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THE "BUSINESS CLIMATE" AND ECONOMIC INEQUALITY

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ABSTRACT

"Business climate indexes" characterize state economic policies, and are often used to try to influence economic policy debate. However, they are also useful in research as summaries of a large number of state policies that cannot be studied simultaneously. Prior research found that business climate indexes focused on productivity and quality of life do not predict economic growth, while indexes emphasizing taxes and costs of doing business indicate that low-tax, low-cost states have faster growth of employment, wages, and output. In this paper, we study the relationship between these two categories of business climate indexes and the promotion of equality or inequality. We do not find that the productivity/quality-of-life indexes predict more equitable outcomes, although some of the policies underlying them suggest they might. We do find, however, that the same tax-and-cost related indexes that are associated with higher economic growth are also associated with increases in inequality.

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1. INTRODUCTION

A fundamental goal of government policy is to encourage economic growth. However, policymakers also focus on the distribution of economic resources, and they face potential tradeoffs between promoting economic growth and promoting equity. States use a variety of policies to influence both growth and equity, and it is therefore important to understand the effects of these policies, as well as the tradeoffs they present.

"Business climate indexes" try to characterize an array of state economic policies that can affect both growth and equity. These indexes often serve the agendas of the organizations that create them, weighting heavily the policies they seek to highlight – whether to encourage or to discourage policymakers from using these policies (Kolko et al., 2013). They arise commonly in policy debate, such as in arguments for lowering taxes and relaxing regulations in states that do poorly on indexes that emphasize these policies. And they are touted by states that do well on such indexes – because of low taxes, for example.[1]

Although debate often focuses on a particular ranking that supports one point of view, actual characterizations of states' business climates are often more nuanced. Some states ranked poorly in terms of taxes are ranked favorably along other dimensions captured in different indexes, such as quality-of-life measures, including crime rates and health, or on education and human capital, and these rankings also figure in policy debate and are touted by states.[2] Thus, the factors emphasized by the indexes and the ranking of states on these factors can influence policy debate and, presumably, policy as well.

In addition to their role in policy debate, business climate indexes can be interpreted as summary measures of a large number of state policies that cannot otherwise be studied simultaneously, and hence can be useful in research. Prior empirical analysis of these business climate indexes (Kolko et al., 2013), focusing on their content and their relationships to economic growth, led to three findings that motivate the present paper. First, business climate indexes largely fall into two clusters: productivity or quality of life; and taxes and other costs of doing business. Indexes within these clusters are very highly correlated, and indexes in the different clusters are uncorrelated or negatively correlated. Second, indexes that emphasize taxes and costs

[1] For recent examples, see http://illinoispolicy.org/illinois-unfriendly-business-environment-killing-jobs-growth/, http://www.texaswideopenforbusiness.com/business-climate/low-taxes.php, and http://ded.mo.gov/financial-professional-services/why-missouri-/favorable-business-climate (viewed October 15, 2013).

[2] See, for example, http://outreach.msu.edu/documents/newsrelease/NewsReleaseCCED_StateNewEconomyIndex.pdf?name=Documents&op=viewlive&sp_id=860 (viewed October 15, 2013).

predict that low taxes and costs generate faster economic growth, more so for the manufacturing sector. Indexes that focus on productivity measures do not predict growth in employment, wages, or GSP. Third, examination of sub-indexes of the tax-and-cost indexes suggests that an especially important factor that is associated with higher growth is lower welfare and transfer payments.

This paper turns to evidence on business climate indexes and the promotion of income equality. Policies that are associated with slower growth – including welfare and transfer payments – might contribute to social welfare by promoting equity. Likewise, some of the policy components in the productivity-related indexes – such as education and health insurance coverage – may promote equality, even if these indexes were not associated with growth.[3] Thus, the prior research may have found no role for the productivity-related indexes because of its narrow focus on economic growth.

