

Infidelity & GDP

A Study By Bobby Goldstein Productions, Inc. & *Cheaters*®

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Hypothesis:

Cheaters® hypothesizes that infidelity, like health care and poverty, has an economic impact on our nation that is a very real yet understudied hindrance to our success as a nation. For the individuals directly affected, *Cheaters*® hypothesizes that the direct financial costs of infidelity result in broken homes, less earning power than a nuclear family unit, and higher levels of poverty; along with higher medical costs associated with depression, other mental health issues and STDs. Society as a whole also suffers due to lost productivity associated with the behavior and depression due to infidelity. Finally, large amounts of personal spending are dedicated toward paying for the act and ramifications of infidelity. This spending would otherwise be injected into the larger economy.

Introduction:

One of the most significant measures of economic recovery is Gross Domestic Product (GDP). At a time when unemployment rates are high, job security is low, and our nation is in the depths of a housing crisis, U.S. policymakers are concerned with stimulating economic recovery. Family fragmentation often accompanies economic crisis. Family disintegration is often measured in divorce rates, increases in single-head households, and rates of infidelity. The leading cause of family fragmentation in the U.S. is economic strife, followed by infidelity. The objective of this study was to see how those two factors are related. *Cheaters*® sought to determine how infidelity affects GDP.

Gross Domestic Product:

GDP is the variable that is most commonly used to monitor changes in the economy because it is the most comprehensive measure of economic activity. When GDP falls and the country is in a recession, personal income, corporate profits, consumer spending, investment spending, industrial production, and many other variables show marked decreases. When GDP is increasing, business is good and consumer spending, personal income, and similar variables increase. Technically defined, GDP is the “market value of all final goods and services produced within a country in a given period of time.” (Mankiw, 2003).

Gross Domestic Product is the total market value of all final goods and services produced by factors of production, located within a nation’s borders. There are two main methods of measuring Gross Domestic Product, the Expenditure Approach and the Income Approach. The Expenditure Approach is the more traditional method. This method involves computing GDP by adding up the dollar value at current market prices of all final goods and services. This measure of GDP is computed by:

GDP=

Consumption Spending (Spending on Goods and Services) +

Investment (Gross Private Direct Investment, includes the creation of capital goods such as factories and machines that can yield production and hence Consumption in the Future; note that this does not include research or employee education) +

Government Expenditures (State, Local, and Federal Expenditures, valued at cost) +

Net Exports (Exports-Imports)

This is the measure that will be used to calculate the effects of infidelity on GDP.

Definitions of Infidelity:

There are a range of definitions of infidelity among cultural groups and even among individuals in relationships. According to the existing scholarly literature infidelity is defined as “a sexual/emotional act engaged in by one person within a committed relationship, where such an act occurs outside of the primary relationship and constitutes a breach of trust and/or violation of agreed upon norms that relate to romantic/emotional or sexual exclusivity.” (Blow et al, 2005). Numerous studies have been conducted in the U.S. to determine the rate of infidelity across sex, race, income, education, and various other demographic factors. *Cheaters*® had to get an accurate view of the number of people in the United States who engage or have engaged in infidelity. Early infidelity studies such as those conducted by Kinsey in the 1950s stated that 50% of men and 25% of women had engaged in infidelity. It is impossible to determine the reliability of Kinsey’s findings, as many were done with the prison population. Interestingly enough, much of the current infidelity research was funded with government grant money during the AIDS crisis.

Since 1972, The University of Chicago has conducted the General Social Survey, which concluded in 2010. Chicago researchers define infidelity as “sex with some person other than your spouse. They ask follow up questions such as “what is your opinion about having sexual relations with someone other than the marriage partner?” The General Social Survey data results were either outdated (from the 1970s) or not yet available for purchase for public use.

The Current Population Survey, the National Survey of Family Growth, and the National Health Interview Survey all ask questions about sexual history, such as the number of times the survey respondent engaged in premarital sex, as well as questions about the number of sexual partners and whether protection was used, etc. Unfortunately, most of these studies did not include questions about whether the survey respondent had engaged in an extramarital affair. The most comprehensive study that has ever been conducted regarding sexual behavior was the National Survey of Sexual Health and Behavior conducted by researchers at Indiana University. This study only recently concluded and preliminary results have just become available. After much time spent making inquiries to these researchers, *Cheaters*® was not able to purchase or obtain any data from them that was not available to the general public.

Thus, with no access to infidelity data sets, prior research results were relied on to determine the probability of each socio-demographic group engaging in infidelity.

Estimating Infidelity Rates in the United States:

In 2005, Adrian Blow and Kelley Hartnett did a comprehensive literature review of all of the academic work that had been done on infidelity in committed relationships. They found that there were numerous ways that researchers defined infidelity. The variable did not have a consistent definition, which is one of the major critiques of the infidelity literature. The numerous definitions of infidelity made it very hard to evaluate the various studies or engage in comparisons among the studies. Infidelity in one study does not mean the same thing in another study. Furthermore, each unique relationship, whether married, cohabiting, heterosexual, or homosexual has very different beliefs about what constitutes infidelity (Blow and Hartnett, 2005).

Blow and Hartnett note that one of the main problems with the infidelity literature is that “most studies and couples favor a definition of heterosexual, extramarital intercourse.” As well, the authors were “surprised by the overall lack of rigorous, focused studies related to infidelity.” This is perhaps due to confidentiality fears, distorted information provided by study participants, and the secretive shameful nature of the subject of infidelity. Most, if not all, of the studies done on or related to infidelity were limited to heterosexual, middle-to-upper class, married, Caucasian samples (Blow and Hartnet, 2005). There is a severe lack of academic and scholarly work done on the state of non-marital infidelity in our country since most of the studies have focused exclusively on infidelity related to marriage.

Rates and Determinants of Marital Infidelity:

Studies from the early 1990s have shown that between 1.5% and 3.6% of married persons had a secondary partner in the last year (Smith, 1991; Chioi et al, 1994). A later study found that extramarital sex was reported by 15.5% of all respondents (Treas et al, 2000). The 2001 Atkins and Baucom paper combined previous scholarly research to better understand the indicators and ramifications of infidelity. Greely (1994) estimated that nearly a quarter of all Americans would engage in infidelity at some point during their lifespan.

