The Economy, the War in Iraq and the 2004 Presidential Election[*]

Douglas A. Hibbs, Jr.

CEFOS, Göteborg University, Göteborg Sweden

_____

ABSTRACT

In this paper I apply the Bread and Peace model of voting in US presidential elections to analyze the sources of George W. Bush's narrow re-election victory in 2004. The aggregate election outcome is readily explained by the model's objectively measured political-economic fundamentals – no appeal need be made to arbitrary count, trend, dummy and switching variables. The results imply that the 2004 election turned mainly on weighted-average growth of per capita real disposable personal income over the term. The war in Iraq, which has escalated dramatically in political relevance since the 2004 contest, had a relatively small impact on the election result, most likely depressing Bush's two-party vote share by less than a half percentage point.

_____

George W. Bush achieved a relatively narrow re-election victory in the 2004 presidential election. Yet unlike his victory as the Republican challenger in the 2000 election when he won the Electoral College vote but received fewer popular votes than the Democrat's candidate Al Gore, in 2004 Bush attracted a 51.24% majority of the total Bush/Cheney v. Kerry/Edwards popular vote.[1]

My analysis of how development of the economy and the war in Iraq affected the 2004 election outcome is based on the "Bread and Peace" model introduced in Hibbs (2000) which analyzed the period 1952-1996. The model assumes that postwar American presidential elections for the most part should be interpreted as a sequence of referendums on the White House party's economic record. My research showed that politically relevant economic performance is best measured by a weighted-average of quarterly growth rates of per capita real disposable personal income, computed from the election quarter back to the first full

_____

[*] An earlier version of this paper was given at the 2007 joint meetings of the US and European Public Choice Societies in Amsterdam. I am grateful for comments received there. The paper was submitted to and ultimately rejected by the *Quarterly Journal of Political Science* as "unnecessarily acerbic" in its criticism of a paper by William Nordhaus published in the same journal that contrasted my model to various equations proposed by Nordhaus' Yale economics department colleague Ray Fair. The *QJPS* submission, review, re-submission and rejection history is available at http://douglas-hibbs.com/Election2004/QJPS_History.htm

[1] I compute the two-party share from the official tally of the Federal Election Commission reported at http://www.fec.gov/pubrec/fe2004/federalelections2004.shtml.

quarter of each presidential term.[2] Growth of per capita real disposable personal income is probably the broadest single aggregate measure of changes in voters' economic well-being in as much as it includes income from all market sources, is adjusted for inflation, taxes, government transfer payments and population growth, and tends to move with changes in unemployment.[3]

The only additional factors I found that significantly affected votes for President in the postwar era were the discretionary US military interventions in the Korean and Vietnamese civil wars. My research indicated that the electoral penalties exacted by Korea and Vietnam fell almost wholly on the party of the President initiating the commitment of US forces (the "war party," in both those cases the Democrats), and were proportionate to the cumulative numbers of American military fatalities at the relevant election dates. Regression experiments determined that the grace period for new presidents inheriting US interventions in Korea and Vietnam ran a full term. The implication was that the 1956 vote for Dwight Eisenhower (who inherited American involvement in the Korean civil war from Harry Truman) was unaffected by US military fatalities in Korea after Eisenhower assumed office in 1953, and that the 1972 vote for Richard Nixon (who inherited American involvement in the Vietnamese civil war from Lyndon Johnson) was unaffected by US fatalities in Vietnam after Nixon assumed office in 1969. Hence the electoral effects of US military interventions were felt mainly in 1952 and 1968.[4]

I want to emphasize that the Bread and Peace model is designed to explain voting outcomes in terms of political-economic fundamentals rather than optimally to predict elections using pre- election poll data on voter sentiments, preferences and the like. Such attitudinal variables are themselves generally affected by objective fundamentals and for that reason supply no insight into the ultimate causes of voting behavior. Applying the model to the 2004 election, I place the American invasion of Iraq (but not Afghanistan) on the same footing as US involvement in Korea and Vietnam, to wit: An unprovoked hostile deployment

---

[2] Hibbs (1982) first proposed the weighted-average real income growth setup in a simple bivariate equation that was fit to eight presidential elections and took no direct account of the electoral consequences of US involvement in the Korean and Vietnamese civil wars. Hibbs (2006) reviews these and many more important issues in the now enormous literature on macroeconomic voting.

