

**Divorce Rates and Female Labor Force Participation Rates: New Evidence from Census
Time Series Data Regarding Differences between Black Women and All Women**

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I. Introduction

The divorce rate in the U.S. has increased over the last forty years as women have become more financially independent, legal reforms have made the cost of obtaining a divorce relatively cheaper and the stigma associated with obtaining a divorce has been reduced. Past research has questioned the causality between the divorce rate and female labor force participation. Does increased labor force participation result in increased divorces or does an increased probability of divorce cause more women to diversify their risk and invest more time and skills in the labor market? This paper uses U.S. time series data to examine the relationship between the divorce decisions and female labor force participation and determines whether that relationship is consistent across racial boundaries.

Because direct data on the divorce rates for black females are not available, data from the March Supplement of the Current Population Survey was used to develop a time series showing the percentage of women between the ages of 18 and 62 who were divorced each year. Two data samples were developed: one sample included all females while the other sample consisted solely of black females. Using the data extracted from these files, four annual time series were constructed for each sample between 1964 and 2007. First, as the primary measure of the magnitude of the divorce problem in the U.S., the number of divorced females per thousand was extracted from the files. Labor force participation was measured by using the average number of hours worked in the week prior to the one in which the survey (Current Population Survey) was conducted. Average real wages was used to indicate the market return to labor. The fertility rate was estimated by the average number of children in the household.

For both samples, the sample including all women and the sample including only black women, these variables were found to exhibit unit roots, but cointegration tests indicated these variables had a long-run relationship captured by a single cointegrating equation. In both samples the cointegrating equation was used to estimate a vector error correction model. Impulse functions from these models showed that an increase in the divorcees leads to an increase in hours worked for white women. However, the response for black women was much weaker. For both samples impulse functions show an increase in income leads to an increase in divorces and an increase in wages leads to an increase in hours worked.

Following this introduction, the next section of the paper reviews the literature regarding the divorce decision. The third section of that paper describes the data and reports the findings of unit root tests and Granger-causality tests. The results of the cointegration tests and the performance of the vector error correction models are discussed in the paper's fourth section. Concluding comments and thoughts about future research are in the final section of the paper.

II. Literature Review

Theoretical models

The decision to divorce has been modeled with theoretical models and empirical models using either micro-level data or aggregate macro data. Becker *et al.* (1997) argued that when a person decides to dissolve a marriage, he or she is comparing the value of being single to the joint value of being married. Following the work of Weiss (1996), assume a wife's present value of being married equals $W_M(X_W, X_H, K, \theta)$ where W_M denotes the wife's utility function of being married and its arguments include X_W , characteristics of the wife, X_H , characteristics of the husband, K , marriage-specific capital such as children and θ , an unobserved measurement of the

quality of the marriage. Likewise, the husband's present value of being married equals $H_M(X_W, X_H, K, \theta)$. The wife will seek a divorce in today's no-fault divorce legal environment if

$$W_S(X_W, \alpha K) + Y_H - C > W_M(X_W, X_H, K, \theta)$$

where W_S is the wife's present value of being single, Y_H is the present value of the alimony and child-support received from the ex-husband, α is the percentage of marriage capital that the wife receives after the divorce and C is the present value of the cost of a divorce. C not only includes the legal costs of a divorce but it also includes the opportunity costs of the time involved in negotiations during the divorce proceedings and the psychic costs involved in the process.

Simply put, a wife seeks a divorce if the present value of the net benefits of being single exceeds the present value of the net benefits of remaining married. Likewise, males will seek a divorce if

$$H_S(X_W, \alpha K) + Y_W - C > H_M(X_W, X_H, K, \theta).$$

Factors that affect this decision include the wife's income relative to the husband's, the wife's relative ease of joining the labor market, and the cost of getting a divorce. Over time, the cost of a divorce has fallen due to the lower cost associated with the no-fault divorce laws and the increased ability to remarry.

Time-series models using macro data

In studying the growth of divorce rates in Great Britain, Smith (1997) found that the higher divorce rates could not be attributed to the introduction of no-fault divorce laws. While these procedural and legal changes may have had a temporary affect, Smith concluded that the rising divorce rate was caused by the increasing female labor force participation and rising levels of female income which reduced women's economic dependence on joint marital income. The advent of the birth control pill and technological change also contributed to rising divorce rates.

Improved fertility control resulted in fewer children which significantly reduced the transactions costs of a divorce.

South (1985) investigated the effect that business cycle had on divorce rates. He found a small, direct relationship between unemployment rates and divorce rates. However, Smith concluded that changes in demographic factors such as the age structure of women and increases in the female labor force participation rate had significantly stronger impacts on the divorce decision than changes in real GDP or the unemployment rate.

Using a vector autoregressive model and Granger-causality tests, Bremmer and Kesselring (1999) found that divorce rates did Granger cause female labor force participation rates. However, the causality flows were unidirectional as they also found that female labor force participation rates did not Granger cause divorce rates.

Bremmer and Kesselring [2004] used U.S. macro time-series data and cointegration techniques to investigate the relationship between divorce, female labor force participation, and median female income. Using standard, time-series techniques found in the analysis of macroeconomic time series, they found these variables had unit roots; but, their first differences were stationary, and these variables were cointegrated. Impulse functions revealed an increase in divorce rate led to a rise in female labor force participation and positive innovations to female labor force participation led to an increase in the divorce rate. Other impulse functions showed that increases in female income caused both higher divorce rates and rising labor force participation rates on the part of females.

Micro empirical studies

Several papers have made a clear causality argument by showing that an increase in the likelihood of divorce increases a female's willingness to enter the labor force. Lombardo [1999],

and Greene and Quester [1982] argue wives facing a higher risk of divorce hedge against that risk with higher levels of labor force participation, and that they respond by working longer hours. Investment in nonmarket activities, such as child rearing, becomes relatively less attractive (it yields a lower expected return), and investment in human capital becomes relatively more attractive (it yields a higher expected return) as the probability of divorce increases. Studies by Johnson and Skinner [1986], and Shapiro and Shaw [1983] provide additional evidence that women increase their labor force participation prior to dissolution of a marriage.

In two separate studies, Spitze and South [1985, 1986] argue a different line of causality exists. Their conclusion is that an increase in female labor force participation results in more familial conflict and, consequently, an increase in divorce. Confirming this result, Mincer [1985] surveyed twelve industrialized nations and found that rising divorce rates lag rising female labor force participation rates.

Previous studies of the impact of income on divorce have provided mixed results. Becker, Landes, and Michael [1977] find that a rise in expected female earnings increases the probability of divorce, while a rise in expected male earnings reduces the probability of divorce. D'amico [1983] recognizes two distinctly different possible effects of income on divorce. One hypothesis is that as the female's wage relative to the male's rises, conflict based on competition for status within the marriage will occur and will increase the likelihood of divorce. The second, opposing hypothesis is the notion that the pursuit of higher socioeconomic status is a familial one and that a wife earning a relatively higher wage than that of the husband may contribute to the overall status goal and solidify the marriage. D'amico's results tend to confirm the latter hypothesis. Finally, Hoffman and Duncan [1995] find no support for the hypothesis that higher

real female wages lead to increased divorce rates and a study by Sayer and Bianchi [2000] tends to confirm this finding.