Factors that demonstrate a statistically significant relationship to infidelity include age, education, history of divorce, religiosity, length of relationship, gender, relationship satisfaction, and opportunity to cheat. The variables *relationship satisfaction*, *relationship dissatisfaction* and *marital conflict* are significantly related to the risk of infidelity (Laumann et al, 2000). There were significant interactions between marital satisfaction and attendance of religious services as well. The Atkins and Baucom study used 1991-1996 data from the General Social Survey and

found that infidelity is most likely among couples in longer marriages, less religious couples, more highly educated couples, and couples including individuals who have previously been divorced (Atkins et al, 2001).

The variable *gender* also has a very strong impact on infidelity. Numerous studies have found that men are more likely to have sexual affairs than women, and women are more likely to have emotional affairs than men (Atkins and Baucom, 2001). The effect of gender is diminished among younger populations. One study showed that if the respondent was less than 40 years old, there was no difference in reported infidelity (Wilderman et al, 1997). Among women and men born more recently, the likelihood of infidelity is the same for both genders. Among older cohorts, men were previously more accepted in society when cheating. Younger women are now more likely to cheat due to cultural influences, such as increasing levels of women in the workforce. As discussed earlier, there is a significant increase in infidelity with employment and financial resources (Atkins et al, 2001).

The relationship between infidelity and income is what is most interesting for the study. Less extramarital sex, EMS, existed when neither partner was employed. Income was only significantly associated with EMS for those who make more than 30,000 a year. People with graduate degrees were 1.75 times more likely than those with high school degrees to engage in EMS. EMS also steadily decreased as the age at which participants who were first married increased, most likely reflecting an education and income bias (Atkins et al, 2001). Thus, if the couple was married at a younger age, there was a higher likelihood of cheating.

The variable *opportunity to cheat* has been widely defined in the scholarly research. Greely (1994) argued that men are in the workforce at a higher rate and with more hours worked

then women, thus men have more opportunity to engage in infidelity. A situation in which the respondent worked and the spouse was at home yields the greatest report of infidelity (Atkins et al, 2001). Some scholars have defined *opportunity to cheat* as the number of days traveling for work, liberality of beliefs, and numerous other measures. They also found that income and work status were the most significant variables. Their explanation for this is that money is equated with power, and thus wealth individuals are more appealing. One of the best measures of *opportunity to cheat* is income.

Consequently, the most important variable for predicting infidelity is income. It is easier for more affluent individuals to hide the costs of entertainment, accommodations, etc. Income could be a proxy for other measures, such as higher status, travel, and interaction with others in the professional world.

Non-Marital Infidelity:

After an extensive review of the scholarly literature, there were two articles that were found which referenced non-marital infidelity in the last twenty-five years. The objective of the study was not even to measure non-marital infidelity, but to argue that the method of infidelity discovery plays an important role in prediction of subsequent relational outcomes (Afifi, Falato, & Weiner, 2001). The other study was performed by Wiederman and Hurd in 1999. These studies included very small samples of college students. Afifi et al just looked at 115 college students who had already experienced infidelity in a dating relationship.

Wiederman and Hurd, 1999 just reported that "75% of men and 68% of women had engaged in some sort of extra dyadic dating activity." This is an almost irrelevant statistic as their definitions of infidelity were related to going on a date (how does one define a

date?) to just a kiss, to all the way up to oral sex and vaginal intercourse. The wide varieties of definitions regarding infidelity for that study make it very difficult to compare to the marital infidelity studies which had such concrete literature.

Considerable time was spent researching how to go about measuring the effects of non-marital infidelity on GDP. However, other economists and scholars at Clemson University were consulted, none felt that a decisive conclusion on how non-marital infidelity affects GDP could be reached. This is due to the extremely scant research that has been done on this subject. Frankly, a larger, more extensive study needs to be conducted. A study of 115 participants tells us very little in relation to how this type of infidelity affects the entire nation.

Methodology for Establishing a Statistically Significant Relationship between GDP and Infidelity:

In order to establish whether there is a statistically significant relationship between GDP and infidelity, the United States population must first be broken into socio-demographic categories according to race, age, education, and income. Using data results from Choi et al, the probability of infidelity for the various socio-demographic groups will be constructed (Choi et al, 2004). See Table 1. The results from this particular study were chosen because this paper was most comprehensive for determining the infidelity probability for each socio-demographic group. Please note that Tom Smith wrote “American Sexual Behavior: Trends, Socio-demographic differences, and Risk Behavior” that provided similar, but not as complete, demographic data from which we could have made inference (Smith, 1998).

Table 1

The table below lists the independent probabilities of an individual engaging in infidelity. Infidelity probabilities garnered from Choi et al, 2004.

	Male	Female	
Race			
White	.0021	0.08	
African-American	0.04	0.044	
Hispanic	0.109	.053	
Other	0.072	0.078	
Age			
15-29 years	0.042	0.027	.0345
30-39	0.026	0.022	.0243
40-49	0.034	0.0022	.0000748
50-59	0.03	0.022	.00066
60-74	0.002	0.0	0
Education			
Less than high school	0.066	0.022	.001452
High school graduate	0.012	0.006	.000072
Some college through doctorate degree	0.026	0.020	.00052

The approach will be to assume independence among the various categories in order to determine, for example, the percentage of white men, between the ages of 60-75, with a high school education, and with an income between 40,001-60,000 dollars per year who engage in infidelity. For example, the probability of an individual in the category Male and White and 15-29 engaging in infidelity is defined as $P(\text{Inf}|\text{M and W and 15-29})$. Since the table doesn't provide this probability, it can be approximated as $P(\text{Inf}|\text{M and W})P(\text{Inf}|15-29)$ using the chain rule. So the probability is $(0.021) * ((.042+.027)/2)$ assuming that M and F have approximately the same numbers.

