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Gender bias and central bank policy: employment and inflation reduction

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This article considers 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. Maintaining competitive exchange rates seems to counterbalance the gender-biased effects of contractionary inflation reduction episodes, however.

Keywords: gender; monetary policy; inflation; employment; Central Banks

JEL classifications: B54, E24, E31, E58

1. Introduction

Central banks in developing countries are increasingly maintaining low inflation rates as the central goal of monetary policy, without much consideration of how these policies impact real outcomes such as employment, investment and growth (Epstein 2003). Although targeting very low inflation rates seems to have done little to raise economic growth, these policies remain a key feature of neoliberal approaches to monetary policy (Epstein 2000). Gerald Epstein and Juliet Schor argue that anti-inflation policy and neoliberal approaches to central banking emerged from the 'contested terrain' of central banks – the class and intra-class conflicts 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 economy 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 empirical questions: (1) what is the impact, if any, of inflation reduction on employment, and is the impact different for women and men, and (2) how are monetary policy indicators 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. After controlling for long-term employment trends,

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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 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 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.

2. Gender differences in employment and unemployment in semi-industrialized countries

In thinking about the differences between women's and men's employment, 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.

Women and men make decisions about whether or not to look for wage work. However, self-perception, what individuals value, and what choices they perceive as possible are constituted by the social world, and are different for women and men (Sen 1990), and so individual preferences must be understood in this light. Norms and the traditional structures of gender and kinship constitute the social expectations of women and men in the household. For example, women are primarily associated with the care of the family, and much of their work time is spent outside of the market, whereas men's work is typically viewed as directly productive and more fully incorporated into the market sphere. Assets also engender labor supply. Systematic differences by gender in ownership of assets are common, and partly determine how much wage employment women seek. Patriarchal property rights, where eldest men have the right to claim and apportion the fruits of household members' labor time, can create incentives for high fertility and lower female labor force participation (Braunstein and Folbre 2001).

On the demand side, gender discrimination results in differential access to employment opportunities. The presumption that men should 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 2006). Women are laid off first because employers presume that it is more important for men to be able to fulfill their traditional breadwinning responsibilities (Azmat et al. 2004). Differential hiring practices also contribute to gender segregation in employment. For example, labor intensive exporters prefer to hire women both because women's wages are typically lower than men's, and because employers consider women to be more productive in these types of jobs (Anker and Hein 1985; Elson 1996). By extension, women may lose their comparative advantage when industries upgrade, leading to a defeminization of employment as has happened in Mexico, India, Ireland and Singapore (Elson 1996; Joekes 1999; Fussell 2000; Ghosh 2001).

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). On the supply side, Cagatay and Ozler (1995) pool cross country data for 1985 and 1990 to show that

SAPs led to increased feminization of the labor force via worsening income distribution and openness. Similarly, research into the determinants of women's labor supply in post-apartheid South Africa has shown that women's labor force participation responds positively to growing unemployment, thereby further increasing the country's average unemployment rate (Casale 2003).

Trade liberalization and structural adjustment policies can cause a reallocation of paid employment from traditional activities, which are adversely affected, to export-oriented production, which is encouraged (Cagatay and Ozler 1995; Standing 1999). Emphasis on export-oriented industrialization has also been associated with increases in informalization of certain types of employment due to increases in competitive pressures (Carr, Chen and Tate 2000; Standing 1999). In addition, female-intensive export-oriented industries are often more cyclically volatile than men's industries, resulting in higher overall rates of unemployment (Howes and Singh 1995). During 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'. The lack of formal employment opportunities and pressures for greater labor force participation led to an increase in women's informal employment in some cases (United Nations 1999; Aslanbeigui and Summerfield 2000).

These gender dynamics have implications for macroeconomic outcomes. For example, increases in women's employment that are associated with lower unit labor costs have important implications for inflation dynamics. 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.

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.

3. Inflation reduction and women's employment

The empirical exercise 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.¹ 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 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).²

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 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. Figure 1 illustrates this pattern. The figure shows, for each year 1971–2002, the percent of all countries in our study in which an inflation reduction episode occurred. Inflation reduction episodes are concentrated over certain sub-periods: 1974–1977, 1980–1986, 1991–1994, 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.

