EMBEDDING CARE AND UNPAID WORK IN MACROECONOMIC MODELING: A STRUCTURALIST APPROACH

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ABSTRACT

This study embeds paid and unpaid care work in a structuralist macroeconomic model. Care work is formally modeled as a gendered input into the market production process via its impact on the current and future labor force, with altruistic motivations determining both how much support people give one another and the economic effectiveness of that support. This study uses the model to distinguish between two types of economies – a "selfish" versus an "altruistic" economy – and seeks to understand how different macroeconomic conditions and events play out in the two cases. Whether and how women and men share the financial and time costs of care condition the results of the comparison, with more equal sharing of care responsibilities making the "altruistic" case more likely.

KEYWORDS

Unpaid work, care, economic models, structuralist models

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RUNNING HEADER: **[It is FE policy that the running header be made up of consecutive words of the title and be a maximum of 40 characters, so we have suggested the following.]** Embedding Care and Unpaid Work

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INTRODUCTION

Since the 1990s, unpaid work and care have garnered increasing academic attention, creating the emerging fields of the economics of unpaid work and the study of "the care economy."[1] Most of this work is oriented toward microeconomics, focusing on issues such as the household division of labor, subsistence production in developing countries, the substitution between nonmarket and market goods and services in households, and the role of caring motivations in sectors of the labor market in developed and developing countries. Empirical work parallels these theoretical efforts. Examples include measuring

unpaid work via time-use surveys across the world, estimating the monetary value or opportunity cost of unpaid work, and linking care with the gender–wage gap and gendered job segregation.

Both strands of research on unpaid work and care – theoretical and empirical – provide invaluable insights into the economic and highly gendered dimensions of these issues, but this work also reveals an analytical gap in the literature (Irene van Staveren 2006). There is not much connection between the theoretical and empirical research on care, with the one developing from feminist philosophy and economic methodology and the other emerging from statistics, case studies, and game theoretic experiments. This distance reflects both the unique role of modeling in economic methodology and the dearth of feminist modeling techniques, particularly at the macroeconomic level. Models serve as bridges between theory and empirics, helping us specify empirical questions and make sense of the results by formally structuring conceptual frameworks developed in theoretical analyses. Perhaps because gender is more immediately apparent in the microeconomic realm (the sexual division of labor is one of the most salient features of households and labor markets), and budding economists are quickly conditioned to see macroeconomic aggregates as somehow above the earthy complications of social relations, the feminist macro model is rare, with a handful of notable exceptions that tend to focus on questions of gender and economic development (Korkut Ertürk and Nilüfer Çağatay 1995; Elissa Braunstein 2000; Marzia Fontana [2002] **[This is the year in the reference list. If you change the citation in the reference list, please make sure it matches the inline citation. Or, if you wish to cite a different source than appears in the reference list, please add the new source there.]**; Robert Blecker and Stephanie

Seguino 2002; Stephanie Seguino 2010 **[Seguino's working paper has been published. We have cited the publication.]**; A. Haroon Akram-Lodhi and Lucia C. Hanmer 2008). The field is even sparser when the issues of care and unpaid work are introduced, which only Akram-Lodhi and Hanmer (2008) and Fontana (2002) include.[2] **[We have moved this sentence to endnote 2.]**

We contribute to this literature by embedding unpaid work and care in a structuralist macro model, as models of this type illustrate how the social structures of production matter for economic outcomes, a natural fit for the proposed task. Unpaid work and care are formally modeled as a gendered input into the market production process via their impact on people as paid workers – the process of reproduction. Motivations for care determine both how much support people give one another, and the effectiveness of that support in economic terms. We ultimately use the model to distinguish between two types of economies – a "selfish" versus an "altruistic" economy, both with stereotypical gender norms about the division of labor – and seek to understand how different macroeconomic conditions and events play out in the two cases. How women and men share the financial and time costs of care condition these results, with more equal sharing of reproductive responsibilities making the "altruistic" case more likely. While much of our discussion refers to the case of a modern industrial economy, the only economic feature required by the structure of the model is a large human services sector that primarily employs women, a feature shared by many countries with varying levels of industrial development. Before turning to the formal derivation of the model, we address some conceptual issues that will ground the discussion that follows.

SOME CONCEPTUAL NOTES ON CARE

We define care in both labor process and output terms. In terms of labor process, care is a work activity that involves close personal or emotional interaction with those being cared for (Nancy Folbre 2006). In terms of output, care refers to services that are inputs into the production and maintenance of the labor force. Some forms of care are more direct than others, such as bathing a patient versus cleaning a bathroom. To some extent, all work could be categorized as indirect care in that its ultimate purpose is to enhance or support human life (Folbre 2006). For the purposes of the model, however, care refers to either direct care services or indirect services that support care. (In the model, the contrasting type of work is the production of durable goods that are used for investment or as capital inputs into the care process.) This conceptualization of care is similar to the notion of reproduction used by Marxist feminists, where the labor force is reproduced, both in the long run in terms of preparing the next generation to enter the labor force, as well as in the short run as the daily care given to paid workers to enable them to resume their paid work (Nancy Folbre 1994).

There is an explicit difference between our definition of care as an activity and the feelings and intentions that motivate caring activities. In the model below, we refer to three different types of motivation for care: self-interest, altruism, and the desire or compulsion to fulfill social norms. Self-interest is the standard behavioral rationality assumed in economics. By contrast, altruism is a motivation that is other-directed and relational, requiring a positively valued, or even affective, personal relationship between

two or more agents. The third motivation, social norms, refers to socially sanctioned, informal rules that guide individual behavior. These rules, many of which are gender specific (including the likelihood that individuals are caregivers), prevail at the individual level for a variety of reasons, including fear of sanctions or the psychological internalization of norms. Thus behavioral norms may be followed in a calculated way, grudgingly, unconsciously, out of habit, or because of a feeling of righteousness or duty.

There is no automatic correspondence between the motivation for care, and whether care work is paid or unpaid, though some (wrongly) presume that unpaid care work is somehow more inherently altruistic than paid care work (Nancy Folbre and Julie A. Nelson 2000). One proposition we do make, however, is that altruistic care workers are more effective at delivering care than those who are otherwise motivated, *ceteris paribus* (Nancy Folbre and Thomas E. Weisskopf 1998). This is simply saying that altruistic nurses with the same skills, work loads, income, and bosses will be more dedicated care workers than selfish nurses, or those that got into nursing because it seemed to be an acceptable female profession. The same goes for unpaid care. Caring for an ailing friend out of love seems like it would result in better care, *ceteris paribus*, than caring for a distant relative out of social obligation. We rely here on the notion of intrinsic motivation, which is key to an activity such as care, and which has been shown in various studies to result in higher labor productivity and lower turnover rates, contributing to more efficiency (Bruno S. Frey 1997). Whether one accepts this argument is not essential for the dynamics of the model, however. The key point is to differentiate between societies that care more and/or better than societies that care less. The reason could be social norms around intergenerational obligation that induce altruistic

preferences; strong social welfare sectors that create highly skilled and well paid jobs in the care sector; or, more likely, gendered ideals that encourage women to provide high quality care for little or no pay.