[3] However disposable personal income of course does not register benefits voters perceive from government supplied goods and services.

[4] Cumulative over-the-term US military fatalities at the 1952 and 1968 election dates were 29,260 and 28,896, respectively, as compared to just 414 over the term preceding the 1976 election, at which point the incumbent (Nixon-) Ford administration had exhausted the estimated one-term grace period.

of American armed forces in a foreign conflict never sanctioned by a formal Congressional declaration of war.

THE BREAD AND PEACE MODEL

The Bread and Peace equation has a simple nonlinear functional form:

$$Vote_t = \alpha + \beta_1 \left(\sum_{j=0}^{14} \lambda^j \Delta R_{t-j} \left(1 \Big/ \sum_{j=0}^{14} \lambda^j \right) \right) + \beta_2 \ Fatalities_t$$

where

- *Vote* is the percentage share of the aggregate two-party presidential vote going to the candidate of the incumbent party.

- *R* is per capita disposable personal income deflated by the Consumer Price Index; ΔR_t is the quarter-on-quarter rate of growth, expressed in annualized percentage points by multiplication by 400, $\log(R_t/R_{t-1}) \cdot 400$. At the election quarter (*j=0*) the weighting parameter $\lambda^{j=0} = 1$ is scaled down to 1/3 because of the within-quarter date of presidential elections (the first Tuesday following the first Monday of November). The term $1 \Big/ \sum_{j=0}^{14} \lambda^j$ in interior parentheses just normalizes $\sum_{j=0}^{14} \lambda^j \Delta R_{t-j}$ such that the lag sum of annualized real income growth rates is expressed as, and its coefficient yields the electoral effect of, a weighted-average taken over the term.

- *Fatalities* is the cumulative number of American military fatalities (in 1000s) over the presidential terms preceding the 1952 (Korea), 1968 (Vietnam), 1976 (Vietnam) and 2004 (Iraq) elections.

Table 1 reports nonlinear-least-squares estimates of the Bread and Peace equation for the fourteen presidential elections spanning 1952-2004.[5] The model was fit using data available in July 2006 on per capita disposable personal incomes from the Bureau of Economic Analysis, data on the consumer price index (all urban workers) from the Department of Labor, and data on US military fatalities in Korea, Vietnam and Iraq from the US Department

---

[5] The Stata program and data file used to generate all results in this paper are available at http://douglas-hibbs.com/HibbsArticles/hibbs_downloadable.htm.

of Defense. According to the coefficient estimates in Table 1, each percentage point of growth in per capita real disposable personal income sustained over the presidential term boosts the in-party candidate's vote share by around 3.6 percentage points above a benchmark constant of approximately 46 percent. In addition, the incumbent's vote share is depressed by about 0.3 percentage points per 1000 American military fatalities owing to hostile, discretionary deployments of US armed forces in unprovoked wars.

Table 1. **Bread and Peace Equation Estimates**

Incumbent Vote Share (*Vote*)	1952 – 2004	N = 14 elections	
	Adj R^2 =.826	Root MSE =2.42	
	Coef. Estimate	Std. Error	t-ratio|p-value
Constant (α)	46.2	1.24	37.3|0.000
Real Income Growth (β_1)	3.61	0.615	5.87|0.000
Weighting parameter (λ)	0.914	0.058	15.9|0.000
Cumulative *Fatalities* (β_2)	-0.307	0.078	-3.95|0.003

Expressed on an annual basis, the weighted-average per capita real disposable personal income growth rate during Bush's first term was 1.72 percentage points. US military fatalities in Iraq stood at 1.13 thousand at the end of October 2004. The within-sample prediction (regression fit) of Bush's two-party vote share from the Bread and Peace model is therefore 52.08%, which yields a prediction error of -0.84%: $46.2 + 3.61 \cdot 1.72 - 0.307 \cdot 1.13 \simeq 52.08$; $51.24 - 52.08 = -0.84$. These model estimates indicate that the Iraq war made only a small dent in the vote for Bush – depressing his two-party share by approximately 1/3 of a

percentage point.[6] However, if casualties continue to mount all the way up to the next election, Iraq could have decisive effect in 2008, particularly if on economic grounds alone that election would likely be close. But in 2004 the fundamental source of Bush's re-election was real income growth over the term.

