

Economic Self-Reliance and Gender Inequality between U.S. Men and Women, 1970–2010¹

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Women have become increasingly economically self-reliant, depending more on paid employment for their positions in the income distribution than in the past. We know little about what happened to men, however, because most prior research restricts changes in self-reliance to be “zero-sum,” with women’s changes necessitating opposite and proportionate changes among men. This article introduces a measure that allows asymmetric changes and also incorporates multiple population subgroups and income sources beyond couples’ labor earnings. Using Current Population Survey data, the authors find that women’s self-reliance increased dramatically, as expected, but men’s declined only slightly. The authors decompose these trends into changes in family structure and redistribution, which increased and decreased self-reliance, respectively, for men and women, though more for women. Labor market shifts, by contrast, were asymmetric and opposing, reducing men’s self-reliance much less than they increased women’s. The authors’ approach opens opportunities for new insight into both gender inequality and the income attainment process.

Gender differences in employment and earnings are substantial and widely documented across racial and ethnic groups (England and Farkas 1986; Pada-

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vic and Reskin 2002; Snipp and Cheung 2016). Yet because men and women share resources within families, their individual labor market experiences do not fully determine their positions in the stratification system (Goldthorpe 1983; Erikson 1984). In this article, we study one important dimension of the stratification system: family income. Intuitively, it might seem like gender disparities in employment and earnings would largely exclude women from the upper regions of the family income distribution, but they do not. Some married women make it to the top because of their husbands' earnings.² At the other end of the economic spectrum, some low-earning and nonearning women obtain important income supports from the government.

Understanding how individuals attain their resources—whether through their own employment, their partners' employment, or other support mechanisms like government transfers—is a central concern of stratification research. We study this income attainment process because, as Sørensen and McLanahan (1987, p. 661) state, "how individuals attain resources may have consequences for both individual family members and the power structure within the family and for relations between women and men in general." In other words, men's and women's life chances likely depend not only on the absolute amount of income at their disposal but also on the sources of this income, at both the microlevel of individual families and the macrolevel of society at large.

Scholars of gender inequality have generated a substantial body of empirical research that addresses how men and women attain their incomes by measuring what is termed the "dependency ratio," or the share of couples' total earnings contributed by each partner. Wives (and husbands) are considered more economically dependent when their own labor earnings compose a smaller share of the couples' total earnings.³ This measure has been used extensively to answer questions related to bargaining and power dy-

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² Of course, wives may not have equal access to couples' resources. Data limitations have largely precluded studies of how incomes are shared within families, limitations we also face (Lundberg and Pollak 1996; exceptions include Vogler and Pahl [1994]).

³ Sometimes, linear transformations of this share are investigated instead. For example, rather than studying $dep_1 = (\text{wife's earnings})/(\text{wife's earnings} + \text{husband's earnings})$, researchers might study $dep_2 = (\text{husband's earnings} - \text{wife's earnings})/(\text{wife's earnings} + \text{husband's earnings})$; here, $dep_2 = 1 - 2 \times dep_1$ (Sørensen and McLanahan 1987).

namics within marriage, particularly in terms of how women's economic dependency predicts the division of household labor, domestic abuse, infidelity, marital satisfaction, marital stability, and the consequences of marital dissolution.⁴ In short, scholars have studied dependency ratios to illuminate the individual-level consequences of within-family inequality.

Complementing these studies of microlevel dynamics, studies of macrolevel variation in dependency ratios have provided insight into broader patterns of gender inequality. Macrolevel studies reveal that women's dependency has declined over time within the United States, yet it remains widespread across racial and ethnic groups, and it differs substantially across countries (Bianchi, Casper, and Peltola 1999; Raley, Mattingly, and Bianchi 2006; Winslow-Bowe 2009). These studies are important insofar as men's and women's differential reliance on their own labor earnings for their positions in the income distribution "perpetuates women's subordinate position . . . in society at large"—not only within individual marriages—and "reinforces women's weak position in the labor market" by reducing their bargaining power in the eyes of employers (Bianchi et al. 1999, p. 5; Hobson 1990, p. 236).

Yet two key macrolevel questions remain unanswered by studies that use dependency ratios to understand how individuals attain their incomes. First, has women's rising reliance on their own labor earnings been matched by commensurate declines among men? There is no doubt that paid labor plays an increasingly important role in how women attain their incomes in the United States, given the declining gender earnings gap and the growing share of couples' total earnings contributed by wives. But we know little about what has happened to men, in part because the dependency ratio forces changes among men and women to appear symmetric (e.g., if wives' share of couples' earnings increases 10 points from 30% to 40%, then husbands' share must decline 10 points from 70% to 60%). That is, when women become less dependent, men must become more so. Some popular discussions of the "rise of women" also imply that women's gains entail men's losses (Rosin 2012). And a similar logic operates in discussions of black women's relatively high labor force participation rate, which, rightly or wrongly, many scholars attribute to black men's relatively low rate (Winslow-Bowe 2009).

Second, to what extent has women's rising reliance on their own labor earnings reflected changes in their own employment and earnings, and to what extent has it reflected changes in family structure (e.g., declining marriage rates) and shifts in redistribution (e.g., declining unconditional gov-

⁴ The studies on these topics are too numerous to cite, but see, e.g., Holden and Smock (1991), Brines (1994), Farmer and Tiefenthaler (1997), Poortman (2000), Bittman et al. (2003), Sørensen (2003), Gupta (2007), Kanji and Schober (2014), and Munsch (2015).

ernment cash transfers)? We know little about how these non-labor market changes have shaped women's income attainment process, or, indeed, how they have shaped men's, because the dependency ratio focuses on married couples (rather than the larger population of working-age adults, including single and cohabiting people), labor earnings (excluding sources of income that cannot be easily partitioned between partners, such as government transfers and refundable tax credits), and gender inequality within couples (missing inequalities across families; for example, the dependency ratio would indicate complete equality in a population split evenly between male and female sole-earner families—since half of all people would depend completely on male earners and half would depend completely on female earners—but it would miss the fact that female sole-earner families tend to have lower incomes than male sole-earner families).

To supplement the important body of research on the dependency ratio, then, and to address the macrolevel aspects of the income attainment process that remain outside of the ratio's more microlevel framework, we introduce a new, simple measure of how individuals attain their incomes, which we call *economic self-reliance*: the population correlation between own labor earnings and total family income, calculated separately for men and women (as we describe fully in the next section). This measure captures the degree to which, in the aggregate, individuals' own employment experiences determine their positions in the family income distribution, a core dimension of the macrolevel stratification system. Because we use the correlation to measure the income attainment process separately for women and men, it helps us answer our first question about the potentially asymmetric evolution of self-reliance by gender, in terms of both the direction and degree of change. It also helps us answer our second question about the potential role of non-labor market contributions (in addition to labor market contributions) to the income attainment process, for men and for women, by allowing the inclusion of nonmarried adults and nonlabor income sources.

Using our new measure, we make three contributions to the literature. First, we examine gender asymmetries in the role of paid labor in determining individuals' places in the income distribution, focusing on time trends between 1970 and 2010. While the dependency ratio constrains men's and women's self-reliance to evolve symmetrically, in a "zero-sum" fashion, a considerable body of evidence suggests that women's increasing economic self-reliance has not been mirrored by commensurate declines among men. We know, for instance, that men's earnings continue to exceed women's, especially among couples, and that women's entrance into market work has not been matched by men's exit or assumption of equivalent domestic work (Light 2004; Goldscheider, Bernhard, and Lappegard 2015). The result has been called a "stalled," "unfinished," or "incomplete gender revolution" (Esping-Andersen 2009; England 2010; Gerson 2010; Pedulla and Thebaud

2015). Thus men's income attainment process may have remained quite stable, with the pathway toward a low or high income continuing to flow primarily through their own employment experiences. This leads us to expect an "asymmetric" pattern of change, in which women's reliance on their own labor earnings has come to resemble men's traditionally high self-reliance more than men's self-reliance has changed to resemble women's traditionally low self-reliance.

In our second contribution, we broaden the scope of prior research by incorporating increasingly important population subgroups (not only married but also single and cohabiting working-age adults) and income sources (not only labor earnings but also nonlabor income). Taking this comprehensive approach to measuring the income attainment process, we can answer our second question concerning the different sources of change in men's and women's self-reliance. We do so by making a third contribution, which is to introduce a new decomposition that delineates how temporal changes in economic self-reliance relate to trends in the labor market (including changing employment rates and earnings distributions), the family (including changing marriage and cohabitation patterns and changing associations between partners' earnings), and redistribution (including changing government taxes and transfers), again for men and women separately. We further explicate these contributions in the following sections.

In sum, we address the two macrolevel questions of how men's and women's income attainment processes each evolved from 1970 to 2010 and how they did so differentially. Using data from the Current Population Survey (CPS), we find that, on net, men's self-reliance decreased very little while women's self-reliance increased dramatically—though room remains for further change. This asymmetry is apparent whether or not we include single adults (although when we include them, we reveal how rising singlehood increased self-reliance for both men and women). Moreover, even when the direction of change was similar for a specific correlate of men's and women's economic self-reliance (such as rising singlehood), the magnitude of change tended to be larger for women. In short, rather than meeting in the middle, between 1970 and 2010 women moved much more toward men's 1970 pattern of economic self-reliance than men moved toward women's 1970 pattern.⁵

In what follows, we first provide a conceptual description of our measure of economic self-reliance (and gender inequality therein) and we document

⁵ Although these trends may reflect the experiences of some groups more than others, our analysis will capture the degree to which subgroup-specific experiences have combined to shape self-reliance among all women and men. We explore this idea further in the conclusion, where we also provide some disaggregation by racial group to illustrate future research directions.

empirical trends over time. We next discuss a wide-ranging array of factors that could have contributed to these trends. We then introduce our analytic approach in formal terms and describe our data and measures. Finally, we detail our results and their implications for understanding four decades of change in the income attainment process and gender differences in that process.

UNDERSTANDING ECONOMIC SELF-RELIANCE AND ITS TRENDS

Measuring Economic Self-Reliance

We measure economic self-reliance using the correlation between individuals' own labor earnings and their total family income (which we also call "earnings" and "income," respectively, for short), calculated separately for men and women. When self-reliance is high, low-income positions derive from low earnings and high-income positions derive from high earnings. When self-reliance is low, income positions depend heavily on partners, the government, or other nonemployment sources of economic support. Complete economic self-reliance anchors one extreme pole on a spectrum of self-reliance. The other pole is complete other-reliance. Traditionally, states of (nearly) complete economic self-reliance have characterized men's economic situations, whereas states of (nearly) complete other-reliance have characterized women's, especially white women's.

Crucial to the substantive interpretation of our measure of economic self-reliance is its sensitivity to the full population distribution of income, as well as to the full population distribution of income-pooling and income-transferring patterns. To illustrate this central fact, we describe several hypothetical examples of earnings and income distributions to reveal how manipulating different sources of income (such as government transfers and partner earnings) affects the self-reliance correlation. We then discuss the normative interpretation of the self-reliance correlation, given the properties illustrated in the hypothetical examples.

Let us first consider a hypothetical population in which everyone is single, no one receives nonlabor income (e.g., government transfers), and the earnings distribution is the same for men and women. In this population, everyone's family income is exactly equal to his or her labor earnings and both men and women are fully self-reliant (i.e., the correlation is equal to one for men as a group and for women as a group). Next, imagine there is some government redistribution from the highest earner to the lowest earner within each gender group, such that the highest earner's income, after redistribution, is now on par with the income of the earner immediately below her or him, and the income of the lowest earner is now on par with the income of an earner above her or him. Income (and income rankings) will

then differ from earnings (and earnings rankings), and self-reliance will decline (albeit slightly in this example). Positions in the income distribution will depend less on labor earnings than when there were no transfers, with the low earner moving up the income distribution and the high earner moving down.

To understand the impact of partners' earnings on the self-reliance correlation, let us return to the original hypothetical population, in which all income is derived from labor earnings alone, the earnings distributions of men and women are exactly the same, and everyone is single. Now imagine that the highest-earning man marries the lowest-earning woman, pooling income.⁶ Further assume that there is a large gap in the earnings of these two individuals. It should be obvious that this partnership reduces self-reliance for the lowest-earning woman, whose (low) earnings position no longer corresponds to her (high) income position (attained via her partner's earnings). This partnership also factors into the self-reliance correlation among all women, which declines. By contrast, the highest-earning man maintains his position at the top of the men's earnings and income distributions, resulting in little change in either his own self-reliance or the self-reliance correlation among all men.

Less obviously, but just as importantly, income pooling among partners also shapes self-reliance among single people, even though their own incomes continue to equal their labor earnings. In our hypothetical example, the male partner's earnings (which we denote now as A) of the lowest-earning woman (whose earnings we denote as B) will be incorporated into the women's family income distribution through her total family income ($A + B$). This quantity now exceeds the income of the single woman at the top of the female earnings distribution (whose earnings, in our hypothetical scenario, also equal A). Thus, this highest-earning single woman now experiences a mismatch between her position at the top of the women's earnings distribution and her position below the top of the women's income distribution. More generally, such mismatches between earnings and income positions decrease self-reliance among single women, because those at the top of the earnings distribution become unable to reach the top of the family income distribution by relying on their own earnings alone. Meanwhile, the opposite holds true among men: when the female partner's earnings are introduced into the men's income distribution, they have little impact because they are so low (i.e., B is much smaller than A). Men's labor earnings will continue to largely determine their places in the men's income distribution, among both single and partnered men, and men's self-reliance will remain high.

⁶ We discuss male-female partnerships because they are the most common in the population. Future research should focus on other types of partnerships as well.

In this example, the resulting gender difference in self-reliance correlations is due entirely to a gender difference in partnership patterns along conventional lines—a high-earning man pooling income with a low-earning woman—and not to any gender difference in earnings. For a final illustration, we consider the reverse scenario: a gender difference only in earnings and not in partnership patterns.

