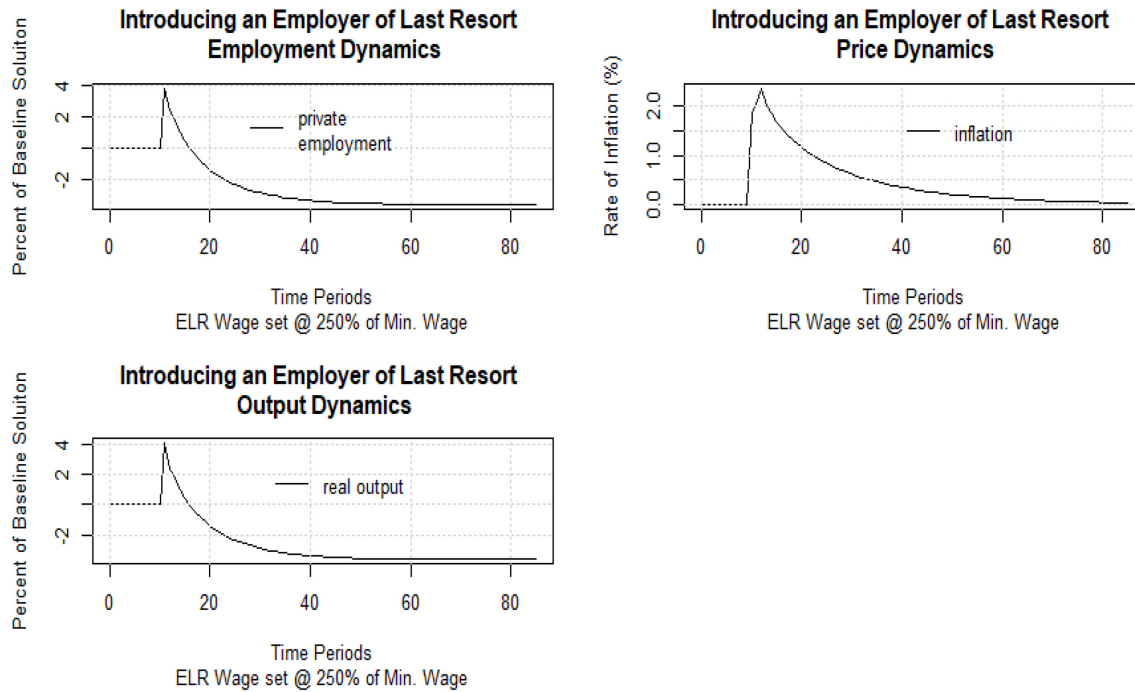


Figure 2.3. Introducing ELR with higher wage: Output, employment, and prices

In scenario 2, when the ELR wage is set equal to the previously determined minimum wage, introducing the ELR causes a positive impact to private sector employment and output (see Figure 2.4) as it settles at approximately 103% of its pre-ELR value. The difference in these two scenarios results primarily from the impact on the costs of production. As evidenced when comparing Figure 2.3 and Figure 2.4, the impact on prices when the ELR wage is set lower is much smaller than the impact when the ELR wage was higher. Interestingly, the introduction of the ELR with a low wage actually causes a temporary drop in prices. This results from the frictions in the job-matching process. Given these frictions, firms increase the exploitation of labor in the face of an unexpected increase in demand, which reduces the unit costs until the firm



is able to hire more labor power. The relatively modest impact to prices does not erode the purchasing power of households and thus results in greater impact to the private sector employment. This drop in prices could be moderated through transparent policy making.

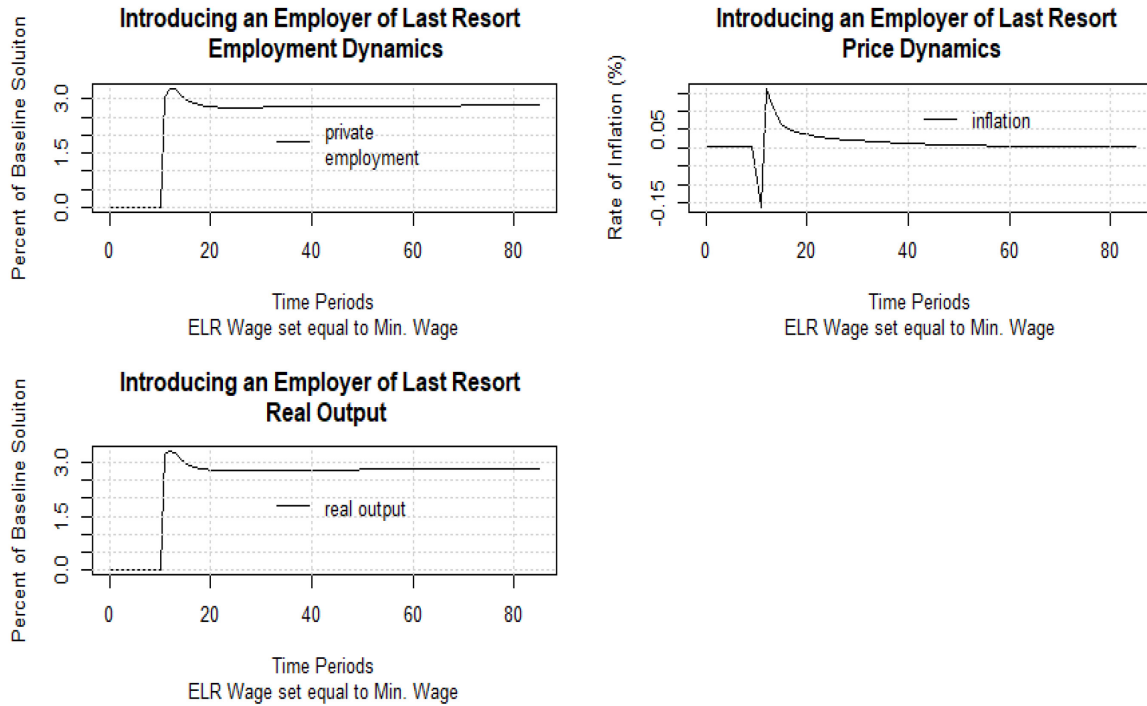


Figure 2.4. Introducing ELR with lower wage: Output, employment, and prices

### Simulation 2: Increasing the Markup

The second simulation adds a positive shock to the size of the markup, which causes an increase in the price, *ceteris paribus*. In this simulation, an unrealistic increase of 60% to the markup is assumed. However, what matters is not the absolute changes, but how does the modeled economy with an ELR compare to the model of the economy without an ELR. Figure 2.5 demonstrates the impact to private sector employment from increasing the markup. The observed dynamics result from inflation eroding the purchasing power of the household, reducing aggregate demand, and thus diminishing the level of employment in the private sector.

The decrease in aggregate demand is further exacerbated by the ensuing reduction in employment and wage bill. However, as the labor market slackens, wage demands decrease, which alleviates the pressure on prices. The introduction of the ELR provides an additional dampening mechanism—by providing a source of income to households who are displaced from private sector employment, consumption expenditure and thus aggregate demand and employment are maintained. This additional dampening mechanism, represented as an additional negative feedback loop, is demonstrated in Figure 2.6; as private employment falls, the wage bill in the ELR rises which sustains real disposable income.

