MICROFINANCE AND THE CARE ECONOMY

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THE CARE WORK AND THE ECONOMY (CWE-GAM) PROJECT

The Care Work and the Economy (CWE-GAM) Project strives to reduce gender gaps in economic outcomes and enhance gender equality by illuminating and properly valuing the broader economic and social contributions of caregivers and integrating care in macroeconomic policymaking toolkits. We work to provide policymakers, scholars, researchers and advocacy groups with gender-aware data, empirical evidence, and analytical tools needed to promote creative, gender-sensitive macroeconomic and social policy solutions. In this era of demographic shifts and economic change, innovative policy solutions to chronic public underinvestment in care provisioning and infrastructures and the constraints that care work places on women's life and employment choices are needed more than ever. Sustainable development requires gender-sensitive policy tools that integrate emerging understandings of care work and its connection with labor supply, and economic and welfare outcomes.

Find out more about the project at www.careworkeconomy.org.

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Ramaa Vasudevan is Associate Professor at the Department of Economics, Colorado State University. She completed her Ph.D. in economics from New School University, New York. Her research engages with the political economy of money and finance. This includes work on the functioning of international monetary system, the different ways in which integration with global markets shapes the developmental trajectory of countries in the developing world, the connection between the workings of the international dollar standard and the contemporary crisis and a historical-institutional analysis of shadow money and shadow banking. More recently she has been investigating the the implications of financialization for macroeconomic dynamics in the US by extending the Post-keynesian model to incorporate a managerial class and the role of finance. Her current work addresses the implications of of the growth of micro-finance for the care-economy, and its repercussions in the wider macro-economy, in the context of developing economies.

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Srinivas Raghav is Lecturer Above The Bar at NUI, Galway. His research is focused on a number of major themes in the areas of Macroeconomics, Finance and Complex systems, and Political Economy. The broad theme that connects various strands of his research is the issue of dynamic interrelation between economic growth and distribution of income, and his current work focuses on this question in the context of financialisation. Raghav's research is interdisciplinary and draws inspiration from the intellectual traditions of Michal Kalecki and John Maynard Keynes on the substantive front, and uses the methods and tools of Complex systems, to study the dynamics of growth and income distribution in the modern financial economies.

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1. INTRODUCTION

Financialisation, through the past three decades, has implicated low income households in developed and developing economies in distinctive ways. In the context of the developed economies, the process of financialization has facilitated debt driven consumption led booms. The empirical evidence from the past three decades, particularly in the US, suggest that the process of financialisation bridged the growing hiatus between consumption demand and the stagnant real wages, and also drove profits through credit growth. In developing countries, where a significant share of production takes place in the informal economy and where the nature of employment is casual and uncertain, the process of financialization, and the growing encroachment of organized finance into working households, is being upheld as a way to extend access to credit and expand productive opportunities to households in rural areas

An important mechanism through which the process of financialization operates in the informal, rural economy in developing countries is through the promotion of microfinance. In the context of the rollback of the developmental state under the neoliberal policy regime, micro-credit schemes were initially promoted as a tool for gender-empowerment and poverty alleviation. The promotion of the 'financial systems approach' by the World Bank in the nineties with its emphasis on cost recovery and financial viability (Robinson 2001), followed by the adoption of 'financial inclusion' as a developmental priority (and not simply a poverty alleviation strategy), most significantly after the Great Financial Crisis (World Bank, 2009), paved the way for the widening of the services offered from provision of microcredit to include a broader range of services, what can be termed microfinance more generally (Robinson 2010). Microfinance was increasingly absorbed within the sphere of mainstream private finance (Bateman 2012, Bateman and Chang 2012, Taylor 2012, dos Santos and Kvangraven 2017). In place of the model of state and international donor subsidized microfinance, a model of market driven and profit oriented 'commercial' microfinance was espoused, internationally (Bateman and Chang 2012). With this development, the focus of microfinance shifted from indicators social performance to those monitoring financial performance, and microfinance became increasingly subject to the instabilities that mainstream finance faces. Micro-finance institutions that tapped the domestic and international capital markets were also more vulnerable to crisis, experiencing a shrinkage in volume with the slowdown in credit (Wagner and Winkler 2013). Since 2008 there have also been meltdowns in micro-finance triggered by excessive indebtedness and consequent defaults, as profit -oriented microfinance has gained ground (Chen et al 2010, Hulme and Arun 2011).

While the implications of financialization have been investigated in the context of developed countries, there is a paucity of macroeconomic models incorporating the specific features of the growing importance of finance in developing economies. Even though the impact of micro-credit on both poverty and gender relations has been extensively studied (Banerjee et al 2015), the implications of the growth of micro-credit

for the care-economy, and their repercussions in the wider macro-economy have received less analytical attention. This paper seeks to address this gap.

Micro-finance credit is meant to be used to fund self-employment or home production, in contexts where limited access to formal institutional credit constrains the investment and leaves households vulnerable to usurious informal money lenders. Further the sustainability of debt depends on the relation between debt repayment and income generation. Income generation in turn is constrained by local demand conditions. The lack of clear evidence for transformative effects of microcredit for poverty reduction or improvement in standard of living (Marr 2012, Banerjee 2013, Banerjee et al 2015) suggest that the success of microenterprise is not related simply to credit availability but would also be affected by the macro-environment of demand that conditions the success and growth of micro-enterprises. Contrary to the vision, microfinance does not open the door for limitless self-employment within the context of poverty (Bateman 2012). Slowdowns in the wider economy, have a feedback effect on lowering the demand for the output of the microfinance sector, and hence for the viability of these enterprises. The capacity of the microfinance sector to provide the impetus to broader demand growth in the economy is likely to be more limited.

The origins of microcredit are also, more significantly, tied to the goal of enabling women in developing countries who face patriarchal or structural constraints on participating in formal employment, and barriers to access to credit, to earn income by setting up micro-enterprises. The provision of small loans without the conventional collateral requirements is key to kick-starting such micro-enterprise. The evidence on the capacity of microfinance to transform gender relations is also mixed and depends not only on the increased access to resources but on the scope for building organizational capacities and bargaining power of women (Kabeer 2000, 2005).

Since micro-finance schemes target women in particular, it also has direct implications for unpaid care-work performed by women within the household. The increase in market labor implies a claim on the time of working women. In the absence of social provisioning of care, this claim on the labor time of women (as principal providers of unpaid care labor) could lead different possible outcomes. First, if this leads to a decrease in time available for care, household income generation would be adversely affected by the erosion of the productivity of market-labour. Second, there could be an increase in intensity of care labor, or an encroachment into what we call for want of a better term the 'own' labor time available to women (whether for leisure, self-care or rest) as the female workers struggles to fulfill the needs of care work. This implies a squeeze on the 'own' labor time of the female worker with consequent effects on her well-being and capacities. Third, the increased income from the market could be used to purchase goods and services that substitutes for care work or make it less time consuming (for example more efficient stoves) for care work or goods and services. The paucity of affordable good quality market care goods and services in rural areas constrains the scope of such substitutions and limits the extent to which women can participate in paid employment without a squeeze on their own labor time. Further, these micro-enterprises tend be structured

around the home and self-employment there remains a greater scope for a blurring of the boundaries between unpaid care work and paid self -employment. While this would allow greater complementarity between paid and unpaid work it would also further cement the rigid gendered norms for care-work that circumscribe women within the household.

On the other hand, macroeconomic slowdowns would affect earnings in the sector through demand effects. This would lead to an increase in unpaid care labor and/or a reduction in savings. The increase in care labor in the face of slowdowns and recessions, is in a sense a transformation of savings from a monetized to a non-monetized form (Stavaeren 2002). Unpaid care and the consequent squeeze on time, accommodates to earnings shocks. This seems to be the case, particularly for low-income households in the developing countries with a large informal economy. Unpaid care labor also acts like a buffer during financial crisis (Singh and Zimmitt 2000, Elson and Cagatay 2000). The leakage of microfinance loans to provide for consumption needs is a further complication.

The proposed paper will explore the linkages between micro-credit and unpaid care work by developing a two-sector model within the structuralist tradition as a first pass to addressing these questions. The objective is to uncover interlinkages between the informal sector based on micro-credit and the formal sector and highlight the implications of changing allocation to care work for the wider economy. Section 2 presents a brief overview of microfinance in developing countries with a specific focus on India. After clarifying our analytical framework in Section 3 we present a two-sector model in order to elucidate the relationship and interaction between the formal capitalist sector employing male workers and the informal, sector where female worker pursues self-employment opportunities through access to micro-finance (Section 4). The model investigates demand dynamics and the impact of an increase in interest rates on microfinance loans. Finally, we explore the interlinkage between care labor and productivity in Section 5.

