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Fixing a Faulty Thermostat: A Replication and re-Analysis of "The Public as Thermostat" Employing a Fixed-effects Model

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Abstract

In a 1995 AJPS article, Christopher Wlezien advanced the notion that the public acts in an Eastonian manner as a thermostat for shaping policy preferences. I assert Wleziens use of a GLS-ARMA approach may be a true mis-specification problem. I propose the use of a fixed-effects model. Using both the older version of MICROCRUNCH and the newer version of RATS, I test Wleziens models and his hypotheses. The results in MICROCRUNCH are somewhat different from the original, whilst the results from RATS suggest that the findings of Wlezien are not nearly as significant as assumed.

Keywords: Public Policy Preferences, Defense spending, Welfare Spending, Fixed-Effects Model

1. Introduction

In a 1995 AJPS article, Christopher Wlezien[1] advanced the notion that the public acts in an Eastonian manner as a thermostat for shaping policy preferences. Using two sets of data compiled into one time-series, Wlezien constructs a generalized least squares-auto regressive moving average - GLS-ARMA - model to test his assertions over six spending categories. I assert that both the model and the application of Easton's "Feedback-Loop" hypotheses are misapplied for these cases.

That is to say, Wleziens assertion in that the public acts as a thermostat leads one to presuppose one of two possible descriptions about the American political public:

1) that the public is a mindless reactive, far more apathetic than even the most cynical nihilist has averred, or

2) that the public is so much more sophisticated than previously assumed that direct democracy becomes a working possibility.

I certainly do not feel that is what Professor Wlezien meant to imply; but reading his assumptions leads to one such set of conclusions.

Further, the use of a GLS-ARMA approach may be a true mis-specification problem. It is understandable that lack of alternate software's and methods is partly at fault. Nonetheless, one of the first things that catches the readers eye when examining the raw data is the inappropriateness of applying GLS to it. I aver that more properly, the data should be examined *via* a fixed effects model using pooled cross-sectional time-series methodology.

I make such an assertion confidently. Stimson (1985) provides much of the groundwork- and counter-arguments- for proper use of GLS methods. Beck and Katz (1995) point out many problems with the improper use of the GLS model ("Parks", hereafter). Greene (1997) notes that for short, wide pools, a fixed-effects model works well, and for a long, deep pool, a random-effects model fits well. For this data, I propose the use of fixed-effects- the units are fixed across, although the pool is virtually square [5x({10x7}+{2x7})]. Using both the older version of MICROCRUNCH (release 2.1) [2], and the newer version of RATS (8.1), I test Wleziens models and his hypotheses. The results in MICROCRUNCH are somewhat different from the original, whilst the results from RATS suggest that the findings of Wlezien are not nearly as significant as assumed.

2. The Puzzle

The essential question is *Does the public act*- OR *react?* to public policies, especially in indicating their preferences for spending categories. That is, does the public indicate it's preferences and then see them followed, or does the public observe budgetary outlays and

[1] Lest any think this is an unfair assault, I have spoken at length with Professor Wlezien in regard to his work.

[2] A word on MICROCRUNCH. Professor James Stimson developed this diagnostic program in the mid 1980's, and produced commercial versions up to 1992. This is the 2.1 version. Stimson halted development of any further commercial releases in no small part due to the flaws ("bugs") in the command structure, as well as for personal and professional reasons. He will, if contacted, discuss the problems- and advantages- of the MICROCRUNCH program. It is still an excellent diagnostic tool, but with acknowledged shortcomings. (Stimson 2002, 2009)

thence indicate pleasure or displeasure with them? Wlezien asserts that the public- most especially in regards to defense appropriations- is willing to engage as an active participant in a trade-off of services and public goods. More recent work suggests this is not quite so (Conneta and Knight, 1998).

Eastonian feedback-loop hypotheses suggest that a mix of the two is what actually occurs. Government makes policy, bureaucrats spend, the public gives assent (or dissent) through the electoral process (and other channels), and representatives react in a 'responsible' fashion. Such is Wleziens assertion.

There exist some flaws in such an application. First, there is conflictual data as to whether we possess a true responsible system. Second, much evidence exists that support the idea of only the politically activist elite responding. Finally, and most problematic, is the suggestion of a widespread, informed, sophisticated *polis*.

