

Gender Bias and Central Bank Policy: Employment and Inflation Reduction

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Central banks in developing countries are increasingly turning to maintaining a low inflation rate as the central target of monetary policy, without much consideration for how these policies impact the real economy – outcomes like employment, investment and economic growth. In this paper, we consider the employment costs of inflation reduction in developing countries from a gender perspective. We explore two broad empirical questions: (1) what is the impact of inflation reduction on employment, and is the impact different for women and men, and (2) how are monetary policy indicators (e.g. real interest rates) connected to deflationary episodes and gender-specific employment effects? We find a common pattern among countries undergoing what we term contractionary inflation reduction, or periods of declining inflation that are accompanied by a loss of formal employment. After controlling for long-term employment trends, we find that the ratio of women's to men's employment tends to decline during these periods in the majority of countries examined. During the fewer periods of expansionary inflation reduction, however, there are no clear patterns to the relative changes in women's and men's employment. In terms of monetary policy indicators, we find that countries that respond to inflation by raising real interest rates above the long-run trend are also more likely to experience employment contractions, as are those in which real money supply growth falls below its long-run trend, with concomitantly higher costs for women's employment. Maintaining competitive exchange rates seems to counterbalance the gender-biased effects of contractionary inflation reduction episodes, however. That the costs of inflation reduction, at least in terms of employment, are inequitably distributed by gender means that monetary policy is also gender specific, with the result that the costs of implementing these sorts of policies are actually quite different – and potentially higher – than is generally presumed.

I. Introduction

Central banks in developing countries are increasingly turning to maintaining a low inflation rate as the central target of monetary policy, without much consideration for how these policies impact the real economy – outcomes like employment, investment and economic growth (Epstein 2003). Although targeting very low inflation as the main index of monetary policy seems to have done little to raise economic growth, these policies remain a key feature of neoliberal approaches to monetary development policy (Epstein 2000). Gerald Epstein and Juliet Schor argue that anti-inflation policy and neoliberal approaches to central banking reflect the “contested terrain” of central banks – the class and intra-class conflict over the distribution of income and power in the macroeconomy (Epstein 2000; Epstein and Schor 1990). Their work underscores the importance of understanding monetary policy from a political economic perspective, as the distribution of the gains and costs of economic policy proffers insight into both a policy’s genesis and its longer-term consequences.

In this paper, we build on their analysis by considering the employment costs of inflation reduction in developing countries from a gender perspective. We explore two broad empirical questions: (1) what is the impact of inflation reduction on employment, and is the impact different for women and men, and (2) how are monetary policy indicators (e.g. real interest rates) connected to deflationary episodes and gender-specific employment effects? We find a common pattern among countries undergoing what we term contractionary inflation reduction, or periods of declining inflation that are accompanied by a loss of employment as captured by the available time-series data. After controlling for long-term employment trends, we find that the ratio of women’s to men’s employment tends to decline during these periods in the majority of countries examined. During the fewer periods of expansionary inflation reduction, however, there are no clear patterns to the relative changes in women’s and men’s employment. In terms of monetary policy, we find that countries that respond to inflation by raising real interest rates or tightening the real money supply (both relative to their long-run trends) are also more likely to experience employment contractions, with concomitantly higher costs for women’s employment. Conversely, those that maintain competitive real exchange rates are likely to reverse the negative impact of contractionary inflation reduction on women’s relative employment.

That the costs of inflation reduction, at least in terms of employment, are inequitably distributed by gender means that the contested terrain of monetary policy is also gender specific, with the result that the costs of implementing these sorts of policies are actually quite different – and potentially higher – than is generally presumed. After a discussion of the literature on the differences in women’s and men’s unemployment in developing countries, and presenting our empirical results, we will develop this last point in more detail in the closing section.

II. Gender Differences in Employment and Unemployment in Semi-industrialized countries

In thinking about the differences between women's and men's unemployment, it is helpful to think in terms of supply-side factors and demand-side factors (Seguino 2003). On the supply side, differences in human capital are probably the most commonly considered. However, gender-based differences in education, skill and experience are themselves rooted in workers' productive roles outside the factory door and the institutional, social and material contexts in which they live. These gender-based structures distinctions create fundamental differences in choice and opportunity by sex. A useful way of considering these difference is through what Folbre (1994) terms "structures of constraint" – the preferences, norms, assets and rules that shape individual choice.

Beginning with preferences, women make decisions about whether or not to look for wage work, a process sometimes referred to as exercising agency or, in the language of utilitarian economics, "desire fulfillment". But self-perception, what individuals value, and what choices they perceive as possible are constituted by the social world (Sen 1990), and so the putative preferences that underlie an individual's objectives must be understood in this light. The objectives that drive women into the labor market can be different from those governing men, with implications for the price of labor. Women who expect to leave the labor force for full-time motherhood may prefer the structure of easy-access, high-turnover jobs that give them a chance to live away from home and exercise freedoms they would not otherwise be able to enjoy.

Norms are the traditional structures of gender and kinship that constitute the meaning and social expectations of women and men in the household. They typically change throughout the course of a woman or household's life cycle. Perhaps the most salient factor here is the sexual division of labor. Women are primarily associated with the care and reproduction of the family, and much of their work time is spent outside of the market, whereas men's work is typically viewed as more directly productive and more fully incorporated into the market sphere. These divisions not only have implications for whether women look for market work at all, but what types of jobs are considered feasible (in terms of combining market and nonmarket work) or even suitable.

Norms about divorce and remarriage also underpin household-level structures that shape women's labor. They partly determine the possibility and terms of exit from a conjugal union and affect daughters' attitudes about market work. In East Asia, where divorce rates are extremely low, wage work for married women is less important as insurance against the economic stress of divorce. Conversely, in parts of Southeast Asia, divorce and remarriage rates are high (Lim 1990: 106). Women's high labor force participation rates and active household management in this region provide a way of insuring against the costs of divorce (Papanek and Schwede 1988: 79).