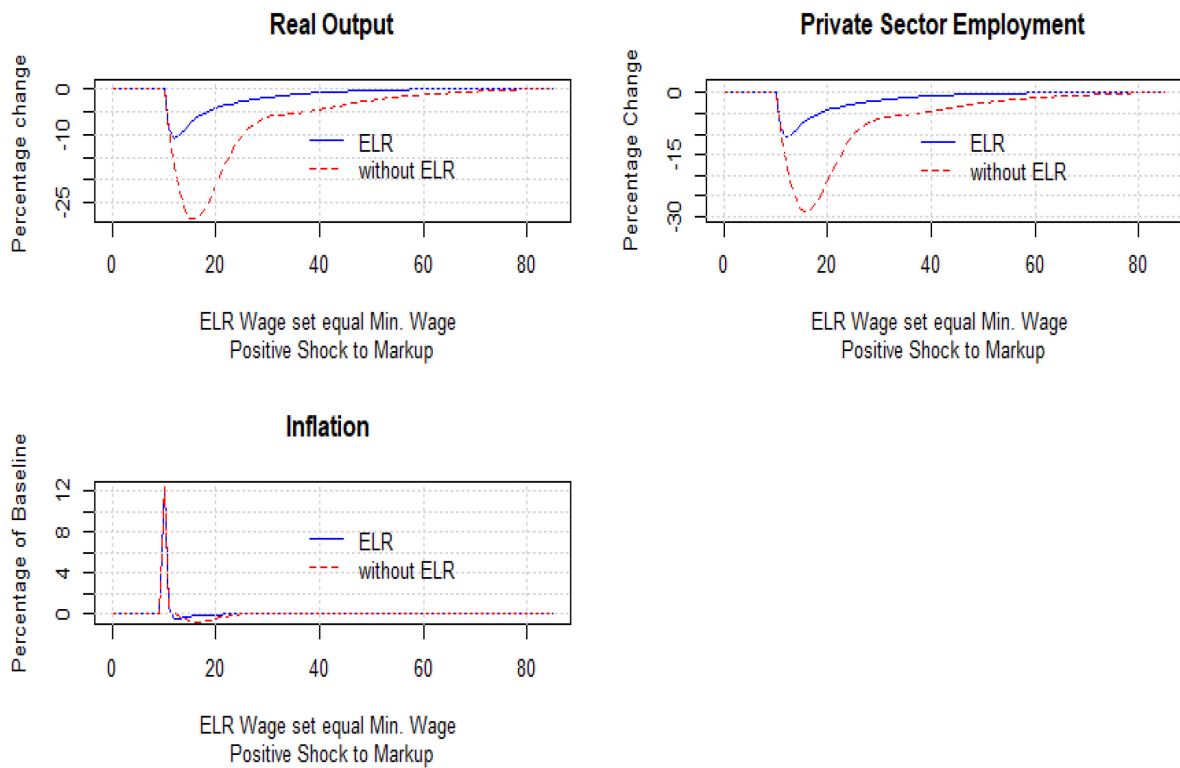


Figure 2.5. Positive shock to markup: Output, employment, and prices

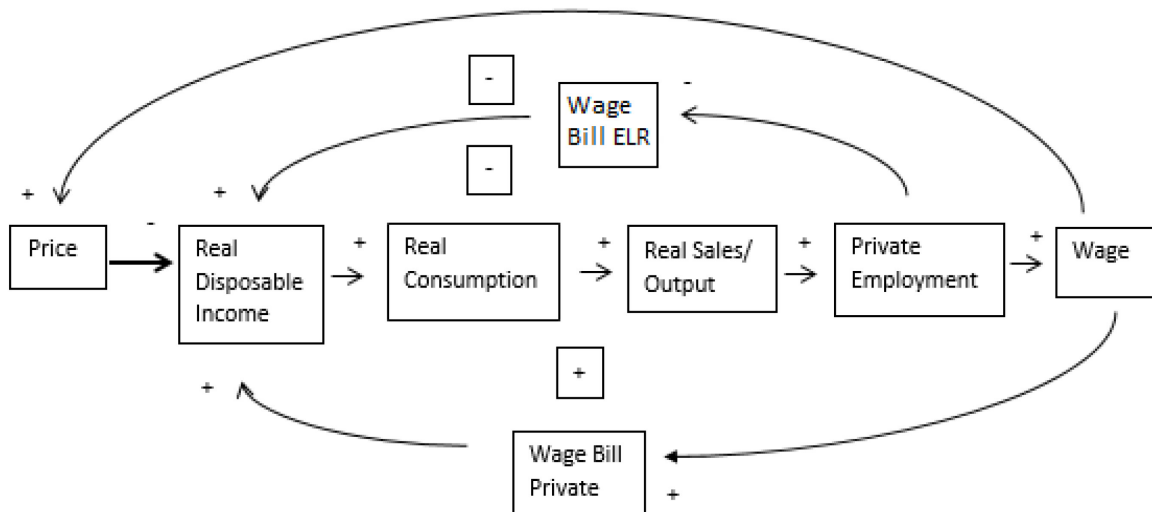


Figure 2.6. Causal loop diagram: How ELR stabilizes output, employment, and prices

Figure 2.7 demonstrates the distributional implications that result from increasing the markup: profits rise dramatically, and wages decline slightly. The resulting inflation erodes purchasing power and reduces consumption and thus employment; as employment falls, labor's bargaining position weakens and the wage declines. The effect on output and employment is reduced as firm profits, which rise dramatically, are paid to capitalist households, which reduces inflation's overall impact on total consumption. The wage in the economy without the ELR undergoes a nearly four times greater drop than the decline in the economy with the ELR. The ELR keeps the private sector wage higher by sustaining aggregate demand and reducing slack in the labor market that would drive the wage down. This result is shown in Figure 2.5, where real output in the economy without the ELR declines by approximately three times the decline in the economy with the ELR. Similarly, by sustaining demand in the face of falling private sector employment, profits in the ELR economy exceed those of the non-ELR economy.

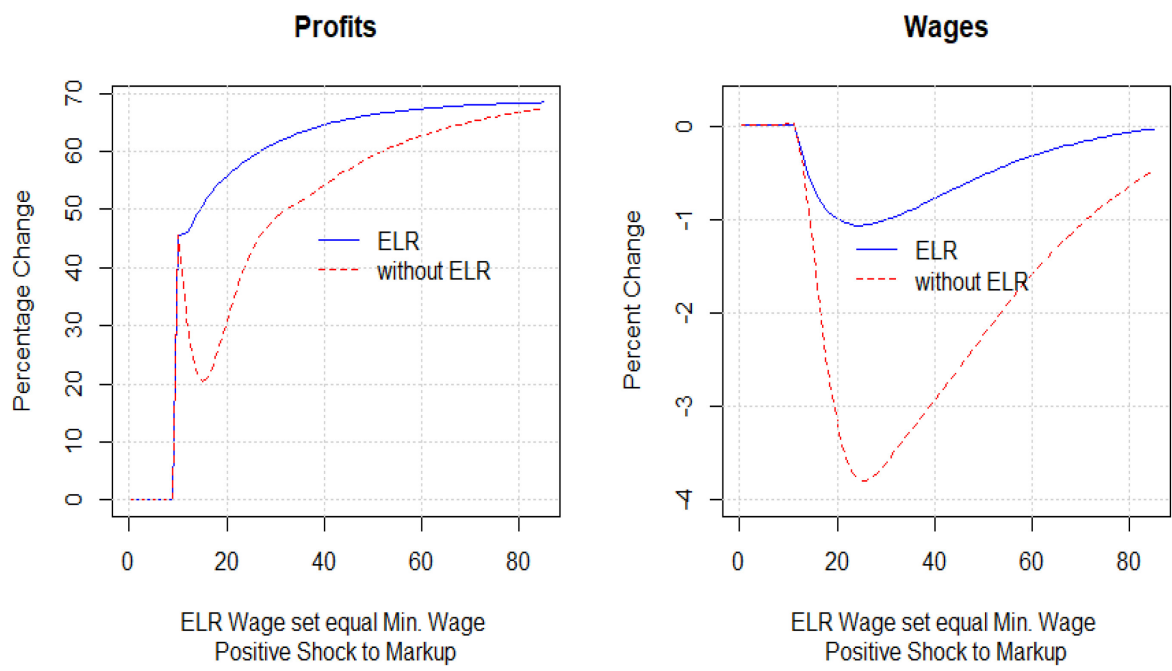


Figure 2.7. Positive shock to markup: Nominal incomes

Simulation 3: Decreasing Government Expenditure

The final simulation, presented in Figure 2.8, decreases the autonomous component of government expenditure by 25%. The modeled economy with the ELR does not experience nearly as significant of a drop in both employment and output as the economy without the ELR. The workers who are displaced from the initial shock, without guaranteed employment, sit idly by with no source of income and hence means to sustain consumption, which causes the level of employment to contract by approximately 20%. The economy with the ELR had employment contract by only 5%. The economy with the ELR also has prices stabilize much more quickly than the modeled economy without the ELR.

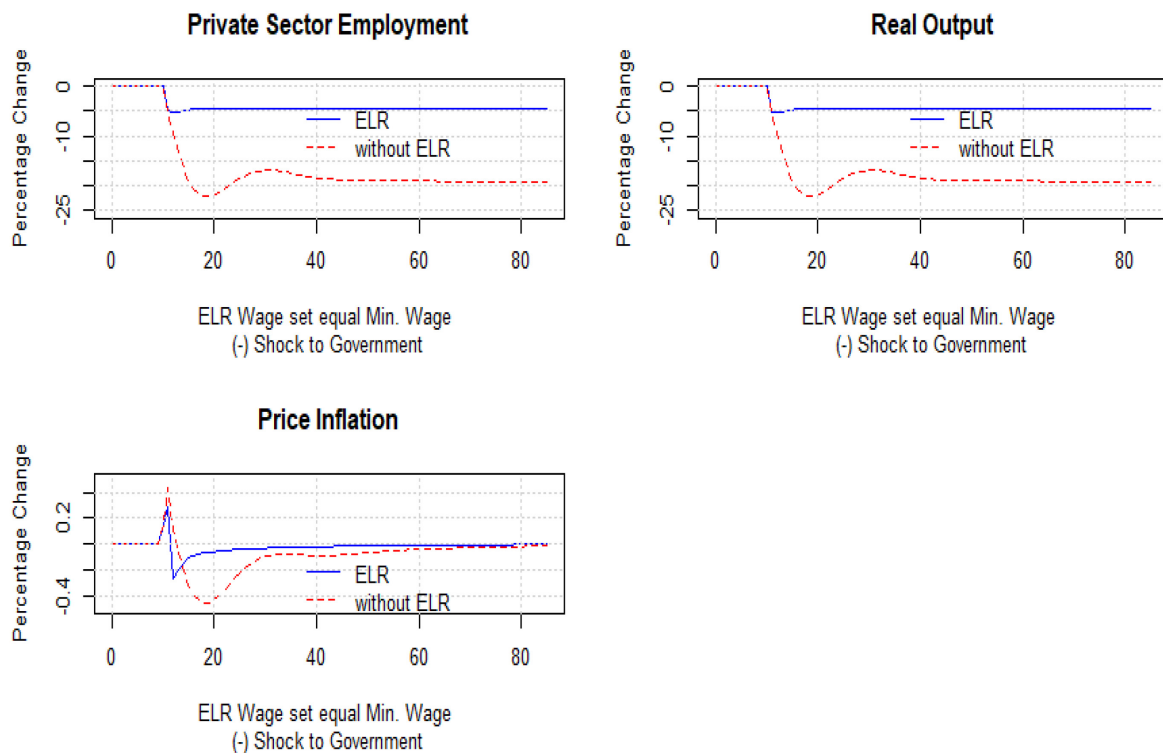


Figure 2.8. Negative shock to government expenditure: Output, employment and prices