However, Spitze and South cast doubt on the sole importance of income in the divorce decision. In their 1985 study, they produced evidence that the number of hours a wife works had a greater impact on the probability of divorce than various measures of the wife's income.

Using a sample of over 100,000 individuals, Kesselring and Bremmer [2006] found that as females experience greater levels of success in the labor market, they also tend to experience higher levels of divorce. A key result was that as the female's earnings became a larger portion of the family income, the likelihood of divorce increased even while controlling for general successes in the labor market. This study used probit analysis to control for a limited dependent variable that was either 1 or 0 (either married or divorced) and sample selection techniques were used to analyze the divorce decision.

III. Data, Unit Root and Granger Causality Tests

Analyzing the ethnic differences in the divorce decision poses interesting empirical issues. While the Center for Disease Control and Prevention (CDC) publishes data on the aggregate divorce rate, they do not provide disaggregated series by ethnic background. Fertility rates provided by the CDC also involve complications as the method of racial attribution varies over time. Prior to 1980 the race of the child was used to determine race. After 1980 the race of the mother is used. The Bureau of Labor Statistics (BLS) published disaggregated series of the labor force participation rate by race only after 1972. Consequently, it was necessary to extract this information or its equivalent from the March Supplement of the Current Population Survey. The extraction process resulted in a time-series running from 1964 to 2007. Two data samples

were constructed from the extracted data: one sample for all women and another sample of only black women.

Data

For each of the two samples, four time series were constructed for each year: (i) the percentage of the sample that was divorced, (ii) the average number of hours worked in the week prior to the survey week, (iii) the average value of the annual wage income (converted to real terms using the CPI), and (iv) the average number of children in each household less than eighteen years old. Plots of the data are provided in Figures 1 – 4.¹

The plots of the average percentage of the women who are divorced are in Figure 1. The stylized fact to observe in this figure is that the percentage of black women that are divorced is always greater than the percentage of divorced women when the sample includes all ethnic backgrounds.

According to Figure 2, compared to the results for all women, black women worked fewer hours per week between 1980 and 2000. However, the average number of hours worked by black females was greater than the average hours worked by all females prior to 1975. In recent years, the average number of hours worked by black women has exceeded the average hours worked by all women—a significant change.

Until 2001, black women had, on average, more children at home than the average number of children for all women. As Figure 3 shows, the average number of children has declined over time. After 2001, black women reported a smaller average number of children at home than the average number of children in the sample of all women.

¹ The time series are available upon request.

Figure 3 reveals a small anomaly in the data. The average number of children jumps upwards between 1968 and 1978. In those years the survey asked for the number of dependents at home rather than asking for the number of children that were less than eighteen years of old. There are several ways to adjust for this one-time, ten-year difference in the data. One method would be to include a binary variable indicating those years in the cointegration test and the vector error correction model. This method was rejected because the resulting confidence intervals and critical values would have been affected in a way making them difficult, if not impossible, to interpret. A second approach would be to adjust these two data series with a Hodrick-Prescott (1997) filter. This filter has been used in other studies to determine the long-run values of a series. Since one of the goals of this paper is to assess whether there is a long-run relationship between these variables, this method was also rejected. Statistical methods will be used to test whether a long-run relationship exists rather than impose that long-run relationship *a priori*. Consequently, to correct for this one-time difference in the data, this study used the third and last method: to do nothing about it.

Figure 4 plots the average, real, annual wage income for all women and for black women only. While the average income earned by black women has been less than the average income earned by all women since 1980, at least the two income averages seem to track each other, mitigating concerns about increasing inequality.

Unit root tests

Given that this project examines eight different time series, four for the sample including all women and four for the sample including only black women, it must be verified that each time series is stationary before any regressions are estimated. Regressions using nonstationary data may produce spurious results where statistical inferences indicate a meaningful relationship

exists between a group of variables when, in fact, no such relationship exists. Augmented Dickey-Fuller tests were used to determine whether the time series exhibited unit roots.

Results from sixteen different Dickey-Fuller (1979) tests are reported in Table 1. The length of the lag in each of the underlying regressions used to find these test statistics was set at the lag length that minimized the Schwarz Information Criterion. Examining first the results for the levels data on the left-hand side of the table, the null hypothesis of a unit root cannot be rejected at the one-percent level for either of the samples. The null hypothesis of a unit root is only rejected in one case at the five-percent level. This occurs when the time series in question is the average hours worked in the previous week for the sample of black females. The test statistic was -3.59 and its p-value was 0.043.

While there is strong evidence that the levels data exhibit unit roots and are nonstationary, the first-differenced data appear to be stationary. Referring to the right-hand column of Table 1, the null hypothesis of a unit root can be rejected at the one-percent level in seven of the eight cases. In the case of the average hours worked in the previous week for the sample including all women, the null hypothesis of a unit root can only be rejected at the five percent level (the -4.00 test statistic had a p-value of 0.0164). Given the null hypothesis of a unit-root can be rejected at the two-percent level (with apologies to Ronald Fisher for not using his famous levels of significance of 1, 5, or 10 percent), the first-differences of the data are treated as stationary.

Granger causality tests

As a first approximation evidence of a relationship between two variables can be signaled by Granger-causality tests. Table 2 reports four Granger-causality tests of interest to this

research. The lag structure of the underlying VAR (vector autoregressive regression model) used in each test was determined by using Wald tests that exclude successive lags.

Three pairs of regressions listed in the last three rows of Table 2 indicate a unidirectional flow of causality from the percentage of women divorced to the average hours worked the previous week, the average number of weeks worked in the previous year and the average number of children. In both samples, the one including all women and the one including only black women, the null hypotheses that the divorce percent does not Granger cause these variables is rejected at the one-percent level (in three cases), at the five-percent level (in two cases) and at the ten-percent level (in one case). However, statistical results in Table 2 indicate that the null hypotheses that the average hours of work, the number of weeks of work or the number of children do not Granger cause the percent of women divorced is not rejected.

In the sample including all ethnicities, the F-statistics of 9.73 and 15.08 indicate the null hypotheses that the percentage of divorced women does not affect the hours of work and the other corresponding null hypothesis that the percentage of divorced women doesn't affect the number of weeks worked is rejected at the one-percent level. The results are weaker with the sample of only black women as the F-statistics (4.45 and 5.10) are only statistically significant at the five-percent level. These results confirm the findings of previous studies. As the likelihood of divorce increases (as measured by an increasing percentage of divorced women) and the sustained reliance on the joint income of a marriage seems less likely, risk-averse women hedge the risk associated with increased marital uncertainty, and invest more time and skills in the labor market.

