

The Economics of Giving: How Monetary Policy Impacts Charitable Giving

Submitted by

Asa Cort

Doctor of Business Administration in Finance Program

In partial fulfillment of the requirements

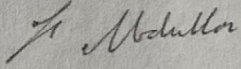
For the degree of Doctor of Business Administration in Finance

Sacred Heart University, Jack Welch College of Business and Technology

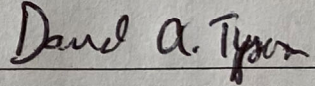
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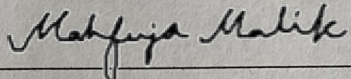
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**Sacred Heart University Doctor of Business Administration in Finance Program Doctoral
Dissertation Paper**

**The Economics of Giving:
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Asa J. F. Cort

Abstract: This paper examines the impact of the monetary policy transmission mechanism specifically the Loan Supply (Narrow Credit Channel), Market Interest Rates (Interest Rate Channel) and Asset Price Levels (Wealth Channel) have on charitable giving within the United States. An OLS (Ordinary Least Squares) model is used to test whether the variables within each channel influences charitable giving. We find that each variable used (revolving credit, real estate loans, federal funds rate, inflation, real disposable income and housing prices) is statistically significant in influencing charitable giving within the United States.

Keywords: monetary policy transmission mechanism, charitable giving, economic factors, panel data, survey data, seasonality, OLS, Bai-Perron Multiple Breakpoint, Impulse Response

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1. Introduction

Non-Profit organizations play a vital role within our national society and globally. From Cancer Research, (American Cancer Society), Recidivism Programs to help reduce crime, (PEP - Prison Entrepreneurship Program and Homeboy Industries), global initiatives (Save the Children), providing clothes to those in need (Goodwill) to local soup kitchens, churches, higher education facilities, music and arts, homeless shelters and Non-Profits that help various inner city needs. It is important to note that charitable organizations can receive donations from four primary sources (individuals, corporations, bequests, and foundations). For purposes of our research, we focus on the individual component because donative dollars represent a larger portion of donations. Non-Profit organizations heavily depend upon donations from private donors to fund their mission, this can cause Non-Profits to have revenue concentration issues (Carroll and Stater, 2008). We have witnessed with the current pandemic how non-profit organizations have suffered financially (Johnson, Rauhaus, Webb-Farley, 2020) mainly due to economic factors effecting individual donors. Two local non-profits within Connecticut are prime examples of both the pandemic and also facing closure due to funding cuts via the state government. The YMCA of Hamden/North Haven closed due to facing roughly 90% cut in revenues during the pandemic. “Our revenues were slashed by 90 percent overnight. We have cut way back on expenses including furloughs and salary reductions, but we have a serious problem” (David Stevenson, CEO of the CCC YMCA) (Path.Com). Music Haven, located in New Haven Connecticut is a small non-profit teaching string instruments to inner city youths. Music Haven faced potential closure due to not receiving \$100,000 in government funding (New Haven Arts). Thankfully, supporters were able to rally for the government to include the line item back into the budget. “Despite revenue concentration issues, Non-Profits represented 5.6% of GDP in the U.S., (National Center for Charitable Statistics,

2019). As of 2016 Non-Profit Organizations represented 7.2% of employers and have more employees on average than for-profit organizations (34 vs. 20), showing the importance of Non-Profit Organizations (U.S. Small Business Administration Office of Advocacy, 2019). With the drastic decrease in donations in our current economic and health crisis, non-profit organization will also contribute to a declining GDP. Much research has been conducted on the demographics of the donor through panel data (i.e., income level, marital status, household size, educational attainment, and tax bracket). Little has been researched concerning the economics of giving using time series data primarily macroeconomic factors. This paper extends previous research to include economic factors to identify if there is a relationship between charitable giving. Further, this paper differs from previous research in that the data excludes donor demographics which skew empirical results. Section 2 provides an overview of past empirical research regarding panel data and times series data on charitable giving. Section 3 describes the data background, data description and methodology used within our modeling testing. The results of the OLS Model and Multiple Breakpoint Analysis will be discussed in section 4. Finally, section 5 will summarize our findings and main hypothesis.

2. Literature Review

(Gittell and Tebaldi, 2006). The research examined by the authors focused on the factors influencing giving within the United States. They focused primarily on personal income, capital gains, religious group affiliation, age, volunteerism, and educational attainment as main factors that influence giving. The model they used is the OLS model in which they regress state-level data to test different economic and social factors on giving. They use charitable giving as their dependent variable (giving data obtained from IRS datafile) and various independent variables (average

contribution per tax filer, average contribution per itemizer, personal income, net capital gain, percentage itemizing, volunteer rate, education (MA + PhD), baby boomers, percentage African American, percentage Protestant, percentage Catholic, percentage other creeds and concentration (skewness). The econometric model used is detailed below:

$$G_i = \beta_1 + \beta_2 Y_i + \beta_3 P_i + \beta_4 X_i + \varepsilon_i$$

Where G is a measure of giving contribution, Y is the natural logarithm of personal income, P is the price / cost of giving, X is a matrix of economic and demographic variables, β s are parameters, ε is the error term, and i indexes the 50 states in the United States. The authors found that the main economic focus on giving by economists is income and prices (Clotfelter 2002; Feldstein and Clotfelter, 1976; Greenwood, 1993; Reece, 1979). However, the authors discovered the concerns associated with basing giving off of price/cost of giving. “Although economists consensually accept that price of giving is a key determinant of giving, difficulties in measuring the price of giving casts doubt about the robustness of giving price estimates (Clotfelter, 1985; Feenberg, 1985). The data sets do not provide direct measures of giving price, and so, simulations of marginal tax rates are utilized to produce estimates of price giving. A heuristic approach that can be used to evaluate the price of giving is to control for itemization status. The logic behind this formulation is that tax filers will respond to giving price incentives by itemizing their giving contributions. Any cost savings from giving can be realized only if households itemize on their federal tax returns. Otherwise, the cost of giving is equal to the gift amount and does not vary by tax filer across states. Dye (1978) found that a variable that controls for itemization status has similar performance in terms of explaining the variations of giving as the conventional estimated price term. Specifically, “the price effect is really an itemization effect” (Dye, 1978, p. 313). A study by Boskin and Feldstein (1977) corroborates Dye’s finding. Clotfelter (1985) also suggested that itemization is an

important factor in determining the levels of giving. 3 Albeit imperfect, we control for giving price by adding percentage itemizing in a state as a proxy of price/ cost of giving.” (Gittell and Tebaldi, 2006). The authors also found that there is a correlation between capital gains and charitable giving, indicating that individuals give more as the stock market performs well. “The model also indicates that (independent of personal income) net capital gains affect giving. More specifically, the estimates suggest that an increase of 10% in average capital gains increases average giving in states by 730 Gittell, Tebaldi Table 4. This result supports previous findings that stock market returns (Deb et al. 2003) and financial security influence giving (O’Herlihy et al., 2006). In particular, Deb et al. (2003) found that changes in the Standard & Poor’s composite stock index are strong predictors of changes in giving” (Gittell and Tebaldi, 2006). The authors also noted the “U-Shape” in giving, which means that individuals who earn less tend to give more and individuals who earn more tend to give less (factoring in age). “The model identifies a “U-shaped” age-giving curve. This is in part in contradiction of the view that age has a positive and accelerating influence on giving (Randolph, 1995, p. 728). Specifically, controlling for other factors, states with a relatively high percentage of residents in the middle-aged cohort (defined as age 35-54 years, and generally classifiable as “baby boomers,” i.e., born between 1946 and 1964) tend to have lower average giving than those states with relatively high population concentrations in either older or younger cohorts.¹¹ The finding here could reflect the particular experience of the baby boom generation in the 2000-2002 economic context in the United States. It is possible that in the early 2000s economic recession baby boomers had limited discretionary capital to allocate to charitable contributions. Responsibilities and obligations for the cohort often included the care of young children and aging parents. And for many baby boomers the early 2000s period required paying off

expensive purchases made during (overly) optimistic economic times in the mid-to-late 1990s. This particular “life cycle” force might have reduced giving by this cohort in the early 2000s”.

(Gittell and Tebaldi, 2006). Finally, the model also observed racial composition and found that after holding everything else constant, states with higher percentages of African Americans tend to have higher average giving (Gittell and Tebaldi, 2006). This could entail the large percentages of African Americans that give to their religious affiliations. The economic factors that were used in the authors paper that were statistically significant in giving are personal income, net capital gains, percentage itemizing, concentration index, percentage Protestant, percent other creeds, volunteer rate, education (MA+ PhD) and percentage of African American were all deemed to be impactful in giving. The study expands on previous studies in trying to understand who gives, and what causes people to give. Most of the factors used come from survey data and is then used within an OLS Model. In order to understand why personal income, Protestants, African Americans and obtaining a certain level of higher education attainment allows an individual to give \$xx.xx we would normally depend on population survey data. However, being able to identify how macroeconomic data affects the previous factors will shed further insight on how giving by African Americans may differ from other racial groups. We beg the question, if the unemployment rate is higher among African Americans how will that influence giving and alter the author’s results? Or, if inflation rises how will that affect the U-Shape graph? Will people who earn less give less because the prices of goods and services has increased drastically? The authors have many explanatory variables but without macroeconomic data it is hard to determine how the factors used in their research influence giving.