Especially in a period of rising earnings inequality without an offsetting increase in earnings mobility (Kopczuk et al., 2010), policymakers may be willing to forgo some growth to increase income equality. Because states that are ranked high on the tax-and-cost indexes are often ranked low on the productivity indexes, and vice versa, focusing on the tax-and-cost indexes and discounting the policies captured in the productivity-related indexes may lead to prioritizing or over-emphasizing economic growth over equity. Alternatively, the same tax-and-cost indexes that are associated with faster economic growth may be associated either with the promotion of economic equality (a rising tide lifts all boats?) or with increased inequality. Thus, the direction of these relationships could reveal the potential consequences of pursuing policies that – as indicated by the prior research – are associated with faster economic growth. Do these policies present tradeoffs with regard to promoting income equality? Or do they also promote equality?

Our analysis documents the empirical relationships between business climate indexes and inequality-related outcomes, rather than economic growth. We find that the productivity-related indexes that failed to predict economic growth also fail to predict changes in the income distribution. In contrast, the same tax-and-cost indexes that predict faster economic growth predict increases in income inequality, pointing to an equity-efficiency tradeoff with respect to state-level public policy, growth, and income inequality. This

[3] Health insurance coverage is partly a labor market outcome, and does not only reflect policy. Indeed a number of variables used in the productivity indexes are outcomes rather than policy inputs, an issue we address in Appendix D of the appendix.

tradeoff is consistent with economic models in which redistributive mechanisms that protect people from economic uncertainty that generates higher inequality also reduce investment and growth (Bertola, 2014).

One caveat is that because the business climate indexes do not change appreciably over time, identification comes largely from cross-state variation in the bundles of policies captured in business climate indexes. We therefore face problems similar to cross-country growth regressions studying long-term economic growth as functions of a number of institutional, policy, and other factors. We nonetheless think the regressions are useful; as suggested by Levine and Zervos (1993), evidence on whether certain relationships hold across countries "will influence beliefs about policy and economic performance" (p. 427).[4]

There are two ways to think about our evidence on business climate indexes. One is to view the indexes as summary measures of the broad policy environment in a state. In this case, the estimates speak to the effects of the policy environment – foregoing rigorous estimation of the causal effects of a single or small number of policies, but avoiding the problem of focusing on one or a small set of policies while ignoring many others that may confound the effects of the policy being studied. The second is to interpret the evidence as assessing what the business climate indexes predict about economic outcomes, to help inform policy debate that relies on these indexes. We think both interpretations are potentially valuable.

2. BUSINESS CLIMATE INDEXES

We use data on 10 business climate indexes for all available years from 1992 through 2008; stopping in 2008 avoids the confounding effects of the extreme changes that occurred because of the Great Recession. We include indexes that have published rankings for multiple years and have made their methods fully transparent.[5] We use index values rather than rankings, to capture information on the magnitudes of the gap between states. Index definitions can change, so we standardize each index for each year, subtracting off its mean and dividing by its standard deviation. The indexes are signed such that higher values correspond to what is intended to reflect a "better" business climate, based on the intention of the creators of each index (e.g., low taxes for the tax-and-cost indexes); so a higher value of an *index* implies a *ranking* closer to one.

[4] Additional discussion of potential limitations and merits of the general approach appears in Kolko et al. (2013).
[5] Kolko et al. (2013) also studied an 11th index – the Fiscal Policy Report Card on the Nation's Governors, published by the Cato Institute. It is excluded from this paper because this is the one index that did not fall neatly into either the productivity or tax-and-cost clusters of indexes, and it had no predictive power.

The first column of Table 1 lists each index and the institution that creates it, as well as the years covered and the broad grouping of the indexes into a focus on productivity and quality of life or taxes and costs of doing business. The next two columns describe the focus of each index, and list the categories of policy variables covered by each index (out of 14 categories that Kolko et al. created based on the content of the indexes). The indexes clearly aim to capture different facets of the policy environment. The tax-and-cost indexes focus on taxes, costs, and regulation and litigation. The productivity-related indexes capture elements of what we consider productivity of the workforce or quality-of-life factors.[6]

Table 2 shows how the 50 states rank, on average, on the two types of business climate indexes. The columns labeled "Average rank" report the result of first averaging each index's ranking across the years for which the index is available, and then averaging these averages for the five productivity-related indexes and the five tax-and-cost-related indexes. These columns of the table show that states can be ranked markedly differently on these two types of indexes. For example, California, with an average rank of 15.3 on the productivity indexes versus 45.6 on the tax-and-cost indexes, is ranked as having a very good business climate on the productivity indexes, but a bad business climate on the tax-and-cost indexes. In contrast, for example, Mississippi has an average rank of 47.8 on productivity, but 16.4 on taxes and costs.

