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Inflationary and Distributional Effects of Alternative Fiscal Policies: An Augmented Minskyan-Kaleckian Model

by

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ABSTRACT

This paper augments the basic Post-Keynesian markup model to examine the effects of different fiscal policies on prices and income distribution. This is an approach à la Hyman P. Minsky, who argued that in the modern era, government is both "a blessing and a curse," since it stabilizes profits and output by imparting an inflationary bias to the economy, but without stabilizing the economy at or near full employment. To build on these insights, the paper considers several distinct functions of government: 1) government as an income provider, 2) as an employer, and 3) as a buyer of goods and services. The inflationary and distributional effects of each of these fiscal policies differ considerably. First, the paper examines the effects of income transfers to individuals and firms (in the form of unemployment insurance and investment subsidies, respectively). Next, it considers government as an employer of workers (direct job creation) and as a buyer of goods and services (indirect job creation). Finally, it modifies the basic theoretical model to incorporate fiscal policy à la Minsky and John Maynard Keynes, where the government ensures full employment through direct job creation of all of the unemployed unable to find private sector work, *irrespective* of the phase of the business cycle. The paper specifically models Minsky's proposal for government as the employer of last resort (ELR), but the findings would apply to any universal direct job creation plan of similar design. The paper derives a fundamental price equation for a full-employment economy with government. The model presents a "price rule" for government spending that ensures that the ELR is not a source of inflation. Indeed, the fundamental equation illustrates that in the presence of such a price rule, at full employment inflationary effects are observed from sources other than the public sector employment program.

Keywords: Minsky; Kalecki Model; Alternative Fiscal Polices; Income Transfers; Investment Subsidies; Direct Job Creation; Employer of Last Resort; Inflation; Income Distribution

JEL Classifications: E12, E24, E25, E31, E62, H11

With the rise and fall of Keynesian economics, belief in the ability of government to stabilize the economy also waned. In reality, however, theoretical debates notwithstanding, government represents a large share of the economy, thereby making it well suited to offset declines in private spending and investment by discretionary action. Prior to the Great Depression, total federal government spending comprised less than 3 percent of gross domestic product (GDP), and after ballooning to 46 percent during World War II, it settled to about 27 percent in 2010.[1] Big Government along with its Big Bank (i.e., the Central Bank with its expanded new functions, such as the lender of last resort), as Minsky used to call them, are here to stay (Minsky 1986).

This paper presents a framework for thinking about the comparative macroeconomic advantages and disadvantages of alternative fiscal policies. Recall that, for Keynes, the very reason for the existence of fiscal policy was to correct the two outstanding faults of society, namely: 1) its failure to produce and preserve full employment; and 2) its inability to secure a more equitable income distribution. The paper evaluates different fiscal policies in light of their ability to address these two fundamental problems. Note that when Keynes advocated an expanded role for government in the context of its objective to secure full employment, he did not advocate just any kind of big government. He favored fiscal policy via direct public employment programs both in contractions and in expansions (Tcherneva 2011, 2012). Direct job creation and public investment are no longer the policies of first resort when dealing with unemployment and business fluctuations. Indeed, income support to households

[1] This figure includes transfer payments to households, and states and subsidies to firms, which do not enter the GDP calculations. It is a gross figure that does not account for total government receipts. If it did, the federal government's net dissaving (i.e., the federal government deficit) would equal 9 percent of GDP in 2010.

(in the form of unemployment insurance and tax rebates) and to firms (in the form of direct subsidies, accelerated depreciation, and tax cuts) are the favored stabilization policies. In addition, government itself is a large consumer of goods and services and thus a provider of demand and cash flows to the private sector. So the question here is: Can we develop a skeletal model for analyzing the comparative advantages and disadvantages of these alternative fiscal policies with an eye to their ability to secure full employment and their impact on prices and income distribution?

To develop this framework, the paper utilizes and augments the basic two- and three-sector pricing models that are the hallmark of Post Keynesian analysis. The specific presentation of the mark-up pricing model here can be largely traced to the work of Kalecki (1971). The approach can also be found in Kregel (1973) and Minsky (1986). It will be argued that, among a range of options, certain contemporary government policies produce relatively more inflationary and inequitable outcomes even as they aim to produce high (or full) employment. Other policies, by contrast, are better suited for achieving full employment while, at the same time, they stabilize prices and yield better income distribution.

This paper extends a previous argument made in Tcherneva (2011, 2012) that *targeted labor demand policies* are more effective than aggregate demand management in connecting fiscal policy with the full employment objective. We now add another link in the chain to illustrate how such policies are also less inflationary and more equitable. Conventional aggregate demand management policies are not only a misapplication of the original Keynesian blueprint for full employment (Ibid.), but over the decades have

contributed to the erosion of income distribution in the US (Minsky 1968, 1973, 1986). Keynes himself alluded to the difficulties of attaining and maintaining full employment via pumping more aggregate demand, but he did not explicitly juxtapose the aggregate demand and targeted labor demand approaches to full employment in fleshing out their relative macroeconomic merits.[2] Thus, the first objective of the paper is to develop a simple Post-Keynesian framework that allows us to evaluate the comparative merits of different fiscal policies.[3]

The second objective is to model a type of fiscal policy that is more consistent with the original Keynesian proposal. As I have argued elsewhere (Tcherneva 2011, 2012), Keynes had a very specific proposal for full employment over the long run, which can be called an "on-the-spot" employment approach that consisted of directly employing the unemployed into public works. One could argue that this proposal was later reinterpreted by Minsky as the "employer of last resort" (ELR) proposal. Thus, the paper will use the Post-Keynesian framework presented here to examine the impact of the ELR proposal on employment, prices, and income distribution.

Finally, although Minsky derived a foundational price equation for an economy with government (following Kalecki), he did not derive such an equation for a *full-employment*

[2] Again, "aggregate demand" here refers to any broad-based government stimulus that would include tax rebates, investment subsidies, income transfers, and generalized purchases of goods and services by government, whereas "targeted labor demand" refers specifically to directly employing the unemployed into useful public sector projects. For details, see Tcherneva 2011.

[3] For such a comparison, the work of Hyman Minsky is particularly useful for several reasons. Firstly, Minsky utilizes the Kaleckian profits approach, which straddles well macroeconomic-analysis with micro-outcomes. The Kaleckian approach, which underpins much of the Post-Keynesian theory of income distribution, cannot be separated from a theory of price determination (Kregel 1971, 1973), which makes it especially suitable for our purposes. This framework lends itself to analyzing the absolute and relative distribution of income and employment across sectors. The analysis could also be used for studying market structure and market power in the determination of income and employment, which would be an extension of the present work.

economy with government. Thus, the third objective of the present paper is to derive such an equation that models the "on-the-spot" employment/ELR proposal. This equation contributes to the ELR literature by adding additional support to the claims about the countercyclical and price-stabilization effects of such a policy. Many ELR scholars have argued that if governments spent on a "fixed price-floating quantity" rule, the ELR itself would not be a source of inflation (save for a potential one-time adjustment in prices) (e.g., Mosler 1997-98; Wray 1998). Mitchell (1998) has empirically demonstrated that a direct job creation program *à la* ELR with a buffer stock mechanism would stabilize the price of the buffer stock, i.e., wages. Fullwiler (2003, 2005) and Majewski (2004) have simulated the ELR using the Fair macroeconomic model and have found a countercyclical stabilizing impact of the program on prices. Additionally, Tcherneva and Wray's study of the direct job creation program in Argentina *Plan Jefes*—which was not a universal ELR, but was nevertheless modeled after the ELR proposals developed in the US—exhibited a countercyclical stabilizing feature both on the economy and on wages (see, e.g., Tcherneva and Wray 2005).

The foundational equation in this paper develops a straightforward baseline scenario that demonstrates this price-stabilization effect using Kalecki's model. More importantly, it explicitly illustrates the importance of the "price-rule" that "on-the-spot" employment/ELR policies must follow to ensure that they stabilize, rather than aggravate, inflation. Indeed, the paper demonstrates that if such a price rule is followed, inflationary pressures throughout the business cycle in a full-employment economy *occur from sources other than the government employment program.* To restate, the ELR program does not eliminate all sources of inflation. Demand-side inflation generated by the private sector (e.g., credit expansion,

speculative investment in the housing market) or from other public sector programs (e.g., military spending, no-bid contracts), or cost-push inflation (e.g., from speculation in commodities, oil embargoes) are still problems to be reckoned with. Nevertheless, the ELR can tame current government-stimulated demand-side sources of inflation by replacing pump priming policies with a policy that offers a better price anchor at full employment. Various taxing schemes can complement the ELR program as additional income distribution and inflation-fighting policies. What these tax schemes look like is beyond the scope of this paper, but it is an important extension of the present work.

Finally, the paper concludes that any fiscal policy should follow a "price-rule." This means that regardless of what programs the government spends on, a price-rule will mitigate the inflationary effects of contemporary Big Government.