Suppose a population is composed of equal numbers of male and female sole-earner partnerships (i.e., couples with only one earner), where, again, the male earners enter the female income distribution through women's partner earnings, and vice versa. If the male sole-earners earn substantially more than the female sole-earners (i.e., there is a gender gap in earnings), then the female sole-earners will find themselves ranked at the bottom of the women's income distribution even though they are at the top of the women's earnings distribution. That is, they cannot rely on their own earnings alone to achieve the same positions in the income distribution as the male sole-earners, who are at the top of the men's earnings and income distributions. In determining the degree of gender equality in self-reliance, then, it will matter not only whether there are the same number of sole-earner families with female versus male earners (which will equalize the number of women and men who contribute 100% of couple earnings) but also whether female and male sole-earner families have comparable incomes, something that the dependency ratio does not capture (Oppenheimer 1997).

It should be clear, in sum, that in these scenarios and numerous others, our measure of economic self-reliance is sensitive to the full population distribution of income, as well as to the full population distribution of income-pooling and income-transferring patterns. As such, it incorporates a strict, but nonetheless comprehensive and realistic, definition of gender inequality in the income attainment process. On the flip side, gender equality is achievable through a great variety of pathways, as long as distributional patterns are equivalent by gender at the macrolevel (e.g., equivalent numbers of male and female sole-earner families with equivalent earnings distributions). Gender equality at the microlevel within individual relationships is unnecessary, although it certainly is not precluded. Our measure, in short, permits a normatively flexible interpretation of self-reliance and gender equality in self-reliance, to which we now turn.

Unlike gender equality in (adjusted) wages, which some might view as an unambiguous normative goal, gender equality in high self-reliance has both costs and benefits. To the extent that gender inequality in economic self-reliance reflects men's greater bargaining and earnings power, increasing women's self-reliance might be beneficial for society and individual women (England and Farkas 1986; Orloff 1992). At the same time, low levels of self-reliance are beneficial in many circumstances. Income pooling within families can serve as a private form of insurance against the risks of income loss

due to unemployment, precarious employment, or ill health (Treas 1987; Oppenheimer, Kalmijn, and Lim 1997; Cherlin 2000); it can enable caring labor (Becker 1981); and, of course, it can boost absolute income levels (Light 2004; Winslow-Bowe 2006). Because self-reliance is normatively ambiguous (i.e., both low and high self-reliance can be viewed positively under various conditions), our approach to gender equality values equal levels of self-reliance for men and women, whatever those levels may be and however they are achieved, rather than equally high levels of self-reliance per se. Indeed, a diversity of income-pooling and income-transferring options in society as a whole, equally attainable by men and women, can enhance equality within economically unequal households by providing exit options (Breen and Cooke 2005).

Finally, economic self-reliance is normatively ambiguous in the further sense of depicting experiences of both affluence and poverty. A poor person can be highly self-reliant if his or her low position in the income distribution is determined primarily by his or her own (low) labor earnings; that is, high levels of self-reliance can coexist with low levels of economic well-being. Likewise, low levels of self-reliance do not necessarily indicate low levels of economic well-being. A nonearning woman whose partner takes home a large paycheck, for example, will have low self-reliance but high income. Moreover, her self-reliance will be lower than that of another nonearning woman whose partner, like herself, has no earnings. Self-reliance (similar to economic dependency) does not reflect absolute economic circumstances or individual ability to “make ends meet.” Nor, for that matter, does it reflect absolute economic independence, since reliance on one’s own labor earnings entails dependence on the market. These other meanings of self-reliance are extremely important, but our analysis focuses on self-reliance as the process by which men and women attain their positions in the economic stratification system, specifically as a result of their own employment experiences.

Trends in Economic Self-Reliance

Moving from hypothetical to observed patterns, here we provide a brief overview of trends in men’s and women’s self-reliance correlations from 1970 to 2010. We then discuss the set of factors that may help to explain these trends. (In later sections, we formally introduce our analytic methods and fully describe our data and measures.)

As illustrated in figure 1, which uses March CPS data to document earnings and income distributions among working-age adults, ages 25–54, men’s self-reliance was much higher than women’s in our base year of 1970. The steep slope connecting men’s positions in the earnings and income distributions reflects their high self-reliance. Low-earning men were low-income men, and high-earning men were high-income. In contrast, the slope connecting

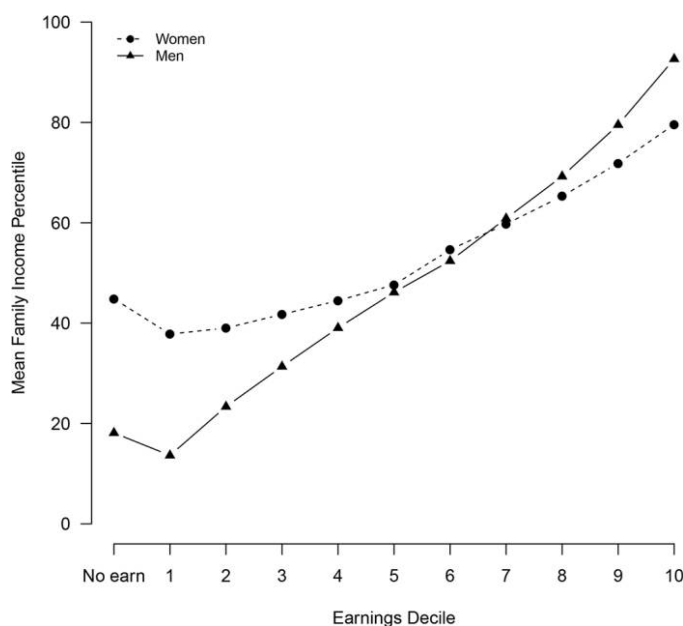


FIG. 1.—Visualizing economic self-reliance in 1970: Mean income percentile in each earnings decile, by gender. Source: CPS data.

women's positions in their earnings and income distributions is shallow, indicating low self-reliance in 1970. This was particularly true for women with no or below-median earnings, because they relied heavily on their partners' earnings and government supports to attain their positions in the family income distribution. But it was also true for high-earning women: the earnings-income relationship was weaker for these women than for high-earning men, because the gender earnings gap meant that they ranked lower in the family income distribution than high-earning men, even when both were single.⁷

Taking the ratio of women's to men's economic self-reliance correlations as our measure of gender equality, figure 2 shows that this ratio increased 74% between 1970 and 2010. This increase was larger than the increase in gender equality in earnings, since self-reliance does not account only for the changing labor market dynamics that generate different earnings between full-time, year-round male and female employees (whose earnings ra-

⁷ In fact, because we adjust our income measure for family size, the gender difference in family income ranks at the top of the distribution is reduced substantially relative to what the gap would be if we did not adjust for family size. Because high-earning women were more likely to be single and childless than high-earning men, men's ranks were lowered more by the family size adjustment than women's ranks.

Economic Self-Reliance and Gender Inequality

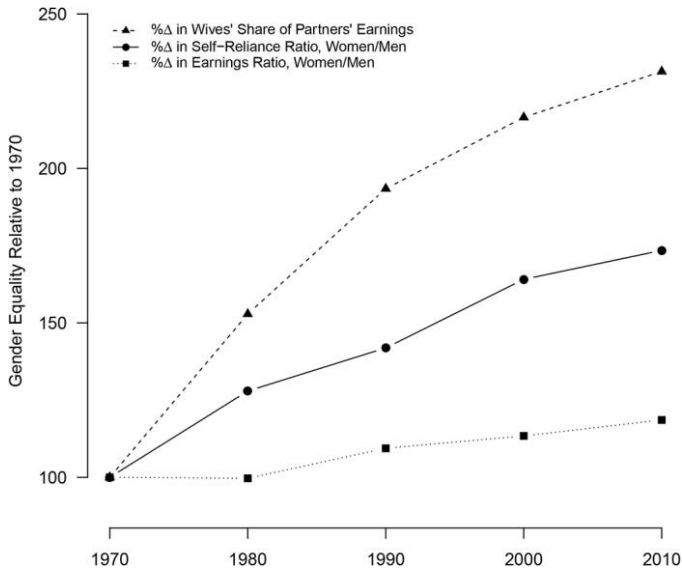


FIG. 2.—Gender equality trends between 1970 and 2010. Source: CPS data

tio is shown in fig. 2). It also accounts for changes in the pooling of earnings in families, joint labor supply decisions in families, and the redistribution of incomes across families privately and by the state. In contrast, gender equality in self-reliance increased less than gender equality in the traditional dependency ratio, which measures the average share of couples' total earnings contributed by the wife (also shown in fig. 2). Although the dependency ratio captures dynamics only among couples while the self-reliance ratio includes single adults, this population difference is not the primary driver of the difference in these two measures' trends. Self-reliance changed similarly whether single individuals were included or excluded (table 1, panels A and B).

Instead, gender equality in economic self-reliance increased less than gender equality in the dependency ratio because men's and women's economic self-reliance evolved asymmetrically (fig. 3). Men's self-reliance—the denominator in the ratio of women's to men's self-reliance—declined only slightly, dropping 3% from .86 to .83, while women's self-reliance increased substantially, rising 68% from .37 to .62 measured on a correlation scale from -1 to 1 (table 1). Despite these changes, a correlation of .62 reveals that women still rely on partners and other nonlabor income (like government supports) for their economic positions to a considerable degree, and certainly more than men do.

In sum, while other approaches to studying economic stratification among men and women provide crucial insights into dynamics within couples (e.g.,

TABLE 1
CHANGE IN ECONOMIC SELF-RELIANCE BY GENDER

	Women	Men
A. Full Population		
Self-reliance, 1970 . . . . .	.37 (.366, .374)	.86 (.861, .864)
Self-reliance, 2010 . . . . .	.62 (.617, .623)	.83 (.832, .835)
Raw change, 1970–2010 . . . . .	.25 (.246, .255)	−.03 (−.031, −.027)
% change, 1970–2010	67.66 (65.860, 69.631)	−3.35 (−3.610, −3.080)
B. Partnered Population		
Self-reliance, 1970 . . . . .	.42 (.411, .419)	.86 (.855, .858)
Self-reliance, 2010 . . . . .	.61 (.605, .611)	.82 (.823, .827)
Raw change, 1970–2010 . . . . .	.19 (.188, .198)	−.03 (−.034, −.029)
% change, 1970–2010	46.49 (44.963, 48.029)	−3.72 (−4.002, −3.434)

SOURCE.—CPS data.

NOTE.—Bootstrapped 95% intervals are in parentheses.

the dependency ratio) or in the labor market (e.g., the gender wage gap), our measure of self-reliance captures differences in men's and women's income attainment processes across the full distributions of earnings and income. Because our approach incorporates a wide variety of population subgroups, we avoid studying select distributions (e.g., distributions among only married individuals or only employed individuals). Still, our results are more heavily influenced by some groups (e.g., whites) than by others (e.g., racial/ethnic minorities), because in this article we present the initial application of our approach to the full population of working-age U.S. adults. Future research should examine intersections and extensions beyond what we study here, as we discuss further in the concluding section.

EXPLAINING TRENDS IN ECONOMIC SELF-RELIANCE

We study the family, the labor market, and the state as intersecting domains jointly affecting changes in men's and women's self-reliance from 1970 to 2010. Changes in the family and labor market alter self-reliance in two ways. First, they change the subgroup *composition* of the population, shifting people from subgroups with relatively low economic self-reliance (e.g.,

Economic Self-Reliance and Gender Inequality

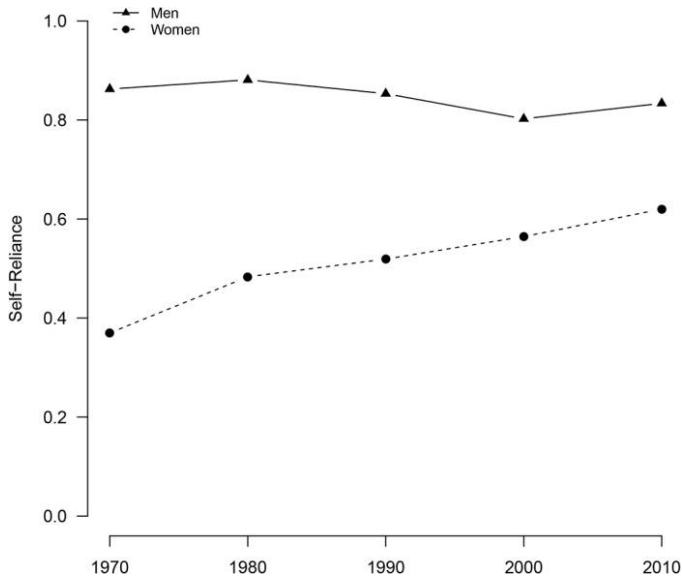


FIG. 3.—Asymmetric trends in economic self-reliance by gender between 1970 and 2010. Source: CPS data.

the group of married, nonemployed women) to subgroups with relatively high economic self-reliance (e.g., the group of single, employed women). Second, they change self-reliance within subgroups, by, for instance, increasing self-reliance among married, employed women when their earnings rise relative to the earnings of their male partners, as suggested by an increasing dependency ratio as well. Changes in redistribution also alter self-reliance within subgroups, as they change the association between earnings and income (e.g., when government transfers to nonearners decline, their self-reliance will increase).⁸ We term these within-group changes in the earnings-income relationship *associational* changes.

In our analysis, we split the population into five subgroups, based on (a) partnership, separating single from partnered individuals, with partnered individuals including married and cohabiting adults, and (b) employment,

⁸ It is also possible for changing redistribution to alter self-reliance by changing the subgroup composition of the population (in addition to changing the earnings-income association within subgroups) by altering people's incentives to marry/remain married or obtain paid employment/remain employed. Our analysis will capture these indirect effects of redistribution in the family and labor market components of self-reliance change rather than attributing them specifically to redistribution.

counting zero, one, or two earners between the focal person and his or her partner.⁹ We examine both compositional and associational shifts across and within these five subgroups over time. For instance, we examine how shifts in self-reliance are associated with a growing share of single, earning women in the population as well as changes in this subgroup's earnings-income association.