2. AN OVERVIEW OF MICROFINANCE

Microfinance involves the provision of small loans to low income individuals to start a small-businesses or micro-enterprises. The limited access to formal institutional credit was seen as a critical constraint to low income households and microcredit has been seen as a way to help low- income households raise their standard of living. More specifically microfinance was launched as way to target women in rural areas who were constrained, both by limited property rights and access to collateral in the credit market, and by patriarchal norms that limited their capacity to participate in rural labor markets. Small loans that enabled women to start their own small enterprises, and be self-employed was seen a significant step in both the empowerment of women and the alleviation of poverty. These micro-enterprises were typically closely related to agriculture and included activities like cattle and poultry rearing, basket weaving, food processing, tailoring, and petty trade. The system of group-lending and peer-monitoring substituted for collateral as a mechanism for enforcing debt repayment and also helped to lower transaction costs. These 'groups' were also seen as potential sites where interactions outside the household

strengthened community networks that might help empower rural women. While the interest rates did not compare favorably with formal credit institutions, they were significantly lower than that of the informal money lenders who dominated rural economy. In the past few decades market and profit oriented financial institutions have entered the sphere of microfinance, attracted by the relatively low rates of default and high repayment rates, and transformed the landscape of microfinance. The impetus to establish microfinance on a secure and sustainable financial footing has undermined its original social mission, while opening new opportunities for finance. The aggressive marketing of microfinance has led to households taking on multiple loans and higher rates of interest and falling inevitably into a debt trap. Instead of fostering collective solidarities among women, the focus has become centered on lenders priorities and profits, and can lead to the fostering hostilities and coercion within the groups (Rankin 2002). This has led to some debate on the need to regulate microfinance, and re-assert its social mission. (Hulme and Maitrot 2014)

In the context of India, microfinance was initially promoted through the self-help group (SHG) -bank linkage program in 1992. Commercial banks partnered with non-governmental organizations to form self-help groups of women in rural areas as a channel for microfinance loans. Microfinance institutions (non-bank financial institutions) entered the field, growing rapidly after 2003, to form a distinct channel for disbursing microfinance in India. While the former channel had its roots in the vision of addressing poverty by transforming rural women into mini-entrepreneurs and was embedded in a vision of inclusive development agenda, the latter channel was profit oriented and had entered the fray as a new avenue for earnings. This period also saw technological innovations including securitization and structured products into this sector (Nair 2010, Sriram 2010). The original social mission of microfinance was increasingly sidelined and the aggressive peddling of microloans triggered excessive debt. The spate of suicides among indebted farmers in Andhra Pradesh in 2010, led to a demand for greater regulation along with the recognition that microfinance is not immune to the volatile logic of finance (Hulme and Arun 2011). Since the mandate of microfinance is to targets low-income households, the impact of this volatility is borne by households least equipped to deal with the consequences.

This overview provides the broad context for this paper. The point of departure for this paper is the predominantly female beneficiary of microfinance loans. In the context of limited opportunities for formal employment in the rural economy in developing countries, the principal burden of unpaid subsistence and care work, and patriarchal norms that constrains the choices faced by the rural women, micro-credit provides an opportunity for gainful self-employment and income generation through these household-based enterprises.

However, the household is also the principal site for provisioning of care labor – the labor that ensures the social reproduction of the workforce and human capacities. A disproportionate burden of care work falls on women, and is provided outside market relations. Community ties can be an important source of social provisioning of care labor

in rural economies but state investment in social care infrastructure and provisioning of care services in rural areas in many developing countries is limited and has suffered as consequence of the structural reforms that enforced a cutback in state spending. Thus, the major burden of care falls on the unpaid labor of women. Further, since microfinance allows women to set up mini-enterprises at home it is also potentially less disruptive to the gendered division of labor that imposes the primary responsibility for care-labor on women despite the increased access to economic resources. The nature of the household enterprises is such that the isolation and seclusion of the woman within the household is not broken (Goetz and Gupta 1996, Ehlers and Main 1998). Kabeer (2002) also points to how the structure of gender asymmetries and unequal interdependence within the household could lead to women seeking more equality *within* the family, through access to credit and livelihoods rather than greater independence *from* the family.

While studies have looked at the impact of micro-finance of incomes and socio-economic indicators of well-being and empowerment of women, there has been less focus on the implication for the gendered nature of the provision of unpaid care. The female worker when seeking self-employment through micro-finance also faces the choice of using the earnings to substitute unpaid care with market substitutes. Market goods can also be used to alleviate the burden of unpaid care work by enabling more effective use of care labor. At the same time, when market care goods and services when available are expensive in relation to the income earned, or else of low quality; the female worker faces a constraint on the extent to which paid employment is traded off with unpaid care[1]. In such a situation, paid employment imposes a double shift and entails an encroachment on the time available for the worker herself (whether for leisure, self-care, or rest). We term this residually available time 'own-time'.

The implications of micro-finance on the decision about allocation of labor time to unpaid care work become crucial in the face of cutbacks to state provision of care and the associated turn to financial inclusion as the over-arching development strategy. If earnings generated are inadequate to sustain an increased recourse to good quality market care goods and service or more effective care labor, the increased burden on the female workers own labor time would have an impact on labor productivity either because there is a reduction in amount of time devoted and the quality of care work, or because of the effect of the reduction in own time exacts a toll on female care work provider's productivity. The scale of earnings from this sector are thus crucial. In the context of the low-income households in rural areas in developing countries the scale of earnings generated and the amount of own time available to women in households where survival strategies depends on unpaid care and subsistence work is likely to be limited[2].

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[1] Evaluations of micro-credit have not provided much evidence to suggest an increase in consumption following access to micro-finance (Banerjee 2013, Banerjee et al 2015a, Banerjee et al 2015b).

[2] Rural economies characterized by limited and low-quality market care goods, and poor social infrastructure and provisioning of care make what Braunstein (2013) characterizes as the low road regime of social reproduction more likely.

The evidence of studies evaluating the impact of microfinance, do not support any conclusions about improved standards of living as an outcome of micro-finance. Even though studies point to an increase in business activity (and thus self-employment opportunities), they are less conclusive about the transformative potential of micro-finance on the borrower (Banerjee et al 2015a, b).   The micro-focus of these studies misses an important a dimension of what would allow micro-finance to pave the way to better and more sustainable earnings opportunities. While the importance of decent infrastructure (including for marketing products) for the success of micro-enterprises has been underscored (Marr 2012), there has been a relative neglect of demand side factors. Since the enterprises are small in scale and there is typically a replication of products and services among small enterprises in a particular region, so that prices and earnings tend to get squeezed due to competitive pressures. The earnings of self-employed micro-entrepreneurs depends on the growth of the demand for their products. This would depend on strong linkages outside the local rural economy. These enterprises cannot grow in the absence of dynamic demand conditions.

The structural constraints on the income generating potential of micro-finance thus arises on the supply-side from the inadequacy of infrastructure and social spending, on one hand and the limits posed by the responsibility of provision of care labor on the other. At the same time demand also poses a structural constraint on the transformative potential of micro-finance. The growth and success of microenterprises depends crucially on the prevailing macroeconomic conditions of demand.

 The analytical model presented in this paper seeks to explore some of these issues.

3. THE ANALYTICAL FRAMEWORK

The analytical model presented here is within the heterodox/ Post-Keynesian tradition. Foley and Taylor (2006, p 77) identify the core features that unify heterodox perspectives as "a focus on the functional distribution of income; the avoidance of model closures that imply full-employment of a given labor force; differential modeling of the consumption and savings decisions of workers and capitalists; the adoption of an investment demand function independent of savings decisions; and the separate treatment of the firm as an economic agent independent of its owner households."

Elson and Cagatay (2000) emphasize the gender-inequitable biases that are implicit in mainstream macroeconomic approaches, particularly in the context of economies dominated by financial interests[3]. The Post-Keynesian approach, with its focus on

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[3] These are the deflationary bias, the breadwinner bias and the commodification bias. The emphasis on austerity depresses wages and employment at the same time that the state is cutting back on social spending and privatizing health education and other social sectors. The household care economy bears the brunt of this, and women are forced to take on a relatively larger burden of unpaid care work in order to compensate for the deteriorating livelihoods of low-income households.

interconnection between demand and distribution, is thus a more appropriate point of departure for our purpose. However, the social and distributional consequences of macroeconomic outcomes and policies go beyond wage and profit shares that are at the core of Post-Keynesian analysis. The interaction of non-market provision of care on demand and distribution dynamics bears further investigation.