The prior research showed that a high rank on the tax-and-cost indexes is associated with faster growth. For example, Kolko et al. report that for the EFINA index, in their preferred specification, moving from the 40th to the 10th place in the rankings is associated with an annual rate of growth of employment that is faster by 0.36 percentage point – over one-fifth of the mean annualized employment growth rate over the sample period. However, many states with low rankings on the tax-and-cost indexes – such as California and Massachusetts – and which would have slower predicted growth based on the policies these indexes capture, are ranked very high on the productivity indexes. The question is whether these latter types of states are doing more to increase equality or at least to moderate increases in inequality.

Paralleling standard fixed-effects analyses, it is natural to ask how changes in the indexes affect state outcomes. However, inter-temporal correlations of the indexes generally exceed 0.7 or 0.8 even for observations eight or nine years apart, so the variation in models using changes in the indexes would likely

[6] As Appendix A in the appendix reports, correlations between the 10 indexes, and other analysis, indicate that the indexes can be divided into these two clusters. That appendix also provides additional information on the indexes.

be quite uninformative – more so because numerous subjective and ad hoc decisions go into constructing the indexes, creating within-state variation that is unrelated to changes in underlying policies. We show this another way in the columns in Table 2 labeled "Average min/max," reporting averages of the minima and maxima the state receives in each group of business climate indexes. These minima and maxima are generally quite close, rarely differing by more than 10, and often by quite a bit less.[7]

3. INEQUALITY MEASURES

We use data from Current Population Survey Annual Social and Economic supplements from 1992 to 2008, measuring two-year changes in state family poverty rates and other measures of family income distributions (but also looking at changes over different windows). These inequality measures are based on total family income, taking account of cash transfers but excluding in-kind transfers and payments from the Earned Income Tax Credit. We focus on family rather than individual income because many of the tax-and-cost and productivity policies that are captured in the business climate indexes affect the collective resources available to all members of a family, such as income tax rates and welfare transfers. In addition, this income measure accords with the standard method of defining poverty rates in the United States.

The first measure of inequality is the state poverty rate, to capture changes at the lower-end of the family income distribution. The poverty rate is more informative than income levels at the lower-end of the family income distribution, because it is based on a predetermined level of the income needed to satisfy a given level of needs related to an adequate diet (Oshansky, 1963); it depends not just on family income but also on family size and age structure. We also study inequality at different parts of the income distribution. We use the common metrics of the differences between the median (50^{th} percentile) and the 10^{th} percentile, the 90^{th} percentile and the median, and the 90^{th} and 10^{th} percentiles. The 50-10 differential tells us about the gap between the middle of the income distribution and the lower end, the 90-50 differential tells us about the gap between the top end and the middle, and the 90-10 differential tells us about the gap between the top and bottom ends of the income distribution. Because we are interested in the relationships between the business

[7] A related issue is that because the business climate indexes are typically available only for a subset of years and that there is often not much overlap between the years available for different indexes (Table 1), for the most part we study one index at a time for the years for which that index is available. Given the high inter-temporal correlations, we would be unlikely to get very different answers if we had the index values for other years.

climate indexes and changes in inequality, we focus on growth in these differentials. Because negative growth in a family income differential could result from a decrease in the top percentile or an increase in the bottom percentile, we also look at annualized two-year growth rates in the income percentiles themselves.[8]

Descriptive statistics (reported in detail in the appendix) indicate that poverty rates were decreasing over the period, averaging a decline of 0.115 percentage point per year, while differentials in real family income percentiles were increasing across the board. The 90-50 differential increased the most over the period, averaging an annualized two-year growth rate of 1.48 percent – due to much higher growth in the 90th percentile than the 50th percentile. Similarly, the 90-10 differential averaged 1.13 percent growth.