Furthermore, there exists quite some problem with measuring something that is to all intents somewhat amorphous. That is to say, how to measure assent or dissent, and even how to measure the final budgets for those policy areas. As Wlezien himself notes, “Finding reliable measures of appropriations……is not entirely straightforward.” (p.987). Force-fitting metrices and creating data *ad hoc* are of limited use for such sweeping theoretical assumptions.

3. The Data

Wlezien constructs his data sets from the General Social Survey (GSS) and from extracted Roper Poll reports. The survey responses from both are conformed into six sets for analyses, covering the six spending categories. These are regressed individually, and then pooled for the Parks method of analysis.

Wlezien notes early the potential problems with these data. The first is that the GSS was not always asking the same questions every year. Conversely, Roper does ask them, but at a different point in the annual cycle: February through April for the GSS, December for Roper. The relevance herein is that individual spending habits do differ from month to month.

A question asked in March may be influenced by post-holiday bills, tax worries, summer vacation plans, and so on. December, on the other hand, may capture ebullient holiday spending moods, wishes and desires for material goods, or distractive "halo" answers from the respondents (Dye, 1997). To ask a question about social program spending in December very well could return a much more positive flush than such would in March.

A second problem lies in the questions chosen as salient. He drops some variables from the analyses, citing "little common variance" (p.984, footnote 2) with the ones chosen. Deleting crime, space exploration, and foreign aid from this seems to be counter-intuitive. Some few Americans see foreign aid as social spending (Milner, Poe and LeBlang, 1999). Allocating budgets to crime-prevention programs certainly suggest that such are a part of the general welfare spending. And, space-exploration has always had strong cognitive attachments to military spending in other surveys- Gallup, Harris, and even Roper (Barker *et al.* 1995, Cook

1971). To remove these may be sincere in the interests of parsimony, but are deleterious for a rigorous explanation.

A tertiary issue in the data is that at no point does Wlezien indicate that he tested the Roper data alone. He acknowledges the flaw in the GSS questions not being asked annually and consistently. I deem it a sensible strategy to abandon the GSS at that point, rather than extrapolate from Roper for those years and questions. It also seems somewhat suspect to include *only* those parts of a survey that fill in the holes of another survey, no matter how well the fit may be.

Fourth, the author does not account for question order and framing issues. Asking a question about the condition of blacks, or whether drug addiction is a problem in the community, are shown to affect individual responses to questions about spending or budgets and deficits (Fiske and Taylor, 1991; Taylor 1975, among others). Again, there is no indication that question ordering is taken into account, much less controlled for.

Question wording- framing the response- may be less of a concern, but one that is not addressed. While the reliable survey organizations such as Roper, Harris, Gallup, and NORC take great pains to make questions as objective as possible, they do not use the exact same wording for their polls. Inclusion of dis-similar questions on the same issue may create unintentional deviations that could only be accounted for by comparing the standard deviations from the individual surveys proper.

The fifth and final issue to consider is that of small *N*. It is certainly understandable that in the social sciences, the absence of data far supersedes that collected. One can not analyze what does not exist. To that end, if no data exists that can test these pre-suppositions through the modeling used, then a more appropriate model should be applied. As this and other concerns are not satisfactorily addressed, I am skeptical of any results or interpretations inferred.

4. The Model

What Wlezien has offered is a testable model, but perhaps not the proper one. He uses pooled cross-sectional time series regression analysis to test the model. That is, he stacks or pools his separate panels, and then regresses them. Pooled time series cross sectional analysis has become quite popular since it si especially useful for social scientists exploring statistical relationships across both time and units. It is a method for examining observations across units combined with observations over time. There is some advantage to utilizing pooled or panel data of these sorts.

First, this approach increases *N*, thusly increasing the confidence one can have in coefficient estimates. Therefore, as *N* increases, the standard errors decrease, *ergo*

$$s_b = \sqrt{\frac{\frac{SSE}{N}}{\sum_{N=1}^{N}(x_{jit} - \bar{x})^2(1 - R_j^2)}}$$ (Greene, 2000).