Theoretical advances have been made in embedding gender and care-work within the broad Post-Keynesian macro-economic framework (Akram-Lodhi and Hanmer 2001, Ertürk, K. and Çagatay 1995, Çagatay and K. Ertürk. 2004. van Staveren 2010, Braunstein et al 2011, Seguino 2013, Braunstein 2013). However, there is a critical gap in the literature with respect to the development of a theoretical modeling framework to understand the implications of the growing involvement of households in relations of debt for the social reproduction of labor. Structuralist macroeconomic models have investigated the implications of finance for macro-dynamics (Hein and Van Treek 2008, Onaran et al 2009, Hein 2012, Hein 2012, Bhaduri et al 2013, Bhaduri and Raghavendra 2017, Vasudevan 2017). In particular, the impact of growing consumer debt on growth, distribution and stability has been studied (Dutt 2005, 2006, Hein 2012, Setterfield and Kim 2013,). There is of course a gender dimension to financialization and the growth of household debt. Floro and Dymski (2000), for instance present a micro-foundational model of unequal power and cost-sharing to investigate the asymmetric impact of financial crisis on gender relations within the household, in emerging markets that integrate into the global financial system. Singh and Zammitt (2000) Aslanbeigui and Summerfield (2000) Van Staveren (2001, 2002) are among the early attempts to address the gendered impact of global financial flows and financial crisis. The investigation of the impacts of financial crisis suggests that the financial burden of excessive financial risk-taking is also shifted to those (mainly women) who provide unpaid care.

Finance undoubtedly accentuates the vulnerability of households but of equal significance is the impact on the provision of unpaid care-work. The adjustment to financial shocks takes place through an increased dependence on unpaid care work. The insertion of households into relations of debt would have implications for the social reproduction of labor. The channels through which finance affects the distribution of paid and unpaid care-work, and how these in turn feedback to effective demand and macroeconomic performance, have been inadequately theorized.

The conception of finance within the heterodox Post-Keynesian macroeconomic framework is relevant to investigating the economic implications of micro-finance, and serves as the point of departure for the model presented here. Note, that while the model in this paper addresses the question of aggregate demand, it should be seen as macro-model of a closed local economy. The household is the site where decisions about consumption and allocation of labor are made. However, in this paper we do not focus on the micro-level decision making within the household but are more interested in investigating macroeconomic outcomes of how income and time are allocated.

In order to focus more sharply on the key analytical relationships that are of interest for our purpose we elaborate a stylized two sector model in the tradition of Post-Keynesian dual models with specific features[4]. The first sector is the formal sector and is modeled on the lines of the conventional Kaleckian model with two classes: capitalist and workers. The other sector is an informal sector and comprises small enterprises that develop on the basis of micro-finance. These enterprises are generally small in scale and predominantly consumption goods (like production and sale of garments or food products). This sector is constituted by self-employed worker/producers. The two-sector formulation allows the investigation of demand dynamics on micro-financed self-employment.

We further assume that the worker in the formal sector is male while the self-employed worker in the informal sector is female. This reflects the stylized facts about regions targeted by microfinance, where men in low income households tend to work outside as formal or casual labor while women remain more tied to the home and home- based enterprises that allow them to continue to fulfill care responsibilities. Microfinance allows the female worker the opportunity for earning by setting up a micro-enterprise. She is faced with the choice of allocating her labor between paid self-employment and unpaid care labor. Care labor poses in some sense a structural constraint on the capacity for paid employment. It is also a critical determinant of labor productivity in general. Further the viability of the micro-enterprise depends on demand conditions in both sectors. We make the simplifying assumption that the goods produced in this sector are consumption goods consumed solely by male and female workers. Increase wage earnings in the formal sector leads to a greater demand for the informal sector output. Higher earnings in the informal sector would also stimulate demand for the formal sector's output. Thus, the two sectors have a mutual feedback effect on each other and the growth in one sector can stimulate demand for the product of the other sector suggesting the possibility of a benign upward trajectory in income level.

The other link between the two sectors is on the supply-side. The informal sector is constituted by female workers who allocate their labor between self -employment and care labor. The opportunity for earnings through micro-finance could have an impact on how care is provided. If the scale of earnings is not enough to lead to an increased recourse to market substitutes (and complements) there will be an erosion of care provision. This would affect labor productivity in both sectors. The other possibility is that care labor is provided at the expense of the own time of the female worker. This would have an adverse impact on the productive capacities of the female worker. Both these channels are explored in this paper.

We assume the quantum of microfinance to be exogenously given. Thus, the model as it is formulated does not explicitly address financial dynamics. It does however allow us to investigate both demand dynamics and the relation between care-work and labor

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[4] Rada (2007) for instance develops a dual model with a modern and subsistence sector incorporating Kaldor-Verdoon channels of productivity growth and retardation mechanisms.

productivity and more specifically the impact of an increase in the interest rate on these interlinkages.

4. MODELLING THE TWO - SECTOR ECONOMY

The economy is divided into a formal capitalist sector employing male workers and an informal sector constituted of female workers who allocate their time between unpaid care work and self-employment. We use the subscripts *fc* and *is* for the formal capitalist and the informal self-employed sector respectively. Self-employment is kickstarted by access to microfinance. Given the small enterprises that micro-finance helps establish, cannot achieve economies of scale, labor productivity in the informal sector is likely to be lower than that of the formal sector. We do not construct micro-level behavioral models of the allocation of labor between unpaid care work and employment and paid work, or of consumption between formal and informal sector output. However, the parameters defining allocative shares reflect these micro-level decisions.

4.1 THE DUAL SECTORS

The formal capitalist sector is modeled in terms of the standard Kaleckian framework with two classes: capitalists and workers. We assume that only male workers have access to formal employment. The value added in this sector is distributed between the two classes in in form wages W_{fc} and profits (Π)

$$Y_{fc} = W_{fc} + \Pi \qquad (1)$$

The profit of the capitalist in the formal sector is: $\Pi_{fc} = \pi Y_{fc}$

where π = profit share.

The wage income of the (male) worker W_{fc}, is:

$$W_{fc} = wl_{fc} = w\frac{Y_{fc}}{\lambda} = (1 - \pi)Y_{fc} \quad (2)$$

Where w denotes the wage, λ labor productivity in the formal sector and l_{fc} the labor employed in the formal capitalist sector.

The informal sector, on the other hand, does not comprise capitalists and workers but the self-employed (female) worker.   We make the restrictive assumption that the female worker does not enter the formal labor market. This reflects the greater barriers to formal employment faced by women in these economies and the adoption of microfinance as a way of addressing these barriers by providing earning opportunities.

Earnings in the informal sector,

$$E_{is} = p_{is}Y_{is} - iB \quad (3)$$

where B is microfinance borrowings, and i the interest rate.

4.2. DEMAND FOR FORMAL AND INFORMAL SECTOR OUTPUT

The demand adjustment dynamics are modelled in a distinct way for each of these sectors. Demand adjustment in the formal capitalist sector is modelled along standard post-keynesian lines as output adjusting to excess demand. Prices are determined as a mark-up over variable costs. In the informal sector, in contrast, we assume price adjusts to excess demand.

In order to determine aggregate demand in the economy we make certain simplifying assumptions.

1. The male worker employed in the formal sector spends a share b of his income on the formal sector good and $(1-b)$ on the informal sector good. Further the male worker does not save. Thus the male worker demand for the formal sector output is bW_{fc}, and that for informal sector output, $(1-b)W_{fc}$.
2. The female worker in the informal sector saves s_f of her earnings. Of the remainder a is spent on the formal sector output and $(1-a)$ on the informal sector output. The female worker thus spends $a(1-s_{is})E_{is}$ on formal sector output, and $(1-a)(1-s_{is})E_{is}$ on informal sector output.
3. The capitalist saves s_π proportion of the profits and spends the rest ($S_K = [1 - s_\pi]\Pi$) on formal sector output.

The assumption that the male worker does not save is a carry-over from the original Kaleckian model and is not crucial to the analysis. The savings behavior of the female worker, however, is of greater significance to the central concerns of the present paper.

The extent to which the self-employed female worker bears the responsibility for providing care work affects the amount that she saves. This responsibility as noted earlier could be shared within the household, the wider community, or provided by the state. But where the responsibility rests primarily on the female worker she would fall into a low-income, low-savings trap. The low-income makes it impossible to save, and limits the extent to which market can substitute or complement care labor. Conversely, low savings make it hard to improve earnings either by spending more time or through productivity enhancing investments. In practice, at low levels of earnings, and with the compulsion of debt repayment, savings are likely to be low or negligible. This would imply that the growth of the informal enterprise would depend on new loans. The constraint on savings is reflected in the empirical findings of the lack of investment growth in this sector[5].