The out-of-sample prediction of the 2004 election result is almost as good as the within-sample prediction-fit. Estimated coefficients for the regression the sample range 1952-2000 ($\hat{\alpha} = 46.3, \hat{\beta}_1 = 3.59, \hat{\lambda} = 0.91, \hat{\beta}_2 = -0.309$) are nearly identical to the full sample estimates shown in Table 1. The one-election-ahead, out-of-sample prediction of Bush's two-party vote share is 52.16%, which gives a prediction error of -0.92%. George Bush's narrow 2004 victory is then very well accounted for by the political-economic fundamentals in the Bread and Peace model.[7]

Figure 1 graphs the strong connection of votes for President to weighted-average per capita real disposable personal income growth over the term featured in the Bread and Peace model. The big effects of cumulative US military *Fatalities* were in 1952 (Korea) and 1968 (Vietnam). The high fatality levels at the time of both those elections (29,260 or 196.8 per million population in Korea and 28,896 or 152.4 per million in Vietnam) most likely deprived the in-party Democratic candidates of victory (Stevenson in 1952 and Humphrey in 1968). Cumulative fatalities at the times of the 1976 and 2004 elections were too small to exert much influence. However, as I mentioned earlier, things may be different in 2008. By April 17 2007 American military fatalities in Iraq had reached 3311, a US exit strategy had not yet materialized, and the accumulation of American body-bags was showing no sign of slowing down.

---

[6] The 95% confidence interval for the effect of *Fatalities* is -0.15 to -0.54 *Vote* percentage points. Even at the extremity of the interval the estimated impact of the Iraq War therefore was not nearly large enough to swing the election.

[7] The Appendix to this paper reports actual and in-sample predicted vote shares for all elections generated by the estimates in Table 1, along with the election period values of weighted-average real income growth and cumulative *Fatalities*. The Appendix also reports estimates for the Bread and Peace equation when the military *Fatalities* variable is scaled to population. Aside from the parameter of the re-scaled *Fatalities* variable, the coefficient estimates in this regression experiment are nearly identical to those reported in Table 1. The estimates again imply that the Iraq war had only minor impact on the 2004 vote, decreasing Bush's vote share by little as 1/5 of a percentage point.