Compositional Change: Family Structures and Employment

Since 1970, as people have increasingly delayed, exited, and forgone marriage, a greater share of the population has come to depend on their own labor earnings to support their positions in the income distribution (Oppenheimer 1988, 1997). Cohabitation, which has become more common as marriage has become less so, should have partially offset the effects of declining marriage prevalence (Smock 2000; Smock and Manning 2004). Yet even accounting for cohabitators, the share of single adults has increased over time.¹⁰ We capture how increasing self-reliance has resulted not only from increasing earnings equality within couples but also from increasing diversity in family structures, as some people pool earnings with a partner while others live on their own.¹¹

At the same time as the partnered share of the population declined for both men and women, the employed share of the population changed differentially for men and women. Since 1970, labor force participation rates among women have increased substantially, particularly among women with children. In 1970 just under 30% of mothers ages 25–54 with young children (under age 5) were in the labor force, compared to over 60% by 1995; for mothers with older children (ages 5–18), labor force participation rose from under 60% to 80% (Cotter, England, and Hermsen 2007, p. 4). Over the same period, labor force participation rates among working-age men have declined, though to a lesser extent, particularly if the incarcerated popula-

⁹ This results in five groups because 2 partnership groups \times 3 earner groups = 6, but we must subtract one because single people cannot have a partner earner.

¹⁰ The pace of change has differed across demographic subgroups, leaving studies of married couples to capture an increasingly select—older, more white, more highly educated—portion of the population (McLanahan and Casper 1995; Goldstein and Kenney 2001). Thus, an additional benefit of our measure of economic self-reliance is that, by including single and cohabiting people, it reflects the experiences of a broad population.

¹¹ Family change and economic change are often intertwined; e.g., increasing shares of single people may partly reflect, from an economic perspective, declining male wages and, from a family perspective, increasing fertility control that enables women to obtain higher education and support their own households. Our demographic approach analyzes changes in the family composition of the population and, thus, the proximate role of rising singlehood. It includes changes in family structure that occurred, in a more distal sense, as a result of earlier changes in the economy.

tion is not counted (Western 2006; U.S. Bureau of Labor Statistics 2008). These changes should have increased women's self-reliance and decreased men's, but in an asymmetric fashion. Men's employment shifted less than women's (again, among the noninstitutionalized population); further, men's earnings continued to exceed women's, especially within couples with children. All things considered, women's rising employment may have done little to change the fact that high-earning men tend to be high income while low-earning men tend to be low income.

Associational Change: Partner Associations, Earnings Distributions, and Redistribution

We study three sources of within-group associational change: partner earnings associations, own earnings distributions, and public and private redistribution.

Partner earnings associations.—The association between partners' earnings has grown in the partnered subgroup of the population (Cancian and Reed 1999; Schwartz 2010). This growth likely increased the economic self-reliance of this subgroup. For example, if a high-earning lawyer marries a low-earning legal assistant, pooling their earnings will position both of them toward the top of the income distribution, but self-reliance would be high for the lawyer and low for the legal assistant. Conversely, if two high-earning lawyers marry, both will be highly self-reliant because their income sharing will solidify the correspondence between both partners' positions toward the top of their respective earnings and income distributions.¹² Thus, economic self-reliance among partnered men and women should increase when their earnings become more similar; yet this increase may be small, since the partner earnings association remains low ($r = .10$) and its growth has slowed in recent decades (Larrimore 2014).¹³

As foreshadowed in our discussion of hypothetical populations, rising partner earning associations may shape self-reliance among single adults as well. When, for example, partnerships between high-earning men and high-earning women become more common, the pooling of their earnings makes it more difficult for single high-earning adults to attain positions to-

¹² Increasing associations between partners' earnings reflected multiple processes, not only the entrance of married women into high-earning occupations; also important were the falling negative association between husbands' wages and wives' annual hours worked as well as women's declining propensity to reduce their labor supply after marrying (Blau and Kahn 2007; Schwartz 2010).

¹³ Note that when partners' incomes are very highly correlated, income pooling may not shift self-reliance, since relatively low-earning partners remain relatively low-income families and relatively high-earning partners remain relatively high-income families. We describe this fact further in the appendix.

ward the top of the income distribution.¹⁴ Even among low- and middle-earning men, wives' earnings may have driven a growing wedge between the incomes of partnered men and single men with identical earnings. Indeed, this is exactly the decline in self-reliance that we would expect if men's income attainment process became increasingly influenced by women's paid labor (which, because of sharing within families, shapes the income distribution faced by both single and partnered men).

However, a rising partner earnings association could also increase self-reliance among single people, insofar as it pushes single people toward the bottom of both the income distribution and the earnings distribution, perhaps as a result of increasing positive selection into marriage (Sweeney 2002; Sweeney and Cancian 2004). Given partnered women's increasing employment and earnings, single women's positions in both the income and earnings distributions likely declined relative to partnered women's and, thus, became more aligned with each other.¹⁵ Related dynamics may have occurred among men, but we expect the rising partner earnings association to increase self-reliance more among women than among men, particularly when we include single people in our analyses, because the relative changes in earnings between single and partnered people were more dramatic for women.

Own earnings distributions.—Changes in individuals' own earnings distributions, irrespective of partner earnings, also may have altered self-reliance. In recent decades, the substantial share of zero-earning women diminished and opportunities opened for women to enter highly compensated managerial and professional jobs (Goldin 1990, 2006; Reed and Cancian 2001). Married women's earnings have gained on single women's, particularly among women without children (whose earnings are now slightly higher if married), although mothers continue to earn substantially less than childless women (Budig and England 2001; Juhn and McCue 2017). The overall increase in women's labor earnings, as well as the increase in the dispersion of labor earnings among employed women, should have increased their self-reliance,

¹⁴ To avoid purely mechanical family size effects, wherein two-earner families experience gains relative to singles due to their extra earner but no penalties to account for their greater consumption needs, we adjust incomes for family size (see the data and measures section below).

¹⁵ In other words, because single and partnered women are intertwined in the earnings and income distributions, changes in the groups' self-reliance are interdependent; if one group comes to dominate the top of the income distribution (e.g., via selection or earnings homogeneity), another group falls down the distribution. While the mechanisms generating income at the individual level differ across single vs. married women (e.g., in terms of the processes determining whether, when, and whom someone marries), the mechanisms determining self-reliance at the group level reflect aggregate income-pooling patterns.

better aligning their earnings and income positions at the bottom, middle, and top of the distribution (Blau and Kahn 1997; McCall 2008). For men, the declining gender earnings gap likely decreased their economic self-reliance, as their individual earnings less easily placed them above working women in the income distribution. However, men's self-reliance should have remained high, given continued gender earnings inequalities and large male earnings dispersion.

Redistribution.—Finally, shifts in redistribution may have altered economic self-reliance. By far the largest type of redistribution comes from government taxes and transfers, although private redistribution also exists (e.g., alimony). In our discussion we primarily focus on government redistribution for simplicity, but we use the term “redistribution” to signal both private and public forms of redistribution.¹⁶

State income supports have become increasingly tied to employment, such that the safety net has become stronger for the working poor but weaker for nonearners (Moffitt 2015; Danziger et al. 2016). This leads us to expect, on the one hand, a rise in self-reliance among nonearners, since they have been increasingly left to fend for themselves at the bottom of both the earnings and income distributions. On the other hand, self-reliance among earners may have declined, as government redistribution has elevated the family income positions of low-earning households (e.g., via the Earned Income Tax Credit [EITC]; Tach and Edin 2017). This redistribution-driven decrease in self-reliance could disproportionately affect women, who, given their rising employment and labor earnings at both ends of the distribution, have become more at risk for such redistribution over time. Private redistribution also might have reduced self-reliance among women, as increasing numbers became single mothers eligible for child support. On the other hand, many low-income mothers have children with men who have limited ability to provide support as a result of labor market barriers, incarceration, and multiple family obligations (Cancian and Haskins 2014), which would limit the impact of child support as a form of private redistribution that reduced self-reliance.

Summary and Predictions

In 1970, men's positions in the family income distribution were highly reflective of their labor market experiences, while women's were not. This pattern

¹⁶ Furthermore, we focus entirely on financial transfers. Future research should incorporate in-kind transfers. For example, single mothers may be more economically self-reliant when their parents provide child care than when they must spend more time supervising their children and less time in the labor market. Economic self-reliance may increase, therefore, with reliance on others for noneconomic support.

has changed over time. Among women, declining partnership, rising partner earnings associations, increasing employment, and rising earnings all should have increased economic self-reliance; only changes in redistribution should have decreased women's self-reliance, at least among employed women. Among men, several of these dynamics should have increased their self-reliance as well, including declining partnership and rising partner earnings associations, despite a common expectation that men's self-reliance should decrease when women's increases. To be sure, we expect that changes in men's employment (declining modestly) and earnings (declining relative to women's) should have reduced their self-reliance. But the fact remains that men's employment and earnings shifts would have had to dramatically lower their self-reliance to offset the family forces that likely bolstered their already high self-reliance. Our macrolevel approach helps expose this complex mix of factors, leading us to predict asymmetric changes in self-reliance by gender.

ANALYTIC APPROACH

To study economic self-reliance among working-age U.S. men and women and its family, labor market, and welfare state predictors, we introduce a decomposition analysis. Following many other decomposition-based studies of inequality, our approach provides insight into "what-if" counterfactual questions regarding changes across segments of the population (e.g., what if partner earnings associations remained at their 1970 level), but it does not identify the individual-level causal mechanisms driving changes in economic self-reliance (Cancian, Danziger, and Gottschalk 1993; Western, Bloome, and Percheski 2008; Larrimore 2014).¹⁷ Our analysis, therefore, sheds light on the nature of observed population changes, not the changes that might occur if we intervened in some way and experimentally manipulated family life, labor market behaviors, or government supports. Similarly, we document observed behaviors and the gender inequality in economic self-reliance that they generate, not potential behaviors (e.g., incomes that people might be able to earn, hypothetically, on the basis of their educational attainment; Xie et al. 2003). In sum, we aim to document the implications of people's observed choices for gender inequality in economic self-reliance.¹⁸

¹⁷ The assumptions required for individual-level causal inferences are too strong to be realistic. For example, we would have to assume that family structure changes had no effect on women's earnings distribution.

¹⁸ For example, a given woman's observed earnings might be low, even if her potential earnings are high, if she chooses to work part-time rather than full-time and therefore does not fully capitalize on her earnings capacity. We are interested in the implications

Our correlational measure of economic self-reliance captures the relationship between the level of own labor earnings and level of family income. This approach facilitates our decomposition analysis, which utilizes the fact that family income is the sum of own labor earnings, partner labor earnings, and other income components. Common transformations to increase linearity (since correlations capture linear associations) do not share this feature (e.g., the sum of the ranks of income components is not equal to the rank of the sum, nor is the sum of the logs of income components equal to the log of the sum). In the online appendix, we show that the overall asymmetric trend in self-reliance looks similar in levels, logs, and ranks; the relationship is quite linear in levels; and the results are not sensitive to outliers, although change at the top of the distribution was substantial. Additional results provided in the online appendix also confirm that our gender-stratified analyses do not exclude important between-gender differences.¹⁹ Further, the online appendix discusses decompositions disaggregated into multiple subperiods between 1970 and 2010, as well as the role of parenthood in economic self-reliance trends, inferred, in part, via analyses of potential earnings.

In the remainder of this section, we first define two broad components of self-reliance—compositional and associational components—and detail how self-reliance changes as a function of changes in these two components. As we show in the results section, this relatively crude decomposition provides important insights into the multifaceted nature of self-reliance trends. Yet we also develop a detailed decomposition that describes five substantively defined sources of change: two compositional (one each related to the labor market and the family) and three associational (one each related to the labor market, the family, and redistribution).

To begin, we divide men and women into five demographic groups defined by partnership (separating single people from married and cohabiting people) and employment (counting zero, one, or two earners between the focal person and his or her partner), as mentioned earlier.²⁰ The self-reliance correlation, r , can be written as the sum of each group's association between

of such choices for gender equality in self-reliance. We document the extent to which women's self-reliance has actually changed rather than examining the extent to which it could have changed, hypothetically, if all women fully capitalized on their earnings potential.

¹⁹ As explained in our hypothetical examples, the reason is that even when we study women (men) alone, men's (women's) earnings and incomes are included in the distributions through partner earnings.

²⁰ Our general conclusions are robust to other typologies of subgroups, such as a disaggregation of dual-earner couples into two groups depending on the full-time/part-time employment status of each partner.

own labor earnings and family income, R_g , for $g = 1, \dots, 5$, weighted by each group's population share, π_g :

$$\text{Self-Reliance} = r = \sum_g \pi_g R_g. \quad (1)$$

In our decomposition, we refer to R_g as a measure of "total association" because it captures both the association between earnings and income within each subgroup and the mean earnings and income differences between subgroups, as in a standard analysis of covariance, though one that is translated into correlational units (to facilitate interpretation, since correlations range from -1 to 1 while covariances are unbounded).

We next decompose the "total association" into these within-group and between-group components:

$$\text{Total Association} = R_g = \underbrace{\frac{\sigma_{gxy}}{\sigma_x \sigma_y}}_{\text{Association Within}} + \underbrace{\frac{(\mu_{gx} - \mu_x)(\mu_{gy} - \mu_y)}{\sigma_x \sigma_y}}_{\text{Association Between}}. \quad (2)$$

The first term in R_g is the "association within," which reflects the covariance between earnings, x , and income, y , among members of group g , σ_{gxy} . The second term in R_g is the "association between," which reflects the group's contribution to the between-group covariance between mean earnings and income; $\mu_{gx} - \mu_x$ and $\mu_{gy} - \mu_y$ capture the difference between the group's mean and the grand mean in earnings and income, respectively. In regression terms, when we run separate regressions by group to estimate associations between variables x and y within each group, our slopes will capture regression to the group-specific means. If these means differ, then these slopes will fail to capture inequalities between groups that contribute to the total association between x and y across the whole population. Both the within-group and between-group components of R_g entail a scaling (i.e., dividing by $\sigma_x \sigma_y$, the standard deviations of earnings and income, respectively). The scaling simply ensures that, once summed across groups (and weighted by group shares, as in eq. [1]), the total associations together reproduce the overall correlation r . (Subgroup total associations, R_g , do not themselves range between -1 and 1 , although r does.)