4. BUSINESS CLIMATE INDEXES AND CHANGES IN INEQUALITY

Methods

We estimate state-level regressions, over time, for: the percentage point change in the poverty rate; the percent changes in the differential between the 50th and 10th percentiles of family income, the 90th and 50th percentiles of family income, and the 90th and 10th percentiles of family income; as well as the percent changes in the 10th, 50th, and 90th percentiles of family income. We estimate relationships between the business climate indexes and changes in inequality measures, rather than levels, for two reasons. First, we want to capture the dynamic effects of the policies captured in the indexes. And second, we are interested – tying this paper to the prior research – in understanding the competing effects of the policies captured in the business climate indexes on economic growth and growth (or declines) in income inequality. If we estimated models using levels of income inequality, we would not necessarily learn anything about these tradeoffs; a set of policies might be related to economic growth because of contemporaneous effects on growth, but related to the level of inequality because of long-term factors that those policies helped to establish. In contrast, evidence that, for example, a particular set of policies is associated with higher growth but rising income inequality can inform policymakers about the consequences and tradeoffs those policies pose.

Our specifications define the index at time t, and the average annual change from t to t+2. We use two-year changes to avoid undue influence of shorter-term movements, but we also explore the sensitivity of the results to varying the length of the interval over which growth is measured. The results were always

[8] For more details on the construction of the inequality measures, see Neumark and Muz (2013).

qualitatively very similar, but in some cases, the two-year changes yielded statistically stronger evidence.

All specifications include year fixed effects to capture the aggregate business cycle or common policy influences, so that we identify the effects of policies captured by state business climate rankings on how state growth or changes in inequality differ from the aggregate. Although we do not – as discussed earlier – include fixed state effects – we do not want to ignore possible unmeasured differences across geographic regions that could be related to both policy and the evolution of income inequality. We therefore include dummy variables for the four broad Census regions. We also note that because we estimate models for changes in income inequality, it is less likely that unmeasured difference across states (or regions) play an important role than if we estimated models for levels. Indeed the results are not very sensitive to excluding the Census region fixed effects, although they were a bit stronger with these controls included.

We also include other control variables from the urban and regional economics literature. First, we use weather variables from Mendelsohn et al. (1994), capturing both temperature and precipitation. We use county-population-weighted state averages based on 2006 Census population estimates. We define "Mild" as the negative of the absolute value of the difference between monthly average temperature and 20 degrees Celsius, summed over January, April, July, and October, and "Dry" as the negative of the average monthly precipitation for those four months, in centimeters. Second, we use "Proximity," defined as the negative of the average distance from the state's county centroids, weighted by county population, to the nearest coast, Great Lake, or major river (Rappaport and Sachs, 2003).[9] Third, we define population density as the tract-weighted population density across the state (in natural logarithms), based on 1990 Census data (Glaeser and Kahn, 2004). Kolko et al. (2013) find that some of these were associated with economic growth, so we also want to control for their influence on inequality (perhaps via growth).

Finally, we construct a measure of the state-specific "shift-share" or "industry composition effect" attributable to the baseline industry mix of the state and national growth by industry. For example, a state with a large initial manufacturing base might have lost more middle-income jobs owing to the downward national trend in manufacturing employment. We start with the industry composition of employment in each state in 1992 (our base year), and calculate how employment would have changed had employment in each

[9] By multiplying these numbers by −1, higher values reflect milder weather, drier weather, and closer proximity.

industry in the state grown at the average rate of growth of the industry's employment in the other 49 states, using 3-digit NAICS industries. Letting *EIS* denote the industry composition effect, *E* denote employment, the subscripts *i* and *j* denote states, and the subscript *k* denote industry, this variable is defined as:

$$EIS_i = \frac{\left\{\sum_k E_{ik,1992} \cdot \left[\frac{\sum_{j\neq i} E_{jk,2006} - \sum_{j\neq i} E_{jk,1992}}{\sum_{j\neq i} E_{jk,1992}} + 1\right]\right\} - E_{i,1992}}{E_{i,1992}} \cdot 100. \quad (1)$$

Turning to the regressions we estimate, let ΔY_{it} denote the changes in income inequality measures for state *i* in year *t*, BC_{it} denote the index, X_{it} denote the controls, D_t denote the year fixed effects, and C_i denote the Census region dummy variables. We estimate regression models of the form:

$$\Delta Y_{it} = \alpha + \beta BC_{it} + X_{it}\gamma + \sum_t \theta D_t + \sum_i \tau C_i + \varepsilon_{it} . \quad (2)$$

It is possible that policies are affected by economic outcomes. For example, increases in inequality may lead states to tax high-income families more, or to try to increase skills among the less advantaged. Such policy responses would imply a higher business climate ranking on the productivity indexes, and a lower ranking on the tax-and-cost indexes. Thus, this type of endogenous response would tend to bias the results towards one of two types of findings: a higher ranking on the productivity indexes increases inequality; or a lower ranking on the tax-and-cost indexes increases inequality. Given that our findings do not conform to either of these stories, we do not think that endogeneity of this sort is not driving our results, although it is possible that the results would be stronger absent such endogeneity.