Gender norms around care constitute our last conceptual point. Unpaid work and care have been understood by feminist economists as highly gendered activities with gendered meanings, asymmetrically distributed between men and women in both the paid and unpaid sectors (M.V. Lee Badgett and Nancy Folbre 1999; Julie A. Nelson and Paula England 2002). Thus, economic analyses of unpaid work and care must be gender aware, as these activities impact the economic lives of women and men differently. For instance, women's disproportionate share of unpaid work relative to men constitutes a stronger constraint on their participation in and gains from the market and the state. Women's lower incomes and relative lack of power over public finance decisions contribute to this inequality. At the same time, the gendered care components of paid work help to explain differences in male and female employment and wages, as described so well by Richard Anker (1998). We capture these divisions in the model by positing gender segregated labor markets and women's association with paid care work. Both women and men contribute to the financial and time costs of providing care in the household, however, just to varying degrees.

A MACROECONOMIC MODEL WITH CARE

We construct a simple structuralist model of the macroeconomy, drawing on a long list of similar models in the structuralist literature (Robert Blecker 1989; Stephen A. Marglin and Amit Bhaduri 1990; Blecker and Seguino 2002; Lance Taylor 2004). In these models, which develop both classical-Marxian **[OK?]** and Keynesian insights in order to construct a framework alternative to the textbook aggregate demand–aggregate supply model, the distribution of income plays a central role in consumption, investment, and the level of output. As in classical-Marxian **[OK?]** frameworks, production is not viewed as constrained by the availability of labor. At the same time, as in the Keynesian tradition, it is the level of output that adjusts (at least in the short run) in order to equalize decisions by firms and households about planned investment and savings respectively. Firms operate with excess capacity, and changes in the short-run level of output change the degree of *capacity utilization* of the economy. This is to say that the existing capital stock does not constrain the level of output. It follows that economies are demand-constrained, and there can be involuntary unemployment. Wages are set not by the marginal product of labor, as in neoclassical models, but rather via a social bargaining process between capitalists and paid workers. Also, it does not really matter whether or not wages are sticky in the short run;[3] what matters is labor's ability to negotiate higher wages when the economy is expanding. The equilibrium in structuralist models determines simultaneously a rate of capacity utilization and one distributive variable, such as the profit share. Although comparable to a standard aggregate demand–aggregate supply model, a structuralist framework emphasizes the interplay between output adjustments and income distribution, rather than the role of price adjustments in restoring a macroeconomic equilibrium after demand or supply shocks.

Only a handful of structuralist models explicitly incorporate gender, and among those that do, the focus is most often on the macroeconomic dynamics of gender-based wage inequality and women's labor force participation in a development context (Ertürk and Çağatay 1995; Braunstein 2000; Blecker and Seguino 2002; Seguino 2010). By contrast, we incorporate unpaid work and care, and the implications of its gendered distribution, into a model that can accommodate a variety of economic structures. There is only one other similar effort that we know of where the authors add a household sector to standard commodity production in what is described as a post-Keynesian modeling framework (Akram-Lodhi and Hanmer 2008). We hope to add to their efforts by focusing on the issues of income distribution and the level of output, adding more methodological detail, and explicitly incorporating gendered bargaining around the time and financial costs of care.

Before getting into the standard sequencing for presenting macroeconomic models such as this one, we introduce how we portray the economic dimensions of unpaid work and care, building on the points developed previously . At its core, the model is about treating labor as a produced means of production. This production process is primarily carried out by women (but also by men) doing both paid and unpaid work and alternatively motivated by altruism, self-interest, and the structure of social norms.

In the short term, we model two kinds of labor inputs into the paid economy: "human capacities," which are produced in the household sector using women's and men's unpaid labor time and the commodities that the household purchases **[OK?]**. We draw capacities in the widest sense of the term and include a broad array of features that make human beings more economically effective (such as emotional maturity, patience,

self-confidence, and the ability to work well with others, as well as standard human capital measures such as skills and education). Because of this definition, we feel it makes more sense to model inputs of short-term capacities into the market production process in terms of labor productivity rather than labor hours. Since this is the short term, and the model is drawn in a context of deficient aggregate demand, an individual's paid work time should depend on the extent of market demand for labor – either one can find a job or not. Productivity once at work, however, depends on the extent to which one is being supported and replenished at home, the day-to-day aspects of reproduction.

In the long term, conversely, spending time or money on the production of human capacities is treated as an investment rather than daily maintenance. Investments in human capacities (such as sending a child to school, seeing a professional therapist, or volunteering at a community center in ways that enhance social capital) raise future productive capacity in ways similar to building more plants and equipment, though investing in future labor capacities is almost never treated as investment in standard macroeconomic models. As with conventional treatments of investment, investment in human capacities generates current demand for output as well as contributes to long-term economic prospects, though this version of the model focuses on the former short-term impacts.

The close reader will note that we have not yet specified how care, the paid and unpaid work that goes into the production, maintenance, and renewal of human beings, works into these dynamics. In terms of investment, motivations for care condition the choice to invest, a decision that may otherwise be based exclusively on expectations about future market opportunities. In the short term, motivations for care condition the

shift from nonmarket to market work that typically accompanies increases in wages, as well as specify the efficiency of market substitutes for unpaid care work.

[We have added the following two sentences to this paragraph.] This description is intentionally sketched rather than highly detailed and precisely defined. For that we must develop the formal model, a task to which we now turn.

The demand side

The structure of the model follows that of Braunstein (2000), which in turn is based on Marglin and Bhaduri (1990), with the exception that we model a closed economy, leaving the dynamics of globalization to future studies. National income Y is split between capitalists who receive profits π and workers who receive wages W; we make an additional differentiation between total male wage income W_m and total female wage income W_f. The distribution of national income is represented by shares, where dividing equation (1) by Y gives equation (2); profit's share of income is represented by π, with male and female labor's share represented by w_m and w_f respectively.

$$Y = R + W_m + W_f \qquad (1)$$

$$1 = \pi + w_m + w_f \qquad (2)$$

The capitalist's profit rate r, defined as total profits divided by the physical capital stock K, can be related to the profit share via some simple accounting as illustrated in equation (3). By introducing the notion of full capacity national income $\bar{Y}$, we express the profit

rate as the multiplicative product of the profit share π, capacity utilization $\left(Y/\bar{Y}=z\right)$, and full capacity output divided by the capital stock $\left(\bar{Y}/K\right)$. Now we have defined the two state variables (the variables that we use to characterize the dynamics of the macroeconomic system): profit share π and capacity utilization z. Choosing these state variables reflects the importance of income distribution and aggregate demand in the structuralist approach.

$$r=\left(R/K\right)=\left(R/Y\right)\left(Y/\bar{Y}\right)\left(\bar{Y}/K\right)=\pi z\bar{y} \tag{3}$$