1. GOVERNMENT SPENDING, PRICES AND PROFITS

As is customary in Post-Keynesian analysis, I will begin with the straightforward two-sector model to illustrate some of the basic relationships and mathematical derivations of price determination and income distribution. The two-sector model, however, besides its simplicity, has several major limitations: as a base case scenario it does not pertain to any real-world economy. At a minimum, it describes rare cases where government comprises a very small share of the economy (such as in the pre-WWII world). Furthermore, we know that the very financing of investment and consumption in the private sector depends, in part, on the amount of government liabilities available in the system. Prices, incomes, and profits are all denominated in money, which is a state-mediated unit of account. Therefore, a model

without any government is limiting and unrealistic. I will present a three-sector model in the next section in which the government spends, taxes, and runs large deficits as is normally the case in the postwar world to delineate these very same relationships. I will present several scenarios of different government programs and their impact on prices and income distribution. While Minsky studied the role of government spending in the determination of profits and the markup, he offered only a cursory discussion of the effects of different types of government policies on them.

Government has traditionally had three distinct functions. First, it provides income support—a function normally associated with income transfers to the unemployed and the poor (e.g., unemployment insurance or Temporary Assistance for Needy Families [TANF]). However, government also provides sizeable investment subsidies to companies, which is essentially an income transfer policy to firms. I will compare the relative effects of these two policies.[4] Secondly, government is an employer when it hires people directly into public sector offices. Government can provide employment either by guaranteeing a job to the unemployed in a manner in which Keynes and Minsky envisioned (Keynes's "on the spot" employment or Minsky's ELR) or via a direct job creation policy that does not promise to hire all who are ready, willing, and able to work, but unable to find private sector employment. Finally, the government is a buyer of goods and services from the private sector. This is generally limited to the purchases of investment/production goods in the form of large military investments, private infrastructure contracts for civilian purposes, and purchases of other goods and services from the private sector. In this context, one could view

[4] Government also provides social insurance, food stamps, and other cash assistance, but for simplicity in our model, we will only study unemployment insurance and firm subsidies.

government as an *indirect* employer. Fiscal policies that emphasize each of these different government expenditures have various effects on prices and income distribution and they affect relative employment and incomes in the separate sectors differently. In all of these cases, except the ELR case, full employment is not guaranteed. As is usually the case, less than full employment is the normal condition. If each of the other policies aims to produce full employment by channeling more funding into their respective priorities (i.e., boosting income transfers to firms or households, directly employing more workers, or buying more goods and services from the private sector), government spending will amplify their respective effects on prices and income distribution. So our first task is to draw a skeletal model to begin to discern these effects. To summarize, we will look at:

- A basic two-sector model with consumption and investment
- A basic three-sector model with consumption, investment, and government, where:
  a) government spending is a source of income transfers to individuals via unemployment insurance
  b) government spending is a source of income transfers to firms via investment subsidies
  c) government acts as an employer via indirect job creation through purchases of investment goods and services, and
  d) government acts as an employer via direct job creation but without a commitment to provide jobs for all of the unemployed
  e) government acts as the employer of last resort

The following analysis will also allow for consumption out of profits and saving out of wages—two assumptions that often enter Post-Keynesian analysis.[5] In addition, I will examine the implications of government spending when it is fixed at a given level by a given budget versus when the budget is allowed to float with the amount of unemployment.

[5] The famous adage that workers "spend what they get and capitalists get what they spend" as stated by Kalecki (1971) and Kaldor (1955-56) was later modified by Pasinetti (1974), who showed that if workers saved, the flow of profits runs partly to workers, but aggregate profits remain unchanged. In other words, investment and government decisions determine total profits, whereas saving and consumption out of profits determine the relative distribution of claims on profit income.

Before I proceed, one important caveat is in order. The Kalecki model is based on identities; thus, all I will be showing here are ex-post relationships, whereby the actual dynamics can be modeled separately in a stock flow consistent model, e.g., as in Godley and Lavoie (2007).

2. THE BASIC TWO-SECTOR MODEL

Although there are various approaches to price determination and inflation, the emphasis on administered price in Post-Keynesian theory frequently evokes the Kaleckian markup approach to pricing.[6] The skeletal version of this model assumes that there are two sectors, the consumption goods sector (C-sector) and investment goods sector (I-sector). Wages and employment in the C-sector (W_C and N_C, respectively) produce a wage bill ($W_C N_C$) associated with the production of a given quantity of consumer goods (Q_C) sold at consumer goods prices (P_C). The output ($P_C Q_C$) produced in the C-sector must satisfy the demand for consumer goods by both consumer-goods workers (Q_C^C) and investment-goods workers (Q_C^I), where $Q_C = Q_C^C + Q_C^I$. The C-sector generates profit π_C because its sales of goods and services exceed the cost of production (the revenue $P_C Q_C$ is greater than the wage bill $W_C N_C$). Part of that profit is used to buy investment goods from the I-sector, generating profit from

[6] Post-Keynesians emphasize that nominal incomes (not quantity of money as in Monetarism) affect the level and changes in prices, which are administered and determined on the basis of the goals, which firms with market power wish to achieve. Prices are administered on the basis of different cost-plus methods (e.g., full-cost, normal cost, target-rate of return). The simplest method commonly used in Post-Keynesian analysis is the Kaleckian markup approach (Kalecki 1971), where prices depend on unit prime (or direct) costs, and a gross margin (i.e., markup at the micro/firm level) is applied to these unit costs, giving us the price of the good (Lavoie 1992; Lee 1998). Some price leaders may apply fixed margins, while others may prefer variable margins; in the aggregate, however, the Kaleckian approach shows that the macro/economy-wide markup is determined by the level and composition of final demand.

investment goods production. If we assume that workers spend their entire income, while firms do not consume out of profits (two assumptions that will be relaxed later), we can develop the following relationships:

$$P_C Q_C = W_C N_C + W_I N_I \quad (1)$$

The wage bill generated in the C- and I-sectors is spent on consumer goods produced. Therefore, the profit generated in the C-sector is equal to the wage bill in the I-sector:

$$\pi_C = P_C Q_C - W_C N_C = W_I N_I \quad (2)$$

Separately, investment goods output sold must pay for the wage bill in the I-sector (i.e., the cost of production) *and* generate profit.

$$I = P_I Q_I = W_I N_I + \pi_I \quad (3)$$

or

$$\pi_I = I - W_I N_I \quad (4)$$

Combining (2) and (4):

$$\pi_C + \pi_I = W_I N_I + I - W_I N_I \quad (5)$$

or

$$\pi = I \quad (6)$$

Aggregate profits add up to total investment, producing the famous Kaleckian result that consumers spend what they get, while investors get what they spend. *In a capitalist/investing economy investment determines aggregate profits and prices must carry profits* (Minsky 1986, 142).

Notation:

W_C and W_I – wages in the C- and I-sectors, respectively;

N_C and N_I – the number of employed in each sector;

W_CN_C and W_IN_I – the wage bills in the C- and I-sectors, respectively;

$\pi_C+\pi_I = \pi$ are the profits generated in each sector, which add up to total profit in the economy.

From the above relationships, it is clear that π_C would be zero if only workers in C-sector were to demand consumer goods (i.e., if $P_CQ_C = W_CN_C$), but since I-sector workers also consume, the C-sector must produce surplus, which will be rationed by the price system between the two sources of demand. Another way to look at this relationship is to consider the Keynesian insight that in a monetary production economy, all production takes place in the pursuit of monetary profit. In other words, even if *all* workers were employed in the C-sector and consumed *all* the goods and services which they produced (i.e., if $P_CQ_C = W_CN_C$), there will be no incentive to produce because there would be no profits generated from consumption goods production. The system simply cannot reproduce itself. Therefore, all C-sector workers must produce more than they consume, in order for the C-sector to generate profit—an impossible outcome if all output is only produced by and sold to C-sector workers. Additionally, because firms operate on the basis of administered prices, where they

mark up their direct costs ($W_C N_C$, if we ignore the cost of materials) with some targeted rate of return, which they expect to receive from production,[7] not all output in the C-sector can be sold because workers spend all they earn. Thus, the micro-markup and the macro-markup ensure that workers in the C-sector cannot purchase all output. The C-sector will produce surplus which will be rationed by the price system. Consumer prices will distribute output, employment, and profits across sectors, and will ensure that the system is able to reproduce itself.

To reiterate, the first important Kaleckian insights for our purposes are that: 1) the aggregate level of investment in the economy determines the aggregate level of profits; 2) the wage bill in the non-consumption goods sector generates profits in the consumption goods sector; 3) the C-sector must produce and sell its surplus to generate profit; and 4) the price system ensures that (3) takes place. Now we need to show how prices actually do that.

From (1), above, we derive a price formula for consumer goods which will be our *simplified foundational equation* for all subsequent queries:

Divide (1) by Q_C:

$$P_C = \frac{W_C N_C}{Q_C} + \frac{W_I N_I}{Q_C} \qquad (7)$$

If we multiply and divide the second term in (7) by $[\frac{W_C N_C}{W_C N_C}]$, we get:

$$P_C = \frac{W_C N_C}{Q_C} + \frac{W_I N_I}{Q_C}[\frac{W_C N_C}{W_C N_C}] \qquad (8)$$

[7] This is at the firm (micro) level; see footnote 6.