Figure 1. Bread and peace voting in US Presidential elections
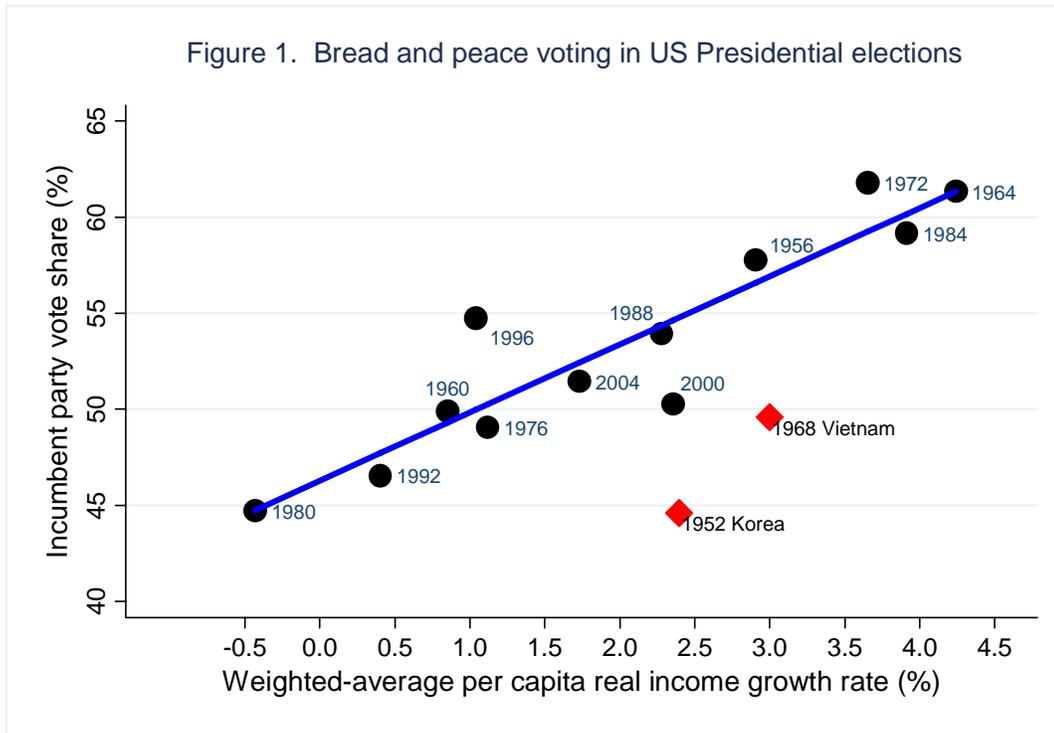
NORDHAUS ON HIBBS VIS-A-VIS FAIR

In a recent article in the *Quarterly Journal of Political Science* William Nordhaus argues that the 2004 election outcome represents a "statistical defeat" for voting models that are based on fundamentals – a conclusion founded mostly on results Nordhaus obtained from analysis of various equations developed by his Yale economics colleague Ray Fair (Nordhaus 2006).[8] However Nordhaus also makes claims about the adequacy of the Bread and Peace model and its prediction of the 2004 election result. The following assertions made by Nordhaus about the Bread and Peace model are erroneous:

- Nordhaus claims that "the forecast error [of the Bread and Peace model] for the incumbent vote margin in 2004 was ... 4 percentage points" (Nordhaus 2006: 317-318, Figure 2).

I do not know how Nordhaus computed a 4 percentage point prediction error for Bush's margin using the Bread and Peace model because no information pertaining to my model

---

[8] Nordhaus discusses results from five different sets of regression and forecasting experiments undertaken with a subset of Fair's many specifications.

appears among the "full documentation with data, statistical programs, and regression files" to which Nordhaus directs readers for background documentation of his calculations. (Nordhaus 2006: 314)[9] Yet Nordhaus' paper will give many readers the impression that he subjected my equation to the same analysis procedures he applied to Fair's equations – estimation of rolling regressions using the most recently available economic data to compute in-sample predictions (i.e. conventional regression fits) and out-of-sample, one-election-ahead predictions of the incumbent two-party vote share.

However, when placed on the same footing as Nordhaus' analysis of Fair's various equations, the Bread and Peace model delivers in-sample and out-of-sample prediction errors for Bush's 2004 vote margin that are well under 2 percentage points – less than half the magnitude asserted by Nordhaus. The margin variable used by Nordhaus is just twice the conventional regression residual (or prediction) error. For example, the Bread and Peace model's in-sample and out-of-sample errors of -0.84% and -0.92% discussed at Table 1 translate to vote margin errors of -1.68% and -1.84%, respectively. Further, my point estimates of the effect of Iraq on Bush's vote share in Tables 1 and A1 – in the range $-1/5$ to $-1/3$ of a percentage point – yield an impact of approximately -0.4 to -0.67 percentage points on Bush's margin, as opposed to "an estimate of around [minus] 1.3 percentage points using Hibbs' equation" that Nordhaus reports. (Nordhaus 2006: 317)[10]

- Nordhaus also writes that he made "an attempt to extend the Hibbs equation back to 1916" and "found that the "peace" variable became insignificant." (Nordhaus 2006: 317, note 9)

According to the Bureau of Economic Analysis at the Department of Commerce (which publishes the official US National Income and Product Accounts), quarterly data series on disposable personal income begin in 1947. I conclude that it was not possible for Nordhaus to estimate the Bread and Peace model back to 1916 using the proper income variable. In any case, the discretionary hostile deployments of American armed forces in Korea, Vietnam and

---

[9] Nordhaus' background documentation is archived at http://dx.doi.org/10.1561/100.00000014_supp.zip. Nordhaus 2006:317, n.8 might imply that Nordhaus worked with a table posted at my web site on July 26, 2004 about the implications of the Bread and Peace model for Bush's likely vote share given data available at that time and under different assumptions about real income growth rates and the numbers of American fatalities in Iraq during the run-up to the November election date.