### Discussion of Price Dynamics

The introduction of an ELR, according to Mitchell (1998, 552-553), enables the economy to function at “loose full employment” while simultaneously maintaining price stability. Loose full employment refers to a recognition that slack in the labor market would continue even at full employment. However, the slack would no longer exist in the form of unemployment; rather, the slack exists in the form of a pool of labor power (the ELR labor force) that the private sector can hire from whenever desired. This pool of labor power allows the private sector to expand production with an increase in demand, even with the economy operating at full employment.

Additional price stability mechanisms identified in the literature include the exogenous price setting of labor and the ELR’s ability to act like buffer stock programs for commodities. The government sets the ELR wage and purchases all unwanted labor power or relinquishes all

labor power demanded by the private sector. The exogenously fixed wage acts as the *numeraire* or price anchor for labor employed outside of the ELR and remains independent of labor market conditions. Specifically, the set price for labor exists as a floor and does not chase wages upward (Minsky 1973, 99-100; Mitchell and Wray 2005, 237-238). The fixed nature of the ELR wage creates a stabilizing influence on all other wages as it provides a stable base price for the determination of other wages. Setting the ELR wage above the existing minimum wage, holding the markup constant, would cause an increase in prices; moreover, as seen in Figures 2.3 and 2.4, the resulting inflation erodes purchasing power and diminishes the ELR's impact on output and employment.

According to Wray (1998, 174), the exogenous nature of the ELR wage would enable the government to stabilize the price of labor and to “impart greater price stability across the spectrum of prices of goods and services.” As demonstrated in the first simulation (Figures 2.3 and 2.4), setting the ELR wage has significant implications for the behavior of prices. The second simulation (see Figure 2.5) reinforces the claim made by Wray—the economy without the ELR experienced a larger variation in the movement of wages (a cost of production) and thus in prices (determined as a mark-up over costs) than the economy with the ELR.

The next aspect of price stability is the ELR's inherent counter-inflationary features. These features remain one of the most contested aspects of the public employment strategy. The analysis first considers the opponents' claims regarding the posited inflationary forces that would ensue with the implementation of an ELR. The critics' inflationary argument remains best understood by breaking it down into two categories: cost-push because of either wage-to-wage pressures or a wage/price spiral and demand-pull as a result of increasing aggregate demand. Opponents, most notably Malcom Sawyer (2003, 904), claim that an ELR would reduce the fear

of being fired, which would increase shirking and result in higher wage demands, thus producing cost-push inflation.

At the level of aggregation in this model, it is not possible to consider individual motivation and the resulting behavior. However, the literature suggests that an ELR would actually be more effective in disciplining labor: ELR workers demonstrate their willingness and ability to work, while private employers can hire from the pool at a slight markup over the ELR wage (Mitchell and Wray 2005, 236; Wray 1998, 131). The argument has been made that ELR workers pose a significant threat to those already employed in the private sector; Mathew Forstater (1999, 17) states that the pool of labor power employed in the ELR serves the same role as the reserve army of unemployed. Beyond the discipline factor, the implementation of an ELR, according to Forstater (1999, 14), allows workers to maintain a higher skill level, thus reducing the cost of hiring out of the ELR as opposed to hiring from the unemployed. Finally, considering that the ELR wage is exogenously set and accepts all who are willing and able to work without seeking certain employment levels or skills, it serves as a wage floor and does not exert any upward pressure on wages beyond the initial wage setting (Mitchell and Wray 2005, 238).

The second argument by opponents draws on a belief that an ELR raises employment by increasing aggregate demand. According to this interpretation, an ELR would push employment levels below supply side inflation barriers, like the NAIRU (non-accelerating inflation rate of unemployment), and result in inflation. However, this belief fails to recognize the difference in targeted spending and pump priming (lowering taxes or increasing government spending). An ELR allows the economy, as mentioned previously, to operate at loose full employment: full employment regardless of the level of aggregate demand. Given that an ELR operates independently of aggregate demand, Mitchell and Wray (2005, 236-238) conclude that policy

makers maintain an ability to influence aggregate demand through traditional fiscal and monetary policy measures without affecting the employment level. The first simulation (Figures 2.3 and 2.4) verifies parts of the opponents' claim. Introducing the ELR does indeed increase aggregate demand and generate additional inflationary pressures. The increase to aggregate demand results from providing income to those previously excluded from the provisioning process. The simulations suggest that if the ELR wage is not set significantly higher than the prevailing wage, the impact to prices is minimal and transitory. The modest impact on prices allows the ELR to have a greater impact on the level of private sector employment; when the ELR approximates the prevailing wage, the increased income to households is not eroded via higher inflation and thus facilitates greater demand and higher output and private employment. Excess capacity serves as a key characteristic of advanced capitalist economies (see Figure 2.9, which graphs Total Capacity Utilization rates for the U.S.). Given the excess capacity, the model yields results in accordance with Mitchell and Mosler (2001, 223) who state that “firms are likely to increase capacity utilization to meet the higher sales volume.”

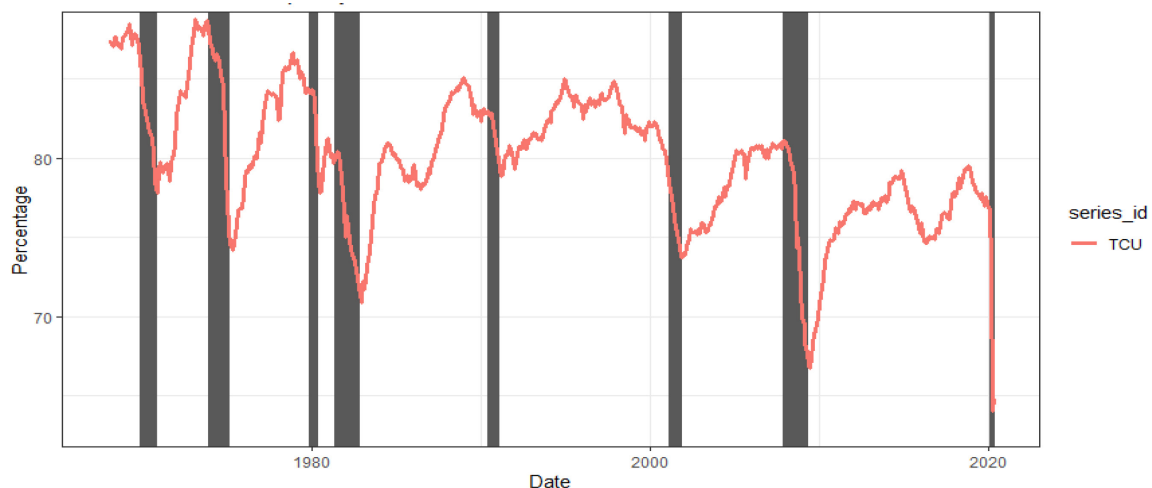


Figure 2.9. Evolution of Total Capacity Utilization  
*Source:* Board of Governors of the Federal Reserve System (U.S.)



The ELR achieves full employment independent of the level aggregate demand by utilizing a concept termed “spending on the price rule” (Mitchell and Mosler 2001, 230); this concept grants policy makers the freedom to set the price of labor and let the market determine the level of spending. Spending on the price rule contradicts the current approach, termed “spending on the quantity rule” (Mitchell and Mosler 2001, 230); the quantity rule dictates that policy makers set the amount to be spent and let market processes determine the price. Contractionary policy, if deemed desirable by policy makers, under the public employment strategy would simply cause a shift from non-ELR employment to ELR employment. Contractionary policy was the focus on the third simulation (see Figure 2.8). Contractionary fiscal policy does indeed induce a shift from private sector employment to the ELR; however, the level of employment in the private sector is much more stable with the ELR—not only does the ELR impart additional price stability, it also provides a stabilizing influence on output and employment. The increased stability across prices, output, and employment results from the negative correlation that exists between the size of the ELR and private economic activity. The causal loop diagram in Figure 2.7 demonstrates the nature of this relationship: as firms release labor, the ranks of the ELR swell, which causes the total ELR wage bill to increase. The reduction in demand through household consumption expenditure via lost wages from private employment is partially offset by the income received from public employment.