Income data was garnered from the Current Population Survey, the product of collaboration between the U.S. Census Bureau and the Bureau of Labor and Statistics. Using this data, the U.S. population was constructed into the socio-demographic groups categorized in Table 2 for race, gender, and age. In addition, the U.S. population was constructed into socio demographic groups as categorized in Table 3 for race, gender, and education. Then the weighted average income was found for each of the following demographic groups (see Table 2 and Table 3).

Table 2 (Sources for data:http://www.census.gov/hhes/www/cpstables/032010/perinc/new01_027.htm)

Race	Gender	Age	Probability of infidelity	Weighted Average Income
White	Male	15-29	0.0007255	23,660.10
White	Male	30-39	0.0005103	56,896.49
White	Male	40-49	1.5708E-06	66782.29
White	Male	50-59	0.00001386	65371.13
White	Male	60-74	0	52831.59
White	Female	15-29	0.0001944	18661.37
White	Female	30-39	0.0001944	35972.86
White	Female	40-49	5.984E-07	38780.97
White	Female	50-59	0.00000528	38768.35
White	Female	60-74	0	30214.32
African-American	Male	15-29	0.00138	17139.66
African-American	Male	30-39	0.000972	37506.16
African-American	Male	40-49	0.000002992	40821.72
African-American	Male	50-59	0.0000264	41776.81
African-American	Male	60-74	0	33941.96
African-American	Female	15-29	0.001518	15656.64
African-American	Female	30-39	0.0010692	29575.64
African-American	Female	40-49	3.2912E-06	34269.52
African-American	Female	50-59	0.00002904	30231.92
African-American	Female	60-74	0	24724.53
Hispanic	Male	15-29	0.0037605	18873.91
Hispanic	Male	30-39	0.0026487	33276.12
Hispanic	Male	40-49	8.1532E-06	39307.07
Hispanic	Male	50-59	0.00007194	39342.66
Hispanic	Male	60-74	0	32801.94
Hispanic	Female	15-29	0.0018285	15907.04
Hispanic	Female	30-39	0.0012879	26369.75
Hispanic	Female	40-49	3.9644E-06	26942.78

Hispanic	Female	50-59	0.00003498	27326.96
Hispanic	Female	60-74	0	21143.44

Table 3

Race	Gender	Education	Weighted Average Income
White	Male	Less than high school	19573.34
White	Male	High school graduate	31970
White	Male	Some college through doctorate degree	53256.17
White	Female	Less than high school	15515.65
White	Female	High school graduate	23264
White	Female	Some college through doctorate degree	40560
African- American	Male	Less than high school	19845.94
African- American	Male	High school graduate	30323
African- American	Male	Some college through doctorate degree	46951.04
African- American	Female	Less than high school	13766.14
African- American	Female	High school graduate	21841
African- American	Female	Some college through doctorate degree	35681.58
Hispanic	Male	Less than high school	22417.88
Hispanic	Male	High school graduate	30727
Hispanic	Male	Some college through doctorate degree	51670.57
Hispanic	Female	Less than high school	14851.26
Hispanic	Female	High school graduate	21351
Hispanic	Female	Some college through doctorate degree	35191.33

The weighted average income was then used for each category as a proxy for GDP in the regression analysis. Economists use income to derive marginal propensity to consume (MPC). MPC is the ratio of the change in consumption to the change in income. In essence, this concept used by economists simply states that an increase in personal consumption spending occurs with an increase in personal income. Consequentially, from income consumption can be derived. Consumption spending, as stated previously, is nearly 2/3 of GDP in the United States economy.

The regression model is modeled as follows:

$$y = \beta_0 + \beta_1x + e_i$$

where y = income as a proxy for GDP and x = infidelity probability. Regression analysis is simply a statistical method of determining the relationship between variables. It is used to determine the effect of one variable on another. In this paper, data was assembled on the probability of infidelity among various demographic groups and their income. Regression analysis was then used to estimate the quantitative effect of infidelity on income. From there, the statistical significance of the relationship between infidelity and income was assessed. Statistical significance is simply how confident one is that the true relationship between the variables is close to the estimated relationship among the variables.

A statistically significant relationship was found between infidelity and GDP for the database created with Table 2, concerning race, gender, age, and income; please see Table 4. Results from the database created with Table 3, concerning race, gender, education, and income were not significant. Further investigation is needed to see why that might be the case. Only the results from Table 2 will be discussed, concerning race, gender, age, and income.

Table 4 (results from database, Table 2)

Source	Degrees of Freedom	Sum of Squares	Mean Square	F Ratio	Prob >F
Model	1	906678001.03	906678001.03	6.0034	0.028
Error	28	4228765859.8	151027352.14		
C. Total	29	5135443860.8			

The relationship that is seen was highly influenced by Hispanics and that led to shifts in income and infidelity. The overall impact of infidelity on GDP is significant, but not strong using this approach.

Proven Statistical Relationship Between Infidelity and GDP:

As can be seen in Table 5 from the regression results, there is a negative relationship between infidelity and GDP; this is demonstrated by the negative coefficient estimate on the variable probability of infidelity. **This negative sign on the coefficient of interest designates that as the probability of infidelity increases, GDP decreases.**

Table 5

Term	Estimate	Standard Error	T-ratio	Prob > t
Intercept	37134.148619	2617.9518423	14.18	<.0001
Probability of infidelity	-6085930.771	2483866.6292	-2.45	0.0208

Now that it has been determined that there is a statistically significant relationship between infidelity and GDP, the monetary impact of infidelity on GDP will be determined.

Divorce and Infidelity:

Divorce is the major consequence of infidelity and hence the main source of cost that will be investigated. It has been shown that marriage problems stemming from infidelity are the most difficult problem to treat in therapy (Whisman, 1997). Therapists dealing in couples' therapy have stated that 50-65% of couples in marriage counseling are there due to infidelity (Glass and Wright, 1988). There have been many studies which have tried to determine the number of marriages that end in divorce due to infidelity. Amato et al (1997) investigated the extent to which reports of marital problems in the 1980s would predict divorce between 1980 and 1992. This study used nationally representative panel data, which addressed the questions of validity of people's self-reports of marital problems. Some of the most frequently cited marital problems included communication difficulties, general incompatibility, drug use, and disagreements over money. The highest cited marital problem which led to divorce was infidelity (Cleek and Pedison, 1985; Kitson, 1992). Extramarital sex was prominent in 8/9 studies summarized by Kiston, Babri, and Roach (1985).