A more problematic policy response is if rising inequality begets policies that generate further inequality – for example, by creating more financial and political support for lowering taxes on the rich when the share of income earned by the rich increases. Given that our main finding is that higher business climate rankings on tax-and-cost indexes are associated with increases in inequality, we cannot as easily dismiss this alternative scenario as an explanation for our results. We do not believe there are compelling instrumental variables to solve this problem, though others have tried to predict changes in specific policies using features of the political system (e.g., Besley and Case, 1995). The problem is particularly difficult because business climate indexes capture many policies. One could think about using economic development policies in neighboring states, but the possibility of inter-jurisdictional competition (e.g., Brueckner, 2003) makes the exogeneity of neighboring states' policies questionable. However, some sensitivity analyses noted below do

not provide evidence of endogeneity bias.

Prior Results on Business Climate Indexes and Economic Growth

Table 3 summarizes the key results from Kolko et al. (2013) on the relationships between business climate indexes and economic growth.[10] The top panel reports results for employment growth measured by the Quarterly Census of Employment and Wages (QCEW). The estimated relationship between each of the productivity indexes and employment growth is generally small and not statistically significant, with a central tendency of about zero, and one anomalous negative finding (for DRCS-BV). In contrast, the estimated coefficients of all five tax-and cost indexes – which reflect the estimated effect of a one-standard deviation increase in the index – are positive and statistically significant. In square brackets, we report the change in the growth rate of employment associated with a move in the rankings from the 40th to the 10th state based on the average values of the index for the included years. For example, for the SBTC index the estimate of 0.265 implies that moving a state from the 40th to the 10th position would increase the rate of employment growth by 0.379 percentage point – a substantial increase compared with the mean employment growth rate of 1.63 percent. The bottom panel reports estimates for GSP growth. The findings are similar to those for employment growth, though less strong statistically.[11]

Thus, all of the indexes for which there is evidence of a positive relationship between the index and employment growth are in the tax-and-cost cluster. Conversely, none of the indexes in the productivity cluster has a positive relationship with employment growth. Thus, the principal finding that is our jumping off point is that states with policies that lead to higher rankings on the tax-and-cost-focused indexes – meaning lower taxes, lower regulatory costs, etc. – have faster employment growth. We now turn to the analysis of whether the productivity indexes appear to deliver better equity outcomes despite being unrelated to economic growth, or alternatively whether the same tax-and-cost indexes that are related to faster economic growth have a systematic relationship with changes in income inequality.

Inequality Regressions

Table 4 reports our key results. Each panel of the table going down the rows reports results for

[10] This table is not exactly from Kolko et al. (2013) because we use annualized two-year growth and include Census region dummy variables, following what we do in this paper. However, the qualitative conclusions are very similar.
[11] Other factors are associated with cross-state growth differences, such as weather and baseline industry composition.

different dependent variables, and each column reports estimates for a different business climate index. For the productivity/quality-of-life indexes in columns (1)-(5), there is some evidence that higher rankings on these indexes are associated with declines in inequality. There is no such evidence for poverty, where the estimated signs alternate and none is significant. However, the SNEI and DRCS-P indexes are associated with statistically significant declines in the 50-10 income differential. To interpret the magnitudes, for example, as reported in square brackets the −1.046 estimate for the SNEI index implies that moving from 40th to 10th in the state index is associated a rate of growth in the 50-10 differential that is lower by 2.00 percentage points per year, which is large relative to the mean growth rate of 0.305.

