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The Reserve Army of Labour in the Postwar U.S. Economy: Some Stock and Flow Estimates

By

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Abstract

This paper presents some estimates of the stock of the reserve army of labour, and flows into and out of the reserve army of labour for the postwar U.S. economy. Estimates of stocks are presented for the period 1948–2011 at a monthly frequency; 6 month moving average estimates of flows into and out of the reserve army of labour are presented for the period 1990–2011. Some interesting patterns in the stock and flow data are pointed out, and it is suggested that this data base on the active and reserve army of labour can be used for empirical analysis of the labour market from a Marxian theoretical perspective.

JEL Codes: B51, O1.

Keywords: Marxian political economy, reserve army of labour, labour market.

1 Introduction

While the mainstream tradition in economics has always had acute theoretical discomfort in dealing with the large pool of unemployed and under-employed labour in typical capitalist economies, the Marxian tradition has accorded it a central place in the analysis of the dynamics of capitalist economies. While unequivocally rejecting Malthus' theory of population, Marx proposed the concept of the reserve army of labour (RAL) as the specifically capitalist mechanism to keep wages from rising beyond the limits conducive to the profitability of capital (Marx, 1992). According to Marx, cyclical fluctuations of the RAL is the mechanism in capitalism that mediates the demand for and supply of labour, and ensures that real wages are kept within the bounds favourable to the needs of capital accumulation. In this paper, we present some estimates of stocks and flows related to the RAL for the postwar U.S. economy, and comment on the patterns observed in the data.

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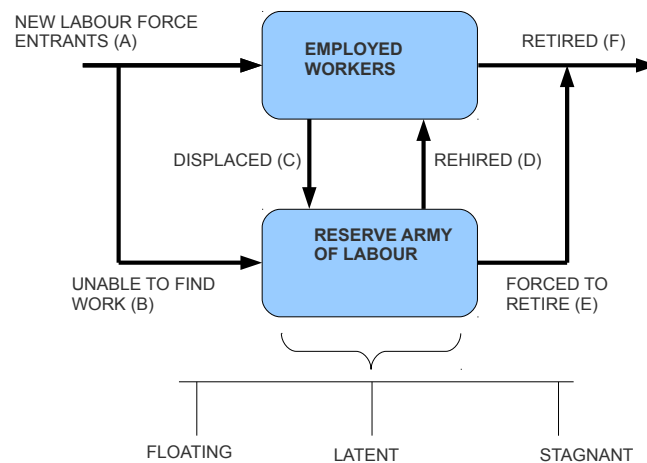


Figure 1: A schematic representation of the two main components of the labour market, the active army of labour (the pool of employed workers) and the reserve army of labour. Various types of labour flows that replenish and deplete the active and reserve army of labour are also indicated. Source: adapted from Sweezy (1942).

To set the stage for the empirical estimates, let me briefly recapitulate the theoretical argument for the structural importance of the RAL. In a typical capitalist economy, the labour market can be divided into two parts, the active army of labour (the pool of employed workers) and the reserve army of labour. The reserve army of labour is what Marx referred to as the “relative surplus population”. This is the pool of labour that is currently “surplus” relative to the needs of capital but that can potentially be drawn on if needed. The RAL is composed of three parts: the floating RAL, the latent RAL and the stagnant RAL. The floating RAL gets primarily recruited through the displacement of workers due to mechanization, economic downturns and relocation of production. The latent RAL is primarily composed of household labour (mainly of women) and subsistence farmers (in the periphery of the global capitalist system); it is a potential source of labour that can be, and has been, tapped into with the increasing labour force participation of women and globalization of production. The stagnant RAL is composed of people who live on the margins of society, workers who have dropped out of the labour force because of long periods of unemployment, and workers whose skills have deteriorated and have become obsolescent (Marx, 1992; Foley, 1986).

Figure 1, adapted from Sweezy (1942), presents a schematic representation of the labour market in a typical capitalist economy. It highlights both the stock of the active and reserve army of labour and the various flows that replenish or deplete those stocks.¹ With population growth, there

¹There is a large literature within mainstream economics that studies flows in labour markets; for a summary of

is a steady stream of new entrants to the labour market every period. The flow of new entrants breaks off into three branches: those who find jobs, those who do not find jobs but keep actively looking for jobs and those that stop looking for jobs. The first branch is the flow of new labour market entrants into the active army of labour and is represented in Figure 1 as flow (A); the latter two branches are the flow of new entrants into the reserve army of labour, and is represented in Figure 1 as flow (B).

When the pace of capital accumulation is high, jobs are created rapidly so that the reserve army of labour is gradually drawn down. Increase in the size of firms due to re-investment of surplus value, and opening up of new industries and new firms due to technological discoveries or growth of the market generally increase the demand for labour power, leading to an increase in the flow of workers from the reserve to the active army of labour. This flow, which reallocates labour between the active and reserve army, is represented in Figure 3 as flow (D).