Assets, or wealth, engender labor supply as well. Systematic differences by gender in ownership or control over assets are common, and partly determines how much wage employment women seek as well as the extent to which women and their decisions

are influenced by other (typically male) household members. Asset ownership also influences the returns to labor from various forms of informal self-employment, including own-account employment. In many countries, women are disproportionately concentrated in forms of non-agricultural own-account employment, often characterized by low and unstable earnings (Chen et al. 2005).

Legal constraints on women's movements, such as officially sanctioned purdah or rules against night work, limit labor supply in gendered ways. Property rights and family law are also crucial determinants women's labor market decisions. Patriarchal property rights, where eldest men have the right to claim and apportion the fruits of all household members' labor time, can create incentives for high fertility and lower female labor force participation (Braunstein and Folbre 2001). Conversely, not having a legal claim on a spouse's income in the event of separation means that a paying job can be an insurance policy against loss of that support (Folbre 1997).

On the demand side, overt and more subtle forms of gender discrimination can result in gender differences in unemployment. In terms of direct discrimination, the male breadwinner ideal – the presumption that men should and do bear the primary financial responsibility for provisioning families – has been linked with higher unemployment for women relative to men in OECD countries (Algan and Cahuc 2004). Women get laid off first because employers presume that it is more important for men to be able to fulfill their traditional breadwinning responsibilities. The same link has been made between gender gaps in unemployment and gender-biased attitudes in general among OECD countries (Azmat, Guell and Manning 2004).

Discrimination in hiring practices also contributes to gender segregation in industries and occupations. A clear example is the nearly universal increase in women's share of the nonagricultural labor force among high growth developing countries in the past few decades (U.N. 1999), a result of tremendous growth in manufacturing trade and export processing from these countries (Standing 1989, 1999). This increased demand is not just a matter of expanding the available labor force when male labor is in short supply. With labor costs such a crucial part of international competitiveness, labor intensive exporters prefer to hire women both because women's wages are typically lower than men's, and because employers perceive women as more productive in these types of jobs (Elson and Pearson 1981). Reasons that employers cite for the latter include: women's putative "nimble fingers;" their obedience and being less prone to worker unrest; their being suited to tedious work; and their reliability and trainability relative to men (Anker & Hein 1985; Elson 1996; Elson & Pearson 1981; Fernández-Kelly 1983).¹ By extension, women may lose their comparative advantage in these job markets as industries upgrade, leading to a defeminization of manufacturing employment as has happened in Mexico, India, Ireland and Singapore (Elson 1996; Susan Joeekes 1999; Fussell 2000; Ghosh 2001). Subcontracting also may have a role to play, as women doing own account work for subcontractors linked with international trade may underlie

Comment [JH1]: Does this refer to East Asian and SE Asia mostly? If so, perhaps we should say so. I'm thinking of Carmen Deere's work on rural women's labor force participation and the "feminization of agriculture" in the Latin American context. This pattern of women's LF participation differs from Guy Standing's argument that it's mostly about manufacturing exports. It can also be about more complex migration and immigration patterns.

¹ Similar reasoning can be applied to the "pink collar" aspects of the international production of services, a sector where women predominate in the administrative support aspect of the trade.

defeminization in formal manufacturing sectors. Women working in the informal sector are undercounted in official employment statistics (Carr, Chen and Tate 2000).

Increases in women's employment that are associated with lower unit labor costs have important implications for inflation. For the non-tradable and import-competing sectors in which some degree of competition exists, lower unit labor costs associated with growth in women's employment reduce inflationary pressures in the countries where the women work. The concentration of women in certain export sectors worldwide also has implications for inflation dynamics in importing countries. The expansion of low-wage manufactured exports from developing countries can lower prices to consumers in relatively more affluent markets, including those with significant market power in the retail sector (Heintz forthcoming).

That women are segregated into certain sectors and jobs underlies the notion of crowding, where an increased supply of female labor in certain classes of jobs or industries raises unemployment and lowers wages in those industries (Bergmann 1974). In a study of gender differentials in unemployment in the Caribbean, Seguino (2003) finds a positive correlation between female share of the labor force and female unemployment (with no such correlation for men), suggesting that job segregation by sex has contributed to higher rates of unemployment for women.

As a result of these gender differences in labor demand and supply, changes in macroeconomic structure and policy have differential effects on men's and women's work (Seguino 2003). From a macroeconomic perspective, some of the most important insights we have on the link between macroeconomic policy and women's employment in developing countries come from the feminist literature critiquing structural adjustment policies (SAPs) imposed largely in Latin American and Africa in the 1980s. Feminists argued that the interaction between gender relations and SAPs have implications both for the distribution of costs and benefits between different groups of women and men, and for the achievement of the economic objectives of the SAPs themselves (Benería and Feldman 1992; Benería and Roldan 1987; Cagatay, Elson and Grown 1995; Elson 1991, 1995; Bakker 1994).

Turning more specifically to issues of gender differences in employment and unemployment in the context of SAPs, Cagatay and Ozler (1995) use cross country data pooled for 1985 and 1990 to show that SAPs have led to increased feminization of the labor force via worsening income distribution and openness. These findings touch on gender differences in both labor supply and demand. From a supply perspective, economic downturns may affect labor supply in one of two ways, by either discouraging workers and pushing them out of the labor market completely, or by inducing households to add more workers to the labor market as protection against lower or more volatile household incomes, new labor market entrants that may or may not leave the labor force once the economy turns around.

It is widely argued that the added worker effect is dominant in explanations of crisis-related increases in labor force participation in Latin America, much of it by women (Cerrutti 2000). Increasing labor force participation by women was also

accompanied by an increase in the number of hours they devoted to paid work (Arriagada 1994). These supply effects underlie Cagatay and Ozler's results that the worsening income distribution associated with SAPs leads to an increase in women's share of the labor force. Such dynamics are not limited to SAPs. For example, research into the determinants of women's labor supply in post-apartheid South Africa shows that women's labor force participation responds significantly to growing unemployment, thereby further increasing the country's average unemployment rate (Casale 2003).