However, the lower rate of growth in the 50-10 differential is not generally attributable to the bottom doing better. For the SNEI index it is, with a positive (1.356) but not significant estimated effect on the growth of income at the 10th percentile. But the DRCS-P index is significantly negatively associated with growth at the 50th percentile, and the point estimate for the 10th percentile is negative.[12] Looking at the other income differentials (90-50 and 90-10), there is no evidence that the productivity/quality-of-life indexes are associated with less growth of inequality (or declines in inequality). None of the estimated coefficients is significant, the signs vary, and many of the estimated coefficients are quite small.

We next turn to the relationship between the tax-and-cost indexes – which are associated with faster growth – and changes in inequality. The strongest evidence in columns (6)-(10) of Table 4 emerges for the EFI index, which is significantly positively associated with growth in the 50-10 and 90-10 differentials. Moreover, as the bottom panel of the table shows, there is a positive and significant relationship with the 90th percentile of family income. Focusing not just on the significant results but also on the point estimates – in particular, the large negative estimate for EFI and the 10th percentile – the EFI index is associated with higher growth at the top (90th) and lower growth at the bottom (10th). This suggests that the 50-10 differential grows because the bottom end does worse, and the 90-10 grows because the top end does better. The point estimate for EFI also indicates a positive (not significant) relationship with the 90-50 differential, with a larger positive estimate for the 90th than the 50th percentile. So these results are most consistent with the middle being relatively unaffected, while the tails spread out, when the EFI index is higher.

[12] Note that the difference between the estimated coefficients for the 10th and 50th percentiles need not equal the estimated coefficient for the 50-10 differential, given that these estimates are for regressions with many other controls.

The implied magnitude is smaller for the 90-10 than for the 50-10 differential – in either relative or absolute terms. Moving from 40th to 10th position on the EFI index is associated with 1.95 percentage points faster growth in the 50-10 differential, relative to the mean growth rate of 0.305 percent. For the 90-10 differential, the effect is 1.58 percentage points, versus a mean of 1.13. Nonetheless, the estimates suggest that this tax-and-cost index could (if the entire effect were causal) potentially account for large increases in the 90-10 differential. We do not find significant evidence in this (or the opposite) direction for any of the other tax-and cost indexes, and the point estimates are generally much smaller. Although the EFI index was not significantly related to GSP growth (Table 5), it was significantly related to employment growth, and the related EFINA index was significantly positively associated with both, with similar coefficient estimates.

Table 5 presents additional evidence from these types of specifications. First, the models from Table 4 are re-estimated using one- and three-year annualized changes in the inequality measures instead of two-year changes. Then, Table 5 collects the coefficient estimates from Table 4 and these two additional specifications, showing – for each index and each inequality measure – the mean of the three estimates, the range, and the number of significant positive or significant negative estimates (the maximum of either is three, including the estimates from Table 4). The shaded rows provide summary measures for the mean and the counts of positive or negative and significant coefficient estimates.

For the productivity/quality-of-life indexes, aside from the two significant coefficients relating the SNEI and DRCS-P indexes to reductions in the growth of the 50-10 differential (column (2)), the evidence points in the other direction. In particular, there is one estimate for which the DRCS-P index is positively associated with growth in poverty, and one for which the SNEI index is positively associated with growth in the 90-10 differential (as well as the 90th percentile of family income). Thus, there is no clear indication that a higher ranking on the productivity/quality-of-life indexes is associated with slower growth of inequality.

For the tax-and-cost indexes, in contrast, the evidence points more strongly in one direction. One estimate for the SBSI index, and two for the EFI index, point to increases in the 50-10 differential, and two estimates for the EFI index point to increases in the 90-10 differential. Moreover, these tend to come from increases in either the 50th or the 90th income percentiles. The message, then, is that the same indexes that are associated with faster economic growth are also associated with rising inequality. We carried out a number of

sensitivity analyses of these results – including assessment of omitted variables and endogeneity bias, as well as reconstructing productivity/quality of life indexes stripping out variables better interpreted as outcomes. The analyses, which are described and reported in Appendix D of the appendix, generally indicate robust and sometimes stronger evidence for our key conclusions.

EFI Sub-indexes and Changes in Inequality

We can try to get a bit more specific about the policies associated with changes in inequality by looking at sub-indexes of the indexes. We focus on the tax-and-cost indexes for which we find quite consistent evidence of an association with changes in inequality. Fortuitously, the strongest evidence was for the EFI index, for which there are five sub-indexes, for: fiscal policy; regulation; welfare spending; size of government; and the judiciary. A priori, we might expect the welfare-spending sub-index, which includes many redistributive measures, to be most strongly associated with changes in inequality.

