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**Comment** Francine D. Blau

Claudia Olivetti's excellent chapter revisits the fundamental issue of the relationship between women's labor force participation and economic development first probed in econometric analyses by Goldin (1990, 1995). In these path-breaking contributions, Goldin builds on the work of Boserup (1970) to advance the hypothesis that the relationship between women's labor force participation and economic development is U-shaped. In the early stages of economic development, women's participation is high since women tend to be heavily involved as family workers in family farms or businesses, or otherwise working for pay or producing for the market within the household. Women's labor force participation initially falls in the course of economic development, along the declining portion of the U, as the locus of production moves out of household and family enterprises and into factories and offices. According to Goldin, this decrease is due both to the negative income effect on women's participation of rising family income and the stigma of women's, particularly married women's, employment as wage workers in manufacturing. The latter, in turn, partially reflects the dirty and unpleasant nature of early manufacturing employments, given which, the employment of a wife is taken as an extremely negative reflection on her husband's ability to provide for his family. As economic development progresses, however, women's education and their consequent opportunities for white-collar employment rise. Women's labor force participation then increases along the rising portion of the U both because the higher wages available to women lead to a substitution effect, increasing their labor force participation, and because white-collar employment does not share the same stigma as factory work and wage labor on farms.

Goldin found strong empirical support for this U-shaped relationship, using both a cross section of international comparative data, as well as historical evidence from the course of economic development in the United States. The latter required painstaking efforts on her part to correct the measured statistics on women's participation for the undercounting of women's activities in earlier periods, including work performed for income in the home (e.g., taking in boarders or doing piecework), unpaid work in family farms and businesses, and even wage work in manufacturing. Goldin's findings regarding the U have been strongly confirmed in subsequent research exploiting international data by Mammen and Paxson (2000), Luci (2009), and Lundberg (2010).

In her impressive contribution to this volume, Olivetti has assembled a

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prodigious amount of cross-sectional and time-series data that enables her to substantially raise the bar of the empirical test of the U, as well as to pose a number of new questions. Olivetti finds resounding support for the U, both in international cross sections of early developed countries for the 1890–2005 period and of all countries for the 1950–2005 period. In addition, and of particular interest, her *within country* analysis of early developed economies over the 1890–2005 period also strongly supports the U. This is the first effort that I am aware of to test the U-shape hypothesis controlling for country fixed effects, and hence this finding is especially notable in subjecting the U hypothesis to a particularly stringent test. However, for the 1950–2005 period, Olivetti finds that the U-shape is more muted when the early OECD economies are not included in the cross-sectional sample. Further, she finds no support for the U in within-country analyses that exclude the early OECD countries.

In addition to her econometric exploration of the U, Olivetti provides new evidence regarding the relationship between the evolution of women's employment and the process of structural transformation in the course of economic development. As Olivetti states, the typical process of reallocation of employment across sectors involves redeployment of the labor force, initially, from agriculture to manufacturing and services; and then, as development continues, this is followed by a decline in the share of employment in manufacturing but a continued increase in the share in services. She finds a broad similarity in this experience for both men and women, but with significant gender differences. Women move out of agriculture and into services more rapidly than men do, while men's employment share in manufacturing initially rises more steeply than women's. These gender differences also appear to be smaller in emerging economies.

Taking her findings together, Olivetti suggests that, in the more recent context, the declining portion of the U is less in evidence because, in contrast to the experience of early developing economies, service employments are more plentiful in the earlier stages and manufacturing employments are cleaner and less brawn intensive. She speculates that such employments will not only encounter less stigma but also that the robust demand for women workers in service and less brawn-intensive manufacturing, including manufacturing work that requires fine motor skills, will create a more favorable market for female employment and generate higher relative wages for women than was the case under early industrialization.

Olivetti's analysis is insightful and carefully done, and her new results on emerging economies are provocative and interesting. I am sure this work will garner considerable well-deserved attention and stimulate additional research on the nature of the relationship between women's participation and economic development and the possibility that it has changed over time. My own view is that, while her findings for emerging economies are extremely interesting and certainly not implausible, they would benefit from

additional probing in future work. My concern is that there may not be enough variation to identify the U in the emerging economies sample, particularly in the within-country estimates (Hamermesh 2000). The U traces out a long-term relationship between economic development and female labor force participation, using GDP per capita as an indicator of economic development. The international cross section, particularly the version that includes the full sample of countries, is well designed to test the U hypothesis since the included countries span the full course of economic development, from the relatively primitive to the most advanced economies. Similarly, there is considerable within-country variation among the sample of early developed countries, which are observed starting at relatively early stages of industrialization through their emergence as economically advanced nations. Thus, it is not surprising that these samples yield the strongest evidence supporting the U-shaped relationship.