On the demand side, Cagatay and Ozler's finding that SAPs interacted with openness are positively correlated with feminization of the labor force reflects the shift away from import substitution and towards export-orientation associated with SAPs. But women's traditional industries have also been subject to contractionary effects. SAPs linked with deflationary stabilization that lowers domestic consumption can have adverse effects on women who produce traditional consumption goods (Standing 1999). In semi-industrialized countries, female-intensive export-oriented industries are more cyclically volatile than men's industries, resulting in higher overall rates of unemployment (Howes and Singh 1995). Emphasis on export-oriented industrialization has also been associated with increases in informalization as firms continue to minimize wage and nonwage costs (Standing 1999). So as female labor force participation and unemployment rose in the context of crisis and structural adjustment, the increasing dominance of informal work became a key feature of new labor markets for women (Arriagada 1994; Benería 2001; Patnaik 2003).

Similar work was done on the gendered employment effects of the Asian financial crisis in 1997-1998. Women were typically the first to be laid off both because they worked in more cyclically volatile firms, such as small export-oriented enterprises, and because of efforts to protect the jobs of "male breadwinners" (UN 1999). In Korea, women lost jobs at twice the rate of men, despite the fact that before the crisis, their unemployment was half that of men's (UN 1999). According to a World Bank report in 2000, women constituted 75 percent of discouraged workers and 85 percent of retrenched workers in the banking and financial service sectors (Aslanbeigui and Summerfield 2000). Immediately after the crisis in Indonesia, 46 percent of the unemployed were women, although they made up only one-third of the workforce. And as more men became unemployed, the percentage of women engaged in paid and unpaid work increased (Ibid.). Similarly, in Thailand women constituted between 50 and 60 percent of the unemployed (Ibid.). A slightly different pattern was found by Lim (2000) in the Philippines, where the post-crisis decline increased male unemployment more than female unemployment despite a rapid displacement of women from the manufacturing sector (especially in traded goods). The reason was the relative resilience of the service and trade sectors, which are more female intensive. Women did, however, increase their labor force participation to deal with male unemployment, and their total work hours relative to men increased as well. Similar to the case of structural adjustment reviewed above, the combination of increasing female unemployment and labor force participation is partly absorbed by increases in informalization. Women are increasingly pushed out of the formal sector and into the informal sector, and those that are new labor market entrants trying to preserve their household income are increasingly drawn into the informal sector as well (UN 1999).

Clearly, there are significant structural differences between women's and men's labor markets on both the supply and demand sides that are differently affected by macroeconomic structure and policy. The literature reviewed above on semi-industrialized countries suggests that economic contractions have a larger negative effect on women's formal employment than men's, though women tend to increase their labor force participation at the same time to protect household income. In the next section we turn to a more direct test of this employment hypothesis, looking at whether the process of inflation reduction in particular can be associated with gender differentials in employment.

III. Inflation Reduction and Women's Formal Employment

The empirical exercise we present here explores the effects of inflation reduction on women's and men's formal employment. We compiled data for 51 "inflation reduction episodes" in 17 low- and middle-income countries.² To assess the employment effects of inflation reduction periods, we looked at actual employment trends during each inflation reduction episode, disaggregated by gender, and compared these to long-run employment trends, estimated by applying a Hodrik-Prescott filter to the employment series. We also examine indicators that suggest how monetary policy responded during inflation reduction episodes using a similar approach. We compare average short-term real interest rates, growth rates of the real money supply, and indicators of the real exchange rate to their long-run trends to see if these variables deviated from trend during inflation reduction episodes. We drew from three different data sources in conducting this exercise: employment data came from the ILO's LABORSTA on-line database, and the macroeconomic data was compiled from *World Development Indicators 2005* (Washington, DC: World Bank) and *International Financial Statistics* (Washington, DC: IMF, October 2005).³

The methodology used is drawn from the literature on measuring "sacrifice ratios" – that is, the loss of output or employment associated with a given reduction in inflation. Sacrifice ratios can be measured simply as the slope of the Phillips Curve showing an employment-inflation trade-off. However, this approach assumes that the sacrifice ratio remains constant over long periods of time. Other approaches examine changes in employment or output over specific deflationary periods. This technique allows the sacrifice ratio to change over time and makes it possible to analyze the behavior of economic variables during specific deflationary periods. This is the approach followed here.

Ball (1993) suggests one method for identifying deflationary periods. Inflation figures are notoriously volatile, making the identification of turning points difficult. A moving average of inflation – in our case, a three-year moving average, encompassing one previous year and one subsequent year – can be used to smooth the series. Peaks and

² Our choice of countries was limited to those for which reasonably reliable, gender-disaggregated formal employment data were available. Informal employment could not be addressed in this analysis because of the lack of a sufficiently long time series for a variety of countries.

³ In addition, the GDP deflator for the U.S. used to construct the real exchange rate measure was taken from the on-line database of the U.S. Bureau of Economic Analysis.

troughs in the smoothed inflation series are identified. Peaks occur when the value in a particular year exceeds the values of immediately adjacent years. Troughs occur when the value in a given year falls below the values of the adjacent years. A deflationary period runs from a peak year to the next trough year.

For the purposes of this exercise, we use the term “inflation reduction episode” to refer to these deflationary periods. The reason for this is that, during some of the periods identified, employment actually expands more rapidly than its long-run trend. It seems confusing to refer to these periods as “deflationary”. Therefore, we use the terms “expansionary inflation reduction episode” and “contractionary inflation reduction episode”.

The inflation reduction episodes identified for the 17 countries examined are remarkably similar in terms of the timing of the episodes. That is, inflation reduction episodes occur in many of these countries simultaneously. **Figure 1** illustrates this pattern. The figure shows, for each year 1970-2003, the percent of all countries in our study in which an inflation reduction episode occurred. Inflation reduction episodes are concentrated over certain sub-periods: 1974-77, 1980-86, 1991-94, and 1997-2000. Also, Figure 1 clearly demonstrates that inflation reduction episodes were much more common throughout the 1990s than throughout the prior two decades, the 1970s and 1980s.