We estimated the same regressions as before, but substituting the sub-indexes of the EFI index for the parent index; descriptive information and the regression results are reported in Appendix C of the appendix. We indeed find that a higher ranking on the welfare-spending sub-index – which, recall, generally means less redistribution – is associated with rising inequality measured by the 90-50 and 50-10 differential. We also find some significant evidence for the government size sub-index, although the signs are inconsistent – reducing poverty but increasing the 50-10 differential. Thus, our takeaway from this analysis is that less generous welfare is likely what is driving the relationship between a higher ranking on the EFI tax-and-cost index and faster growth of inequality, which seems a quite reasonable interpretation.[13]

Summary of Key Evidence

Figure 1 provides a convenient summary of our main conclusion that states that rank higher on tax-and-cost business climate indexes experience faster economic growth but also rising inequality. The figure displays evidence for the EFI index, for which we found the strongest and most consistent evidence. In each of the three figures we plot a regression line relating GSP growth to the change in inequality (for the 50-10,

[13] If there is reverse causality in this case, it should be in the opposite direction, with rising inequality (at least if it is due to declines at the bottom) leading to more welfare spending, holding policy parameters fixed. One possible exception, however, is if policy responds to the greater expenditures by reducing program generosity to cut spending. But to some extent we are less concerned about reverse causality because we use across-state rather than within-state variation to identify the effects of the policies captured by the business climate indexes; endogeneity bias is likely reduced by avoiding reliance on short-term changes in state economic conditions that could affect some of the policy variables.

90-50, and 90-10 differential). The horizontal axis is measured as the negative of the increase in inequality, so that the negative slope implies that where GSP growth was higher, inequality increased by more.[14] The slope is negative for each inequality measure.

We then plot, for each state, its value for these two outcomes, as well as its ranking on the EFI index averaged over the years for which it is available. In the corner of each quadrant – defined in terms of medians – we list the mean rank and the number of observations. We see two things. First, in all cases but especially for the 50-10 differential, more observations are in the upper-left and lower-right quadrants, indicating that we are more likely to see high growth and more rapidly rising inequality or lower growth and more moderately rising inequality than a mix of either high growth and more moderate growth in inequality, or vice versa. Second, and more relevant to the business climate indexes, the mean ranking of states in the upper-left quadrant is always the highest and the mean ranking of states in the lower-right quadrant is either the lowest (for the 90-10 differential) or nearly the lowest. This reflects our main finding: states that rank high on this tax-and-cost index have higher growth but larger increases in inequality, while states that rank low have lower growth but more moderate increases in inequality.

5. CONCLUSIONS AND DISCUSSION

Past research showed that business climate indexes that emphasize taxes and costs predict economic growth, with lower taxes and costs as measured by the indexes associated with faster growth. In contrast, indexes that focus on policies related to productivity and the quality of life do not predict growth in employment, wages, or GSP. If we only cared about economic growth, and we could interpret these relationships as causal, the implication would be clear. States should mimic the policies that generate high ratings on tax-and-cost business climate indexes, thus achieving higher growth, and they can ignore the policies emphasized by the productivity/quality-of-life indexes.

However, policymakers (and voters) also care about the distribution of economic resources. This raises the question of how the policies captured by the business climate indexes are associated with changes in inequality. We find little consistent evidence that the policies captured by the productivity/quality-of-life indexes are associated with more moderate growth in inequality. This might be viewed as discouraging for

[14] We word it this way because inequality rose in most states for all measures.

those who value the policies emphasized in these indexes, which include health, human capital, and related measures. On the other hand, the productivity/quality-of-life business climate indexes include so many policies that might have rather disparate effects that it is hard to draw firm conclusions. Moreover, our results do *not* imply that none of the policies captured in these indexes moderate the growth in inequality, but rather that the agglomeration (and weighting) of the policies captured in these indexes are not associated with declining inequality. Nonetheless, this kind of evidence can inform policy debate about business climate indexes. Touting a state's high ranking on the productivity/quality-of-life indexes to argue that such a state might, for example, be spared from some of the rising inequality the United States has experienced is not warranted, but instead requires more explicit evidence on specific policies.