Shackelford and Buss note that despite the tremendous costs involved with divorce, many couples divorce following detection of infidelity. The fact that so many couples do divorce following the discovery of infidelity attests to the perceived costs that accompany infidelity (Shackelford, 1997). Betzig's 1989 ethnographic study of 160 cultures found that marital infidelity was the leading cause of divorce, with nearly 80 percent of the cultures stating that infidelity was the primary and only cause of their divorce. Studies of divorce in Western nations have suggested that nearly 25-50% of divorces are due to spousal infidelity.

David Buss (1994) states that "from an evolutionary psychological perspective, infidelity signals the diversion of important reproductive resources." Buss and Shackelford developed an instrument in which each spouse estimated the probability that he or she would seek divorce if their partner engaged in various types of infidelity. They used recently married couples for their study because divorce is most likely to occur in the first few years of marriage. They found that couples estimated that infidelity would lead to divorce nearly 50% of the time.

According to conservative estimates, infidelity occurs in 20-25% of all marriages (Greeley, 1994; Laumann, Gagnom, Michael and Michaels, 1994; Wiederman, 1997). Consequently, 25-50 of divorcees report that a spouse's infidelity was the primary cause of their divorce (Kelly and Conley, 1987). Infidelity has been shown to be the strongest and most proximal cause of relationship dissolution. Among married couples, the risk of relationship dissolution is greatest when a spouse is both sexually and emotionally involved with an outside partner (Glass, 2003).

Explaining the Economic Effect of Infidelity on Gross Domestic Product:

As previously stated, 25-50% of divorcees report that a spouse's infidelity was the primary cause of their divorce (Kelly and Conley, 1987). The majority of scholars has put that estimate closer to fifty-percent. The costs of divorce due to infidelity will be based on the methodology created by the Institute for Marriage and Family, titled "The Taxpayer Costs of Divorce and Unwed Childbearing" (Scafidi, 2008). This study elaborates on the well-known economic implications of divorce and unwed childbearing, measuring the taxpayer costs of family fragmentation to U.S. taxpayers in all fifty states. The major assumption made was that all costs of divorce stems from the effects of family fragmentation on poverty. The legal costs of divorce were not included.

The costs of divorce on families have been well-established and quantified. The costs of family fragmentation include increased tax expenditure for antipoverty programs, criminal justice, education programs, and lower levels of taxes paid by the children of divorce who grow up earning less due to decreased opportunity. The "Taxpayer" study used indirect estimates based on the assumption that marriage has no independent effects on adult and children. When parents either part or fail to marry, there is increased poverty, mental illness, juvenile delinquency, and adult criminality among the children involved (Scafidi, 2008).

Furthermore, the increase in divorce due to infidelity has led to an increase in the number of people in need of social welfare services. Social welfare costs, increased teen pregnancy, domestic violence, and crime rates are often attributable to children of divorce and divorcees, which dramatically raise costs to taxpayers. Family fragmentation has been proven to increase crime (O'Brien and Stockard, 2003). Divorce increases the need for and cost of child-protective services and social work.

It has been well-documented that marriage reduces poverty. There are economies of scale in running a household, as well as strong benefits from having two wage earners in a home. It has been found that almost all of the increased poverty among divorced mothers is the result of divorce.

The first major assumption of the “Taxpayer” study is that the taxpayer costs of divorce and unmarried childbearing stem solely from the negative effects family fragmentation has on poverty in female-headed households. Accordingly, the resulting taxpayer costs of divorce will be conservative due to the fact that the study does not include male-headed households; most likely this study greatly underestimates taxpayer costs. The second major assumption of this study is that it assumes that marriage lifts 60% of female-headed households out of poverty. The third major assumption is that the share of expenditures on government antipoverty programs is equal to the percent of poverty that results from family fragmentation (Scafidi, 2008). The result of the third assumption is that choosing marriage instead of divorce would reduce the costs of government programs by nearly 32%.

The “Taxpayer” study uses several calculations to estimate the taxpayer costs of divorce. The estimates of costs include “calculations of foregone tax revenue in income taxes, FICA taxes, and state and local taxes... They also include the direct costs to taxpayers as result of increased expenditure on Temporary Assistance for Needy Families, Food Stamps, Housing Assistance, Medicaid, State Children’s Health Insurance Program, Child Welfare programs, Women, Infants, and Children assistance, low-income home energy assistance program, head start, school lunch and breakfast programs, and the justice system” (Scadifi, p. 13, 2008).

In other words, taxpayer costs are the social services costs that result from divorce due to infidelity, such as increased welfare costs, food stamps costs, etc. Please see Table 7 from the Scadifi article, listed below.

Table 7. Estimated Costs of Family Fragmentation for U.S. Taxpayers*	
<i>* These costs include federal, state, and local costs.</i>	
	in billions
Justice System	\$19.3
TANF – Cash Assistance	\$5.1
Food Stamps	\$9.6
Housing Assistance	\$7.3
Medicaid	\$27.9
SCHIP	\$2.8
Child Welfare	\$9.2
WIC	\$1.6
LIHEAP	\$0.7
Head Start	\$2.7
School Lunch and Breakfast Program	\$3.5
Additional U.S. Income Taxes Paid	\$6.1
Additional FICA Taxes Paid	\$9.4
Additional State & Local Taxes Paid	\$6.8
Total U.S. Taxpayer Cost of Family Fragmentation	\$112.0

Explanation of How to Calculate the Economic Effect of Infidelity on Gross Domestic Product:

Taxpayer costs are the same as Government Spending, one component of Gross Domestic Product. The increase in government spending due to divorce is \$112 billion per year. Since half of all divorces are caused by infidelity, infidelity was tabulated to increase government spending to \$56 billion each year. Government spending is one component of GDP. Government spending takes away from the other components of GDP: consumption, investment, etc.

