

Forecasts of the U.S. Employment-Population Ratio  
To 2011

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February 6, 2013

This is an online Appendix to Moffitt (2012). The author would like to thank Lu Xu for research assistance.

## Abstract

Moffitt (2012) noted a decline in the employment-population ratios for men and women over the period 2000-2007 prior to the Great Recession. He estimated a model of the determinants of the ratio as a function of wage rates, nonlabor income, and demographic factors. This note uses that estimated model to predict what the employment-population ratio would have been in 2011 if the structure of the labor supply function had remained what it was in 2007 but wage rates, nonlabor income, and demographic variables had taken on their 2011 values. The predictions show that the employment-population ratios of men and women would have returned to their 2007 levels. This suggests that the employment-population ratio may indeed fully recover from their Great Recession declines.

Moffitt (2012) noted the historic turnaround in the trends of the employment-population ratio beginning around 1999-2000. After that point, the slow downward trend in the male ratio accelerated its decline and the long-standing increase in the female ratio reversed and began to decline. The ratio fell from 80.5 percent in 1999 to 77.8 percent in 2007 for men and from 67.6 percent in 1999 to 65.9 percent in 2007 for women (16-to-64 population only). Moffitt estimated a model of the determinants of the employment ratio which posited it to be a function of wage rates, nonlabor income, and demographic determinants related to marital status, childbearing, and related family composition variables. The estimated model was able to explain roughly half of the decline in the male ratio from 1999 to 2007 but very little of the decline in the female ratio, at least for all females combined and without disaggregation by demographic variables.

With the onset of the Great Recession, the employment-population ratio plummeted starting in 2008, falling to approximately 72 percent for men and 63 percent for women in 2009. It has exhibited a slow recovery since that time. Given the downward trend in the ratio prior to the Great Recession, a natural question is whether it will recover to its 2007 level after the completion of the recovery or whether it will return only to a lower level.

This note uses the model estimated by Moffitt to forecast the employment-population ratio for men and women in 2011, the latest year for which Current Population Survey data are available. The results suggest that the ratios may fully return to their 2007 levels.

## Details

In his primary model, Moffitt estimated an OLS equation for the probability of being employed on pooled data on men and women 16-64 from the March 1989, 1999, and 2007 Current Population Surveys. The equation contained a predicted value for the log real weekly wage, real weekly nonlabor income (interest and dividends), a set of race-education-age dummies, and variables for marital status, household headship, the numbers and ages of children, and related demographic variables. The estimates of the model are reported in that paper.

For the purposes of this exercise, the latest March CPS was obtained, which was administered in March 2012. Using the reported information on 2011 earnings and weeks worked, a log real weekly wage was computed. A predicted wage was then obtained for all individuals in the data set using the same procedures described in the Moffitt main model: log real weekly wage equations were estimated as a function of race-education-age dummies, four demographic variables, and a selection correction adjusting for possible bias resulting from estimation on workers only. The predicted wages from this equation were then inserted into the estimated employment equation, along with 2011-2012 values for all the other variables in that equation. A slight difference in procedures is required here than in the estimation for, while nonlabor income is as of 2011, the demographic variables are as of March 2012. Those variables are unlikely to have changed enough since March 2011 (the comparable data of measurement of the demographic variables to the previous analysis) to significantly alter the forecast.

Applying this procedure results in a predicted value of the employment-population ratio in 2011 of 78.1 percent for men and 67.0 percent for women. These are close to the 2007 values noted previously and, in fact, slightly above those values. Table 1 shows a decomposition of the contributions of the different variables in the equation to this result. For men, the real weekly

wage for men 16-64 increased by 20 percent from 2007 to 2011, which would have increased men's employment-population ratio by 1.2 percentage points. However, declines in the marriage rate and the percent head of household pulled the ratio down by 0.5 percentage points. The net effect was a slight increase in the employment rate.<sup>1</sup> For women, wages fell by 10 percentage points between 2007 and 2011 but the wage coefficient for women is sufficiently small that this led to very little decline in the employment rate. Increases in the rate of household headship and declines in the number of children had offsetting effects.

Moffitt found the results for women to be very different for women of different marital statuses and presence of children. Therefore, there could have been different movements in the employment-population ratio for such subgroups.

The actual employment-population ratios for men and women in March 2012 were 71.3 and 62.2 percent, respectively, thus considerably below those forecast. However, the unemployment rate still stood at 9 percent and the recovery had not been completed.

## **Summary**

A forecast of the male and female employment rates for 2011 from the model estimated by Moffitt (2010) suggests that those rates will recover to their 2007 levels after their drastic declines in the Great Recession and after the recovery is complete and the labor market returns to its 2007 condition.

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<sup>1</sup> There was a very slight change in the race-age-education composition of the sample as well; these contributions are not shown in the table.

## References

Moffitt, R. 2012. "The Reversal of the U.S. Employment-Population Ratio in the 2000s: Facts and Explanations." Brookings Papers on Economic Activity (2).

Table 1

## Changes in Independent Variables, 2007-2011

	Men		Women	
	Change	Weighted by Coefficient	Change	Weighted by Coefficient
Predicted Log Weekly Wage	.199	.012	-.105	-.001
Nonlabor Income/1000	-1.084	.001	-1.082	.001
Married	-.041	-.003	-.029	-.001
Divorced-Widowed-Separated	..010	.000	-.002	.000
Head of Household	-.027	-.002	-.027	-.003
Single Parent	.005	.000	.001	.000
Children 0-5	-.027	.000	-.027	.003
Children 6-18	-.042	.000	-.041	.001