Equation (4) defines investment demand i as depending on physical investment i and investment in human capacities, i^a. Physical investment is undertaken by capitalists and depends on their expectations about future profit rates, r^e. Using capitalist expectations about future profit rates reflects the Keynesian notion of fundamental uncertainty, which suggests that the future is inherently unknowable. However, capitalist expectations about future profit rates get more optimistic when current profit shares are high (assuming output can be sold), so $r_\pi^e>0$ (note that throughout this study, partial derivatives are indicated by subscripts). Similarly, when capacity utilization is high, capitalists suspect that expansion is justified by current demand conditions, so $r_z^e>0$. The relationship between expected profit rates and physical investment demand $i_{r^e}^K$ is based on what Keynes termed "animal spirits," a sort of "spontaneous urge to action" that is built on widely acknowledged but poorly understood waves of market confidence and panic.[4]

$$i=\left[i^K\left(r^e(\pi,z)\right)+i^a\left(o^e(\pi,z)\right)\right] \tag{4}$$

$r_{\pi}^{e} > 0; \quad r_{z}^{e} > 0; \quad i_{r^e}^{K} > 0$

$o_{\pi}^{e} < 0; \quad o_{z}^{e} > 0; \quad i_{o^e}^{a} > 0$

Investment in human capacities follows a parallel path. Rather than basing their decisions on expected profit rates, individuals invest in themselves and others based on expected opportunities o^e. These expectations are dampened by the profit share, assuming one can get a job (given z), a higher profit share means lower wages, so $o_{\pi}^{e} < 0$. And by the same token, higher capacity utilization means that more investment is justified by current employment conditions (given a particular split between profits and wages), and $o_{z}^{e} > 0$. It is important to note that investments in human capacities can take the form of commodities or time; equation (4) details the *demand* for investment, not how it is financed.[5] The pathway from expectations about future opportunities to actual investments in human capacities $i_{o^e}^{a}$ is governed by what we term "caring spirits": the tendency, whether determined by social norms or individual motivation, to provide care for one's self and others in ways that add to current aggregate demand and future economic productivity. Studies of the link between what we would consider care and productivity are extensive, ranging from the economics literature on the linkages between human and social capital and economic growth (James S. Coleman 1988; Stephen Knack and Philip Keefer 1997), to the public health literature on the labor costs of poor physical and mental health (Wayne N. Burton, Daniel J. Conti, Chin-Yu Chen, Alyssa B. Schultz, and Dee W. Edington 1999; Walter F. Stewart, Judith A. Ricci, Elsbeth Chee, Steven R. Hahn, and David Morganstein 2003), to the business literature on how support for care, by employers and in the home, enhances labor productivity (William Van Lear and Lynette Fowler 1997; Fran Durekas 2009 **[Durekas is not included in References.**

Please complete the entry we have begun.]). Keep in mind, however, that ours is a short-run model, and so we only capture the effect of these types of investments on current output (for example, the construction of a community center or an employer opening an on-site childcare center).

Let us pause for a moment over the proposition that caring spirits govern investment in human capacities. After spending so much time clarifying that we use the term "care" to refer to an activity as opposed to a feeling, how can we then use it to characterize "spirits"? The reason is we use caring spirits, which are analogous to Keynes's animal spirits **[We have deleted this because you have already defined this. If you would like to remind the reader of this definition, please briefly restate it in parentheses rather than referring to a previous endnote.]**, to describe the exogenous effect of whether care is enthusiastically provided, for whatever reason. Modeling caring spirits in terms that evoke animal spirits in the investment function underscores the importance of care in a society's macroeconomic fortunes. But this parallel should not be taken to mean that it works in precisely the same way as physical investment decisions. Animal spirits refer to the essentially irrational, often herd-like sentiments that tend to characterize financial markets. Caring spirits are long-term, institutional features of society.

To understand how caring spirits shape human capacities investment demand, consider the following expression, $di^a = i^a_{o^e}\left(o^e_\pi\, d\pi + o^e_z\, dz\right)$, with the letter d referring to a change. It shows that the change in human capacities investment demand, di^a, equals the responsiveness of that demand to changes in expected opportunities, $i^a_{o^e}$, multiplied by the change in expected opportunities due to changes in the wage share, $o^e_\pi d\pi$, plus the

change in expected opportunities due to changes in output, $o_z^e dz$. We differentiate between two types of regimes for caring spirits. We argue that, all else being equal, changes in expected opportunities will have a bigger impact on investment in human capacities in altruistic societies than in selfish ones (that is, $i_{o^e}^a$ will be higher). The reason is that, all else equal, altruistic societies (relative to selfish ones) tend to spend more of their care finances and time in ways that enhance the ability of household or community members to take advantage of future economic opportunities through, for instance, programs such as education or job training for the disabled. (Note that the model captures the impact of these investment decisions on current output via its impact on aggregate demand.) When wages or output decline and expected opportunities worsen, these sorts of investments decline as well, especially in altruistic societies where care resources get reallocated to countering the short-term effects of economic decline and wage squeeze, such as attending to the emotional stress of unemployment or compensating for declines in public expenditures on healthcare and other public goods. This sort of dis-investment in human capital and the consequent pressure on the unpaid care sector has been a frequent criticism of structural adjustment programs (Diane Elson 1995 **[please see our note in the reference list.]**). The net result is that the elasticity of investment in human capacities with respect to changes in expected opportunities is higher in altruistic societies than selfish ones.[6] Just how much higher is a question we return to after working through the rest of the demand side.

Savings is separate from investment in the sense that savers do not save in order to invest. Instead, savings depend on the marginal propensities to spend by capital and labor. A key assumption is that the marginal propensity to consume out of wages is

greater than the marginal propensity to consume out of profits (capital saves more than paid workers). Equation (5) puts savings, s, in terms of the profit share and capacity utilization of the model's state variables. An increase in the profit share raises savings because capitalists save more than paid workers $(s_\pi > 0)$, and an increase in capacity utilization increases savings via increases in the profit rate $(s_z > 0)$.

$$s(\pi, z) \qquad s_\pi > 0; s_z > 0 \tag{5}$$

On the demand side, macroeconomic equilibrium means that the investment that investors desire equals that supplied by savers, and the result is termed the IS schedule to denote investment–savings equilibrium, as indicated by equation (6). Some authors in the structuralist tradition, such as Taylor (2004), refer to what we term the IS curve as the *demand regime* of an economy, so we use these labels interchangeably. The slope of the IS schedule in $\langle z, \pi \rangle$ space is given in equation (7). The signs of partial derivatives are noted above the relevant variables for ease of reference.

$$\textit{IS schedule:} \quad \left[i^K \left(r^e(\pi, z) \right) + i^a \left(o^e(\pi, z) \right) \right] = s\left(\pi, z\right) \tag{6}$$

$$\textit{IS slope:} \qquad \frac{d\pi}{dz} = \frac{\overset{+}{s_z} - (\overset{+}{i_z^K} + \overset{+}{i_z^a})}{\underset{+}{i_\pi^K} + \underset{-}{i_\pi^a} - \overset{+}{s_\pi}} \tag{7}$$

A key issue on the demand side is whether the IS curve is upward or downward sloping – whether declines in profit share are associated with declines or increases in output. The sign of equation (7) determines these relationships. Beginning with the numerator, it is standard to assume that savings are more responsive to changes in output than investment to ensure the system's stability. Otherwise, any disturbance to equilibrium will cause investment demand to outpace savings until the economy ends up at either zero output or

full capacity utilization; this assumption is often referred to as "Keynesian stability" to reflect its origins in elementary Keynesian theory (Marglin and Bhaduri 1990: 164). Our specification is a bit different in that the numerator also contains the positive effect of capacity utilization on human capacities investment demand, and these investments (the financial aspects of them, at least) are only partly financed out of what we typically consider to be savings (for example, borrowing money from a bank to pay for college). Current earnings finance some of these investments in the same way as consumption, like spending on healthcare or after-school programs, though borrowing also finances some. Including these types of investments means that our notion of savings should be supplemented to include some aspects of current spending, though saving and investment can still be treated as (at least partly) disconnected.[7] Even when we add these components to savings and investment, we are still constrained by the Keynesian stability condition that savings must be more responsive to changes in capacity utilization than demand for investment in capital and human capacities.