To illustrate the important substantive meaning of these within- and between-group components, we turn to the notion of a truncated distribution. For instance, the within-group earnings-income correlation is high among employed single women, whose incomes consist primarily of their own earnings. Yet their within-group distribution is truncated, in that it misses the

high incomes obtained by women partnered to high-earning men. Thus, a high rank in the employed single women's income distribution does not guarantee a high rank in the income distribution of all women. The between-group component of employed single women's total association adjusts for this divergence. This adjustment is accomplished through the differences between the mean earnings and incomes of employed single women (i.e., their group means) and the mean earnings and incomes of all women (i.e., the grand means). When discussing our results, we introduce a grand-mean-adjusted version of the total association that captures this within- and between-group heterogeneity (or lack thereof) in a single statistic that can be easily interpreted on a correlational scale.

To study time trends, we decompose changes in economic self-reliance between time t and baseline time b , $r^t - r^b$, into contributions from the two main components of change: changes in the total associations, R_g , and changes in the population composition, π_g . We study women and men separately, thus allowing their patterns to evolve asymmetrically:

$$\begin{aligned} \text{Change in Self-Reliance} &= r^t - r^b \\ &= \underbrace{\sum_g (\pi_g^t - \pi_g^b) R_g^t}_{\text{Compositional Change}} + \underbrace{\sum_g \pi_g^b (R_g^t - R_g^b)}_{\text{Associational Change}}. \quad (3) \end{aligned}$$

Substantively, given our five subgroups, compositional change captures the roles of changing family structure (in terms of the shares of people who are single vs. partnered) and changing labor force participation (in terms of the shares of people who are employed or have an employed partner). Associational change, in turn, captures the three factors that we discussed in the prior section: changes in partner earnings associations, redistribution, and own earnings distributions.

To complete this more detailed, five-part decomposition (two types of compositional change and three types of associational change), we draw on three facts: (a) total family income, y , is the sum of own labor earnings, x , partner labor earnings, p , and other nonlabor income, o ; (b) the covariance of the sum of variables equals the sum of the covariances of each of the pairs; and (c) the mean of the sum of variables equals the sum of the means of the variables.²¹

²¹ $\text{Cov}[x, y] = \text{Cov}[x, (x + p + o)] = \text{Var}[x] + \text{Cov}[x, p] + \text{Cov}[x, o]$ and $E[x + p + o] = E[x] + E[p] + E[o]$.

Thus:

$$\begin{aligned}
 \text{Change in Self-Reliance} &= \gamma^t - \gamma^b \\
 &= \underbrace{\sum_g (\pi_g^{t,F} - \pi_g^b) R_g^t}_{\text{Change in Family Structure}} + \underbrace{\sum_g (\pi_g^t - \pi_g^{t,F}) R_g^t}_{\text{Change in Labor Force Participation}} \\
 &\quad + \underbrace{\sum_g \pi_g^b \left(\frac{\sigma_{g,xp}^t}{\sigma_x^t \sigma_y^t} - \frac{\sigma_{g,xp}^b}{\sigma_x^b \sigma_y^b} \right) + \pi_g^b \left(\frac{(\mu_{gx}^t - \mu_x^t)(\mu_{gp}^t - \mu_p^t)}{\sigma_x^t \sigma_y^t} - \frac{(\mu_{gx}^b - \mu_x^b)(\mu_{gp}^b - \mu_p^b)}{\sigma_x^b \sigma_y^b} \right)}_{\text{Change in Partner Earnings Association}} \\
 &\quad + \underbrace{\sum_g \pi_g^b \left(\frac{\sigma_{g,xo}^t}{\sigma_x^t \sigma_y^t} - \frac{\sigma_{g,xo}^b}{\sigma_x^b \sigma_y^b} \right) + \pi_g^b \left(\frac{(\mu_{gx}^t - \mu_x^t)(\mu_{go}^t - \mu_o^t)}{\sigma_x^t \sigma_y^t} - \frac{(\mu_{gx}^b - \mu_x^b)(\mu_{go}^b - \mu_o^b)}{\sigma_x^b \sigma_y^b} \right)}_{\text{Change in Redistribution}} \\
 &\quad + \underbrace{\sum_g \pi_g^b \left(\frac{\sigma_{g,xx}^t}{\sigma_x^t \sigma_y^t} - \frac{\sigma_{g,xx}^b}{\sigma_x^b \sigma_y^b} \right) + \pi_g^b \left(\frac{(\mu_{gx}^t - \mu_x^t)^2}{\sigma_x^t \sigma_y^t} - \frac{(\mu_{gx}^b - \mu_x^b)^2}{\sigma_x^b \sigma_y^b} \right)}_{\text{Change in Earnings Distributions}}.
 \end{aligned} \tag{4}$$

The term $\pi_g^{t,F}$ in equation (4) is an adjusted weight for subgroup g . It reflects the change in family structure between time b and time t but holds constant the distributions of number of earners within each family structure at their baseline time b levels (i.e., it ensures that the distribution of earner-type groups among couples and among singles is fixed at the 1970 level, while the relative share of partnered vs. single adults changes between 1970 and 2010).²² Each of the three associational sources of change includes a within-group change and a between-group change (as discussed in relation to eq. [2]). In the appendix, we describe how to interpret components of this decomposition in detail.

Taken together, these five components reflect the family (first and third components), labor market (second and fifth components), and redistribu-

²² We define the adjusted weights as follows:

$$\pi_g^{t,F} = \begin{cases} \frac{p_t}{p_b} \pi_g^b & \text{if } g \text{ is an unpartnered group} \\ \frac{1 - p_t}{1 - p_b} \pi_g^b & \text{if } g \text{ is a partnered group,} \end{cases}$$

where p_b is the share of people who were unpartnered at baseline time b and p_t is the share of people who were unpartnered at time t .

tive (fourth component) sources of asymmetric change in the income attainment processes of women and men, and thus asymmetric change in their self-reliance. We estimate these sources of change using CPS data (described below). To reflect sampling uncertainty in our estimated quantities of interest (which are nonlinear combinations of multiple parameter estimates, e.g., estimated means, variances, and covariances), we use a nonparametric bootstrap approach.²³ Our tables contain 95% bootstrap intervals; when an interval does not include zero, then in a statistical testing framework we can claim that we reject the null hypothesis of zero at the 5% level. Because we analyze very large samples (described below), we consistently reject this null. We nevertheless include bootstrap intervals to quantify the extent of our uncertainty.

DATA AND MEASURES

We analyze data from the Integrated Public Use Microdata Series (IPUMS) distribution of the Current Population Survey (CPS) Annual Social and Economic Supplement (Flood et al. 2017). Surveys from 1970 to 2012 refer to income during the years 1969–2011. We summarize trends over this period by comparing time points that we call 1970 and 2010; each time point pools three years of data (e.g., the 2010 time point pools information from 2009–11, survey years 2010–12). To study individuals' reliance on their own labor earnings for their positions in the family income distribution, we exclude individuals under 25 and over 54 in order to limit biases associated with school attendance and retirement.²⁴

Our unit of analysis is the individual, but individuals are located within families to calculate their total family incomes. The Census Bureau defines a family as a group of people residing in the same household related by marriage, birth, or adoption. We add cohabitators to the census-defined family, identifying cohabitators using the method developed by Casper and Cohen (2000).²⁵ If we instead consider only married people to share families (and thus treat cohabitators as single), our overall findings regarding self-reliance

²³ We resample with replacement to obtain 1,000 bootstrap samples. For each $b = 1, \dots, 1,000$, we calculate bootstrap versions of our statistics of interest. We take the 2.5th and 97.5th percentiles of each bootstrap distribution to estimate 95% intervals.

²⁴ In additional analyses, we adjusted the age distribution of the 2010 population to match the age distribution of the 1970 population (because earnings and income vary with age and because the age structure of the population has changed across time). We found that our results were not sensitive to the changing age distribution and therefore report results unadjusted for age.

²⁵ Beginning in 1995 cohabitators were identified directly in the CPS data. For consistency throughout our study period, we use indirectly identified cohabitators throughout our analysis, but switching to directly observed cohabitators for the later years leaves our results unchanged.

trends remain unchanged, for both the full population and the partnered population. Unsurprisingly, the role of family structure change in explaining self-reliance change is larger if we include only married people in the partnered group, while the role of partner association change is smaller.²⁶ Multiple families may reside in a single household; we include all age-eligible subfamilies and secondary families in our analyses. All analyses are weighted using person-level CPS weights to adjust for differential sample selection probabilities, failure to obtain interviews, and mismatch between CPS-estimated and census-observed (or projected) distributions by age, sex, and race.²⁷

Family income is the sum of all labor market earnings (including wages and salaries as well as self-employment earnings from farm and nonfarm businesses) and receipts from government transfers and other sources such as nongovernment pensions from all family members (including cohabitators).²⁸ To these CPS-provided components of family income we add tax liabilities estimated using the National Bureau of Economic Research's TAXSIM program (Feenberg and Coutts 1993). We include all federal income tax liabilities (including refunds from the EITC and child tax credit) and payroll taxes.²⁹ In our analyses, we split family income into three components: an individual's own labor earnings, his or her partner's labor earn-

²⁶ Family structure plays a larger role because when we treat cohabitators as single, we have a larger compositional shift from partnered to nonpartnered groups over time. Partner associations play a smaller role because (a) cohabitators tend to be negatively paired, relative to the full population (e.g., women have higher than average mean earnings but their male partners have lower than average mean earnings), and (b) this negative pairing declined over time, resulting in a less negative between-group component of the partner association. The growth (from more to less negative) in the between-group component (evident in table 4, panel A, when we treat cohabitators as partnered) is eliminated, then, when we treat cohabitators as single.

²⁷ The CPS excludes institutionalized individuals. Rising incarceration suggests that any declines in economic self-reliance that we find among men might be overstated. The reason is that incarcerated men, if they were instead part of the target survey population, would likely experience high unemployment, low earnings, and low marriage rates (Western 2006). If changes in the welfare state have increasingly left nonemployed individuals without government income supports, then these men would likely be highly self-reliant (left at the bottom of both the earnings and income distributions). For women, rising incarceration suggests that any increases in economic self-reliance that we find may be understated (to the extent that incarcerated women would also be disproportionately poor and highly self-reliant if noninstitutionalized). However, the impact of rising incarceration should have been much smaller among women than among men, since on an absolute scale the increase was much larger among men.

²⁸ Results do not differ substantively when the self-employed and farm sector are excluded.

²⁹ Because TAXSIM does not provide state income tax estimates before 1977, we capture only federal taxes. State and local taxes, including property and sales taxes, have been estimated to account for about 7.4%–14% of taxpayers' incomes depending on the year and income level, with the percentage increasing somewhat between 1980 and 2010 and being somewhat higher for filers with less than \$25,000 in income (in 2010 dollars) than for higher-income filers (Gebeloff 2012).

ings (set to zero for single people), and all other income, including government transfers and taxes as well as all other contributions such as child support and dividends.³⁰

We discuss this third, nonlabor income component as capturing government redistribution, although it includes several other income sources. We do so for two reasons. First, empirically, we calculate that 93% of this nonlabor income component in 2010 derives from taxes and transfers.³¹ Second, practically, our analyses are quite complex even when we split income into only three components (own labor earnings, partner labor earnings, and nonlabor income). Further disaggregation, such as separating tax and transfer income from other nonlabor income, would introduce additional intricacies that would require an even lengthier discussion. Nonetheless, future research could benefit from such an analysis, and our findings regarding the impact of government redistribution should be considered suggestive until that time.³²

To account for economies of scale and the differential consumption needs of small versus large families, we follow other studies and divide income by

³⁰ We count child support received as income but do not deduct child support paid, primarily because of practical limitations (IPUMS-CPS captures the value of child support paid only between survey years 2010 and 2017, missing most of our study period).

³¹ Most of this comes from taxes and FICA (88.5% of nonlabor income); the remaining 4.5% comes from other transfers (welfare/public assistance, Supplemental Security Income [SSI], Social Security income, unemployment payments, worker's compensation, Veterans Administration payments, educational assistance, disability payments, and survivor's benefits). Note that taxes and transfers as a share of other income would be even larger, as would their role in redistributive change over time, if we included older adults and their Social Security income (we return to this point in the conclusion). The 7% of nonlabor income not derived from taxes or transfers comes from multiple sources (retirement income; dividends from stocks and mutual funds; rent from roomers/boarders; money from estates, trusts, or royalties; income from child support payments; income from alimony payments; financial assistance from friends or relatives not living in the same household; labor earnings from other members of the household not the head or spouse; and "other income" [e.g., "small amounts of income from hobbies, severance pay, and foster child care payments"]). Private transfers that are regularly made or publicly enforced (e.g., child support) are captured fairly well in household surveys, but other private transfers are not (Gornick and Smeeding 2018, p. 450). Transfers from high-income, older parents to lower-income children in their 20s and 30s may be particularly underreported, upwardly biasing self-reliance estimates for our working-age population.

