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Gender Inequality and Economic Growth: A Reply to Schober and Winter-Ebmer

STEPHANIE SEGUINO*
University of Vermont, USA

Summary. — Using data from a meta-wage analysis, Schober and Winter-Ebmer fail to confirm my earlier finding that gender wage inequality stimulates growth in semi-industrialized economies [SIEs]. The authors contend their wage data, based on micro-level studies with heterogeneous coverage, are superior to the education-adjusted manufacturing wages on which my paper relied. In response, I elucidate why wage data should be restricted to the manufacturing sector. I explore possible measurement errors their data introduce and note concerns with the meta-regression approach that limit the applicability of these data to the specific task of understanding the growth effect of gender inequality in SIEs. Finally, I discuss advances made over the last decade in the methodology used to evaluate gender effects on growth, identifying directions for new research on this important topic.

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Schober and Winter-Ebmer (2011) have presented a critique of a paper I originally published in a special issue of this journal devoted to exploring the implications of integrating gender into macroeconomic and trade models (Seguino, 2000). Using data from Weichselbaumer and Winter-Ebmer's [WWE] (2005) meta-analysis of international gender wage gaps, the authors replicate my empirical model for a set of semi-industrialized economies and for a larger set of countries at varying stages of development. The authors do not find evidence that gender wage inequality is a stimulus to growth, and present some modest evidence that gender wage equality can in fact stimulate growth in a larger set of countries.

In presenting their results, Schober and Winter-Ebmer make several important claims. First, they argue that internationally comparable gender wage gaps can only be accurately calculated from micro-level studies, and that these are superior to the education-adjusted manufacturing gender wage gaps used in Seguino (2000). Secondly, and perhaps inadvertently, they suggest my results legitimate gender inequality as a means to promote economic growth. I respond to both of these concerns.

The most serious contention concerns the appropriate measure of gender wage gaps. Schober and Winter-Ebmer's growth accounting estimations use three measures of gender wage gaps drawn from a wide variety of micro-level studies: a raw wage gap (unadjusted for productivity differences); unexplained wage gaps (based on Blinder-Oaxaca decompositions or coefficients on gender dummy variables, after controlling for a variety of standard control variables); and "meta-residual" wage gaps, obtained by attempting to account for idiosyncratic differences in the wide variety of underlying wage studies.

The data on which Schober and Winter-Ebmer base their analysis yield problematic measures of the three wage gaps on several counts, each of which may inhibit an accurate assessment of their effect on growth in semi-industrialized economies [SIEs]. Schober and Winter-Ebmer's dataset is drawn from 263 micro-level national studies. The authors develop a time-series dataset from these studies, but given the different methodologies, sectoral coverage, control variables, and workers these studies cover¹, the wage gaps are measured inconsistently from year to year and are particularly ill-suited for panel data estimation techniques.

A second concern relates to the specific wage data required to test the hypothesis advanced in Seguino (2000) that economic growth is spurred by the relatively lower wages of women employed in the export manufacturing sector. Schober and Winter-Ebmer correctly note that wage data for the export sector alone are not generally available. But we do know that for most SIEs, the preponderance of exports are labor-intensive manufactured goods and these are produced primarily by female workers, making manufacturing wage gaps a good proxy for our variable of interest.

Women's job segregation in labor-intensive industries in SIEs is in part a function of gender norms that see such jobs as "female." Women tend to be excluded from non-labor intensive manufacturing jobs, and indeed, as Tejani and Milberg (2010) demonstrate, as economies upgrade to the production of more skill-intensive exports, women's share of manufacturing jobs has declined in a number of SIEs. As a result, manufacturing gender wage gaps capture the downward pressure that "crowding" of women into the labor-intensive manufacturing sector has on female wages and thus the gender wage gap. Any approach to assessing the growth impact of gender wage gaps in SIEs then requires the use of manufacturing wages, not economy-wide wages or wages in other sectors (such as agriculture, the public sector, or education) as used in Schober and Winter-Ebmer.