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[5] There is evidence in developing countries, that as women's discretionary income and bargaining power increase, aggregate saving rates rise, implying a significant effect of gender on aggregate savings (Seguino and Floro 2013). There are however contradictory impacts of a rise in female earnings on savings. On the one hand the greater responsibility for providing care might result in lower savings for instance due to due to greater investment in education of children. On the other hand, women may be motivated to save in

The literature on the gendered pattern of consumption suggests that male workers are likely to spend a larger share of their income on capital intensive and luxury goods which are produced in the formal sector. Therefore $b > a$

The investment goods demanded by both sectors are also produced in the formal sector. Investment demand (real) in the formal sector is given by:

$$I_{fc} = \alpha + \beta Y_{fc} + \gamma \pi \quad (4)$$

This is the conventional Kaleckian investment demand function where α represents animal spirits, and investment responds to capacity output and the profit share.

Investment demand (real) in the informal sector on the other hand is given by:

$$I_{is} = s_{is}[p_{is}Y_{is} - iB] \quad (5)$$

Where s_{is} is the savings rate out of net earnings. Investment in this sector is governed as in the Classical model. The initial investment is determined by the quantum of microfinance. Subsequently, the entire savings (after repayment of loan) are reinvested. We do not explicitly consider the term of the loan in the present analysis, which is looking at short run impacts.

The determinants of s_{is} are not explored in this paper, but this variable is crucial to the adjustments made by the female worker, in the context where the female worker is the principal provider of unpaid care labor. Increased earnings allow the substitution of unpaid care labor with market goods and services. Thus, increased employment need not involve a diminution of the provision of 'care', but rather its transformation from a non-market to a market form. However, at the margin, there is a trade-off between earnings and the cost of market substitutes as the worker choses between market and non-market forms of production and savings (van Staveren 2002). It has also been argued that micro-finance is a mechanism for saving, where the large one-time spending enabled by micro-credit is then paid back by restricting consumption (Banerjee 2013).

We can determine aggregate demand for each sector. The total (real) demand for the formal capitalist sector output is:

$$D_{fc} = \{a(1 - s_{is})[p_{is}Y_{is} - iB] + s_{is}[p_{is}Y_{is} - ib] + b(1 - \pi)p_{fc}Y_{fc} + (1 - s_{\pi})\pi p_{fc}Y_{fc} + p_{fc}(\alpha + \beta Y_{fc} + \gamma \pi)\}/p_{fc} \quad (6)$$

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order to better provide for the security of the family. Relative bargaining power within the household and control over earnings would also affect women's savings behavior (including the forms in which savings are undertaken). The present model does not address this particular issue.

The first term represents consumption demand of the self -employed worker, the second term the investment demand in the informal sector, the third and fourth terms the consumption demand of the formal sector worker and capitalist respectively and the last term investment demand in the informal sector.

The total demand for informal sector output is given by:

$$D_{is} = \{(1-a)(1-s_{is})[p_{is}Y_{is} - iB] + (1-b)(1-\pi)p_{fc}Y_{fc}\}/p_{is} \quad (7)$$

The first term is consumption demand of the self-employed workers and the second that of the formal sector worker. We now turn to investigating demand dynamics.

4.4 DEMAND DYNAMICS:

The dynamics of adjustment to disequilibrium in demand is distinct in the two sectors. In the formal sector output adjusts to excess demand, in manner of the standard Post-Keynesian model, so that:

$$\dot{Y}_{fc} = D_{fc} - Y_{fc} = 0$$
$$\Rightarrow \dot{Y}_{fc} = a(1-s_{is})[p_{is}Y_{is} - iB] + s_{is}[p_{is}Y_{is} - iB] + b(1-\pi)p_{fc}Y_{fc} + (1-s_\pi)\pi p_{fc}Y_{fc}$$
$$+ (\alpha + \beta Y_{fc} + \gamma\pi)p_{fc} - p_{fc}Y_{fc} = 0$$

$$\Rightarrow \dot{Y}_{fc} = [a(1-s_{is}) + s_{is}][p_{is}Y_{is} - iB] - [1 - b(1-\pi) - (1-s_\pi)\pi - \beta]p_{fc}Y_{fc} + \gamma p_{fc}\pi +$$
$$\alpha p_{fc} = 0 \qquad (8)$$

For the Keynesian stability condition to hold

$$\frac{d\dot{Y}_{fc}}{dY_{fc}} < 0$$

This implies that

$$[1 - (1-\pi)b - (1-s_\pi)\pi - \beta] > 0$$

This condition implies that the demand gap (i.e., the demand for the formal sector output that is not satisfied within the sector) for the formal sector output varies directly with the formal sector output. (See Appendix I).

In the informal sector in contrast price adjusts to excess demand such that:

$$\dot{p}_{is} = D_{is} - Y_{is} = 0$$
$$\Rightarrow \dot{p}_{is} = (1-a)(1-s_{is})[p_{is}Y_{is} - iB] + (1-b)(1-\pi)p_{fc}Y_{fc} - p_{is}Y_{is}$$
$$= [(1-a)(1-s_{is}) - 1][p_{is}Y_{is}] - [(1-a)(1-s_{is})iB] + (1-b)(1-\pi)p_{fc}Y_{fc} = 0 \quad (9)$$

$$\frac{d\dot{p}_{is}}{dp_{is}} < 0$$

since $[(1-a)(1-s_{is})-1] < 0$ as long as $a < 1, s_{is} < 1$. This condition implies that there is shortfall in demand for the informal sector output from within the informal sector.
We now have a dynamical system in $\dot{Y}_{fc}$ and $\dot{P}_{is}$ (see Figure1)

The nullcline (where $\dot{Y}_{fc} = 0$) for formal sector demand in the Y_{fc}, p_{is} space, is given by

$$Y_{fc}(p_{is}) = \frac{[a(1-s_{is})+s_{is}][p_{is}Y_{is}-iB]+(\gamma\pi+\alpha)p_{fc}}{[1-b(1-\pi)-(1-s_\pi)\pi-\beta]p_{fc}} \quad (10)$$

$$\Rightarrow \quad \frac{dY_{fc}}{dp_{is}} = \frac{[a(1-s_{is})+s_{is}]Y_{is}}{[1-b(1-\pi)-(1-s_\pi)\pi-\beta]p_{fc}}$$

The slope of the formal sector nullcline is thus:

$$\frac{dY_{fc}}{dp_{is}} > 0 \quad \text{iff} \quad [1-(1-\pi)b-(1-s_\pi)\pi-\beta] > 0$$

The nullcline is therefore upward sloping if the condition for Keynesian stability holds. An increase in the price of the informal sector good requires a higher level of formal sector output for the market to be in equilibrium.

Further,

$$\Rightarrow \quad \frac{dY_{fc}}{dY_{is}} = \frac{[a(1-s_{is})+s_{is}]\,p_{is}}{[1-b(1-\pi)-(1-s_\pi)\pi-\beta]\,p_{fc}} > 0$$

if the Keynesian stability condition holds. An increase in the informal sector output shifts the nullcline upwards.

The nullcline for the informal sector (where $\dot{p}_{is} = 0$), in the Y_{fc}, p_{is} space, is given by:

$$p_{is}(Y_{fc}) = \frac{[(1-a)(1-s_{is})iB]-(1-b)(1-\pi)p_{fc}Y_{fc}}{[(1-a)(1-s_{is})-1]Y_{is}} \quad (12)$$

The slope of the nullcline is

$$\frac{dp_{is}}{dY_{fc}} = \frac{(1-b)(1-\pi)p_{fc}}{[a(1-s_{is})+s_{is}]Y_{is}} > 0$$

Thus, a higher level of formal sector output implies that a higher price equilibrates the informal sector since demand has risen.

Note also that

$$\frac{dp_{is}}{dY_{is}} = \frac{[(1-a)(1-s_{is})iB] - (1-b)(1-\pi)p_{fc}Y_{fc}}{[1-(1-a)(1-s_{is})]Y_{is}^2}$$

The denominator is positive so

$$\frac{dp_{is}}{dY_{is}} \lessgtr 0 \text{ if } [(1-a)(1-s_{is})iB] \lessgtr (1-b)(1-\pi)p_{fc}Y_{fc} \quad (13)$$

The RHS represents the male workers consumption of the informal sector output while the LHS is the leakage in the female workers consumption demand for the informal sector output on account of interest payments.

