Is It All about Competence?

The Human Capital of U.S. Presidents

and Economic Performance

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This paper has provides an assessment of the extent to which human capital improved the economic policy competence of U.S. presidents. Several recent studies have used international data to test similar hypotheses. However, international studies suffer from a variety of comparability issues, not all of which can be avoided through fixed effects and error correction. The U.S. results developed in this paper suggest that both career paths and education have significant effects on a president's economic policy judgment, particularly in the period after the Civil War. However, the paper also suggests that more than good economic management skills are required to win national elections.

Section 1: Introduction

For the most part, rational-choice based political analysis has focused on the policy positions of candidates for elective office, rather than on characteristics of the candidates themselves. There are many reasons to do so, including the fact that policy choices are the main "output" of elected officials, and that these outputs are products of a variety of skills, not all of which are easily measured. However, to ignore the characteristics of the persons running for office misses much that clearly influences voter choices. There are "yellow dog" democrats, as the expression goes, but most voters prefer to cast their votes for competent, trustworthy, candidates, especially for high offices in which candidates address a wide variety of issues, only a subset of which are codified in party platforms, campaign speeches, and literature.[1]

That competence matters to voters is indicated in survey work by political scientists. For example, Glass (1985) reports that most voters place considerable weight on candidate competence when casting their votes. About half of voter comments on the attractiveness of candidates focus on personal attributes of the candidates that might reflect on their future performance in office. Only about a fourth focus on policy issues. Historians often rank presidents by their competence, although relatively little work has been done on the determinants of their relative performance. For example, Mondak (1995) suggests that members of the House of Representatives who lose reelection bids tend to be less competent than those who win.

These empirical results have, in turn, inspired theoretical work that assumes that competence can be assessed by voters and affects their choice among candidates. For example, Berger, Munger,

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[1] A "yellow dog" democrat is a person who would vote for a yellow dog (listed as a Democratic candidate), rather than a Republican candidate.

and Potthoff (2000), and Groseclose (2001) demonstrate that convergence to median-voter positions is less likely to occur in settings where perceived candidate quality differs, unless voter preferences are lexicographic. The jury theorem suggests the median voter will accurately assess the relative competence of candidates, even if no single voter can do so, given their small information sets, Congleton (2006). Median estimates of candidate competence tend to be accurate in such cases, even if individual voter assessments are not. Besley (2006) suggests that career paths may have significant effects on the competence of government officials.

Several studies link national economic performance with the party of the president and Congress. Several others have argued that past economic performance is a factor in voter decisions, especially among independents, to vote for or against incumbent office holders; indeed, economists and political scientists often argue that it is the best single predictor of success in presidential elections (Alesina and Rosenthal 1995, 1978). If these studies are taken seriously, a useful index of the competence of U.S. presidents is the extent to which they, on average, achieve (or are at least associated with) good economic results. In this paper, we attempt to determine whether a president's past job experience and education affect the effectiveness of his economic policies.

Perhaps surprisingly, given these literatures stressing competence, studies that explore whether the competence of individual presidents is affected by human capital (job experience) or how difference components of human capital affect economic development have only very recently been undertaken. Most of these studies have been published in the past three years, and most rely upon the large leadership data set created by the Archigos project of Rochester University. Only of a subset of those paper focus on leader competance; most focus on accession to leadership post.

The most relevant of the recent studies for the present paper are Besley and Reynal-Quero (2011) and Besley, Montalvo, and Reynal-Querol (2011), which explore the extent to which more educated leaders tend to be elected in democracies and also whether more educated leaders have effects on national growth paths. In general, they find that education increases both political and economic success. Our results complement theirs, insofar as education and career path variables are shown to improve a presidents competence as an economic steward. However, ability as an economic manager is evidently not decisive in American presidential elections. More than economically relevant human capital matters.

The paper is not a direct extension or critique of the Archigos-based literature, but a parallel and complementary contribution that is grounded in public choice models and focuses on U. S. history and institutions. It provides a somewhat different model of political and economic interactions, and uses a new data set to test the model developed. Section 2 reviews possible channels through which presidential policies and appointees may affect economic growth rates, and discusses previous historical research on presidential competence. Section 3 discusses data sources and our particular indices of human capital. Section 4 analyzes several estimates of the effects of presidential human capital on observed growth rates in the United States. It also provides evidence on the extent to which economically relevant human capital affects presidential elections. Section 5 summarizes our results and conclusions.[2]

Section 2: Executive Authority and Economic Performance

The "executive power" of U.S. presidents is established in the U.S. Constitution: "The

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[2] An early version of this paper was presented at the 2008 meetings of the Public Choice Society, where several useful comments were received. Subsequent versions of the paper have been posted on Social Science Research Network website since 2010.

executive Power shall be vested in a president of the United States of America" (Article II, Section 1, first sentence); its meaning is defined indirectly in the last sentence of Section 3, which holds that the president "shall take Care that the Laws be faithfully executed." That is, "executive power" requires faithfully executing the laws as they are passed in the legislature. Nevertheless, this is not to say that the presidency is necessarily a weaker branch than the legislature. The modern presidency has powers explicitly granted by the Constitution, such as "veto power" to turn down the actions of Congress, and also a variety of powers that are implicit in the organization of government. Article II, Section 2 grants the president the powers to appoint, remove, and supervise all executive officers and to appoint all federal judges. He can appoint cabinet members, subject to Senate approval, and members of the Federal Reserve. He has some discretion over legislative mandates, insofar as these have to be interpreted. And, he can make regulatory law through executive order.