After reworking the equation we get:

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I}{W_C N_C}\right] \qquad (9)$$

Although (7) and (9) are identical, for ease of exposition, we will be using both equations. Equation (7) allows us to trace more easily changes in P_C from changes in employment and output, while equation (9) allows us to observe the markup over direct costs. Equation (9) was used by Minsky, who wanted to relate the consumer prices to wages in the C-sector, the ratio of employment and wages between the C- and I-sectors, and to what Minsky called A_C—the average productivity in the C-sector (where $A_C = Q_C/N_C$). Although in the analysis below I will assume, as Minsky did, that a given change in Q_C brings about a proportionate change in N_C, I will not speak of "productivity," *per se*, to avoid confusion with the neoclassical notion. In the latter, all factors of production are paid factor incomes based on their marginal productivity, all factor incomes add up to and determine total output, and the different relative productivity of each factor of production then determines income distribution. In this work, I treat Q_C/N_C as a simple ratio, allowing for Q_C and N_C to change with changes in the volume and composition of final demand. Such a treatment is consistent with the Post-Keynesian emphasis that total output determines the productivity of different factors of production, not the other way around, and also confirms Minsky's insight that "surplus is forced by the investing process and that the distribution between wages and profits is determined by the economic process and not by technology" (Ibid., 151).[8]

[8] For evidence that productivity is a residual of output growth, see Wray and Pigeon (1999).

We can therefore express prices in terms of output, employment, and wages in the C-sector and the relative wages and employment (i.e., the relative wage bills) in the C- and I-sectors. If we assume in equation (9) that $W_C=W_I$, then prices will depend on the relative employment in each sector. The term $\left[1 + \frac{W_I N_I}{W_C N_C}\right]$ is the markup required in the C-sector to produce the surplus necessary to ration all consumption goods to the different sources of demand. In other words, the price level is determined by the composition of final demand. The greater the relative employment in non-consumption-goods-producing sectors, the greater the markup would be.

Note that this is an ex-post relationship in which the multiplier is implicit—it illustrates what has already happened and how the different sources of demand affect the aggregate markup (again, to be distinguished from the individual micro-markup at the firm level). When I add government in the subsequent section, I will use this equation to trace the effects of alternative fiscal policies on the markup, prices, profits, and income distribution. As with any comparative static analysis, there are considerable limitations to this approach, as well, but it allows us to examine the immediate and secondary effects of government spending.

Before we examine the three sector model which includes government, let us explore what happens to prices, profits, and distribution in response to changes in investment. Let us assume that investment collapses. We know from (3) that:

$$I = W_I N_I + \pi_I \qquad (3)$$

Therefore,

$$\Delta I = \Delta W_I N_I + \Delta \pi_I \qquad (10)$$

In other words, we can expect that both the wage bill and profits from investment will decline (in fact, falling expected profits may have been the precursor to the collapse in investment). When the wage bill in the investment sector falls ($\Delta W_I N_I$), we expect profits in the C-sector to fall by the same amount $\Delta \pi_C$. (Since $W_I N_I = \pi_C$, then $\Delta W_I N_I = \Delta \pi_C$). This collapse in C-sector profits will produce a multiplier effect depressing production in the C-sector, since now I-sector workers are not buying as many C-goods, i.e., part of Q_C^I—the consumption goods produced for I-sector workers—goes unsold, which in turn will trigger layoffs on the C-sector of workers who used to produce this (now unsold) output. As noted above, we will assume, as did Keynes, that $\%\Delta Q_C = \%\Delta N_C$, i.e., changes in output and employment in the C-sector are proportionate.

Thus, with the collapse in investment, the wage bill and profits in the I-sector ($W_I N_I$ and π_I) fall, C-sector profits (π_C) fall, consumption goods output (Q_C) falls, and the wage bill in the C-sector ($W_C N_C$) falls as well, which as we will see in a moment must have a depressing effect on consumer prices P_C.

Why is this the case? Let us first explain it intuitively and then show it using equations (7) and (9). When $W_I N_I$ falls by X%, Q_C falls by less than that (say Y%, where Y% < X%) because a small proportion of Q_C goes unsold, i.e., a portion of Q_C^I. Thus, we can expect $W_C N_C$ also to fall by a smaller percentage (Y%) because only the portion of the workers dedicated to the production of the unsold Q_C^I would be laid off.

Consider the modified equation (7) from above, where Q_C is now decomposed into its components Q_C^C and Q_C^I:

$$P_C = \frac{W_C N_C}{Q_C^C + Q_C^I} + \frac{W_I N_I}{Q_C^C + Q_C^I} \qquad (11)$$

If $W_I N_I$ falls by say 20 percent, then only Q_C^I will fall by 20 percent, but that would only make, say, 5 percent of Q_C, which is reasonable since the wage bill in the I-sector is much smaller than the wage bill in the C-sector (in the US, for example, investment is only about 17 percent of GDP, while consumption comprises about 69 percent). Now, if Q_C falls by 5 percent, then $W_C N_C$ will also fall proportionately. This means that the first fraction of equation (10) remains the same, but the second is markedly smaller. Prices of consumer goods P_C have fallen. This shows that *in a two sector economy, a collapse in investment has a strong deflationary effect on prices*. If we use equation (9), all we are saying is that the markup over direct costs has fallen, because $\Delta W_I N_I > \Delta W_C N_C$

$$P_C = \frac{W_C N_C}{Q_C}[1 + \frac{W_I N_I}{W_C N_C}] \qquad (9)$$

Note that in this scenario we have lost jobs from both the I- and C-sectors and profits have declined by the amount of the drop in investment.

Now let us reverse the analysis and explore what happens if investment rises. In this case, $W_I N_I$ will rise and so will π_C, which will produce a multiplier effect and cause Q_C^I to increase and Q_C and N_C to rise, but by a smaller percentage. In this case, the markup will rise, since the percent increase in $W_I N_I$ exceeds that of $W_C N_C$ ($\Delta W_I N_I > \Delta W_C N_C$). The ratio $W_C N_C / Q_C$ remains unchanged because both N_C and Q_C rise by the same amount (even if proportionately less than $W_I N_I$, as per our assumption), but because of the increase in the markup, a rise in investment produces a rise in prices. *This is our first indication that an*

investment-led expansion is inflationary. It can be easily verified that a *consumption-led expansion will have a taming influence on the markup*.

Note, however, that normally in most economies, wages in the investment sector tend to be higher than wages in the consumption sector.[9] This means that if there is a 20 percent increase in the wage bill of both the C- and I-sectors, there will be a smaller employment-creation effect in the I-sector because their wages weigh more. Relatively speaking, directing the same amount of demand toward investment rather than consumption would yield a smaller employment effect ($\Delta N_I < \Delta N_C$).

This also means that, *in conditions of less than full employment ($N_I+N_C<N_F$),*[10] *policies that produce an investment (as opposed to a consumption) boom would create proportionately greater inflationary effects, but with proportionately smaller employment effects*. In the off-chance that we are at full employment (N_F), an increase in employment in the I-sector will be accompanied by a decline in employment in the C-sector. This relative redistribution of employment would cause the price increase to be even greater than in the below-full-employment scenario above. This result also indicates how in modern economies, unemployment is used as an inflation-inhibiting tool.

Be that as it may, can we envision a level of investment growth that would eventually get us to full employment? This is a highly unlikely scenario, but hypothetically possible, as long as firms enjoy perpetual investment optimism, i.e., profit expectations are sustained and improving. This, of course, is rather difficult to achieve not the least because, as Keynes had

[9] Investment sector jobs, as in manufacturing, still remain relatively more unionized and command higher wage and benefit packages than in the consumption sector, where low-wage service sector jobs comprise an ever increasing share of C-sector employment.
[10] N_F signifies full employment hereafter.

reminded us, the marginal efficiency of capital (*mec*) declines when the market is flooded with capital goods. But even if expectations do not falter, a prolonged investment boom may eventually produce full employment at the expense of increasing prices and profits and, therefore, at the expense of increasingly more inequitable distribution of income. But as we know, a perpetual investment boom cannot be relied upon to sustain full employment even if it were achieved. In fact, because investment is, by far, the most volatile component of aggregate demand, profits and employment too will be unstable. Note from (7) above that $\pi = I$. When investment is volatile, so are aggregate profits. Profits in modern economies, and profit expectations, in particular, have a special role to play, as they determine the offer of employment. And if falling profits depress expectations of future profits as well, investment (and employment) will fall even further.

Such a basic two-sector model describes a system with volatile prices P_C, investment I, profits π, employment N, and income distribution. It is also a system in which idle capacity is the normal condition, $N_I+N_C<N_F$ and one which is prone to sizeable inflationary and deflationary forces. It is a model that describes earlier (pre-WWI) market economies, when neither government spending nor trade are contributing much to final demand. In such a system, bringing the economy to full employment via investment stimuli will add to the markup on consumer prices (i.e., via a relatively more inflationary method of producing full employment), whereas increasing output and employment in the C-sector will have a dampening effect on prices.

The above two-sector model refers to the simplest aggregate equation, where output is the sum of consumption and investment ($Y = C + I$), which can be augmented by adding

government demand ($Y = C + I + G$). In the prewar period, total federal government spending comprised less than 3 percent of total output, hardly an influence on total demand and not enough to offset fluctuations in private demand. As government spending ballooned in the postwar period, the share of government spending in GDP has varied from 46 percent during World War II to 27 percent today. With its new expanded roles and responsibilities, the government sector has been able, by exercising its discretionary spending power, to help stabilize prices, profits, and employment.