Pooling is also useful when there is only a short time period for which data is available, so that there are not enough observations to reproduce through time dynamics. Most usually, time series methods require somewhere in the neighborhood of thirty to fifty time observations. This is not to suggest that social science should only utilize pooling when time series are short, but that other advantages turn it into a more desirable method under such a circumstance.

Secondly, one is able to explore the determinants of variation across both units and time. Thusly, the advantages of time-series can be combined with the advantages offered by use of cross-sectional data (Note that there are also disadvantages to pooling, these mostly come from a misapplication of the method).

Thusly, Wleziens general model

$$\Delta R_t = \Delta P_t^* - \Delta P_t$$

where *R* can change as either *P** or *P* do; increases in *P** influence *R* positively. Increases in *P* influence *R* negatively. His more specific model for each spending category (Cities, Defense, Education, Environment, Health, and Welfare) is

$$\Delta R_{it} = \tau_{1i} \Delta P_{it}^* + \tau_{2i} \Delta P_{it} + \varepsilon_{it}$$

where ε_{it} represents the error term. This is a variation of the typical time series regression equation, usually written as

$$Y_{it} = B_0 + B_1 X_{it1} + B_2 X_{it2} + \cdots + B_k X_{itk} + U_{it}$$

where $i = 1, 2, \ldots N$, the number of panels; and $t = 1, 2, \ldots T$, the number of time periods.

Time series data are characterized by their having repeated observations on fixed units, in this case spending categories. Typical analysis ranges from ten to one hundred, units being observed for lengthy time periods to validate the sample- from twenty to fifty time units. Time series data allow for temporal and spatial error correlation, as well as for heteroskedasticity. To deal with these problems, a few solutions are available. One is the aforementioned Parks GLS, another is *feasible generalized least squares* or FGLS (when formulating this, it is often necessary to determine as to whether the data are described by a common or separate auto-correletion coefficient at each unit), and a third is the fixed-effects method.

Wlezien chose the Parks method. The small sample size has the in-built problem of potentially compounding spatial and temporal error correlation, so *panel corrected standard errors* (PCSE) should be employed, following Beck and Katz (1995). Unfortunately, MICROCRUNCH 2.1 doesn't allow for PCSE, and Wlezien doesn't utilize them. As I initially replicate his model strictly in MICROCRUNCH I do not either, and the fixed-effects replication controls for this potential problem.

The advantages of the fixed-effects approach are manifold. One is that it is a more sophisticated and rigorous methodology, developed to account for the problems unique to pooled cross-sectional time series analyses. Another is that various software's have been developed which employ this methodology relatively routinely, whereas the older releases of MICROCRUNCH do not. The fixed-effects model as well accounts for the problem of intercepts and/or slopes varying across units, something the Parks method does not do. (Levine and Ross, 1992).

5. Outputs

5.1 GLS-ARMA- 1

The following tables show Wleziens reported results from his work, standard errors are in parentheses.:

Table 1. Defense Spending Preference Regression

Independent Variable	*Net Support for Defense Spending* (differenced)		
Intercept	11.53**	(2.4)	
Net Dislike of the Soviet Union *t* (diff)	.66**	(.12)	
Net Dislike of the Soviet Union *t-1* (diff)	.60**	(.13)	
Defense Appropriations *t*	-2.7**	(.41)	
R^2	.84	Adjusted R^2	.80
Standard error of the regression	6.84	Durbin-Watson	1.72
Box-Ljung (3 df)	.33		
N=15;	**p<.01 (2-tailed)		

Table 2- Pooled Preference Regressions for the Five Categories

Independent Variable	*Net Support for Spending*$_{jt}$ (differenced)	
Intercept	1.68** (.51)	1.76** (.52)
Business Expectations $_t$ (differenced)	.12** (.03)	.13** (.03)
Business Expectations $_{t-1}$ (differenced)	-.08** (.03)	-.08** (.03)
Appropriations$_{jt}$	-.03 (.02)	------
Cities$_t$	------	-.01 (.03)
Education$_t$	------	-.04 (.05)
Enviroment$_t$	------	-.01 (.08)
Health$_t$	------	-.06 (.13)
Welfare$_t$	------	-.14*(.06)
R^2	.21	.24
Adjusted R^2	.17	.16
Standard error of the regression	4.58	4.64
Rho	-.31	-.23
Box-Ljung (3 df)	.2.57	3.68
N=75;	**p<.01 (2-tailed)	*p<.05 (2-tailed)