Lowi and others (2002) argue that "the power to appoint the 'principal executive officers' and to require each of them to report to the president makes the president the chief executive officer (CEO) of the nation. It is because of such responsibilities and authorities that the president is widely assumed to be able to "manage" the economy—at least at the margin. Macroeconomic policies can be influenced through executive orders and appointments to key economic posts in the U.S. Treasury, Federal Reserve, and Office of Management and Budget. Microeconomic policies can be influenced by appointments and executive orders by the Department of the Interior, Department of Energy, Department of Labor, and numerous regulatory agencies. Veto power and the "bully pulpit" in turn provide the president with additional influence over national budgets and

legislation. In the early days, the Department of State was also an important determinant of U.S. economic development by negotiating the terms through which new territories were secured, which increased national agricultural and natural resource endowments.

Presidential influence on economic performance is not universally accepted by economists or political scientists, but most students of business cycles and economic regulation believe that macroeconomic and microeconomic policies have economic consequences. Many scholars also believe that past economic performance affects a president's prospects for re-election (Nordhaus 1975; MacRae 1977; Hibbs 1989).

The extent of presidential influence over such matters varies with a nation's political institutions and the "cause and effect" connections between policies and economic development. Insofar as voters generally prefer economic growth to recession, elected presidents are encouraged by electoral competition to promise "a chicken in every pot and a car in every garage."[3] Party platforms and electoral competition, thus, determine many of the executive policies and legislative proposals that affect economic growth, rather than presidential discretion. Nonetheless, the competence of elected officials affects their ability to devise and implement growth increasing policies.

Alesina and Rosenthal (1995), for example, suggest that "competence is inherent to a party's management team, rather than … specific presidents." However, the empirical evidence developed by Alesina and Rosenthal is not fully persuasive. Their approach focuses on the

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[3] This slogan was used by the Republican Party during Hoover's 1928 campaign for office along with "vote for prosperity."

competence of parties, rather than individual presidents, as the decisive factor.[4] If presidential

competence varies person by person, one could falsely conclude that administrative competence

does not matter if only party affiliation is considered. Parties have numerous members and no

evidence exists that the most competent economic stewards always rise to the highest offices.

(Indeed, the results reported in Table 5 suggest that this is not the case for U.S. Presidents.)

The law of large numbers implies that we will observe little difference in the average

administrative competence across parties per se. Moreover, to explore administrative competence,

the entire tenure of individual presidents should be examined, rather than simply the year

following an election: Rome was not built in a day, as the expression goes. Moreover, budgetary

cycles and negotiations should be taken into account. For example, the budget for a president's

first year in office is primarily determined by the Congress of the previous year.

It also bears noting that economic growth is not simply a matter of macroeconomics, a field

of study and subset of policies largely worked out in the twentieth century. Other economic

development strategies have long been part of U. S. public policy at the national and state levels.

Jefferson essentially doubled the natural resource base of the U. S. through his Louisiana

Purchase in 1803. Less dramatically, executive policies may enhance growth by subsidizing or

providing infrastructure. Washington, Jefferson, and Adams favored the construction of canals and

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[4] Even in this case presidenetial competence may influence policy choices at the margin. In their empirical estimations, Alesina and Rosenthal include the "components of competence" in the error term, because these components cannot be observed separately by the voters. The variance/covariance structure is used to examine whether "a change in party control of the White House makes a difference in aggregate economic growth in the year following the election." This model of partisan administrative policy effectiveness is rejected by their analysis (Alesina and Rosenthal 1995: 216).

roads to encourage economic development further inland from the Atlantic Coast. President Monroe, in contrast, vetoed financing for the Erie Canal, which instead was financed by New York State. It turned out to be a productive development project for New York State and the Midwest. A few decades later, the *Pacific Railway Act* was signed into law by Lincoln. It provided government bonds and land grants to subsidize construction of a transcontinental railroad. The natural resource base and market of the U. S. was further expanded by Tyler and Polk's interest in bringing Texas into the United States, by Polk's Mexican War, and the purchase of Alaska in 1867. Tax laws, economic institutions and broad range of regulations also affect the productivity of a nation's markets.

That only a subset of possible economic policies increase real per capital national income is implied by a broad range of micro economic analysis, classical and neoclassical models of growth, and real business cycle models. For example, tax policies and regulations may increase or decrease economic activity and growth. The supply of money and credit, as well as the magnitude of the national debt, are influenced by state and national banking regulations. Decisions about the dollar to gold exchange rate, whether to include silver in the monetary base, or not, and a host of regulations with respect to banking, insurance, and investment reserves also affect the money supply and market for credit. The 2008 financial crisis demonstrates that a broad range of micro-policies can have significant effects on macroeconomic aggregates.