List (2011) studied three factors in his paper, *The Market for Charitable Giving*; donor provide the resources to charities, charitable organizations develop strategies to attract resources and the government decides (among other things) on the tax treatment of individual contributions (List, 2011). List found that there lies a concern on the cyclical nature of giving, “while individual gifts are responsive to the economic environment, they are much more sensitive to economic upturns than to downturns, this relationship has led to charitable gifts significantly outpacing the S&P 500 over the last decade.” (List, 2011). List uses a simple regression model to test giving by identifying the percentage change in charitable giving regressed on the previous year’s percentage change in the S&P 500. List found that nearly 40 percent of the variance in percentage changes in total charitable giving is accounted for by variation in the previous year’s percentage change in the S&P 500 (List, 2011). What does this mean exactly? When the economy (measured by the S&P 500) experiences a downturn, charitable organizations depend more on donative (individual) dollars in fear that their organization may close. As in the opposite, individual donors respond more greatly when the economy is doing good as opposed to economic downturns (List, 2011). This will suggest that individual donors give less when the economy is not performing well as opposed to when the economy is performing well. These findings are based solely upon annual giving from Giving USA and does not consider donor tax bracket. The question is left, what factors beyond a declining S&P 500 causes individuals to give less? We believe the S&P 500 is a broad measure on how well the economy is doing, but not the sole factor. As we have examined, factors that directly impact the donor who may not be invested in the stock market are important in determining the financial sustainability of non-profit organizations and their likelihood to see an increase or decrease in donative dollars. Our research differs from John List because we are using multiple factors to test our hypothesis. Our dataset is also centered around channels within the

Monetary Policy Transmission Mechanism in which the factors would be closely examined that can influence charitable giving. Our dataset contains monthly data in which we can capture more observations to test our hypothesis. By utilizing multiple factors, it provides greater insight into how certain economic factors can influence charitable giving.

(Meer, Miller and Wulfsberg, 2017) In their research the authors primary focus on charitable giving is examined through panel data (from the Panel Study of Income Dynamics). Panel Data is data that contains observations about different cross-sections across time (i.e., social class, education attainment, religion affiliation etc.) The research spans from 2002 to 2012 (pre, during and after the great recession), “we therefore focus primarily on the impacts on the probability of giving and the overall impact on giving” (Meer, Miller and Wulfsberg, 2017). The conclusion of their findings was “Overall giving falls relative to the levels seen in the mid-2000s, during the peak of the business cycle. Shocks to income and wealth do not account for this drop, suggesting that broader shifts in attitudes towards giving or increased uncertainty are at work. Given previous results on habit formation in charitable giving (Meer, 2013) and later-life impacts of macroeconomic shocks on behavior (Malmendier and Nagel, 2009), this finding suggests that the Great Recession might have serious long-term negative consequences for philanthropic behavior.” (Meer, Miller and Wulfsberg, 2017). They believe that when shocks to income and wealth were taken into consideration that it did not impact overall giving. Much panel data-based research aims to understand the makeup of the donor (i.e., why do they give, how do they give, their beliefs and attitudes towards giving, etc.). In regard to stating that income and wealth as factors do not cause a decline in giving but other factors such as attitudes are responsible for a decline in giving when the economy was at its peak does not grasp the entire scope of possibilities that can impact charitable giving. When the economy is stable or at its peak with no sight of a recession on the horizon, the

federal reserve does not have to stimulate the economy, the federal funds rate is stable, the unemployment rate is not high, and inflation is stable. Thus, individuals could have decreased giving for other economic reasons. Basing the results solely upon where the economy is within the business cycle excludes the possibility that certain economic factors such as personal debt, lower real disposable income, etc. could be the reason why people give less even at the peak of the business cycle.

(Greenlee and Trussel, 2000) The authors examine a very important topic within the non-profit sector, financial vulnerability. The paper describes what is considered a financially vulnerable non-profit organization using various ratios with a model to determine if a non-profit organization is financially vulnerable. The model is based upon the work of Tuckman and Chang (1991), the data was obtained through the IRS Statistics of Income database (National Center for Charitable Statistics). The database has charities with more than \$10 million in assets and a random sample of approximately four thousand smaller charitable organizations. The database is issued annually by the NCCS and was available for the years 1982 through 1983 and 1985 through 1995, the authors merged the data for each year to develop their model (Greenlee and Trussel, 2000). Tuckman and Chang (1991) defined a non-profit organization as financially vulnerable if “it is likely to cut back its service offerings immediately when it experiences a financial shock” such as an economic downturn or the loss of a major donor. The four indicators of financial vulnerability identified by Tuckman and Chang are as follows, Inadequate Equity Balances, Revenue Concentration, Low Administrative Costs and Low Operating Margins. “Tuckman and Chang (1991) empirically tested their financial vulnerability model by selecting a random sample of 4,730 nonprofit 200 Greenlee, Trussel nml11205.qxp 11/16/00 9:42 AM Page 200 organizations that filed an annual Form 990 tax return with the Internal Revenue Service (IRS) in 1983. Those falling into the lowest

quintile for all four variables were defined as severely at risk. Nonprofits with any one of the four variables in the bottom quintile were defined as at risk. We extend their research by using their financial indicators to predict which charities will become financially vulnerable. That is, we use their financial indicators to develop a model that determines the probability of a charity's becoming financially vulnerable" (Greenlee and Trussel, 2000). However, Greenlee and Trussell identified financially vulnerable non-profit organizations differently. "Therefore, for the purposes of this study, a financially vulnerable charity is defined as one that reduces program expenditures (deflated by total revenues) in each of three consecutive years. Specifically, an organization that decreased its program service expenditures (as a proportion of total revenues) in any three consecutive years during the period 1986 to 1995 is considered to be financially vulnerable. The database from which we selected our samples was limited to these years. In order to develop a predictive model, we measured the variables using data from the tax year prior to the reductions in program expenditures. For example, a charity experiencing a reduction in the ratio of program expenses to total revenues for 1993, 1994, and 1995 was defined as financially vulnerable for this study. We would then measure the four financial indicators in 1992 in order to determine if we could predict its actual financial status in 1995" (Greenlee and Trussel, 2000). Their model also has limitations, "First, we assumed that a financially vulnerable charity is one that experiences a decrease in program expenditures over a three-year period. This precludes any determination of financial vulnerability during the first four years of an organization's existence. Also, in selecting our samples, we used a relatively short time period (1985–1995) and limited our study to charitable organizations. Both the short time period and the use of only charities were due to limitations of the database from which the sample was selected. Further research is needed to use alternative

definitions of a financially vulnerable organization, extend the time period of the study, and expand the population of organizations from which the sample is selected” (Greenlee and Trussel, 2000).

Why is financial vulnerability critical within the economics of giving? As defined within the four indicators by Tuckman and Chang, if a non-profit experience a financial shock and can leverage assets through the organizations investment vehicles to help prevent closure, that will entail that the positive stock market reaction will help struggling non-profits maintain financial stability.

Regarding revenue concentration, many non-profits face this issue, the less diversified the non-profit is, the more susceptible the organization will be to the loss of a major donor. When analyzing all four indicators, the research does not include how macroeconomic factors can impact revenue concentration or inadequate equity balances. The factors listed are both internally and externally influenced by macroeconomic data. If a major donor experiences a decline in real disposable income or their assets decline greatly due to the stock market declining, or if inflation continues to increase or decrease will impact each demographic of giver and income level differently. Meaning inflation will have more of an impact on an individual making minimum wage as opposed to a higher tax bracket donor. If the Federal Reserve has to stimulate the economy, then the financially vulnerable non-profit will not be able to utilize assets within their investment portfolio because the overall stock market and economy may be in a recession, and they would have depleted all their assets and still face potential closure. It is vitally important to understand how various economic factors influence the ratios used in the models that determine if a non-profit is financial vulnerable.