[10] Nordhaus' computations are based on a Bush two-party vote share of 51.6% as opposed to the official tally of 51.24%. A small error-in-dependent-variable therefore taints Nordhaus' various regression-prediction experiments.

Iraq have nothing in common politically with American involvement in the World Wars. Fair evidently sees things the same way: In a piece posted at his web site after the 2004 election he wrote that his dummy variable *War*, which as noted ahead Fair added to his initial 1978 model in 1996 in order to pick up fillips to incumbent vote shares at elections during the World War I and II periods, "has nothing to do with wars like Korea, Vietnam and Iraq." (Fair 2004: 3-4)

- Although Nordhaus acknowledges that the 2004 "forecast error" of the Bread and Peace model was "much smaller than Fair's equation," he asserts that the Bread and Peace model "has larger errors than the Fair approach for most election years back to 1952." (Nordhaus 2006: 317)

Here again Nordhaus' claim is incorrect. A comparison of the absolute values of residual errors generated by the Bread and Peace model estimates in Table 1 (see Appendix Table A1) to the corresponding errors reported in Nordhaus' background documentation (at page 6) for what he calls the "New Fair" and "Original Fair" equations shows that my model has smaller errors than both of those Fair equations in 9 out of the 14 Presidential elections spanning 1952-2004. Moreover, the average absolute value of residual errors generated by the Bread and Peace model for those 14 elections is 1.49 percentage points, whereas the corresponding average absolute values of residual errors are 1.94 percentage points for the "New Fair" equation and 2.95 percentage points for the so-called "Original Fair" equation.[11] The standard errors of the regression (root mean square errors) reported in Nordhaus' background documentation (at pages 4 and 5) for the "New Fair" and "Original Fair" equations are 2.62 and 4.07, respectively, as compared to 2.42 in Table 1 for the Bread and Peace model. What should one make of regression errors and other fit statistics turned in by Fair's equations?

The list of regressors in the model that Fair settled upon initially, with variables defined with reference to the two-party vote share received by the incumbent party,[12] are: A general regression constant, C, plus (1) a switching variable *Party* that equals 1 when the Democrats are incumbent and -1 when the Republicans are, (2) a time trend t taking positive trend values

---

[11] As shown ahead, what Nordhaus calls the "Original Fair" equation in fact does not correspond to any equation Fair ever used to fit and forecast elections.

[12] The actual "Original Fair" equation is written out in Fair 1978: 323, Table 2, Equation 4 and (more transparently) in Fair 1996a: 92, Table 1, Column 1. Until the 2000 election Fair used the two-party vote share of the Democrat's presidential candidate as the dependent variable rather than the incumbent party vote share, and this required multiplying through the economic performance variables (but not the trend term and other coded variables as they are defined here) by the *Party* switching term defined just ahead.

at election years when the President was a Democrat and negative values when the President was a Republican, (3) a binary variable *Person* coded +1 when a sitting President was a candidate for re-election and 0 otherwise, (4) the election year growth rate of per capita real output G_{1YR}, (5) the absolute value of the average annual growth rate of GNP deflator over last two years of the term, P_{2YR}, and the independent vote getting ability of incumbents re-running, *VGA*, which required a nonlinear restriction on the covariance matrix. This original model was revised repeatedly in years to follow in a series of update documents.