Consider the equilibrium condition $\dot{p}_{is} = 0$ (Equation 9). This implies that

$$[(1-a)(1-s_{is})iB - (1-b)(1-\pi)p_{fc}Y_{fc} < 0 \text{ since}$$

$$[(1-a)(1-s_{is}) - 1] p_{is}Y_{is} < 0$$

Thus, equilibrium is not possible in a situation where the demand leakage due to interest payment exceeds the informal sector workers demand. Therefore, demand equilibrium is only possible if

$$\frac{dp_{is}}{dY_{is}} < 0.$$

An increase in the informal sector output, will thus lead to a shortfall in demand and a fall in the informal sector price level. The nullcline will shift down.
The Jacobian of the dynamical system evaluated at the steady state $(\bar{Y}_{fc}, \bar{p}_{is})$, can be represented as follows:

$$\begin{bmatrix} -[1-b(1-\pi)-(1-s_\pi)\pi-\beta]\overline{p_{fc}} & [a(1-s_{is})+s_{is}]\overline{Y_{is}} \\ (1-b)(1-\pi)\overline{p_{fc}} & -[a(1-s_{is})+s_{is}]\overline{Y_{is}} \end{bmatrix}$$

The trace of the Jacobian is negative as long as $[1-b(1-\pi)-(1-s_\pi)\pi-\beta] > 0$. This is the condition for Keynesian stability.

Turning to the sign of determinant of Jacobian, D:

$$D \lessgtr [1-b(1-\pi)-(1-s_\pi)\pi-\beta] - [(1-\pi)(1-b)] = s_\pi\pi - \beta \lessgtr 0$$

Thus the system is stable (D > 0) if the savings of the capitalist increases more than investment, in response to an increase in formal sector income. This condition also implies that the formal sector nullcline is steeper than that of the informal sector, i.e.:

$$\left|\frac{dp_{is}}{dY_{fc}}\right|_{fc} = \left|\frac{1}{\frac{dY_{fc}}{dp_{is}}}\right|_{fc} > \left|\frac{dp_{is}}{dY_{fc}}\right|_{is}.$$

The stability condition thus boils down to the condition that the responsiveness of demand in the informal sector to the formal sector demand is greater than the responsiveness of the formal sector demand to the informal sector demand. Another way of stating this is that elasticity of the informal sector price to formal sector output, is greater than that of the formal sector output to informal sector price. This asymmetry reflects the structural primacy of the formal sector. It also suggests that policies that stimulate the formal sector would have a positive impact on earnings in the microfinance sector. Exogenous shocks that depress demand in the formal sector would conversely also depress earnings in the micro-finance sector. The neoliberal policy package that cutbacks on public investment and employment generation while turning to microfinance to redress the negative impact on livelihoods in rural areas in developing countries, has a limited scope as a viable development strategy.

When D < 0, the system will display saddle-path dynamics, which in the absence a forward-looking jump variable suggests unstable dynamics. The condition for stability this depends on the relative slopes of the two null-clines and key to this is the behavior of the formal sector capitalists[6].

Figure 1 presents the phase diagram for the adjustment dynamics for both cases.

We can now turn to exploring some comparative static effects of changes in various parameters of the macroeconomic outcome. In the next sub-section we focus on the impact of changes in the interest rate since this is of crucial importance to the debt repayment capacity of the borrowers in the informal sector.

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[6] The condition basically implies that savings responds more than investment for a unit change in output, i.e. $\frac{dS_K}{dY_{fc}} > \frac{dI_K}{dY_{fc}}$ (where $I_K = I_{fc}$).

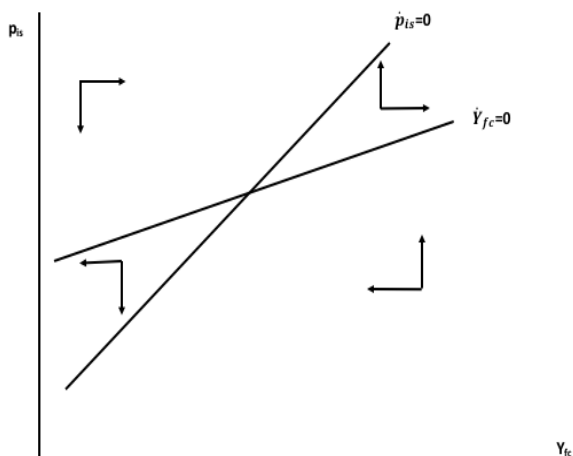Figure 1: Demand Dynamics: Formal and Informal Sector
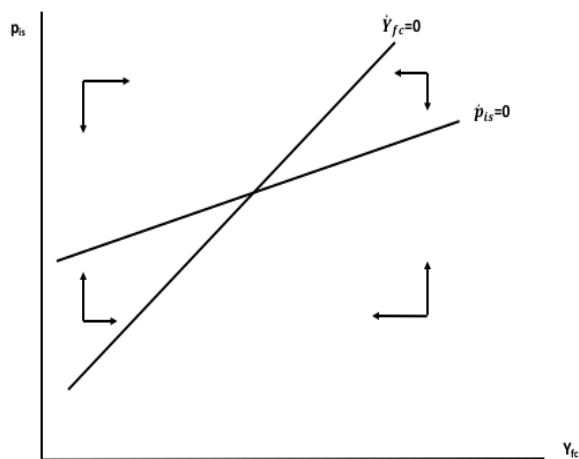
a. Stable case

Figure 1

b. Unstable case

4.5 IMPACT OF AN INCREASE IN INTEREST RATE

Increasing debt burden due to rising and multiple interest payment claims has been an issue with the recent growth of microfinance. The model allows us to investigate the impact of the rise in interest rates on demand and output.

Now

$$\frac{dp_{is}}{di} = \frac{[(1-a)(1-s_{is})B]}{[(1-a)(1-s_{is})-1]Y_{is}} < 0$$

Thus, an increase in the interest rate shifts the informal sector nullcline downwards, lowering p_{is}.

An increase in i also has an impact on the formal sector nullcline.

$$\frac{dY_{fc}}{di} = \frac{-[a(1 - s_{is}) + s_{is}]B}{[1 - b(1 - \pi) - (1 - s_\pi)\pi - \beta]p_{fc}} < 0$$

The increase in interest rates and the consequent leakage of demand to interest payments will lead to a fall in the formal sector equilibrium output. The formal sector nullcline will shift leftwards.

Figure 2a represents the analysis for the stable case. At the new equilibrium (a point like B, in Figure 2a), p_{is} (and therefore informal sector earnings) will fall. At the same time the shift in the formal sector nullcline implies that Y_{fc} will fall. Thus, usurious rates in the microfinance sector have an overall negative impact on income and earnings in both sectors. This conclusion is of significance in the context of the recent promotion of for-profit microfinance as a development strategy. A case can be made that the promotion of higher 'profitable' interest rates in the microfinance sector would have a negative impact on income and earnings when the demand dynamics are stable. When demand dynamics are unstable, however, we have a new (unstable) equilibrium where informal sector price and earnings and formal sector output rises with an increase in the interest rate (Figure 2b).

Figure 2: Impact of an increase in interest rate
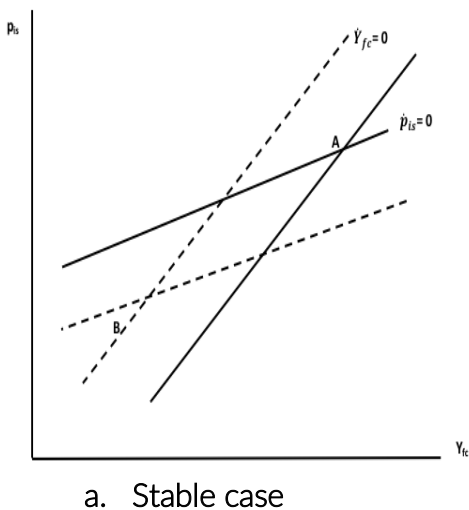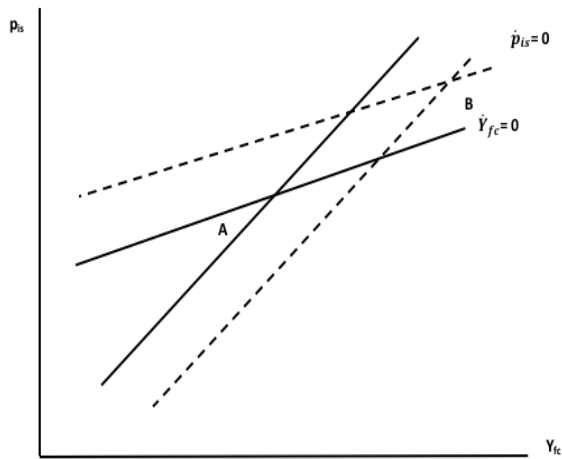
a. Stable case

b. Unstable case

Figure 2

5. CARE WORK AND LABOR PRODUCTIVITY:

The female worker in informal sector is also the principal provider of care. Care work is crucial for the reproduction of labor capacities, and the allocation of female labor time between paid self-employment and unpaid care work has a central role in macroeconomic outcomes. In this section we present a stylized analytical model to facilitate a preliminary exploration of these outcomes

We assume a gendered division of labor where care work is provided solely by female workers. Care work includes both the care work involved in reproducing male and female capacities, but also the labor involved in care for children and the elderly. Our focus in this model is on the former. Further, while the unpaid work includes subsistence production for household consumption, we will incorporate this kind of unpaid labor within the unpaid care labor since it contributes to the material needs of social reproduction of labor of both men and women. The time left after paid and unpaid work has been performed is potential surplus time that could be spent be spent on a leisure activity, rest or some form of self-care. It is the time that the female worker can claim as her own and is of crucial importance to the reproduction and development of the capabilities and capacities of the female worker. The curtailment of this own time – the time squeeze - as female workers increase their participation in paid employment, is a significant dimension of how microfinance can exacerbate the pressure on the labor-time of the self-employed worker, with detrimental effects on her productivity and well-being.