[Figure 1 about here]

This pattern of inflation reduction suggests that one or more common factors determine inflation rates and monetary variables in the different countries examined. One obvious possibility is the world interest rate. Figure 1 shows the real yield on U.S. Treasury Bills over the entire period as a proxy for short-term, inflation-adjusted world interest rates. An increase in the real yield of U.S. T-bills preceded three out of the four common inflation reduction episodes. Only in the most recent episode, from approximately 1997 to 2000, did interest rates fail to increase beforehand.⁴ Because the data for the different countries shows similar trends in the variables analyzed, we emphasize deviations from long-run trends, rather than absolute levels or changes, in order to investigate common patterns and divergent trends.

We restricted the countries used as follows:

- Only low- or middle-income countries were examined.⁵
- Countries must have at least 20 years of gender-disaggregated employment data (it would be hard to estimate a meaningful “long-run trend” with a shorter series).
- Time series with missing values were used. However, time series with two consecutive missing observations were rejected. Missing values were

⁴ Other real U.S. interest rates did increase around the time of the last inflation reduction episode, e.g. the yield on three-year government bonds.

⁵ The sample of countries includes Singapore which could arguably be classified as a high-income country today. However, for much of the period considered in this paper, 1970-2003, Singapore can be considered a middle-income country.

estimated for the purposes of computing a long-run trend by extrapolating between the previous and subsequent values in the series.

Changes in employment across inflation reduction episodes were calculated as the annualized value of the overall rate of change in employment across the entire peak-to-trough period. As mentioned earlier, values for the long-run employment trends were computed by applying a Hodrick-Prescott filter to the actual employment time series for each country (men, women, and total). The employment time series used most likely underestimates the magnitude of informal employment in these countries. Therefore, the results of this analysis should be interpreted bearing this in mind.

Table 1 summarizes the results for all the inflation reduction episodes studied. The table shows the country name, the dates of each inflation reduction episode, and the deviation from the long-run trend for women's employment, men's employment, and the female to male employment ratio. Negative values indicate that the series grew more slowly than the long-run trend (a negative value could also indicate a more rapid decrease in the actual value compared to the long-run trend). Table 1 is divided into contractionary and expansionary inflation reduction episodes. During contractionary inflation reduction episodes, the rate of increase of total employment fell below its long-run trend. During expansionary inflation reduction episodes, the rate of increase of total employment was equal to or greater than its long-run trend.

Table 1. Inflation reduction episodes and deviations from long-run employment trends, disaggregated by gender.

A. CONTRACTIONARY INFLATION REDUCTION EPISODES

			DEVIATIONS FROM LONG-RUN EMPLOYMENT TRENDS			
			W	M	Ratio	
	period	Deflation as percent of avg. inflation				
Barbados	1980-86	-143%	-1.8%	-0.8%	-1.0%	
	1990-94	-113%	-2.5%	-2.6%	0.1%	****
	1996-99	-117%	-1.0%	0.3%	-1.4%	
Brazil	1993-99	-305%	-0.7%	-0.1%	-0.6%	
Colombia	1980-85	-29%	-3.2%	-2.5%	-0.7%	
Costa Rica	1982-85	-123%	-1.5%	-0.1%	-1.4%	
India	1973-77	-175%	-0.2%	-0.4%	0.2%	****
	1982-86	-37%	-0.1%	-0.2%	0.1%	****
	1991-94	-26%	0.1%	-1.2%	0.2%	****
	1997-02	-93%	-1.0%	0.9%	-0.2%	
Jamaica	1974-76	-45%	-0.5%	-0.2%	-0.3%	
	1992-00	-190%	-0.5%	0.1%	-0.6%	
Kenya	1975-80	-36%	-2.2%	-0.1%	-2.1%	
	1981-87	-66%	0.8%	-0.3%	1.1%	****
Malaysia	1981-86	-181%	-0.4%	-0.8%	0.4%	****

Mauritius	1980-86	-182%	-0.6%	-1.6%	0.9%	****
	1989-93	-46%	-1.3%	-0.3%	-0.9%	
	1994-96	-21%	-1.8%	-0.9%	-0.8%	
Philippines	1973-76	-69%	-1.6%	-0.4%	-1.2%	
	1980-82	-55%	0.2%	-0.3%	0.5%	****
	1984-87	-130%	-2.4%	0.0%	-2.3%	
Singapore	1974-76	-171%	-6.7%	-0.7%	-5.9%	
	1981-86	-267%	-1.8%	-2.0%	0.1%	****
South Korea	1980-85	-196%	-1.4%	-0.9%	-0.5%	
	1991-94	-45%	-0.4%	0.0%	-0.4%	
	1997-00	-82%	-1.2%	-1.1%	-0.1%	
Sri Lanka	1981-86	-106%	-0.7%	0.1%	-0.8%	
	1997-99	-56%	-0.7%	-2.6%	1.9%	****
Taiwan Province of China	1974-76	-106%	-4.9%	0.3%	-5.1%	
	1980-85	-243%	0.6%	-0.5%	1.1%	****
	1991-02	-197%	-0.4%	-0.2%	0.2%	****
Thailand	1974-76	-88%	-1.3%	-0.8%	-0.5%	
	1980-85	-180%	-2.6%	-0.7%	-1.8%	
	1990-93	-31%	-0.8%	0.1%	-0.9%	
	1997-00	-136%	-0.8%	-0.7%	-0.1%	
Trinidad & Tabago	1980-87	-56%	-1.0%	-0.6%	-0.4%	

**** Inflation reduction episodes in which the ratio of women's to men's employment increased more rapidly than the long-run trend.