3. Data and Methodology

3.1 Data Background

The data selected for purposes of the research topic stem primarily from the Monetary Policy Transmission Mechanism (independent variables) and the Urban Institute National Center for Charitable Statistics (dependent variable). The Federal Reserve Bank is the nation's central banking authority. The Federal Reserve is tasked by Congress to achieve three primary objectives: maximum employment, stable prices, and moderate long-term rates. In order for the Federal Reserve to accomplish their objectives they measure how the economy is functioning relative to the Monetary Policy Transmission Mechanism (see table 1). The importance of the transmission mechanism begins with its origin from the start of the Federal Reserve System and has thus developed over time. "At that time (1902) there were in existence some twenty thousand national and state banks, stock savings banks, private banks, and loan and trust companies, of which about one-half had a capital of \$25,000 or less. There were about five thousand national banks, the largest of which had a capital of \$25,000,000. The largest state banking institution had a capital of \$2,000,000, a surplus of \$2,500,000, and deposits of \$34,000,000. There was no organic cohesion between these approximately twenty thousand banks. Individualism in banking was the gospel of the country. The view was generally held that centralization of banking would inevitably result in one of two alternatives: either complete governmental control, which meant politics in banking, or control by "Wall Street", which meant banking in politics. Abhorrence of both extremes had led to an almost fanatic conviction that the only hope of keeping the country's credit system independent was to be sought in complete decentralization of banking." (Federal Reserve System: Its Origin and Growth: 1930, volume 1). We begin to see the establishment of reserve requirements, "Under the National Bank Act a system of obligatory individual "reserves" was relied upon to limit the possible extent of credit and deposit expansion." (Federal Reserve System: Its Origin and Growth: 1930, volume 1). Finally, we see the development of the federal funds rate and open market

operations. “The proposed bank was to establish a general rate of interest to be modified from time to time, at which it would allow advances of money against clearing-house certificates. There were also provision enabling the bank to buy three months’ paper, bearing at least three signatures, payable in dollars or in certain foreign currencies.” (Federal Reserve System: Its Origin and Growth: 1930, volume 1). The tools used through the Monetary Policy Transmission Mechanism were put in place so that the welfare of our countries’ monetary and fiscal health can be maintained in the event of financial disruption.

The Donation Index was created by Mastercard Center for Inclusive Growth. The purpose of the index is to track donations to U.S. Non-Profit Organizations overtime. The index data does not go past December 2017 and account for 107 observations. “By making the report and dataset available, the Mastercard Center for Inclusive Growth is working to help organizations better understand trends in individual donations, as well as develop insights around the forces that impact giving.” (Donation Insights – Closing the information gap on charitable giving U.S. Report – June 2018).

3.2 Data Description

3.2.1 The Donation Index that is used as the dependent variable was developed by Mastercard in connection with the Urban Institute National Center for Charitable Statistics. The donation index is an anonymized and aggregated dataset that comprises of donations made by donors to U.S. Non-Profit organizations through the Mastercard Payment Network. We have also examined annual itemized charitable contributions from the Tax Policy Center Urban Institute and Brookings

Institution. We examine primarily monthly giving data but also encompass annual data to test our hypothesis.

3.2.2 Loan Supply (Narrow Credit Channel) comprises of Revolving Credit and Real Estate Loans.

Revolving Credit (Consumer Credit) is outstanding credit extended to individuals for household, family, and other personal expenditures, excluding loans secured by real estate. Total consumer credit comprises of two major types: revolving and nonrevolving. Revolving Credit plans may be unsecured or secured by collateral and allows a consumer to borrow up to a prearranged limit and repay the debt in one or more installments. Credit Card Loans comprise most of revolving consumer credit measured in the G.19, but other types, such as prearranged overdraft plans, are also included. Nonrevolving Credit is closed-end credit extended to consumers that is repaid on a prearranged repayment schedule and may be secured or unsecured. To borrow additional funds, the consumer must enter into an additional contract with the lender. Consumer motor vehicle and education loans comprise the majority of nonrevolving credit, but other loan types, such as boat loans, recreational vehicle loans, and personal loans, are also included.

Real Estate Loans comprises of all real estate loans made by commercial banks to individuals (domestically chartered commercial banks; large domestically chartered commercial banks; small domestically chartered commercial banks; and foreign-related institutions in the United States. Foreign-related institutions include U.S. branches and agencies of foreign banks as well as Edge Act and agreement corporations).

3.2.3 Real Rates (Interest Rate Channel) comprises of the Federal Funds Rate and Core PCE (Inflation).

The Federal Funds Rate is the interest rate at which depository institutions trade federal funds (balances held at Federal Reserve Banks) with each other overnight. The Federal Open Market Committee (FOMC) meets eight times a year to determine the federal funds target rate thus proving the relative importance that the Federal Funds Rate has in our economy. The Federal Funds rate is known to be our nation's central interest rate it influences other interest rates such as the prime rate, which is the rate banks charge their customers with higher credit ratings. Additionally, the federal funds rate indirectly influences longer- term interest rates such as mortgages, loans, and savings, all of which are very important to consumer wealth and confidence. Core PCE (Inflation) is measured by personal consumption expenditures excluding food and energy. The inflation rate is critical in determining the direction of prices within our economy. When there is low inflation in the economy, the Federal Reserve could be stimulating the economy and the prices of goods and services are more affordable. Inflation can impact different demographics and income levels differently and is one of the main objectives that the Federal Reserve seeks to achieve (stable prices).

3.2.4 Asset Price Levels (Wealth Channel) comprises of Real Disposable Income and Housing Prices.

Real Disposable Income is the amount of income that an individual has after taxes and deductions have been applied to their gross income. This amount is what is available for individuals to use for consumption, savings, or investment. It is an important factor within the wealth channel because the more an individual has in real disposable income the greater likelihood, they will be able to give more and invest in other asset classes.

Housing Prices (S&P/Case-Shiller U.S. National Home Price Index) The S&P CoreLogic Case-Shiller U.S. National Home Price Index (“the U.S. national index”) measures the value of single-family housing within the United States. “The index is a composite of single-family home price indices for the nine U.S. Census divisions and is calculated monthly. Percentage changes in the indices measure percentage changes in housing market prices given a constant level of quality. Changes in the types and sizes of houses or changes in the physical characteristics of houses are specifically excluded from the calculations to avoid incorrectly affecting the index value.” (S&P CoreLogic Case-Shiller Home Price Indices Methodology).

3.3 Methodology

The methods used in this paper include the Ordinary Least Squares (OLS) to test whether the variables are statistically significant with times series data. We use the unit root test (Augmented Dickey-Fuller) to check for stationarity of each dataset. We also use the Bai-Perron Multiple Breakpoint Analysis to test for instability and structural changes over 5 sequential breaks. In addition to OLS, ADF and Bai-Perron we illustrated impulse response graphs to see if or how the independent variables have an impact on our dependent variable.

3.3.1 OLS Model

OLS is a type of linear least squares method for estimating the unknown parameters in a linear regression model. OLS chooses the parameters of a linear function of a set of explanatory variables by the principle of least squares: minimizing the sum of the squares of the differences between the observed dependent variable (values of the variable being observed) in the given dataset and those predicted by the linear function of the independent variable.

$$Y = \beta_0 + \sum_{j=1..p} \beta_j X_j + \varepsilon$$

Y is the dependent variable, β_0 , is the intercept of the model, X_j corresponds to the j^{th} explanatory variable of the model ($j= 1$ to p), and ε is the random error with expectation 0 and variance σ^2 .

3.3.2 Bai-Perron Multiple Breakpoint Analysis

The multiple breakpoint analysis Tests for parameter instability and structural change in regression models. Developed by Chow (1960), who tested for regime change at *a priori* known dates using an *F*-statistic, the model was further developed by Bai (1997) and Bai and Perron (1998, 2003). They provided theoretical and computational results that further extend the Quandt-Andrews framework by allowing for *multiple* unknown breakpoints.

$$y_t = X_t' \beta + Z_t' \delta_j + \epsilon_t$$

A standard multiple linear regression model with T periods and m potential breaks (producing $m+1$ regimes). for the regimes $j= 0, \dots, m$. Note that the regressors are divided into two groups. The X variables are those whose parameters do not vary across regimes, while the Z variables have coefficients that are regime specific.

OLS Results

4.1 Loan Supply (Easy Credit Channel). As noted previously, the easy credit channel consists of revolving credit and real estate loans. Both independent variables were tested together to check if the model results were statistically significant after running a unit root test. At either 1, 5 or 10% confidence intervals does revolving credit and or real estate loans become statistically significant in relation to charitable giving? The results show that within the easy credit channel both revolving

credit and real estate loans are statistically significant (see table 2). The results show a Durbin-Watson Statistic of 2.59 which shows no detection of autocorrelation. We also tested for seasonality and found that both independent variables remain statistically significant in relation to charitable giving (see table 3). We examine these results and their interpretation in that as consumer increase their debt, they will donate less to non-profit organizations.

4.2 Market Interest Rates (Interest Rate Channel). Both independent variables were tested together to check if the model results were statistically significant after running a unit root test. At either 1, 5 or 10% confidence intervals does the federal funds rate and inflation become statistically significant in relation to charitable giving? The results show that within the interest rate channel both federal funds rate and inflation are statistically significant (see table 2). The results show a Durbin-Watson Statistic of 2.57 which shows no detection of autocorrelation. We also tested for seasonality and found that inflation remained statistically significant at 5%, however, the federal funds rate became statistically insignificant, (see table 3). We examine these results and their interpretation in that as when inflation rises the individuals will give less because the prices of goods and services has also increase. Also, as interest rates increase, individuals will give more because the cost of borrowing has also increased, thus deterring some from taking out unnecessary debt.