Referring to the first row of regression results reported in Table 2, the Granger-causality tests about the relationship between income and divorce give different results depending on

whether the sample includes all women or just black women. In the sample including all women, the Granger causality test indicate bilateral causality in that one regression rejects the null hypothesis that income does not Granger cause the percent divorced (the test statistic in Table 2 was 10.13) and the other regression rejects the corresponding null hypothesis that the percentage of divorced women does not Granger cause income (with a test statistic of 10.83). Between 1964 and 2007, the percentage of Caucasian women in sample including all ethnic backgrounds ranged between 82 and 89 percent. Over the same years, the percentage of black women in this sample ranged between nine and eleven percent.

However, when the relationship between wage income and the percentage of divorced women is tested with the sample that only includes black women, the two Granger-causality tests indicate statistical independence. In the regression explaining the percentage of black women that were divorced, regression coefficients associated with previous values of black female income proved to be simultaneously equal to zero (the F-statistic reported in Table 2 is 0.37). Likewise, in the regression explaining the annual income of black women, one could not reject the null hypothesis that all the regression coefficients associated with lagged values of the percentage of black divorced women were also simultaneously equal to zero (the F-statistic in Table 2 is 1.05).

IV. Cointegration Tests and the Vector Error Correction Model

After constructing the unique data series used in this paper and finding that the first differences of the data were stationary, the long-run relationships between the variables was examined. The goal was to determine whether the four time series--the percentage of divorcees, the average number of hours worked per week, the average annual wage income and the average number of children in the household--are cointegrated in both samples. In other words, does a

long-run relationship between the variables exist in the sample that includes all women and in the sample including only black women? Once it was determined that the series were cointegrated in both samples, the next issue was to find the actual estimates of the VAR model that incorporates this long-run relationship. After the vector error correction model was estimated, impulse functions were used to explore the relationship between critical variables such as the percentage of divorcees, the average hours of work, income and the number of children.

Cointegration tests

The results of the Johansen (1990) cointegration tests for both samples are reported in Table 3. In the first sample, the sample including all ethnicities, the underlying VAR contained two lagged variables of each of the four dependent variables. In the case of the second sample, the one that only included black women, the VAR had three lagged values for four dependent variables. The appropriate lag structure for each model was determined by applying successive lag exclusion tests to each additional lag included in the model. The functional form selected for the cointegrating equation was the one that minimized the Schwarz Information Criterion for the VAR. In both samples, statistical tests indicated the appropriate cointegrating equation included both an intercept and a quadratic deterministic trend. The inclusion of the trend is intuitively pleasing because during this time frame many states passed acts such as no-fault divorce laws that made getting a divorce much easier. These laws reduced the cost of obtaining a divorce, increasing the percentage of divorcees in a given population.

The cointegration tests indicate that one cointegrating equation exists for each sample. This result implies that both samples, the one including all races and the one including only black women, have a single long-run relationship between the divorce percent, the hours of

work, the wage income and the number of children. Using Johansen's trace statistic, the null hypothesis of no cointegrating equation is rejected in both samples at the one-percent level. The test statistic for the sample including all women was 80.85 while the test statistic for the black sample was 43.98. Using the trace statistic and setting the level of significance at one percent, both samples fail to reject the null hypothesis that there is only one cointegrating vector. In both samples, if the level of significance was raised to five-percent, then the trace statistic indicates the presence of two cointegrating equations. In the data sample including all women, the null hypothesis of only one cointegrating equation is rejected with a test statistic of 36.87. The test statistic of 38.37 indicates the same result for the sample containing only black women.

Though less powerful than the trace statistic, the maximum eigenvalue statistic also indicates the presence of only one cointegrating equation in both samples. In the sample of only black women, the maximum eigenvalue statistic rejects the null hypothesis of no cointegrating equation with a test statistic of 40.04. The same result is found in the sample including all women with a corresponding test statistic of 43.98. At the five percent level, the maximum eigenvalue statistic of 26.57 indicates that there are at most two cointegrating equations for the sample of black women.

Therefore, if the level of significance is set at the one-percent level, the Johansen cointegration tests indicate there is one equation that describes the long-run relationship between the four endogenous variables for each sample. To capture the proper long-run dynamics in the VAR, this long-run relationship must be incorporated into the estimation of the vector error correction models.

Vector correction model

To determine the relationship between the percentage of divorcees, the average hours worked, the average, annual wage income and the average number of children at home, a VAR is estimated for each sample of women. Since the variables in each sample are nonstationary and cointegrated, a vector error correction model is estimated with first-differenced data. This model builds in the one cointegrating equation found in the previous section and restricts the endogenous variables to converge to their long-run behavior even though short-run dynamics are still allowed.²

The regression procedure used in the all women sample estimates four separate equations, each with eleven explanatory variables. Therefore, 44 different regression parameters are estimated. To visualize how well the model explains the four endogenous variables, the actual value of the variable is plotted against the predicted value of the variable. These plots are reported in Figures 5 – 8 and they reveal a model where the predicted values closely track the actual variables.

Likewise the plots of the actual and predicted values of the four endogenous variables in the sample including black women are reported in Figures 9 – 12. This model includes 3 lags of each dependent variable as explanatory variables in each of the four regression models in addition to including the intercept, the time trend and the variable capturing the cointegrating equation. This system of seemingly unrelated equations estimates a total of 60 regression parameters.³ Examination of Figures 9 – 12 again show another set of equations where the predicted values closely follow the actual values. The ability of both estimation models to

² Estimates of the cointegrating equation for each sample are available upon request.

³ Estimation results from either sample are available upon request.

accurately predict the endogenous variables in either sample results in additional confidence in the reliability and validity of the impulse response functions that are analyzed next.

Key results from the impulse response analysis

Statistical inference in the vector error correction model is complicated and the current practice of analyzing how the endogenous variables respond to exogenous shocks in the other variables is to construct impulse response functions. In the impulse response functions that follow, there was an exogenous, one standard deviation shock or innovation to one of the endogenous variables. These innovations are orthogonalized using the inverse of the Cholesky factor of the residual covariance matrix and adjusted for the degrees of freedom.

Figure 13 shows the response of the average hours worked to an innovation in the percent divorced. The response differs whether the sample includes all women or the sample includes only black women. In the sample including all women (the majority of which was white), increased divorce rates lead to more hours worked. This result is consistent with previous findings using aggregate U.S. data. However, when the sample is disaggregated and only black women are included, increased divorce rates have no noticeable long-run affect on hours worked. The plot hovers slightly above 0.00, showing no large, significant increase in hours worked, a result that is contrary to what has been found with aggregate U.S. data.

Figure 14 shows that the average percent of divorcees increases with an increase in wages. This behavior was observed in both samples: the sample including all women and the sample including only black women. In terms of magnitude, it appears that black women show a relatively larger response to the increase in wages. Likewise, Figure 15 shows that higher wages leads females to work more hours per week. Again, the net effect shows a larger response in the sample of black women than the sample that includes all women.