Turning to the denominator, if $s_\pi > i_\pi^K + i_\pi^a$, then the IS curve is downward sloping as indicated in Figure 1, and there is a negative association between profit share and capacity utilization in the goods market. A case in which aggregate demand equilibrium implies that the profit share declines with capacity utilization is traditionally referred to in the structuralist literature as a *wage-led* demand regime. Conversely, if $s_\pi < i_\pi^K + i_\pi^a$, then the IS curve will slope upwards, and higher profit shares are associated with increases in output, leading to a *profit-led* demand regime. The negative impact of profit share on investments in human capacities, i_π^a, acts by pushing the slope of the IS curve downward, so that an increase in wages is associated with more economic activity. In other words,

the negative slope means that the increase in consumer demand and investment in human capacities, brought about by an increase in the wage share, outweighs the decline in physical investment demand induced by the decline in profit share. In fact, the more pronounced an economy's caring spirits (that is, the greater the elasticity of i^a with respect to o^e), the more likely it is that higher wages will lead to higher output. We use the nature of caring spirits as a way to differentiate between the two IS regimes, with IS_A referring to the altruistic case and IS_S referring to the selfish case. The pathway indicated by the arrow in Figure 1 shows that as caring spirits decline, the IS_A curve steepens, requiring ever larger wage increases to yield the same positive outcome in terms of capacity utilization. When caring spirits are low enough, the slope of the IS curve becomes positive, and the economy shifts to the IS_S regime where higher profit shares are associated with more output. In terms of the magnitude of the slope, the more altruistic the caring spirits, the flatter the (downward sloping) IS_A schedule, while more pronounced selfishness is associated with flatter upward sloping IS_S schedules.

FIGURE ONE ABOUT HERE

The supply side

The supply side of the economy, which structures what is referred to as the "producer's equilibrium" or the PE curve, is constituted by interaction among three different spheres: the labor market, the product market, and the production of human capacities in the

household sector. The novelty in our approach lies in introducing human capacities as a determinant of the producer's equilibrium.

In the gender-segregated labor market we posit **[OK?]**, women and men work in two different industries. Women work in the service or nondurable goods industry; this industry produces market substitutes for the unpaid care that women and men contribute to reproduction. Men work in the durable goods industry producing physical investment goods as well as goods that complement care work, both in the market and at home. When we refer to the "female sector" and the "male sector," we refer to these industries respectively.[8] Durable goods are normal goods, so as income increases so does demand for them, with the result that when workers shift from market to nonmarket production, there is a concomitant decline in the demand for durable goods even though these goods complement both paid and unpaid care work. Think of washing machines, a durable good, as an example. Both commercial laundries and households use washing machines to maintain human beings, but households are less likely to buy their own or replace an old machine if there is less household income.

Equilibrium wages result from an underlying process of bargaining that occurs between paid workers and capitalists, a process that results in labor's bargaining power (and wages) rising along with capacity utilization.[9] The basic textbook idea is that as capacity utilization increases and unemployment declines, labor gains bargaining power relative to capital. Since labor markets are segmented by gender, the economy-wide measure of capacity utilization z is actually a weighted average of capacity utilization in the male and female sectors. Because male durable goods are normal goods, capacity utilization in the two sectors move together (though not in fixed proportions as workers

move in and out of the unpaid sector), and we use the economy-wide measure of capacity utilization in the determination of both women's and men's wages.

Equations (8) and (9) represent these relationships for female and male labor markets respectively, with f referring to the female hourly wage and m referring to the male hourly wage. The elasticity of wages with respect to capacity utilization is positive, though the magnitude of this elasticity depends on the ability of paid workers to successfully translate tighter labor markets into higher wages. Because women's collective bargaining power vis-à-vis capitalists tends to be lower than men's (partly because of the availability of nonmarket substitutes for female market production), we assume $m_z > f_z$.

$$f = f(z) \qquad f_z > 0 \tag{8}$$

$$m = m(z) \qquad m_z > 0 \tag{9}$$

When nominal wages change, capitalist behavior in product markets determines the extent to which these wage changes are passed on in the form of higher (or lower) prices. Equations (10) and (11) represent these behavioral dynamics, with capitalists choosing prices (P_m for the male sector good and P_f for the female sector good) by marking up over the unit costs of production. For the male durable goods sector in equation (10), τ equals one plus the capitalist's markup over unit cost, with unit cost equal to the male hourly wage m times the labor coefficient a. The labor coefficient equals the number of hours it takes a paid worker to produce one unit of a good (equivalent to the reciprocal of labor productivity). Note that the lower the labor coefficient, the more productive the paid worker. Therefore, equation (10) says that the price of a unit of the male good, P_m, is determined by multiplying one plus the markup

times the wage costs of producing that one unit ma.[10] Equation (11) represents the same concepts for the female nondurable goods/services sector, with θ equal to one plus the markup. For ease of exposition, we further assume that the labor coefficient a is the same for the two sectors.

$$P_m = \tau ma \qquad \tau > 1 \tag{10}$$

$$P_f = \theta fa \qquad \theta > 1 \tag{11}$$

We know that bargaining between capital and labor determines wages in labor markets, as described by equations (8) and (9). What about markups? Because we are interested in the dynamics of reproduction, we assume a fixed markup in the male sector, a common convention in structuralist models (see for instance Marglin and Bhaduri [1990]). With a fixed markup and a little algebraic manipulation, we can show that the profit share in the male sector π_m is constant, as in equation (12).

$$\pi_m = \frac{(\tau - 1)}{\tau} \tag{12}$$

Conversely, the markup in the female sector is endogenous, and reflects the power of female sector capitalists (service sector capitalists), a power that is based on market demand conditions and the power of (female) organized labor.[11] The basic logic is that the higher market demand is, or the less power female trade unions have, the more room capitalists have to raise the markup. Three factors determine the power of service sector capitalists to change the markup: (1) P_m, the price of male goods, which are a complement for women's market production, thus $\theta_{P_m} < 0$; (2) H, which represents the time women and men spend on unpaid care work and is inversely related to the demand for female market goods, so $\theta_H < 0$; and (3) female wages f, which reflect how the

bargaining power of women's labor cuts into the ability of capitalists to impose higher markups. Equation (13) captures these relationships, and substitution from equations (8) and (10), along with a bit of algebra, results in an expression for the female sector profit share in equation (14).

$$\theta = \theta\left(P_m; H; f\right) \qquad \theta_{P_m} < 0; \quad \theta_H < 0; \quad \theta_f < 0 \tag{13}$$

$$\pi = 1 - \frac{1}{\theta\left(\tau m(z) a; H; f(z)\right)} \tag{14}$$

As mentioned in the introduction to the model, the economy-wide profit share π equals a weighted sum of profit shares in the male and female sectors. Since π_m is a constant and demand for male and female market goods move together, we use changes in π_f as a proxy for changes in π. This is not an oversimplification, because a constant profit share in the male sector acts just like a shift variable in the producer's equilibrium.