B. EXPANSIONARY INFLATION REDUCTION EPISODES

			DEVIATIONS FROM LONG-RUN EMPLOYMENT TRENDS			
			Deflation as percent of avg. inflation	W	M	
	period					
Brazil	1989-92	-39%	1.9%	-0.8%	2.8%	****
Chile	1984-88	-39%	0.8%	2.3%	-1.5%	
Costa Rica	1991-93	-42%	0.2%	1.6%	-1.4%	
Jamaica	1979-82	-101%	0.1%	0.5%	-0.4%	
	1985-88	-90%	2.9%	0.5%	2.3%	****
Kenya	1993-96	-134%	0.9%	-0.3%	1.3%	****
Malaysia	1992-96	-27%	0.6%	1.4%	-0.8%	
Mauritius	1974-77	-59%	3.9%	1.6%	2.1%	****
Philippines	1990-94	-60%	0.2%	0.3%	-0.1%	
Singapore	1990-99	-139%	0.1%	0.1%	0.0%	
Sri Lanka	1974-76	-100%	1.9%	3.1%	-1.1%	
	1989-94	-50%	8.9%	3.6%	4.9%	****
Trinidad & Tobago	1974-77	-48%	0.2%	1.0%	-0.8%	
	1989-92	-37%	3.8%	1.6%	2.1%	****

	1993-96	-69%	0.7%	0.6%	0.2%	****
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**** Inflation reduction episodes in which the ratio of women's to men's employment increased more rapidly than the long-run trend.

C. SUMMARY

Contractionary inflation reduction episodes with declining female:male employment ratios relative to the trend: 67%
Contractionary inflation reduction episodes with declining female:male employ ratios relative to the trend (excl. India): 72%
Expansionary inflation reduction episodes with increasing female:male employment ratios relative to the trend: 53%

In 67 percent of contractionary inflation reduction episodes, the rate of change of the female to male employment ratio fell below its long-run trend, indicating that women's employment was disproportionately affected by the slowdown. If India were excluded from the sample, this proportion would rise to over 72 percent.⁶ However, in expansionary inflation reduction episodes, there was no clear distinction. The female to male employment ratio increased faster than trend in 53 percent of cases and at or below trend in 47 percent of cases – nearly an even split.

The contractionary inflation reduction episodes were associated with a larger decline in inflation from peak to trough relative to the average inflation rate for the entire episode. Averaging across all contractionary episodes, the decline in inflation was 115 percent of the average inflation rate during the episode in question. For expansionary episodes, the decline was 69 percent.

The difference in employment experiences across countries during inflation reduction episodes – e.g. expansion or contraction of employment – might be explained, in part, by policy choices. For example, if real interest rates rose above the long-run trend in reaction to an acceleration of inflation, this could trigger a contractionary inflation reduction episode. However, if real interest rates were not raised above the long-run trend (e.g. they were kept in line with the long-run trends of global interest rates), a contraction of employment might be avoided.

To examine this possibility, we looked at average real short-term interest rates across the inflation reduction episodes.⁷ In most cases, short-term rates linked directly to monetary policy choices were used (e.g. a discount rate or bank rate). If these rates were unavailable, yields on short-term (three month) Treasury bills were calculated instead.⁸ If actual average real interest rates were negative, these inflation reduction episodes were tabulated separately.

⁶ India is notable in terms of its frequent deviation from the behavior exhibited by other countries, both with respect to the gender dynamics of slower employment growth and the observed trends in real interest rates during inflation reduction episodes.

⁷ Due to its extreme volatility, Brazil was excluded from this analysis.

⁸ Only in the case of Jamaica were the t-bills used to determine actual interest rates and to estimate long-run trends.

Table 2 shows patterns in short-term interest rates over expansionary inflation reduction episodes. Average actual real interest rates are compared to the average interest rates associated with the long-run trend, calculated by applying a Hodrick-Prescott filter to the real interest rate series. The difference in average real interest rates (actual rates minus the rates associated with the long-run trend) is expressed as a percentage of the average long-run trend in real interest rates over the inflation reduction episode. Only inflation reduction episodes with positive actual average real interest rates over the episode in question are included in Table 2.

Table 2. Patterns in average real short-term interest rates over inflation reduction episodes in which total employment expanded (only episodes with positive average real interest rates included).

	Period	Difference in actual and long-run average real interest rates as a percent of the long-run average	Notes
Chile	1984-88	-31.3%	
Costa Rica	1991-93	-9.8%	
Kenya	1993-96	-2.1%	
Malaysia	1992-96	-9.7%	
Philippines	1990-94	-42.8%	
Singapore	1990-99	-6.9%	
Sri Lanka	1974-76	+24.0%	1973-75: avg. neg. interest
	1989-94	-5.6%	
Trinidad & Tabago	1989-92	+6.3%	1988-91: +5.4%
	1993-96	-3.0%	

In almost all of the inflation reduction episodes, actual real interest rates were, on average, kept below the long-run trend. This is consistent with the argument that countries that do not raise interest rates in the face of growing inflationary pressures are less likely to experience employment losses, or a slow-down in the growth rate of employment, during inflation reduction episodes. There were only two exceptions: Sri Lanka 1974-1976 and Trinidad and Tabago 1989-92.

One problem with looking at interest rates over the entire inflation reduction episode is that policymakers might increase interest rates in anticipation of inflation or in response to domestic economic conditions *prior* to the year in which inflation peaks. Therefore, we also examined average interest rates over an alternative periodization in order to see if the timing of the interest rate changes influenced our interpretation of the nature of the inflation reduction event. We looked at the period one year before the beginning of an inflation reduction episode and extending half-way into the episode. For example, if the inflation reduction episode spanned the years 1980 to 1984, then the alternative period over which interest rates were compared would be 1979 to 1982.

This alternative periodization for the real interest rate analysis shows that real interest rates were negative on average in Sri Lanka from 1973 to 1975. Therefore, the increase in real interest rates documented in Table 2 might represent an effort by policymakers to move from negative real interest rates to positive (yet still relatively low)

rates. Raising negative interest rates (i.e. making them more positive) could have a different impact on employment than raising positive real interest rates – a point to which we will return shortly. However, the alternative periodization does not shed much light on the case of Trinidad and Tabago from 1989 to 1992.