Table 3- Total Social Appropriations and Preferences for Social Spending

Independent Variable	Net Support for Spending$_{jt}$ (differenced)			
Intercept	1.96**	(.45)		
Business Expectations $_{t}$ (differenced)	.15**	(.03)		
Business Expectations $_{t-1}$ (differenced)	-.07**	(.03)		
Social Appropriations$_{t}$	-.18**	(.04)		
R^2	.36	Adjusted R^2	.33	
Standard error of the regression	4.13	Rho	-.27	
Box-Ljung (3 df)	3.66			
N=75;	**p<.01 (2-tailed)	*p<.05 (2-tailed)		

Table 4- Assessing the Interdependence between Defense and Social Spending Preferences

Independent Variable	Net Support for Spending$_{jt}$ (differenced)			
	Defense		Social	
Intercept	11.51**	(2.52)	1.76**	(.45)
Net Dislike of the Soviet Union *t* (diff)	.65**	(.13)	------	
Net Dislike of the Soviet Union *t-1* (diff)	.61**	(.15)	------	
Defense Appropriations *t*	-2.71**	(.43)	------	
Predicted Difference In the Preferred Level Of Social Spending	-.1	(.86)	------	
Business Expectations $_{t}$ (differenced)	------		.17**	(.03)
Business Expectations $_{t-1}$ (differenced)	------		-.07**	(.02)
Social Appropriations$_{jt}$	------		-.17	(.04)
Predicted Difference In the Preferred Level Of Defense Spending	------		-.1	(.03)
R^2	.84		.45	
Adjusted R^2	.78		.41	
Standard error of the regression	7.17		3.86	
Rho	------		-.37	
Durbin-Watson	1.73		------	
Box-Ljung (3 df)	.3		3.19	
**p<.01 (2-tailed)	N=15		N=75	

Wlezian determines that from these reported results the public prefers to trade-off guns and butter, but only in one direction: guns-to-butter. The conclusion is not especially strong, given his *caveat* that public preferences for social spending are much more stable over time than for defense spending. Albeit that the duration of the abbreviated time-series was following

intense public dislike of defense spending *post*-Vietnam, through the massive Reagan-Bush defense build-up, this becomes almost tautological.

5.2 GLS-ARMA- 2

I replicated the data in MICROCRUNCH and obtained the following (standard errors in parentheses):

Table R1- Defense Spending Preference Regression, Replicated

Independent Variable	Net Support for Defense Spending (differenced)		
Intercept	11.52**	(2.52)	
Net Dislike of the Soviet Union *t* (diff)	.63**	(.11)	
Net Dislike of the Soviet Union *t-1* (diff)	.63*	(.12)	
Defense Appropriations *t*	-1.95*	(.55)	
R^2	.792	Adjusted R^2	.76
Standard error of the regression	6.92	Durbin-Watson	1.41
Box-Ljung (3 df)	.322		
N=15;	**p<.01 (2-tailed)	*p<.05 (2-tailed)	

Table R2- Pooled Preference Regressions for the Five Categories, Replicated

Independent Variable	Net Support for Spending$_{jt}$ (differenced)			
Intercept	1.65**	(.52)	1.71**	(.54)
Business Expectations $_t$ (differenced)	.1	(.13)	.11	(.13)
Business Expectations $_{t-1}$ (differenced)	-.11*	(.06)	-.11*	(.06)
Appropriations$_{jt}$	-.07	(.08)	------	
Cities$_t$	------		-.03	(.04)
Education$_t$	------		-.05	(.05)
Enviroment$_t$	------		-.03	(.1)
Health$_t$	------		-.09	(.17)
Welfare$_t$	------		-.11*	(.07)
R^2	.202		.234	
Adjusted R^2	.163		.15	
Standard error of the regression	4.44		4.56	
Rho	-.3		-.24	
Box-Ljung (3 df)	.2.46		3.59	
N=75;	**p<.01 (2-tailed)		*p<.05 (2-tailed)	