When growth in the demand for labour power starts drawing down the reserve army of labour to the point that real wages start increasing, incentives for labour saving technical change increase. Displacement of labour due to mechanization, reduced pace of accumulation due to falling demand, bankruptcy of existing firms during severe recessions and relocation of production to other geographical areas increases the flow of workers from the active to the reserve army of labour; workers are either unemployed or drop out of the labour force altogether. This flow, which again reallocates labour between the active and reserve army, but in an opposite direction, is represented in Figure 3 as flow (C).

At all times, there is a steady stream of workers leaving the capitalist labour market every period. One branch of this stream is composed of the workers who retire out of the active army; another branch is those who retire (or are forced into retirement) out of the reserve army. These two flows are represented in Figure 3 as (F) and (E) respectively.

The rest of the paper is organized as follows: section 2 discusses the data sources; section 3 and section 4 present estimates of stock and flow variables, respectively, related to the active and reserve army of labour; the last section concludes with some thoughts about future research on labour markets from a Marxian perspective.²

2 Data

The main source of data for estimating the size of various stocks and flows related to the active and reserve army of labour (and the pool of employed workers) in the U.S. is the monthly survey conducted by the Bureau of Labour Statistics (BLS) of the U.S. Department of Labour called the Current Population Survey (CPS).³ The CPS has been conducted every month since 1940 (when it was initiated as the Work Projects Administration Project), and currently 60,000 households appear in the sample (which translates to about 110,000 individuals). Every month a fourth of

some recent research and data sources see Davis et al. (2006). Despite the insightful discussion in Sweezy (1942), later heterodox economists do not seem to have given much attention to this aspect of the capitalist labour market.

²In this paper, we restrict attention to the U.S. economy; for discussions of the RAL for the global economy see Foster et al. (2011).

³For details see <http://www.bls.gov/cps/>

the sample is changed, i.e., every household is surveyed for 4 consecutive months, followed by an 8 month period when it is not surveyed; the household is then surveyed again for 4 consecutive months before exiting the sample for good. This procedure reduces the burden on individual households while ensuring that 75% sample remains same from month to month and 50% of the sample remains constant from year to year. This allows researchers some latitude in inferring time series patterns in the labour market.

The starting point for estimating stock variables relating to the labour market data is the civilian non-institutional population (CIV). CIV is an estimate of every person 16 years and above who is not in an institution (prison or mental health institution) nor on active duty in the U.S. Armed Forces. Based on a detailed interview, the CPS assigns every person in CIV to either of three pools:

1. pool of employed workers (EMP): those who reported doing any wage or salary work (full-time or part-time); did self employed work; was with a job but not at work due to vacation, illness, etc.; or, was doing unpaid family work;
2. pool of unemployed workers (UNEMP): those who reported as not having a job currently, who looked for a job in the previous 4 weeks (with reference to the time of the interview), and is, therefore, currently available for work;
3. pool of those who are out of the labour force (NLF): those who are neither employed nor unemployed.

The information gathered by the BLS during the CPS, and made publicly available, will allow us to construct estimates of increasingly comprehensive measures of the RAL. While it is obvious that all the unemployed workers would be part of the RAL, the question as to which part of the NLF should be included in the RAL requires little more analysis. Based on answers to questions in the CPS, the NLF can be divided into two broad groups: (a) those who reported that they want a job, and (b) those that reported as not wanting a job, the latter being by far the largest component of NLF.⁴

There might be, in turn, two big categories within those who did not want a job: (i) those who were attending educational institutions, and (ii) those who had retired. Among those who did want a job, the CPS allows us to distinguish two important groups: (i) those workers who searched for jobs sometime in the past 12 months (but did not do so during the past 4 weeks), and (ii) those workers who did not search for jobs anytime in the past 12 months. Of those who had actively searched for work sometime during the past 12 months, the workers who report as being currently available for work as referred to as the “marginally attached workers”. An important subset of the marginally attached workers are those that have stopped looking for jobs because of discouragement, with the reason for discouragement being varied. Some believe that no work is available for them, or that they lack necessary schooling or training; some believe that their employer thinks them either too young or too old; some are discouraged because of other types of discrimination in the labour market; they are all referred to as the “discouraged workers”.

⁴Data to break up the NLF into these groups is available only from 1994 onwards.