To complete the producer's equilibrium, we add the daily maintenance of human capacities in the household sector. Human capacities are produced by a combination of women's and men's unpaid work time and the commodities that are purchased as inputs into household production. Beginning with nonmarket labor supply, equation (15) relates unpaid work time to its opportunity cost, namely the wage that could be earned participating in market activities. The function H can be thought of as a reduced formresult of intrahousehold negotiations: partners bargain over the time each will spend on reproductive labor by weighing its opportunity costs, namely the wage each could earn in market activities. Intrahousehold bargaining is a complex process conditioned by social norms and individual motivations. That said, it seems reasonable to assume that $\left|H_m\right| > \left|H_f\right|$ because of gender norms regarding the sexual division of labor. That is, all

else equal, because of the widespread dominance of social norms that identify unpaid care work as "women's work," men will be more responsive to the pull of higher wages than women.

Note that the amount of unpaid work time that women and men ultimately dedicate to household production depends on the interaction of two effects: the responsiveness of female (male) labor supply to wages H_f (H_m) *times* the ability of female (male) paid workers to bargain with capitalists over wages in the labor market f_z (m_z). This aspect is important to consider, both in absolute and relative terms. First, if $|H_f|$ is small (perhaps because women are strongly time altruistic or because social norms discourage women's market work), and f_z is large (because of strong collective bargaining institutions), the result of a change in capacity utilization may look the same as a society characterized by the opposite – social norms that support women's market work combined with weak labor unions. Second, since men's bargaining power is (assumed to be) higher than women's in the workplace $(m_z > f_z)$, it is also the case that $|H_m m_z| > |H_f f_z|$. So as capacity utilization increases, men lower their unpaid work time more than women do.

$$H = H\big(f(z); m(z)\big) \qquad H_f < 0; \quad H_m < 0 \tag{15}$$

Going back to household production, equation (16) puts human capacity production in terms of the labor coefficient a, introduced in equations (10) and (11), and the idea that market labor productivity depends on the reproduction of labor power the household sector provides. Recall that the labor coefficient is the reciprocal of labor productivity, so anything that contributes to reproduction actually lowers □. If women

and men spend less time at home, capacities may suffer, lowering market labor productivity and raising the labor coefficient, so $a_H < 0$. The magnitude of a_H, the extent to which human capacities change pursuant to a change in nonmarket labor time, depends on the productivity of that labor time. This can be specified in a number of ways, and certainly involves factors like skill, motivation, the availability of care related capital goods, and of course the state of one's own human capacities (tired caregivers are usually less effective ones).

The terms a_f and a_m capture both the gendered nature of financing the monetary costs of reproduction and how effective commodities are in contributing to reproduction. To the extent that commodities contribute to capacities (more on this in a moment), $a_f < 0$ and $a_m < 0$, with $f(z)$ and $m(z)$, reflecting how wages are determined in labor markets. There are two processes at work here. First there is the question of the proportion of higher wages that are devoted to reproduction, and then there is the issue of what these financial contributions actually purchase. Like decisions about time, these financial decisions are also the result of an intrahousehold bargaining process. So in addition to the share of income, a_f and a_m also depend on whether commodities provide good substitutes or complements for unpaid care (think of altruistic and well paid versus selfish and underpaid care sector workers, or purchasing a refrigerator versus a television set).

Now to sum up our points about equation (16), an increase in capacity utilization has both a negative (time) effect through the increase in the opportunity cost of unpaid work and a positive (income) effect on the production of capacities through consumption of market care goods, though the latter effect is conditioned by the gender distribution of

the financial costs of reproduction and what care and capital commodities households ultimately decide to purchase.

$$a = a\left[f(z);\, m(z);\, H\left(f(z); m(z)\right)\right] \qquad a_f < 0; \quad a_m < 0; \quad a_H < 0 \tag{16}$$

We are now able to characterize the producer's equilibrium. Substituting equations (15) and (16) into (14) while recalling that the male sector profit share is a constant, equation (17) is the producer's equilibrium or PE schedule. It is also common to refer to a schedule linking distributive shares with capacity utilization via supply-side considerations as the *distributive curve* (Taylor 2004): henceforth, we will use the two terms interchangeably.

PE schedule or distributive curve

[We have formatted the above text as a second-level subheading. OK?]

$$\pi = \pi_m + \pi_f = \left(\xi - \frac{1}{\theta\{\Omega\}} \right) \quad \text{where} \quad \xi = 2 - \frac{1}{\tau} \tag{17}$$

$$\Omega = \left\{ \tau m(z) a\left[f(z);\, m(z);\, H(f(z), m(z))\right];\, H\left(f(z), m(z)\right);\, f(z) \right\}$$

$$\Omega = \left\{ \tau m(z) a\left[f(z); m(z); H\left(f(z); m(z)\right)\right];\, H\left(f(z); m(z)\right) \right\}$$

As with the IS curve, to get the slope in $\langle z, \pi \rangle$ space we take the total derivative of equation (17) with respect to z and π. The result is given in equation (18).

PE slope **[OK?]**

$$\frac{d\pi}{dz} = \frac{\theta'\{\Omega\}}{\left[\theta\{\Omega\}\right]^2} \tag{18}$$

$$\theta'\{\Omega\} = \left[\tau a \bar{\theta}_m \overset{+}{m}_z + \bar{\theta}_f \overset{+}{f}_z \right] + \left[\tau a \bar{\theta}_a \left(\left(\bar{a}_f + \bar{a}_H \bar{H}_f \right) \overset{+}{f}_z + \left(\bar{a}_m + \bar{a}_H \bar{H}_m \right) \overset{+}{m}_z \right) \right] + \left[\bar{\theta}_H \left(\bar{H}_f \overset{+}{f}_z + \bar{H}_m \overset{+}{m}_z \right) \right]$$

The sign of the slope of the PE curve depends on the sign of the numerator $\theta'(\Omega)$. The second line of equation (18) organizes $\theta'(\Omega)$ in a way that facilitates discussion. The signs of partial derivatives are displayed above the appropriate variable and a summary explanation of these signs is reported in Table 1.

TABLE ONE ABOUT HERE

The first bracket in equation (18) is the *collective bargaining effect*, where stronger labor unions (in both the male and female sectors) tend to pull down the profit share, and the slope of the distributive curve as capacity utilization increases. The second and third brackets together represent what we call the substitutability effect, and capture the net effect of using market substitutes for unpaid work time on the services sector. Essentially, two dynamics are at work here: (1) whether market goods yield effective substitutes for time in the production of human capacities (the second bracket), which we refer to for brevity as *goods substitutability*; and (2) the extent to which men and women actually use market goods and services as a way to compensate for decreases (or save money in the context of increases) in their unpaid work time (the third bracket). The latter we refer to as (pure) *time substitutability*.

While time substitutability acts unambiguously pulling the PE curve to slope upwards, the effect of goods substitutability is not clear in principle. The reason why is that there are two contradictory dynamics at work. First, there is the negative effect of declines in unpaid time on the production of human capacities as wages rise ($a_H H_f$ and

$a_H H_m$), which in turn lower the space for markups because paid service sector workers have become less productive (θ_a). Secondly, paid workers can compensate for this decline in unpaid care work time by using higher wages to purchase more care services or durable goods that make unpaid care time more efficient (a_f and a_m), which will raise human capacities and productivity, enabling capitalists to make more profit on each unit sold. Hence we use the term "goods substitutability" to represent how well goods substitute for time. (Note that the [pure] time substitutability effect, the third bracket, is distinct from the time dynamics of goods substitutability because the former captures how the contraction of time increases demand for paid care services – not how increased use of these services affect labor productivity.)