In a 1982 update Fair replaced G_{1YR} with the growth rate of per capita real output in the 2nd and 3rd election year quarters only, G_{2-3}. (Fair 1982: 322)

In a 1984 update Ford's 1976 candidacy was re-defined to be non-incumbent so that the coding of *Person* changed from +1 to 0 for that election, $Person_{ex\ Ford}$. Also, the two-year annual inflation term P_{2YR} was replaced by the absolute value of average inflation over eight quarters beginning one quarter back from the election quarter, P_8, and the *VGA* restriction was dropped in favor of the conventional ordinary least squares estimator. (Fair 1988: 169, 172-173, 176)

In a 1988 update the initial trend term, t, was replaced by a new trend, t^*, that stopped increasing in 1976. (Fair November 1990: 2)

In a major 1992 update G_{2-3} was replaced by the per capita real output growth rate in the first three quarters of the election year, G_{1-3}, a variable $GoodNews_{2.9}$ was added that was equal to the number of quarters over the term in which the annualized per capita real output growth rate exceed 2.9 percent, the eight quarter inflation term P_8 was replaced by the average absolute value of the GDP deflator growth rate over 15 pre-election quarters, P_{15}, the once-revised trend term t^* was dropped, and a new trend variable *Duration* was added that was coded 0 if the incumbent party had been in office for only one term at a given election date, +1 if in office for two consecutive terms, 1.25 if in office for three consecutive terms, and so forth by increments of 0.25.[13] Finally, a third new variable *War* was added that took values of +1 at the 1920, 1944 and 1948 elections, and 0 otherwise. And for those same three elections the empirical values of the economic variables P_{15} and $GoodNews_{2.9}$ (but not G_{1-3} or any other variable) were arbitrarily set equal zero. (Fair 1996b: 125-127, 134)

---

[13] At Fair 1996b: 127 and in other update documents Fair mistakenly defines *Duration* as being coded 0 if the incumbent party had been in office for one or two consecutive terms before beginning its trend values of 1.0, 1.25 etc. However according to his various data appendices the actual coding used over time consistently satisfies the definition given here.

In a 1996 update the growth rate threshold for "good news" was raised from 2.9 to 3.2 percent – *GoodNews$_{3.2}$* – which was motivated by revisions to the measurement of real output in the National Income and Product Accounts. (Fair November 6 1998: 1-2)

We have quite a remarkable stream of re-specifications which – to his credit – Fair faithfully cataloged, posted at his public web site, and freely admitted were wholly motivated by attempts to improve ex-post the fit of his equations to aggregate voting outcomes as one election followed the other. As Fair recently conceded "Much searching over many years has been done in arriving at the final [2004] version." (Fair 2004: 5) It is clear that Nordhaus' appeal to the favorable magnitudes of regression errors and fits prior to the collapse of the most recent vintage of Fair's model in 2004 has no foundation in standard statistical inference – a point first driven home to economists by Edward Leamer in his famous 1978 book *Specification Searches: Ad Hoc Inference with Nonexperimental Data.*

Moreover, as shown by the revision history of Fair's equations summarized above, the equation that Nordhaus calls the "Original Fair" model is actually Fair's initial 1978 equation after elimination of the secular trend term – an important alteration that Fair did not finally make himself until 1996 at which time several other variables were added or modified, as we saw above. Nordhaus uses the resulting hybrid equation – a specification that Fair never proposed himself – as the data mining benchmark for appraising Fair's empirical track record, and the picture it conveys is misleading. In Nordhaus' Figure 1 (Nordhaus 2006: 315), for instance, the in-sample prediction error of the hybrid "Original Fair" equation for Ford's margin in 1976 is depicted as -5.1 percentage points. Fair's actual original equation, however, generated an in-sample error between -11.3 and -12.1 percentage points for the 1976 incumbent margin (Fair 1982: 323, Table 1, Equations 1 and 2) – a residual which is on the scale of Fair's huge error for 2004 and second only to his model's implosion in 1992 when GHW Bush's margin was over-predicted by 19.6 to 24 percentage points depending upon the vintage of economic data used. (Fair 1992: 124; Fair 1996a: 94)