To see why it is important to restrict the wage sample to manufacturing wages, see Table 1. The data there compare female to male wage ratios for a subset of countries from the Seguino (2000) paper in four industrial sectors—manufacturing; transport, storage, and communication; wholesale and retail trade; and community, social, and personal services. As can be seen, in almost all cases, the manufacturing female/male monthly earnings ratio is significantly lower than in the remaining sectors, even when we control for hours worked. This suggests that the economy-wide gender wage gaps and those from samples covering other sectors used in Schober and Winter-Ebmer may understate the degree of inequality. The failure to find a positive effect of wage gaps on growth may thus be linked to the inexactness of Schober and Winter-Ebmer's wage measure.

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Table 1. *Female/male monthly earnings by sector, 1995, selected semi-industrialized economies*

Sector	Ratio of female to male monthly earnings (%)	Earnings ratios adjusted for hours of work (%)
<i>Brazil</i>		
Manufacturing	58.5	69.1
Community, social, and personal services	78.6	101.3
Wholesale and retail trade	76.9	90.5
Transport, storage, and communications	67.3	81.6
<i>Costa Rica</i>		
Manufacturing	70.4	75.2
Community, social, and personal services	72.0	85.3
Wholesale and retail trade	78.7	84.5
Transport, storage, and communications	84.7	106.0
<i>Mexico</i>		
Manufacturing	45.3	49.6
Community, social, and personal services	81.1	89.6
Wholesale and retail trade	56.2	62.4
Transport, storage, and communications	117.4	147.3
<i>South Korea</i>		
Manufacturing	54.1	55.1
Community, social, and personal services	53.0	53.0
Wholesale and retail trade	60.9	61.8
Transport, storage, and communications	84.0	89.2
<i>Thailand</i>		
Manufacturing	68.2	NA
Community, social, and personal services	85.9	NA
Wholesale and retail trade	81.1	NA
Transport, storage, and communications	132.6	NA

Note: Industrial sectors are from ISIC-Rev 2. NA indicates data are not available.

Source: Author's calculations from *Laborsta* (www.laborsta.org) accessed April 20, 2011.

A third and important concern that emerges from Schober and Winter-Ebmer's wage data relates to the appropriate way to correct for productivity differences between men and women. Schober and Winter-Ebmer's unexplained gender wage gap dataset is drawn from human capital-type regressions that control for a host of variables in order to identify and decompose the determinants of wages and thus gender wage inequality. While some of the explanatory variables explain inequality, they do not themselves reflect gender productivity differences. Indeed, a number of the right-hand side variables in these studies may also reflect discriminatory processes.

For example, some studies use controls for number of children, or married versus never married. That such variables may be correlated with wages says more about norms and stereotypes of appropriate gender roles than it does individual productivity. Similarly, some studies control for the share of females in an occupation or industry. Although that variable may "explain" gender wage gaps, it more likely reflects the

effects of job segregation than it does productivity. Similarly, race variables do not necessarily imply differences in productivity. Inclusion of these and numerous other variables inappropriately strip a portion of the effects of discrimination from the wage data. Were this corrected, again, it is likely the unexplained gender wage gaps Schober and Winter-Ebmer had at their disposal would be larger, with unknown consequences for the results of their econometric results.

There is an additional concern, related to Schober and Winter-Ebmer's use of internationally comparable "meta-residuals." These are drawn from *WWE* (2005), who weight observations based on the types and number of regressors in the micro-level studies (with more controls assumed to improve the quality of estimates). Given that some of the regressors are not actually productivity controls, as noted above, this biases the results. The authors also weight observations based on the citation index of the journal. Journal publication policies and citation norms are complex, and not entirely related to quality. This seems like a spurious criterion to use in weighting observations.²

Finally, I turn to the authors' efforts to calculate the effect of gender wage gaps on economies at differing stages of development and thus structures of production. One of the most important lessons to come out of the last decade's research is that the role of gender inequality is very likely to differ across countries, depending on the type of gender job segregation, coupled with the structure of the economy. (For example, in some countries, the bulk of exports are produced in male-dominated industries. In other cases, access to credit rather than wages may be a more salient macroeconomic variable). It is, therefore, not surprising that the size and sign of the gender wage gap variable in Schober and Winter-Ebmer varies, depending on the sample of countries included. This points to the fact that more theorizing is needed to elaborate how gender inequality influences macro-level outcomes in industrialized, post-industrialized, and agricultural economies. Their influence is likely to differ from that in SIEs (Seguino, 2010).