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 US Treasury bills over the entire period as a proxy for short-term, inflation-adjusted world interest rates. An increase in the real yield of US 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.³

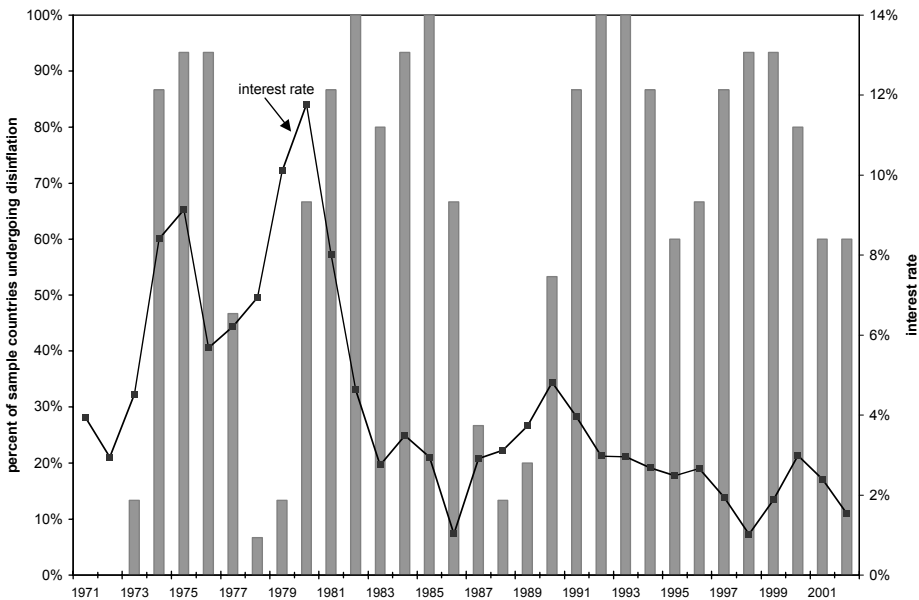


Figure 1. Inflation reduction episode frequencies, and the real US interest rate, 1971–2002.

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.⁴
- 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 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.

In 67% 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. However, in expansionary inflation reduction episodes, there was no clear distinction. The female to male employment ratio increased faster than trend in 53% of cases and at or below trend in 47% of cases – nearly an even split.

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. To examine this possibility, we looked at average real short-term interest rates across the inflation reduction episodes.⁵ 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.⁶ If actual average real interest rates were negative, these inflation reduction episodes were tabulated separately.

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

			Deviations from long-run employment trends		
	Period	Deflation as percent of avg. inflation (%)	W (%)	M (%)	Ratio (%)
A. Contractionary inflation reduction episodes					
Barbados	1980–1986	–143	–1.8	–0.8	–1.0
	1990–1994*	–113	–2.5	–2.6	0.1
	1996–1999	–117	–1.0	0.3	–1.4
Brazil	1993–1999	–305	–0.7	–0.1	–0.6
Colombia	1980–1985	–29	–3.2	–2.5	–0.7
Costa Rica	1982–1985	–123	–1.5	–0.1	–1.4
India	1973–1977*	–175	–0.2	–0.4	0.2
	1982–1986*	–37	–0.1	–0.2	0.1
	1991–1994*	–26	0.1	–1.2	0.2
	1997–2002	–93	–1.0	0.9	–0.2
Jamaica	1974–1976	–45	–0.5	–0.2	–0.3
	1992–2000	–190	–0.5	0.1	–0.6
Kenya	1975–1980	–36	–2.2	–0.1	–2.1
	1981–1987*	–66	0.8	–0.3	1.1
Malaysia	1981–1986*	–181	–0.4	–0.8	0.4
Mauritius	1980–1986*	–182	–0.6	–1.6	0.9
	1989–1993	–46	–1.3	–0.3	–0.9
	1994–1996	–21	–1.8	–0.9	–0.8
Philippines	1973–1976	–69	–1.6	–0.4	–1.2
	1980–1982*	–55	0.2	–0.3	0.5
	1984–1987	–130	–2.4	0.0	–2.3
Singapore	1974–1976	–171	–6.7	–0.7	–5.9
	1981–1986*	–267	–1.8	–2.0	0.1
South Korea	1980–1985	–196	–1.4	–0.9	–0.5
	1991–1994	–45	–0.4	0.0	–0.4
	1997–2000	–82	–1.2	–1.1	–0.1
Sri Lanka	1981–1986	–106	–0.7	0.1	–0.8
	1997–1999*	–56	–0.7	–2.6	1.9
Taiwan	1974–1976	–106	–4.9	0.3	–5.1
	1980–1985*	–243	0.6	–0.5	1.1
	1991–2002*	–197	–0.4	–0.2	0.2
Thailand	1974–1976	–88	–1.3	–0.8	–0.5
	1980–1985	–180	–2.6	–0.7	–1.8
	1990–1993	–31	–0.8	0.1	–0.9
	1997–2000	–136	–0.8	–0.7	–0.1
Trinidad & Tobago	1980–1987	–56	–1.0	–0.6	–0.4
B. Expansionary inflation reduction episodes					
Brazil	1989–1992*	–39	1.9	–0.8	2.8
Chile	1984–1988	–39	0.8	2.3	–1.5
Costa Rica	1991–1993	–42	0.2	1.6	–1.4