³² Mislabeling biases—from labeling our third component "government redistribution" although it includes other income sources—likely work in multiple directions. For example, on the one hand, because most people ages 25–54 with income from capital are relatively high earning, by counting this income under government redistribution, the government may appear less redistributive than it is. On the other hand, to the extent that alimony or child support payments flow primarily from high-earning to low-earning families, by counting this income under government redistribution, the government may appear more redistributive than it is. On net, then, these mislabeling biases may be relatively small.

the square root of family size (including cohabitators).³³ To adjust for inflation, we use the personal consumption expenditures index.³⁴

Nonresponse to income questions in the CPS has increased significantly over time, and very high incomes have been top-coded inconsistently. We address these two issues jointly by multiply imputing values for the completely unobserved items (due to item nonresponse) as well as the partially unobserved items (whose values we know exceed a top-coded level, which are imputed from truncated distributions). We impute each income component iteratively using multivariate imputation with chained equations (MICE; Van Buuren and Groothuis-Oudshoorn 2011). Using MICE ensures that we impute values from the joint distribution of our income components, accounting for the relationships among these components and the uncertainty in these relationships, which is crucial for our analysis, which focuses on the relationships among own labor earnings and other income components. We create 10 fully imputed data sets and combine the results of our analyses on each data set using Rubin's (1987) rules.³⁵ Our analytic sample contains 114,008 men and 132,976 women in 1970 and 178,701 men and 208,338 women in 2010.

RESULTS

Earlier, we described the asymmetry in men's versus women's self-reliance trends between 1970 and 2010 (i.e., from figs. 1, 2, and 3 and table 1). We therefore begin here with our simple, two-component decomposition, which describes how self-reliance trends relate to compositional and associational

³³ Another common approach is to divide by the poverty threshold, but Census Bureau-reported poverty thresholds do not account for cohabitators in many years. Results are unchanged when we instead use OECD equivalence scales. Note also that when we explore the components of family income (i.e., family income = own labor earnings + partner labor earnings + other income), we scale the components so that they sum to the family size-adjusted family income.

³⁴ We focus on income because it is the most important input into other measures of economic well-being, such as consumption and wealth. For example, people spend their income to consume and save their income to build wealth; income is also key to building wealth in housing—the largest component of wealth for most people—via its role in determining mortgages. However, because wealth is also an input into income (in addition to income being an input into wealth), we capture this via income from interest, dividends, rents, royalties, estates, trusts, pensions, and annuities.

³⁵ Specifically, our point estimates are averages over our 10 imputations. To obtain uncertainty estimates, we use a nonparametric bootstrap approach as described in the previous section. We find similar results when, instead of using multiple imputation to handle missingness and top-coding, we use Census Bureau income allocations and drop a consistent set of potentially top-coded observations, focusing our analysis on the bottom 98% of family incomes. We prefer our imputation approach because we include the highest-income observations and better account for uncertainty due to missing values.

changes. Much can be gleaned from changes in these two components alone, but in the second part of the results section, we discuss our more detailed, five-component decomposition, which reveals how self-reliance trends relate to changes in the family, the labor market, and redistribution.

In brief, we find that self-reliance rose substantially among women but declined only slightly among men because, as we show in our two-part decomposition, associations between earnings and income were high for all subgroups of men, regardless of their partnership or earning status, whereas women's associations varied greatly by such statuses. Consequently, there was less room for compositional shifts from one subgroup to another to transform men's overall self-reliance correlation than women's. Further, men's subgroup associations themselves did not decline substantially, even as several of women's subgroup associations did increase dramatically. In our detailed decomposition, we show that women's and men's self-reliance correlations both shifted in the same direction with changes in the family (both increasing) and redistribution (both decreasing). This left labor market shifts as the only factor that could generate symmetric (or zero-sum) trends in self-reliance for men and women: if these labor market shifts had reduced men's self-reliance as much as they increased women's self-reliance, then self-reliance would have evolved more symmetrically than it did. But they did not, resulting in the strongly asymmetric trends in self-reliance for men and women that we observe.

Taken together, our findings reveal that men's earnings continue to dominate the family income distribution; the relationship between earnings and family income is still much more attenuated by partner earnings and redistribution among women than among men. This gender difference is, however, substantially smaller in 2010 than in 1970, because women's self-reliance moved toward men's 1970 level, not because men and women met in the middle.

Compositional and Associational Changes

Our simple, two-part decomposition apportions change in economic self-reliance between (1) changes in the subgroup *composition* of the population, shifting people from subgroups with relatively low levels of economic self-reliance to subgroups with relatively high levels of economic self-reliance, and (2) changes within subgroups in the (total) *association* between own labor earnings and total family income (as in eq. [3]).

Aggregate compositional and associational change.—In the full population, combining single and partnered people, compositional changes increased self-reliance for men and women alike while associational changes increased self-reliance among women but decreased it among men (table 2, panel A). The opposing directions of associational change led overall self-

TABLE 2
DECOMPOSITION OF CHANGES IN ECONOMIC SELF-RELIANCE BY GENDER

	Women	Men
A. Full Population		
Raw change, 1970–2010 . . . . .	.25 (.246, .255)	–.03 (–.031, –.027)
Due to composition . . . . .	.14 (.139, .144)	.05 (.048, .057)
Due to association . . . . .	.11 (.104, .114)	–.08 (–.086, –.077)
% due to composition	56.59 (55.329, 57.900)	–183.66 (–214.007, –164.922)
% due to association	43.41 (42.100, 44.671)	283.66 (264.922, 314.007)
B. Partnered Population		
Raw change, 1970–2010 . . . . .	.19 (.188, .198)	–.03 (–.034, –.029)
Due to composition . . . . .	.09 (.090, .094)	–.01 (–.016, –.009)
Due to association . . . . .	.10 (.096, .106)	–.02 (–.024, –.015)
% due to composition	47.69 (46.380, 49.129)	39.45 (28.352, 51.614)
% due to association	52.31 (50.871, 53.620)	60.55 (48.386, 71.648)

SOURCE.—CPS data.

NOTE.—Bootstrapped 95% intervals are in parentheses. See eq. (3) for the definitions of the compositional and associational components of the decomposition.

reliance to move in different directions among women (increasing) and men (decreasing). They also led to asymmetric magnitudes of change, with women's self-reliance increasing much more than men's self-reliance decreased, since compositional change and associational change were reinforcing among women but offsetting among men. For partnered women (table 2, panel B), the general pattern of change in self-reliance was the same as observed for all women, with compositional and associational changes reinforcing one another to increase self-reliance. For partnered men, however, both the compositional and associational changes were small and negative, leading self-reliance to decline slightly, as it did for all men, but for somewhat different reasons.

To better understand these different reasons, recall that compositional change captures different processes in the full population versus the partnered population. In the latter, compositional change captures changes in employment only (e.g., from one- to two-earner couples), whereas in the full population, compositional change also captures changes in family structure

(from partnered to single households).³⁶ Because compositional change increased self-reliance among the full population of men but decreased it among partnered men, we can conclude that changes in employment decreased men's self-reliance much less than shifts away from marriage and cohabitation increased it. We disentangle these dynamics more fully in the detailed decomposition. But first we describe the broad compositional and associational components of economic self-reliance for each subgroup in the full population of working-age adults.

Subgroup compositional and associational change.—The first six columns of table 3 contain the compositional and associational components for women; the next six columns contain the components for men. The shares of the population in each subgroup are given in the first two columns of the results for women (cols. 1 and 2) and men (cols. 7 and 8); these reflect the compositional weights from equation (1). The next two columns for women (cols. 3 and 4) and men (cols. 9 and 10) contain the earnings-income associations; these are the “total associations” from equation (2), combining within-group and between-group components. The final two columns for women (cols. 5 and 6) and men (cols. 11 and 12) present what we call “standardized associations.” These are the measures of the within-group correlation between earnings and income that are adjusted for mean differences between groups (as mentioned above).³⁷

These standardized associations facilitate the substantive interpretation of self-reliance trends in two ways. First, they are on the correlational scale (ranging from -1 to 1), unlike the total association, which is an additive component of the overall self-reliance correlation (see eq. [1]). Second, they account for the fact that strong earnings-income associations within groups may not accurately capture the earnings-income associations reflected in the full population, as a result of inequality between subgroups in their mean earnings and incomes. (Drawing from an earlier example, single employed

³⁶ By definition the composition of the partnered population cannot change in terms of family structure, because we define family structure change as shifts between being partnered and being single.

³⁷ The formula for calculating these standardized associations is

$$R_g^{\text{std}} = \frac{E[x_{ig}^{\text{std}} y_{ig}^{\text{std}}]}{\sqrt{E[(x_{ig}^{\text{std}})^2] E[(y_{ig}^{\text{std}})^2]}},$$

where x_{ig}^{std} (y_{ig}^{std}) is the labor earnings (total family income) of individual i from subgroup g , standardized to the full population distribution by subtracting the mean earnings (income) across all groups and dividing by the standard deviation of earnings (income) across all groups (rather than standardizing to the group-specific mean and standard deviation, as typical correlations do). Thus, the values of x_{ig}^{std} and y_{ig}^{std} represent the number of standard deviation units above or below the grand mean, not the group mean. By using deviations from the grand mean, we incorporate information about the group's position in the full distributions of x and y .

TABLE 3
COMPOSITIONS AND ASSOCIATIONS BY GENDER, YEAR, PARTNERSHIP, AND EMPLOYMENT

	WOMEN						MEN					
	1970 Share (1)	2010 Share (2)	1970 Assoc. (3)	2010 Assoc. (4)	1970 Std. Assoc. (5)	2010 Std. Assoc. (6)	1970 Share (7)	2010 Share (8)	1970 Assoc. (9)	2010 Assoc. (10)	1970 Std. Assoc. (11)	2010 Std. Assoc. (12)
Partnered:												
Both earning . . . . .	.41 (.410, .412)	.47 (.473, .476)	.56 (.548, .564)	.58 (.577, .592)	.63 (.626, .634)	.67 (.665, .671)	.45 (.445, .447)	.51 (.510, .512)	.62 (.609, .631)	.69 (.682, .697)	.81 (.804, .809)	.81 (.804, .809)
One earning . . . . .	.41 (.407, .409)	.19 (.190, .191)	.02 (.013, .017)	.17 (.170, .181)	.02 (.021, .028)	.24 (.234, .248)	.44 (.442, .444)	.21 (.204, .206)	.85 (.844, .866)	.78 (.773, .796)	.90 (.901, .905)	.85 (.842, .850)
Neither earning . . .	.01 (.008, .009)	.02 (.017, .018)	.63 (.622, .647)	.79 (.781, .797)	.79 (.764, .811)	.90 (.894, .912)	.01 (.009, .009)	.02 (.019, .019)	1.60 (1.568, 1.632)	1.09 (1.084, 1.104)	.82 (.799, .841)	.92 (.910, .927)
Single:												
Earning . . . . .	.13 (.133, .134)	.25 (.251, .253)	.77 (.734, .803)	.96 (.945, .979)	.42 (.404, .427)	.73 (.728, .738)	.10 (.095, .097)	.23 (.225, .227)	1.90 (1.846, 1.964)	1.14 (1.120, 1.163)	.91 (.909, .916)	.88 (.878, .884)
Not earning . . . . .	.04 (.039, .040)	.07 (.065, .066)	.70 (.691, .703)	.81 (.804, .816)	.89 (.881, .895)	.92 (.917, .926)	.01 (.006, .006)	.04 (.039, .040)	1.64 (1.599, 1.684)	1.07 (1.059, 1.078)	.81 (.786, .831)	.89 (.877, .898)

SOURCE.—CPS data.

NOTE.—Bootstrapped 95 % intervals are in parentheses. Shares are π_g , the proportion of the population in subgroup g . Associations are R_g , the “total association” between own labor earnings and total family income for group g . Standardized associations are correlations between own labor earnings and total family income, where both are standardized to mean 0, SD 1 relative to the full gender-specific distributions. See eq. (1) for the relationship between shares, associations, and self-reliance. See eq. (2) for information on associations.

women's own earnings and total family income may appear very similar when comparing across the truncated earnings and income distributions of single employed women only, but they may appear less similar in the population including partnered women whose family incomes are pushed higher, on average, by their partners' earnings.) Consequently, standardized associations can be easily compared across subgroups. These standardized associations are not part of our formal decomposition; they stand on their own, helping to illuminate associational changes in self-reliance. Following the order of columns in table 3, we first discuss compositional change and then associational change.

Subgroup compositional change.—Between 1970 and 2010, men and women shifted overwhelmingly into subgroups with higher earnings-income associations than the subgroups they departed, increasing self-reliance. The share of people in partnered, one-earner families decreased dramatically over this period, falling from 41% to 19% of women and from 44% to 21% of men ages 25–54 (table 3, cols. 1–2, 7–8). Conversely, the share of single, employed people increased substantially, rising from 13% to 25% among women and from 10% to 23% among men. The share of people in partnered, dual-earner families also rose, as did the share of nonearners, both single and partnered to another nonearner, underlining the need to account for nonlabor income such as government income transfers when studying economic self-reliance. Still, the great majority of the decrease in the share of people in partnered, one-earner families was compensated by the increasing share of single, employed people.

Not surprisingly, this shift was associated with large increases in self-reliance because earnings-income associations were higher among the latter group (single, employed people) than among the former group (people in partnered, one-earner families), particularly among women (e.g., compare cols. 4 and 10 in table 3). The smaller increases in the shares of nonearning people (both single and partnered to another nonearner) also tended to increase self-reliance among both women and men, because self-reliance was high in both of those groups (their zero earnings corresponded closely to their very low incomes). The 6 percentage point increase in the share of people in partnered, dual-earner families tended to increase self-reliance among women but decrease it among men, since women's self-reliance is higher in dual-earner than in single-earner couples while the opposite is true for men, who exhibit more dependency in dual-earner couples than in single-earner couples, as expected.

Subgroup associational change.—While about 57% of the increase in women's self-reliance between 1970 and 2010 was driven by these compositional shifts from one population subgroup to another, the remaining 43% was to due increases within each subgroup in their earnings-income (total) associations (table 2, panel A; see also eq. [2]). For men, all of the decrease in

self-reliance was due to associational change; compositional change dampened the decline driven by associational change.