These finer distinctions among workers that are all grouped together under the category of NLF will be useful in constructing various measures of the RAL. But before we do so, we must also look at another, often overlooked, category of workers: those undergoing incarceration. According to the International Center for Prison Studies, the US economy has, by far, the largest prison population in the world as a share of the total population.⁵ This forms a small but significant part of the relative surplus population because this population is potentially available to capital; by removing them off the labour market, pressure on wages is reduced. Hence, one must include some measure of the population in prisons and jails to get a more accurate measure of the RAL. The Bureau of Justice Statistics (BJS) has made available annual data on the correctional population for the period since 1980. Though there are some issues of comparability of the data over years, it gives us an usable number for the population in prisons and jails.⁶

To summarize: data from the CPS on UNEMP and NLF, and the data on the population in prisons and jails from the BJS will allow us to construct various measures of the stock of the reserve army of labour for the whole postwar period. To construct estimates of flows between the active and reserve army of labour, we can draw on BLS data on monthly flows between EMP, UNEMP and NLF. The flow data, constructed on the basis of research using CPS data, goes back all the way to February 1990 and will allow us to construct estimates of flows between the active and reserve army of labour for the period 1990-2011. Now I turn to defining four measures of the stock of RAL and then presenting estimates of the stock and flow measures.

3 Stock of the Reserve Army

3.1 Alternative Measures

In this paper we present four, increasingly comprehensive, measures of the stock of the relative surplus population in the US economy over the postwar period. The first measure, RAL 1, is the total number of unemployed workers; this is the most conservative estimate of the reserve army of labour. Data on the number of unemployed workers is available from the BLS at a monthly frequency since January, 1948. We present this as the first estimate of the relative surplus population in the U.S. in Figure 2.

The second measure, RAL 2, adds the marginally attached and part-time workers to the unemployed workers; this is more comprehensive than RAL 1 because it includes workers who are not counted as unemployed because they did not actively look for work anytime in the 4 weeks preceding the CPS and part-time workers who wish to switch to a full-time job but are unable to do so because of economic reasons. Data on marginally attached and part-time workers are available only from January, 1994. For the period before 1994 we use a simple imputation method.

The imputation works in two steps. In the first step we compute the average (mean) of the ratio of RAL 2 and RAL 1 for the period 1994M1 to 2011M9; since this period spans more than two long business cycles, the ratio can be expected to capture the relationship between the unemployed and

⁵See, <http://www.prisonstudies.org/>

⁶For details see <http://bjs.ojp.usdoj.gov/>

the marginally attached (and part-time) workers fairly robustly.⁷ In the second step, we multiply RAL 1 by this ratio for every month between 1948M1 and 1993M12 to get RAL 2. This gives us a complete RAL 2 series from 1948M1 to 2011M9. This is what we plot in Figure 2 as RAL 2, the second measure of the RAL.

The third measure, RAL 3, adds all workers who are not in the labour force but wanted a job to the total number of unemployed and part-time workers; this measure is more comprehensive than RAL 2 because there are many workers outside the labour force who are not part of the “marginally attached” worker category. Since data on the category of those not in the labour force but who reported as wanting a job is available only from 1994M1 onwards, we use the imputation method that we used for the construction of RAL 2 to construct the RAL 3 series for the period before 1994M1 as well.

The fourth and most comprehensive measure, RAL 4, is the sum of the people in prison and jail and RAL 3. Data on the number of persons in prison and jail is available at an annual frequency from 1980 to 2009. Hence, the RAL 4 series starts in 1980 and runs up to 2009. Moreover, the figure for the prison and jail population for a particular year is added to the RAL 3 figure for every month in that year. Note that even this measure, the most comprehensive so far, provides only a lower bound for the “true” reserve army of labour. This is because the latent reserve army is almost certainly not properly estimated in RAL 4. In a sense, the latent reserve army can only be estimated *post facto*, i.e., after the latent labour force has actually joined the labour force. Hence, almost always, this portion of the reserve army will be underestimated.

To summarize, and for easy reference, we will use the following four measures of the RAL.

1. RAL 1 = unemployed workers;
2. RAL 2 = unemployed workers + part-time workers + marginally attached workers;
3. RAL 3 = unemployed workers + part-time workers + all workers currently not in the labour force but wanting a job = RAL 2 + all workers currently not in the labour force who did not search for work anytime during the past 12 months and those who searched but are not available for work currently;
4. RAL 4 = unemployed workers + part-time workers + all workers currently not in the labour force but wanting a job + persons in prison and jail.

3.2 Trends and Patterns

We present time series plots of the four, increasingly comprehensive, measures of the stock of the reserve army of labour in the U.S. economy in Figure 2; Table 1 presents summary statistics of the four stock measures for the whole postwar period and also separately for the regulated and the

⁷If there is a structural break in the relationship between the unemployed and the marginally attached (and part-time) workers in the 1990s, then this imputation might provide an overestimate of RAL2 in the period period before 1994. Heterodox economists generally agree that a structural break occurs much earlier, between 1973 and 1979, when neoliberal capitalism emerges as the “solution” to the structural crisis of the late 1970s. Hence, we think that the ratio would not be plagued by problems of structural break.

neoliberal period, using 1980 as the demarcation year. Several interesting patterns emerge from the information in Table 1 and Figure 2.