Table 1. (Continued).

	Period	Deflation as percent of avg. inflation (%)	Deviations from long-run employment trends		
			W (%)	M (%)	Ratio (%)
Jamaica	1979–1982	–101	0.1	0.5	–0.4
	1985–1988*	–90	2.9	0.5	2.3
Kenya	1993–1996*	–134	0.9	–0.3	1.3
Malaysia	1992–1996	–27	0.6	1.4	–0.8
Mauritius	1974–1977*	–59	3.9	1.6	2.1
Philippines	1990–1994	–60	0.2	0.3	–0.1
Singapore	1990–1999	–139	0.1	0.1	0.0
Sri Lanka	1974–1976	–100	1.9	3.1	–1.1
	1989–1994*	–50	8.9	3.6	4.9
Trinidad & Tobago	1974–1977	–48	0.2	1.0	–0.8
	1989–1992*	–37	3.8	1.6	2.1
	1993–1996*	–69	0.7	0.6	0.2

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

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 almost all of the expansionary 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 Tobago, 1989–1992.

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	1984–1988	–31.3		
Costa Rica	1991–1993	–9.8		
Kenya	1993–1996	–2.1		
Malaysia	1992–1996	–9.7		
Philippines	1990–1994	–42.8		
Singapore	1990–1999	–6.9		
Sri Lanka	1974–1976	+24.0		1973–1975: avg. neg. interest
	1989–1994	–5.6		
Trinidad & Tobago	1989–1992	+6.3		1988–1991: +5.4%
	1993–1996	–3.0		

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, beginning one year before the start of an inflation reduction episode and extending half-way into the episode.

This alternative periodization 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 Tobago 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.

In most cases, the opposite pattern observed 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 1996–1999 and Colombia 1980–1985, 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

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	1980–1986	+36.7	
	1990–1994	+4.4	
	1996–1999	–3.3	1995–1998: +1.0%
Colombia	1980–1985	–1.1	1979–1983: +34.6%
India	1982–1986	+14.2	
	1991–1994	–9.3	1990–1993: –19.3%
	1997–2002	–18.4	1996–2000: –12.8%
Jamaica	1992–2000	–8.4	Interest rates are T-bill rates. 1991–1996: avg. neg. interest
Malaysia	1981–1986	+51.9	
Mauritius	1989–1993	–79.2	1988–1991: –76.3%
	1994–1996	+16.4	
Singapore	1981–1986	+17.9	
Sri Lanka	1981–1986	+398	
	1997–1999	+2.9	
Taiwan	1980–1985	+24.3	
	1991–2002	–6.5	1990–1997: –11.9%
Thailand	1980–1985	+6.6	
	1990–1993	+5.2	
	1997–2000	+14.2	

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% 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 1991–1994, India 1997–2002, Jamaica 1992–2000, Mauritius 1989–1993, and Taiwan 1991–2002. 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.

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. 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 and 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 shows differences between the actual average annual growth rate and the growth rate associated with the long-run trend for the real exchange

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	1982–1985	below	contract
India	1973–1977	below	contract
Jamaica	1974–1976	below	contract
	1979–1982	below	expand
	1985–1988	above	expand
Kenya	1975–1980	below	contract
Mauritius	1980–1986	below	contract
Philippines	1973–1976	below	contract
	1980–1982	below	contract
	1984–1987	below	contract
Singapore	1974–1976	below	contract
South Korea	1980–1985	below	contract
	1991–1994	below	contract
	1997–2000	above	contract
Taiwan	1974–1976	below	contract
Trinidad & Tobago	1974–1977	below	expand
	1980–1987	below	contract