The female worker, thus, allocates her time between market-oriented informal self-employment (l_{is}), unpaid care work (l_{cw}) and what we characterized as own time or the time available for her own self (l_s). The allocation of a quantum of labor, l_f, between own time l_s, unpaid care work, l_{cw}, and self -employment, l_{is} is an outcome of a complex process of decision making that reflects both intra-household bargaining processes and social norms. We abstract from the actual decision-making process and focus on the outcome of this decision making process. Now

$$l_f = l_{cw} + l_{is} + l_s$$

We assume a fixed supply of female labor, l$_f$. This simplification is adopted in order to highlight that increased self-employment involves a trade-off. We further postulate that

$$l_{cw} = \theta \, l_f$$

$$l_s = \phi \, l_f$$

Where

$$0 < \theta < 1, 0 < \phi < 1$$

The behavioural parameters θ, and ϕ, which are the aggregate share of female labor time (l_f) allocated to unpaid care work and own time respectively, capture the choice between spending time on earning through self-employment in the informal sector, care work for social reproduction, and own labor-time. So that

$$l_{is} = (1 - \theta - \phi) \, l_f$$

More generally, while the linear formulation above is a simplification, it reflects the trade-off between unpaid care work, own labor time, and paid work. While it is important to recognize that both paid and unpaid labor could increase at the expense of own labor time, there is a limit to the squeeze of this own labor time without deep damage to the capacities and capabilities of the female worker.

Labor productivity in the informal sector, λ_{is} is lower than that in the formal sector λ, in large part because the small scale of the micro-enterprises pre-empts any benefits from economies of scale. We could postulate that

$$\lambda_{is} = \zeta\lambda$$

where the parameter ζ is ratio of productivity in the informal sector to that in the formal sector. The parameter would be governed by the technological differences between the two sectors and also by the social norms that shape the gendered evolution of labor productivity. Of greater significance for our purpose here is how this parameter would be affected by the squeeze on own labor-time. As l_s is squeezed, ζ will fall, so that productivity in the informal sector falls relative to productivity in the forma sector

We can now represent the demand nullclines as

$$Y_{fc}(p_{is}) = \frac{[a(1 - s_{is}) + s_{is}][p_{is}(1 - \theta - \phi)\zeta\lambda l_f - iB] + (\gamma\pi + \alpha)p_{fc}}{[1 - b(1 - \pi) - (1 - s_\pi)\pi - \beta]p_{fc}}$$

$$p_{is}(Y_{fc}) = \frac{[(1-a)(1-s_{is})iB] - (1-b)(1-\pi)p_{fc}\lambda l_{fc}}{[(1-a)(1-s_{is}) - 1][\zeta\lambda(1-\theta-\phi)l_f]}$$

The impact of changes in labour productivity and the allocation of care labor for the macro-economic outcomes can now be investigated explicitly.

5.1 Impact of changes in allocation to care work and productivity

We begin by abstracting from the mutual impacts of allocation to care-labor and labor productivity on each other, and investigate the immediate impact of independent changes in the two variables on the two sectors.

Let us first consider the impact of an exogenous (or policy induced) increase in labor productivity. From the equations for the formal and informal sector demand sector nullcline we can see that

$$\frac{dY_{fc}}{d\lambda} = \frac{[a(1-s_{is}) + s_{is}][p_{is}(1-\theta-\phi)l_f]\zeta}{[1-b(1-\pi) - (1-s_\pi)\pi - \beta]p_{fc}} > 0$$

$$\frac{dp_{is}}{d\lambda} = -\frac{[(1-a)(1-s_{is})iB]}{[(1-a)(1-s_{is}) - 1][\zeta\lambda^2(1-\theta-\phi)l_f]} > 0$$

Thus, an exogeneous increase in labor productivity would lead to a higher formal sector equilibrium output level, shifting the nullcline for the formal sector to the right. It would also shift the nullcline of the informal sector upwards.

Figure 3 presents the impact of an exogeneous increase in labor productivity. The new equilibrium will be at a point like B, where both formal sector output and price and earnings in the informal sector rise. Note that an increase in ζ (a relative increase in productivity in the informal sector) would have analogous impacts. Conversely a decline in ζ would shift the formal sector nullcline to the left and the informal sector nullcline downwards and both formal sector output and informal sector prices and earnings will fall.
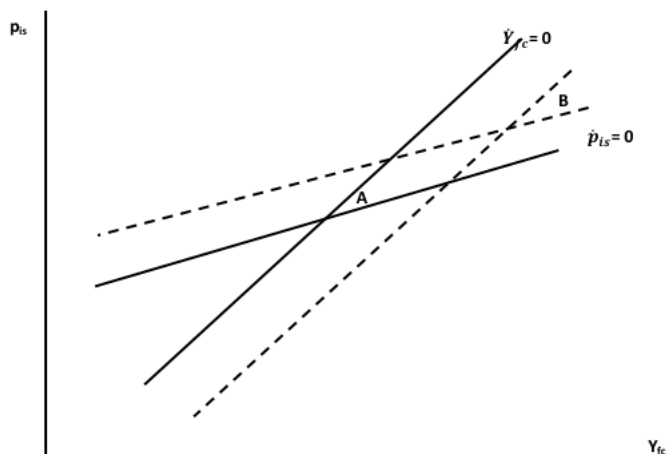
Figure 3: Impact of increase in labor productivity

Figure 3

We now consider the impact of an increase in the allocation of paid self-employment. The wrinkle is that an increase/decrease in the allocation to care-work can come at the expense of

   a. a decrease/increase in the allocation of time unpaid care labor
   b. a decrease/increase available own labor time.
   c. a decrease/increase in both l_{cw} and l_s.

We will consider only the first two which can be regarded as two limiting cases.
First consider the case where allocation to care-labor is reduced as more time is spent on paid self-employment.

The impact on the formal sector output is given by:

$$\frac{dY_{fc}}{d\theta} = \frac{-[a(1-s_{is})+s_{is}][p_{is}\zeta\lambda l_f]}{[1-b(1-\pi)-(1-s_\pi)\pi-\beta]p_{fc}} < 0$$

The decrease in the allocation to care-labor, would *raise* the equilibrium level of the formal sector output and shift the nullcline to the right.

Turning to the impacts on the informal sector output we can see (from the equation for the nullcline) that

$$\frac{dp_{is}}{d\theta} = \frac{[(1-a)(1-s_{is})iB]-(1-b)(1-\pi)p_{fc}Y_{fc}}{[(1-a)(1-s_{is})-1][\zeta\lambda l_f](1-\theta-\phi)^2}$$

$$\frac{dp_{is}}{d\theta} \lesseqgtr 0 \; if \; (1-b)(1-\pi)p_{fc}Y_{fc} \lesseqgtr [(1-a)(1-s_{is})iB]$$

The effect of an exogenous increase in the allocation to unpaid care labor (at the cost of paid self-employment) is determined by the same condition which determines whether an increase in the informal sector output leads to a decrease or an increase in price in this sector (Eqn 13). But as we have seen equilibrium will only exist if : $(1 - b)(1 - \pi)p_{fc}Y_{fc} > [(1 - a)(1 - s_{is})iB]$.

We will, therefore, only consider the case where consumption of the informal sector output by the worker in the formal sector exceeds the leakage of demand due to the burden of interest payments so that

$\frac{dp_{is}}{d\theta} > 0$.

The reallocation of labor to paid self-employment at the expense of unpaid care, ceteris paribus, increases output and creates an excess supply that lowers price level in the informal sector. The nullcline shifts downwards. The impact on earnings in this sector is not clear since output has risen. Thus the decreased allocation to care work as female self-employment increases would lead to an increase in formal sector output and a fall in informal sector prices.