The relatively large share of government spending in GDP means that sizeable fluctuations in investment can be offset by discretionary spending. But by doing so, the government can also impart an important inflationary bias on the system. This is what Minsky referred to as the role of government as a "blessing and a curse" (Minsky 1986, 283). The much needed stabilization effect of government has also made the economy more susceptible to inflationary forces. To understand the inflationary bias of government, one must understand 1) the government's effect on the size and distribution of final demand and 2) the government's effect on the financial system and the resources available for financing private investment. This second effect is of critical import in a monetary production economy, but we will abstract from it for the moment, to focus on how different types of government spending affect the composition of final demand, and therefore the markup, employment, and income distribution. [11]

[11] For a comprehensive analysis of the impact of different fiscal policies on inflation and income distribution one must also deal with the linkages between government spending and the financial system as suggested by Minsky (1986).

3. THE BASIC THREE-SECTOR MODEL WITH CONSUMPTION, INVESTMENT, AND GOVERNMENT

We already know that demand from income generated in sectors other than the consumer goods sector adds to the markup. Thus, it is easy to extend the analysis above and to anticipate, even before deriving the equations, a greater overall markup on consumer prices, by adding government. But the size of the markup will be different depending on the different government policy employed. As we compare the effects of transfer payments and the direct and indirect employment effects from government spending, we will make the following assumptions. For comparison purposes, we will initially assume that wages in all sectors are the same, $W_I=W_C=W_G$. We will later relax this assumption to make it more realistic, especially as we discuss the role of "price rules." Secondly, for simplicity of exposition, I will initially abstract from taxes, in order to compare different government policies without confusing the reader with the implications of "after-tax income." Later, I will add taxes back to the price equation to show how consumer income taxes *reduce* the markup, but profit taxes *increase* it. Thus, the analysis assumes, in line with the historically-normal condition, that the government will run deficits.[12]

[12] Note that this assumption of deficits should constitute the base scenario for any analysis. As the Lavoie-Godley stock-flow consistent model illustrates, private sector surpluses (foreign and domestic) must necessarily be offset by public sector deficits. The existence of large foreign savings and (normally) positive personal savings has been made possible by deficit spending (Godley and Lavoie 2007). Conversely, in the presence of trade deficits, the government surplus during the late 90s was realized only due to the large negative savings posture of the private domestic sector (Wray 2002). Separately, the Chartalist contributions make it clear that government spending provides tax credits to the private sector, which denominates its transactions in state money (Mosler 1997-98). Deficits provide net new financial assets to the private sector, which tends to hoard a portion of them. Therefore, the normal condition of the budget stance is to run a deficit; surpluses in a given accounting period are limited to the size of previously run deficits (Wray 1999).

I will first examine the two cases in which the government provides transfer payments. In the first idealized case, the transfer payments are only in the form of unemployment insurance to those who have been laid off (TR_{UI}). In the second idealized case, government only provides investment subsidies to firms (TR_{IS}). The two scenarios will examine the effect of the two policies on prices, profits, and income distribution.

3.1 Government Spending on Transfer Payments to Individuals in the Form of Unemployment Insurance: TR_{UI}

We know that consumer goods production must satisfy the demand of wage earners in the C-sector and I-sector as well as those of non-wage earners. Suppose now that investment has collapsed, leading to a fall in $W_I N_I$ and π_I. We know that, after the multiplier effect, output and employment in the C-sector will also fall, but by a proportionately smaller amount. Collapsing investment produces a depressing effect on consumer prices, profits, and employment. Suppose however that those who have been laid off from the I-sector are now paid unemployment insurance by the government, such that $\Delta W_I N_I = \Delta TR_{UI}$. In reality, of course, unemployment insurance is only a fraction of the lost wage bill from unemployment, and we will address this issue below, but for now it should be clear that because unemployment insurance replaces the lost wage bill in the investment sector, income to the working class in the system is restored, but not employment. Because this injection in unemployment insurance goes directly to the C-sector, it restores profits π_C, produces a small multiplier effect, and induces the C-sector to rehire those workers who were laid off when part of Q_C (namely the part of Q_C^I that went unsold after the collapse in investment). Therefore, unemployment insurance recovers P_C, π_C, and the small decline in $W_C N_C$, but it

does not recover π_I or $W_I N_I$. Such an unemployment insurance policy brings the markup back to its previous level so that the price system can now redistribute output between those who still have their jobs and those who lost theirs. As noted above, however, TR_{UI} is usually far smaller than the lost wage bill in the I-sector; it is also only a temporary safety net. This means that it will not normally restore prices to their original level, though it will halt their fall. Neither is it going to produce the same employment effect in the C-sector after the multiplier if π_C recover only marginally. This is also a temporary patch that forestalls the deflationary effect from collapsing investment and prevents further layoffs.

I assumed that $\Delta TR_{UI}=\Delta W_I N_I$ in order to show that price stability is possible without employment stability. This is why Keynes was so skeptical of income stabilizing policies which did not guarantee stabilization of employment. Suppose, however, that the government wants to stimulate the C-sector by pumping more demand, and does so by *increasing* unemployment insurance. We know that by virtue of the larger transfer payment, profits in the C-sector π_C also increase. This produces a multiplier effect, generates some more production of C-goods and employment in the C-sector (but recall this is a proportionately smaller increase), and prices continue to rise since unemployment insurance (TR_{UI}) adds directly to the markup.

When we examine the two core equations above (7) and (9), but now add TR_{UI}, we get:

$$P_C = \frac{W_C N_C}{Q_C} + \frac{W_I N_I^{'}}{Q_C} + \frac{TR_{UI}}{Q_C} \qquad (12)$$

and

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I^{'}}{W_C N_C} + \frac{TR_{UI}}{W_C N_C}\right] \qquad (13)$$

From (13), the markup on consumer goods will depend on the relative wages and employment in the C- and I-sectors and the size of the transfer payment, relative to the wage bill in the C-sector. Note here that $W_I N_I^{'}$ is the new, now lower, level of investment which necessitated the government intervention via unemployment insurance. Note also that whether you consider equation (12) or (13), TR_{UI} still increases proportionately by more than either Q_C in equation (12) or $W_C N_C$ in equation (13).

Both equations show that pumping an increasing amount of aggregate demand via increasing expenditures on unemployment insurance would produce much faster price increases than the rise in output or employment in the C-sector. Growth in the C-sector production and employment will not be able to offset the inflationary effects of the unemployment insurance (UI) policy because the latter has relatively small employment-creation effects (the denominator increases more slowly than the numerator).

A quick look at profits reveals that government deficit spending, which in our case equals unemployment insurance (i.e., $Def = TR_{UI}$),[13] is a direct injection into aggregate profits. Now that we have three components of final demand, we can derive new equations for profits:

$$P_C Q_C = W_C N_C + W_I N_I^{'} + TR_{UI} \qquad (14)$$

From here, profits in the C-sector are:

[13] Recall that we have no taxes at the moment—government spends simply by issuing unemployment insurance checks.

$$\pi_C = P_C Q_C - W_C N_C = W_I N_I' + TR_{UI} \quad (15)$$

which yields:

$$\pi_C = W_I N_I' + Def \quad (16)$$

$$I = P_I Q_I = W_I N_I' + \pi_I \qquad or \qquad \pi_I = I - W_I N_I' \quad (17)$$

Therefore, adding (15) and (16), we get the familiar result that profits equal investment spending plus the deficit:

$$\pi = I + Def \quad (18)$$

This famous result illustrates that countercyclical government spending, in the presence of investment volatility, will stabilize profits. In our case, the job is done by unemployment insurance, but any government deficit spending will have this effect.

Unemployment insurance is an important safety-net for the immediate short term, but it is, by definition, not a pro-employment policy. It is a policy that provides nonwage income to the working population. One could argue that if $\Delta TR_{UI} = \Delta W_I N_I$ (as per our assumption above), workers are no worse off than before. In reality, however, this is not the case, because unemployment insurance is far smaller than the wages lost from unemployment. Furthermore, it is not a genuine automatic stabilizer, because it expires well before the private sector has recovered sufficiently to provide employment for all. The singular characteristic of unemployment is that there are people who *want to* work but cannot find employment. It therefore represents forced idleness and no matter how humane or desirable

short-run UI policies are, they are not a permanent or even a medium-term solution to the problem of unemployment. The job of the policy maker is to devise a pro-employment safety net that allows those individuals in forced idleness who *want* to work to find employment. It should be remembered that the dynamics of modern capitalist economies require that income is generated from employment and production and that, for this reason, *in monetary production economies*, livelihoods depend on income from work. Furthermore, the evils of unemployment are far too numerous to list here (see, e.g., Darity 1999; Forstater 1999) and unemployment insurance does very little to address them, other than keep the unemployed afloat for a brief period of time.

So if the objective of the policy maker is to institute pro-employment policies, the next question to ask is: How does unemployment insurance compare with alternative government policies that aim to stimulate employment creation?