Political-economic fundamentals logically consist of objectively measured policies and performance affecting voters. By this common sense standard Fair's model is not composed predominantly of fundamentals. Four of the seven regressors in Fair's latest equation are various trend and coded binary terms that bear no connection to objective policies and performance. And among the three economic terms, the oddly calibrated *GoodNews* variable – the number of quarters during a term in which the annualized growth rate of per capita real

output exceeds 3.2 percent (earlier 2.9 percent) – is a count variable that along with *Party*, *Person*, *Duration* and *War* was constructed by admission to neutralize election prediction errors of earlier specifications (Fair 1996b: 125-127), rather than being an impartial measure of systematic economic performance. [14]

CONCLUSIONS

George W. Bush won a relatively narrow victory in the 2004 election which is very well accounted for by objective measurement of economic performance in the Bread and Peace model – in particular the weighted-average growth rate of per capita real disposable personal income over the term. One need not resort to arbitrary political-count, trend, dummy and switching variables or to oddly calibrated economic-count variables to explain the voting outcome.

American military fatalities in Iraq, which in principle might have had great electoral consequences, stood at 1,130 at the end of October 2004. According to the Bread and Peace model that number was insufficient to exert big effect on the 2004 election. From the beginning of November 2004 to the middle of April 2007, however, American military fatalities almost tripled. If flow of American military personnel killed continues at anything like this pace, Iraq may well prove decisive in the 2008 election. But in 2004 the election turned primarily on a real income growth record just favorable enough to keep the Republicans in the White House.

REFERENCES

Bartels, Larry. 1997. "Correspondence: econometrics and elections." *Journal of Economic Perspectives* 11: 195-97.

Fair, Ray. 1978. "The Effect of Economic Events on Votes for President." *Review of Economics and Statistics* 60: 159-172.

Fair, Ray. 1982. "The Effect of Economic Events on Votes for President: 1980 Results." *Review of Economics and Statistics* 64: 322-325.

Fair, Ray. 1988. "The Effect of Economic Events on Votes for President: 1984 Update." *Political Behavior* 10(2): 168-179.

Fair, Ray. November 1990. "The Effect of Economic Events on Votes for President: 1988 Update." web document at http://fairmodel.econ.yale.edu//vote2008/index2.htm.

---

[14] Bartels (1997) also criticizes Fair's relentless efforts to pick up jots and wiggles of the aggregate vote data with the comings and goings of various arbitrarily coded variables.

Fair, Ray. 1996a. "Econometrics and Presidential Elections." *Journal of Economic Perspectives* 10(3): 89-102.

Fair, Ray. 1996b. "The Effect of Economic Events on Votes for President: 1992 Update." *Political Behavior* June: 119-139.

Fair, Ray. November 6, 1998. "The Effect of Economic Events on Votes for President: 1996 Update." web document at http://fairmodel.econ.yale.edu//vote2008/index2.htm.

Fair, Ray. 2004. "A Vote Equation and the 2004 Election." web document at http://fairmodel.econ.yale.edu//vote2008/index2.htm.

Hibbs, Douglas. 1982. "President Reagan's Mandate from the 1980 Elections: A Shift to the Right?" *American Politics Quarterly* 10: 387-420.

Hibbs, Douglas. 2000. "Bread and Peace Voting in U.S. Presidential Elections." *Public Choice* 104: 149-180.

Hibbs, Douglas. 2006. "Voting and the Macroeconomy." In *The Oxford Handbook of Political Economy*, ed. Donald Wittman and Barry Weingast. Oxford, UK: Oxford University Press, 565–86.

Leamer, Edward. 1978. *Specification Searches: Ad Hoc Inference with Nonexperimental Data*. New York: John Wiley & Sons.

Nordhaus, William. 2006. "Electoral Victory and Statistical Defeat? Economics, Politics and the 2004 Presidential Election." *Quarterly Journal of Political Science* 1: 313-322.

Appendix to "The Economy, the War in Iraq and the 2004 Presidential Election"

Douglas A. Hibbs, Jr.