4.3 Asset Price Levels (Wealth Channel). Both independent variables were tested together to check if the model results were statistically significant after running a unit root test. At either 1, 5 or 10% confidence intervals does real disposable income and housing prices become statistically significant in relation to charitable giving? The results show that within the wealth channel both real disposable income and housing prices are statistically significant (see table 2). The results

show a Durbin-Watson Statistic of 2.64 which shows no detection of autocorrelation. We also tested for seasonality and found that both independent variables remain statistically significant in relation to charitable giving (see table 3). We examine these results and their interpretation in that as consumers experience an increase in real disposable income they will tend to give more. In relation to housing prices, wealth is also associated to the value of ones' property and monetary policy. "Many have argued that these low interest rates—or the provision of large amounts of liquidity that they required—helped foster the extraordinary surge in the demand for housing. As the Economist recently put it, "By slashing interest rates (by more than the Taylor rule prescribed) the Fed encouraged a house-price boom. With low money market rates, housing finance was very cheap and attractive—especially variable rate mortgages with the teasers that 2 many lenders offered. Housing starts jumped to a 25 year high by the end of 2003 and remained high until the sharp decline began in early 2006. The surge in housing demand led to a surge in housing price inflation which had already been high since the mid-1990s. The housing inflation rate measured by the OFHEO price index reached 10 percent at an annual rate in the fourth quarter of 2004 and remained over 10 percent for two years; measured by the Case-Shiller index, housing inflation surpassed 20 percent during parts of this period. This jump in housing price inflation then accelerated the demand for housing in an upward spiral. With housing prices rising rapidly, delinquency and foreclosure rates on sub-prime mortgages also fell, which led to more favorable credit ratings than could ultimately be sustained. As the short-term interest rate returned to normal levels, housing demand rapidly fell bringing down both construction and housing price inflation. Delinquency and foreclosure rates then rose sharply, ultimately leading to the meltdown in the subprime market and on all securities that were derivative from the subprimes". (Taylor, 2007). Taylor used a model specifically a simple housing equation "For the purposes of this policy panel I

took a more straightforward approach. I estimated a simple housing starts equation with the federal funds rates as the explanatory variable. The equation was estimated with quarterly data over the nearly 50-year period from the second quarter of 1959 to the second quarter of 2007. The model shows a strong, statistically significant effect of the federal funds rate on housing starts which occurs with a lag". (Taylor, 2007). When individuals have increased their wealth through their homes, they can donate a portion of the proceeds of their homes to a non-profit organization or because of their increased in net worth they will give more because their overall net worth has increased.

4.1 Multiple Breakpoint Analysis Results

We examine these results through the Monetary Policy Transmission Mechanism. As the Federal Reserve aims to achieve their three objectives (maximum employment, stable prices, and moderate long-term rates). Within the three channels the use of these tools has made our independent variables either statistically significant or not statistically significant (see tables 4, 5 and 6). The results suggest that when revolving credit is statistically significant the unemployment rate is lower in the respective periods. When real estate loans are statistically significant the results suggest that the 30-year fixed rate mortgage rates were lower. In the respective periods where inflation is statistically significant the results suggest that prices were rising, and individuals decreased their giving. In periods where the federal funds rate was statistically significant the results suggest that interest rates were increasing thus causing individuals to decrease borrowing and increase giving. In regard to when real disposable income was statistically significant, the unemployment rate was lower. When housing prices were significant, interest rates were lower as well.

4.2 Impulse Response

After illustrating the impulse response graphs, the only graph that is significant is the charitable donations and real estate loans. All other graphs did not show a significant response of the independent variable to the dependent variable.

4. Conclusion

This paper examines the impact of the monetary policy transmission mechanism specifically the Loan Supply (Narrow Credit Channel), Real Rates (Interest Rate Channel) and Asset Price Levels (Wealth Channel) have on charitable giving in the United States. We utilize OLS and Multiple Breakpoint Analysis to test the significance of each independent variable and test for structural changes within periods. We find that non-profit organizations are impacted through the use of the Monetary Policy Transmission Mechanism that directly impacts individual donors. Financial stability within any non-profit organization depends greatly upon the amount of revenue that comes from donative dollars. Non-Profit Organizations depend on individual donors to help them carry out their mission and when the donative dollars are impacted through the use of the Monetary Policy Transmission Mechanism, Non-Profit Organizations can become financially vulnerable. The paper aims to not only add to the general literature on the charitable marketplace but to specifically address the need to combine macroeconomic data, panel data and survey data in further research. Non-Profit Organizations could benefit greatly if they understood the economics behind giving.

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**Dissertation
Statistics and Graphs**

Table 1: Summary Statistics

Variables	No. of Observations	Mean	Median	Std. Dev	Max	Min
Revolving Credit	107	-0.0013	0.0192	0.6759	2.8967	-2.9457
Real Estate Loans	107	0.0084	-0.0191	0.5257	2.8132	-2.6068
Real Disposable Income	107	0.1320	0.1950	0.7449	2.4924	-5.8010
Housing Prices	107	0.0185	0.0054	0.2705	1.3519	-0.8317
Federal Funds Rate	107	0.0105	0.0000	0.0376	0.1400	-0.0500
Inflation	107	0.1288	0.1228	0.0692	0.3723	-0.0764

Table 2: All Models w/Channels

Donations	Loan Supply Channel	Wealth Channel	Interest Rate Channel	All Variables
Revolving Credit	-8.09*** (-2.82)			-8.97*** (-3.22)
Real Estate Loans	-9.31** (-2.51)			-10.55*** (-2.95)
Real Disposable Income		5.00* (1.89)		5.43** (2.10)
Housing Prices		16.36** (2.25)		17.38** (2.42)
Federal Funds Rate			97.12* (1.85)	94.35* (1.83)
Inflation			-64.99** (-2.26)	-63.74** (-2.24)
No. Of Observations	107	107	107	107
Adj. R ²	0.11	0.07	0.06	0.23
F-stat (Prob.)	7.66 (0.00)	4.82 (0.00)	4.30 (0.02)	6.14 (0.00)

DW Test Stat	2.59	2.64	2.57	2.51
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Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10% |1.96| – 5% |2.578| – 1%

Table 3: All Models w/Channels (Adjusted for Seasonality)

Donations	Loan Supply Channel	Wealth Channel	Interest Rate Channel	All Variables
Revolving Credit	-8.00*** (-2.90)			-8.72*** (-3.24)
Real Estate Loans	-8.15** (-2.25)			-9.38*** (-2.70)
Real Disposable Income		5.31** (2.10)		5.70** (2.30)
Housing Prices		15.05** (2.15)		16.10** (2.34)
Federal Funds Rate			68.79 (1.32)	67.56 (1.33)
Inflation			-59.50** (-2.14)	-59.10** (-2.14)
No. Of Observations	107	107	107	107
Adj. R ²	0.18	0.14	0.11	0.23
F-stat (Prob.)	9.00 (0.00)	6.81 (0.00)	5.50 (0.00)	6.14 (0.00)
DW Test Stat	2.40	2.40	2.34	2.51

Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10% |1.96| – 5% |2.578| – 1%

Table 4: Breakpoint Model - Easy Credit Channel

All Variables	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Revolving Credit	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Real Estate Loans	Periods based on breakpoints	
		Coefficient		Coefficient		Coefficient
Revolving Credit	Period I: 02/2009 – 10/2013 17 obs.	4.59 (0.83)	Period I: 02/2009 – 02/2011 25 obs.	-5.52 (-1.45)	Period I: 02/2009 – 09/2013 56 obs.	-8.97** (-2.17)
Real Estate Loans						-10.71*** (-3.30)
Revolving Credit	Period II: 07/10 – 03/13 33 obs.	-21.36*** (-3.33)	Period II: 03/2011 – 01/2013 23 obs.	-30.14*** (-4.68)	Period II: 10/2013 – 01/2015 16 obs.	21.83** (2.29)
Real Estate Loans						29.90 (0.77)
Revolving Credit	Period III: 04/2013 – 01/2015 22 obs.	19.07** (2.46)	Period III: 02/2013 – 11/2015 34 obs.	11.94 (0.85)	Period III: 02/2015 – 06/2016 17 obs.	-14.71*** (-3.99)
Real Estate Loans						20.81 (1.30)
Revolving Credit	Period IV: 02/2015 – 12/2017 35 obs.	-15.50*** (-4.00)	Period IV: 02/2015 – 12/2017 25 obs.	-45.70 (-1.54)	Period IV: 07/2016 – 12/2017 18 obs.	-32.57*** (-3.24)
Real Estate Loans						-63.74** (-2.46)
Diagnostic Statistics	Adjusted R-Squared	0.21	Adjusted R-Squared	0.091	Adjusted R-Squared	0.26
	F-Statistic	5.00	F-Statistic	2.52	F-Statistic	4.50
	Schwarz Info Criterion	9.00	Schwarz Info Criterion	9.10	Schwarz Info Criterion	9.00
	Durbin-Watson Stat	2.64	Durbin-Watson Stat	2.63	Durbin-Watson Stat	2.55

Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10%

|1.96| – 5%

|2.578| – 1%

Table 5: Breakpoint Model – Interest Rate Channel

All Variables	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Federal Funds Rate	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Core PCE	Periods based on breakpoints	
		Coefficient		Coefficient		Coefficient
FFR	Period I: 02/2009 – 12/2010 23 obs.	-97.36 (-0.70)	Period I: 02/2009 – 11/2010 22 obs.		Period I: 02/2009 – 12/2011 35 obs.	-70.47 (-0.52)
Inflation				-8.59 (-0.18)		-36.68 (-0.86)
FFR	Period II: 01/2011 – 11/2013 35 obs.	34.65 (0.20)	Period II: 12/2010 – 12/2013 37 obs.		Period II: 01/2012 – 08/2013 20 obs.	162.58 (0.85)
Inflation				-129.82*** (-2.68)		-190.52*** (-3.34)
FFR	Period III: 12/2013 – 03/2015 16 obs.	1782.53*** (4.57)	Period III: 01/2014 – 11/2015 23 obs.		Period III: 09/2013 – 03/2015 19 obs.	1527.27*** (4.30)
Inflation				116.59 (1.57)		87.78 (1.34)
FFR	Period IV: 04/2015 – 12/2017 33 obs.	124.77 (1.65)	Period IV: 12/2015 – 12/2017 25 obs.		Period IV: 04/2015 – 12/2017 33 obs.	118.66 (1.70)
Inflation				-169.10*** (-2.57)		-139.00*** (-2.60)
Diagnostic Statistics	Adjusted R-Squared	0.11	Adjusted R-Squared	0.10	Adjusted R-Squared	0.20
	F-Statistic	2.87	F-Statistic	2.76	F-Statistic	3.50
	Schwarz Info Criterion	9.04	Schwarz Info Criterion	9.05	Schwarz Info Criterion	9.10
	Durbin-Watson Stat	2.60	Durbin-Watson Stat	2.56	Durbin-Watson Stat	2.45

Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10%

|1.96| – 5%

|2.578| – 1%

Table 6: Breakpoint Model – Wealth Channel

All Variables	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Housing Prices	Periods based on breakpoints	Changes in Charitable Donations as a function of changes in Real Dis. Income	Periods based on breakpoints	
		Coefficient		Coefficient		Coefficient
Housing	Period I: 02/2009 – 11/2010 22 obs.	-0.60 (-0.20)	Period I: 02/2009 – 11/2012 46 obs.		Period I: 02/2009 – 12/2010 23 obs.	8.05 (0.92)
Real Dis. Income				2.90 (1.00)		6.53 (1.20)
Housing	Period II: 12/2010 – 11/2013 36 obs.	-0.12 (-0.40)	Period II: 12/2012 – 12/2014 25 obs.		Period II: 01/2011 – 11/2012 23 obs.	28.30*** (2.60)
Real Dis. Income				-7.00** (2.40)		-7.10 (-1.00)
Housing	Period III: 12/2013 – 03/2015 16 obs.	2.60 (0.44)	Period III: 01/2015 – 07/2016 19 obs.		Period III: 12/2012 – 12/2014 25 obs.	29.70 (1.72)
Real Dis. Income				-33.00 (-1.44)		8.25*** (2.82)
Housing	Period IV: 04/2015 – 12/2017 33 obs.	1.41 (0.34)	Period IV: 08/2016 – 12/2017 17 obs.		Period IV: 01/2015 – 12/2017 36 obs.	52.13 (1.20)
Real Dis. Income				-35.50 (-1.00)		-25.40 (-1.30)
Diagnostic Statistics	Adjusted R-Squared	0.03	Adjusted R-Squared	0.03	Adjusted R-Squared	0.80
	F-Statistic	1.45	F-Statistic	1.50	F-Statistic	1.20
	Schwarz Info Criterion	9.13	Schwarz Info Criterion	9.13	Schwarz Info Criterion	9.21
	Durbin-Watson Stat	2.65	Durbin-Watson Stat	2.70	Durbin-Watson Stat	2.70

Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10% |1.96| – 5% |2.578| – 1%