First, as depicted in the top panel of Figure 2, the absolute magnitude of the RAL has grown unambiguously over time, growing from about 5–6 million in the 1950s to about 25–30 million in 2011. The growth in the magnitude of the RAL was especially rapid in the decade of the 1970s: the RAL almost doubled in magnitude within that decade highlighting the consensus view among heterodox economists that the 1970s was a period of structural crisis of capitalism. Between 1980 and 2010, on the other hand, the size of the RAL remained relatively stable. It soared skywards once again during the current recession, again indicating that we are in the midst of another structural crisis of capitalism.

Second, as can be seen from Table 1, the mean and median value of the RAL more or less doubled between the regulated and neoliberal period of postwar U.S. capitalism. The mean value of RAL 1 was 4.02 million in the regulated period; it increased to 8.40 million during the neoliberal period. RAL 2 increased from a mean value of 7.16 million to 14.93 million; and RAL 3 increased from a mean value of 8.99 million to 18.61 million. The median value shows a similar pattern. Interestingly, the standard deviation for every measure of the RAL is higher in the neoliberal period than in the regulated period, indicating higher monthly fluctuations in the size of the RAL. Among other things, this increase in the volatility of employment would certainly increase the uncertainty and precariousness of income (and consumption expenditure) flows unless cushioned by credit markets.

Since part of the growth of the RAL comes about due to population growth, we need to normalize the size of the RAL with respect to the labour force (the sum of the employed and the unemployed) to get a better appreciation of the true trends. This brings us to the third pattern that we wish to highlight. As depicted in the bottom panel of Figure 2, the RAL as a proportion of the labour force has also grown over time. While there was a rapid growth during the decade of the 1970s, the proportion of the RAL with respect to the labour force has remained relatively stable (at a high value) since the early 1980s. It is interesting to note that RAL 2, RAL 3 and RAL 4 was bigger as a share of the labour force during the recession of the 1980s than they are now.

As can be seen from Table 1, the mean and median values of RAL 1, RAL 2 and RAL 3 as a share of the labour force are significantly higher in the neoliberal period (in comparison to the regulated period). The mean value of RAL 1, as proportion of the labour force, was 5.15% in the regulated period; it increased to 6.37% during the neoliberal period, an increase of more than a percentage point. RAL 2, as a proportion of the labour force, increased from a mean value of 9.17% to 11.32%, an increase of more than 2 percentage points; and RAL 3, also as a share of the labour force, increased from a mean value of 11.51% to 14.14%, an increase of close to 3 percentage points. As can be seen from Table 1, the median values of the three measures of the RAL also show a similar pattern. Interestingly, the standard deviation for every measure of the RAL as a proportion of the labour force continues to be higher in the neoliberal period than in the regulated period. This might reflect the higher turnover in the labour market in the neoliberal period which increases, as already indicated, the uncertainty associated with employment and thus increases the precariousness of jobs.

This brings us to the fourth and, in a sense, the most interesting pattern observed in Figure 2.

All measures of the RAL, both in absolute magnitude and as a proportion of the labour force, show marked cyclical fluctuations at business cycle frequencies; this is immediately obvious in Figure 2. Along the lines of Marx's intuition in Chapter 25 of Volume I of *Capital* (Marx, 1992), the RAL grows during recessions and is depleted during the recovery and boom phase of the business cycle. This remarkable pattern is true for every business cycle in the postwar period that is depicted in Figure 2.

But there is an interesting shift, within this overall pattern of cyclical fluctuations, from the regulated to the neoliberal period. In the business cycles of the regulated period, the phase of depletion of the reserve army would start immediately after the business cycle trough and would run all the way to the next peak. In the neoliberal period, this has gradually changed and the new pattern is most clearly visible in the cycles since 1990. In the neoliberal period, the phase of depletion of the RAL starts later (starting several quarters after the trough) and ends early (ending several quarters before the next peak). While this seems to be an important issue for in-depth future study, an immediately hypothesis suggests itself: neoliberal globalization and the relocation of production in the periphery of the global capitalist system.⁸

Marx's understanding about the dynamic evolution of the capitalist economic system highlighted the important impact of capital accumulation on the lives of workers. One aspect of this impact was the continuous growth of the reserve army of labour with capital accumulation. Mechanization and the adoption of labour saving technologies, which are an intrinsic part of the process of capital accumulation, constantly replenishes the floating reserve army of labour. The extension, often with the use of force, of capitalist relations of production into the periphery of the global capitalist system destroys subsistence agricultural production systems and draws an increasingly large population into the capitalist labour market as a latent reserve army of labour. De-skilling of workers that comes with capital accumulation, and discouragement of workers at fading employment prospects that arise from long periods of unemployment swells the ranks of the stagnant reserve army of labour. All these mechanisms ensure a continual, though fluctuating, growth of the reserve army of labour (Foley, 1986). Time series plots in Figure 2 emphasize that this view is remarkably in accord with the facts of postwar U.S. capitalism.