Such macro-relevant microeconomic policies are not recent inventions. For example, Lincoln's *National Banking Act* of 1862 gave the central government exclusive authority to print money. Lincoln also reduced the international convertibility of dollars to gold. The Morrill Act of

1862 creating land grant agricultural and technical universities, which would affect national growth rates in the long run through effects on the rates of human-capital accumulation and innovation. Cleveland successfully lobbied for the repeal of the Sherman Act of 1890 (in 1893) which reduced silver's contribution to the monetary base.[5] Infrastructure, property rights, law enforcement, tax and tariff laws, and macroeconomic policies affected aggregate domestic and international flows of labor and capital and how they were distributed among regions and industries during the nineteenth and twentieth centuries.

A broad range of policy choices are directly and indirectly influenced by Presidents and their appointees. The policies that attract their interest are likely to be affected by pragmatic political interests and ideology, as emphasized by most public choice scholars, but also by their competence.

Competence, in turn, is affected by talent, training, and experience. The available evidence strongly suggests that education increases marginal productivity and wage rates. Checchi (2006), for example, notes that numerous cross-national panel studies demonstrate that "differences in education explain differences in earnings, even accounting for unobserved difference in abilities, and these outcomes can be taken as evidence for a productivity-enhancing effect of schooling."

On the other hand, human capital accumulation does not end when one graduates from school, as implicitly assumed in many studies, including the interesting Besley et. al. ones mentioned

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[5] See Bordo and Rockoff (1996) for an overview of modifications to the Gold Standard during the nineteenth and early twentieth centuries, and of the effects that such policies had on international capital flows. See Cleveland and Powell (1909) for a thorough overview of state and national subsidies to U. S. railroads.

above. Human capital is also accumulated through experience and career choices. Differences in unobservable innate talents for learning, management, and communication also affect competence, as noted above. Because of difficulties in attempting to assess competence, several political psychologists have attempted to measure presidential competence with subjective indicators that go beyond educational attainment (Simonton 1988, 1995, 2006; Peffley 1989; Riding and McIver 1997). Others use public surveys or focus group studies that ask subjects to rank presidents by their competence. Still other scholars have aggregated various measurements and conduct meta-analyses. For example, Simonton (2006) develops a measure of presidential leadership from 12 indices and draws the conclusion that "individual differences in intelligence correlate positively with leader performance."

Unfortunately, subjective appraisals and their associated survey measurements suffer from problems of accuracy and consistency. Most voter knowledge about past presidents comes from common history books and other media sources, and consequently surveys of opinion on the quality of presidents before World War II tend to reflect the opinions of a handful of historians and textbook writers, rather than being independent assessments by the voters themselves.

This paper develops a narrower, but more objective, policy relevant index of economic competence based on human capital accumulation. If presidential decisions on policies and appointments affect economic performance at the margin, a plausible index of a president's competence as an economic steward is the average growth rate of real per capita income during his or her term of office. Insofar as the best possible policies or appointees are not obvious, it is likely that a president's stock of human capital partially determines their performance as

economic policy makers.

An algebraic characterization of the hypothesized relationship between competence and economic development can be developed using a modeling structure analogous to that of the stochastic trend literature in macroeconomics. Let Y_{t-1} be real GDP per capita at the beginning of year t and Y_t be its value at the end of the year. The change in average real income during the year is partly a matter of preexisting trends, plus random shocks, e_t, and government policies, R_t, that occur during the year. The latter include macroeconomic policies and microeconomic policies affecting the extent of capital, labor, and land available for domestic economic purposes. Long term trends reflect existing institutions, stocks of human capital, and various deep rooted aspects of culture, such as its work ethic, honesty, and propensity to innovate. Given these and other economic conditions at the beginning of the year, suppose there is a growth-maximizing policy R_t^* that a hypothetical well-informed president with perfect judgment would adopt. The maximal policy-induced increase in per capita real GDP can be denoted γ_t^*, which may be regarded as the country's potential growth rate. Persons with less than perfect judgment choose a less than perfect policy, R_t, with $|R-R_t^*| = B_t$ and so realize a smaller policy-induced increase in income, $\gamma_t^* - \alpha B_t$.

Under these assumptions, the increase in real per capita GDP observed in year t can be written as:

$$Y_t = \gamma_t^* - \alpha B_t + e_t + Y_{t-1} \tag{1}$$

We assume that the extent of policy mistakes varies with human capital, H_{t-1}, accumulated prior to office and other unalterable characteristics of the president of interest, Z_{t-1}, that improve his or her economic policy decisions, $B_t = b(H_{t-1}, Z_{t-1})$. Function b is assumed to be a

monotone-decreasing function of human capital and other unalterable observable and non-observable characteristics of the person who is president. The observed increase in real per capita GDP by a given president is:

$$Y_t - Y_{t-1} = \gamma^* - \alpha \, b(H_{t-1}, Z_{t-1}) + e_t \tag{2}$$

If presidential leadership and policies matter, $\alpha > 0$, and presidential human capital indirectly determines the observed economic growth during a president's term of office.