Much as prior literature would predict, then, associational shifts increased women's self-reliance and decreased men's. However, critical to the story of asymmetry, these associational shifts were greater among women than among men, particularly when considered relative to the baseline levels of self-reliance in 1970. For women, there was a .11-point associational change relative to a 1970 correlation of .37, whereas for men, there was a $-.08$ -point associational change relative to a 1970 correlation of .86 (table 2, panel A, and table 1, panel A). We first describe these associational changes in greater detail for women and then discuss the more complicated patterns among men, using the standardized associations, plotted in figure 4, to aid interpretation.

Women.—As a general matter (and as we noted when discussing eq. [2] and eq. [3]), it is useful to think of women's associational change as rooted to a significant degree in mean differences in earnings and incomes across subgroups of women. In 1970, single women had relatively high mean earnings but relatively low mean income, and partnered women had relatively low mean earnings but relatively high mean income. But as partnered women's labor force participation and earnings increased, these between-group disparities lessened. The increasing earnings-income alignment is reflected in both (a) the increase in the total associations, which combine within-group and between-group factors (table 3, cols. 3–4), and (b) the increase in the

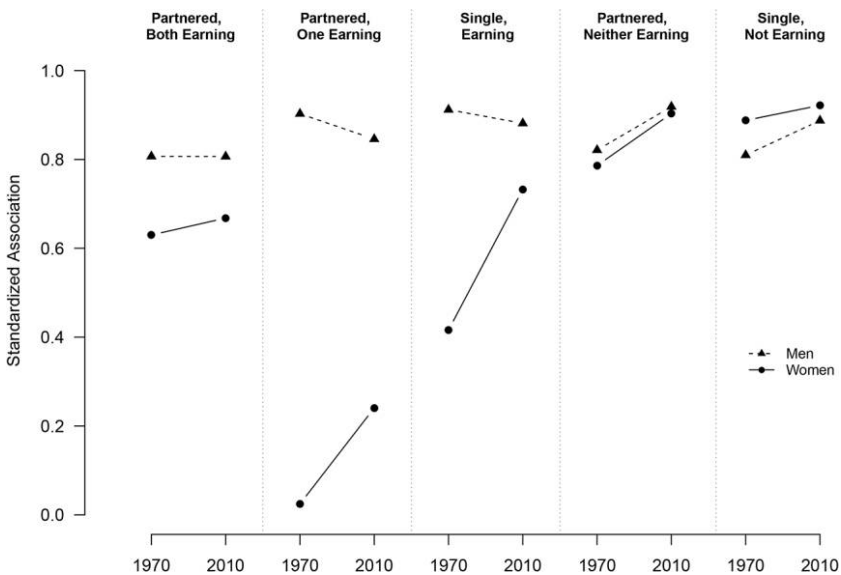


FIG. 4.—Standardized self-reliance associations by group, gender, and year. (See table 3 for details.) Source: CPS data.

standardized associations, which combine these factors on a correlational scale (table 3, cols. 5–6). For instance, the standardized association increased markedly from .42 in 1970 to .73 in 2010 for employed, single women, signaling that the earnings of such women are not as different as they used to be from the earnings of partnered women with similar incomes.³⁸ Figure 4 illustrates that earnings-income alignment increased most among single, working women and partnered women in one-earner families, yet women in all subgroups saw their earnings-income association, and thus their self-reliance, increase.³⁹

Men.—Among men, we see a more complex picture of associational change but one that nonetheless results in the decline in economic self-reliance between 1970 and 2010 that we would expect, albeit in muted form. Four patterns emerge.

First, we observe a decline in both the total association and the standardized association for men in one-earner groups, whether single or partnered. For example, employed single men's standardized association fell from .91 to .88; the corresponding numbers for men in partnered, one-earner groups were .90 and .85. Importantly, these declines reflect a move toward the once-common experience of women that we have highlighted throughout this article, namely, heterogeneity in the incomes of men with similar earnings (including zero earnings) but differential access to partner earnings. Simply put, partnership dynamics, and the income pooling they entail, matter more now than in the past in terms of where men end up in the family income distribution. Nevertheless, the earnings-income associations remain very high among men in single-earner groups, much higher than the levels among women in such groups in 2010 (.73 for employed single women and .24 for women in single-earner families), let alone in 1970 (.42 and .02, respectively).

The second pattern we underscore goes against the grain of men's declining self-reliance: men in dual-earning partnerships witnessed an increase, though slight, in their total association and standardized association. The reason is that high-earning (low-earning) partnered men increasingly have high-earning (low-earning) partners, solidifying their positions at the top (bottom) of both the earnings and income distributions, as documented in the literature on income inequality (Cancian and Reed 1999).

³⁸ Note that had we simply calculated a within-group correlation for employed, single women, it would have been high in both 1970 and 2010 because the truncated distribution eliminates between-group differences.

³⁹ By 2010, the level of self-reliance among partnered women in dual-earning families was almost as high as among single, working women. Self-reliance was even higher (and more similar across single vs. partnered women) among women in nonearning families, whose zero earnings corresponded to very low incomes. Partnered women in one-earner families remained as the least self-reliant group in 2010, as many women in these families earned nothing but had relatively high-earning partners who created high family incomes.

The third pattern of note is the decline in the total earnings-income associations among men in nonearning families (whether single or partnered), accompanied by rising standardized associations. On one hand, the rising standardized associations indicate that men in zero-earning families are increasingly located at the very bottom of the income distribution, partly reflecting declining government redistribution to nonemployed people, as we discuss further below. This increased their self-reliance in correlational terms. On the other hand, the declining (unstandardized) total associations reflect the fact that zero-earning and very low-income men were more common in 2010 than in 1970, thus reducing the between-group component of their total association (i.e., reducing the divergence between their group mean and the grand mean).

Finally, the fourth important pattern in men's associational shifts is that these shifts are substantially larger when single and partnered men are analyzed together than when partnered men are analyzed alone ($-.08$ vs. $-.02$; table 2). This reflects the increasing misalignment between single men's labor earnings and their family incomes that is a hallmark of declining self-reliance. While single men used to easily translate their earnings position into an equivalent position in the income distribution, they have increasingly fallen short in their income attainment relative to families with two earners. A man with median (male) earnings, for instance, who is married to a woman with median (female) earnings will rank considerably higher in the family income distribution than his single counterpart (a man also with median earnings).

Summary, subgroup associational change.—The associational shifts for women and men, on the whole, have moved in opposing directions as predicted, with women's increasing and men's decreasing. However, women's change was larger than men's, both in absolute terms and relative to each group's baseline (1970) level of self-reliance, particularly among couples. As figure 4 highlights, men's standardized associations increased in several subgroups. Thus, in order for men's overall self-reliance to decrease as much as women's increased (and thus generate a symmetric, zero-sum pattern of change), men's decrease in the remaining subgroups (specifically, the one-earner partnered and single groups) would have to have been extreme. Instead, men's decrease in those subgroups was relatively small, leading to asymmetric associational change. Finally, not only were the changes in men's standardized associations relatively small over time, the differences were also relatively small across subgroups. In 2010, men's standardized associations ranged from .81 to .92 on the correlation scale, indicating high levels of self-reliance (while women's ranged from .24 to .92). Regardless of subgroup (or time period), men's place in the income distribution strongly reflected their own labor earnings.

Next, we further explain these associational shifts in self-reliance, as well as the compositional shifts, by more explicitly relating them to changes in the family, the labor market, and redistribution.

Detailed Decomposition: Family, Labor Market, and Redistributive Changes

Family Change

Changes in the family increased self-reliance among both women and men via changes in family structure, a compositional change, and in partner earnings associations, an associational change.

Compositional change.—In terms of family structure, the increasing share of single adults was associated with an increase in self-reliance of .08 (on the correlation scale) among women and .06 among men (table 4, panel A). This .08 change explains almost a third of the total .25 increase in self-reliance among women. Among men, the .06 increase offset other forces that put downward pressure on economic self-reliance. Although the extent of compositional change in family structures was similar across genders (table 3, cols. 1–2 and 7–8), the impact of this change on self-reliance was slightly larger among women than among men (at .08 vs. .06) because the level of self-reliance (i.e., the subgroup association) differed much more across family structures among women than among men. For example, in 2010 the standardized association for partnered women in single-earner families versus single employed women was .24 versus .73, while the contrast among men was .85 versus .88 (table 3, cols. 6 and 12).

Associational change.—The rise in partner earnings associations also increased economic self-reliance among both women and men, as positions in the earnings distributions increasingly corresponded to positions in the income distribution. We do see, however, a substantial gender difference in the role of rising partner earnings associations, which increased self-reliance among all women by .15 points on the correlation scale, but only .03 among all men (table 4, panel A). This gender difference stems from the particularly marked increase in women's between-group component of the total association of partners' earnings (table 4, panel A, cols. 3 and 6).⁴⁰ The between-group

⁴⁰ The declines in self-reliance among women and men due to changing within-group partner associations (of $-.04$ and $-.02$, respectively) were driven entirely by changes in partnered, single-earner families. In these families, one "breadwinning" partner is coupled with a zero-earning partner. Over time, these breadwinners' mean earnings grew, leaving the zero-earning partners further behind in absolute terms and generating an increasingly negative within-group partner association. This decline among partnered, single-earner families outweighed a small increase in the association among partnered, dual-earner families; this generated a net decline in the within-group contribution of partner earnings associations to self-reliance.

TABLE 4
DECOMPOSITION OF CHANGES IN ECONOMIC SELF-RELIANCE BY GENDER, INCLUDING SOURCES OF COMPOSITIONAL AND ASSOCIATIONAL CHANGE

	WOMEN			MEN		
	1970-2010 (1)	Within (2)	Between (3)	1970-2010 (4)	Within (5)	Between (6)
	A. Full Population					
Raw change . . . . .	.25 (.246, .255)			-.03 (-.031, -.027)		
Due to association . . . . .	.11 (.104, .114)	.04 (.033, .041)	.07 (.070, .074)	-.08 (-.086, -.077)	-.08 (-.089, -.079)	.00 (.001, .004)
Due to composition . . . . .	.14 (.139, .144)			.05 (.048, .057)		
% due to association	43.41 (42.100, 44.671)			283.66 (264.922, 314.007)		
% due to composition	56.59 (55.329, 57.900)			-183.66 (-214.007, -164.922)		
Sources of associational change:						
Due to partner association . . . . .	.15 (.147, .156)	-.04 (-.040, -.033)	.19 (.185, .191)	.03 (.025, .031)	-.02 (-.020, -.015)	.05 (.044, .046)
Due to redistribution	-.09 (-.089, -.082)	-.03 (-.037, -.031)	-.05 (-.053, -.050)	-.01 (-.015, -.001)	-.01 (-.016, -.002)	.00 (.000, .002)
Due to earnings distributions . . . . .	.04 (.037, .049)	.11 (.101, .114)	-.06 (-.068, -.062)	-.10 (-.110, -.092)	-.06 (-.067, -.047)	-.04 (-.046, -.042)
Sources of compositional change:						
Due to family structure . . . . .	.08 (.076, .081)			.06 (.060, .069)		
Due to labor force participation . . . . .	.06 (.062, .065)			-.01 (-.014, -.010)		

TABLE 4 (Continued)

	WOMEN			MEN		
	1970-2010 (1)	Within (2)	Between (3)	1970-2010 (4)	Within (5)	Between (6)
Sources of compositional change:						
Due to labor force participation . . . . .	.09 (.090, .094)			-.01 (-.016, -.009)		
% contribution of sources of change:						
% due to partner association	18.01 (15.206, 20.625)			-106.64 (-125.224, -94.753)		
% due to redistribution	-45.78 (-47.173, -44.240)			238.45 (216.824, 275.053)		
% due to earnings distributions	80.09 (77.297, 82.975)			-71.26 (-107.017, -44.066)		
% due to labor force participation	47.69 (46.380, 49.129)			39.45 (28.352, 51.614)		

SOURCE.—CPS data.
NOTE.—Bootstrapped 95% intervals are in parentheses. For the partnered population, all of the compositional change is due to labor force participation change (none can be due to family structure change since everyone in the partnered population shares the same family structure, by definition). See eq. (3) for the definitions of composition/association decomposition components. See eq. (4) for the definitions of the sources of association change components.

component, in the full population, captures mean differences between single and partnered people (not only, as in the partnered population, mean differences between partnered people in families with zero, one, or two earners). In 1970, single women tended to have high mean earnings and zero partner earnings, while partnered women tended to have low mean earnings and high mean partner earnings. These single versus partnered differences declined over time, as partnered women's earnings increased and became more similar to the earnings not only of their partners but also of single women. This increased self-reliance (see also the appendix). This change was smaller among men because the relative mean earnings positions of single versus partnered men did not shift as much as they did among women.

Unsurprisingly, changes in partner earnings associations increased self-reliance among partnered men and partnered women to the same extent (raising both by .03; table 4, panel B). Yet, interestingly, the magnitude of this change was relatively small (explaining only 18% of the total increase in self-reliance of .19 among partnered women) and reflects rising between-group more than within-group associations. The primary story of increasing self-reliance among partnered women is not the story of rising similarity in partners' earnings, which remains quite low.

Summary of changes.—Taken together, changes in family structure and changes in partner earnings (total) associations almost fully explain the increase in self-reliance among all women ($.08 + .15 = .23$, compared to the observed growth of .25 points on the correlation scale; table 4, panel A). Figure 5 provides a visual representation of these results; the bar representing women's family change is almost as large as the bar representing women's total change. Among men, family change also predicts increasing self-reliance, although men's observed self-reliance decreased ($.06 + .03 = .09$, which is greater than the observed decline of .03; likewise, fig. 5 shows that men's family change is more positive than men's total change is negative). Among couples, changes in family structure—predefined as single versus partnered—could not affect self-reliance, since the population is limited to people who reside in one family type. But changes in partner earnings associations could, and they increased self-reliance among partnered women and partnered men slightly (by .03 points on the correlation scale).

Labor Market Change

Labor market changes, including compositional changes in the shares of families with different numbers of earners and associational changes in the distributions of own earnings, further increased women's self-reliance, but they reduced men's self-reliance.