#### Discussion of Labor Market Flows

Insufficient demand, in accordance with Keynes (1964) and reasserted by A.P. Thirlwall (1993, 335), remains the primary cause of unemployment. Unemployment is a macroeconomic problem; however, J.E. King (2015, 4) acknowledges that unemployment does entail a

microeconomic dimension. These microeconomic dimensions are observed empirically as labor market flows. Specifically, heterogeneities within the labor market animate a search and match process which is timely, responsible for generating labor market flows significantly larger than those initiated by desired changes in firm employment levels, and generates worker flows which are disproportionately concentrated within a subset of the labor force.

Contrary to the approach traditionally adopted in SFC models (Godin 2014; Godley and Lavoie 2007), employees, employers, and jobs are heterogeneous. Davis and Haltiwanger (1992) and Davis, Schuh, and Haltiwanger (1997) find empirical evidence supporting heterogeneous employment dynamics at the plant-level. The success of these authors' approach spawned a literature which substantiated and encouraged further development of the equilibrium approach to unemployment as described by Dale Mortensen and Christopher Pissarides (1999) and which is presented in a very pedagogical manner in Pissarides (2000). This analysis incorporated insights from the job flow approach to modelling the labor market in utilizing a matching function. The matching function describes job-match formations as a function of both micro and macro elements. Introducing a matching function allows the analysis to capture the implications of labor market heterogeneities responsible for search and match frictions without, according to Pissarides (2000, 4), explicitly modeling the features which give rise to it. The churning flows are modelled by an additional flow out of employment that is independent of desired firm level employment and is pro-cyclical (Akerlof, Yellen, and Rose 1988, 495).

This analysis has explicitly accounted for the labor market flows representing the significant and regular occurrence of separations and accessions of employee-employer job-matches. This analysis suggests the importance of modelling the microeconomic dimensions of unemployment in facilitating a more effective ELR policy proposal as well as a more

comprehensive understanding of its effect on key economic outcomes. Labor is heterogeneous and viscous, assuming these frictions away downplay benefits afforded by the ELR. The analysis has sought to demonstrate that accounting for and modelling the sheer size of the labor market flows contains implications on labor market outcomes. Including these labor market flows into the model further demonstrates the increased stability and higher private employment levels that results from the ELR.

As evidenced in Chapter 1, approximately 17% of all job-matches are dissolved every quarter and 70% of those dissolutions are due to heterogeneities in the labor market. This large flow of workers into the pool of unemployed labor power acts as a drag on aggregate demand; however, transitioning into the ELR, as opposed to the incomeless despair of unemployment, reduces the loss of income and provides a stabilizing influence on output, employment, and prices. The analysis understates the benefits as they relate to the observed heterogeneity. The ELR, according to Mitchell and Wray (2005, 238), serves as a stock of labor power from which the private sector can draw from when it wishes to expand. The stock of labor is kept active, either working or engaged in an assisted search, preventing deterioration of skills and offering a work history which reduces costs associated with search and match; ultimately, it is conceivable the ELR should facilitate a more effective search and match process.

### **Future Developments**

The SFC model presented above incorporates the labor market heterogeneity that drives job and worker flows, a novel contribution to the SFC modelling and ELR literature. Integrating these flows promotes a greater understanding of how the ELR will influence key economic outcomes. However, a key feature of these flows is ignored—these labor market flows are concentrated among a subset of the population and drive the existence of a segmented labor

market. Ignoring the concentration of these flows downplays some of the distributional benefits afforded by an ELR. Moreover, the only constraint to the supply process are the labor market heterogeneities just discussed. Capital and the investment which leads to its production is not featured as prominently as it is in the capitalist economic system in which we live. In the following section, the shortcomings of this model are considered and future developments are discussed.

### Segmented Labor Market

In addition to modeling the heterogeneity of employees, employers, and jobs, the labor market can be divided into primary and secondary markets to better account for segmentation (Lavoie [2014] 2015, 277). Peter Doeringer and Michael Piore ([1971] 1985) and Michael Reich, David Gordon, and Richard Edwards (1973) developed this theory, which posits that there exists a primary market defined by stable jobs and higher wages and a secondary market with unstable jobs and lower wages. More recent empirical work by Burgess, Lane, and Stevens (2000, 484), Anderson and Meyer (1994, 179), and Chapter 1 of this dissertation lend credence to the claim that a segmented labor market does indeed exist. These empirical studies find evidence that there exists a subgroup of the labor force which faces a more precarious labor market experience defined by frequent turnover. In seeking to account for the segmented labor market, the household sector needs to be decomposed into those who participate in the primary or the secondary markets. This decomposition will facilitate a better understanding on the distributional implications prompted by an ELR.

However, the empirical studies on labor market flows, like the one in this dissertation, utilizes a dataset which offers no insight into those participating in the informal sector. According to a study by Daniel Flaming, Brent Haydamack, and Pascale Joassart-Marcelli

(2005, 1-4) approximately 15% of Los Angeles county's labor force participates in the informal economy; this sector is unregulated and often characterized by a disregard for basic rights of workers. While LA County is somewhat unique given its proximity to the Mexico-U.S. border, ignoring the informal sector causes this analysis to underestimate the size of the marginalized labor force that would be positively impacted with the implementation of an ELR. This shortcoming can be addressed by varying the relative size of the secondary market and measuring the sensitivity of these results.

### Investment

Minsky (2008) describes a capitalist economy as a dynamic system driven by the pursuit of profit. The profit motive restricts the economic decisions of private enterprise. Kalecki's (1971) profit equation elucidates the importance of investment in determining profit and hence the scope of its influence on economic activity. The recognition regarding the significance of investment was not restricted to academia; indeed, the stimulation of private investment has resided at the core of policymakers' approach to generating employment for at least several decades. Moreover, the undertaking of investment generates residues which influence future economic activity.

Under the current institutional structure, investment links the present and the future. This link appears as transfer of money across time: present money, required for the development of capital goods, is exchanged for the future cash flows that the capital goods is expected to generate. Utilizing finance to fund the capital development leads to the creation of a claim against the future cash flows, linking the balance sheets of different sectors. Moreover, investment leads to the production of long-lived capital goods which take time to produce. As such, positive net investment increases the size of the capital stock.

The current treatment of investment downplays its influence on the level of economic activity and diminishes the unique ability of an ELR to generate full employment independent of the profit constraint. The unique ability to circumvent the profit constraint facilitates an exploitation of the capital saturation described by Foster and McChesney (2009) in a socially beneficial manner. In so doing, the analysis considers the relations between investment, the stock of capital, the concomitant relations of each upon economic performance (including the level of employment in the private sector), and how full employment generated with the implementation of a ELR remains robust to a convincing treatment investment.

Forstater's (1999) brief, "Public Employment and Economic Flexibility," states that economic flexibility, a highly touted characteristic of private enterprise market economies, is traditionally achieved through the existence of excess capacity and unemployed resources. This flexibility enables the economy to accommodate unexpected increases in aggregate demand without spurring inflation. In the private investment employment strategy, according to Minsky (1973), private investment serves as a chief determinant of the level of economic activity and is constrained by the profit motive of private enterprise. Compounding this constraint upon economic activity, Foster and McChesney (2009) state that the U.S economy has reached the mature capitalist stage. This stage of development is characterized by capital saturation, which contributes to lower than optimal levels of economic activity. Excess capacity reduces the profit from investing, in turn reducing investment. The reduction in investment depresses overall economic activity and contributes to unemployment.

As Mitchell and Muysken (2008, 164, 201) stated, "the best attack on unemployment is to increase employment." However, employment in the private sector depends on investment, which in turn depends on profit. This profit constraint, which has been exacerbated by capital

saturation, prevents the economy from achieving full employment. The decision of “to employ or not to employ” in the private sector is wholly dependent on the criterion of expected profitability (Forstater, 1999). The government exists as the only entity that can provide an infinitely elastic demand for labor that functions independently of the profit constraint. Ultimately, the decision to employ or not to employ, when made by the government, can and should incorporate a broader set of criteria. A broader set of criteria defining the employment decision would enable the government to direct economic activity to sectors of the economy that are suffering from capital saturation and away from areas with insufficient supply. It is possible to circumvent the profit constraint and arrive at full employment while maintaining economic flexibility with the public employment strategy.