Graphs

Figure 1: Donations and Revolving Credit and Real Estate Loans

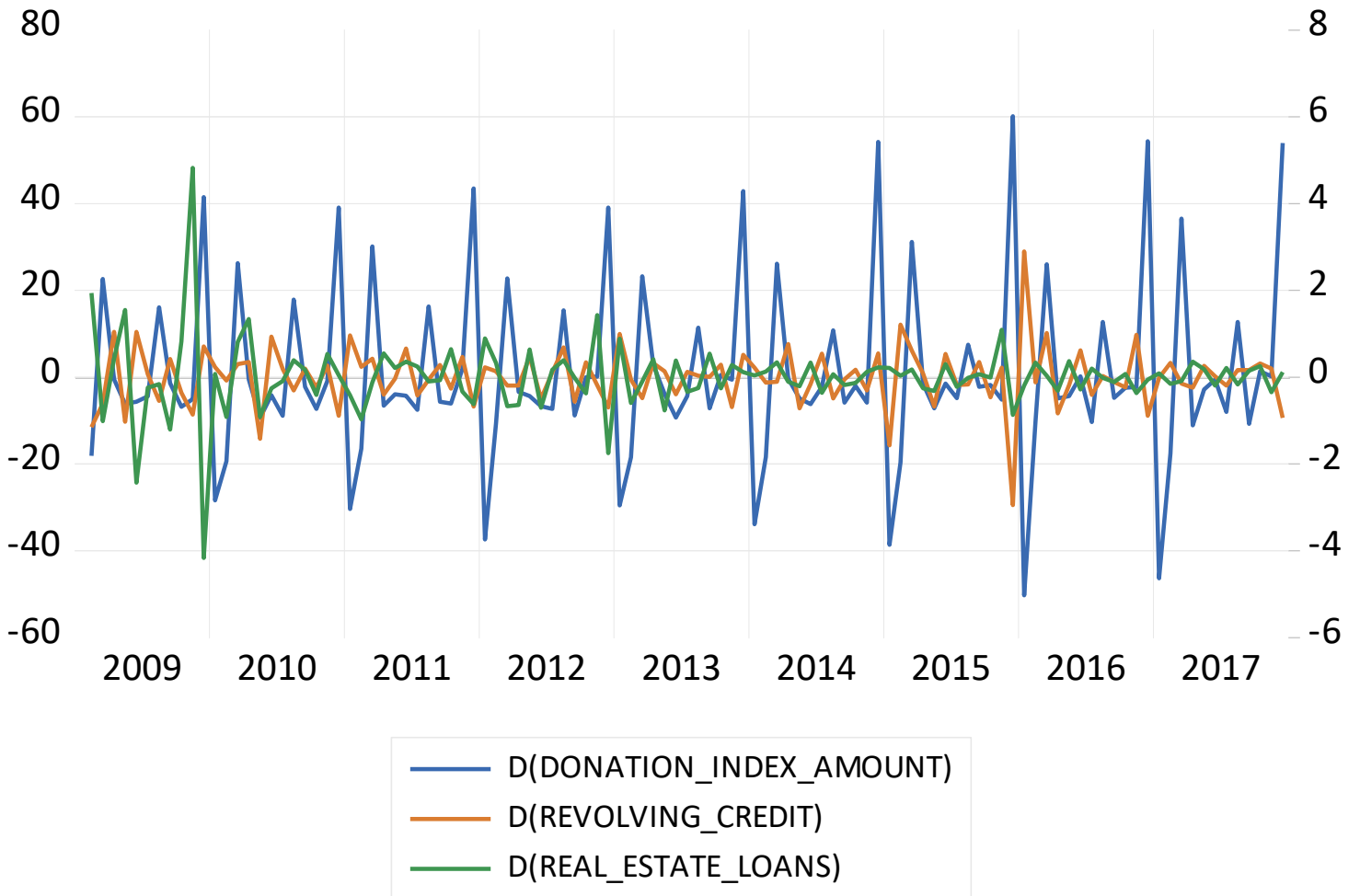


Figure 2: Donations and Core PCE and Federal Funds Rate

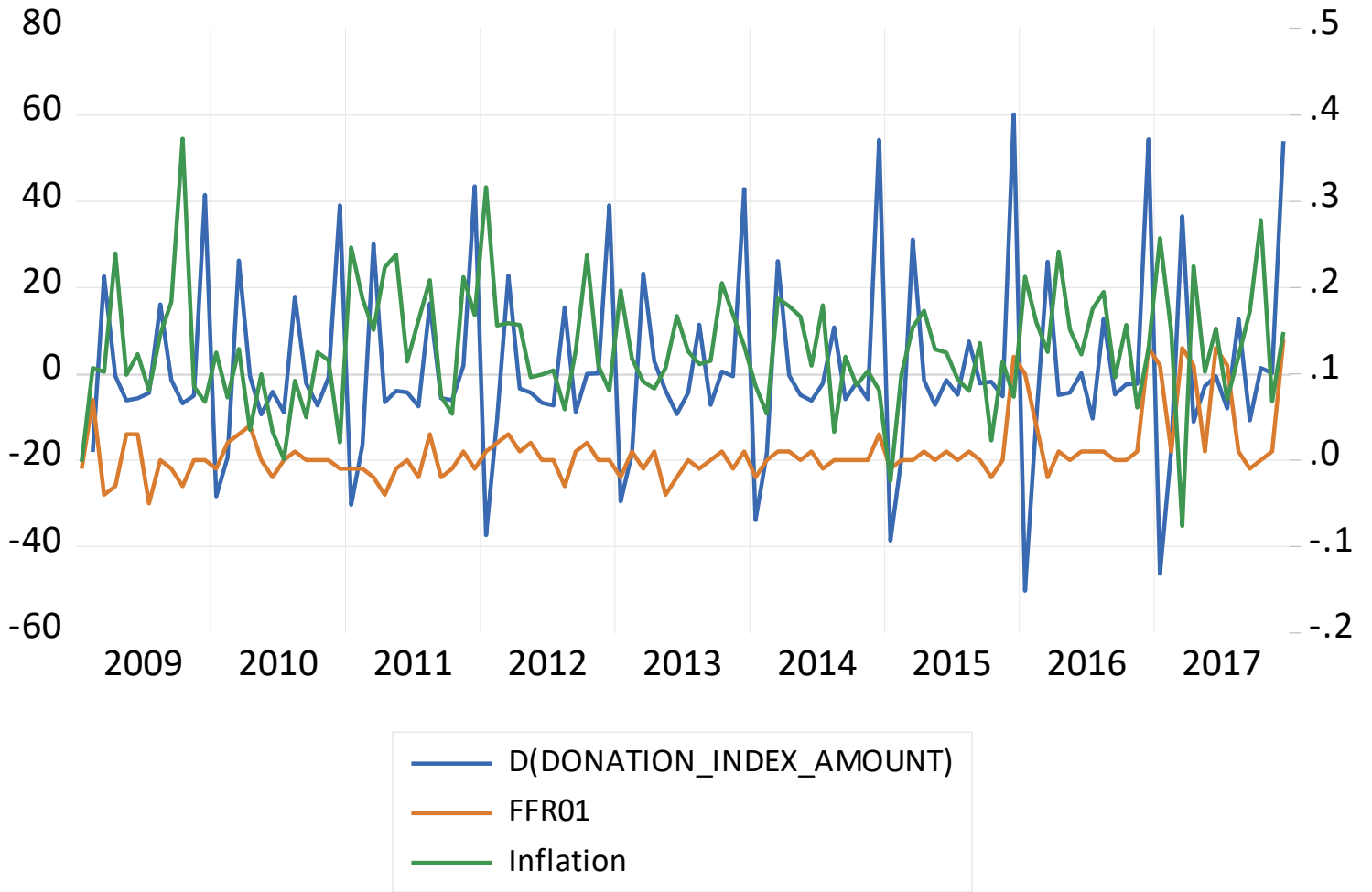


Figure 3: Donations and Housing Prices and Real Disposable Income

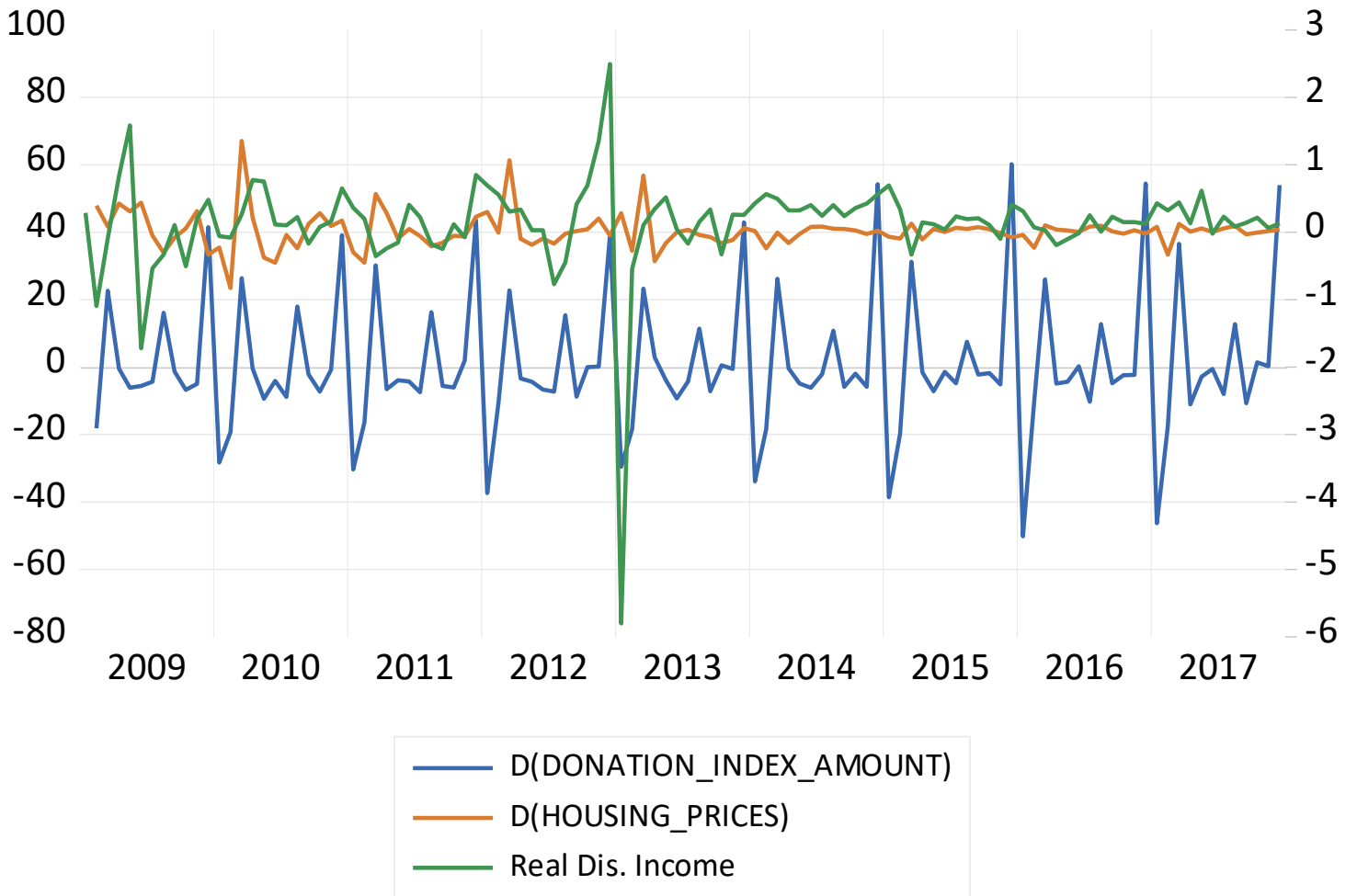


Figure 4: Impulse Response Donations & Revolving Credit

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to D(REVOLVING_CREDIT)