Gross Domestic Product is a summation of consumption, investment, government spending, and net exports. Gross Domestic Product does have some “leakages”, savings and taxes “leak” out from Gross Domestic Product. Since savings is income not spent it is considered a withdrawal of spending from the income expenditure approach. Thus it is leaking out of the income expenditure stream thus called a “leakage”. As well, taxes are taken out of consumption so they are a “leakage” to GDP as well.

The first leakage to Gross Domestic Product is net taxes. These consist of tax revenues paid by households to government minus transfer payments received by households. Transfer payments mean government payments like pensions, retirement benefits, disability payments, temporary aid to needy families, etc. The second leakage is saving. Saving is the part of domestic income that is not used by households to purchase consumer goods or pay taxes.

Due to the presence of leakages in GDP, it cannot be said that because government spending increased \$56 billion due to infidelity, that GDP increased \$56 billion due to infidelity. The

effect of the increase in government spending must be calculated through use of the multiplier process. The multiplier process effect shows that an *initial change in spending* can cause a *larger change in GDP*. The multiplier *determines how much larger that change will be*; it is the ratio of a change in GDP to the initial change in spending.

The multiplier effect measures the effect that any change in expenditure (Investment, Government Spending, Consumption, or Net exports) will have on GDP. Traditionally, $\text{Multiplier} = 1/(1 - \text{Marginal Propensity to Consume}) = 1/\text{Marginal Propensity to Save}$. Marginal propensity to consume is the proportion of additional income that an individual desires to consume. For example, if a household earns one extra dollar of disposable income, and the marginal propensity to consume is 0.65, then of that dollar, the household will spend 65 cents and save 35 cents. Marginal propensity to consume can be found by dividing change in consumption by a change in income, or $\text{MPC} = \Delta C / \Delta Y$. Nationally, the average marginal propensity to consume for Americans is 90%. Thus, the marginal propensity to save is 10%.

In essence, what the multiplier effect means is that when person A spends their money, it becomes person B's income. Then person B will go spend their income which then becomes person C's money, etc. The cycle repeats, but because of the tendency to save which stays the same for every person percentage wise, the amount spent in each cycle is less and less.

More generally, the exogenous spending multiplier is the ratio of a change in national income to any autonomous change in spending (private investment spending, consumer spending, government spending, or spending by foreigners on the country's exports) that causes it. When this multiplier exceeds one, the enhanced effect on national income is called the multiplier effect. The mechanism that can give rise to a multiplier effect is that an initial

incremental amount of spending can lead to increased consumption spending, increasing income further and hence further increasing consumption, etc., resulting in an overall increase in national income greater than the initial incremental amount of spending.

Why the multiplier approach should be used:

Multiplier = change in real GDP/ initial change in spending

(*Change in GDP = multiplier*initial change in spending)

The rationale behind this approach is that:

The economy supports repetitive, continuous flows of expenditures and income. Any change in income will vary both consumption and saving in the same direction as, and by a fraction of, the change in income. Initial change in spending will set off a spending chain throughout the economy. Chain of spending, although of diminishing importance at each successive step, will cumulate to a multiple change in GDP. For example, If the government chooses to spend an extra \$10 million on hotels, the factors of production regarding the buliding industry will increase by \$10 million; however, some (the MPC * 10 million) of this increase in income will be spent on local consumer goods needed for the hotel. Thus, more than just \$10 million worth of goods and services are produced, hence why the multiplier effect is needed. The greater is the marginal propensity to consume, the larger is the multiplier. The idea is that every dollar of spending creates more than one dollar in economic activity.

A national multiplier effect can be greater or less than 1. Multiplier values less than one have been empirically measured, suggesting that certain types of government spending crowd out private investment or consumer spending that would have otherwise taken place. This

crowding out can occur because the initial increase in spending may cause an increase in interest rates. The multiplier effect has been used as an argument for the efficacy of government spending or taxation relief to stimulate demand during periods of slow growth in an economy.

The other important aspect of the multiplier is the extent that government spending generates new consumption; it also generates "new" tax revenues. For example, when money is spent in a shop, purchases taxes such as VAT are paid on the expenditure, and the shopkeeper earns a higher income, and thus pays more income taxes. Therefore, although the government spends \$1, it is likely that it receives back a significant proportion of the \$1 in due course, making the net expenditure much less than \$1. Indeed, in theory, it is possible, if the initial expenditure is targeted well, that the government could receive back more than the initial \$1 expended.

For example: a company spends \$1 million to build a factory. The money does not disappear, but rather becomes wages to builders, etc. The builders will have higher incomes as a result, consumption rises as well, and hence the total demand of the economy will also rise, spurring an increase in GDP. Suppose further that recipients of the new spending by the builder in turn spend their new income, this will raise consumption and demand further, and so on.

The increase in the Gross Domestic Product is the sum of the increases in net income of everyone affected. If the builder receives \$1 million and pays out \$800,000 to sub contractors, he has a net income of \$200,000 and a corresponding increase in disposable income (the amount remaining after taxes). This process proceeds down the line through subcontractors and their employees, each experiencing an increase in disposable income to the degree the new work they

perform does not displace other work they are already performing. Each participant who experiences an increase in disposable income then spends some portion of it on final (consumer) goods, according to his or her marginal propensity to consume, which causes the cycle to repeat an arbitrary number of times, limited only by the spare capacity available.

Another example: when tourists visit somewhere they need to buy the plane ticket, catch a taxi from the airport to the hotel, book in at the hotel, eat at the restaurant and go to the movies or tourist destination. The taxi driver needs petrol (gasoline) for his cab, the hotel needs to hire the staff, the restaurant needs attendants and chefs, and the movies and tourist destinations need staff and cleaners.

The multiplier effect is a tool used by governments to attempt to stimulate aggregate demand. This can be done in a period of recession or economic uncertainty. The money invested by a government creates more jobs, which in turn will mean more spending and so on. The idea is that the net increase in disposable income by all parties throughout the economy will be greater than the original investment. When that is the case, the government can increase the gross domestic product by an amount that is greater than an increase in the amount it spends relative to the amount it collects in taxes.