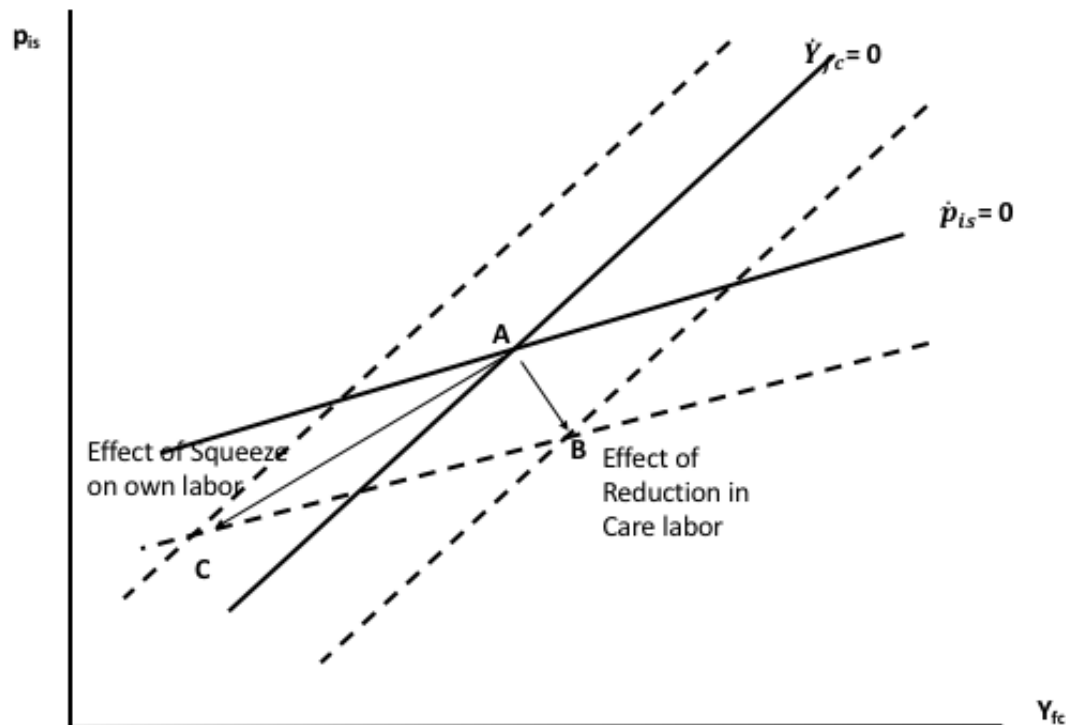Figure 4: Impact of an decrease in unpaid care labor/own time

Figure 4

Figure 4 presents the impact of an decrease in allocation to care labor. The impact is the

opposite of that of an increase in labor productivity. The formal sector nullcline shifts to the left. Since $\frac{dp_{is}}{d\theta} > 0$, the informal sector nullcline will shift upwards and the new equilibrium will be at a point like point B, with higher price in the informal sector, but a decline in the equilibrium formal sector output level. Conversely, a decrease in allocation to care-labor with an increase in paid self-employment would result in a lower informal sector price, while formal sector output would rise (This is the movement from Point A to point B..

In the second case where the female worker increases the allocation by squeezing her available own labor time, $|\Delta\theta| = |\Delta\phi|$ so that $\Delta[1 - \theta - \phi] = 0$. The allocation to care work is unchanged. In this limiting case there is no immediate impact on formal sector nullcline since the impact of an increased allocation to self-employment is matched by a decrease of female own-labor. We have earlier discussed that this decrease for the female workers productivity would lead to a fall in ζ , so that the informal sector nullcline would shift downwards. Now

$$\frac{dY_{fc}}{d\zeta} = \frac{[a(1 - s_{is}) + s_{is}][p_{is}(1 - \theta - \phi)\lambda l_f]}{[1 - b(1 - \pi) - (1 - s_\pi)\pi - \beta]p_{fc}} > 0$$

$$\frac{dp_{is}}{d\zeta} = -\frac{[(1 - a)(1 - s_{is})iB] - (1 - b)(1 - \pi)p_{fc}\lambda Y_{fc}}{[(1 - a)(1 - s_{is}) - 1][\lambda l_f](1 - \theta - \phi)\zeta^2} > 0$$

Thus the decline in ζ would shift the formal sector nullcline to the left, and the informal sector nullcline downwards. This would correspond to amovement from A to C in Figure 4. This squeeze would have longer term effects on the efficacy of the unpaid care labor provided by the female worker more generally and thus also on λ .

5.2 INTERACTION OF CARE WORK AND LABOR PRODUCTIVITY

One issue with the preceding analysis is that it neglects the relation between allocation of labor to unpaid care work and productivity. This complicates the shorter run comparative static effects discussed in the previous section. The increased allocation of care-labor has a positive impact on labor productivity. However, this impact takes place over a longer period of time than the immediate adjustments to demand that were being investigated in the previous section[7].

Labor productivity would also depend on earnings of both male and female workers since these allow the workers to substitute market products for unpaid care labor and can also be spent on goods that improve productivity of care labor. The allocation of incomes (whether from wages or self-employment) on the purchase of care goods and services is

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[7] The approach followed in this paper is to associate the impact of care-labor to labor as a way of capturing the role of care work in social reproduction and the development of human capacities. It is also possible to think of the impact of care labor in maintaining or expanding the amount of labor supplied to the market.

of course subject to intra-household bargaining and conditioned by the structures and norms of social provisioning of care[8]. In our simplified formulation, male wages (w) and informal sector earnings (E_{is}) have a positive impact on labor productivity. Informal sector earnings are dependent the price of the informal sector output (p_{is}) and the interest payment. An increase in informal sector price will increase earnings and increase labor productivity. A rise in interest rate, would conversely tend to have a negative impact on labor productivity because of the leakage of earnings. The social provision of care (c_s) also has a positive impact on productivity. The increased allocation to care-labor would also have a positive impact on labor productivity. However, whether the increase allocation is due to a decrease in paid self-employment or surplus labor time does matter[9]. Social provision of care (c_s) and the level of capital investment (k) would also increase labor productivity

$$\lambda = \lambda(w, E_{is}[p, i], \theta, c_s, k)$$

$$\lambda_w > 0, \lambda_{E_{is}} > 0, \ \lambda_\theta > 0, \ \lambda_{c_s} > 0$$

Note that in our approach care-work affects labor productivity in both sectors. It also determines the availability of labor for the informal sector.

The parameter θ, the allocation of labor to unpaid care work, depends inversely on earnings in the informal sector, since with higher earnings unpaid care labor would be substituted by market products. Market goods and services could also increase the productivity of care-labor enabling equivalent or greater care (in terms of both quality and quantity) with the same allocation of labor. An increase in interest rate burden would lead to an increased allocation to care-labor, as unpaid labor substitutes for market care goods in order to meet interest payments. The allocation of time to care-work would also decline with an increase in labor productivity (λ) since this would increase earnings (and the efficacy of care labor). An increase in ζ would also enable a reduction in allocation to unpaid care work. An increase in formal sector wages would lead to a fall in the allocation of care labor, on the same assumption of an increased purchase of market substitutes or complements for care labor. The impact may be less than that of an increase in earnings of the informal sector and would depend on intra-household bargaining. Finally the social

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[8] The quality and range of market provided care and care-related goods and services is of course an important consideration which would influence both participation in the paid employment and the impact of increased spending on such goods on labor productivity.

[9] Note that $\lambda_\theta = -\lambda_{E_{is}} \frac{\delta E_{is}}{\delta \theta} + \frac{\delta \lambda}{\delta \theta}$ The first term is the impact of a reduction in earnings due to the reallocation of labor from self-employment to unpaid care. The second term is the direct impact of increase in allocation to care on productivity. The increased allocation to care would reduce earnings and therefore also reduce spending on market goods and services that substitute for care work or make it more effective. For $\lambda_\theta > 0$ the positive impact of care labor on labor productivity must be greater than the loss of labor productivity due to reduced earnings due to lower paid employment. This is the case considered here. Further note that if the increased allocation to unpaid care work is the result of cutting back on surplus labor time ϕ , we could plausibly expect that ζ to fall. The squeeze of surplus labor time of the female worker would then reduce informal sector productivity (relative to formal sector productivity), even if ⍰ is not affected because of the increased burden on the female worker's time.