Table 3 shows a similar set of calculations for another sub-set of inflation reduction episodes. This time, contractionary inflation reduction episodes are featured. As with Table 2, only inflation reduction episodes with positive actual average real interest rates over the episode in question are included.

Table 3. Patterns in average real short-term interest rates over inflation reduction episodes in which total employment contracted (only episodes with positive average real interest rates included)

	Period	Difference in actual and long-run average real interest rates as a percent of the long-run average	Notes
Barbados	1980-86	+36.7%	
	1990-94	+4.4%	
	1996-99	-3.3%	1995-98: +1.0%
Colombia	1980-85	-1.1%	1979-83: +34.6%
India	1982-86	+14.2%	
	1991-94	-9.3%	1990-93: -19.3%
	1997-02	-18.4%	1996-00: -12.8%
Jamaica	1992-00	-8.4%	Interest rates are t-bill rates. 1991-96: avg. neg. interest
Malaysia	1981-86	+51.9%	
Mauritius	1989-93	-79.2%	1988-91: -76.3%
	1994-96	+16.4%	
Singapore	1981-86	+17.9%	
Sri Lanka	1981-86	+398%	
	1997-99	+2.9%	
Taiwan Province of China	1980-85	+24.3%	
	1991-02	-6.5%	1990-97: -11.9%
Thailand	1980-85	+6.6%	
	1990-93	+5.2%	
	1997-00	+14.2%	

In most cases, the opposite pattern observed previously in Table 2 is evident. During contractionary inflation reduction episodes, actual interest rates were kept above the long run trend on average. In two cases, Barbados 1996-99 and Colombia 1980-85, actual real interest rates fell below the long-run trend during the entire inflation reduction episode. However, if we apply the alternative periodization we can see that real interest rates increased before inflation peaked and during the earlier stages of the inflation reduction period. For example, in Colombia from 1979 to 1983 average actual real interest rates were nearly 35 percent higher than the long-run average over this same period.

There were five contractionary inflation reduction episodes in which real interest rates behaved differently: India 1991-94, India 1997-02, Jamaica 1992-00, Mauritius 1989-93, and Taiwan Province of China 1991-02. In one case – Jamaica – the alternative periodization shows that interest rates were negative on average going into the inflation reduction episode. This alters the impact on employment of keeping rates below their long-run trend. However, in the other four cases, interest rates and employment exhibited a different pattern when compared to the other episodes in Table 3.

This discussion suggests that negative real interest rates are important in analyzing the employment trends across inflation reduction episodes. **Table 4** summarizes trends in real interest rates for those inflation reduction episodes in which average actual real interest rates were negative.

Table 4. Patterns in average real short-term interest rates over inflation reduction episodes in which average real interest rates were negative.

	Period	Actual interest rates above or below long-run trend	Employment: expansionary or contractionary
Costa Rica	1982-85	below	contract
India	1973-77	below	contract
Jamaica	1974-76	below	contract
	1979-82	below	expand
	1985-88	above	expand
Kenya	1975-80	below	contract
Mauritius	1980-86	below	contract
Philippines	1973-76	below	contract
	1980-82	below	contract
	1984-87	below	contract
Singapore	1974-76	below	contract
South Korea	1980-85	below	contract
	1991-94	below	contract
	1997-00	above	contract
Taiwan Province of China	1974-76	below	contract
Trinidad & Tabago	1974-77	below	expand
	1980-87	below	contract

In the majority of the cases in which average real interest rates were negative, interest rates were kept below the long-run average and employment grew slower than the trend rate of growth. This suggests that keeping interest rates negative and below the long-run trend will not help to increase employment. In two cases employment expanded despite low, negative real interest rates: Jamaica 1979-82 and Trinidad and Tabago 1974-77. However, these appear to be the exception rather than the rule. One reason why negative real interest rates tend to be associated with a contraction in employment relative to its long-run trend is that many of these inflation-reduction episodes are “stagflationary”. That is, supply-side shocks produce a situation in which inflation accelerates, economic growth slows down, resulting in negative real interest rates.

Real interest rates are only one set of variables that potentially link monetary policy to inflation reduction and employment dynamics. Two other possibilities are the real exchange rate and the growth rate of the real money supply. **Table 5** examines trends in these two variables across the various inflation reduction episodes. Specifically, it shows differences between the actual average annual growth rate and the growth rate associated with the long-run trend for the real exchange rate (RER) and the real money supply across various inflation reduction episodes. The inflation reduction episodes are separated into contractionary and expansionary periods.

Table 5. *Differences in the average actual annual growth rate and the average annual growth rate associated with the long-run trend for the real exchange rate (RER) and the real money supply across inflation reduction episodes.*

Country	Period	RER	Money Supply
<i>Total employment contracts on average</i>			
Barbados	1980-86	-0.3%	-1.1%
	1990-94	+1.1%	-1.5%
	1996-99	-1.2%	+3.0%
Brazil	1993-99	+1.1%	+0.3%
Colombia	1980-85	+2.2%	+0.2%
Costa Rica	1982-85	-6.7%	-9.4%
India	1973-77	+1.6%	-1.6%
	1982-86	+0.8%	+0.6%
	1991-94	+3.6%	-0.4%
	1997-2002	+0.4%	+1.7%
Jamaica	1974-76	-9.0%	-0.7%
	1992-2000	-0.6%	+0.5%
Kenya	1975-80	-3.5%	+1.9%
	1981-87	+1.7%	+1.8%
Malaysia	1981-86	+4.5%	-1.4%
Mauritius	1980-86	0.0%*	-2.2%
	1989-93	+1.8%	-1.9%
	1994-96	-4.0%	-1.4%
Philippines	1973-76	-3.9%	-1.6%
	1980-82	+0.8%	-0.4%
	1984-87	0.0%	-10.2%
Singapore	1974-76	+3.9%	-0.6%
	1981-86	+2.8%	-2.4%
South Korea	1980-85	+7.0%	-1.9%
	1991-94	-0.4%	-2.7%
	1997-2000	+6.7%	+6.2%
Sri Lanka	1981-86	-0.7%	-1.1%
	1997-99	+1.7%	0.0%
	1997-99	+1.7%	0.0%
Thailand	1974-76	-0.2%	-0.3%
	1980-85	+3.7%	-2.5%
	1990-93	-1.9%	+2.8%
	1997-2000	+7.0%	-0.4%
Trinidad & Tabago	1980-87	+2.7%	-1.0%
<i>Total employment expands on average</i>			
Brazil	1989-92	0.0%	+4.9%
Chile	1984-88	+2.2%	+2.7%