## CHAPTER 3

### THE EMPLOYER OF LAST RESORT: AN INSTITUTIONAL ADJUSTMENT TOWARDS AN INCLUSIVE PROVISIONING PROCESS

#### **Abstract**

This inquiry seeks to establish that an employer of last resort (ELR) would animate the non-invidious re-creation of community, challenge the hierarchy which permeates social and economic relations, and facilitate an institutional adjustment towards a more inclusive provisioning process. To do so, the analysis commences by revealing how the current institutional structure fails to provide a non-invidious provision of the material means of life. The first section demonstrates that the institution of ownership and the price system serve as the animating forces which create the inegalitarian power structure affecting unemployment, an inequitable distribution, and hierarchy. After describing the social problem and institutional structure, the analysis considers and extends Hyman Minsky's proposal for a public employment program.

The second section focuses on the institutional implications encouraged by the implementation of a ELR, emphasizing the interrelated nature of employment and community and their role in facilitating institutional. In drawing on the theory of institutional adjustment, it becomes clear that community remains integral to the adjustment process, providing space for organizing across historical divisions while encouraging an increased recognition of the interdependence necessary for change. The analysis draws to a close by considering how an ELR challenges the dominant and problematic institutions. The ultimate objective of the final section remains illuminating the role of an ELR in facilitating a transition towards an inclusive provisioning process: the creation of an institutional structure that reduces hierarchy and



domination and promotes equality, diversity, and autonomy, enabling all members of the community to participate in the social provisioning process.

### **Social Problems and the Institutional Structure**

This analysis begins with a powerful statement made by John Maynard Keynes [1936] (1964, 372): it remains the inability to provide full employment and an equitable distribution of wealth that persists as the greatest problems plaguing our capitalist system. Adding to Keynes's insight, Julie Mathaei and Teresa Amott (1997) assert that the current institutional structure and core economic processes reinforce an economic hierarchy which motivates domination and exploitation of one group over others, extending to nationality, race, gender, and class. Mathaei (1992) suggests that this hierarchy transpires on multiple levels, assumes many forms, and operates through numerous processes. Under the current institutional structure, money has emerged as a primary mechanism which renders power over things, other humans, and nature. Money has become the ultimate symbol of invidious distinction, functioning in accordance with a value system which equates worth with personal attributes and achievements.

The hierarchal power structure pervading society generates an invidious restriction of the material means of life, afflicting large segments of the community. Data from the American Community Survey for the year 2013 (U.S. Census Bureau, 2013) confirms that women and historically disadvantaged minorities suffer disproportionately.<sup>20</sup> The reported median income in 2013 for minorities ranges from approximately 0.63-0.74 of Whites, while females' median income was approximately 0.74 of males. Unemployment for Black or African American males over the age of 16 remains double that of their White counterparts. The hierarchal power

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<sup>20</sup> Median income for historically disadvantaged minorities was calculated using data for Black/African American, Latino/Hispanic, and Native American populations.

structure does not restrict its animus to only women and minorities; according to Pavlina Tcherneva (2015, 2), over the period of 2009-2012, the top one percent received 95 percent of all economic growth, while the top one-tenth of one percent seized 32 percent.

The problems of unemployment, an inequitable distribution, and hierarchy remain best understood in terms of social relations permeated by an inegalitarian power structure. Recognizing this structure leads to an acknowledgement that those who suffer from these problems live in subservience. If society chooses to reject this domination, it must consider how to move towards a greater degree of autonomy: what will serve as the catalyst, initiating the non-invidious re-creation of community. According to Murray Bookchin (1971, 46), this process must facilitate assembly and community; moreover, it must seek the dissolution of power and hierarchy.

This inquiry now seeks to distinguish the driving forces generating the power structure and hierarchy that plagues society. In so doing, two key institutions require consideration: Thorstein Veblen's "price system" and private ownership. The price system represents the hegemonic power exercised by business over society: the structure and processes which reinforce hierarchy through the creation of inegalitarian social and economic relations. The institution of ownership forms the foundation for the ethical consent which justifies the price system's stranglehold over society and the associated employment and distributional ills.

It was during the rise of the machine era, according to Veblen (1904, 66), that the institution of ownership experienced a great change. This change of circumstance permitted the institution of ownership to extend to the public stock of knowledge—most importantly, technology embodied in capital goods. Veblen (1904, 77; 1923, 66-67) states that this extension, considered a natural right, vests the owner unqualified power of discretionary idleness: the

ability to restrict the community's access to the material means of life. It remains this "conscientious withdrawal" that, Veblen (1921, 1-7) asserts, ensures business receives a satisfactory income in money terms for the employment of its property in the capitalist production process.

The concentration of ownership, a marked characteristic of modern society, affords business exclusive control over the production process. Veblen (1904, 1-3) notes that through this control the businessman acts as "the only large self-directing economic factor" and hence, "controls the exigencies of life under which the community lives." The businessman's enslavement to pecuniary animus spawns his disregard for community while openly pursuing predatory coercion. And it remains the hegemonic position of the price system that facilitates these acts of coercion. Relying upon the Veblenian processes of contamination, emulation, subordination, and mystification, William Dugger (1989) perspicaciously sketches the concomitant process of the emerging corporate hegemony and the hollowing of non-corporate institutions. This control, however, represents a profound dichotomy, as there exists a dissociation between the interests of business, narrowly focused on pecuniary gain, and community. Business's command over industry, with its singular focus on pecuniary gain, expedited the organization of society on the price system.

Coinciding with the rise of the machine and the previously mentioned extension of ownership to the public stock of knowledge, the putative earning capacity, derived from ownership, emerged as the ultimate goal of the price system. Veblen (1921, 4-9, 17) states that realizing the maintenance of reasonable prices relies upon a habitual restriction of the community's access to the material means of life. Given that business commands industry, it follows that business principles dictate the rate and volume of output without concern for the

community. In Veblen's words, "price is the essence of the case, livelihood is not." Not only does the price system determine access to the material means of life, but, according to Max Lerner (Veblen & Lerner 1948, 26), the price system also dictates social values and furnishes the "cash nexus," facilitating the association of personal attributes and worth with the ultimate symbol and value of a pecuniary social system.

As the machine process proliferated, there emerged an increasingly important role for business relations to maintain the functioning of the interrelated subsystems that constitute the economic process. This new agency for the owners of the sub-processes allowed them to induce a differential advantage, achieved with an alteration of values, through manipulation of relations and transactions. Of particular interest remains the continuation, albeit in a transformed manner, of inegalitarian power relations based on gender, race, nationality, and social standing. According to Matthaey (1999, 598), a new form of hierarchy has emerged which no longer remains characterized by rigid divisions, particularly along gender lines. However, traditionally masculine activities, although now more freely accepting of women (especially those with class and/or race privilege) continues to receive higher valuation than traditionally feminine activities. At the core of these processes remains a struggle to dominate others in the economic hierarchy.

When the institutional structure, according to Paul Bush (1987, 158), fails to provide a non-invidious provision of the material means of life to the community, social problems arise. And solutions to social problems rely on progressive institutional change, change which contributes to the continuity of life. Marc Tool (1979, 293) adds that progressive institutional change facilitates the non-invidious re-creation of community. Thus, progressive institutional change does not accept the equating of worth with personal attributes and achievements:

progressive institutional change rejects hierarchy and promotes inclusion throughout the community.

### **Employment and Community**

According to J. Fagg Foster (1981, 930), addressing social problems, such as those described in the first section, necessarily involves an institutional adjustment. Foster's theory of institutional change operates within an institutionally defined space, requires deliberate choice by members of the community, and must not displace non-problematic institutions. In what follows, the analysis seeks to establish that an ELR would not only address unemployment and distributional problems but would serve to restore community. Community exists as the institutional space that will promote a recognized interdependence and create social relations capable of subverting the price system's hierarchal structure, facilitating a transition towards a more inclusive provisioning process.

Minsky (1965, 1973, [1986] 2008) emphasized the need for an ELR to effectively combat poverty, sustain effective demand, and constrain economic instability. Minsky's proposal contains four key features: exogenously determined compensation, no means test for employment, permanent status with voluntary participation, and federally funded while locally implemented (i.e., a decentralized administration). David Brady (2003, 392) and Isabel Sawhill (1988, 1110-1112) both find evidence that unemployment serves as a primary cause of poverty. William Mitchell and Joan Muysken (2008) come to the conclusion that the best approach to alleviating unemployment involves increasing employment rather than addressing supply-side issues. By simply offering a job to anyone willing and able to work, the greatest structural challenge—a shortage of jobs—in confronting poverty would cease to exist. And, according to

Minsky (1965), targeted spending through direct job creation facilitates the greatest primary and secondary effects in combating poverty.

The current approach to generating employment relies upon inducing investment through the special treatment of capital income. Minsky (1973) notes that not only does this special treatment amplify instability, but according to a Congressional Research Service report by Thomas Hungerford (2011), the rising share of capital income served as the greatest contributor to the increasing inequality over the first decade of the 21st century. Utilizing direct job creation would allow policy makers to abandon the special treatment that capital income currently receives. The public employment strategy would increase stability while simultaneously reducing a key component stimulating inequality.