Section 3: Data Sources and Variables

With this hypothesis in mind, we assembled a data set of economic performance, experience, and human capital variables for past presidents though Bill Clinton. (We ignore the last two presidents out of politeness.) We use the average growth rate of real per capita GDP during a president's entire term of office as the measure of the quality of their economic policy judgment. Maddison (2001) provides a consistent data series for real GDP per capita in the United States for the years 1870–2000. Additional annual real GNP data for 1789–1870 is reported in the *International Historical Statistics: Americas 1750–2000* (Mitchell 2003).

We use annual population data from the *Statistical Abstract* series of the U.S. Census from 1820–2000. Unfortunately, the Census reports population size before 1820 only every 10 years, so one must interpolate pre-1820 data to estimate annual population for the early period of the United States. We believe that splicing the Mitchell and Maddison series for real per capita GNP and per capita GDP is acceptable, although not entirely without problems. The correlation between their estimates of real GDP per capita after-1870 data is high, but not perfect (0.9225).[6]

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[6] A second reason to exclude the post 2000 observations is an apparent data entry error in the Mitchell series. Mitchell (2003),

The average growth rate of per capita real GDP is calculated for each president's term of office (dY_t). This series is more stationary than the annual series, because long run average growth rates tend to be relatively stable. However, that stability implies that a boom tends to be followed by a bust, whether caused by presidential policies or exogenous shocks. Presidents who serve during a boom may marginally increase or reduce the amplitude or duration of the boom through their policies, but cannot be expected to sustain a boom indefinitely. Similarly, presidents who serve during a recession may worsen or reduce the severity of "their" recession, but are unlikely to sustain a recession forever (although recessions may be easier to prolong than booms).[7]

Overviews of presidential careers and education are available from various Web sites, such as "whitehouse.gov," "house.gov," "americanpresidnets.org," and "wikipedia.org." We compare the overlapping data sets among Web sites to verify that the data entries are accurate and the coding is appropriate. Several presidential career paths are evident in candidate biographies, and these are summarized with a series of binary and trinary variables. For example, several past presidents served as governors of a state at some point before winning the office of president. Our variable "governor" is a trinary variable that takes the value 1 if a president served as a governor (or military governor) at any point before becoming president.[8] We code persons who served as

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suggests that the average growth rate of GNP person during George H. W. Bush's term was as high as 9.5%. In contrast, the averaged growth rate of GDP per capita was only 0.7%; hence, it is obviously a typographical error in Mitchell (2003). (If we include the entry for George H.W. Bush, the correlation between the Mitchell and Maddison per capita GDP series decreases to 0.8707.)

[7] A regression between a president's average growth rate of real per capita GNP on the previous president's average in the 1870-2009 period yields: $dY_t = 0.02747 - 0.059dY_{t-1}$ with a t-statistic of 4.89 for the constant and of -3.23 for the coefficient. The coefficient should have been zero (statistically) if the dY series were stationary. The R^2 for this regression is 0.31 and the DW is 2.14. Since it is unlikely that a "competent" president is always followed by an incompetent one, the most likely explanation is that business cycles occur for exogenous reasons, but around a classical long run steady state growth path. Note that without shocks, the fact that the coefficient is less than one implies that in the long run, the series is asymptotically stable (stationary) and would converge to the constant term, 0.02747, which can be interpreted as the long run equilibrium growth rate of classical models (here, 2.7%/year).

[8] Military governors included Andrew Jackson and Andrew Johnson.

lieutenant governor or who were governors for less than a half year as 0.5.[9] There are 17

observations scoring 1, and 2 observations scoring 0.5. We also collected data on the years that a

person served as governor, which is simply the ending year of his or her term as governor minus

the beginning year. If the time served in office was less than 0.5 year, we round the score to "0.5"

years.

"Senate" is a binary variable that takes the value 1 if a president served as a senator at some

point before serving as president, and a 0 if not. (The Continental Congress is regarded as the

precursor to the Senate, because members of the Continental Congress also represented states.)

Eighteen ex-presidents served in the Senate at some point in their career. Years served in the

Senate are calculated as the end year minus the beginning year of the term. "House" and "Years

House" are similar variables for prior service in the House of Representatives. Seventeen

presidents served in the House before being elected to the Presidency. We also calculate

composite variables for service in either chamber, "Congress" and "Years Congress," which are

the sum of the president's respective Congress and Senate variables. Nine presidents served in

both the House and Senate. Service in a state legislature is tabulated in a similar way. "State

Congress" takes the value if a president served in a state legislature at some point before

becoming president. Eighteen presidents had done so. "Years State Congress**" is again the ending

year of the term minus the beginning year of the term.

"Vice-president" is another career path variable that is for the most part a binary variable. It

has the value 1 if a president has served as a vice-president at some point before becoming

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[9] Martin van Buren.

president. A person who served as vice-president for less than half a year, however, is coded with a 0.5. Seven past presidents did not finish their terms because of disease, assassination or scandal and were replaced by their vice-presidents. "Years VP" is calculated as the ending year of the term as vice-president, minus the beginning year of the term. ("Years VP" is coded as 0.5 when a person served as vice-president for less than half a year.)