In terms of the net effect of time and goods substitutability on the PE slope, we differentiate between two stylized cases: high versus low substitutability. If substitutability between market and nonmarket work is low, the entry of greater numbers of unpaid caregivers into the paid workforce (via higher rates of capacity utilization) will compromise the production of human capacities without much increase in demand for female market goods, squeezing the capitalist markup and resulting in a downward sloping PE schedule. This case is traditionally referred to as "profit squeeze" in the structuralist literature (Taylor 2004). Conversely, if substitutability is high (meaning that commodities are effective at counterbalancing the effects of declines in unpaid work time on human capacities and households use them as substitutes), then increases in capacity utilization will raise human capacities as well as market demand for female goods. This would in turn lead to higher markups, profit shares, and an upward sloping PE curve, or equivalently a distributive curve displaying so-called "forced saving" **[OK?]**. The

emphasis on class in both classical-Marxian **[OK?]** and post-Keynesian frameworks is usually modeled by portraying capitalists as having a higher propensity to save than paid workers (something we also assume). If an increase in economic activity redistributes income toward profits, total savings will also increase in the economy, hence the label "forced saving" when the PE curve is upward sloping.

What about the gender distribution of care, how does it affect the PE schedule? Because women and men contribute both money and time to reproduction, their decisions about supplying and purchasing care affect the macroeconomy in the same way. Less time or money being put toward care, regardless of its source, will lower the production of human capacities and dampen demand for the female market sector goods, lowering markups, profit shares, and the PE slope. We can, however, introduce some stylistic differences between men and women in their behavior around care and characterize the results. The more men and women share the time and financial costs of care the more likely that the PE slope is positive (meaning that increases in capacity utilization will increase the production of human capacities by more than it cuts into capitalist power vis-à-vis labor); we call this the "gender egalitarian" (GE) case. Conversely, in cases where men contribute very little to care either in terms of time or financing, it is more likely that the PE slope will be negative; we call this the "single mother" (SM) case.[12] A third possibility is where men contribute a lot to care financially but contribute little in terms of time, what we term the "traditional" (TR) case. This last case is actually the strongest in terms of contributing to a positive PE slope because higher capacity utilization results in a lot more money being contributed to care, with less time sacrifice than the GE case (as men's lower time contributions to care in the traditional case means there is less time

to give up in the first place). We can thus think of the PE/TR slope as steeper than the PE/GE slope, though both are positive.

To get the ultimate direction of the PE schedule, we must account for the collective bargaining, substitutability, and gender distribution of care effects simultaneously. Because we are interested in the gendered dynamics of care, we hold the collective bargaining effect constant and focus on substitutability and the gender distribution of care. Table 2 presents a taxonomy of potential cases; a plus indicates a positive slope, a minus a negative slope, and a question mark that the slope is indeterminate. The rows refer to the gender distribution of care, with the TR case getting a double plus sign to indicate the larger (positive) effect it has on the PE slope relative to the GE case. For the columns, when substitutability between market and nonmarket work is high, the PE schedule will tend to slope upwards; when substitutability is low, the PE curve will slope downwards. The case of gender egalitarian care relations and high substitutability results in a positive slope since both gendered care relations and substitutability work in the same direction; the case of traditional care relations and high substitutability also results in positive slope, but with a steeper PE curve than the prior case. The third clear case is where only women engage in care (the SM case), combined with low substitutability between market and nonmarket care, which results in a downward sloping PE curve.

TABLE TWO ABOUT HERE.

To evaluate a stylized case that we can relate to the IS schedules for selfish versus altruistic caring spirits, we differentiate between the high and low substitutability cases, keeping in mind how the gender relations around care can work against or reinforce this

contrast. High substitutability results in a positive association between z and π – the PE/HS case; and low substitutability results in a negative association between z and π – the PE/LS case. Gender egalitarian and traditional societies are more likely to conform to the PE/HS case, while societies where women take on the costs of care largely on their own are more likely to be a PE/LS case. Figure 2 illustrates the two cases. **[Please indicate where Figure 2 should appear in the text as you have done for the tables and Figure 1]** Note that there is the question of magnitude as well as sign. The higher the degree of substitutability or the more gender egalitarian, the flatter the (upward sloping) PE/HS schedule. As substitutability declines and/or gender relations get more traditional, the PE/HS curve steepens, until it bears a negative slope, again flattening (but with a negative slope) as substitutability continues to decline and/or men become completely uninvolved in the provision of care. The pathway of these dynamics from one regime to another is indicated by the direction of the arrow in Figure 2.

A MODEL EXERCISE: AN ALTRUISTIC ECONOMY VERSUS A SELFISH ECONOMY

Putting the IS and PE schedules together, we maintain that societies with altruistic caring spirits are more likely to also have high substitutability between market and nonmarket work (PE/HS paired with IS_A, which we refer to as an altruistic economy), with the opposite being the case as well (PE/LS paired with IS_S, which we refer to as a selfish economy). The reason is that when men and women do take on market work, they

minimize the deleterious effects on human capacities by cutting into leisure time or even sleep. In our model, women in particular bring their caring capacities to their market work, making them simultaneously more likely lose sleep and leisure time and more effective paid care workers. **[OK?]**

The effect of the gender distribution of care on this system operates via the PE slope, as detailed in Table 2. It is difficult to imagine that an economy characterized as altruistic would leave the financial and time costs of care exclusively to women (as evidenced by the indeterminacy of the slope in the PE/HS/SM case), so we posit that selfish economies are also more likely to conform to the single mother case. This is not to say that single mothers are selfish, or that traditional and egalitarian societies do not also have single mothers. The label is merely meant to indicate a society where mothers are left to shoulder the time and financial costs of care alone. For the high substitutability case, we contrast two types of gender relations related to care: the PE/HS/TR case, where the combination of high substitutability and traditional gender relations result in a steep positive slope; and the PE/HS/GE case, where the combination of high substitutability and gender egalitarian care relations result in a flat positive slope. Hence, both gender egalitarian and traditional relations of care are consistent with an altruistic economy, but the gendered relations of care change the magnitude of the PE slope.

With these three regimes in mind, we can trace the relative impact of different sorts of public policies on profit share and capacity utilization.[13] Figure 3 illustrates the results of policies designed to strengthen the positive correlation between female wages and output for the selfish and altruistic cases, with the arrows indicating how the PE curves shift after the policy is implemented. **[Please indicate where Figure 3 should**

appear in the text as you have done for the tables and Figure 1] These policies could include measures that raise the bargaining power of paid women workers relative to capitalists, such as laws that make it easier for unions to organize paid care sector workers. Another example would be an increase in the legislated minimum wage, as service sector workers are more likely to work for very low wages, and raising the wage floor can spill over into higher paid sectors as it lowers competition for higher wage jobs. To the extent that women are systematically underpaid because care work is undervalued in markets, all else being equal, comparable worth policies would also raise women's wages.