3.2 Government Spending on Transfer Payments to Firms in the Form of Investment Subsidies: TR_{IS}

The second scenario to consider is one in which the government spends on transfers to firms in the form of investment subsidies, in hope that they will boost production and employment (TR_{IS}). These subsidies could go directly to the I-sector or they could be given to the C-sector for the purpose of purchasing investment goods from the I-sector. So whether these transfers are supplied to the I-sector directly or indirectly via the C-sector, ultimately one would expect that if they indeed stimulate new investment that they would partially fund the wage bill associated with this new production and partially the profits earned from I-goods production:

$$\Delta TR_{IS} = \Delta W_I N_I + \Delta \pi_I \qquad (19)$$

As expected, this would be a pro-profit policy because any increase in investment increases aggregate profits by the same amount. Of course, the newly created employment in the I-sector will increase its demand for C-goods. Thus, after the multiplier effect, we can expect employment in the C-sector to increase as well, but by a proportionally lower amount than the new employment in the I-sector. Now, would such a transfer policy necessarily increase investment? This very much depends on the state of expectations and why investment fell in the first place. Giving investment subsidies to firms would reduce the supply price of capital, but if profit expectations and the marginal efficiency of capital are collapsing even faster than the falling cost of production, no net new investment would occur. There is evidence to suggest that investment subsidies only subsidize already planned investment, and do not result in net new hiring or investment projects (see Cannari, *et al.* 2006).

If the government decides to keep pumping transfer payments to the I-sector in order to further stimulate investment, we know that prices would rise faster than the C-sector could respond to alleviate these inflationary effects by increasing employment and production. *Therefore, again, a pro-investment policy redistributes income away from the wage to the capital share in income*. Is there a limit to the amount of transfer payments that need to be provided to the I-sector in order to generate full employment? Under the foregoing assumptions, if we pump enough demand, at some point, we would expect to get to full employment, but since much of these transfer payments leak into profits π_C and π_I, it is unclear how long and how large a profit boom is needed to produce the kind of job creation N_C+N_I that would absorb all of the unemployed into either sector.

Hypothetically, however, whether investment increases on its own, or transfer subsidies are provided for purchases of investment goods, the employment creation effects of each should be the same. When investment is insufficient to produce full employment or declines, Keynes proposed that the government step in to provide the requisite demand. He did not, however, favor that this be done via transfer payments to firms, which amounts to reducing the cost of investment, because there is still no guaranteed that sufficient demand would exist to buy the newly produced investment goods. We know that under modern accounting rules, investment goods produced but unsold are counted in inventory accumulation, which, for the purposes of national accounting, is considered to be an increase in investment.[14] Such a stock buildup, however, has an important negative effect on the marginal efficiency of capital and profit expectations. Sizeable inventory accumulation indicates decelerating aggregate demand and tends to depress future investment plans. Thus, a policy of transfer payments via investment subsidies could increase investment, GDP, and employment in the near term, but if this production goes unsold and accumulates in inventories, the stimulus effect will quickly be reversed in subsequent periods. Similar to unemployment insurance, investment subsidies may only prove to be a temporary fix.

The government could, of course, buy the inventory goods from the I-sector and could either stockpile them, let them decay, or destroy them. This would amount to fiscal policy via indirect job creation. So the next question to consider is how government transfer payments compare with government employment policies. I will explore two different types

[14] To be more precise, in the US National Income and Product Accounts, change in business inventories represents the change in the physical volume of goods purchased by private business for use in the production of other commodities or for resale, valued in average prices of the period. This means that inventories could include both consumption and investment goods.

of government employment policies—those that have direct and indirect employment effects. A direct employment effect would be produced when the government hires the unemployed in the government sector; an indirect effect is when the government buys either consumption or investment goods from the private sector. Government purchases of investment goods from the I-sector is an indirect employment policy, where the government demand for I-goods is expected to produce employment creation for the production of these goods. Thus, I will first look at the latter scenario —indirect job creation—which I will later compare to a direct job creation, specifically via the Employer of Last Resort.

3.3 Government as an Employer via Indirect Job Creation

If the government buys the unsold investment goods, whenever demand falters, the I-sector will always have a guaranteed source of demand and could keep producing I-goods, employing workers necessary to produce the output now consumed by the government ($W_I^G N_I^G$), and earning profits from producing for the government (π_I^G).

Here, total profit is given by:

$$\pi = \pi_C + \pi_I + \pi_G \qquad (20)$$

The price level is:

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I}{W_C N_C} + \frac{W_I^G N_I^G}{W_C N_C}\right] \qquad (21)$$

Total government deficit spending is:

$$Def = W_I^G N_I^G + \pi_I^G \qquad (22)$$

Full employment N_F could be sustained by a level of government spending sufficient to buy all the investment goods necessary to sustain this employment demand, which boost profits in the aggregate by π_G.

$$N_F = N_C + N_I + N_I^G \qquad (23)$$

Such a policy produces a wage bill in the I-sector, which is now larger by $W_I^G N_I^G$ and which adds to the markup. Prices are sustained at a higher level and so are profits.

But is there a better alternative? A government which buys I-goods and destroys them is essentially one which follows, for example, a policy of building bombs and stockpiling them or dropping them on other nations. Apart from the obvious moral problems with such a wasteful and hostile policy, we know that the employment creation effect for the same amount of spending is much smaller than if such spending were directed to the C-sector. What if the government bought all the consumption goods it could possibly buy from the C-sector in order to maintain full employment and then either stockpiled, destroyed these C-goods, or distributed them to the working poor? Now government spending changes to

$$Def = W_C^G N_C^G + \pi_C^G \qquad (24)$$

This policy is preferable to indirectly supporting employment in the I-sector, since the newly generated wage bill in the C-sector has a multiplier effect which will increase C-goods production for the private sector (not for government) and will therefore have a taming influence on the markup (see equation [25]). In addition, there is a positive effect from the government's redistributive policy of C-goods to the poor.

$$P_C = \frac{W_C N_C + W_C^G N_C^G}{Q_C + Q_C^G}\left[1 + \frac{W_I N_I}{W_C N_C + W_C^G N_C^G}\right] \quad (25)$$

This is a viable policy option but note that it, too, inflates profits (this time of the C-sector; see equation [24]) in order to entice firms to hire the unemployed. Such policies are difficult to implement because it is unclear what type of consumption goods industries should be stimulated by government spending in order to distribute the excess production to the needy. But, once again, with this policy too, if we pump enough demand, hypothetically, we should at some point get to full employment even at the cost of inflating C-sector profits.

All of the discussion so far completely ignores structural unemployment, which, as I have argued in previous work (Tcherneva 2011, 2012) was of critical importance to Keynes. So far, the analysis presumes that pumping enough demand will eventually, even at the cost of price and profit inflation, produce full employment. But in the face of structural unemployment, it will not matter how much demand we pump via unemployment insurance, investment subsidies, or government purchases of investment or consumption goods. At a certain point, the private sector will simply not be able to absorb all who want a job, especially if those who are left behind in the labor market are the so-called "unemployable" individuals. Here we come full circle back to Keynes's Chapter 20 of the *General Theory* (1936), and his discussion of the employment function, where he clearly makes the case that, as we approach full employment, part of the increase in demand will be spent on output and production, and part will go directly to prices and profits. This could result either from production bottlenecks, or simply from the fact that demand is not directed to the "right" sectors. And to know the latter, we must know the employment creation effects of all sectors.

This is one reason why industry targeting is controversial as a policy for development or for full employment.

Suppose, however, that we did know which industries had large employment creation effects, and government conscientiously purchased goods and services from these sectors in order to stimulate job creation in pursuit of full employment. Suppose one such industry is the sock production textile industry. The government may find itself in a position of stimulating sock production, creating jobs in sock factories, and distributing socks to the poor. Even if this policy is reasonably successful in reducing unemployment and bringing the economy close to full employment, is this a viable policy? Can we put resources to better use? Do the poor need so many socks? Are there other goods and services that they could benefit from? In reality, even the sock industry will refuse to hire the "unemployable"—i.e., those lacking characteristics desired by sock industry employers—and true full employment would not be achieved. In addition, the output that the government is busy redistributing to the poor may not be as valuable as some other products they may need. This rather silly example illustrates how this kind of government planning is not likely to succeed. This is not to say that government should not attempt to discern the employment creation effects of different industries or to undertake redistributive policies. No, all of these are rather useful and sorely lacking in many developed but deregulated nations, such as in post-Reagan US. The example illustrates that the goals of production and redistribution of different types of output are not necessarily the ones that will produce true full employment.

There is a policy option that addresses structural and cyclical unemployment problems well, absorbs all the unemployed and unemployable, and does so more cheaply

than all of the alternatives that have been presented so far—this policy is the employer of last resort.

3.4 Government Direct Job Creation via the Employer of Last Resort Program

This policy immediately secures full employment by giving a job to all who want one. It is a policy that does not attempt to fit the unemployed workers to a particular consumption goods or investment goods industry, but is a policy that, instead, fits public sector jobs to the unemployed and unemployable. Even the most unskilled person can do something in the public sector that can contribute to social welfare and the public good, while simultaneously beginning to learn new skills, gain new work experience, and enhance their own human capital which will make them more employable in the eyes of private employers. The design and administration of such a program have been discussed at length in the literature. One feature of the ELR that this author has advocated is to allow the unemployed and poor themselves to actively participate in the proposal and design of the needed community projects with the help of the nonprofit sector, in order to minimize the managerial and administrative difficulties the federal government may face in executing these projects (Tcherneva 2006).