Table R3- Total Social Approprations and Preferences for Social Spending, Replication

Independent Variable	Net Support for Spending$_{jt}$ (differenced)			
Intercept	1.94**	(.42)		
Business Expectations $_t$ (differenced)	.14*	(.06)		
Business Expectations $_{t-1}$ (differenced)	-.06*	(.05)		
Social Appropriations$_t$	-.11*	(.06)		
R^2	.32	Adjusted R^2		.29
Standard error of the regression	4.07	Rho		-.29
Box-Ljung (3 df)	3.5			
N=75;	**p<.01 (2-tailed)		*p<.05 (2-tailed)	

Table R4- Interdependence Between Defense and Social Spending Preferences, Replicated

Independent Variable	Net Support for Spending$_{jt}$ (differenced)			
	Defense		Social	
Intercept	11.45**	(2.5)	1.79**	(.41)
Net Dislike of the Soviet Union *t* (diff)	.63**	(.11)	------	
Net Dislike of the Soviet Union *t-1* (diff)	.59**	(.17)	------	
Defense Appropriations *t*	-2.68**	(.42)	------	
Predicted Difference In the Preferred Level Of Social Spending	-.13	(.89)	------	
Business Expectations $_t$ (differenced)	------		.15*	(.06)
Business Expectations $_{t-1}$ (differenced)	------		-.04*	(.05)
Social Appropriations$_{jt}$	------		-.16	(.06)
Predicted Difference In the Preferred Level Of Defense Spending	------		-.14	(.06)
R^2	.78		.42	
Adjusted R^2	.76		.39	
Standard error of the regression	7.23		3.78	
Rho	------		-.34	
Durbin-Watson	1.53		------	
Box-Ljung (3 df)	.333		3.07	
**p<.01 (2-tailed) *p<.05 (2-tailed)	*N*=15		*N=75*	

Note that the results are very nearly similar. The small differences may be due to a multitude of things[3], but are close enough that the same conclusions could be reached, although not as emphatically. Wlezien concludes with a very assertive statement that this model works quite well. His final *caveat* is that over time, there would not exist apparent cyclicality, but rather

[3] Different versions of MICROCRUNCH, different PC problems, coding inconsistencies (see my footnote 1).

equilibrium. I am unconvinced the assiduous sociometrician would now find the results nearly so convincing, especially given the differing coefficients and *R*-squares. More particularly, Table R2's *Welfare* support is very different from the initial reported value, which could be construed as signifying the models mis-application, if not it's dubious causality and prediction..

5.3 Panel-Fixed

With that in mind, the model is now processed as a fixed-effects pooled cross-sectional time-series using RATS software for analysis. One primary advantage of RATS is that it has been developed primarily as a time-series tool, rather than as an appendage to another statistical package. Other packages, such as STATA and E-VIEWS, also perform this pooled function quite well, but are not necessarily time-series oriented *in toto*. What follows are the outputs from RATS for the model:

Table 5.1- Linear Regression - Estimation by Instrumental Variables

Usable Observations	15	Degrees of Freedom	13	
Total Observations	165	Skipped/Missing	150	
Centered R**2	-0.026	R Bar **2	-0.105	
Uncentered R**2	0.101	T x R**2	1.520	
Mean of Dependent Variable	-5.280	Std Error of Dependent Variable		14.529
Standard Error of Estimate	15.271	Sum of Squared Residuals		3031.641
Durbin-Watson Statistic	0.839			

Variable	Coeff	Std Error	T-Stat	Signif
**********				
1. Constant	-6.095	22.862	-0.267	0.794
2. DEFPREF	0.218	6.032	0.036	0.972

Table 5.2- Panel Regression

Usable Observations	15	Degrees of Freedom	12	
Total Observations	165	Skipped/Missing	150	
Centered R**2	-1.362	R Bar **2	-1.755	
Uncentered R**2	-1.069	T x R**2	-16.033	
Mean of Dependent Variable	-5.280	Std Error of Dependent Variable		14.529
Standard Error of Estimate	24.116	Sum of Squared Residuals		6979.085
Durbin-Watson Statistic	0.780			