Extending Minsky's analysis provides additional insight into the role of an ELR in animating a transition towards a more inclusive provisioning process. Drawing on the ideas of inclusive democracy as developed by Takis Fotopoulos (1997), participatory economics as presented by Robin Hahnel (2012) and Michael Albert (2003), and the feminist economic ideas of Matthaëi (1999) leads to a vision of society that rejects hierarchy and aims at the elimination of domination through the creation of an institutional structure that promotes equality, diversity, autonomy, and strives to include all members of the community in the social provisioning process.

The potential impact to the community of an ELR extends beyond the provision of employment; in fact, Minsky's proposal allows for great secondary impacts to propagate throughout the community. An ELR affords opportunities which coincide directly with key community building concepts as put forward by Gar Alperovitz, David Imbroscio, and Thad Williamson in their 2002 book *Making Place for Community*. By taking workers where they are

and as they are, an ELR ensures a strong economic presence in underdeveloped communities plagued by unemployment. This presence acts as a form of anchoring; according to Alperovitz, Imbroscio, and Williamson (2002, 68), anchored communities tend to display greater stability. Long term stability in JG anchored communities derives from a decreased reliance on private investment to drive economic development; while in the short term, stability arises from the support provided to local businesses, encouraging the development of local linkages. The decentralized administration of an ELR would further stimulate local linkages as a community-based decision making process should enhance support of local firms and cooperatives. It follows that an ELR would greatly diminish the community's dependence on the exigencies of the market in pursuit of the material means of life.

In accordance with Veblen, John Curl (2012, 2-3, 246, 354) states that, coinciding with the rise of the machine, there began a transformation that forced the "free" population into wage slavery. Utilizing an ELR to support development of cooperatives (co-ops) would contribute to a reversal of that transformation, aiding restoration of community and reducing hierarchy. According to Curl, cooperatives offer an alternative to wage slavery through facilitating a re-organization of life on a different basis, subverting the typical hierarchal structure and precarious employment generated under the price system. Moreover, an ELR can empower co-ops to provide public works and services that benefit the locality. The organizational structure of co-ops promotes a bottom-up inclusive process in both work and community, directly contradicting the top-down structure of the price system which marginalizes those who do not fit. Undoubtedly, this bottom-up process remains better suited to provide for the needs of people.

The impact of community economic stability contains grand implications. Alperovitz, Imbroscio, and Williamson (2002, 2-7) note that a robust economic foundation enhances the

communities' social capital, bolsters cultural worth, and affords social validation. Additionally, an economically vigorous community will foster inclusiveness of diverse political interests, especially at the local level, animating a tendency towards a great social leveling. Developing stable geographic communities would provide space for organizing across historical divisions. Moreover, this space, in accordance with Foster's (1981, 933) principles of institutional adjustment, would increase a recognition of the interdependence of community members, facilitating a transition away from the price system.

Returning to Dugger's analysis illuminates how an ELR would not only end unemployment, but also serve to restore the hollowing institution of community: an ELR would provide substance by engaging individuals in activities which surpass the mere pursuit of pecuniary gain. An ELR would not only serve to restore community, but simultaneously facilitate resistance to hegemony. Restoring community would strengthen and protect its independent functioning, a key component of promoting a pluralist culture. According to Dugger (1989, 1-5), a pluralist culture consists of a multitude of independent institutions, serving to promote a synthesis of values and beliefs. The diversity involved in a pluralist culture creates individual will and strengthens character. Pluralism animates the process of freedom—the freedom from conformity and the freedom to stimulate individual maturity. Hence, an ELR affords great potential in restoring the institution of community, encouraging resistance to corporate hegemony.

In a 2010 article, Jon Wisman (46) suggests that the hollowing out of the institution of community leads to increased withdrawal from social activities. Further reinforcing this argument, Amartya Sen (1997, 161) adopts a broad view of poverty, facilitating an understanding of the nature of deprivation resulting from unemployment. Sen states that



unemployment predisposes people to social exclusion. This marginalization encompasses economic activities as well as participation in community life and political processes. Considering the extent of the deprivation initiated by unemployment, it becomes clear that the restorative ability of an ELR to the community extends beyond the mere provision of employment.

Drawing on the ideas of Bookchin (1993, 48-50) and his portrayal of community under Confederalism illustrates the importance of community in challenging the existing power structure. For Bookchin, communities comprise a local, interdependent public space which facilitates active participation in social processes. Active participation encourages an inclusive, bottom-up power structure that, according to James Scott (2012, xii, 19), promotes cooperation without hierarchy. This structure involves “informal, self-organized, and transient networks of neighborhood, work, and family that lie outside the formal institutions of politics.”

Experiences from previous public employment programs serves to illustrate the actual impact beyond the provision of employment to the community. The New Deal Programs influenced community life through the arts and provision of a host of public goods and necessities. The numerous alphabet programs of the New Deal served to engage community and individuals outside the realm of the price system. An example provided by Curl (2012, 315-322) describes the formation of new co-ops and assistance to existing ones. Moreover, Curl depicts how New Deal programs actually went beyond influencing community, directly creating 99 new communities, which housed approximately 50,000 residents with the New Deal homestead colony program. While, according to Tcherneva and L. Randall Wray (2007), the *Jefes* program in Argentina included projects specifically designed to address community needs, including construction of new or renovation of existing community centers, and provision of imperative

services such as food kitchens, family attention centers, and health promotion programs.

Furthermore, reliance on a decentralized administration facilitated the *Jefes* program to address the most pressing needs of communities. Beyond providing needed services to communities, *Jefes* greatly enhanced civic participation, drawing people from a broad range of social strata into political processes. Although these programs were historically specific, it remains clear that there exists huge potential for an ELR to contribute to the restoration of the community, thereby enhancing community life and social cohesion.

Tcherneva and Wray (2007, 24-25) note another very interesting result from the *Jefes* experience: the contribution towards redefining the meaning of work. A principal accomplishment in challenging the price system and the associated patriarchal processes emerged with the vitiation of the preconception that traditionally unpaid activities (typically associated with feminine roles) are unproductive. This bias clearly stems from the subordination of society to the primacy of the price system, the contamination by pecuniary values, and the continued existence of patriarchal institutions. The provision of paid employment for “unproductive work” not only challenges historic patriarchal tendencies and the primacy of the price system, but serves to strengthen community. According to John Budd (2011, 107-42), the prevailing conceptualization of work derives from social institutions and the associated power nexus. Thus, redefining work in and of itself serves as a challenge to dominant institutions. However, when considering that this work often entails community-oriented goals and/or traditionally feminine activities, it becomes apparent that extending the conceptualization of work into this sphere provides additional substance, meaning, and value—key sources of institutional resistance—to community, presenting a challenge to the hegemony and hierarchy which marks the current institutional structure.

Mathew Forstater (2013, 145-54) describes how Municipal Confederalism can serve as a framework for an ELR. In so doing, Forstater posits the importance of work for human development, claiming it exists as an integral component of human experience. Unemployment denies this opportunity; whereas, Albert (2003, 104) notes that the hierarchal organization under the price system disparately empowers a select few, further reinforcing hierarchy through class, gender, and racial divisions. Both Forstater and Albert contend that the organization of work can serve to balance this integral component of human experience. An ELR, through its capacity to operate outside the realm of the price system, can organize work so that it empowers all, regardless of any demarcation, equally.

### **Ownership and the Price System**

Dugger (1989, 53-54) states that the hegemonic culture encourages whatever means necessary to achieve a given end, emphasizing ends over means. Within the current institutional structure, a shortsighted, narrow view of profit maximization dominates. Not only does this approach serve to hollow out the non-corporate institutions (family, school, union, church, community, state, and mass media), but, according to Forstater (1999, 7-8), it requires maintaining flexibility—an ability to adapt to changing circumstances. The permanence of unemployed resources, including most notably labor power, enables maintenance of the desired flexibility. Forstater states that system flexibility facilitates an expansion of capital accumulation by attenuating structural rigidities. This flexibility benefits the businessman and corporation at the expense of the community.

In accordance with Veblen (1904, 286-287) and Dugger (1989, 8) who both observed that the state serves as an instrument of domination, Forstater (1999, 8) asserts that flexibility, maintained through politically forced unemployment, occasions unnecessary and unacceptable

economic and social costs to the community. The narrow criteria dictating economic decisions in the private sector does not harmonize with the broader well-being of the community. And only the government, through its ability to divorce the employment decision from the profit constraint, possesses the unique capacity to place means in their proper relationship to ends in the social-economic processes of a capitalist system. A monetarily sovereign government possesses the means; what the state lacks, however, remains the will.