If the government increases spending without increasing taxes, then the government is engaging in deficit spending. This spending must be financed from government reserves (if any) or net borrowing from private or foreign investors. If the money is borrowed, it must eventually be paid back with interest, such that the long term effect on the economy depends on the tradeoff

between the immediate increase to the GDP and the long term cost of servicing the resulting government debt.

Note:

y is original output (GDP)

b_C is marginal propensity to consume (MPC)

b_T is original income tax rate

b_M is marginal propensity to import

Standard Government Spending Equation:

$$\Delta y = \Delta G * \frac{1}{(1 - b_C)(1 - b_T) + b_M}$$

Balanced-Budget Government Spending Equation (Not applicable for the current U.S. Economy):

$$\Delta y = \Delta G * 1$$

$$\Delta y = \Delta T * 1$$

Empirical Estimates of U.S. Government Spending Multiplier:

In congressional testimony given in July 2008, Mark Zandifi provided estimates of the one-year multiplier effect for several fiscal policy options. The multipliers showed that any form of increased government spending would have more of a multiplier effect than any form of tax cuts. The most effective policy, a temporary increase in food stamps had an estimated multiplier of 1.73. The lowest multiplier for a spending increase was general aid to state governments, 1.36. Among tax cuts, multipliers ranged from 1.29 for a payroll tax holiday down to 0.27 for accelerated depreciation. Making the Bush tax cuts permanent had the second-lowest multiplier, 0.29. Refundable lump-sum tax rebates, the policy used in the Economic Stimulus Act of 2008 had the second-largest multiplier for a tax cut, 1.26.

Robert J. Barro estimated that government spending has a multiplier of around 0.8, meaning for \$1.00 spent, the economy gets \$0.80. In addition, the spending must be repaid in the future most likely with tax increases which he assumes to have a multiplier of -1.1 (Barro, 2011). This results in a further decrease in GDP and concludes that government spending actually has more cost than benefit.

Calculating Multiplier Effect of Infidelity on GDP:

Government spending increase due to infidelity= \$56 billion

Using Robert Barro's 2011 empirical estimate for the government spending multiplier (0.8), the change in GDP due to infidelity is:

Change in GDP= Change in Government Spending * Multiplier

Change in GDP= \$56 billion *0.8

Change in GDP= \$44.8 billion

If this government spending did not have to be repaid in the future, it could be said that infidelity in the U.S. leads to an increase in \$44.8 billion.

HOWEVER, since government spending does have to be repaid, Barro's empirical multiplier estimate is used when spending must be repaid in the future due to tax increases. This multiplier estimate is -1.1. Thus, the change in GDP due to infidelity is:

Change in GDP= Change in Government Spending *Multiplier

Change in GDP= \$56 billion *-1.1

Change in GDP= - \$61.6 billion

Thus, the decisive and clear conclusion from this study is that infidelity in the U.S. is leading to a 61.6 billion dollar decrease in GDP per year.

Implications for United States Policymakers:

The studies that are going to be discussed all highlight opportunities for policymakers to find effective interventions for family fragmentation. In the future, results from studies such as this one can be incorporated into a larger set of findings in this area to help couples thoughtfully consider how to create relationships less vulnerable to divorce. The studies that are being reviewed identify marriage as an economic situation in which the taxpayer costs of divorce stem from the effects that family fragmentation has on poverty. Even social programs that result in very small decreases in divorce and unwed childbirth could decrease government spending and increase GDP.

In *Divorce: Causes and Consequences*, (Stewart and Brentano, 2007), it is learned that the social costs of divorce have been well-established and quantified. The costs of family fragmentation include increased tax expenditure for antipoverty programs, criminal justice, education programs, and lower levels of taxes paid by the children of divorce who grow up earning less due to decreased opportunity. When parents part, there is increased poverty, mental illness, juvenile delinquency, and adult criminality among the children involved (Stewart & Brentano, 2007).

One of the primary costs is that the increase in divorce rates has led to an increase in the number of people in need of social welfare services. Social welfare costs, increased teen pregnancy, domestic violence, and crime rates are often attributable to children of divorce and divorcees, which dramatically raise costs to taxpayers. Family fragmentation has been proven to also increase crime rates among those affected (Stewart & Brentano, 2007). Furthermore, divorce increases the need for and cost of child-protective services and social work.

It has been well-documented that marriage reduces poverty. There are economies of scale in running a household, as well as strong benefits from having two wage earners in a home. There is evidence that almost all of the increased poverty among divorced mothers is the result of divorce. Many studies show the negative effects family fragmentation has on poverty in female-headed households. As well, marriage lifts 60% of female-headed households out of poverty. Finally, estimates indicate that choosing marriage instead of divorce would reduce the costs of related government programs by nearly 32% (Stewart & Brentano, 2007).

There have been several studies estimating the taxpayer costs of divorce. Stewart and Brentano estimate the costs of divorce to include calculations of foregone tax revenue in income taxes, FICA taxes, and state and local taxes. They also include the direct costs to taxpayers as a result of increased expenditure on Temporary Assistance for Needy Families, Food Stamps, Housing Assistance, Medicaid, State Children's Health Insurance Program, Child Welfare programs, Women, Infants, and Children assistance, low-income home energy assistance program, head start, school lunch and breakfast programs, and the justice system (Stewart and Brentano, 2007). The authors further the understanding of the policy implications of divorce literature by stating that it has been estimated that family fragmentation costs U.S. taxpayers at least \$112 billion each year, or over \$1 trillion dollars per decade.

Stewart and Burtano also propose a number of potential policy changes that could impact the divorce rate, as well as make the transitions related to divorce easier for families. Policy suggestions for actually preventing divorce include: 1) workplace reforms such as increasing work place flexibility so married people have more time to devote to family; 2) Paid family leaves to help reduce stress when a child is born or a family member is sick; 3) Flex time, part-

time work, and work-provided child care could also reduce marital stress. Furthermore, Stewart and Burtano suggest that social security and tax benefits could be targeted towards parents who want to stay home and care for children when they are young (Stewart and Brentano, 2007).