Variable	Coeff	Std Error	T-Stat	Signif
**********				
1. Constant	-37.812	74.334	-0.509	0.620
2. DEFPREF	-2.522	3.517	-0.717	0.487
3. DEFENSE	1.5614	3.146	0.497	0.629

Table 6.1- Linear Regression - Estimation by Instrumental Variables

Usable Observations	15	Degrees of Freedom	13	
Total Observations	165	Skipped/Missing	150	
Centered R**2	0.176	R Bar **2	0.112	
Uncentered R**2	0.950	T x R**2	14.240	
Mean of Dependent Variable	26.867	Std Error of Dependent Variable		7.120
Standard Error of Estimate	6.708	Sum of Squared Residuals		584.838
Durbin-Watson Statistic	0.649			

Variable	Coeff	Std Error	T-Stat	Signif
1. Constant	23.424	2.696	8.690	0.000
2. DEFPREF	0.922	0.553	1.666	0.120

Table 6.2 – Linear Regression- Reversed ordering

Usable Observations	15	Degrees of Freedom	13	
Total Observations	165	Skipped/Missing	150	
Centered R**2	0.509	R Bar **2	0.472	
Uncentered R**2	0.970	T x R**	14.547	
Mean of Dependent Variable	26.867	Std Error of Dependent Variable		7.120
Standard Error of Estimate	5.174	Sum of Squared Residuals		348.044
Durbin-Watson Statistic	1.554			

Variable	Coeff	Std Error	T-Stat	Signif
1. Constant	25.019	1.427	17.528	0.000
2. WELFARE	-0.350	0.095	-3.676	0.003

Note that none of these correspond but fleetingly to the MICROCRUNCH results. Testing the model as WELFARE affecting DEFPREF (and vice-versa) also give us insignificant results. Various null-hypothesis tests were also weak, sometimes yielding conflicting and inconsistent results. I tested the model using PANELSCC.src as well as the PREGRESS command structure, and as suggested by De Boef and Granato (1999), I also tested for cointegration using RATS code for multivariate group mean panel Fully Modified OLS (FMOLS) in heterogeneous panels. These reveal the following:

Table 7- INDIVIDUAL FMOLS RESULTS

DEFPREF		WELFARE		EDUC		panel member
0.13	(-10.27)	-0.06	(-19.68)	0.05	(-22.60)	1
0.09	(-19.83)	0.03	(-22.49)	0.00	(-33.93)	2
0.06	(-9.35)	-0.01	(-13.35)	-0.07	(-13.95)	3
-0.03	(-14.14)	0.05	(-22.73)	0.02	(-24.88)	4
0.05	(-18.18)	-0.16	(-16.96)	-0.03	(-24.88)	5
-0.06	(-9.77)	0.08	(-14.42)	0.12	(-15.30)	6

(*t*-stats in parentheses)

	DEFPREF	WELFARE	EDUC
null vector for t-stats is	1.000	1.000	1.000

Table 8- PANEL GROUP FMOLS RESULTS

DEFPREF		WELFARE		EDUC	
0.04	(-30.82)	-0.01	(-41.43)	0.01	(-51.23)

(t-stats in parentheses)

N = 7 , T = 13 , max-lag = 2

Note the wildly different *t*-statistics from the original model. Pedroni (1996, 2000, and 2001) convincingly demonstrates such results indicate a very weak model, as well as possibly suffering from co-integrated data. I fully concur- if so, that would support my assertion that the overall application of the model to the Eastonian thesis is mis-specified.

6. Conclusion

There is not much that can be added; the incoherence of the reported data tells much. The original model is clearly mis-specified, and mis-estimated. It is seemingly therefore a poorly designed and executed model as well.

That said, if one of the purposes of social science is not only explanation but prediction and forecast, then a mis-specified model falls flat. Indeed, one of the primary purposes of the time series approach *is* the ability to minimally forecast. This model fails to be used as a predictive one doubly-

a) as demonstrated, the quantitative methodology is ill-suited, and

b) by limiting the scope of investigation to the Soviet Union- a nation-state that has ceased to exist- the avid social scientist can not apply with veracity this to another "thermostatic" hypothesis.