(non-market) provision of care (c_s) would reduce the necessary allocation to unpaid care work. Thus

$$\theta = \theta(w, E_{is}[p, i], \lambda, \zeta, c_s)$$

$$\theta_w < 0, \theta_{E_{is}} < 0, \theta_\lambda < 0, \theta_\zeta < 0, \theta_{c_s} <$$

Figure 5: Labor productivity and the burden of care work
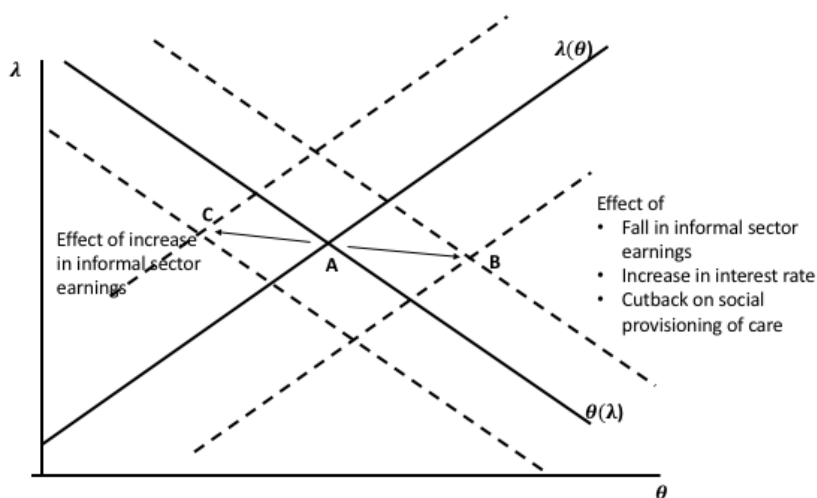
We can represent the interaction between labor productivity and the share of care work in female labor time graphically (Figure 5)[10]. This representation helps clarify some basic long term comparative static effects. The intersection of the labor productivity and the care allocation ($\bar{\lambda}, \bar{\theta}$), schedule represents the outcome of the interaction[11]. Starting from a point like A, a fall in informal sector earnings, would shift $\lambda(\theta)$ schedule downwards and $\theta(\lambda)$ schedule upwards (to point B). There would be an unambiguous increase in the burden of unpaid care work that would squeeze the labor time of women workers. At point B in Figure 5, labor productivity remains unchanged. The impact on labor productivity, however, is ambiguous.

An increase in the interest rate would have similar effects. The burden of care labor would increase but the impact on labor productivity would be ambiguous. Thus the brunt of rising interest is borne by a greater expenditure of unpaid care labor and a squeeze on the labor time of the female worker. This once again suggests that the promotion of for-profit microfinance (and higher interest rates) is not an appropriate strategy.

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[10] The functions are likely to be non-linear. Increases in allocation of care labor would have a greater impact on productivity when the allocation is at a lower level compared to when the allocation is higher. Conversely the reduction allocation of labor time to unpaid care work with an increase in labor productivity would be smaller at higher levels of labor productivity compared to that at lower levels of labor productivity. However, the linear representation of the two functions does not affect the analytical conclusions in a significant way.

[11] We could conceive of an equilibration mechanism of the form:
$$\dot{\lambda} = \rho(\bar{\lambda} - \lambda)$$
$$\dot{\theta} = \delta(\bar{\theta} - \theta)$$

An increase in earnings in the informal sector, due to policy interventions that boost demand or buttress the interlinkages between the two sectors, would shift the $\lambda(\theta)$ schedule upwards, and also shift $\theta(\lambda)$ schedule downwards to point like C, so that the burden of care work is reduced. This implies that the increase in earnings can enable a reduction in the burden of care work by enabling the use of market substitutes for care. The impact on labor productivity depends on the magnitude of the shift of the productivity schedule. The impact of access to credit and self-employment opportunities on the asymmetries of the gendered division of care responsibilities is, however, less clear-cut.

An exogenous shock that reduces state and community provided social care services as a result of the neoliberal policy imperatives to scale back public spending would shift the $\theta(\lambda)$ schedule rightwards, so that a higher burden of unpaid care would be necessary. The overall impact would then depend on how the $\lambda(\theta)$ schedule shifts. The cutback on the social provision of care would push the productivity schedule downwards, implying a reduction in labor productivity, unless compensated for by an increase in unpaid care labor (a movement from A to B). If the increase in care-labor is at the expense of paid self-employment than demand would be depressed. The lower earnings would exacerbate the dependence of the households on unpaid care labor. If the increase in the allocation to unpaid care is achieved be cutting back on the own labor time of the female worker than this would lead to an increased productivity gap between the formal and informal sector as the capacities of the female informal sector worker are eroded by the squeeze on her own time. This suggests that the long term viability of a microfinance strategy of development depends not just on strengthening macro-economic linkages of this sector with the rest of the economy but also by initiatives that expand social provisioning of care.

This admittedly schematic analysis of the interaction of care work and labor productivity suggests that the macroeconomic outcomes of the growth of the microfinance sector need to be comprehended with much greater nuance. It is meant to clarify the constraints that a developmental strategy based primarily or exclusively on microfinance faces.

6. CONCLUSION

In this paper we present a simple model that integrates the role of demand and care work into the analysis of microfinance. What the model underscores is that the output and demand for the informal sector hinges on the broader macro-economic conditions in the economy (represented by the formal sector). A vibrant and stable formal sector is the only sustainable basis for a stable informal sector. The capacity of microfinance to alleviate poverty and lift incomes is thus dependent on conditions in, and linkages with the formal sector.

The schematic model also suggests that rising interest rates have an overall dampening effect on demand. The recent transformation of microfinance, as the sector became more

closely linked to mainstream finance, has been fostered on the premise that access to credit is a more critical constraint than the price of credit (Cull et al 2009). Donors and development agencies have encouraged raising interest rates in order to ensure the viability and profitability of microfinance institutions. The empirical experience of relatively low rates of default in this sector have also attracted mainstream financial institutions. In the process the focus has shifted from the sustainability of income generation for borrowers to that of the profitability of the lending institution. Given the higher transaction costs associated with small loans and extending outreach to marginal low income households this change of focus has undermined the social mission of microfinance to reach the poorest and most neglected households. The high interest rates also undermine the scope of microfinance as a path to better and sustainable livelihoods for poor households in rural areas.

Finally, the paper draws attention to some of the complexities of the impact of microfinance for the provision of care. The original mission of microfinance targeted the female worker with less access to earning opportunities and greater responsibility for the care work. While higher female earnings can alleviate the burden of care by making care work more effective and by enabling the market to substitute for unpaid care, at the lower income levels and in a context of 'a low road' regime of care (Braunstein 2013) the gendered responsibility for care remains a critical constraint for the female beneficiary of micro-finance. Further, the home-based nature of microenterprises would tend to perpetuate the gendered asymmetries of care responsibility within the household. Higher interest rates in this sector impose a higher burden on the labor time of the female worker with a consequent squeeze of care-labor or the own labor time.   Microfinance cannot be an effective path to poverty alleviation or gender empowerment, unless it is backed by investment in the social provisioning of care.

Thus, microfinance faces a structural constraint on the demand side from overall macroeconomic conditions, and on the supply side from the responsibility for unpaid care work borne by the female beneficiary of microfinance. Paradoxically, microfinance has been espoused as a developmental strategy in precisely the period when the role of the developmental state has been eclipsed, and cutbacks in public spending have been prescribed. This paper injects a note of caution and suggests that the success of microfinance as a developmental strategy depends on wider policies that support demand and the social provision of care.   There is, in the final analysis, no substitute for a developmental strategy based on public investment in support of both job creation and social provision of care.

APPENDIX I

The formal sector equilibrium demand condition can be written as the sum of the demand in the formal and informal sector

$$Y_{fc} = D_{is} + D_{fc}$$

Thus

$$\overline{D} = Y_{fc} - D_{fc} = [1 - (1 - \pi)b - (1 - s_\pi)\pi - \beta]p_{fc}Y_{fc} - [\alpha + \gamma\pi]$$

$\overline{D}$ represents the demand gap (reflecting an excess supply of the product with respect to own sector demand) for the formal sector output that must be fulfilled by the informal sector for macroeconomic equilibrium.

This implies that

$$\frac{d\overline{D}}{dY_{fc}} = [1 - (1 - \pi)b - (1 - s_\pi)\pi - \beta]p_{fc}$$

$$\frac{d\overline{D}}{dY_{fc}} \lessgtr 0 \; if \; [1 - (1 - \pi)b - (1 - s_\pi)\pi - \beta] \lessgtr 0$$

Thus, the condition for Keynesian stability corresponds to the condition that the demand gap for the formal sector output varies positively with the level of the formal sector output.

Note that in a one sector model, with the worker consuming spending the entire wage (b = 1) this condition reduces to $s_\pi\pi - \beta > 0$. In this case too, the condition implies that there is a demand shortfall as the savings rise faster than investment as income.

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