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	1980–1986	–0.3	–1.1
	1990–1994	+1.1	–1.5
	1996–1999	–1.2	+3.0
Brazil	1993–1999	+1.1	+0.3
Colombia	1980–1985	+2.2	+0.2
Costa Rica	1982–1985	–6.7	–9.4
India	1973–1977	+1.6	–1.6
	1982–1986	+0.8	+0.6
	1991–1994	+3.6	–0.4
Jamaica	1997–2002	+0.4	+1.7
	1974–1976	–9.0	–0.7
	1992–2000	–0.6	+0.5
Kenya	1975–1980	–3.5	+1.9
	1981–1987	+1.7	+1.8
Malaysia	1981–1986	+4.5	–1.4
Mauritius	1980–1986	0.0*	–2.2
	1989–1993	+1.8	–1.9
	1994–1996	–4.0	–1.4
Philippines	1973–1976	–3.9	–1.6
	1980–1982	+0.8	–0.4
	1984–1987	0.0	–10.2
Singapore	1974–1976	+3.9	–0.6
	1981–1986	+2.8	–2.4
South Korea	1980–1985	+7.0	–1.9
	1991–1994	–0.4	–2.7
	1997–2000	+6.7	+6.2
Sri Lanka	1981–1986	–0.7	–1.1
	1997–1999	+1.7	0.0
Thailand	1974–1976	–0.2	–0.3
	1980–1985	+3.7	–2.5
	1990–1993	–1.9	+2.8
	1997–2000	+7.0	–0.4
Trinidad & Tobago	1980–1987	+2.7	–1.0
<i>Total employment expands on average</i>			
Brazil	1989–1992	0.0	+4.9
Chile	1984–1988	+2.2	+2.7
Costa Rica	1991–1993	–4.8	–1.1
Jamaica	1979–1982	–2.2	+1.9
	1985–1988	–7.8	+4.9
Kenya	1993–1996	+5.7	+11.4
Malaysia	1992–1996	–4.6	+5.1

Table 5. (Continued).

Country	Period	RER (%)	Money Supply (%)
Mauritius	1974–1977	n.a.	+5.4
Philippines	1990–1994	–1.8	–0.5
Singapore	1990–1999	+0.4	+1.4
Sri Lanka	1974–1976	–1.0	–4.8
	1989–1994	–0.3	–0.7
Trinidad & Tobago	1974–1977	–1.0	–1.0
	1989–1992	–3.8	–2.7
	1993–1996	+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.

rate (RER) and the real money supply across various inflation reduction episodes. The inflation reduction episodes are separated into contractionary and expansionary periods.

In terms of the real exchange rate, for the purposes of this study, we measured the RER as the nominal US dollar exchange rate adjusted for changes in the US 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.

There do not appear to be any systematic patterns with respect to changes in the real exchange rate across inflation reduction episodes. 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 – particularly formal employment and wage employment – has tended to be concentrated in tradable sectors, either export-oriented or import-competing. 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,⁷ there is some indication that money supplies grew more slowly during contractionary episodes. In 67% 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% 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.

This analysis suggests a number of preliminary findings. However, it is important to recognize that a myriad of factors affect the variables examined here, and therefore any generalizations must be tentative. Nevertheless, we can make some general observations from the analysis presented.

- 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. 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 relatively more likely to experience a slow-down in the growth of employment, 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 impact the gender bias of contractionary inflation reduction episodes. In 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.

4. Discussion and conclusions

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 (Dollar and Gatti 1999; Klasen 1999). 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, 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). Faced with cyclically higher rates of unemployment during disinflation, 'good mothers' will have fewer opportunities to invest in their children.

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 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 overall social welfare. 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.

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. 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 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. As such, inflation targeting policies should be considered in terms of their social content (e.g. what are the social structures that underlie this policy) as well as its social impact (Elson and Cagatay 2000). Such an approach underscores the gendered nature of the contested terrain in macroeconomic policymaking.

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Notes

1. Our choice of countries was limited to those for which reasonably reliable, gender-disaggregated formal employment data were available.
2. In addition, the GDP deflator for the US used to construct the real exchange rate measure was taken from the on-line database of the US Bureau of Economic Analysis.
3. Other real US interest rates did increase around the time of the last inflation reduction episode, e.g. the yield on three-year government bonds.
4. 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.
5. Due to its extreme volatility, Brazil was excluded from this analysis.
6. Only in the case of Jamaica were T-bills used to determine actual interest rates and to estimate long-run trends.
7. The definition of the money supply used is money plus quasi-money, corresponding to M2.

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