Compositional change.—Changes in employment within family structures—particularly the shift from single-earner to dual-earner families among

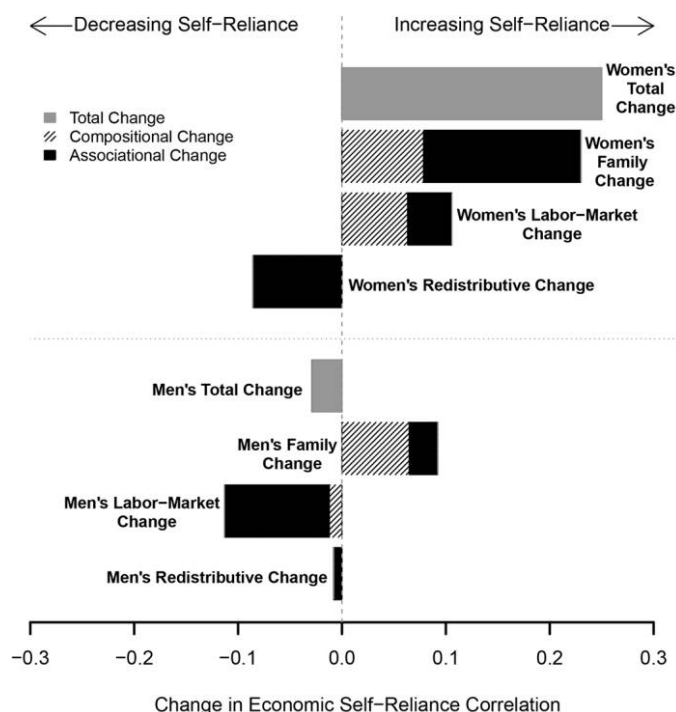


FIG. 5.—Change in economic self-reliance between 1970 and 2010 by gender. (See table 4 for details.) Source: CPS data.

couples—increased self-reliance substantially among women but decreased it only slightly among men (generating increases of .06 and .09 among all women and partnered women, respectively, and decreases of .01 among both all men and partnered men; table 4, panels A and B). This gender difference reflects the fact that variation in self-reliance across families with different numbers of earners was larger among women than among men. For example, the standardized self-reliance association among women in partnered, dual-earner families was .67 in 2010, compared to .24 among women in partnered, single-earner families; the corresponding numbers for men were .81 and .85 (table 3).

Associational change.—Changes in earnings distributions within subgroups also tended to increase self-reliance among women and decrease it among men, particularly in the full population of men (with increases of .04 and .15 among all women and partnered women, respectively; a decrease of .10 among all men; and a slight increase of .02 among partnered men; table 4, panels A and B). The growth in self-reliance among women, particularly partnered women, clearly reflects the increasing weight of

women's own earnings in determining their family incomes. Intuitively, when women's earnings are clustered around zero, they cannot predict women's incomes; when women's earnings rise and become more dispersed, they have more explanatory power. The flip side of this coin is evident for men in the full population, where men's own earnings have become less predictive of their positions in the income distribution. Interestingly, this decline was not observed among partnered men. While wives' increasing earnings raised family incomes in an absolute sense, they did not change the fact that partnered men's earnings remain strongly predictive of their places in the income distribution.⁴¹

Summary of changes.—Summarizing across the labor market and family changes, both increased self-reliance among women, together predicting more growth than observed $([.06 + .04] + [.08 + .15] = .33 > .25$; table 4, panel A). Among men, labor market changes decreased self-reliance while family changes increased it, together explaining most of the very small net decline in self-reliance $([-.01 - .10] + [.06 + .03] = -.02$; $[-.02] < [-.03]$).

Change in Redistribution

All of the redistribution-driven change in self-reliance is reflected in associational change (i.e., change in the association between own earnings and other family income). Overall, this change was linked to a decline in self-reliance (though we caution again that our analyses do not distinguish between the large reported share of taxes and transfers that is public and the smaller share that is private; see nn. 31 and 32).⁴²

Associational change.—Among people with at least one earner in the family, government taxes and transfers became increasingly redistributive. When the government shifts money from higher- to lower-earning families, this tends to decrease self-reliance, since positions in the income distribution

⁴¹ From a more technical perspective, we can understand the decline in self-reliance in the full population of men associated with changes in their own earnings distribution as follows: Earnings variability both within and between groups of men generally rose over time, which, in isolation, would tend to increase self-reliance. Yet because the speeds of increase in within- and between-group earnings association contributions (where the between-group contributions are squared differences between group-specific mean earnings and grand mean earnings) were slower than increases in overall earnings and income variability (in the correlation's denominator) in the full population of men (but not the partnered population), changes in earnings heterogeneity tended to put downward pressure on self-reliance among all men (but not partnered men).

⁴² While this result may strike some readers as counterintuitive—after all, the push to “end welfare as we know it” seemed like a push toward greater self-reliance, at least from a rhetorical perspective—in fact, the safety net was redirected toward supporting earners rather than eliminated altogether (allowing low earners to increasingly rely on government redistribution for their total family incomes; Tach and Edin 2017).

become less tightly linked to positions in the earnings distribution. Redistribution grew especially quickly among women in families with at least one earner, whose rising labor earnings were subject to increasing taxation that shifted income from higher- to lower-earning women. Redistribution decreased self-reliance by .09 among women but only .01 among men (table 4, panel A).⁴³

Notably, taxes and transfers had the opposite effect on self-reliance among subgroups with zero labor earnings. Self-reliance increased for single women with no earnings and for partnered women who neither earned themselves nor had an employed partner. Their standardized earnings-income associations grew by .03 points (from .89 to .92) and .11 (from .79 to .90), respectively; the corresponding growth for men in nonearning families was .08 and .10 (table 3). The association between their zero labor earnings and their family incomes rose between 1970 and 2010 because their nonlabor income from government taxes and transfers became less generous, leading their positions at the bottom of the earnings and income distributions to correspond more closely over time.

Summary of changes.—Change in redistribution decreased self-reliance among both women and men, thus explaining the mismatch between the changes predicted from family and labor market trends alone (.33 and $-.02$ among women and men, respectively) and the observed changes in self-reliance (.25 and $-.03$).

Summary of Detailed Decomposition

Figure 5 summarizes the detailed decomposition results (plotting the numbers reported in table 4, panel A). Two patterns are clear. First, women's changes were much larger than men's, in both overall self-reliance and its component pieces. Second, family change shifted self-reliance in the same direction among women and men (pushing self-reliance upward among both genders via changes in family structure and partner earnings associations), as did redistribution (pushing self-reliance downward for both genders overall, despite increasing it for the subgroup of nonearners). Consequently, men's employment and earnings distributions would have to have declined drastically to create a zero-sum change in self-reliance. Labor market changes did have opposing effects among men (decreasing self-reliance) and women (increasing it), as expected from prior research. Yet the extent of these changes

⁴³ Unsurprisingly, in the population of couples, redistribution affected women's and men's self-reliance similarly (table 4, panel B). Since our TAXSIM simulations assume that all married people file taxes jointly, we expect similar effects of redistribution across genders when studying individuals in couples.

among men was too small to create a zero-sum trend in self-reliance; instead, women's self-reliance increased much more than men's declined.

CONCLUSIONS

Over the past four decades, women's positions in the economic hierarchy have become increasingly tied to their own labor earnings. During the early and mid-20th century in the United States, most women's economic positions were instead determined by their husbands' employment. In particular, male breadwinner families, defined as families "in which the husband works for wages or salary and the wife has no occupation listed in the census . . . represented a majority of marriages for just four decades—from 1920 to 1960—reaching a peak of 57% in 1940" (Ruggles 2015, p. 1800). Then, as dual-earner families became more common, sociologists debated how to incorporate women's employment into studies of socioeconomic stratification (Sørensen 1994). Out of this debate rose an important line of research that examined the shares of couples' earnings contributed by husbands versus wives (Sørensen and McLanahan 1987). Women were considered more economically dependent on their husbands when their share of couples' earnings was small. This research continues to provide essential insights into gender inequalities and divisions of labor within families (Bertrand, Kamenica, and Pan 2015).

However, previous research has also left unanswered some fundamental macrolevel questions regarding how people attain their incomes—whether via their own employment, their partners' employment, or other sources such as government redistribution—and how this income attainment process differs for men and women. We raise two questions that correspond to our two main substantive contributions to the literature and summarize how our findings help to address them.

The first question concerns the extent to which economic self-reliance is "zero-sum," with gains among women entailing commensurate losses among men. Prior studies imply this zero-sum vision, because when one partner's share of a couple's total earnings increases, the other partner's share must decline proportionately. This vision is appropriate for studies of microlevel dynamics within individual couples; yet for understanding macrolevel patterns of gender inequality, both among couples and when including single individuals, it is more limited. By introducing a measure of economic self-reliance that allows for asymmetric trends by gender, we found that men's high degree of self-reliance declined by only 3% from 1970 to 2010, whereas women's (initially low) degree of self-reliance grew by over two-thirds. Moreover, we uncovered sharply asymmetric trends even when focusing exclusively on couples. In short, gender equality in economic self-reliance increased not because women and men both moved toward a middle ground,

but because women moved toward men's positions whereas men remained relatively static.

What explains these asymmetric trends? This question goes to the heart of the second puzzle that motivated our analysis, regarding the sources of change in men's and women's income attainment processes. Using our two-part decomposition of the self-reliance correlation into compositional and associational components, we quantified the extent to which men's earnings continue to determine positions in the family income distribution for men and women and, conversely, the limited extent to which women's labor earnings affect men's relative economic standing. For instance, the standardized association between men's own earnings and family income was above .80 in both 1970 and 2010 within all subgroups examined, changing little over time (table 3 and fig. 4). Meanwhile, women's standardized associations varied between .02 and .92 across years and subgroups, with the highest levels of self-reliance (of .90 and .92) obtaining only in families without earners. Simply put, men's self-reliance remains high whether or not they are coupled or are pooling income with a partner, whereas women's self-reliance remains heavily attenuated by these factors, though much less so than in the past.

Using a more detailed, five-part decomposition, we examined the roles that changes in the family, the labor market, and redistribution played in self-reliance trends (table 4 and fig. 5). We found that the major factor associated with a reduction in men's self-reliance was the declining weight of their labor earnings in determining their position in the family income distribution (i.e., a labor market effect). Yet, consistent with the minor declines in men's standardized associations mentioned just above, the scale of this labor market shift was substantively small, particularly for partnered men, and even for all men when considered relative to their baseline, 1970 level of self-reliance. The correspondence between men's earnings and their family income did decline, then, but far less than required in a zero-sum framework to counterbalance the increases in women's self-reliance. Such zero-sum change in self-reliance was further undermined by the fact that changes in self-reliance associated with redistribution, family structure, and partner earnings associations were, in fact, similar for men and women (particularly in direction, although the magnitude of change tended to be larger for women).

At the microlevel, this configuration of labor market changes is consistent with accounts of an unfinished gender revolution, in which men's mix of paid and unpaid labor within couples changed much less than women's did, and women's growing labor force attachment plateaued well short of full participation (England 2010; Gerson 2010; Goldscheider et al. 2015). But our macrolevel analysis of the income attainment process offers additional insights into the nature of gender inequality, and the nature of income inequality, because it places changes in self-reliance on the scale of the full

distribution of earnings and family income, including single individuals as well as couples, and including tax and transfer income as well as labor earnings.⁴⁴ It thus captures how between-household dynamics shape self-reliance (in addition to microlevel, within-couple inequalities), in terms of differences in family structure and partner choices, public and private redistribution, and typical earnings and income levels.

Within this macrolevel framework, we show that gender equality in economic self-reliance can be achieved via increasing earnings homogeneity within couples, to be sure, but also via increasing family diversity, increasing redistribution, and other processes that generate symmetrical earning and partnering patterns among men and women throughout the population, whatever those patterns may be. (For example, if male and female sole-earner families were equal in population shares as well as in earnings levels, this could generate gender equality in economic self-reliance even though within each individual couple there would be substantial earnings inequality.) This enables a definition of gender equality that is both comprehensive and normatively flexible and that can be attained at either high, medium, or low levels of self-reliance, in recognition of the fact that self-reliance entails benefits as well as costs.

Our framework also opens up a much-needed avenue of analysis linking studies of gender inequality with studies of income inequality across families and households (McCall 2008; Perrons 2005; Yavorsky et al. 2019). We find that women made significant strides within the existing stratification order, leaving that (increasingly unequal) order mostly intact. That is, paid labor became more central in women's income attainment process, but men and women both continue to enjoy very different life chances depending on their family incomes, the distribution of which is still heavily influenced by men's earnings. This set of observations is not to deny the fact that rising female employment slowed the growth in family income inequality between 1970 and 2010 (Western et al. 2008; Larrimore 2014), since the distance between income ranks can change even when the rankings themselves change much less. Our findings also extend research showing that earnings homogeneity and its rise are relatively small in relation to the scale of income inequality,⁴⁵ because, as we show, the entire stratification order remains strongly conditioned by male earnings, despite notable declines in the gender earnings gap and dependency ratio.

Our empirical analyses only scratch the surface of the research that could be done to better understand the changing role of paid labor, and other

⁴⁴ We do miss, however, institutionalized individuals, and we focus on working-age adults.

⁴⁵ For example, Schwartz (2010) finds that even when considering only inequality among married couples—which is much smaller than overall inequality—about one-quarter of the growth from 1967 to 2005 was associated with rising earnings homogeneity.

sources of income, in men's and women's income attainment processes. Future studies could expand this work in at least four ways.

First, we have developed a measure of gender inequality that—similar to other measures of gender inequality—likely varies across racial and ethnic groups (Snipp and Cheung 2016). We might expect, for example, different patterns among African-Americans and whites, since (a) gender differences in earnings and employment are smaller among African-Americans and (b) single-headed families are more common. These factors should increase self-reliance among black women relative to white women and increase gender equality in self-reliance among African-Americans relative to whites.