In Veblen's analysis, the state acts chiefly to represent the interests of business and, according to Dowd (1966, 132-134), state power remains the expression of those dominant interests. Furthermore, Veblen (1904, 286-287) notes that this subservience to business interests remains unchallenged as the community naïvely believes that their material welfare coincides with the pecuniary pursuits of business. According to Colin Ward (1973, 12), it remains this subscription to business values by the community that allows the unchallenged domination of business over society. The subreption of business values, Dowd (1966, 105, 134) states, has gone so far as to become accepted unthinkingly. Yet, social wellbeing does not necessarily parallel business propositions. Dowd expands upon this discord by considering the propensity for emulation, stating that a virtual enshrinement of businessmen substantiates the fashioning of politics in their image. This fashioning undoubtedly contributed to the price system emerging as a dominant influence in the socio-economic process. In the concluding pages of *Absentee Ownership*, Veblen (1923, 442-445) reaffirms the primacy of the price system and its subreption of the state, asserting that the state remains a predatory fraternity with a reverence for applying business principles to socio-economic problems. In Veblen's (1904, 379) own words, "[t]he question, therefore, remains, on the whole, a question of what businessmen may be expected to do for cultural growth on the motive of profits."

Regardless of the dominance assumed by the price system, according to Lerner (Veblen and Lerner, 1948, 27), Veblen's theory of power stresses that it remains the community which exhibits the disposition for slaughter. It follows that there exists a recognized interdependence in the institutional adjustment brought about by implementing an ELR. This interdependence, according to Foster (1981, 933), implies that a deliberate choice must be made by those who are to break with previous behaviors. This break will first require a recognition on the part of the community that the inalienable rights of pecuniary obligation and ownership as defined during the eighteenth century no longer, as Veblen [1919] (2002, 112) observed, safeguard the "rule of Live and Let Live." And secondly, the ensuing institutional adjustment, according to Marc R. Tool (2000, 202), must be readily adapted into the existing institutional structure, only displacing the non-instrumental functions of problematic structures. An ELR would not completely displace the price system, nor the market where it conducts its business. Rather, implementing an ELR functions in accordance with Foster's principal of minimal dislocation; as Minsky (2008, 112) noted, the market mechanism suffices in making unimportant social decisions (i.e., decisions like those regarding ice cream flavors). However, Minsky asserts that the market consistently yields undesirable results on important issues; most notably maintaining economic stability, capital development, and education and training.

An ELR serves as an initial step toward the realization of an inclusive provisioning process. According to Veblen (2002, 111-114), this realization requires displacing the vested interests' legitimate right in "getting something for nothing." While an ELR does not completely dispose of this feature, it does present a formidable challenge to the interpretation of the principal "inalienable right" which motivates it—ownership. Ownership, specifically of the means of

production and the technology embodied within it, confers the right to the vested interests to control economic activity: to restrict the community's access to the material means of life.

Through decentralized administration, an ELR places a portion of the means of production under demotic control of the community, initiating a re-appropriation of the material means of life. This re-appropriation of the means of production, however, does not result in a redistribution of ownership as understood under the price system. Rather, the re-appropriation affords the community the power to determine user rights. Drawing from the work of Hahnel (2012, 21-32, 46) enables this analysis to consider how communal "ownership" of the means of production promotes an egalitarian outcome. First, communal ownership maximizes the benefit afforded to the community via the power to decide which tasks are undertaken: it transfers power to community, facilitating the community to meet its most pressing needs uninhibited by pecuniary motives. Second, an ELR would address a grave flaw in the contribution-based maxim underlying the current distributional structure—the punishment of those who remain unable to find employment (i.e., unable to contribute) due to a lack of jobs. The redistribution of ownership and improved distributional structure serve to increase economic justice—moving towards a distribution of economic benefit more closely paralleling the degree of effort and personal sacrifice expended.

It has been established that an ELR challenges the price system by engaging people outside of its realm. According to Hahnel (2012, 13-15), there exist four fundamental activities within any organization of the provisioning process; thus, any transition away from the current organization towards a more inclusive process must address these four key components. The inquiry now seeks to establish how an ELR addresses these components, while also promoting

key elements of citizenship, which, according to Fotopoulos (1997, 216-217), remain integral in achieving an inclusive provisioning process.

The first two aspects, both restricted by the profit constraint and dictated by the price system, concern decisions regarding the organization of work and production. Furthermore, Joan Acker (2006, 441) states that a great deal of the economic and social inequality originates with the organizing and daily activities of work. In contrast, decisions defining the organization of work and production inside the JG transpire independent of the profit constraint and outside the realm of the price system. Thus, organization under an ELR can place means in the proper relations to ends, considering the impact to community while specifically designing jobs and projects to reduce hierarchy. Distribution, traditionally based on the contribution maxim, would no longer exclude the unemployed, as an ELR ensures anyone who is willing and able to work has the opportunity to do so. Moreover, an ELR presents a serious challenge to the institution of ownership which serves to substantiate this maxim. The exogenously determined compensation can ensure satisfaction of basic needs, a critical component of social citizenship. The gradual shift of control over the means of production would benefit the community; specifically, it would afford the community greater autonomy over the material means of life. This structure of demotic ownership serves as an integral component of economic citizenship uninhibited by inegalitarian power relations. Finally, with concern to the allocation of resources—the distribution of burden and benefits—an ELR would increase participation across a broad spectrum of society in the allocation decision through its decentralized administration. This increased participation would grant the community greater influence over allocation and represents the final element of Fotopoulos's (1997) economic citizenship.

It follows that an ELR addresses the four key activities while engaging individuals outside the realm of the price system and promoting active citizenship, thus facilitating an increased space for autonomy and expression while reducing marginalization. According to Hahnel (2012, 90-91), this increased autonomy would animate a transition towards a more participatory process. However, the need for a broader view of the ultimate goals of the transition process and contributions from an ELR requires further explication. Under the current institutional structure, hierarchy (including class, racial, and gender demarcations) stems principally from the institution of ownership. In accordance with Hahnel (2012, 13-19), an ultimate goal of an ELR-driven transition towards an inclusive provisioning process remains the creation of a non-hierarchical community. However, Ward (1973, 24) notes that the concentration of power, stemming from the hegemony of the price system and the institution of ownership, serves as the primary obstacle to progressive social change. In challenging the price system, an ELR directly contests the foundation of hierarchy and the ultimate obstacle to progressive social change—the institution of ownership. Furthermore, an ELR affords greater economic democracy: an ELR extends decision making power to those affected to a greater degree. An emphasis on communization of the economic process and development of local linkages will parallel a rise in solidarity—concern for the well-being of others. And ultimately, an ELR would facilitate greater economic justice, as economic reward would no longer exclude the members of the population for which no jobs exist.

### **Conclusion**

This inquiry has sought to establish that an ELR would animate a non-invidious re-creation of community, challenge the hierarchy which penetrates society on many levels, and facilitate an institutional adjustment towards a more inclusive provisioning process. In so doing,



the analysis depicted how the current institutional structure fails to provide a non-invidious provision of the material means of life. The first section established that the institution of ownership and the price system serve as the driving forces behind the inequalitarian power structure that propagates unemployment, an inequitable distribution, and hierarchy. After describing the social problem and institutional structure, the analysis considered and extended Hyman Minsky's proposal for a public employment program. The second section focused on the institutional implications brought about by the implementation of an ELR, emphasizing the restoration of community and its role in subverting the dominant and problematic institutions. In drawing on Foster's theory of institutional adjustment, it became clear that community and work exist as integral elements in the adjustment process, providing space for alternative social relations and encouraging a recognized interdependence. The analysis drew to a close by considering challenges presented by an ELR to the institution of ownership and the price system. The final section illuminated the role of an ELR in transition towards an inclusive provisioning process: the creation of an institutional structure that reduces hierarchy and domination and promotes equality, diversity, and autonomy, providing opportunity for all members of the community to participate in the social provisioning process.

## APPENDIX

### EQUATIONS, PARAMETERS, AND VARIABLES

Lower case is in real terms

Upper case is in nominal terms and people

<sup>T</sup> denotes targeted value

<sup>e</sup> denotes expected value

$\bar{\phantom{x}}$  denotes exogenous variable

bold denotes stock

### Variables

$AF$  – amortization funds

$C_c$  – consumption demanded by capitalists

$C_d$  – consumption demanded

$C_s$  – consumption supplied

$C_w$  – consumption demanded by workers

$c_c$  – real consumption capitalists

$c_w$  – real consumption workers

**$DD$  – demand deposits**

**$dd$  – real value of demand deposits**

$G_D$  – Government demand

$G_S$  – Government supplied

$g$  – real government expenditure

$GDP$  – Gross domestic product

$I_d$  – Investment demanded

$I_s$  – Investment supplied

$in^T$  – target level of real inventories

$in^e$  – expected level of real inventories

**$in$  – real inventories**

**$IN$  – Nominal value of inventories**

$JD$  – job-matches destroyed

$JM$  – job-matches created

**$L_d$  – loans demanded**

**$L_s$  – loans supplied**

$\overline{MW}$  - minimum wage

**$\bar{N}$  – labor force**

**$N_{etr}$  – employment level ELR**

**$N_f$  – employment level firm**

$N^T$  – targeted employment level

$NHUC$  – normal historic unit costs

$\omega$  – nominal wage aspiration

$P$  – price

$\Pi$  – total profits paid out to capitalist households

$\Pi_b$  – profits from banks

$\Pi_f$  – profits from firms

$\pi_c$  – rate of cost inflation

$\pi_p$  – rate of price inflation

**$R$  – base money**

$r_{td}$  – interest rate on deposits

$r_l$  – interest rate on loans

$\bar{r}_r$  – policy rate

$S$  – sales

$s$  – real sales

$s^e$  – expected real sales

$t$  – labor market tightness

**$TD$  – time deposits**

$T_c$  – taxes supplied by capitalists

$T_d$  – taxes demanded

$T_s$  – taxes supplied

$T_w$  – taxes supplied by workers

$UC$  – unit costs

$\overline{W}_{elr}$  – wage for job guarantee  
 $W$  – nominal wage  
 $WB_{elr}$  – wage bill ELR  
 $WB_f$  – wage bill firms  
 $WB_{jg}$  – wage bill for job guarantee  
 $WB$  – total wage bill  
 $YD$  - disposable income  
 $y$  – real output  
 $yd_c$  – real disposable income capitalists  
 $yd_w$  – real disposable income workers