4 Flows between the Active and Reserve Army

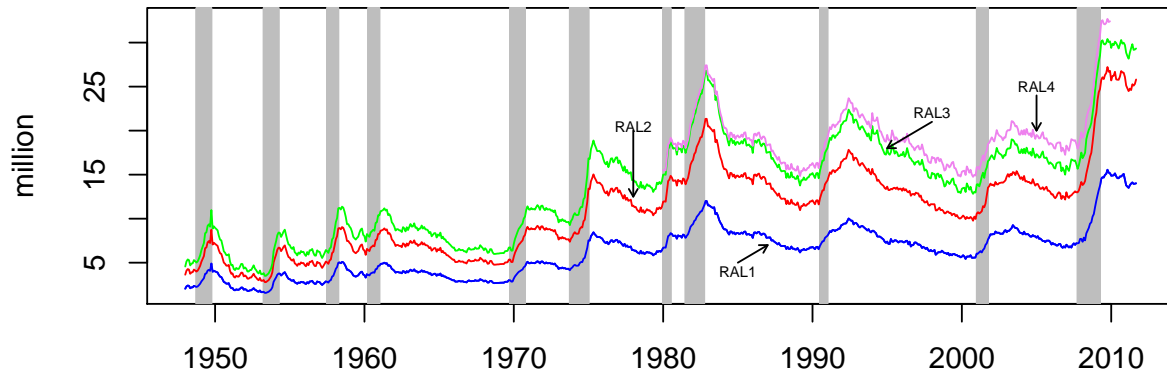
4.1 Introduction

It is interesting to inquire not only into the stock of the reserve army of labour at any point in time but also to study the magnitude and pattern of flows into and out of the reserve army over periods of time. This is because of high turnover in capitalist labour markets, especially in the U.S.

In this paper we present estimates of the flows between the active and reserve army of labour to highlight this aspect of turnover in the U.S. labour market. Estimates of these flows have been constructed from BLS data on the monthly flow of workers between three pools: (a) the pool of employed workers (EMP), (b) the pool of unemployed workers (UNEMP), and (c) the pool of workers who are outside the labour force (NLF).

⁸Some aspects of this issue has been explored in Basu and Foley (2011).

Reserve Army of Labour (absolute magnitude)



Reserve Army of Labour (proportion of Labour Force)

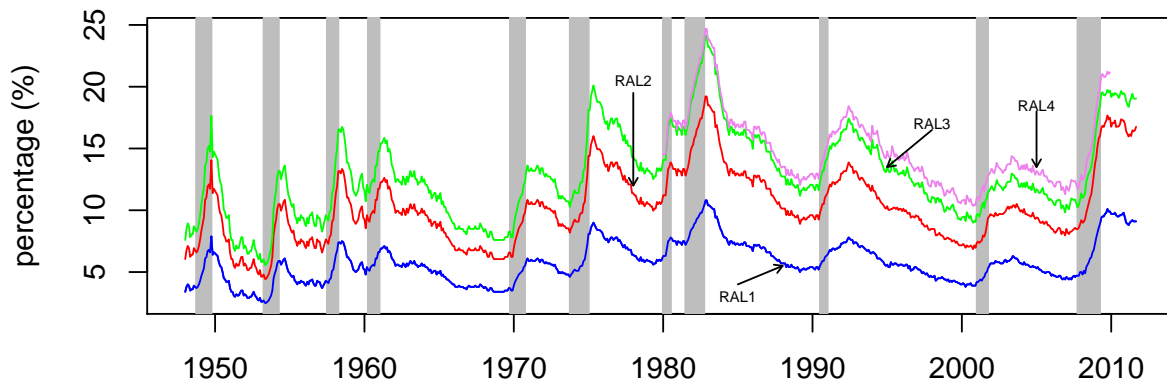


Figure 2: Four measures of the reserve army of labour in the post-War U.S. economy (1948–2011), both the absolute magnitude (first row) and as a proportion of the labour force (second row). RAL 1 is the number of unemployed workers; RAL 2 is the sum of RAL 1 and the marginally attached and the part-time workers; RAL 3 is the sum of RAL 1 and all part-time workers and all those not in the labour force who wanted a job; RAL 4 is the sum of RAL 3 and the number of persons in jail and prison. The shaded regions refer to the recessions according to the NBER methodology.