In the altruistic economies, both gender egalitarian (PE/HS/GE) and traditional (PE/HS/TR), higher female wages shift down the PE schedule, resulting in a lower profit share (the shift from π^* to π_1) but higher output (the shift from z^* to z_1). The reason is that even though higher wages put a squeeze on the unpaid reproductive sector in terms of lowering unpaid work time and making market substitutes for that unpaid work more expensive, this loss is compensated by a combination of effective market substitutes for which the positive income effect allows substitution, and the ongoing maintenance of those aspects of household work for which no market substitutes can be found. In order to compare the relative effects of the same change in wages in the traditional and gender egalitarian cases, we extend the π intercepts of the PE curves to the axis to illustrate how both curves shift out by the same amount. With the same exogenous change in female wages, the more gender egalitarian the care relations, the larger the positive effect on output, as indicated by $\left(z_{1,GE} > z_{1,TR}\right)$. Intuitively, this comes from the fact that in traditional societies, higher female wages lower nonmarket care time and make market

substitutes more expensive, with men doing less than in the gender egalitarian case to compensate.

In addition, the more altruistic the caring spirits captured by the IS schedule, the flatter the IS curve, and the greater the positive impact this shift in the PE schedule will have on output in both the gender egalitarian and the traditional cases. Movement down the IS curve illustrates how the decline in demand for investment in physical capital is more than outweighed by increased demand for investment in human capacities that accompany a higher wage share. Conversely, the opposite occurs in the selfish economy, with higher female wages leading to a decline in economic activity as decreases in unpaid care work are not counterbalanced by the positive effects of higher wages on human capacity production. Similarly, the weaker the caring spirits of potential investors in human capacities are, the flatter the IS_S curve, and the bigger the negative impact of higher female wages on market output.

The model exercise shows that an increase in female wages contributes to output in an altruistic economy and not in a selfish economy. This seems to suggest that in an altruistic economy, more gender equality in the market (facilitated by reducing the economy-wide gender–wage gap for example) generates efficiency gains that are not reaped in a selfish economy. The more gender egalitarian the care relations, the larger these efficiency gains. These efficiency gains partly run through an efficiency wage type of effect in the paid care sector, leading to higher labor productivity as well as higher quality of caring services. Stronger work motivation underlying efficiency wages directly contributes to the quality of care through a crowding-in effect of altruistic motivations.

For example, with higher quality healthcare there are fewer days lost and less loss in productivity by sick workers in the labor market.

CONCLUDING REMARKS

Modeling exercises such as this one are admittedly rife with sometimes troubling oversimplifications and abstraction. Even though incorporating care and the notion of labor as a produced input is an instructive effort to widen standard economic discourse, we are still limited by structures that value care according to its role in market production rather than, for instance, its being essential for well-being or an ethical society**[OK?]**. One practical consequence is that our notion of human capacities represents only the reproduction of current market workers and the production of future ones, and it does not incorporate the care that goes into supporting the elderly or the permanently disabled. We do not see the latter as out of reach of our current modeling framework, however, which could incorporate the dynamics of externalities, insurance, and risk into investment and care decisions in ways that reflect differing types of dependencies, or switch around the output and human capacities variables, making the latter a central shift variable.

The point of modeling is just as much to uncover what we do not understand as it is to discover what we do. Part of the feminist project is to shift economic discourse, and that the discipline is so driven by modeling requires that feminists develop alternatives to standard techniques. Ultimately, then, the model's most important contribution lies in underscoring the complexity and insight afforded by embedding unpaid work and care in

macroeconomic modeling, as a proposition as seemingly as obvious as suggesting that human capacities are produced introduces a whole new aspect to standard macroeconomic approaches to understanding the dynamics of output and investment. It thereby contributes to new understandings of macroeconomics, which increasingly recognizes the endogeneity of technology and human capital. Understanding the endogeneity of paid and unpaid labor and their feedback effects on the economy as a whole cannot remain outside of these developments.

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TABLES

[The tables and figures are provided in a separate document.]

REFERENCES

Akram-Lodhi, A. Haroon and Lucia C. Hanmer. 2008. "Ghosts in the Machine: A Post Keynesian Analysis of Gender Relations, Households and Macroeconomics," in Francesca Bettio and Alina Verashchagina, eds. *Frontiers in the Economics of Gender*. New York: Routledge.

Anker, Richard. 1998. *Gender and Jobs: Sex Segregation of Occupations in the World*. Geneva: International Labour Organization.

Badgett, M.V. Lee and Nancy Folbre. 1999. "Assigning Care: Gender Norms and Economic Outcomes." *International Labour Review* 138(3): 81–103.

Blecker, Robert. 1989. "International Competition, Income Distribution and Economic Growth." *Cambridge Journal of Economics* 13(3): 395–412.

Blecker, Robert and Stephanie Seguino. 2002. "Macroeconomic Effects of Reducing Gender Wage Inequality in an Export-Oriented, Semi-industrialized Economy." *Review of Development Economics* 6(1):103–19.

Bowles, Samuel and Robert Boyer. 1990. "A Wage-led Employment Regime: Income Distribution, Labour Discipline, and Aggregate Demand in Welfare Capitalism," in Stephen A. Marglin and Juliet B. Schor, eds. *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*. New York: Oxford University Press.

Braunstein, Elissa. 2000. "Engendering Foreign Direct Investment: Family Structure, Labor Markets and International Capital Mobility." *World Development* 28(7): 1157–72.

Burton, Wayne N., Daniel J. Conti, Chin-Yu Chen, Alyssa B. Schultz and Dee W. Edington. 1999. "The Role of Health Risk Factors and Disease on Worker Productivity." *Journal of Occupational and Environmental Medicine* 41(10): 863–77. **[This is the title we found for these authors in this journal issue with these page numbers.]**

Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *The American Journal of Sociology* 94: S95–S120.

Durekas, Fran. 2009. **[Please complete.]**

Dutt, Amitav Krishna. 1987. "Alternative Closures Again: A Comment on Growth, Distribution and Inflation." *Cambridge Journal of Economics* 11(1): 75–82.

Elson, Diane, ed. 1995. *Male Bias in Economic Development*. Manchester: Manchester University Press. **[Please make changes to this and/or the next entry. Please either cite individual chapters from this edited volume or list the entire volume, but do not list both.]**

———. 1995. "Male Bias in Macro-Economics: The Case of Structural Adjustment," in Diane Elson, ed. *Male Bias in the Development Process*, pp. 164–90. Manchester: Manchester University Press.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] England, Paula. 1992. *Comparable Worth: Theories and Evidence*. New York: Aldine de Gruyter.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] England, Paula, Michelle Budig, and Nancy Folbre. 2002. "Wages of Virtue: The Relative Pay of Care Work." *Social Problems* 49(4):

455–73.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] England, Paula and Nancy Folbre. 1999. "The Cost of Caring." *Annals of the American Academy of Political and Social Science* 561(1): 39–51.

Ertürk, Korkut and Nilüfer Çağatay. 1995. "Macroeconomic Consequences of Cyclical and Secular Changes in Feminization: An Experiment at Gendered Macromodelling." *World Development* 23(11): 1969–77.

Folbre, Nancy. 1994. *Who Pays for the Kids? Gender and the Structures of Constraint*. London: Routledge.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] ———. 1995. "Holding Hands at Midnight: the Paradox of Caring Labor." *Feminist Economics* 1(1): 73–92.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] ———. 2001. *The Invisible Heart: Economics and Family Values*. New York: The New Press.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] ———. 2004. "A Theory of the Misallocation of Time," in Nancy Folbre and Michael Bittman, eds. *Family Time. The Social Organization of Care*, pp. 7–24. London: Routledge.