The model also fails to be replicated, another necessary aspect of science. Without repeated, coherent, and accurate replication, the social scientist must needs be retreat to older models and testable hypotheses. And thusly, failure in replication signifies failure in testing these hypotheses. Work is clearly unfinished here.

What remains to be done is relatively simple. Gathering data on *overall* preferences for defense spending, social spending, *et cetera*, is possible for most years from 1955 onward. These data are available through the aforementioned sources (Roper, Harris, *et al*.) as well as newer data from YouGov and even the CCAP (see for instance Casey, 2009). Metrices for the data need to be compatible, not shoe-horned together. On a technical matter, the coding and syntax for the original MICROCRUNCH program needs to be included along with the data from ICPSR. This would prevent mis-coding, or poor programming.

Finally, the data for all of those years should then be run through as many appropriate procedures as possible- GLS-ARMA, Robust Regression, panel procedures, *at cetera*- to satisfy the critics. Following that, the time-series analyses about dynamic preferences over time can be performed.

The remedies for addressing this dilemma, until further performed, suggest that for the time being, I can only speculate on the natures and methods that make up the American political public when it comes to preferences for budgeting and spending. What these results *do* suggest is that the guns-butter trade-off is not as clearly delimited and defined as many policy makers may wish. Moreover, those 'Hawks' and 'Doves' among the punditry would well heed that the lack of a clear, bright line makes this not as clear-cut as they might desire.

Given that the recent works by Casey (2009), Clarke *et al.* (2011), Whitten and Williams (2011), and Eicheberg and Stoll (2012) all note that the 'trade-off' model is less supported than is the 'I want it all' approach. Policy makers must bear in mind that the public matters; yes: but the public has shallow needs forefront. Thus accepting that the public desires a strong defense community at the expense of the social safety net is wrong-headed thinking; the public when asked specific questions about policy matters gives a more nuanced response. As an example, the recent kerfuffle over the ACA had the public wanting to overturn the act (by some polls nearly 50%); yet when asked about specific portions of the ACA, the public was supportive of all provisions – up to 78% in some cases, and no lower than 60% in any aspect of the law[4] (Grande, *et al.*, 2011). This means that the policy prescriptions arising out of trade-offs must be exercised with caution; the public wants to have its cake and eat it too.

7. Acknowledgement

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[4] Or climate change. See Bruno Takahashi's article (2011) in *Public Understanding of Science*, 20: 4 pp 543-557

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9. Appendix- Data and Codes As Received From ICPSR

Thermo1.dat

1977	1	4	-16	38	6.7	0.69	
1978	5	4	0	-16	-1.2	-4.1	
1979	13	8	1	0	-1	-1.89	
1980	45	32	40	1	3.8	-0.33	
1981	36	-9	-17	40	14.1	4.74	
1982	-1	-37	0	-17	12.9	-3.32	
1983	-8	-7	-4	0	7.7	2.65	
1984	-21	-13	2	-4	4.6	3.74	
1985	-26	-5	1	2	6.3	-3.67	
1986	-24	2	-22	1	-0.2	0.25	
1987	-26	-2	-13	-22	-4.6	-1.59	
1988	-22	4	-12	-13	-4.1	1.74	
1989	-25	-3	-16	-12	-1.7	0.48	
1990	-32	-7	-24	-16	-1.9	-1.17	
1991	-13	19	-2	-24	-2.8	-2.05	

Thermo2.dat

1977	21	2	20	33	126.2	29.3	12.2	1
1978	20	1	-18	20	42.9	-10	-9.6	1
1979	21	1	-21	-18	2.6	-1.3	0.7	1
1980	19	2	-12	-21	3.6	0.1	27	1
1981	19	0	26	-12	10.2	-5.2	12.8	1
1982	23	4	-10	26	18.2	-20.4	-10.2	1
1983	25	2	13	-10	15.6	-0.3	-2.6	1
1984	32	7	31	13	13.2	4.4	-1.1	1
1985	23	9	-10	31	11.3	9.7	1.9	1
1986	28	5	-3	-10	20.9	-11.9	-13.9	1
1987	25	3	-12	-3	2.5	4.1	-21.8	1
1988	36	11	6	-12	16.9	4.3	-15.7	1
1989	36	0	6	6	19.5	2.8	-17.8	1
1990	40	4	-5	6	19.5	8.7	-25.4	1
1991	35	5	16	5	7.4	17.2	-15.7	1
1977	38	3	20	33	29.9	29.3	12.2	2
1978	41	3	-18	20	30.9	-10	-9.6	2
1979	45	4	-21	-18	34.4	-1.3	0.7	2
1980	43	2	-12	-21	12.2	0.1	27	2