The next response function also shows conflicting results. Referring to Figure 16, when the data sample includes all women, an increase in wages leads to a very small increase in the average number of children. However, when the data sample is only black women, higher wages lead to smaller family sizes.

Finally, Figure 17 provides evidence that an innovation in the divorce rate leads to smaller family sizes. In both data samples, the one including all women and the one including only black women, increases in the divorce rate lead to fewer children, with black women showing a stronger response.

V. Concluding Thoughts

A previous study using aggregate U.S. time series showed that increase in the divorce rate led to high female labor force participation rates. This paper shows that this result may differ across races. Impulse response functions indicate the average number of hours worked by black women was much less sensitive to an increase in the percentage of black female divorcees than the sample that included all women, most of which were predominately white. Like the past study, whether the sample included all women or just black women, impulse functions showed that higher wages resulted in both larger percentages of divorced females and increases in hours worked. In both of these cases, the impulse functions for black women showed a larger response.

Future work with this data set involves applying a similar analysis to Hispanic women. Though it will involve smaller time series, a similar study can be done using fertility rates from the CDC and labor force participation rates from the BLS. One of the most important contributions that this paper provides is an estimate of the willingness to divorce across racial boundaries.

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Table 1
Augmented Dickey-Fuller Tests

<i>Sample Including All Women</i>					
<i>Level Data</i>			<i>First-Differenced Data</i>		
Variable	Test Statistic	Lags	Variable	Test Statistic	Lags
Percent Divorced†‡	1.26	0	Percent Divorced†‡	-5.13*	0
Wage Income†‡	-2.66	4	Wage Income†‡	-5.33*	3
Hours Worked†‡	-1.59	1	Hours Worked†‡	-4.00**	0
Number of Children	-1.18	0	Number of Children	-5.87*	0

<i>Sample of Black Women Only</i>					
<i>Level Data</i>			<i>First-Differenced Data</i>		
Variable	Test Statistic	Lags	Variable	Test Statistic	Lags
Percent Divorced†‡	-1.70	1	Percent Divorced†‡	-9.31*	0
Wage Income	2.51	9	Wage Income	9.28*	0
Hours Worked†‡	-3.59**	2	Hours Worked†‡	-5.89*	0
Number of Children†‡	-2.14	0	Number of Children	-6.46*	0

* (**) indicates the null hypothesis that the time series has a unit root is rejected at the 1% (5%) level. † indicates that the regression model included an intercept, while ‡ indicates the regression included both an intercept and a time trend. Annual data: 1964 – 2007.

Table 2
Granger Causality Tests: Annual Data

Null Hypothesis	Sample			
	All Women		Black Women	
	F-Statistic	Lags	F-Statistic	Lags
Wage income does not Granger cause divorce percent	10.13*	1	0.37	2
Divorce percent does not Granger cause wage income	10.83*	1	1.05	2
Hours of work do not Granger cause divorce percent	0.28	2	0.00	1
Divorce percent does not Granger cause hours of work	9.73*	2	4.45**	1
Weeks of work do not Granger cause divorce percent	0.17	2	0.71	2
Divorce percent does not Granger cause weeks of work	15.08*	2	5.10**	2
Number of children does not Granger cause divorce percent	0.00	1	0.02	1
Divorce percent does not Granger cause number of children	3.46***	1	14.50*	1

*, **, and *** indicate the null hypothesis can be rejected at the 1% level, 5% level, or 10 % level, respectively. Annual data: 1964 – 2007.

Table 3
Johansen Cointegration Tests

Variables: Percent Divorced, Annual Wage Income, Hours Worked Per Week, Number of Children

Model Including All Women (2 lags)

Null Hypothesis: Number of Cointegrating Equations	Trace Statistic	0.01 Critical Value	0.05 Critical Value
None	80.85*	62.52	55.25
At most 1	36.87**	41.08	35.01
At most 2	16.47	23.15	18.40

Null Hypothesis: Number of Cointegrating Equations	Maximum Eigenvalue Statistic	0.01 Critical Value	0.05 Critical Value
None	43.98*	36.19	30.82
At most 1	20.41	29.26	24.25
At most 2	16.47	21.74	17.15

Model Including Only Black Women (3 lags)

Null Hypothesis: Number of Cointegrating Equations	Trace Statistic	0.01 Critical Value	0.05 Critical Value
None	78.41*	62.52	55.25
At most 1	38.37**	41.08	35.01
At most 2	11.80	23.15	18.40

Null Hypothesis: Number of Cointegrating Equations	Maximum Eigenvalue Statistic	0.01 Critical Value	0.05 Critical Value
None	40.04*	36.19	30.82
At most 1	26.57**	29.26	24.25
At most 2	11.55	21.74	17.15

* and ** indicate the null hypothesis can be rejected at the 1 % level and the 5 % level, respectively. The cointegrating equation and the VAR for both models include an intercept and a quadratic deterministic trend. Annual data: 1964 - 2007.