Table 1: Summary Statistics of RAL Stock Measures^a

	RAL 1	RAL 2	RAL 3	RAL 4
POSTWAR PERIOD (1948–2011)				
<u>MAGNITUDE</u> (million)				
MEAN	6.20	11.03	13.78	19.44
MEDIAN	6.34	11.30	14.43	19.03
STD DEV	2.92	5.19	6.18	3.37
<u>SHARE OF LABOUR FORCE</u> (%)				
MEAN	5.76	10.24	12.82	14.92
MEDIAN	5.60	9.80	12.29	14.11
STD DEV	1.65	2.94	3.50	3.04
REGULATED PERIOD (1948–80)				
<u>MAGNITUDE</u> (million)				
MEAN	4.02	7.16	8.99	
MEDIAN	3.79	6.74	8.46	
STD DEV	1.57	2.80	3.51	
<u>SHARE OF LABOUR FORCE</u> (%)				
MEAN	5.15	9.17	11.51	
MEDIAN	5.20	9.25	11.62	
STD DEV	1.39	2.48	3.11	
NEOLIBERAL PERIOD (1980–2011)				
<u>MAGNITUDE</u> (million)				
MEAN	8.40	14.93	18.61	19.44
MEDIAN	8.00	14.02	17.54	19.03
STD DEV	2.24	3.98	4.22	3.37
<u>SHARE OF LABOUR FORCE</u> (%)				
MEAN	6.37	11.32	14.14	14.92
MEDIAN	5.90	10.30	13.17	14.11
STD DEV	1.67	2.97	3.39	3.04

^a RAL 1 is the number of unemployed workers; RAL 2 is the sum of RAL 1 and the marginally attached and the part-time workers; RAL 3 is the sum of RAL 1 and all part-time workers and all those not in the labour force who wanted a job; RAL 4 is the sum of RAL 3 and the number of persons in jail and prison. Data for the population in prison and jail is available only from 1980; hence estimates of RAL 4 are not available before 1980.

The first flow of interest is the flow from the reserve to the active army of labour. Using BLS data, this flow can be computed as the total monthly flow of workers into the pool of employed workers from (a) the pool of the unemployed (UNEMP), and (b) the pool of workers outside the labour force (NLF). Since a subset of the sum of UNEMP and NLF is the RAL, the sum of the flow of workers from UNEMP to EMP, and from NLF to EMP provides an estimate of the flow of workers from the reserve army of labour into the active labour force, i.e., the pool of employed workers. This is the flow that is represented by (D) in Figure 1.

The second flow of interest is the reverse flow of workers from the active to the reserve army of labour. using BLS data, this flow has been computed as the total monthly flow of workers from the employed pool into (a) the pool of the unemployed, and (b) the pool of workers outside the labour force. Since, as indicated above, a subset of the sum of UNEMP and NLF is the RAL, this gives an estimate of the flow of workers from the active to the reserve army of labour. This is the flow that is represented by (C) in Figure 1.⁹

4.2 Trends and Patterns

In Table 2 and Figure 3 we present summary statistics and time series plots of the flows between the active and reserve army of labour. The monthly flows between the active and reserve army of labour is extremely volatile; hence, in Figure 3, I present 6 month moving averages of the monthly flows. The moving average smooths out the monthly fluctuations and allows us to observe the trend in the flows in a clearer manner. Table 2 presents summary statistics of the original series. Several interesting patterns emerge from the flow data.

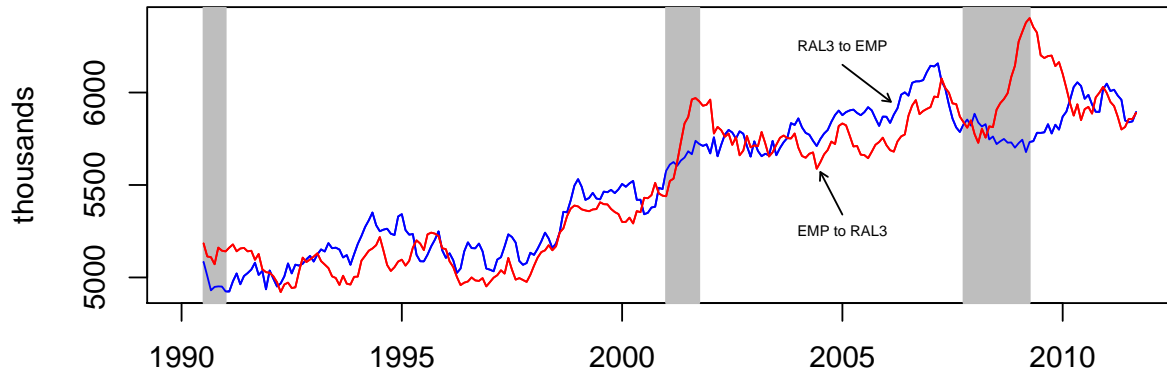
First, the flows from the active to the reserve army of labour, and the reverse flow from the reserve to the active army of labour hover close to each other. This is highlighted in both panels of Figure 3. This is to be expected: if the two flows diverged from each other that would lead to continuous accumulation or decumulation of the stock of active and/or reserve army of labour. This would endanger the stability of capital accumulation. Hence, the normal functioning of capitalism would not allow this to happen, which is precisely what emerges from the flow data in Figure 3.