Two minor points made by Schober and Winter-Ebmer also merit comment. The authors point to Seguino and Floro (2003), which finds that gender wage equality is positively correlated with increases in aggregate saving rates. Schober and Winter-Ebmer argue that since savings spur growth, gender equality is good for growth—a finding that stands in contradiction to the results reported in Seguino (2000). Their claim is, however, not consistent with a demand-led growth theoretical framework (Setterfield, 2002). Savings are not automatically converted into investment (the so-called paradox of thrift), and as such, an increase in aggregate savings can dampen aggregate demand, output, and employment. Finally, the authors note that Seguino's (2000) regressions do not include initial GDP as an explanatory variable to capture the effect of convergence. It should be noted that the primary focus in the original study was on the fixed effects panel data estimations, with initial conditions captured in the fixed effect. Controlling for initial GDP would have been redundant in those regressions.

Apart from the concerns about Schober and Winter-Ebmer's wage data, the authors raise important issues with regard to the multiple pathways by which gender relations affect macro outcomes. We have learned much over the last decade since Seguino (2000) was published. It is clear that the type of inequality matters in terms of its effect on output and growth, as well as whether we are considering short-run effects on aggregate demand or long-run impacts operating on both the demand and supply side. Further, variables such as wages are likely to have multiple effects on the macroeconomy. Wage

effects on product prices, and thus export demand and business investment, are likely to be transmitted rapidly. In contrast, the economy-wide benefits of women's bargaining power due to higher wages on children's well being, for example, will only be observed with a rather long lag.

Other advances have been made. For example, Klasen (2002) and Klasen and Lamanna (2009) have developed a sophisticated method for measuring the impact of aggregate gender educational gaps on growth, and find that educational inequality slows economic growth. The apparent incompatibility of those results with the work of several authors who find gender wage gaps in the export sector are a stimulus growth has spurred fruitful discussion and debate (Berik, Rodgers, & Seguino 2009).

Research over the past decade also suggests that estimation techniques and model specifications used in estimating the impact of gender wage gaps on macro-level outcomes can be improved upon. Baliamoune-Lutz (2007), for example, develops a simultaneous equation approach for assessing the relationship between growth and gender equality in sub-Saharan Africa, taking into account the feedback effects between these variables.

Further research in this direction is warranted, given indications that gender educational inequality and thus productivity-adjusted gender wage gaps are not exogenous. For instance, Wood and Ridao-Cano (1999) find that greater trade openness has a negative impact on school enrollment rates in developing countries. Vijaya (2007) presents empirical evidence these effects are gendered, with female enrollment in secondary education more negatively affected by trade openness than male rates, potentially due to SIE concentration in low-skilled export production that relies predominantly on female labor.

The continued attention to the macroeconomic effects of gender inequality that the Schober and Winter-Ebmer paper offers is a welcome one. In order to implement macro-level policies that make gender (and other kinds of) equality compatible with economic growth, we must understand how gender operates in the economy. A finding that gender wage inequality is a stimulus to growth is not a vote or indeed justification for inequality. Rather, it is an evidence-based approach for assessing how things stand and what we need to do at the policy level to promote equity-led growth.

NOTES

1. Examples from the WWE (2005) dataset include studies exclusively focused on academics, academic economists, suburban workers, IT professionals, and public university employees.
2. Further, it is time series-consistent wage gaps *within* countries that are most essential for the effect of gender wage inequality on SIE growth rather than internationally comparable wage gaps.

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