Figure 1
Percent Divorced: 1964 - 2007

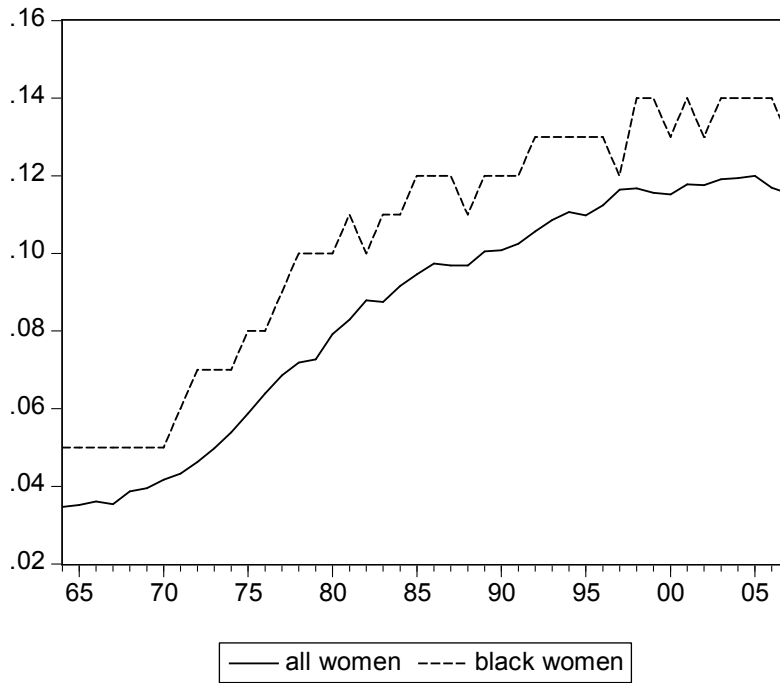


Figure 2
Average Hours Worked Previous Week: 1964 - 2007

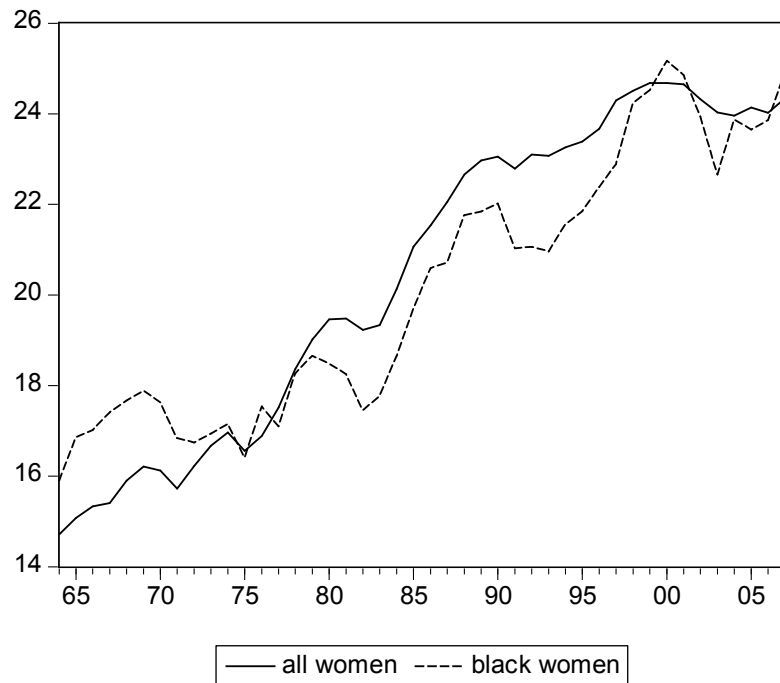


Figure 3
Average Number of Children: 1964 - 2007

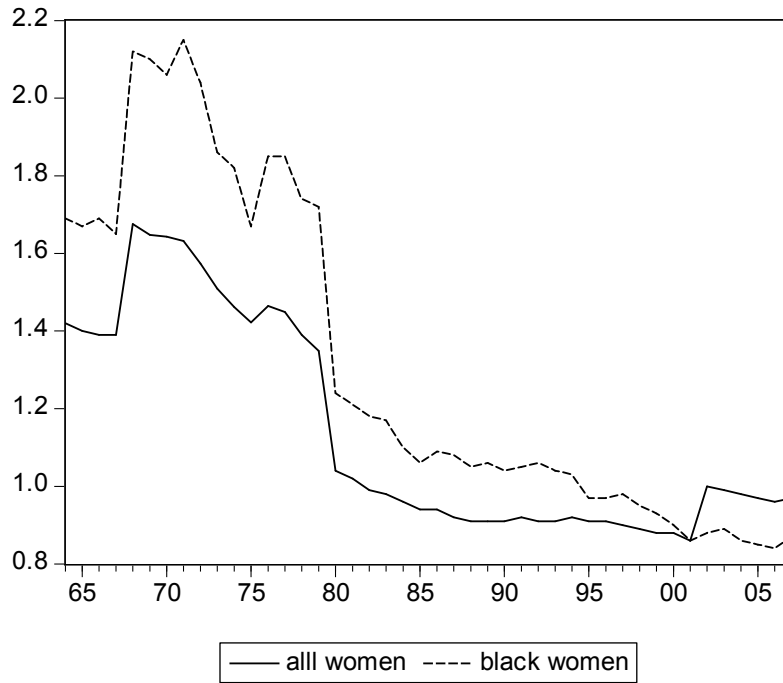


Figure 4
Average Annual Wage Income: 1964 - 2007

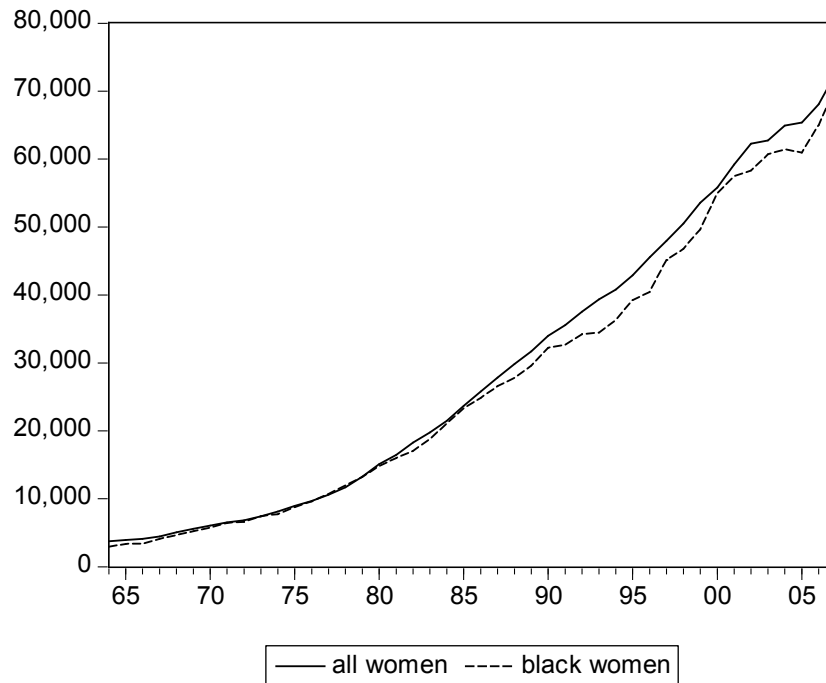


Figure 5
Divorce Rates, All Women: Actual and Predicted Values from VEC

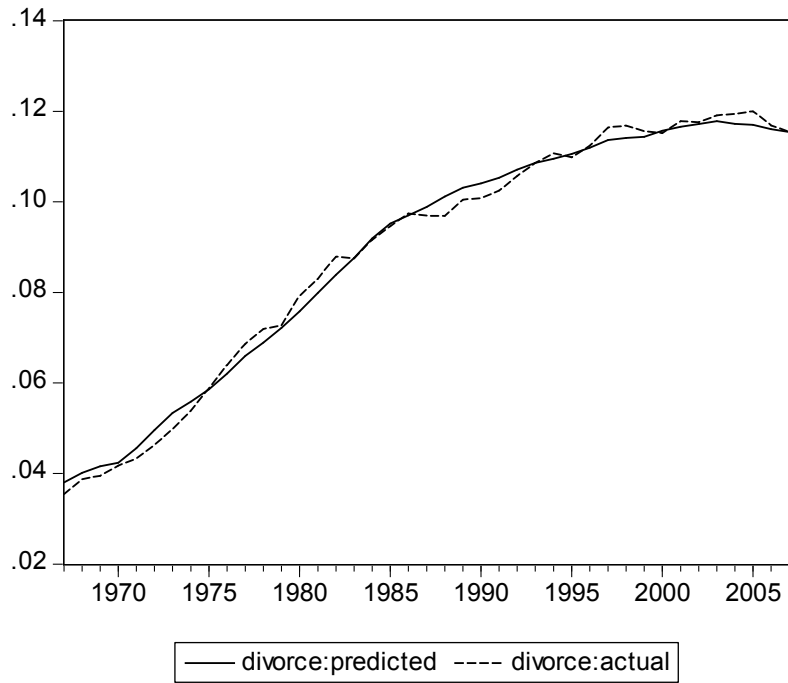


Figure 6
Average Hours Worked Previous Week, All Women: Actual and Predicted Values from VEC