Values for other senior government posts were also collected. For example, "Secretary of State" and "Years Secretary" data were also assembled. Six presidents had previously served as secretary of state (all before the Civil War). Leadership positions in the military are coded as "Army" with a 1 if the person held the rank of general or served as secretary or assistant secretary of the Army, Navy, or War. Army is coded as 0.5 if a president had military service of lower rank and 0 if he had no military experience. Twelve presidents score 1, and nine others score 0.5. "Years Army" is the year discharged (or departure from office) less the year of enlistment (or of taking office). Service as an ambassador or equivalent position is tabulated with the binary variable "diplomat." (U.S. ambassador to United Nations is considered a diplomatic position.) Nine presidents had diplomatic experience before rising to that office. "Years Diplomat" is simply the end year of service minus the beginning year in that office.

In addition, we collected data on three other indices of human capital. "Lawyer" takes the value 1 for bar members and 0 if not. Twenty-three presidents were lawyers under this definition. "Education" takes the value 2 for persons who graduated from graduate school or law school (9 cases), 1.5 for some graduate/law school (1 case), 1 for college (22 cases), 0.5 for some college (2 cases), and 0 for those never attended college (7 cases). The age of the president is measured as

the year a person becomes president minus the birth year of that president. There are 41

observations in total. William Henry Harrison was dropped from our estimation, because he

served only one month as U.S. president.

Table 1: Summary of Data

Variables	Observations	Mean	Std. Deviation	Minimum	Maximum
GDP Per Capita Growth	41	.0158137	.0281729	-.0676987	.0822589
Age to be president	41	55.29268	6.059059	43	70
Governor	41	.4390244	.4898357	0	1
Years Governor	41	1.573171	2.48385	0	12
Congress	41	.8536585	.7602952	0	1
Years Congress	41	6.121951	7.022091	0	24
Senate	41	.4390244	.5024331	0	1
Years Senate	41	2.609756	3.611634	0	12
House	41	.4146341	.498779	0	1
Years House	41	3.512195	5.736384	0	24
vice president	41	.304878	.445506	0	1
Years VP	41	.9878049	2.212148	0	8
Secretary of State	41	.7560976	.357839	0	1
Years Secretary	41	.7560976	2.332433	0	8
Army	41	. 402439	.4361696	0	1
Years Army	41	4.560976	8.814899	0	40
State Congress	41	.4390244	.5024331	0	1
Years State Congress	41	2.073171	3.437952	0	16
Diplomat	41	.2195122	.2195122	0	1
Years Diplomat	41	.8536585	1.891573	0	7
Lawyer	41	.5609756	.5024331	0	1
Education	41	1.036585	.646048	0	2

Section 4: Empirical Analysis

We estimate "selection effect" and the "training effect" versions of equation 2. The "selection

effect" suggests that education and academic talent improves a president's economic performance.

This effect is tested by human capital binary variables. The "training effect" predicts that the more

experience one has at relatively high level positions, the more human capital is accumulated and the greater is ones skill as a manager and policy maker. We use years in particular positions to test for "training effects." We also take account of structural changes in governance that some scholars attribute to the Civil War and to industrialization. It is possible that the determinants of competence and the scope for domestic economic policymaking changed in the second half of the nineteenth century. For example, prior to the Civil War it may be argued that fundamentals were most important: arable land per capita, property rights, stable money, and freedom of interstate trade were most important. In the industrial period, offsetting (or not inducing) business cycles and encouraging human and physical capital accumulation may also have been important. To account for institutional shifts (and data splicing), we include two series of estimates: ones based on "1789–2000" observations and ones based on the "1870-2000" observations. The first is a significantly deeper sample than allowed by the Archigos data set, which covers the 1875-2004 period, the latter is a similar period, although we focus more narrowly on human capital accumulation than that data base does.

[Table 2: Somewhere Around Here]

Table 2 reports OLS estimates for 1789–2000. We use four specifications to test for the "selection effect" and the "training effect." In specification 1, we include only key "career path" variables. Governor, Congress, and Army have significantly positive impacts on a president's economic performance, and these three variables have significant training as well as selection effects. In specification 2, we include a proxy for education as well, which is a key human capital variable. For the selection effect estimates, the coefficient of education is positive and significant,

and does not alter the significance of other variables. The education variables reduced the fit of the training effect variables, perhaps because persons who were able to retain such posts tended to be well educated. Only the coefficient for Army continued to be statistically distinguishable from zero. In specification 3, we keep the four significant variables and add two additional career path variables of possible importance—Diplomat and Lawyer—but neither variable makes a difference.

Specification 4 focuses on the effects of leadership posts and education. Experience as a state governor and military leadership are significant on both the selection and training effects. Education is significant on the selection effect and marginally significant on the training effect. Experience in Congress has a marginally significant impact on economic performance. Because all coefficients are positive, it suggests that distinguished career paths and education improve policy judgment and thereby improve economic performance as hypothesized above.