Second, in terms of the magnitude of the flows, there was a steady increase in both flows for about a decade between 1997 and 2007. As depicted in the top panel of Figure 3, while both flows hovered around 5 million during the mid-1990s, they had risen to about 6 million by mid-2000s. This increase seems to be linked to the growth of the population and the labour force. This emerges from the bottom panel in Figure 3: as a share of the labour force, both flows do not display any trend over this two decade period.

This is reinforced by the data in Table 2. Mean and median values of both flows remained close to 3.9 percent of the labour force over the three – two complete and one incomplete – cycles since 1990. The variability of both flows was almost identical in the cycle of the 1990s; during the next two cycles, the flow from the active to the reserve army has become more volatile compared to the reverse flow.

⁹We do not report data on the other flows that appear in Figure 1 because they are about two orders of magnitude smaller than the flows between the active and reserve army of labour. On average, flow (A) is about 2% of flow (D), and flow (B) is about 6% of flow (C).

Flows between Active and Res Army of Lab (magnitude)



Flows between Active and Res Army of Lab (proportion of LF)

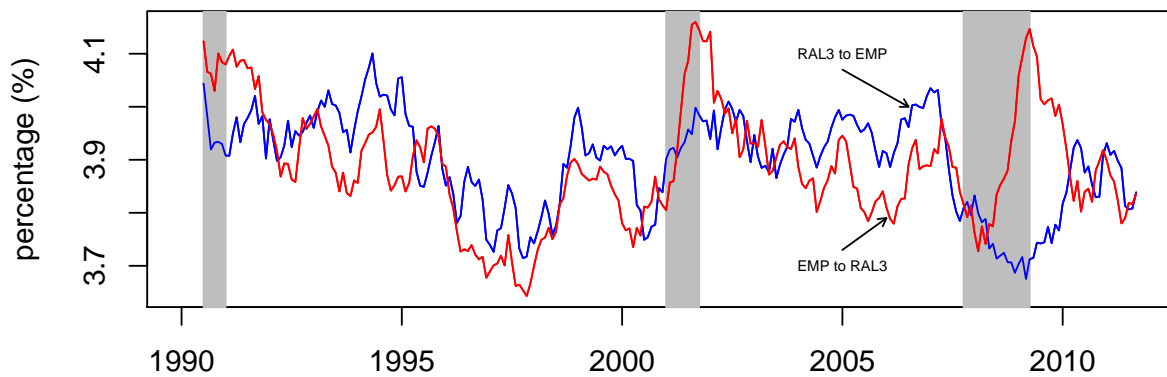


Figure 3: Six month moving average of flows into and out of the reserve army of labour, 1990–2011. RAL 3 refers to a broad measure of the reserve army of labour (unemployed workers + part-time workers + all workers currently not in the labour force but wanting a job) and EMP refers to the pool of employed workers. The shaded regions refer to the recessions according to the NBER methodology.

The third interesting pattern relates to the relative magnitudes of the two flows. As can be seen in Figure 3, the flow from the active to the reserve army is, in general, smaller in magnitude for most of the duration of the cycle. Close to the peak of the business cycle, this pattern is reversed and the flow from the active to the reserve army becomes larger than the reverse flow. This pattern of flows is again reversed a few quarters after the trough.

It is interesting to note that the pattern of flows (into and out of the reserve army) is consistent with the patterns observed for the stocks of the reserve army of labour. The period of recovery and boom is a period of relatively rapid capital accumulation; hence, it is also a period when the stock of the reserve army is depleted. But this can only happen if the flow from the reserve to the active reserve army is larger than the flow in the reverse direction. This is precisely what we observe.

The period of (and before) the recession, on the other hand, is a period when the stock of the reserve army is replenished due to the displacement of labour, either due to slowing down of capital accumulation, or mechanization of the production process, or relocation of production or bankruptcy of existing firms. But this can only happen when the flow of workers from the active to the reserve army of labour becomes larger than the reverse flow. That is precisely what we observe in Figure 3.