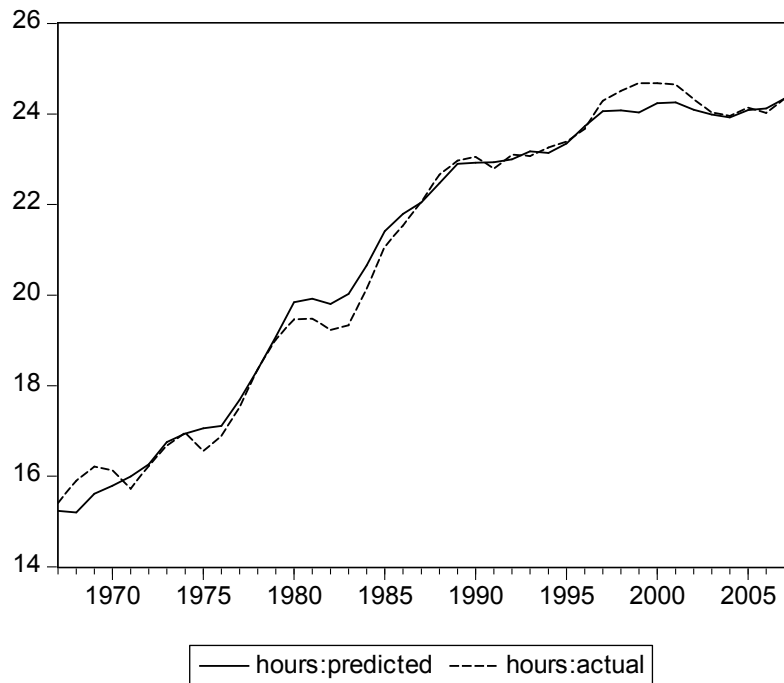


Figure 7
Average Number of Children, All Women: Actual and Predicted Values from VEC

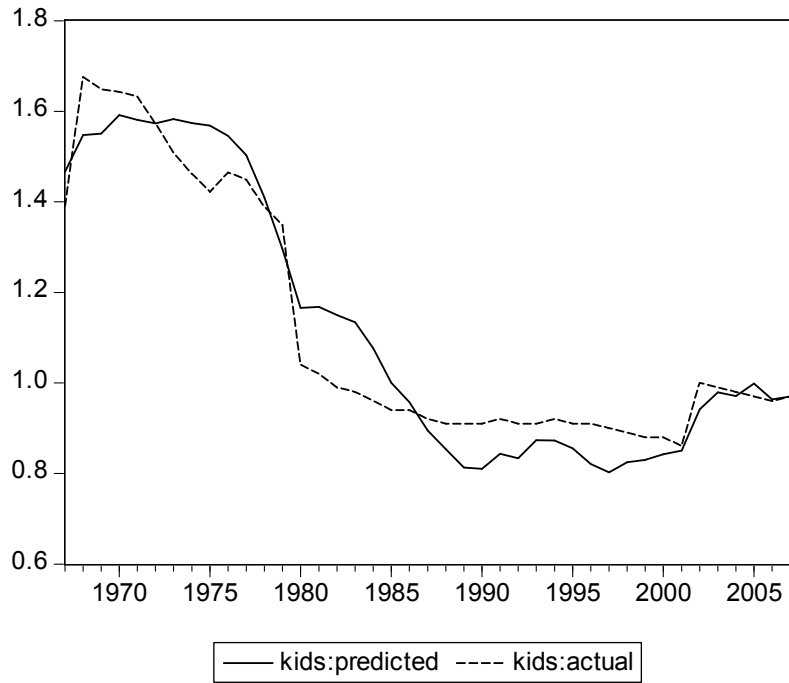


Figure 8
Average Annual Wage Income: All Women: Actual and Predicted Values from VEC

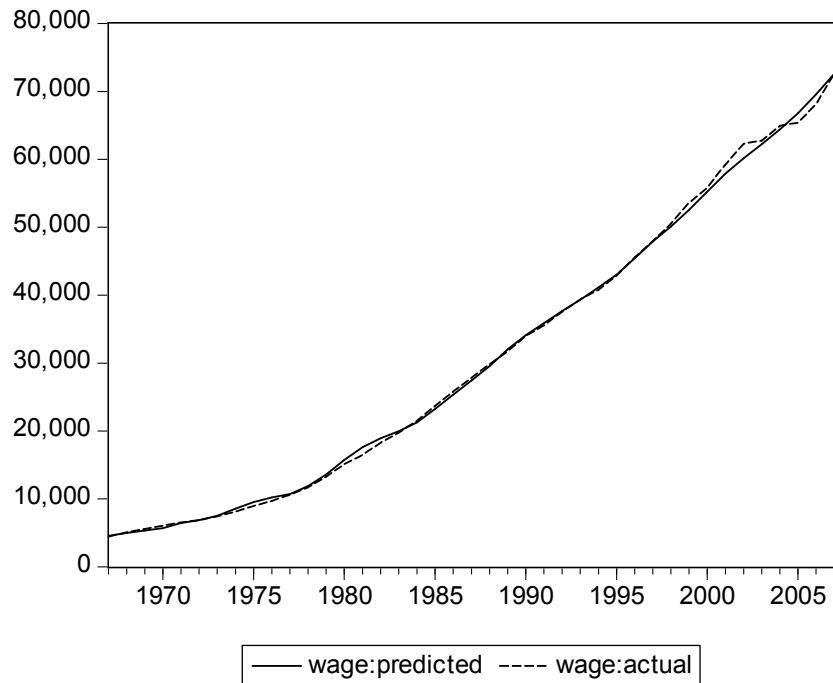


Figure 9
 Divorce Rates, Black Women: Actual and Predicted Values from VEC

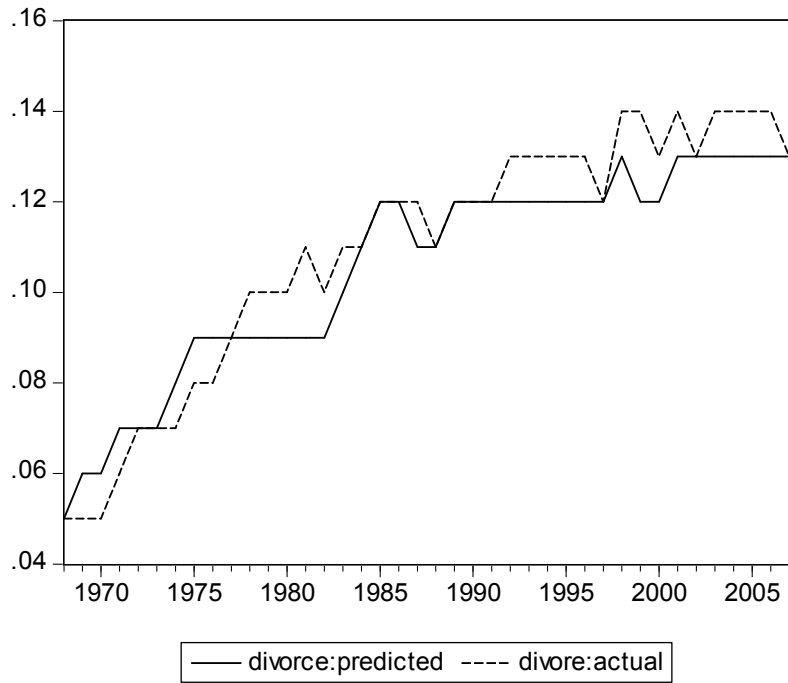


Figure 10
 Average Hours Worked Previous Week, Black Women: Actual and Predicted Values from VEC