## Parameters

<sup>T</sup> denotes targeted value

<sup>e</sup> denotes expected value

$\sigma$  – inventory to sales ratio  
 $\gamma$  – partial adjustment parameter for real inventories  
 $\beta$  - partial adjustment parameter for expected real sales  
 $\psi_1$  – job-match creation rate  
 $pr$  – average productivity of labor  
 $\psi_2$  – job destruction rate  
 $\varphi$  – markup for price  
 $add$  – interest rate differential  
 $\theta_w$  – tax rate on workers  
 $\theta_c$  – tax rate on capitalists  
 $\alpha_1$  – sensitivity of consumption to real disposable income  
 $\alpha_2$  – sensitivity of consumption to real wealth  
 $\Omega_0$  –autonomous wage demand  
 $\Omega_1$  – markup over minimum wage  
 $\Omega_2$  – Sensitivity to labor tightness  
 $\Omega_3$  – partial adjustment of nominal wage to aspired wage

$\eta$  – additional government expenditure for every ELR employee

## Equations of Model

1.  $C_D = C_w + C_c = C_S$
2.  $I_D = I_S$
3.  $G_D = G_S$
4.  $T_D = T_S = T_w + T_c$
5.  $WB = WB_f + WB_{elr}$
6.  $\Pi = \Pi_f + \Pi_b$
7.  $GDP \equiv C_S + I_S + \Delta IN + G_S + WB_{elr} \equiv WB_f + \Pi_f + AF + r_{L-1}L_{-1} + WB_{elr}$
8.  $y = s^e + in^e - in_{-1} = s^e + \Delta in^e$
9.  $in^T = \sigma^T \cdot s^e$
10.  $in^e = in_{-1} + \gamma(in^T - in_{-1})$
11.  $in = in_{-1} + (y - s)$ 
  - a.  $in - in^e = s^e - s$
12.  $s^e = \beta s_{-1} + (1 - \beta)s_{-1}^e$
13.  $s = c + i + g$
14.  $\Delta N_f = JM - JD$
15.  $JM = \psi_1 \cdot (N^t - N_{f,-1})$
16.  $N^T = \frac{y}{pr}$
17.  $JD = \psi_2 \cdot N_{f,-1}$
18.  $WB_f = W_f \cdot N_f$
19.  $UC = \frac{WB_f + r_l \cdot L_d}{y}$
20.  $IN = in \cdot UC$
21.  $S = P \cdot s$
22.  $P = (1 + \varphi)NHUC$
23.  $NHUC = (1 - \sigma^T)UC + \sigma^T(1 + r_{L-1})UC_{-1}$
24.  $\Pi_f = S + \Delta IN - WB_f - AF - r_{l-1} \cdot L_{-1}$

25.  $L_D = L_{D,-1} + I_D - AF + (IN - IN_{-1})$   
 a.  $\Delta L_D = I_D - AF + \Delta IN$
26.  $L_S = L_D$
27.  $r_l = r_r + add$
28.  $r_{td} = r_r - add$
29.  $\Pi_b = r_{l,-1} \cdot L_{-1} + r_{r,-1} \cdot R_{-1} - r_{TD,-1} \cdot TD_{-1}$
30.  $\Delta DD_S + \Delta TD_S = \Delta L_S + \Delta R_S$
31.  $T_w = \theta_w \cdot (WB_f + WB_{elr})$
32.  $YD_w = WB - T_w$   
 a.  $YD_w = (1 - \theta_w) \cdot WB$
33.  $YD_c = \Pi_f + \Pi_b + r_{td} \cdot TD_{-1} - T_c$   
 a.  $YD_c = (1 - \theta) \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1})$
34.  $T_c = \theta_c \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1})$
35.  $\Delta V_c = YD_c - C_c$
36.  $\begin{bmatrix} DD \\ TD \end{bmatrix} = \begin{bmatrix} \lambda_{10} \\ \lambda_{20} \end{bmatrix} V + \begin{bmatrix} \lambda_{11} & \lambda_{12} \\ \lambda_{21} & \lambda_{22} \end{bmatrix} \times \begin{bmatrix} 0 \\ r_{TD} \end{bmatrix} + \begin{bmatrix} \lambda_{13} \\ \lambda_{23} \end{bmatrix} YD_c$   
 a.  $\lambda_{10} + \lambda_{20} = 1$   
 b.  $\lambda_{11} + \lambda_{21} = 0$   
 c.  $\lambda_{12} + \lambda_{22} = 0$
37.  $DD = V_c - TD$
38.  $c = c_w + c_c$
39.  $C = C_w + C_c$
40.  $yd_w = \frac{YD_w}{P}$
41.  $C_w = c_w \cdot P$
42.  $c_w = yd_w$
43.  $v_c = \frac{V_c}{P}$
44.  $c_c = \alpha_2 v_{c,-1}$
45.  $C_c = c_c \cdot P$
46.  $t = \frac{N}{\bar{N}}$

47.  $\omega^T = \Omega_0 + \Omega_1 \cdot MW + \Omega_2 \cdot t$
48.  $MW = \begin{cases} \overline{MW}, & \text{without Job Guarantee} \\ W_{jg}, & \text{with Job Guarantee} \end{cases}$
49.  $W = W_{-1} + \Omega_3(\omega^T - W_{-1})$
50.  $\pi_c = \frac{UC - UC_{-1}}{UC_{-1}}$
51.  $\pi_p = \frac{P - P_{-1}}{P_{-1}}$
52.  $G = \begin{cases} \bar{G} & , \text{ without ELR} \\ \bar{G} + \eta \cdot (\bar{N} - N_f), & \text{ with ELR} \end{cases}$
53.  $g = \frac{G}{P}$
54.  $r_r = \bar{r}_r$
55.  $WB_{elr} = W_{elr} \cdot (\bar{N} - N_f) = W_{elr} \cdot N_{elr}$
56.  $T = \theta_w \cdot (WB_f + WB_{elr}) + \theta_c \cdot (\Pi_f + \Pi_b + r_{td} \cdot TD_{-1})$
57.  $\Delta R_s = G + WB_{elr} + r_r \cdot R_{-1} - T$
58.  $PQ \equiv C + I + \Delta IN + G \equiv W_F N_f + r_L \cdot L + \Pi_f + AF$
59.  $\Delta R \equiv \Delta V - \Delta L$
60.  $\Delta R = 0$
61.  $\Delta IN + I_d - AF = \Delta L = 0$
62.  $\Delta DD + \Delta TD = \Delta V_c = 0$
63.  $\Delta N = 0$

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## VITA

Brandon Oakley McCoy was born September 10, 1981 in Northern California. After graduating high school, he moved to Cochabamba, Bolivia. It was a tumultuous time in Cochabamba as the people took to the streets to battle neoliberal economic policies in what is now known as the “Water War.” After helping the people of Bolivia victoriously expel the transnational corporation and reclaim the community’s water, Brandon returned north. He spent the next decade as a seasonal migrant in the service industry, working at ski resorts in the winter and national parks during the summer with frequent trips back to South America in between seasons.

A product of the community college system, he attended Sierra College, South Lake Tahoe Community College, and Portland Community College. After an illustrious career as a community college student, Brandon transferred to Lewis & Clark College in Portland, Oregon, where he was awarded a B.A in Economics with departmental honors. He continued his education at Portland State University where he pursued post-baccalaureate studies in Mathematics, Economics, and Systems Science.

In addition to his academic journey and South American adventures, Brandon is a motorcycle enthusiast, amateur mechanic, and avid outdoorsman.

Mr. McCoy entered the University of Missouri at Kansas City Interdisciplinary Ph.D. program with a passion for understanding the social provisioning process. He was motivated by his experience in Bolivia, particularly the indigence he witnessed while there and his experience battling neoliberal policies and transnational corporations. Upon completion of the Doctor of Philosophy degree, Mr. McCoy plans to continue researching and teaching.