Further Tests and Estimates

It bears noting that the periods in which presidents hold office are not always similar, which may have additional effects on economic policy decisions. Examining studentized residuals for identifying outliers, we note that Hoover (with residual score –2.667) and Lincoln (with residual score –2.423) appear to be outliers. The absolute values of the residuals of all other presidents are lower than 2.0. Dropping Lincoln and Hoover, we rerun the final specification and discover another outlier, Roosevelt (residual score 2.508). It is not surprising that these three presidents faced extreme circumstances and constraints. Abraham Lincoln and Franklin D. Roosevelt served as presidents during the two largest wars in the U.S. history— the Civil War and World War

II—and Herbert Hoover served at the beginning of the Great Depression.

[Table 3: Somewhere Around Here]

With these three outliers dropped from the data set, we re-examine the 1789–2000 estimate. The results are reported in table 3. Comparing table 2 and table 3, it seems clear that these three outliers have significant effects on the OLS estimates. A good deal of the fit in the first series of estimates is evidently a consequence of the unusual periods in which Lincoln, Hoover, and Roosevelt served. In the table 3 estimates, only serving Congress improves economic stewardship (growth) at a statistically significant level; although the impact of secretary of state is negative and significant. Other career path variables are not important. Adding the three other variables (Education, Diplomat and Lawyer) does not change the significance of Congress and Secretary of State. In our re-estimation of specification 4, Congress and Secretary of State have significant coefficients. Nevertheless, we suspect that the contribution of Secretary of State is an anomaly, for no U.S. presidents after the Civil War served as Secretary of State prior to serving as President.

To test the hypothesis that career paths and Presidential competence matter more in the industrial economy that emerged after the Civil War, we re-estimate the models using the real GDP capita data from 1870 to 2000. This also avoids problems associated with the data set splice. Hoover and Roosevelt remain outliers and are dropped from the estimates reported in table 4. (The absolute value of studentized residual for Hoover is now as high as 3.452, and for Roosevelt as high as 2.907.)

[Table 4: Somewhere Around Here]

The results in this truncated sample from the industrial period of the United States are more

supportive of the hypothesis that specific career paths and education improve economic policy judgment, as often found in the Archigos-based studies. In specification 1, we find that experience in Congress has a positive and significant effect, while the other three variables are marginally significant. In specification 2, we include our proxies for education. In specification 3, we omit the Army variable, which was insignificant in binary 2, and add Diplomat and Lawyer, although neither turns out to have a statistically significant effect on economic policy judgment. Specifications 2 and 3, however, continue to suggest that Congressional experience and education improve economic policy judgment; although experience as vice-president, surprisingly, reduces it. In specification 4, we find that serving as governor also improves economic performance, although the contribution is only marginal.

The coefficient for vice-president remains negative and significant, which may indicate that the main value of a vice-president is electoral, rather than advisory (Lowi et, al. 2002). In other words, the president may select vice-presidents not because he or she has better economic judgment than others, but in order to increase political support in crucial states by adding ideological or regional "balance," or because of their special campaign skills.[10]

We also examine the "training effect" in table 4. "Yrs Governor" and "Yrs Congress" are both significant when "Education" is included; although "Education" appears to be more important than years in particular jobs. "Education" measures the human capital that is accumulated before the person entered politics and doubtless also affected his or her ability to win

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[10] After 1870, observations share the score of "0" on 'Secretary of State," so we omit this variable from the estimates in table 4.

elections for offices held before the presidency. Specification 4 suggests that the more years as governor or on Capital Hill, the better is the economic stewardship of a president with a given education level.[11]

Human Capital Accumulation and Electoral Success

Given that some kinds of human capital appear to produce better economic stewards than others, we next examine whether having that particular kind of human capital improves prospects for electoral success. To do so, we collected data on the same indicators for the major party candidates that lost presidential elections, and used the estimates of table 4 column 3 to estimate the winner's and loser's observable human capital as economic stewards. The results are summarized in table 5.

The results are interesting for several reasons. They show that observable ability as an economic manager is not a decisive element for most presidential elections. In only about half the elections does the candidate with the highest economic human capital win the election. Nonetheless, economically relevant human capital appears to matter. For example, the increase in Richard Nixon's experience (as governor) during the 1960s, evidently made him a more attractive candidate in 1968. (He won in 1968, after losing in 1960.) Moreover, in only two cases, did a candidate with much greater economically relevant experience lose an election—and in both cases, the winning candidate (Coolidge and Bush) had other experience that might plausibly have improved their economic management skills in a manner not captured by our estimates.

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[11] When we distinguish between "Yrs House" and "Yrs Senate" and re-run years 4, we observe that both variables have positive, but insignificant coefficients. The T statistic equals to 1.31 for "Yrs House," and 0.76 for "Yrs Senate."

That economically relevant human capital fails to be decisive in every election should not be surprising. A candidate's competence is not entirely determined by his or her vita, and therefore voters may take account of more variables than used in this study (or that can be tabulated) to assess candidate competence. Moreover, our measures may not determine competence in other policy areas deemed important for the circumstances of a particular election. For example, after a major war, army experience may be deemed more important than during normal times, because national security issues are especially important and/or salient. (After the civil war and WWII, the next U.S. president was a general.)

That human capital as an economic steward is not decisive is also consistent with the fact that incumbent candidates who experienced poor growth are often, nonetheless, reelected to office. Economic competence is evidently only one of many criteria that voters use when ranking candidates.