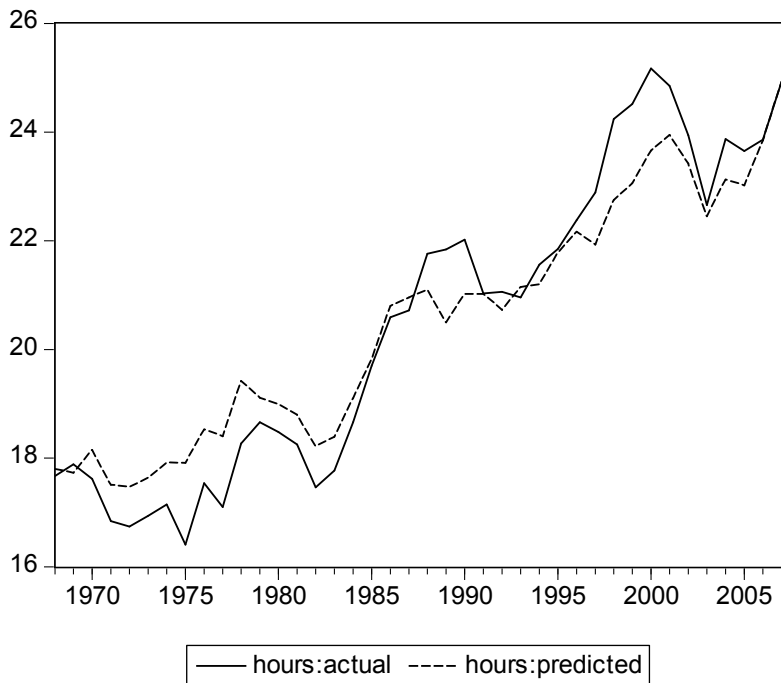


Figure 11
Average Number of Children, Black Women: Actual and Predicted Values from VEC

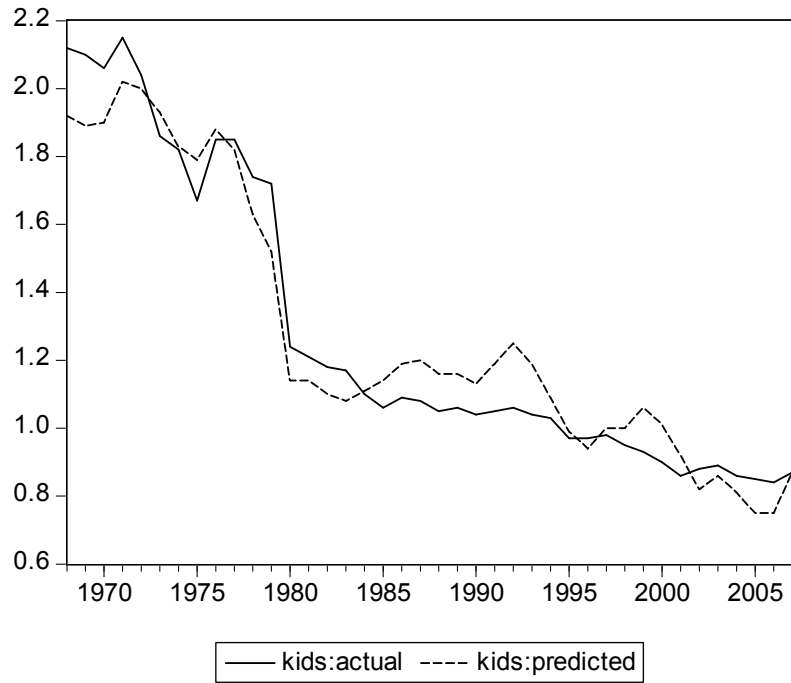


Figure 12
Average Annual Wage Income: Black Women: Actual and Predicted Values from VEC Black Women:

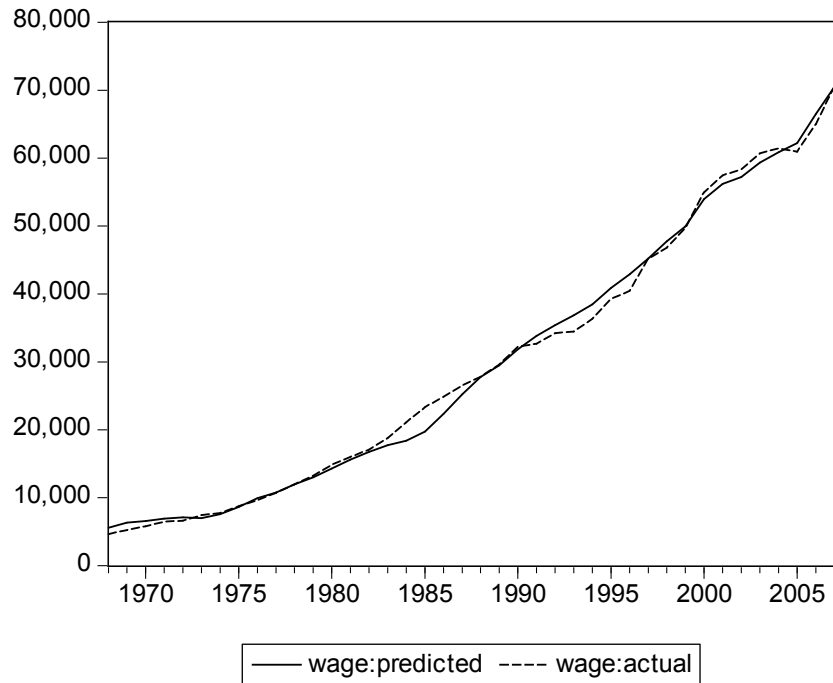


Figure 13
 Impulse Response of Average Hours Worked to Percent Divorced

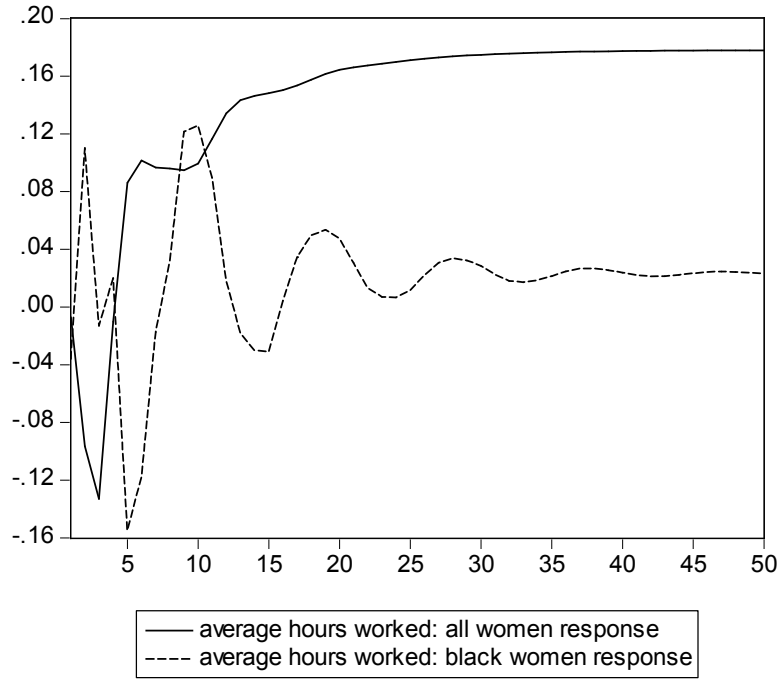


Figure 14
 Impulse Response of Average Divorce Percentage to Wages

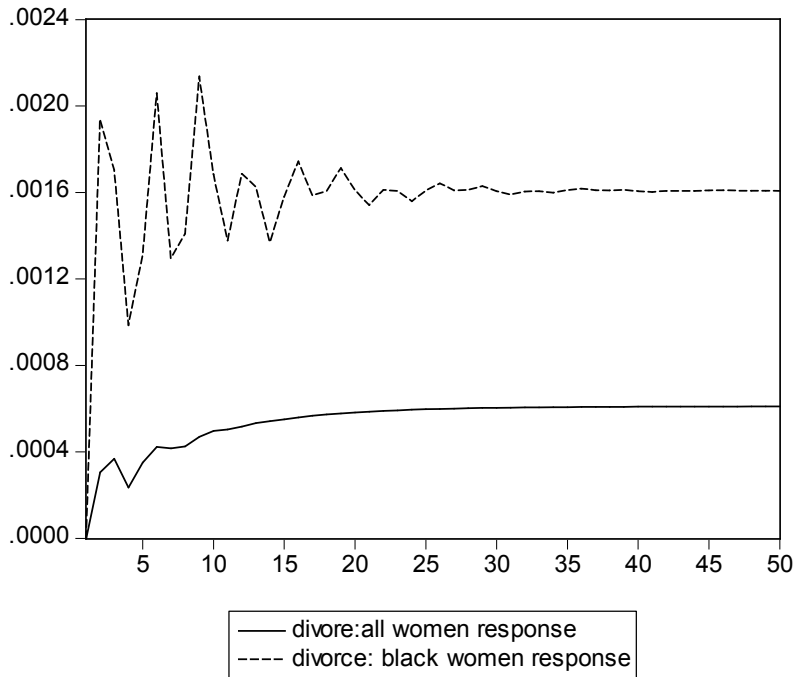


Figure 15
Impulse Response of Average Hours Worked to Wages

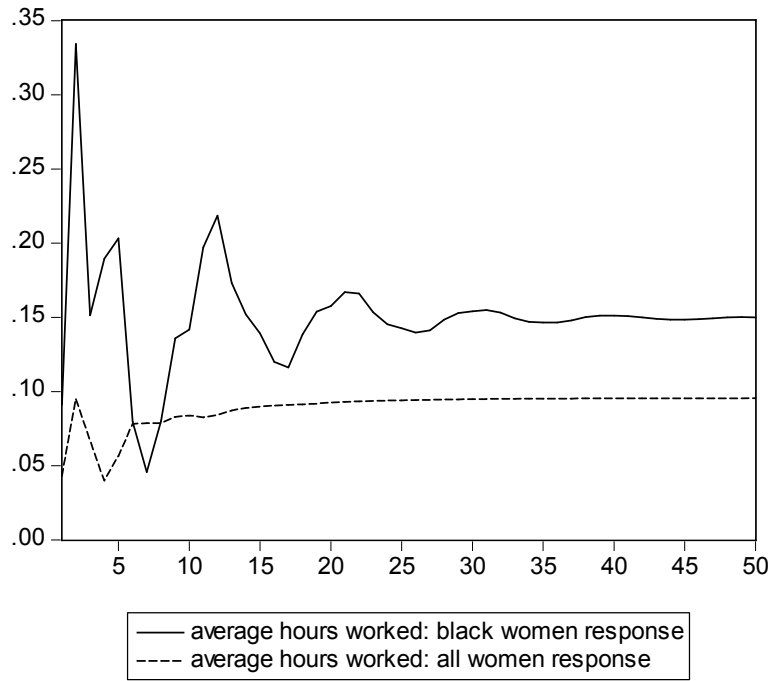


Figure 16
Impulse Response of Average Number of Children to Wages

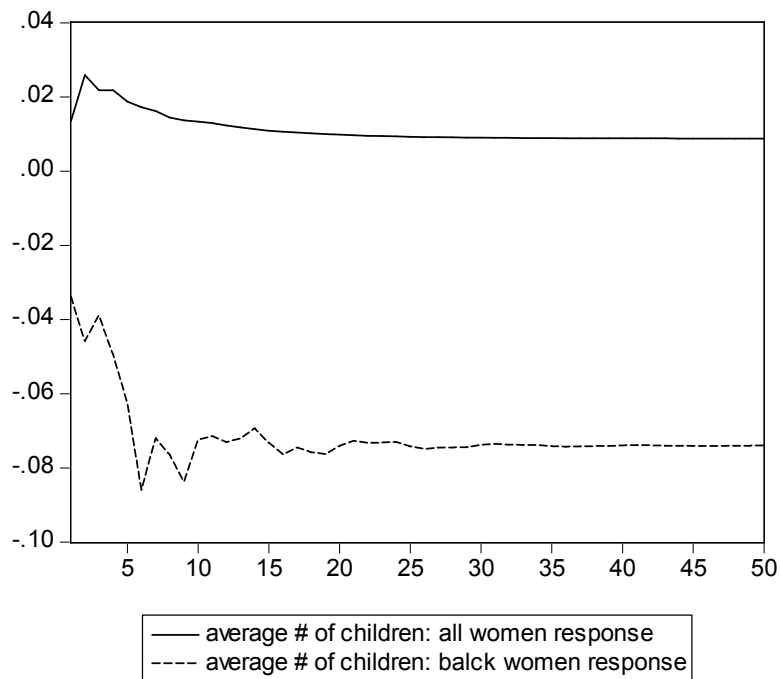


Figure 17
Impulse Response of Average Number of Children to Percent Divorced