1981	49	6	26	-12	5.4	-5.2	12.8	2
1982	48	1	-10	26	24	-20.4	-10.2	2
1983	54	6	13	-10	2.2	-0.3	-2.6	2
1984	61	7	31	13	7.8	4.4	-1.1	2
1985	55	6	-10	31	1.2	9.7	1.9	2
1986	56	1	-3	-10	8.3	-11.9	-13.9	2
1987	56	0	-12	-3	6.3	4.1	-21.8	2
1988	60	4	6	-12	1.5	4.3	-15.7	2
1989	64	4	6	6	6	2.8	-17.8	2
1990	68	4	-5	6	1	8.7	-25.4	2
1991	62	6	16	5	9.4	17.2	-15.7	2
1977	37	9	20	33	46.8	29.3	12.2	3
1978	42	5	-18	20	34.1	-10	-9.6	3
1979	31	11	-21	-18	10.8	-1.3	0.7	3
1980	33	2	-12	-21	9.3	0.1	27	3
1981	38	5	26	-12	22.3	-5.2	12.8	3
1982	38	0	-10	26	5.2	-20.4	-10.2	3
1983	46	8	13	-10	13.8	-0.3	-2.6	3
1984	55	9	31	13	11.3	4.4	-1.1	3
1985	48	7	-10	31	4.9	9.7	1.9	3
1986	54	6	-3	-10	13.9	-11.9	-13.9	3
1987	60	6	-12	-3	20.6	4.1	-21.8	3
1988	60	0	6	-12	1.5	4.3	-15.7	3
1989	68	8	6	6	5.7	2.8	-17.8	3
1990	67	1	-5	6	3.8	8.7	-25.4	3
1991	63	4	16	5	2.3	17.2	-15.7	3
1977	49	6	20	33	9.1	29.3	12.2	4
1978	48	1	-18	20	0.1	-10	-9.6	4
1979	52	4	-21	-18	7.2	-1.3	0.7	4
1980	47	5	-12	-21	0.2	0.1	27	4
1981	50	3	26	-12	2.4	-5.2	12.8	4
1982	50	0	-10	26	4.4	-20.4	-10.2	4
1983	52	2	13	-10	12.2	-0.3	-2.6	4
1984	51	1	31	13	21.2	4.4	-1.1	4
1985	52	1	-10	31	2.3	9.7	1.9	4
1986	53	1	-3	-10	6.8	-11.9	-13.9	4
1987	64	11	-12	-3	9.3	4.1	-21.8	4
1988	63	1	6	-12	6.3	4.3	-15.7	4
1989	65	2	6	6	8.6	2.8	-17.8	4
1990	70	5	-5	6	14.3	8.7	-25.4	4
1991	67	3	16	5	19.5	17.2	-15.7	4

1977	48	1	20	33	29.9	29.3	12.2	5
1978	45	3	-18	20	0.8	-10	-9.6	5
1979	44	1	-21	-18	17.3	-1.3	0.7	5
1980	44	0	-12	-21	11.8	0.1	27	5
1981	32	12	26	-12	3.4	-5.2	12.8	5
1982	28	4	-10	26	28.3	-20.4	-10.2	5
1983	26	2	13	-10	0.7	-0.3	-2.6	5
1984	16	10	31	13	1.5	4.4	1.1	5
1985	26	10	-10	31	25.2	9.7	1.9	5
1986	18	8	-3	-10	21.3	-11.9	-13.9	5
1987	23	5	-12	-3	3.3	4.1	-21.8	5
1988	19	4	6	-12	3.8	4.3	-15.7	5
1989	19	0	6	6	1.5	2.8	-17.8	5
1990	16	3	-5	6	9	8.7	-25.4	5
1991	15	1	16	5	26.8	17.2	-15.7	5