CEFOS, Göteborg University, Göteborg, Sweden

Fits and Predictions

Table A1 below shows actual and in-sample predicted vote shares generated by estimates for the Bread and Peace model reported in Table 1 of the main paper, along with the election period values of the weighted-average real per capita disposable personal income growth and cumulative *Fatalities* independent variables.

Table A1. **Candidates, Votes, Predictions and Performance**

In-Party v. Out-Party Candidates	Election Year	Incumbent Party % *Vote* Share	Predicted % *Vote* Share	Regression Prediction Error	Weighted-avg. Real Income Growth	Cumulative *Fatalities* (1000s)
Stevenson v. Eisenhower	1952	44.60	45.90	-1.30	2.40	29.260
Eisenhower v. Stevenson	1956	57.76	56.65	1.11	2.89	0.00
Nixon v. Kennedy	1960	49.91	49.28	0.63	0.85	0.00
Johnson v. Goldwater	1964	61.34	61.43	-0.09	4.21	0.00
Humphrey v. Nixon	1968	49.60	48.23	1.37	3.02	28.896
Nixon v. McGovern	1972	61.79	59.27	2.52	3.62	0.00
Ford v. Carter	1976	48.95	50.00	-1.05	1.08	0.414
Carter v. Reagan	1980	44.70	44.82	-0.12	-0.39	0.00
Regan v. Mondale	1984	59.17	60.16	-0.99	3.86	0.00
GHW Bush v. Dukakis	1988	53.94	54.41	-0.47	2.27	0.00
GHW Bush v. Clinton	1992	46.55	47.58	-1.03	0.38	0.00
Clinton v. Dole	1996	54.74	49.98	4.76	1.04	0.00
Gore v. GW Bush	2000	50.27	54.75	-4.49	2.36	0.00
GW Bush v. Kerry	2004	51.24	52.08	-0.84	1.72	1.130

The only postwar presidential election results not well accounted for by the Bread and Peace model are 1996 and 2000. A partisan of the Bread and Peace like myself model might be tempted to conjecture that idiosyncratic influence of candidate personalities took especially

strong form in 1996 and 2000 – with the ever charming Bill Clinton looking especially attractive when pitted against the darkly foreboding Bob Dole in 1996, and the unfailingly wooden Al Gore paling by comparison to the affable George Bush in 2000. This line of reasoning is of course entirely ad hoc and without scientific standing.

Scaling US Military Fatalities to Population

The US population grew from 158 million at time of the 1952 election to 295 million at the time of the 2004 election. A sensible refinement of the original Bread and Peace model (advocated by Nordhaus 2006:317) would be to scale the *Fatalities* variable by population size. Expressed per million US population, cumulative fatality rates among US armed forces at the 1952, 1968, 1976 and 2004 election dates were 196.8, 152.4, 2.08 and 3.86, respectively. As shown by Table A2 below, re-estimating the Bread and Peace equation with *Fatalities* scaled to population yields a small improvement to the model's fit. Aside from the parameter of the re-scaled *Fatalities* variable, however, the coefficient estimates are nearly identical to those of Bread and Peace model with cumulative military fatalities not scaled to population size (as in Table 1 of the main paper). The within-sample prediction of Bush's 2004 two-party vote share is 52.23% and so the prediction error about -1%: $46.3 + 3.55 \cdot 1.73 - 0.05 \cdot 3.86 \simeq 52.23$; $51.24 - 52.23 = -0.99$. As in the main paper, the estimates imply that the Iraq war had only minor impact on the 2004 vote, decreasing Bush's vote share by as 1/5 of a percentage point.

Table A2. **Bread and Peace Equation Estimates with *fatalities* scaled to population**

Incumbent Vote Share (*Vote*)	1952 – 2004 Adj R^2 =.836	N = 14 elections Root MSE =2.35	
	Coef. Estimate	Std. Error	t-ratio|p-value
Constant (α)	46.3	1.20	38.5|0.000
Real Income Growth (β_1)	3.55	0.595	6.03|0.000
Weighting parameter (λ)	0.908	0.057	16.0|0.000
Cumulative *Fatalities* per million population(β_2)	-0.050	0.012	-4.15|0.002