———. 2006. "Measuring Care: Gender, Empowerment, and the Care Economy." *Journal of Human Development* 7(2): 183–99.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] ———. 2008. *Valuing Children: Rethinking the Economics of the Family*. Cambridge, MA: Harvard University Press.

Folbre, Nancy and Julie A. Nelson. 2000. "For Love or Money – Or Both?" *The Journal of Economic Perspectives* 14(4): 123–40.

Folbre, Nancy and Thomas E. Weisskopf. 1998. "Did Father Know Best? Families, Markets, and the Supply of Caring Labor," in Avner Ben-Ner and Louis Putterman, eds. *Economics, Values and Organization*, pp. 171–205. New York: Cambridge University Press.

Fontana, Marzia. 2002. "Modeling the Effects of Trade on Women, at Work and at Home: a Comparative Perspective." Paper presented at the Workshop on Methodological Tools for Assessing the Sustainability Impact of **[Please complete.]** IFPRI Washington DC.. **[We found a version of this paper as a journal article in *World Development* 28(7) and in van Staveren, Elson, Grown, and Cağatay, eds. *The Feminist Economics of Trade*. Please consider citing one of these publications, or complete the current citation.]**

Frey, Bruno S. 1997. *Not Just for the Money: An Economic Theory of Personal Motivation.* Cheltenham: Edward Elgar.

Knack, Stephen and Philip Keefer. 1997. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation." *The Quarterly Journal of Economics* 112(4): 251–88.

Marglin, Stephen A. and Amit Bhaduri. 1990. “Profit Squeeze and Keynesian Theory,” in Stephen A. Marglin and Juliet B. Schor, eds. *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*, 152–86. New York: Clarendon Press.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] Meagher, Gabrielle. 2006. “What Can We Expect from Paid Carers?” *Politics & Society* 34(1): 33–53.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] Nelson, Julie A. 1996. *Feminism, Objectivity and Economics*. London: Routledge.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] ———. 1999. “Of Markets and Martyrs: Is it OK to Pay Well for Care?” *Feminist Economics* 5(3): 43–59.

Nelson, Julie A. and Paula England. 2002. “Feminist Philosophies of Love and Work.” *Hypatia* 17(2): 1–18.

[This source does not seem to be cited in the paper. Please either cite it or remove it from the reference list.] Picchio, Antonella, ed. 2003. *Unpaid Work and the Economy: A Gender Analysis of the Standards of Living*. London: Routledge.

Razavi, Shahra. 2007. “The Political and Social Economy of Care in a Development Context: Conceptual Issues, Research Questions and Policy Options.” Paper 3, UNRISD Gender and Development Programme.

[This source does not seem to be cited in the paper. Please cite it or remove it from the reference list.] Sawyer, Malcolm C. 1985. *The Economics of Michal Kalecki*. London: MacMillan.

Seguino, Stephanie. 2010. “Gender, Distribution and the Balance of Payments: Constrained Growth in Developing Countries.” . *Review of Political Economy* 22(3): 373-404.

Stewart, Walter F., Judith A. Ricci, Elsbeth Chee, Steven R. Hahn, and David Morganstein. 2003. “Cost of Lost Productive Work Time among US Workers with Depression.” *Journal of the American Medical Association* 289(23): 3135–44.

. .

Taylor, Lance. 2004. *Reconstructing Macroeconomics: Structuralist Proposals and Critiques of the Mainstream*. Cambridge, MA: Harvard University Press.

Van Lear, William and Lynette Fowler. 1997. “Efficiency and Service in the Group Home Industry.” *Journal of Economic Issues* 31(4): 1039–50.

van Staveren, Irene. 2006. Review of *Unpaid Work and the Economy. A Gender Analysis of the Standards of Living*, by Antonella Picchio, ed. and *Careful Economics: Integrating Caring Activities and Economic Science*, by Maren A. Jochimsen. *Review of Political Economy* 18(2): 290–3.

NOTES

[1] The term “care economy” was coined by Elson (1995).

[2] Akram-Lodhi and Hanmer (2008) present a completely theoretical model with no geographic orientation, while Fontana (2002) uses Bangladesh and Zambia as case studies.

[3] The assumption of sticky wages ensures that the AS curve is upward sloping in the short run, and therefore is responsible for much of the predictions of the AD-AS model regarding demand and supply shocks. On the other hand, the policy prescriptions of a structuralist model will not depend on short-run frictions in the labor market, but on the extent to which the social structure of production assigns low or high bargaining power to paid workers in the economy.

[4] Keynes used the term "animal spirits" to describe investors' behavior as depending not on interest rates and market values of assets, which argued were not an adequate reflection of financial value. Instead, he recognized that investors act on the basis of a taste for risk as well as optimism that they will be able to beat the market. Hence, investors' motivations are largely intuitive and influenced by what others do and by rules of thumb rather than by narrow rationality as a cost–benefit analysis.

[5] We abstract from interest rates in this model because we are not concerned, at least at this point, with how the cost of capital (both human and physical) affects investment demand. Besides, it is likely that interest rates are of minimal importance in determining how nonmarket work and care play out macroeconomically.

[6] The additional question of how caring spirits are endogenous, and how processes such as industrialization, growth, or economic decline affect caring spirits is an interesting one, and it is perhaps one we can get a firmer handle on with more systematic cross-cultural and time series analyses of time-use studies.

[7] We thank an anonymous reviewer for making this point.

[8] Completely segregating the market work of women versus men in this way is a stylized reflection of the fact that occupational segregation by sex is extensive in a variety of

countries, and that women tend to cluster in human services such as teaching, medicine and nursing, personal services (such as hairdressing or housekeeping), and clerical assistance (Anker 1998). Even among low- and middle-income countries where formal human service delivery is not well developed, paid care is often provided informally via the employment of domestic workers (Shahra Razavi 2007).

[9] As one anonymous reviewer points out, since the labor coefficient *a* in equation (16) is not constant in the model, an increase in the rate of capacity utilization will not automatically tighten the labor market and produce an increase in wages. In particular, equation (16) shows that an increase in *z* actually lowers the labor coefficient *a*. To maintain the conflicting features of distribution in response to capacity increases, that is to ensure that labor's bargaining power rises with capacity, we assume that the response of *a* to *z* is less than proportional.

[10] There is no capital in the price equations as it needlessly raises the complication level of the system. Alternatively, one could substantiate this assumption based on the labor theory of value, and that capital depreciation costs are already embedded in wage costs.

[11] In Kaleckian-type macro models, the markup is typically linked with the degee of monopoly power or industrial concentration. There are others, however, that take a different approach. Amitav Krishna Dutt (1987) posits fixed prices and a markup that varies with corporate power vis-à-vis trade unions. Marglin and Bhaduri (1990) use a flexible markup that rises along with capacity utilization. And Samuel Bowles and Robert Boyer (1990) propose a flexible markup that reflects efficiency wage dynamics (as unemployment declines and the cost of job loss goes down, capitalists are compelled to

raise wages to maintain labor discipline). Our specification also reflects the power of female sector capitalists.

[12] This is not to say that there are not single mothers in the other regimes, only that women get little care support from the state or absentee fathers.

[13] To formally conduct the comparative statics on the IS/PE system, we actually have to use the implicit function theorem and Cramer's Rule, which we have done but have not included here.