This is, in fact, what we observe in preliminary analyses, though not perhaps to the degree that one might expect. In 1970, black women's self-reliance was .47 on a standardized correlation scale, compared to .36 among white women, and self-reliance was equally high among black and white men (app. table A1, panel A). The racial difference in self-reliance among women is more pronounced in analyses that do not standardize earnings and income measures to account for racial differences in their distributions. In such unstandardized analyses, black women's 1970 self-reliance was .64, while white women's was still .36 (app. table A1, panel B). That is, black women could more easily use their own earnings to climb to the top of the African-American income distribution (which is a truncated distribution) than the full-population income distribution (which includes all racial-ethnic groups). Despite these different 1970, baseline levels of self-reliance among black versus white women, the change in self-reliance between 1970 and 2010 progressed similarly (increasing .22 vs. .25 points on the standardized correlation scale, respectively) and also declined only slightly among black men, as it did among white men. In future studies, a more thorough analysis of African-Americans is necessary in order to understand the drivers of these levels and trends; other racial and ethnic groups should also be studied.

Second, geographic and industry- or firm-level variation could be explored, both within the United States and cross-nationally (Gornick and Meyers 2003; Pedulla and Thebaud 2015). For example, do states that support more generous family and medical leave foster greater gender equality in self-reliance than states with less generous leave policies? If so, does this greater gender equality stem from decreasing self-reliance among men, or only increasing self-reliance among women? Similarly, might states that have relatively strong affirmative action enforcement, or more female-dominated industries, minimize gender differences in self-reliance by shifting employment in women's favor? Such shifts could reduce gender differences in economic self-reliance not only by reducing the gender wage gap but also by altering the calculus of who works (more women perhaps) and who does not (more men perhaps) in order to devote time to family care.

Third, the role of the welfare state has been underexplored in prior studies of gender inequality that have focused on men's and women's relative earnings. Unlike earnings, income supports are not easily partitioned among family members, but they are consequential. We found that changes in redistribution reduced self-reliance on net because more people live in earning than nonearning families, and redistribution increased for the former while it decreased for the latter. Yet much additional work is needed to better understand these results, including to tease out the relative roles of different public benefits (e.g., EITC vs. SSI) and different private transfers (e.g., child support vs. financial assistance from parents) for different population subgroups (including, of course, men and women). It is also worth noting that because we focus on working-age adults, Social Security plays a small part in our results relative to its large role in redistributing income to older adults. Future research could use panel data to follow adults into retirement and analyze how Social Security shapes self-reliance via own earnings history, partner earnings history, and interhousehold redistribution.

Fourth, much more work could be done to understand the mechanisms driving self-reliance trends. For example, how much of the increase in women's self-reliance reflects their rising education (both in absolute terms and relative to men)? As another example, how much has declining fertility contributed to self-reliance trends? And, conditioning on fertility levels, how much have changes in parents' opportunities or behaviors contributed (because of employer discrimination or intensive mothering, for instance)?

We do not have space to examine these important extensions of our research into men's and women's income attainment processes. We have introduced an approach to studying these processes that (*a*) allows men's and women's self-reliance to evolve asymmetrically, (*b*) can incorporate multiple population groups and income sources, (*c*) captures gender differences throughout the income and earnings distributions, and (*d*) can be used to decompose changes in self-reliance into components associated with transformations in the family, the labor market, and redistribution. Future studies employing this approach will provide new insights into the evolving nature of inequality at the intersection of gender disparities and stratification research.

APPENDIX

TABLE A1
CHANGE IN SELF-RELIANCE BY GENDER AND RACIAL GROUP

	AFRICAN-AMERICAN		WHITE	
	Women	Men	Women	Men
A. Standardized to Full Population				
Self-reliance, 1970. . . . .	.47	.88	.36	.86
Self-reliance, 2010. . . . .	.70	.83	.61	.83
Raw change, 1970–2010. . . . .	.22	–.05	.25	–.03
% change, 1970–2010.	46.72	–5.41	68.91	–3.19
B. Not Standardized to Full Population				
Self-reliance, 1970. . . . .	.64	.82	.36	.86
Self-reliance, 2010. . . . .	.73	.81	.61	.83
Raw change, 1970–2010. . . . .	.10	–.01	.25	–.03
% change, 1970–2010.	15.72	–1.27	68.56	–3.18

SOURCE.—CPS data.

NOTE.—Panel A reports self-reliance correlations that have been standardized so that individuals' earnings and incomes are positioned relative to the full population's means and variances. Panel B reports self-reliance correlations that have not been so standardized (thus, individuals' earnings and incomes are positioned relative to their racial group's means and variances).

Interpreting the Detailed Decomposition

Equation (4) presents a detailed decomposition of changes in economic self-reliance between a baseline time b and an endpoint time t ($b = 1970$ and $t = 2010$ in our empirical analysis). The detailed decomposition has five components: changes in self-reliance associated with (1) changes in family structure, (2) changes in labor force participation, (3) changes in partner earnings associations, (4) changes in redistribution, and (5) changes in earnings distributions. Components 3, 4, and 5 can be further decomposed into two subcomponents each: (A) changes within population subgroups and (B) changes in differences between population subgroups. In our analysis, we examine five population subgroups, defined by partnership (single vs. married or cohabiting people) and number of earners in the family between the focal person and partner, if present (zero, one, or two earners).

To ease understanding of this detailed decomposition (given its many different components and subcomponents), in this appendix we explicate components (3.A) and (3.B), the within- and between-group sources of change in economic self-reliance associated with changes in partner earnings associations. Following equation (4), we define these components as,

Change in self-reliance associated with change in partner earnings association

$$= \underbrace{\sum_g \pi_g^b \left(\frac{\sigma_{g,xp}^t}{\sigma_x^t \sigma_y^t} - \frac{\sigma_{g,xp}^b}{\sigma_x^b \sigma_y^b} \right)}_{(3.A): \text{ Within-Group}} + \underbrace{\sum_g \pi_g^b \left(\frac{(\mu_{gx}^t - \mu_x^t)(\mu_{gp}^t - \mu_p^t)}{\sigma_x^t \sigma_y^t} - \frac{(\mu_{gx}^b - \mu_x^b)(\mu_{gp}^b - \mu_p^b)}{\sigma_x^b \sigma_y^b} \right)}_{(3.B): \text{ Between-Group}}.$$

Here we see that both (3.A) and (3.B) are weighted sums, where the weights are the shares of the population in each subgroup at the baseline time b (π_g^b ; e.g., the share of women in 1970 in dual-earner families). Thus, the changes experienced by bigger groups are more influential than the changes experienced by smaller groups. As shown in table 3, the largest group in 1970 consisted of partnered people in dual-earner families (followed very closely by partnered people in single-earner families), while the smallest group consisted of partnered people in families in which neither partner worked.

Weighted by their subgroup size, each of the five population subgroups' experiences contribute to the estimated aggregate change. In particular, each of the five groups has a within-group change (in 3.A) and a change in between-group difference (in 3.B). Consider first one group's within-group change:

$$\frac{\sigma_{g,xp}^t}{\sigma_x^t \sigma_y^t} - \frac{\sigma_{g,xp}^b}{\sigma_x^b \sigma_y^b}.$$

The denominators in this change are substantively uninteresting.⁴⁶ In the numerators, we see that this change is the difference between the time t (2010) and time b (1970) covariance (σ) between an individual's own labor earnings (x) and his or her partner's labor earnings (p), calculated only among people in group g . But note that three of the five groups (single, working people; single, nonworking people; and partnered people in families in which neither partner works) have within-group covariances of exactly zero (since, for all members of these groups, partner earnings either do not exist or equal zero). Only one of the five population subgroups contains two earners, the group of partnered people in dual-earner couples. For people in this group, the covariance between partners' earnings is fairly easy to interpret. When partners' earnings are very similar, this covariance will be large and posi-

⁴⁶ In the denominators, we divide by the product of the standard deviation of own earnings (σ_x) and total family income (σ_y). This division simply ensures that we can discuss economic self-reliance on an easy-to-understand scale, ranging from -1 to 1 , from perfect negative linear association to perfect positive linear association, like a correlation. Without this division, we would have to discuss economic self-reliance on a covariance scale, which, unlike a correlation scale, is unbounded and thus difficult to interpret.

tive; and, conversely, when partners' earnings are inversely related, this covariance will be negative.⁴⁷

The final group, partnered people in families with only one earner, also has a nonzero within-group covariance. This may seem surprising, given that one person in each of these couples has zero earnings (by definition of this group). However, because the gender of the working partner is not the same across all families, we can calculate a within-group covariance. (For example, in family *A* the focal woman may have zero earnings while her spouse has positive earnings, but in family *B* the focal woman may have positive earnings while her spouse has zero earnings. It is not the case that either "own earnings" or "partner earnings" are always zero within this subgroup. Thus we can calculate a covariance in this group.) In the group of partnered people in single-earning families, covariances tend to be negative; they are less negative when the incomes of the partners are more similar (which means—given that by definition one partner's earnings is zero—that the working partners' earnings are low) and more negative when high earners pair with zero earners.

In sum, we find that changes in economic self-reliance associated with changes in partner earnings associations within population subgroups are driven entirely by (a) changes within the group of partnered people in dual-earner families (who saw a slight increase in their within-group covariance) and (b) changes in the group of partnered people in single-earner families (who saw a slight decline in their within-group covariance, as the model of breadwinning persisted among these couples), with (b) outweighing (a).

⁴⁷ As we discuss in the main text, higher partner earnings associations correspond to higher self-reliance, because when a high-earning woman partners with a high-earning man (and, likewise, a low-earning woman partners with a low-earning man), their positions in their own labor earnings distributions will be reinforced in their family income distributions. In contrast, when low-earning women partner with high-earning men (or vice versa), their positions in the earnings and income distributions will be discordant and self-reliance will be low. In other words, when partners' incomes are very highly correlated, income pooling may not shift self-reliance, since relatively low-earning partners remain relatively low-income families and relatively high-earning partners remain relatively high-income families. This can create some seemingly counterintuitive results when comparing across extreme populations. Compare, e.g., population *A*, in which all women are married and have very low earnings compared to their husbands but partner earnings correlations are extremely high, on the order of .9 (a very extreme scenario), to population *B*, in which all women are married but have higher earnings relative to their husbands than in population *A* and also much lower partner earnings correlations. In this case, women in population *A* would appear more self-reliant than women in population *B* although they are lower-earning (even relative to their husbands), because low-earning women would remain in low-income families, while in population *B* the lower partner earnings correlation implies that more low-earning women are high-income and thus rely less on their own earnings for their positions in the income distribution. However, not only is this situation highly unlikely in observed social data (despite being theoretically possible), it is consistent with our framework in which self-reliance captures relative positions rather than absolute well-being.

Let us turn from considering change within groups to considering change between groups. As defined in the equation above, one subgroup's change in the between-group difference is

$$\frac{(\mu_{gx}^t - \mu_x^t)(\mu_{gp}^t - \mu_p^t)}{\sigma_x^t \sigma_y^t} - \frac{(\mu_{gx}^b - \mu_x^b)(\mu_{gp}^b - \mu_p^b)}{\sigma_x^b \sigma_y^b}.$$

As before, the denominators in this change are substantively uninteresting (see n. 46). The numerators capture the difference between the time t (2010) and time b (1970) subgroup contribution to the between-group portion of the covariance between individuals' own labor earnings (x) and their partners' labor earnings (p). Stepping back a moment to understand the between-group portion theoretically, consider why we see an association between individuals' own earnings and their partners' earnings. The reason is not only that, among partnered people in dual-earner couples, earnings tend to be similar within couples. The reason is also that both own earnings and partner earnings tend to be higher in dual-earner couples than average (and, as another example, both own earnings and partner earnings are lower in zero-earner families than average). These between-group differences contribute to the overall covariance between own and partner earnings.

Whenever a given subgroup deviates from the population average in the same direction in terms of both own earnings and partner earnings (e.g., among partnered people in dual-earning families, both own earnings and partner earnings are higher than the population averages), then the subgroup contributes positively to the between-group covariance. When a subgroup deviates from the population average in opposite directions (e.g., has higher than average own earnings but lower than average partner earnings, as in sole-earning couples on average), the subgroup will contribute negatively to the between-group covariance. In notation, we capture these differences between subgroup averages and population averages in the terms $(\mu_{gx}^t - \mu_x^t)(\mu_{gp}^t - \mu_p^t)$, where μ_{gx} is the average own earnings (x) in subgroup g and μ_x is the population average own earnings; likewise, μ_{gp} is the average partner earnings (p) in subgroup g and μ_p is the population average partner earnings, all at time t (2010).

Importantly, unlike the within-group change, all five population subgroups contribute to the between-group change (because, e.g., even among the group of people in families with zero own earnings and zero partner earnings, the product $(\mu_{gx} - \mu_x)(\mu_{gp} - \mu_p)$ is nonzero because μ_x and μ_p are nonzero). For example, if partnered people in dual-earner families pull away from people in other population subgroups between time b and time t (and, thus, pull away from the population averages of own earnings and partner earnings), then they will contribute to increasing the partner earnings association via this between-group channel. Likewise, if partnered people in zero-

earner families fall behind people in other population subgroups in both own and partner earnings (as their zero earnings become more distant from the typical earnings in the population), then they will also contribute to increasing the partner earnings association via this between-group channel. Additionally, this component rises if negatively paired groups, such as single-earning women, become less of an outlier over time, as their average own earnings become more similar to the population average earnings of women.

On net, the between-group components of the women's partner association are substantial and negative in sign because of the conventional pattern of lower-earning women partnering with higher-earning men and higher-earning single women partnering, so to speak, with zero-earners. Thus, the positive shifts in the between-group component—as this negative pairing became less pronounced over time—contributed importantly to the increase in women's self-reliance over time, much more so than the within-group components did.

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Economic Self-Reliance and Gender Inequality

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