Section 5: Conclusions

This paper has provided an assessment of the extent to which human capital improves the economic policy competence of U.S. presidents. It differs from earlier studies undertaken by political scientists because we attempt to "open the black box" of competence and determine the sources of economic competence. It differs from recent work by international political economists

in that it focuses on a single country with a stable institutional framework. This avoids a variety of pooling problems that bedevil international studies, but at the cost of a much smaller sample.[12]

Our results suggest that both career paths and education have significant effects on a president's economic policy judgment, particularly in the period after the Civil War. We also find evidence that the determinants of economic judgment are more robust in 1870–2000 than in the pre-Civil War period, which seems plausible given the industrialization and increased scope of federal economic policy in the post–Civil War period. However, we also find that economic competence is not the only factor that influences a presidential candidate's electoral success.

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[12] Among the many pooling problems are assumptions that implicitly require institutions to be stable over the period of interest. Otherwise, country fixed effects will not capture all relevant institutional differences. Political and economic institutions changed at different rates in different rates in the first half century of the studies that begin in 1875. Moreover, some of those changes may reflect the same leadership characteristics focused on in the international studies focusing on economic growth and political success (Hayo and Voight 2013).

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Table 2: 1789–2000 OLS Estimations of Real per Capita Average Growth

Equation/ Variables	Binary 1	Years 1	Binary 2	Years 2	Binary 3	Years 3	Binary 4	Years 4
Governor	**.023**	**.005**	**.022**	.004	**.022**	.004	**.022**	**.004**
	(2.22)**	**(2.04)****	**(2.23)****	(1.48)	**(2.20)****	(1.54)	**(2.43)*****	**(1.87)***
Congress	**.01**	**.001**	**.01**	.001	**.009**	.001	.009	.001
	(1.83)*	**(1.75)***	**(1.76)***	(1.38)	**(1.75)***	(1.29)	(1.68)	(1.42)
V. president	.002	.001	.0003	.001	–	–		
	(.22)	(.71)	(.02)	(.34)				
Army	**.028**	**.001**	**.025**	**.001**	.025	.001	**.027**	**.001**
	(2.19)**	**(1.71)***	**(2.13)****	**(1.89)***	**(2.40)*****	(1.56)	**(2.75)*****	**(2.12)****
Secretary of State	−.009	−.0002	−.01	−.0001	–	–	–	–
	(−.70)	(−.13)	(−.78)	(−.10)				
Education			**.011**	.011	**.012**	.011	**.011**	.011
			(1.85)*	(1.39)	**(2.11)****	(1.44)	**(1.91)***	(1.51)
Diplomat					−.003	.001		
					(−.31)	(.42)		
Lawyer					−.008	−.003		
					(−.91)	(−.31)		
Constant	−.013	−.005	−.022	−.0133	−.019	−.012	**−.023**	−.013
	(−.90)	(−.38)	(−1.40)	(−.93)	(−1.27)	(−.73)	**(−1.72)***	(−1.05)
R^2	.3022	.1941	.3602	.2466	.3683	.2503	.3477	.2466

Note: The *t*-statistics are in parentheses. Standard errors are corrected for heteroschedasticity. Number of observations: 41.

*** Indicates significant at .025 level.

** Indicates significant at .05 level.

* indicates significant at .1 level.

Table 3: 1789–2000 OLS Estimations Real per Capita Average Growth with Censored Data

Equation/ Variables	Binary 1	Years 1	Binary 2	Years 2	Binary 3	Years 3	Binary 4	Years 4
Governor	.007 (.99)	.002 (1.63)		.002 (1.61)		.002 (1.68)	.009 (1.30)	
Congress	**.008** **(2.11)***	.001 (1.07)	**.007** **(1.74)***	.0003 (.66)	**.007** **(1.88)***		.006 (1.62)	
V. president	−.007 (−1.24)	.001 (.71)						
Army	.007 (.87)	.0003 (.83)					**.014** **(1.84)***	
Secretary of State	**−.019** **(−2.19)****	−.001 (−.87)	**−.020** **(−2.26)****		**−.021** **(−2.46)*****			−.002 (−1.20)
Education .			.006 (1.09)	.003 (.51)				
Diplomat			.001 (.19)					
Lawyer			−.004 (−.82)					
Constant	.011 (1.31)	.012 (1.58)	.012 (1.77)	.010 (1.42)	.1562 (4.29)	**.015** **(4.75)*****	.003 (.46)	**.020** **(6.07)*****
R^2	.2561	.1113	.2173		.1838	.0411	.1304	.0336

Note: The *t*-statistics are in parentheses. Standard errors are corrected for heteroschedasticity. Number of observations: 38.

*** Indicates significant at .025 level.

** Indicates significant at .05 level.

* indicates significant at .1 level.