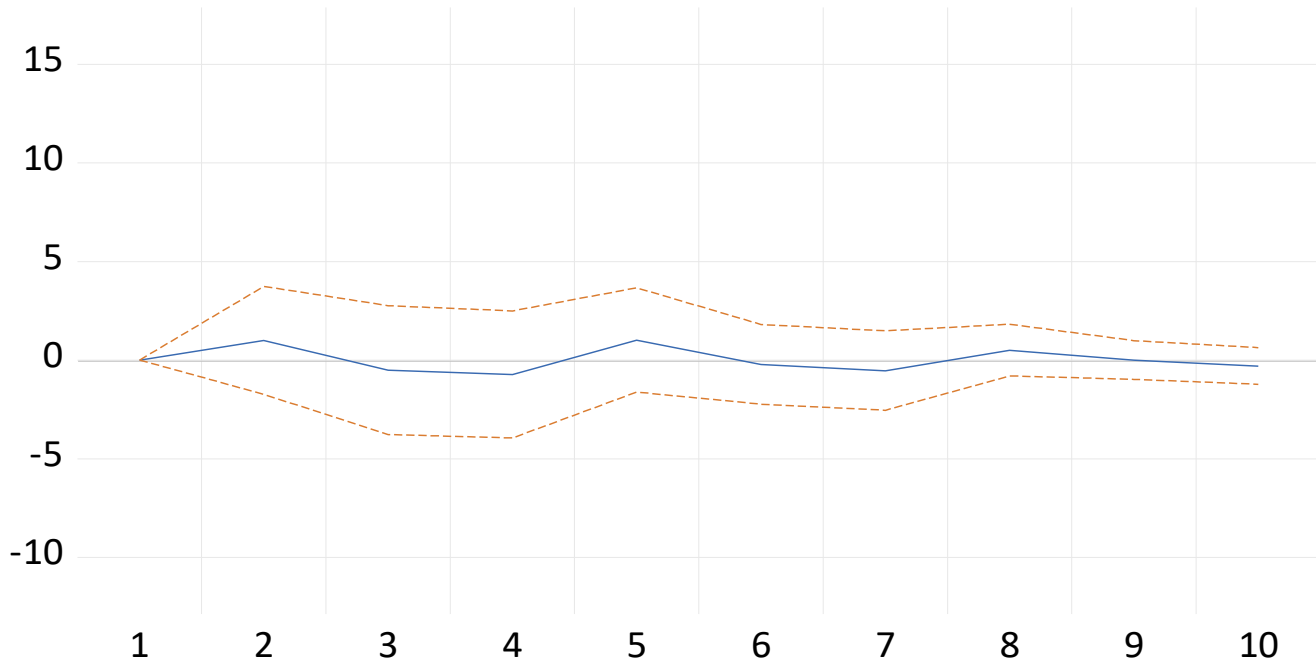


Figure 5: Impulse Response Donations & Real Estate Loans

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to D(REAL_ESTATE_LOANS)

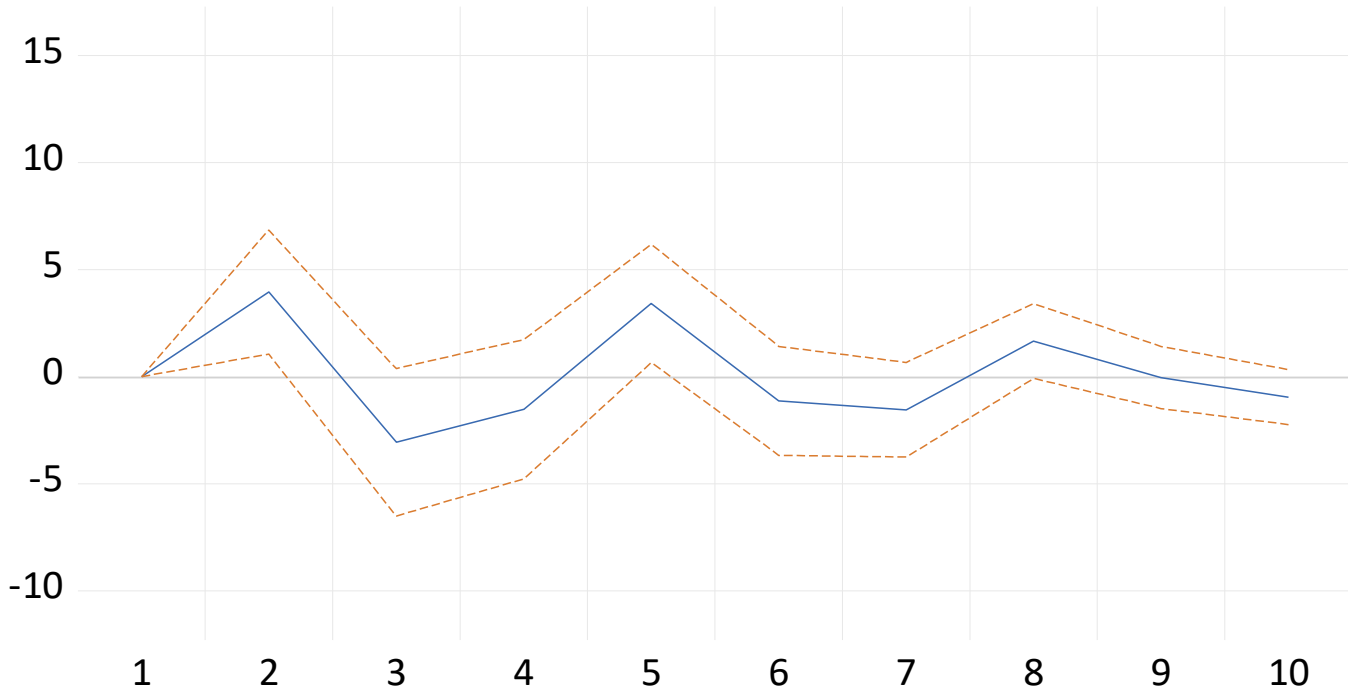


Figure 6: Impulse Response Donations and Inflation

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to INFLATION

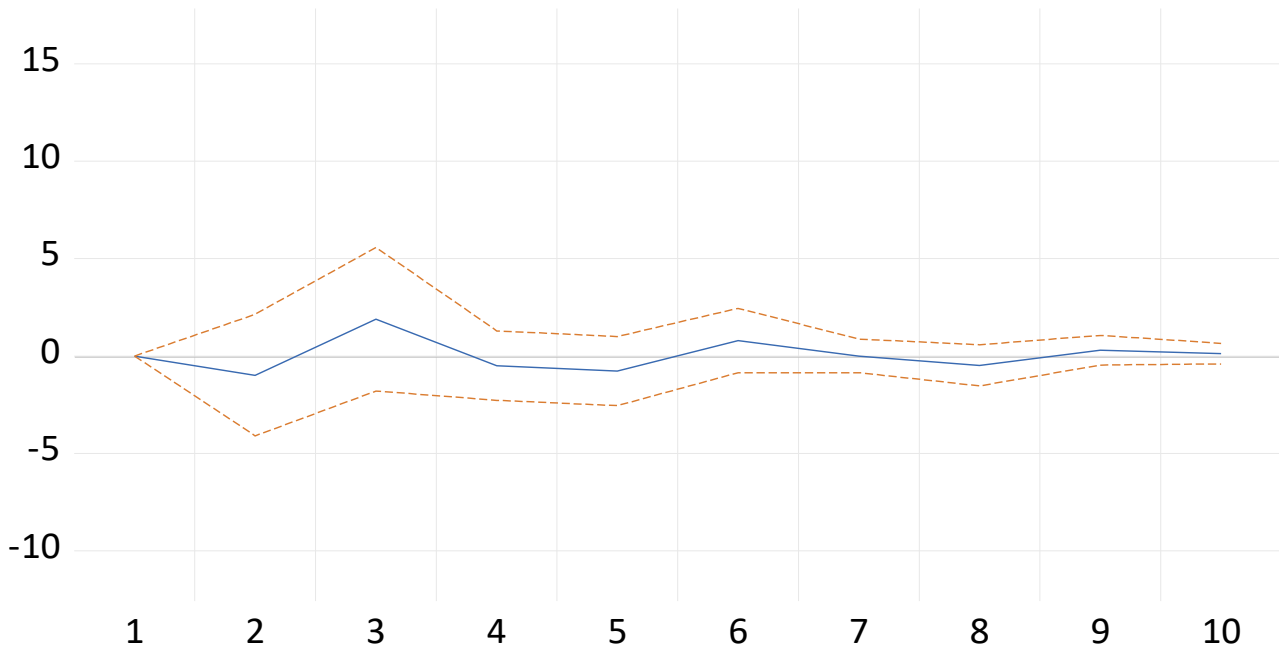


Figure 7: Impulse Response Donations and Federal Funds Rate
Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to FFR