In contrast, some of the countries in the 1950–2005 emerging economies sample experienced relatively modest increases in GDP per capita for considerable periods of time during the window in which they were observed; changes that were likely not substantial enough to be associated with significant economic development. Moreover, even countries experiencing fairly robust growth in GDP per capita may not have experienced a substantial enough increase to trace out a portion of the U during the time period for which data on them are available. For these reasons, it may be difficult to detect a U-shape in a within-country analysis for the emerging economies sample, and this may also explain why the U is more muted when the international cross section is restricted to the emerging economies. Olivetti correctly points out in a footnote that my concern is partly mitigated by the fact that the 1950–2005 data set includes at the very least four data points spanning fifteen years for all the non-OECD countries in the sample. However, this is not sufficient to fully allay my concerns. Thus, I believe Olivetti's findings on emerging economies could use further probing. This might include, not only further investigation using a longer data set and including a larger set of controls, as suggested by Olivetti in a footnote, but also case studies of individual countries, comparable to Goldin's study of the United States for the earlier period.

To the extent that Olivetti's story of a more muted U in emerging economies is borne out, I would add an additional factor militating against a decline in women's participation with early economic development in the current climate. The broad acceptance of women's employment in most of the advanced economies likely has an impact on gender roles and norms in the emerging economies. Much of the literature on the impact of culture focuses on the influence on current behavior of traditional beliefs and norms of an earlier period (e.g., Alesina, Giuliano, and Nunn 2013) or different country of origin (e.g., Blau 1992; Antecol 2000; Fernández and Fogli 2009; Blau, Kahn, and Papps 2011; Blau, Kahn, Liu, and Papps 2013). But our

world of increasingly global economic activity and communications likely impacts not only the economic opportunities of women in developing countries, but also the gender roles and norms in those countries. For example, Jensen (2012) finds broad-ranging effects on women in a developing country of new job opportunities in the business process outsourcing industry. In his experimental study, young women in randomly selected Indian villages were provided with three years of recruiting services (e.g., information about job openings, assistance with interview skills) to help them get back office jobs in this new industry. Jensen found that women who received the recruiting services were less likely to marry and have children during this period, and instead obtained more schooling or entered the labor market. As another example, a recent study by Jensen and Oster (2009) suggests the potential broad-reaching effects of increased communications. They identified a number of cultural shifts resulting from the introduction of cable television in rural India, including decreases in the reported acceptability of domestic violence toward women, reduced son preference, lower fertility, and increases in women's autonomy.

Moving to Olivetti's results for the early developed economies, let me begin by noting that she has done an incredible job assembling the data that permit her to trace women's participation patterns over a long period for these economies. Her results highlight some issues that could be addressed in future research. For example, she finds some different patterns within the individual countries—including the classic U-shape, but also monotonically increasing female participation rates in two countries and even a slightly N-shaped pattern in some countries. It would be interesting to know whether the different patterns she uncovered reflect measurement issues or real differences across countries; and, if the latter, how we might explain these patterns. Monotonically increasing female participation is obtained for Canada and the United States. We already know from Goldin's work that the US result is due to measurement issues; however, it is unclear whether or not this is the case for Canada. Olivetti speculates that it is and I am inclined to agree with her but it would be interesting to see further work on this. What the N-shaped pattern represents is a more open question. Addressing these questions would probably entail more detailed historical research of the type that Goldin did for the United States.

Regarding the sectoral patterns by gender that Olivetti uncovers, she makes the interesting point that she and others have examined whether international differences in industrial structure help to explain international differences in women's wage outcomes. A related point I would like to make is that the sectoral pattern she uncovers suggests that women were well positioned in what would eventually become the leading sector in most advanced economies—services. This location of women underlies the evidence for the United States that sectoral demand shifts favoring women help to explain the narrowing of the gender wage gap since 1980 (e.g., Blau and Kahn 1997,

2006; Welch 2000; Bacolod and Blum 2010). Thus, it is interesting to contemplate that what was a disability to women compared to men in earlier stages of economic development, that is, the less robust increase in demand for women than for men in early manufacturing, became an advantage at a later time in the form of women's greater concentration in services.

Let me close by noting one more fruitful area for future research. My suggestion here echoes an especially innovative use of econometric analysis in Goldin (1990). One criticism that is sometimes made of economic modeling is that it abstracts from historical and institutional factors. However, Goldin turns this feature of economic models to her advantage. She estimates an econometric model of married women's labor force participation using decennial US Census data for the period 1890–1980. She finds that the model overpredicts married women's labor force participation for 1930, 1940, and 1950. She presents this discrepancy as evidence in support of her thesis that the process of change in participation for married women was retarded by institutional barriers like marriage bars (i.e., prohibitions against employing married women that were particularly prevalent in teaching and clerical work) and the lack of availability of part-time employment.

My suggestion points to how estimates of the econometric relationship between economic development and female participation, like those Olivetti has produced in this comprehensive analysis, might be used in an analogous fashion to highlight the role of noneconomic factors in accounting for international differences in female labor force participation. Findings reported by Lundberg (2010) suggest that this would be a useful direction. In a cross-sectional graph of the U, where the data points (countries) are labeled, she notes that communist countries (China and Vietnam) lie above the U, suggesting that they have higher than expected female participation rates, given their levels of economic development, while “Muslim countries in the Middle East with many sequestered women drag down the center of the ‘U’” (127). This could be formalized in future work, with the estimated U used to develop a measure of expected versus actual participation, given the level of economic development. The difference between the two might make for an interesting shorthand summary measure of the role of political and cultural factors.

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