Table 4: 1870–2000 OLS Estimations Real per Capita Average Growth with Adjusted Data

Equation/ Variables	Binary 1	Years 1	Binary 2	Years 2	Binary 3	Years 3	Binary 4	Years 4
Governor	.014	**.0025**	.009	.0011	.010	.0011		**.0022**
	(1.55)	**(1.75)***	(1.59)	(1.09)	(1.35)	(.88)		**(2.10)***
Congress	**.015**	**.0009**	**.01**	.0003	**.009**	.0004	**.009**	**.0008**
	(2.65)*	**(1.79)***	**(2.11)***	(.77)	**(2.10)***	(.70)	**(2.26)***	**(1.91)***
V. president	–.009	–.0002	**–.011**		**–.012**		**–.012**	
	(–1.29)	(–.24)	**(–2.02)***		**(–2.10)***		**(–2.36)***	
Army	.011	.0003	.004					
	(1.18)	(.86)	(.56)					
Secretary of State	–		–		–		–	
Education .			**.017**	**.0168**	**.017**	**.0170**	**.017**	
			(3.07)*	**(3.03)***	**(3.35)***	**(3.06)***	**(3.36)***	
Diplomat					.005	.0002		
					(.78)	(.08)		
Lawyer					–.002	–.001		
					(–.30)	(–.15)		
Constant	.001	.0074	–.010	–.006	–.009	–.006	–.008	**.0092**
	(.09)	(.88)	(–1.22)	(–.98)	(–1.02)	(–.72)	(–1.09)	**(1.83)***
R^2	.3190	.1920	.5975	.4528	.6004	.4537	.5900	.4528

Note: The *t*-statistics are in parentheses. Standard errors are corrected for heteroschedasticity. Number of observations: 23.

*** Indicates significant at .025 level.

** Indicates significant at .05 level.

* indicates significant at .1 level.

Table 5: Presidential Human Capital and Elections

Year	Winner	Observable Human Capital	Loser	Observable Human Capital	Candidate with Higher Human Capital Wins (X)
1856	**James Buchanan**	0.0270	John Fremont	0.0300	
1860	**Abraham Lincoln**	0.0000	Stephen Douglas	0.0100	
1864	**Abraham Lincoln**	0.0000	George McClellan	0.0110	S
	Andrew Johnson	0.0135			
1868	**Ulysses S. Grant**	0.0110	Horatio Seymour	0.0160	
1872	**Ulysses S. Grant**	0.0110	Horace Greeley	0.0000	X, S
1876	**Rutherford B. Hayes**	0.0470	Samuel Tilden	0.0160	X
1880	**James A. Garfield**	0.0190	Winfield Hancock	0.0110	X
	Chester A. Arthur	−0.0040			
1884	**Grover Cleveland**	−0.0010	Jamie Blaine	0.0270	
1888	**Benjamin Harrison**	0.0210	Grover Cleveland	−0.0010	X
1892	**Grover Cleveland**	−0.0010	Benjamin Harrison	0.0210	
1896	**William McKinley**	0.0450	William Byran	0.0340	X
1900	**William McKinley**	0.0450	William Byran	0.0340	X, S
1904	**Theodore Roosevelt**	0.0090	Alton Parker	0.0070	
1908	**William Howard Taft**	0.0280	William Byran	0.0340	
1912	**Woodrow Wilson**	0.0330	William Howard Taft	0.0280	X
1916	**Woodrow Wilson**	0.0330	Charles Hughes	0.0330	=, S
1920	**Warren G. Harding**	0.0215	James Cox	0.0090	X

1924	**Calvin Coolidge**	0. 0050	John Davis	0. 0340	
1928	**Herbert Hoover**	0. 0070	Al Smith	−0. 0010	X
1932	**Franklin D. Roosevelt**	0. 0370	Herbert Hoover	0. 0070	X
1936	**Franklin D. Roosevelt**	0. 0370	Alf London	0. 0180	X, S
1940	**Franklin D. Roosevelt**	0. 0370	Wendell Lewis Willkie	0. 0070	X, S
1944	**Franklin D. Roosevelt**	0. 0370	Thomas Dewey	0. 0330	X, S
1948	**Harry S Truman**	0. 0050	Thomas Dewey	0. 0330	
1952	**Dwight D. Eisenhower**	0. 0110	Adlai Ewing Stevenson II	0. 0265	
1956	**Dwight D. Eisenhower**	0. 0110	Adlai Ewing Stevenson II	0. 0265	S
1960	**John Kennedy**	0. 0290	Richard M. Nixon	0. 0010	X
1964	**Lyndon B. Johnson**	0. 0245	Barry Goldwater	0. 0210	X
1968	**Richard M. Nixon**	0. 0350	Hubert Humphrey	0. 0230	X
1972	**Richard M. Nixon**	0. 0350	George McGovern	0. 0460	S
	Gerald R. Ford	0. 0250			
1976	**Jimmy Carter**	0. 0180	Gerald R. Ford	0. 0250	
1980	**Ronald Reagan**	0. 0160	Jimmy Carter	0. 0180	
1984	**Ronald Reagan**	0. 0160	Walter Mondale	0. 0250	S
1988	**George H. W. Bush**	0. 0080	Michael Dukakis	0. 0450	
1992	**William J. Clinton**	0. 0330	George H. W. Bush	0. 0080	X
1996	**William J. Clinton**	0. 0330	Bob Dole	0. 0290	X, S