In this section, I will assume, as is frequently discussed in the ELR literature, that the government pays a base wage which is exogenously fixed (Mosler 1997-8; Mitchell 1998; Wray 1998).[15] Wages in the C- and I-sectors will be higher to make employment in those sectors more attractive. This has also been empirically demonstrated in the case of Argentina, which is the closest contemporary example to an ELR-type program, albeit a limited one (see

[15] Some have suggested that the floor should be set at the living wage level, Tcherneva (2006).

e.g., Tcherneva and Wray 2005). In the case of Argentina, all those who were hired out of the government public employment program into the private sector were employed at a premium above the ELR wage.

The immediately obvious difference between the employer of last resort (ELR) policy and the earlier indirect job creation government policies is that government spending does not leak into profits of either the C- or I-sectors. Compare the deficit associated with the ELR program with that of the alternative policies. The deficit levels are:

$$Def_{ELR}=W_{ELR}N_{ELR} \quad (26)$$

$$Def_C = W_C^G N_C^G + \pi_C^G \quad (24)$$

$$Def_I = W_I^G N_I^G + \pi_I^G \quad (22)$$

If Def_{ELR}, Def_C and Def_I are the full employment levels of government spending from these three policies (ELR, stimulating C-sector employment by purchasing C-goods, and stimulating I-sector employment by buying I-goods), we can expect these expenditures to be ranked in the following fashion:

$Def_{ELR} < Def_C < Def_I$.

The pro-investment policy generates the largest deficit Def_I, because it has the smallest employment creation effects; thus, a lot more government spending is required to get the economy to full employment N_F. This is because investment is a small percentage of GDP, and because much of the government spending is absorbed by the higher wage (recall that I-sector workers command the highest wages $W_I>W_C>W_{ELR}$, which means that the same amount of government spending is distributed more toward wages and less towards employment). Furthermore, Def_C exceeds Def_{ELR}, because wages in the C-sector are greater

than those from ELR employment, and because part of the government spending leaks into C-sector profits.[16] Thus, it is reasonable to expect that the smallest amount of government spending will be associated with the direct job creation policy.

So, if the government decides to act as an employer of last resort, what happens to the rest of the economy? $W_{ELR}N_{ELR}$ is still income earned in a non-consumption goods industry but spent on consumption goods, which adds to the markup and to C-sector profits, albeit by less than when we attempted to get to full employment by pumping government demand for C-goods (this is because $W_C > W_{ELR}$ and because none of the government ELR stimulus leaks immediately into profits). ELR will also have some multiplier effects, i.e., it will increase the wage bill and production in the C-sector (W_CN_C and Q_C) which means that either W_IN_I will fall as the C-sector hires away workers from the I-sector (remember that we are now at full employment) or $W_{ELR}N_{ELR}$ will fall for the same reason. In both cases, the markup will fall. But if the C-sector hires from the ELR pool, then spending on ELR is even smaller than that from the alternative fiscal policies. The size of the government deficit matters not because of some budgetary constraints the government faces, but because a smaller government deficit will add less to the profit share of income and to the markup. Furthermore, the Chartalist literature stresses that it is important to know what government spending actually buys because we will be able to discern how the government supplies its currency to the non-government sector. When we stimulate the production of consumption goods via Def_C, the deficit is spent partially on the newly created wage bill in the C-sector ($\Delta W_C^G N_C^G$) and

[16] Recall that the ELR hires at a base wage, which would serve as the effective minimum wage (Wray 1998). Hiring away from this pool of employed workers occurs at a premium over the ELR wage, as demonstrated in the case of Argentina (Tcherneva and Wray 2005).

partially on profits earned from producing for the government ($\Delta\pi_C^G$). When we stimulate investment (*Def*$_I$), government spending produces a new wage bill in the I-sector ($\Delta W_I^G N_I^G$, where spending now buys more "expensive" workers) and new profit from producing for the government $\Delta\pi_I^G$. With ELR, we know that government spending pays only for the wage bill of the ELR workers where, regardless of the size of the public sector labor force, one hour of work is always set at the base ELR wage W_{ELR}. As Keynes argued, in dealing with a theory of employment, we "can make use of only two fundamental units of quantity, namely, quantities of money-value and quantities of employment" (Keynes 1936, 41). If quantity of employment is measured in terms of labor-units and the money wage of a labor unit is the wage unit, then we can deal with the behavior of the economic system as a whole by measuring output by the employment that went into its production and its relative remuneration.[17,18] From a Chartalist perspective, if the ELR wage sets the terms of exchange between the ordinary labor unit and the base wage, then we have an anchor of "value" of the currency and we will know exactly how much work one unit of currency (provided via government spending) is worth. With ELR, we create a benchmark for the ratio between the ordinary labor unit and the base wage.

Here is the ex-post price relationship for consumer goods with ELR.

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I}{W_C N_C} + \frac{W_{ELR} N_{ELR}}{W_C N_C}\right] \qquad (27)$$

[17] Here Keynes took "ordinary labor" as the base measure of the labor unit (i.e., one unskilled worker), where more skilled and specialized labor units are remunerated according to some proportion in relation to the base unit. In other words, if a specialized unit is remunerated at double the rates of a base unit, then it will count as two ordinary labor units.

[18] This is yet another validation of Keynes's unique method of analysis, which has been discussed elsewhere (Tcherneva 2011, 2012). Keynes insisted that output is measured in terms of number of people employed, which was consistent with his commitment to "on-the-spot" employment policies.

Compare it with the price equation from the pro-Investment government policy

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I}{W_C N_C} + \frac{W_I^G N_I^G}{W_C N_C}\right] \quad (21)$$

Because $W_I^G N_I^G$ is larger than $W_{ELR} N_{ELR}$, the markup is also larger. *A policy that pumps increasing amounts of investment demand to produce full employment is bound to be more inflationary than ELR*.

The price equation from the fiscal policy which stimulated consumption goods production is:

$$P_C = \frac{W_C N_C + W_C^G N_C^G}{Q_C + Q_C^G}\left[1 + \frac{W_I N_I}{W_C N_C + W_C^G N_C^G}\right] \quad (25)$$

The first fraction does not change after we add the demand from government because the numerator and denominator increase proportionately, but the second fraction is now smaller, which is why we argued above that this pro-consumption goods policy has a taming effect on the markup, even as it inflates profits.

This result was to be expected since this is a policy of flooding the market with consumption goods. The problem, however, remains that we may not know which consumption goods industries to target and, even if we did, the structurally unemployed and those who are believed to be unemployable, may still remain without jobs, no matter how large the government spending. With ELR, however, we address both problems directly but at the cost of producing a *higher but stable* markup. By contrast, the markup from unemployment insurance, investment subsidies, or purchases of investment goods from the I-sector is not only higher than that from the ELR policy, but it is also *rising*, because as the economy approaches full capacity, an *increasing* amount of spending on each of these

policies is necessary to secure true full employment (recall much of it directly leaks into profits and prices). With the ELR policy in place, we know exactly how much spending is required to employ all the jobless who wish to work, whereas through any of the alternative policies we do not how large a demand would be required to encourage the private sector to secure *and* maintain true full employment.

Even though the markup from the ELR policy is the most stable, if its size were a concern for any reason, there is a way to reduce it. This can be done by having the ELR program produce consumption goods which will absorb part of the wage bill of either ELR workers or those from other sectors. In a sense we are still flooding the market with consumption goods, but we do not have to figure out which C-industry has high employment-output elasticities and, after we do, still run the risk of flooding the market with the "wrong" kind of C-goods.

With the ELR, we can let the ELR participants determine the kind of consumption goods and services that are most needed in the poor communities and organize production in the ELR sector around those needs. This was done very effectively in Argentina where the participating workers produced many goods and services that were either sold in the market or distributed free of charge to the poor.

Finally, we need to relate consumer goods prices to the ELR wage and the relative employment shares in the three sectors (C-sector, I-sector, and G-sector). With ELR the ex-post equation is the following:

$$P_C Q_C = W_C N_C + W_I N_I + W_{ELR} N_{ELR} \qquad (28)$$

Where the total consumption goods production is given by the consumer goods produced in the private sector (Q_C^C) and those produced by the ELR program (Q_C^{ELR}). In other words,

$$Q_C = Q_C^C + Q_C^{ELR} \quad (29)$$

We also know that the ELR wage will be the base wage and that the C- or I-sectors can always hire workers at a premium over the ELR wage. Therefore,

$$W_C = (1+\alpha)W_{ELR} \quad (30)$$

$$W_I = (1+\beta)W_{ELR} \quad (31)$$

where $\beta > \alpha$.