Country	Period	RER	Money Supply
Costa Rica	1991-93	-4.8%	-1.1%
Jamaica	1979-82	-2.2%	+1.9%
	1985-88	-7.8%	+4.9%
Kenya	1993-96	+5.7%	+11.4%
Malaysia	1992-96	-4.6%	+5.1%
Mauritius	1974-77	n.a.	+5.4%
Philippines	1990-94	-1.8%	-0.5%
Singapore	1990-99	+0.4%	+1.4%
Sri Lanka	1974-76	-1.0%	-4.8%
	1989-94	-0.3%	-0.7%
Trinidad & Tabago	1974-77	-1.0%	-1.0%
	1989-92	-3.8%	-2.7%
	1993-96	+1.4%	+5.4%

* Based on 1981-1986 average, due to data limitations.

Source: Authors' calculations based on data from the IMF publication International Financial Statistics. Real US interest rate is T-bill rate less the inflation rate.

In terms of the real exchange rate, for the purposes of this study, we measured the RER as the nominal U.S. dollar exchange rate adjusted for changes in the U.S. GDP deflator relative to the specific country's GDP deflator. A decrease in the value of our RER measurement, therefore, represents an appreciation in the real exchange rate. Likewise, an increase in value represents a depreciation.

There do not appear to be any systematic patterns with respect to changes in the real exchange rate across inflation reduction episodes and whether the episode was contractionary or expansionary. In 34% of inflation reduction episodes, the average annual percent change in the real exchange rate was below that of the long-run exchange rate (i.e. the exchange rate appreciated relative to its long-run trend); in 60% of the episodes the difference in average growth rate was positive (i.e. the actual real exchange rate depreciated relative to the long-run trend); and in 6% of the episodes there was no difference between the growth rate of the actual and long-run real exchange rates. These ratios were approximately the same for contractionary and expansionary inflation reduction episodes.⁹

However, real exchange rates appear to have an impact on the gender bias observed in contractionary inflation-reduction episodes. Recall that, in the majority of cases, women's formal employment was disproportionately affected by the slowdown in employment growth. However, about a third of the time, the ratio of women's to men's employment actually improved when compared to its long-run trajectory. In each of these cases, the real exchange rate either depreciated or showed no deviation relative to its long-run trend. In other words, maintaining a competitive exchange rate may offset some of the gender bias observed during contractionary inflation-reduction. Why would this be the case? As previously noted, in many countries the growth of women's employment –

⁹ In contractionary episodes, 36% of the episodes showed an appreciation, 58% a depreciation, and 6% no difference in the average growth of the real exchange rate relative to its long-run trend. In expansionary episodes, the percentages were 34%, 60%, and 7%, respectively.

particularly formal employment and wage employment – has tended to be concentrated in tradable sectors, either export-oriented or import-competing (Kabeer and Mahmud, 2004; Benería, 2003; Elson, 1996; Elson and Pearson, 1981). A real depreciation of the exchange rate favors tradable sectors and could help protect women’s employment in certain cases.

Turning to the real money supply,¹⁰ there is some indication that money supply grew more slowly during contractionary episodes. In 67 percent of all contractionary episodes for which data is available, actual average annual growth rates in the real money supply fell below the long-run trend. In 60 percent of all expansionary episodes, actual annual growth rates in the real money supply were greater than the average for the long-run trend. Relative to the gendered effects of inflation reduction then, tightening the real money supply may have a tendency to be associated with greater sacrifices in women’s employment.

Summary

This analysis suggests a number of preliminary findings. However, it is important to recognize that a myriad of factors affect the variables examined here – in particular, employment, inflation, interest rates, exchange rates and the money supply – and therefore any generalizations must be tentative. Although some commonalities do arise, the diversity of country experiences prevents us from drawing definitive conclusions without additional in-depth analysis and country-specific case studies.

Nevertheless, we can make some general observations from the analysis presented.

- Inflation reduction episodes occur simultaneously across a large number of countries. This suggests that there are common, external factors that influence inflation dynamics in low- and middle-income countries.
- If employment contracts during an inflation reduction episode, it is likely that women will experience a larger loss of employment, in percentage terms, than men. In the majority of cases, contractionary inflation reduction has a disproportionately negative impact on women. However, during inflation reduction episodes in which employment expands, the gender-specific impact is ambiguous.
- Countries that respond to inflationary pressures by raising real interest rates above the long-run trend are more likely to experience a slow-down in the growth of employment relative to those countries that keep interest rates in line with or below the long-run trend, with concomitantly higher losses for relative female employment. However, countries with negative real interest rates do not appear to be able to increase employment growth by lowering real interest rates still further.
- We did not find a link between changes in the real exchange rate and the impact of inflation reduction on employment in general. However, we did find that RERs seem to impact the gender bias of contractionary inflation reduction episodes. In

¹⁰ The definition of the money supply used is money plus quasi-money, corresponding to M2.

all cases where women experienced relative employment gains during employment contractions, exchange rates either depreciated or showed no deviation relative to long-run trends.

- Tightening the real money supply also seems to be negatively associated with employment in general and women's employment in particular.