Stewart and Burtano's next policy suggestion is similar to the research done by Halford, Markman, and Stanley in "Strengthening Couples' Relationships with Education: Social Policy and Public Health Perspectives" (2008). Stewart and Burtano hypothesize that programs help people prepare for and resolve conflict during marriage will provide the most effective means of decreasing divorce rates in the United States. The authors cite studies of cities which use the Community Marriage Policy, where clergy do not marry couples until they have had marital counseling. They reveal that divorce rates in these cities have dropped by nearly sixty percent. Furthermore, Stewart and Burtano believe that couple's education should include teaching couples about the array of problems that they can encounter if a marriage ends in divorce (Stewart and Brentano, 2007).

Additional policy initiatives cited by others mentioned in the text include waiting periods for the marriage process and covenant marriages that are more difficult to exit from. To garner a covenant marriage license, couples must have premarital counseling and agree to seek marital counseling once married. As well, the couples must agree to divorce only if there has been abuse, adultery, abandonment, and several other extreme conditions (Stewart and Brentano, 2007). In the states that offer covenant marriage, fewer than five percent of couples have agreed to formalize this type of marriage.

In "Strengthening Couples' Relationships With Education: Social Policy and Public Health Perspectives", Halford, Markman, and Stanley discuss evidence that skills-based couples

relationship education (CRE) increases the health and stability of a couple's relationship. This study also investigated whether or not it was worthwhile for state or federal governments to pay for and promote CRE. This was investigated more thoroughly in the case of low-income individuals. Other authors have previously shown that many countries are investing in CRE as a way to reduce the social and economic costs of divorce. The article is thus assuming that it is important for U.S. government officials to consider focusing on promoting healthy marital relationships as it has been shown that healthy relationships help both the couple, the family, and society as a whole (Halford, Markman, and Stanley, 2008).

The assumptions made in the Halford et al article are typical of assumptions made about divorce in the U.S. The assumptions are that a large portion of divorcees in the U.S. have chronic adjustment problems, as well as financial hardship and difficult parenting. The main hypothesis of the Halford, Markman, and Stanley article is that CRE is efficient and will lead to a decrease in the divorce rate in the U.S. Their methodology was to investigate the three main inventory assessments used to teach CRE and the social effectiveness of those methods (Halford, Markman, and Stanley, 2008). Thus, ongoing social concern over the impacts of divorce has led many governments to expand provision of CRE. A controversial issue that this article fails to address is whether the state should be involved in promoting or increasing marriage.

They found that while a number of the CRE programs have many areas in common, such as realistic expectations, positive communication, and effective conflict management, the CREs also differ widely. Since they differ in approach and methodology, it is very difficult to compare CREs. In the short term, CRE was found to improve relationship satisfaction. Long term studies are mixed, with only one of three of the major CRE programs found to be effective for long-term

relationship satisfaction. The couples that benefited from such programs were those in the early stages of their relationship (Halford, Markman, and Stanley, 2008). This is the finding which may be the most important for policymakers.

In fact, current social policy has led to the increased use of CRE, even though the reviews of its efficacy are mixed. The authors note that the implementation of CRE programs is due to the work of a variety of political actors such as interest groups, elected officials, and administrative officials. One of the strengths of this article is that it discusses the history of CRE government initiatives in the U.S. Healthy marriage has been a policy goal in the U.S. for over one hundred years. Passage of the Welfare Reform Act of 1996 initiated interest in CRE as a policy making tool (Halford, Markman, and Stanley, 2008). The goal of the welfare reform act was to encourage welfare recipients to raise their children with both biological parents.

While the authors acknowledge that many improvements to CRE need to be made, they argue that is through the wide spread dissemination and use of CRE that policymakers will find ways to improve on CRE programming. The policy implications of CRE program implementation are vast. It is argued that the CRE programming is for people with little to no formal education and are socially disadvantaged (Halford, Markman, and Stanley, 2008). Statistics show these are the individuals that, due to economic hardship, will most likely divorce. Individuals with economic hardship would almost never receive CRE without government intervention because of the expenses that accompany counseling.

Halford, Markman, and Stanley found CRE to be most effective when implemented through government programs that individuals already trusted- such as employment services and jails. There have been several major state policy initiatives for CRE implementation. In the late

1990s, Oklahoma began the Oklahoma Marriage Initiative in order to increase the support of marriage and lower the divorce rate in the state. There has been no study performed yet evaluating the effectiveness of the Oklahoma program or the effectiveness of other state programs (Halford, Markman, and Stanley, 2008).

Halford et al fail to provide evidence of any cost-benefit analysis that has been done on the effectiveness of CRE when it is sponsored by the government and targeted towards socially and economically disadvantaged families. The authors fail to acknowledge whether CRE can be tailored to the needs of varying groups. For example, would CRE developed for high conflict relationships reduce divorce in those relationships? Can CRE be targeted to couples with different needs? Can CRE be developed for these purposes? This article provided extensive information about improving couples relationships with one type of intervention- CRE. The article failed to mention any other policy initiatives to reduce divorce rates in the U.S.

“Economic influences on marriage and divorce,” by Nancy Burstein, depicts a much more thorough view of the policy initiatives that have taken place to improve the divorce rate in the U.S. Burstein provides a thorough literature review of the decreased social and economic costs that occur when divorce rates fall in a community. Less government funding of social welfare programs is required and families and children demonstrate increased contributions to society. Burstein assumes that “if there is good reason to believe that that marriage has effects in ameliorating social ills, our policies should encourage it” (p. 388, 2007). The primary purpose of the Burstein research was to provide economic explanations of the benefits and costs of marriage and provide a discussion of the policy initiatives regarding marriage.

While Halford, Markman, and Stanley only acknowledge the government policies that encourage marriage, Burstein discusses U.S. policy that both encourages, but also highly discourages marriage. Burstein, like Stewart and Brentano, address the fact that the social ills of divorce are burdensome for taxpayers and that the continuation of marriage in this country depends on the communal use and respect for the institution. A decline in marriage among the socially disadvantaged causes society great harm as these individuals will only fall into more dire economic straits (Burstein, 2007).