Given these conditions, we can derive P_C by substituting equations (29), (30) and (31) into equation (28). *Thus, we can express the price level as a function of the ELR wage (W_{ELR}), the relative employment shares in different sectors, and the ratio between the premia charged over the ELR wage in the C and I-sectors* α *and* β. Let us derive it:

$$P_C = \frac{W_C N_C}{Q_C^C + Q_C^{ELR}} \left[1 + \frac{W_I N_I}{W_C N_C} + \frac{W_{ELR} N_{ELR}}{W_C N_C}\right] \quad (32)$$

or

$$P_C = \frac{(1+\alpha) W_{ELR} N_C}{Q_C^C + Q_C^{ELR}} \left[1 + \frac{(1+\beta) W_{ELR} N_I}{(1+\alpha) W_{ELR} N_C} + \frac{W_{ELR} N_{ELR}}{(1+\alpha) W_{ELR} N_C}\right] \quad (33)$$

or

$$P_C = \frac{(1+\alpha) W_{ELR} N_C}{Q_C^C + Q_C^{ELR}} \left[1 + \frac{(1+\beta) N_I}{(1+\alpha) N_C} + \frac{N_{ELR}}{(1+\alpha) N_C}\right] \quad (34)$$

We can simplify further:

$$P_C = \frac{W_{ELR}N_C}{Q_C^C+Q_C^{ELR}}\left[(1+\alpha)+\frac{(1+\beta)N_I}{N_C}+\frac{N_{ELR}}{N_C}\right] \quad (35)$$

Equation (35) is our fundamental equation for a full employment economy with an ELR type policy. It illustrates a full employment condition $N_{ELR}+N_C+N_I=N_F$, where the multiplier is implicit. If the ELR wage rises, so will prices P_C, which is why the modern ELR proposal emphasizes that the ELR wage must serve as an anchor and would be raised discretionarily, but should not be indexed to prices. Any discretionary rise in the W_{ELR} would produce a one-time jump in prices, but wage-price indexation will likely render the ELR policy inflationary and will ensure that the ELR wage is no longer an anchor to prices and wages in the economy. P_C could also rise if the private sector wants to bid up its own wages, i.e., the C- and I-sectors keep increasing α and β. Furthermore, inflationary effects can be observed if employment in the I-sector rises faster than employment in the C-sector. If this occurs and the ELR pool does not change, then we can expect production of consumer goods to decline somewhat if workers are now redirected to investment goods production. This decline in Q_C, will fuel the inflationary effect of the investment boom. But it is unlikely that the ELR employment and production will remain unchanged. If there is indeed an investment boom which hires workers away from the C-sector, the demand for Q_C will not decline; it may, in fact, increase if these workers now command higher wages from I-sector employment and can increase their standard of living. This means that Q_C will not fall (it may actually increase) and the production of these new goods will have to be done by somebody. In this scenario, then, it is likely that the C-sector will hire away workers from the ELR sector in order to satisfy the demand for consumer goods. Another way of seeing this is

to say that as N_I increases and $W_I N_I$ increases, so will π_C. This, in turn, will prompt the C-sector to hire from the ELR pool in order to boost Q_C production. *So as N_I rises, N_{ELR} falls and serves as a countercyclical stabilizer to prices*. But because I-sector workers command higher wages $W_I=(1+\beta)W_{ELR}$, there will still be small upward pressure on the markup and prices from this *private-sector* driven investment boom. Output of consumer goods may remain the same or may increase as workers move from the ELR industry to the C-sector.

Conversely, when investment collapses, N_I falls but N_{ELR} expands. Thus, the ELR program offsets the deflationary pressures from falling investment demand. Because the ELR wage is lower than W_I, this offsetting effect is only partial. Furthermore, as $W_I N_I$ falls, π_C also falls and so will Q_C^C after the multiplier effect. But since the ELR pool has now expanded, so has ELR production of C-goods Q_C^{ELR}, which partially sustains the output of C-goods, as workers move between sectors. Apart from the other benefits of ELR that have been explained elsewhere in the literature (Minsky 1986; Wray 1998; Mitchell 1998; Forstater 1999; Mosler 1997-98; Tcherneva 2006), this simple Kaleckian model allows us to see the price stabilization feature of a government policy that attains and maintains full employment.

In other words, with the ELR in place, under conditions of full employment, price increases result when the private sector expands and government shrinks. Conversely, when employment in the C- and I-sectors falls, it is immediately absorbed in the ELR labor force, which prevents the markup from collapsing, while at the same time it stabilizes prices. In other words, the markup falls by less than in the absence of ELR. Government ELR policy can be seen as taming the markup. There are, of course, other government and non-

government factors that can produce inflation, but inflation, it must be emphasized, does not result from the ELR program.

The ELR is a policy that favors wage incomes and consumption. It is a policy that does not rely on fueling the profits of the private sector in order to generate employment and, as such, it yields better income distribution than the alternatives. It is a cheaper policy option that tames the inflationary and deflationary effects from changes in investment demand, while maintaining full employment. It sets a clear ceiling to government spending, as spending stops once all of the jobless who wish to work have been hired. By contrast, priming the pump or directing demand to private sector production requires larger deficits because some of these deficits will leak into profits and most of the spending will go first towards hiring more "expensive" and generally employable workers. Near full capacity, it is possible that no amount of government demand will entice the private sector to hire the least skilled and least educated workers, thereby ensuring that all new demand will go directly into prices and profits.

4. GOVERNMENT POLICIES TODAY

Today, governments perform all of the different types of fiscal policies discussed so far except for the ELR option. In the US, the government provides unemployment insurance to the unemployed for a limited duration, transfer payments in the form of large (direct and indirect) subsidies for military production, direct purchases of military consumption and investment output, while increasingly outsourcing its operations to the private sector, and therefore steadily diminishing the amount of public sector employment (mostly federal).

Direct job creation is virtually non-existent. From the model presented here, it is clear that all of these policies add to the markup when they result in large deficits, all of them boost profits, and none of them have so far achieved or sustained a full employment level of output. The only time of true full employment in the US was during World War II, when the government did indeed serve as the employer of last resort, extending its peace-time Depression-era New Deal policies to the war effort. But this type of government ELR is not what any economist envisions. From Keynes to Minsky to all modern advocates of direct employment, full employment can and must be organized around civilian purposes in a way to serve the needs of modern societies during peacetime. All of the other peacetime fiscal policy alternatives have considerable inflationary bias, even as they stabilize profits and put a floor on incomes and layoffs. This is why Minsky called Big Government "a blessing and a curse." Profits and prices recover and even increase, but without achieving or maintaining full employment.

4.1 Trade Deficits, Taxes, Consumption out of Profits, and Saving out of Wages

The discussion so far ignored several factors. First, we have omitted taxes. All of our equations can be amended to include taxes on wages, which reduce the markup by reducing the disposable income of each sector's workers. Furthermore, if we include savings out of wages, the markup will be even lower. In cases such as in the US, which experienced negative saving rates during the late 1990s and early 2000s (i.e., consumption financed by borrowing had consistently exceeded incomes during that time), the negative saving rate has actually *added* to the markup—again a source of inflation from the private-sector. All equations can also be amended to include purchases of imports which will reduce the

markup, since the domestic wage bill is partially spent of foreign-produced consumer goods. This is, to some extent, the reason why the inflationary effects of large household dissaving and government deficits have not been manifested in the US. [19] In effect, trade deficits in the US serve to *export* domestic inflation to our trading partners.

Finally, all equations must include profit taxes, which would *add* to the markup. This is because any taxes on the employer are treated as costs of production, which must be recaptured by the price system; e.g., social security taxes and employer pension contributions must be added to labor costs. Thus, prices could rise, even without increases in investment or government deficit spending if such taxes are increasingly imposed on producers, who in turn attempt to recover them by marking up their direct costs by the amount of the tax increase (Minsky 1986, 149). Finally, we must add consumption out of profits, which in modern economies is a sizeable and important addition to the markup.

The importance of consumption spending out of profits is that it feeds back into aggregate profitability and essentially reproduces itself. In modern economies, consumption out of profits takes the form of what Minsky called overhead or ancillary labor—that is, labor not directly linked to the production of capital assets. Recall that up to now, part of the surplus generated in the C-sector is spent on purchases of capital assets. But this surplus need not be allocated to the production of investment goods; it may go to support military production or an elaborate corporate bureaucracy, or as Minsky argued—to the building of Versailles (Ibid., 153). More importantly, in the modern era, the new competition based on

[19] Note that in the late 90s, the government actually reduced deficits drastically and moved briefly into surplus. This stance quickly reversed after the 2001 recession, which, coupled with the "War on Terror," has produced once again large government deficits.

volume of sales and size of market share, has necessitated large expenditures on advertising, marketing, and research, all of which produce income which is derived from consumption out of profit, but is spent on consumption goods. Thus, the markup will be greater with ever increasing consumption out of profits. Thus, Minsky argued that "an increasing dominance of markets by firms with market power due to and sustained by advertising, product development, and sales efforts produces inflationary pressures" (Ibid., 155). Although all of these expenditures result in the allocation of the surplus to wages and salaries, they also represent costs of production to firms which must be recovered by the price system (Ibid.). Such an inflationary process has a particular aspect that makes it self-perpetuating. As the wages derived from consumption out of profits are spent on consumption goods, they result in increased profits. Therefore, the more firms spend out of profits, the more they increase their profitability by inflating the markup. This is why Minsky argued that this process leads to a form of self-fulfilling prophecy: "in the aggregate the greater the amount of such spending, the more firms can afford to spend in this way" (Ibid., 156). Saving out of wages will mitigate this process, however, since the wages of executive, managerial, and other overhead or ancillary workers tend to be higher, and so, too, are their marginal propensities to save, which reduce the cash flows available for profit income (Ibid.).