Within this overall pattern we see a stark difference between the current recession and the previous one. In the 2001 recession, the flow of workers from the reserve to the active army continued increasing even during the recession quarters. Of course, during those quarters, the reverse flow was larger, and the net effect was an enlargement of the stock of the reserve army (as seen in Figure 2). But during the recession that started in the fourth quarter of 2007 displayed a different pattern. The flow from the reserve to the active army started falling a few quarters before the peak, and kept falling through the recession quarters; it started picking up only after the trough. The reverse flow, i.e., the flow from the active to the reserve army shot up right after the peak, and the gap between the two flows widened enormously. The net result was a massive increase in the stock of the reserve army of labour (as seen in Figure 2).

The fact, observed in Figure 3, that the two flows take several quarters after the trough to come close to each other, and for the flow from the reserve to the active army to climb above the reverse flow, lies behind a pattern we had observed in the stock data: the stock of the reserve army starts depleting only a few quarters after the beginning of the recovery (i.e., the trough quarter).

5 Conclusion

In this paper, we have presented estimates for four measures, increasing comprehensive, of the stock of the reserve army of labour for the postwar U.S. economy. We have also presented estimates of the flow of workers between the active and reserve army of labour. Summary and time series plots of both the stock and flow data reveal interesting patterns. Two patterns observed in the data provide striking evidence in support of Marx's understanding of the process of capital accumulation and its impact on the working class.

The first pattern relates to the long-run dynamics of capitalism and refers to Marx's observation that the reserve army of labour will continuously grow with capital accumulation. There are no mechanisms available to capitalism to do away with the relative surplus population. In fact, capital-

Table 2: Summary Statistics of RAL Flow Measures^a

	1990–2001	2001–2007	2007–2011
RAL 3 → EMP			
<u>MAGNITUDE</u> (thousand)			
MEAN	5205.80	5829.31	5862.53
MEDIAN	5193.00	5810.00	5864.00
STD DEV	246.74	210.87	204.10
<u>SHARE OF LF</u> (%)			
MEAN	3.90	3.94	3.81
MEDIAN	3.91	3.95	3.82
STD DEV	0.16	0.12	0.14
EMP → RAL 3			
<u>MAGNITUDE</u> (thousand)			
MEAN	5151.55	5792.49	5996.94
MEDIAN	5127.00	5792.00	5997.00
STD DEV	207.53	212.40	274.53
<u>SHARE OF LF</u> (%)			
MEAN	3.86	3.92	3.89
MEDIAN	3.85	3.90	3.90
STD DEV	0.16	0.16	0.17

^a RAL 3 refers to a broad measure of the reserve army of labour (unemployed workers + part-time workers + all workers currently not in the labour force but wanting a job) and EMP refers to the active army of labour (the pool of employed workers). The period 1990–2001 refers to the peak-to-peak cycle between 1990Q3 to 2001Q1; the period 2001–2007 refers to the peak-to-peak cycle between 2001Q1 to 2007Q4; and the period 2007–2011 refers to the period 2007Q4 to the present.

ism does exactly the opposite: the mechanisms of capital accumulation continuously replenishes the reserve army of labour through displacement of workers, destruction of subsistence farming and de-skilling and discouragement of unemployed workers. Figure 2 shows that this is in fact the case for postwar U.S. capitalism.

The second pattern relates to short-run fluctuations of the capitalist system and refers to Marx's observation that the reserve army of labour fluctuates with the pace and needs of capital accumulation. According to Marx, this fluctuation is the capitalist mechanism for regulating the value of labour power. Figure 2 highlights the striking fluctuations of the reserve army tied up with the pace of capital accumulation (as captured by the phases of the business cycle). This provides *prima facie* evidence in support of Marx's view in Chapter 25 of *Capital*, Volume I.

How might information on the reserve army of labour be used? The data on the stock and flows related to the active and reserve army of labour can be used to investigate several outstanding issues in the Marxian analysis of the labour market. Here, I would like to highlight two.

First, Marx's account of the capital accumulation process accords a very important place to the reserve army of labour. Fluctuations in the reserve army of labour is the main mechanism for the regulating the value of labour power within bounds that allow the process of capital accumulation to proceed. Is there evidence for this claim? This issue can be investigated using this data base.

Second, this data can also help in throwing some light on the vexed issue of technological unemployment. Marx believed that the displacement of workers by machinery is the primary method of recruitment of the (floating) reserve army of labour. This would imply that the main component of the flow of workers from the active to the reserve army occurs due to mechanization. But we know that the flow of workers from the active to the reserve army occurs due to various reasons, only one of them being mechanization. Other reasons could be cutback in investment due to collapse of demand, relocation of production to lower cost regions, bankruptcy and failure of firms. Decomposing the flow of workers from the active to the reserve army into two groups, one arising from mechanization and the other due to all other reasons, might be a way to empirically test Marx's claim.

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