Burstein states that there are many explanations for divorce. Demographic factors such as: age, racial/ethnic distribution, fertility, male to female ratio; economic factors- men's potential earnings, women's potential earnings, income sources that depend on marital status; sociocultural factors: societal norms for gender roles, significance of marriage and divorce, value of personal autonomy; and psychological factors all play a role. Burstein's largest assumption in this paper is that economic factors are the most pertinent to studying and creating policy initiatives to decrease divorce. Burstein hypothesized that economic incentives and disincentives preexisting by government can strongly influence marriage and divorce rates. In order to investigate this hypothesis, Burstein provides a systematic review of the literature referring to the economic models of marriage.

Halford, Markman, and Stanley, as well as Stewart and Brentano, do not explain as thoroughly as Burstein the government policies currently in place which create either incentives or disincentives for marriage. The most pertinent policies influencing the rate of marriage and divorce in the U.S. are the income tax code, Social Security spousal and survivor benefits, the Earned Income Tax Credit, child support enforcement, Temporary Assistance to Needy Families,

food stamps, Medical, Supplemental Security Income, and WIC (Burstein, 2007). The primary issue is that many government policies contradict each other in terms of incentives to stay married. TANF and similar programs promote the establishment of separate family households. This is largely because these programs base eligibility and benefits on the availability of economic resources. Thus, if a spouse is earning income, benefits from the program decrease.

However, Stewart and Burtano discuss the economic incentive structure of marriage better than the two articles. Stewart and Burtano state that “the association between poverty and mental-health problems, in general, is one of the most established findings in all psychiatric epidemiology” (p. 85, 2009). They found that adults who received income from the government after a divorce had a much higher level of social and emotional adjustment problems than adults whose income came from personal earnings or private transfer payments. Consequently, not only does the amount of income received post-divorce matter, but where the money comes from is also relevant (Stewart and Buratano, 2009).

Burstein argues that marriage in the U.S. should be encouraged by policymakers. She states that there is a vested interest to society in encouraging marriage, ultimately lowering tax payer costs and increasing productivity of adults and children. While the main argument behind Halford, Markman, and Stanley’s paper is that couples education should improve divorce rates, Burstein argues, after systematically reviewing the economic policy incentives and disincentives of marriage, that economic policy changes need to be made, as opposed to an introduction or change in policy implementation of programs like CRE (Burstein, 2007).

The other authors did not study marriage and divorce through the economic lens that Burstein used. Using macroeconomic trend data, it has been found that marriage declines and

divorce increases among the less educated largely due to falling male earnings. Among individuals with increased education, it has been found that marriage rates have fallen and divorce has increased due to the rise in female earnings. Interestingly, an employed man is more likely to marry and stay married than his unemployed cohorts. Both theory and data confirm the value of male earnings for marriage stability (Burstein, 406).

One fascinating policy initiative discussed by Burstein was a study in which low-income mothers were much more likely to marry after receiving earnings support, health insurance, and child care subsidies upon entering into employment. This counters the idea that increased earnings for women leads to higher marriage dissolution. This is an initiative not discussed by Stewart and Brentano, or Halford, Markman, and Stanley. Most studies have shown that increased women's earnings have a stronger effect on marriage stability than couples' education (Burstein, 2007).

One study by Schoen, Astone, Rothert, Standish, and Kim (2002) incorporate the ideas of Burstein, Stewart and Brentano, and Halford, Markman, and Stanley. Schoen et al found that women's baseline labor force participation related to an increased likelihood of divorce. This suggests that marital disruption may precede a woman's employment rather than leading to it. Interestingly, low levels of female wages improved marriage, while higher levels of female wages increased the likelihood of marital disruption (Burstein, 2007). Thus, perhaps a combination of complex policy initiatives are needed to improve marriage stability and decrease divorce rates in the U.S.

Conclusion:

During the last presidential election, the American public was most concerned with the issue of providing for a family during an era of low job security. Recently, months of arguments among policy makers over how to manage the nation's debt only increased stress and worry over economic stability. During times of such economic crisis, social welfare programs such as Medicaid, SNAP, EBT, and many more risk being cut at a time when the need for these programs is increasing.

The reasons people get married, as well as the reasons people get divorced, are long and complex. While many policy makers may argue against further government involvement in influencing marriage and divorce rates, the social and economic ramifications of a decline in marriage and increase in divorce are vast. Given the fact that economic policy can directly influence marriage and divorce rates and indirectly through social policy, there is reason to believe that the divorce rate in the U.S can be decreased and that this is an issue that deserves further discussion and research.

It is clear from both an empirical approach and a cost-benefit analysis approach that infidelity does have an extremely negative impact on GDP. The relevance of research on infidelity and its ramifications on our society and economy is only becoming more prominent. The knowledge economy has created a movement in which women are increasingly becoming more educated and putting the genders on more equal footing financially. This trend is making women just as likely to cheat as men in the current generation. In addition, some have recently argued against fidelity in marriage. Columnists such as David Savage in his "It Gets Better

Project” argue that while infidelity is right for many couples, it may not be the best way for all couples. Savage has created a topic of hot debate among sociologists.

This study brings to the forefront many issues that require further research. During the last presidential election, the American public was most concerned with the issue of providing for a family during an era of low job security. Recently, months of arguments among policy makers over how to manage the nation’s debt only increased stress and worry over economic stability. During times of such economic crisis, social welfare programs such as Medicaid, SNAP, EBT, and many more risk being cut at a time when the need for these programs is increasing. Further research would be needed to determine whether infidelity increases during periods of economic crisis, leading to increased government spending and the lowering of GDP.

There are many implications from these studies that could help public policymakers to intervene and prevent infidelity. Hopefully, results from studies such as this one can be incorporated into a larger set of findings in the marital area to help couples thoughtfully consider how to create relationships less vulnerable to infidelity. Even social programs that result in very small decreases in government spending could save taxpayers a great deal of money.

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