Any of the previously discussed alternative fiscal policies, which attempt to secure full employment by boosting the profits of the private sector, in fact, prove to be even more inflationary than already discussed because part of the newly generated profits will be consumed. For the purposes of our present model, consumption out of profits is very

important, because it indicates how much more inflationary those fiscal policies that fuel private sector profitability are.

Consistent with Minsky (1986), we can now derive our modern day price equation:

$$P_C = \frac{W_C N_C}{Q_C}\left[1 + \frac{W_I N_I + Def - \pi_I^G - \pi_C^G - \pi_X + T_\pi - BT_{DEF} + C\pi^* - sW^*}{W_C N_C}\right] \quad (36)$$

Where BT_{DEF} is the trade deficit, π_X are profits from export production, T_π are profit taxes, and $C\pi^*$and sW^* are consumption out of after-tax-profits and savings out of after-tax-wages, respectively.

In the above equation:

$$Def = TR_{UI} + TR_{IS} + W_C^G N_C^G + W_I^G N_I^G + \pi_I^G + \pi_C^G - T_\pi - T_W \quad (37)$$

where T_W are taxes on all wage incomes and T_π are taxes on all profits π—not just those earned from producing for the government ($\pi_I^G + \pi_C^G$).

The result of present day fiscal policies is that they have failed to guarantee full employment, even as they manage to support and inflate prices and profits. If we add the ELR, we can expect to reduce the need for deficit spending on some of the other government programs, such as unemployment insurance, but it is unlikely that investment subsidies and military spending will be curbed substantially, unless there is a major shift in policy. *Therefore, any inflationary effect from government spending that occurs in the presence of an ELR will come from sources other than the ELR.*

4.2 Market Power and Pricing

So far, we have only alluded to firm market power, which was important in Kalecki's income distribution analysis. Note that if, when demand flows to firms, they are able to respond by

raising prices rather than employment and output, then all government spending will flow directly into profits. Firms with sizeable market power will probably do both, which still means that a greater proportion of government spending will result in greater increases in profit margins than in employment. In such cases, fiscal policy could keep pumping demand but have an even smaller employment creation effect than indicated above. If a firm has a significant market power (say it is the monopolist in military goods production), then it could try to charge the highest possible price for the goods it sells to the government in order to extract the highest possible profit.[20] Furthermore, over the long run, profit-seeking enterprises will likely restructure production to favor automation and labor-replacing technologies, so that increasingly higher profits are extracted from producing for government (which is a guaranteed source of demand) by reducing their labor costs. Whether firms extract maximum profit π_G from government by raising the price of consumption or investment output produced for government ($P_C^G \; or \; P_I^G$) in the short run, or by utilizing labor-replacing technology in the long run, both will further exacerbate income inequality.

With greater market power of firms, an even greater government deficit will be required to produce full employment because a much greater proportion of the stimulus would leak into profits. If there is no ceiling or cap on profits earned from producing for the government (and in the contemporary policy environment of "no-bid contracts," this is not an unreasonable assumption), there may also be no specific ceiling to government spending if fiscal policy is committed to pumping enough demand to produce full employment via such a pro-investment policy. By contrast, in the ELR case, there is a clear limit to deficit spending.

[20] A recent study finds that contracting out to private firms is more expensive for the federal government than if the government were to hire the workers directly to do the job (Project on Government Oversight 2011).

First, there is no leakage into a bottomless desire for profits. Secondly, as soon as N_{ELR} absorbs all the unemployed, such that $N_C+N_I+N_{ELR}=N_F$, deficit spending stops and no longer adds to the markup.

In the modern era, government makes a sizeable contribution to the markup, which is why Minsky called government "an engine of inflation." The above analysis is entirely different from the neoclassical interpretation of government crowding-out effects, central bank monetization of government debt, or large helicopter drops of money chasing too few goods as forces of inflation. It is an interpretation of the relative nominal wages and employment shares in different sectors. It is an approach that allows us to study firm and union market power in the determination of income distribution and firm power in the determination of aggregate profits.

5. GOVERNMENT SPENDING AND "PRICE RULES"

From the analysis so far, it is becoming clear that how government spends and what it buys is of crucial importance for income and inflation determination. This differential impact depends on how much it pays for a particular good or service or, in the ELR case, for labor. Thus the foregoing analysis can be complemented with a price-rule axiom, which states that government spending must adopt a price-rule that involves the least amount of income and price distortions and the greatest amount of job creation.

The rule that government spending follows currently is a budget rule, but since the government financial balance (i.e., the deficit or the surplus) is endogenously determined (as tax collections and automatic countercyclical spending depend on economic activity, not on

direct government policy), the government effectively follows a spending rule. That is, spending caps are placed on various items as they are appropriated in the budgetary process. In recessions, certain expenditures increase automatically. If such countercyclical measures are deemed inadequate, the government may authorize emergency measures to help things along. Tax rebate checks, for example, are a favored discretionary policy that aims to inject quick cash in the economy. This approach is no different from the income transfer approach above. There are some proposals to boost the amount and length of unemployment insurance received. In the aggregate, these are all approaches that favor profits over wages, which in normal circumstances would impart an inflationary bias on the economy.

This "something for nothing" income transfer approach has another destabilizing feature. From a Chartalist perspective, we know that taxes create demand for state currency; a sizeable imbalance between tax collections and transfer payments, suggests that government injects liabilities "for free" in an economy that usually works to "earn" them to pay the tax. This erodes the value of the currency, as seems to have been the case in numerous countries around the world (for details see Hudson 2003). For this reason, Chartalists have always preferred to tie the provision of the currency to something specific, such as one hour of performed work. Chartalists suggest that this approach will anchor the value of the currency and, if coupled with an ELR policy, the ELR labor force can serve as the buffer-stock that maintains the currency's value (Mosler 1997-98; Mitchell 1998; Wray 1998). Although Keynes, a self-proclaimed Chartalist, did not link the value of the currency with such an ELR program, his whole methodology and approach to fiscal policy as a tool for directly targeting labor demand suggests precisely such a rule—that spending must be

limited, not to some arbitrary budget caps, but to programs that directly absorb labor up to 95 to 100 percent capacity via an "on the spot" (or direct) job creation (Tcherneva 2011).

In the absence of an ELR policy, government spending on direct job creation is still more stabilizing than spending on transfers or investment goods, but it does not constitute a full employment policy, which, as Keynes had argued, should be the objective of fiscal policy. Finally, government spending on investment goods should also follow some rule, such that the costs and employment creation associated with every government contract are carefully monitored, monopoly pricing is limited, and the size of profits that could be earned from producing for government is also restrained.

As already discussed above, in conditions of full employment, the government base wage becomes the anchor for all labor inputs in all sectors. *But if the W_{ELR} is indexed, it would stop serving as an anchor for P_C and would impart a strong inflationary bias on prices.* As Minsky explained, there are two main types of inflation:

> In one, prices rise, even as increases in money wages lag behind prices; in the second, prices rise as money wage increases keep up with or even lead prices. When the determinants of the markup rise relative to the output of consumer goods, then prices rise relative to wages and the purchasing power of wages falls. This type of inflation does not feed on itself. (Minsky 1986, 259)

In the case of wage indexation, we are linking, by design, price changes to wage changes, thereby guaranteeing a spiral inflationary process. This is what Minsky called open inflation, where rising prices induce wage increases, which lead to additional costs and thus price rises. Such an inflationary effect will be exacerbated overtime as inflation expectations become entrenched in the minds of workers and employers, making it doubly more difficult to halt such an open inflation.

But if government uses a discretionary rule for wage increases, e.g., W_{ELR} is periodically revised up (say, every 5-10 years, which is still more frequent than the historical revisions in the minimum wage), then any increase in the markup will be a one-time adjustment that does not constitute inflation. Discretionary increases do not produce the same automatic inflationary effects as indexation. A stable ELR wage is a stable anchor for prices. Only in conditions of full employment can we be certain of the inflationary and employment effects of government policy. To do so, the ELR wage should be exogenously fixed and changed discretionarily, whereby government spending must be allowed to fluctuate with the level of ELR employment. This is what has been succinctly called the "fixed price/flexible quantity" rule by Mosler (1997-98).

A final word is in order with regard to profits. Notice that it is the government deficit, not government spending, that enters the profits equation. Deficits, as well as all of the above relationships, are ex-post results, leaving employment to rest solely on profit determination, which leads to a rather unstable system. With ELR, full employment is guaranteed, whereby the inflationary influences on the markup from government are controlled. Moreover, the government ELR program imparts countercyclical price stabilization even if it does not eliminate all sources of inflation entirely (namely those which emerge from changes in private demand). ELR will, however, eliminate the need for a wide range of income transfers that are currently used to support the unemployed and the poor. As Minsky continually emphasized, if we are serious about poverty eradication, pro-employment, not pro-income policies are needed (Minsky 1968; see also Bell and Wray 2004). With an ELR, full employment is guaranteed and price stability is strengthened through the program's

countercyclical mechanism. In conditions of true full employment, over the short and long run, economists would still need to devise comprehensive anti-inflationary policies that would deal with private sector generated inflation.[21]

[21] See Lerner's MAPs (Lerner and Colander 1980) and Vickrey's TIPs programs (Vickrey 1986) as examples of two similar proposals.

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