These results suggest that contractionary monetary policy aimed at reducing inflation often has a disproportionately negative impact on women's employment, an effect that may be eased by maintaining a competitive exchange rate. Conversely, non-contractionary inflation reduction is not necessarily favorable to women's formal employment in all circumstances.

IV. Closing discussion

In terms of the study's economic implications, the empirical analysis presented here concerns the short-run, gender-specific impacts of policy responses during inflation reduction episodes. The results say little about the long-run impact of different policy responses. Supporters of inflation-targeting frequently acknowledge that short-run trade-offs might exist, but the long-run benefits of low inflation for growth and development are more significant. This argument is problematic when transitory policy shocks have long-run consequences for real economic variables (Fontana and Palacio-Vera 2004). Similarly, short-term gender-specific shocks can have long-run effects for a country's human and economic development.

A number of empirical studies suggest that gender-based inequities in employment and unemployment have implications for long-term development. For example, this body of research shows that a positive relationship exists between gender equality (measured most commonly as educational equity) and economic growth in developing countries (Hill and King 1995; Dollar and Gatti 1999; Klasen 1999). Some of the effects are quite large: Klasen (1999), in a panel data study between 1960 and 1992, finds that had South Asia and Sub-Saharan Africa had more gender equity in education, growth would have been 0.9 percent per year faster. Investing in girls makes for a higher productivity workforce, but higher rates of unemployment and cyclical volatility in women's jobs will discourage these types of investments at both the individual and community levels.

In a related sense, lower incomes and higher income volatility for women could lead to lower investments in human capital overall, thereby lowering long-term growth. Theory and evidence have aptly demonstrated a higher co-incidence between a mother's income and the family's basic needs than a father's income (Benería and Roldan 1987; Blumberg 1991; Chant 1991), a finding underlying what has been termed the "good mother hypothesis." Income that is controlled by women is more likely to be spent on children's health and nutrition (Dwyer and Bruce 1988; Hoddinott, Alderman, and Haddad 1998). In many countries, a large proportion of fathers provide little or no economic support for their children (Folbre 1994). But faced with cyclically higher rates of unemployment during disinflation, "good mothers" will have fewer opportunities to invest in their children.

In the nearer term, systematic discrimination in hiring and firing results in a misallocation of workers as the most able are not matched with the most appropriate jobs. Such misallocations can result in efficiency losses with effects on output and growth. Tzannatos (1999) evaluates the effects of eliminating gender-based occupational segregation in a number of developing countries, and finds on average a one-time gain in output of six percent. His results are significant but incomplete. He only considers occupational segregation, not industrial segregation, which can be a much more extensive part of gender segregation in some countries, as in China. In addition, Tzannatos only considers the static picture, and not the dynamic efficiency losses from being on a particular growth path characterized by a high degree of gender segregation (Elson 1999).

For example, these types of dynamic efficiency losses may be experienced when women are crowded into certain sectors, keeping wages low and leaving little incentive for firms to innovate and raise productivity. Competitiveness and growth in such sectors are increasingly based on minimizing both wage and nonwage labor costs, contributing to what Standing (1989, 1999) terms global feminization – the increasing flexibilization and informalization of global labor markets. Elson (1999) discusses a study of the gendered institutional structure in Britain by Breugel and Perrons (1995), who argue that the gender order partly underlies Britain's reliance on its low-cost, low value-added industrialization strategy, with the result that Britain relies more heavily on low-paid, part-time women workers than Germany or Scandinavia. They see this pattern as a result of women being treated as secondary workers, the structure of social security benefits, and the continuing lack of affordable childcare. The result is a relatively low-skilled equilibrium growth path. Some might counter that for export-oriented labor intensive sectors, into which women are likely to be segregated in a developing country context, there is little potential for mechanization and productivity improvements (Seguino 2002). But research done in South Korea indicates that low levels of international capital mobility and rising wages stimulated firms in both female- and male-dominated industries to raise productivity (Seguino 2002), so it is possible to combine export orientation with a high productivity growth path.

Less instrumental and ultimately more central than the economic implications of gender-biased inflation reduction discussed above is the issue of equity, as we find that women as a group shoulder a disproportionate share of the costs of contractionary inflation reduction. From a social justice and gender equity perspective, then, it is important to better understand and redress these gender-biased outcomes. One way of doing so would be to focus research and policy on better understanding the link between inflation targeting and well-being. The route from inflation targeting to growth to well-being is often presumed but rarely studied. That women take on a large share of the employment costs of inflation targeting indicates the complexity and remoteness of these linkages. To get at these connections, central banks should incorporate gender specific indicators in the creation of targets, such as gender disaggregated employment figures or gender aware inflation rates (that account for gendered consumption and employment patterns). These market-based targets should also be supplemented by longer-term gender aware human development targets to ultimately get at the links among inflation targeting, equity and well-being.

These points about social justice and inflation targeting bring us back to the political economy issue raised in the opening of the paper. Treating gender equity as secondary to other, more “general” economic concerns may also be instrumental in the political sustainability of inflation targeting in monetary policy. As our analysis implies, incorporating concerns over gender equity into monetary policy formulation would involve a move away from inflation targeting as it is currently practiced and could harm the interests of those invested in a low inflation, high interest rate environment – largely financial capitalists. Moreover, if women’s labor force participation keeps unit labor costs and inflation lower than it would otherwise be, then a focus on gender equity within the context of sustainable levels of inflation could require other mechanisms for price control that are more consistent with long-run growth and development. Such a move might be resisted by those that benefit (perhaps only in the short-run) from women’s more precarious employment – for example, their employers and employed men. From this perspective, gender biased central bank policy may help solve the political problems introduced by inflation targeting in that gender bias concentrates the costs of these policies on a less powerful segment of society – women. Inflation targeting should be considered in terms of its social content (e.g., what are the social structures that underlie this policy) as well as its social impact (Elson and Cagatay 2000), as an instance of contested terrain in macroeconomic policymaking.

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