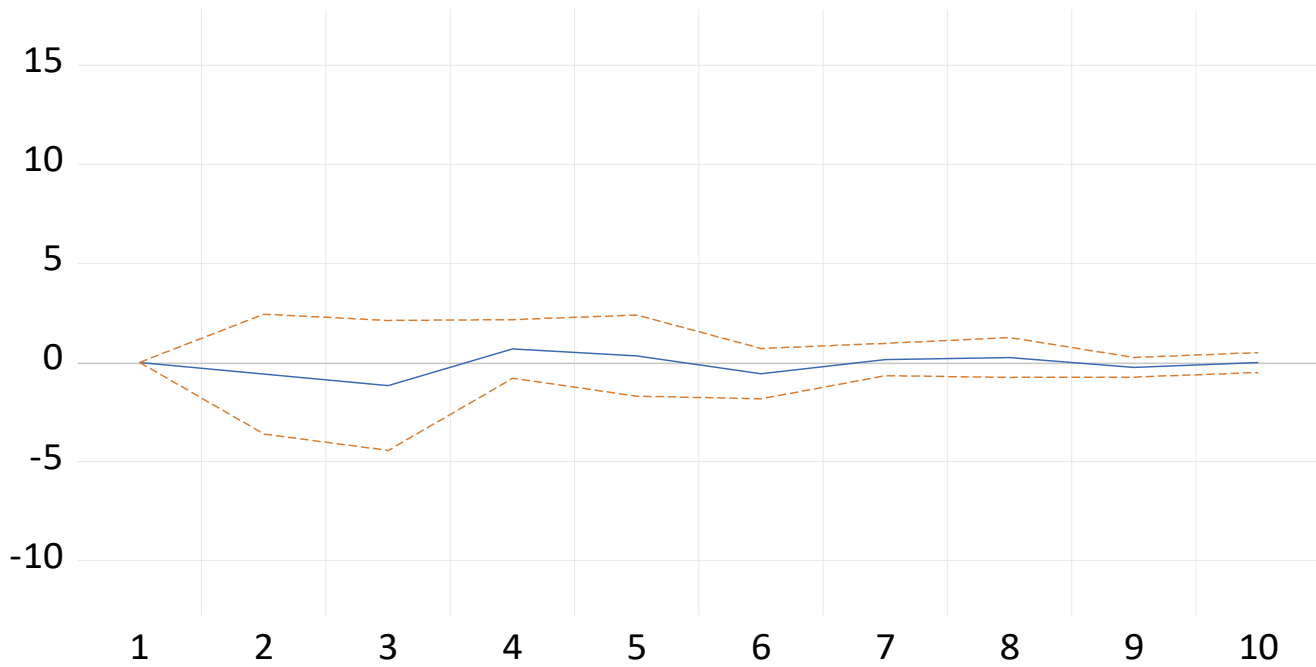


Figure 8: Impulse Response Donations and Housing Prices

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to D(HOUSING_PRICES)

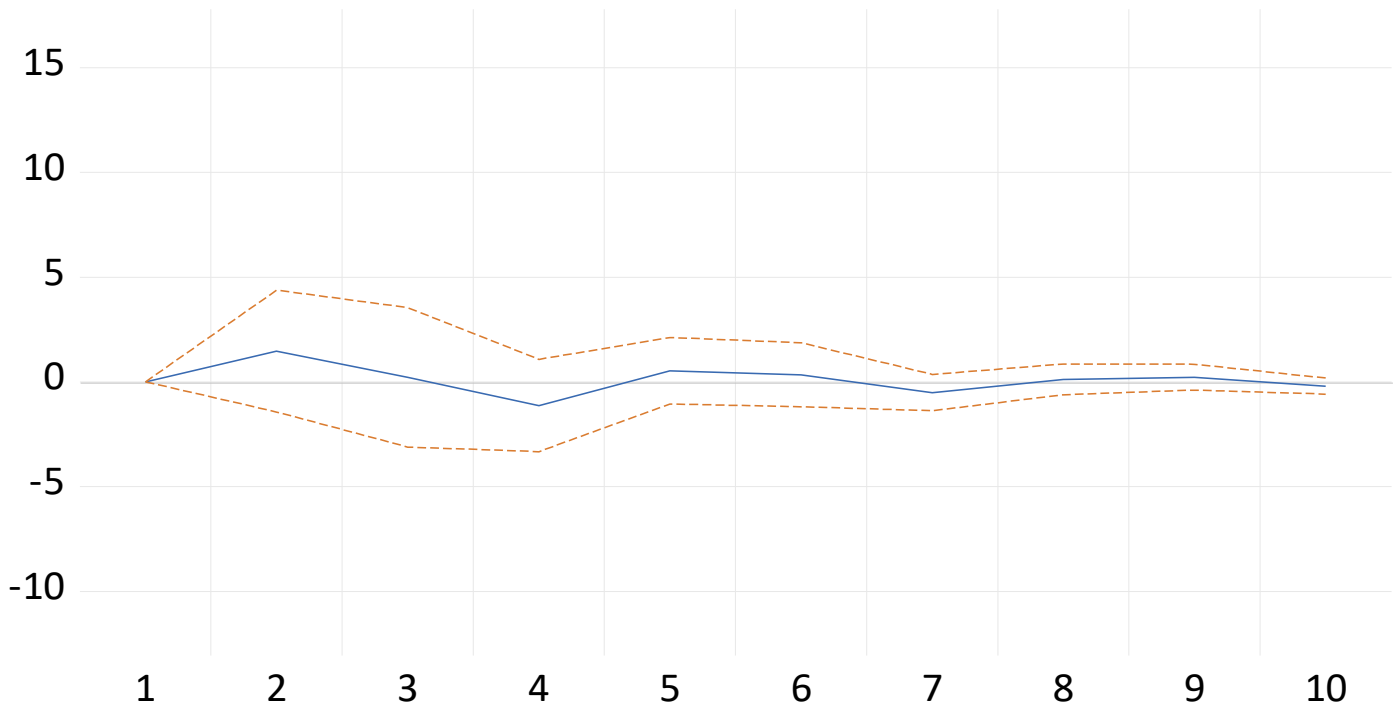


Figure 9: Impulse Response Donations and Real Disposable Income
Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Response of D(DONATION_INDEX_AMOUNT) to REAL_DIS__INCOME

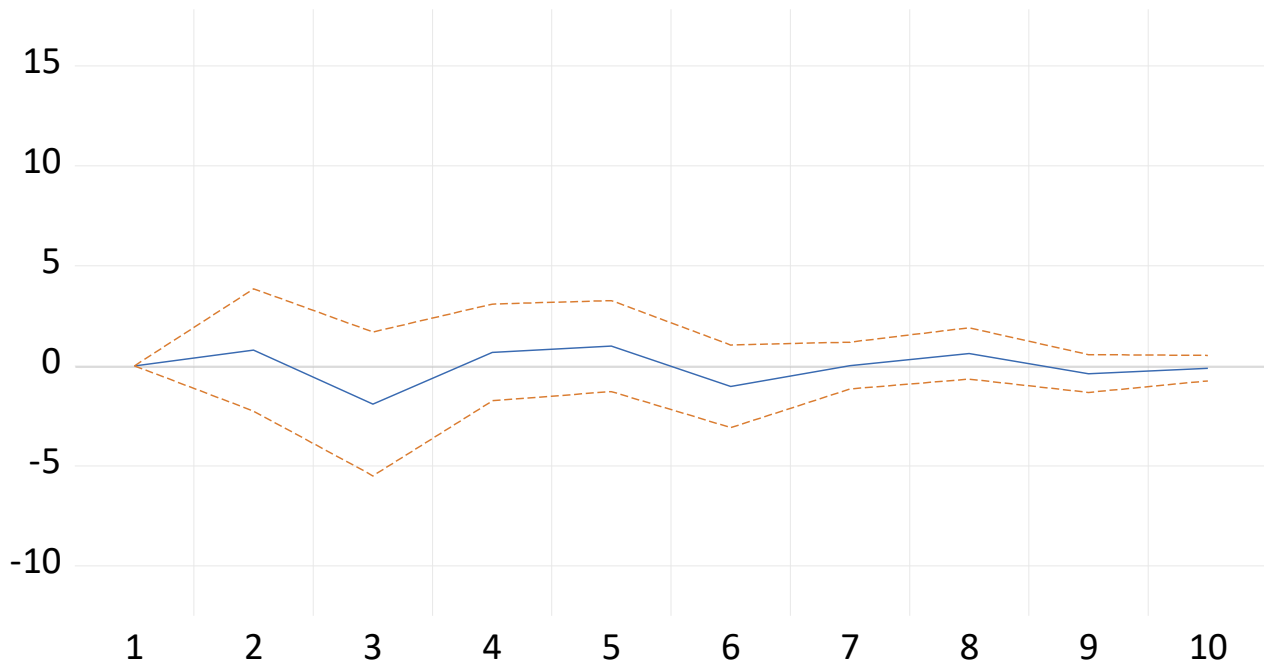


Figure 10: All Models w/Channels (Annual Data)

Donations	Loan Supply Channel	Wealth Channel	Interest Rate Channel	All Variables
Revolving Credit	6752.26 (0.12)			21652.60 (0.32)
Real Estate Loans	-3711.17 (-0.24)			-7193.23 (-0.38)
Real Disposable Income		37376*** (3.54)		29033*** (2.85)
Housing Prices		670670*** (3.30)		494828*** (2.57)
Federal Funds Rate			28632.48 (0.04)	963922.3 (1.00)
Inflation			-2059265 (-0.93)	-4188408 (-1.35)
No. Of Observations	30	30	30	30
Adj. R ²	-0.07	0.40	-0.00	0.49
F-stat (Prob.)	0.10 (0.92)	10.84 (0.00)	0.90 (0.35)	5.60 (0.00)
DW Test Stat	1.53	1.83	1.55	2.15

Note: t-stat in parentheses. *** represents significance at 1%, **5%, and *10%.

|1.64| – 10% |1.96| – 5% |2.578| – 1%