We do find, however, more direct and, in our view, more easily interpretable evidence of a policy tradeoff between promoting growth and promoting equity. Specifically, the same tax-and-cost related policies that are emphasized in the tax-and-cost indexes are associated with faster economic growth *and* larger increases in inequality. Moreover, our sense is that the policies captured in the tax-and-cost indexes are somewhat less disparate and hence the indexes are more easily interpretable. The results suggest, then, as economic models would predict, that policymakers – and society at large – have to make some tradeoffs when choosing policies affecting taxes and the costs of doing business; the policies that enhance growth are also associated with more rapidly increasing inequality (in our sample period, when inequality is generally increasing). Moreover, there is some evidence that the tax-and-cost-related policies that spur greater inequality and faster growth are less generous welfare and transfer programs.

To reiterate the qualifications stated at the outset, the research in this paper does not represent rigorous causal analysis of particular policies. Rather, it mainly reflects cross-sectional associations between changes in inequality (and economic growth) and the broad characterizations of policy captured by existing business climate indexes. Consequently, the implications may be more important for policy debate than for economic analysis. Specifically, the evidence implies that when tax-and-cost-related business climate indexes are touted as demonstrating a strong business climate in a state – as they often are – policymakers and voters should be aware that there is another side to the coin: although these business climate indexes are associated with higher economic growth, they are also associated with rising inequality. This perspective

should influence the way policymakers and the public think about the tax-and-cost-related business climate indexes that feature most prominently in policy debate.

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Table 1: Business Climate Indexes

Index, institution, and years	Stated focus of index	Policy categories
Productivity/quality-of-life		
SNEI: State New Economy Index, Progressive Policy Institute (1999, 2002) , Information, Technology and Innovation Foundation and Kauffman Foundation (2007, 2008)	Compatibility of state's economy with "New Economy"	Business incubation; human capital; technology, knowledge jobs, and digital economy, and external sector
DRCS-P: Development Report Card for the States─Performance, Corporation for Enterprise Development (2000-2007)	Opportunities for employment, income, and improving quality of life	Quality of life; equity; employment, earnings, job quality, and resource efficiency/environment
DRCD-DC: Development Report Card for the States─Development Capacity, Corporation for Enterprise Development (2000-2007)	Capacity for future development	Cost of doing business (excl. taxes); quality of life; business incubation; human capital; infrastructure; technology, knowledge jobs, and digital economy, and resource efficiency/ environment
DRCS-BV: Development Report Card for the States─Business Vitality, Corporation for Enterprise Development (2000-2007)	Dynamism of the state's large and small businesses	Business incubation; technology, knowledge jobs, and digital economy, and external sector
SCI: State Competitiveness Index, Beacon Hill Institute (2001-2008)	Long-term competitiveness for attracting and incubating new businesses and growth of existing firms	Cost of doing business; size of government; tax rates and burden; quality of life; welfare and transfer payments; employment, earnings, and job quality; business incubation; human capital; infrastructure; technology, knowledge jobs, and digital economy, resource efficiency/environment, and external sector
Taxes and costs of doing business		
SBTC: State Business Tax Climate Index, Tax Foundation (2003-2009)	Tax rates	Tax rates and tax burden
SBSI: Small Business Survival Index, Small Business and Entrepreneurship Council (1996-2008)	Government-imposed or government-related costs affecting investment, entrepreneurship, and business	Cost of doing business (excl. taxes); size of government; tax rates and tax burden; regulation and litigation; quality of life; infrastructure
CDBI: Cost of Doing Business Index, Milken Institute (2002-2007)	Fundamental business costs, including labor, taxes, real estate, and electricity	Cost of doing business (excl. taxes); tax rates and tax burden
EFI: Economic Freedom Index, Pacific Research Institute (1999, 2004, 2008)	Government favors free enterprise and consumer choice; individual rights to pursue interests through voluntary exchange of private property under rule of law	Cost of doing business (excl. taxes); size of government; tax rates and tax burden; regulation and litigation; welfare and transfer payments
EFINA: Economic Freedom Index of North America, The Fraser Institute/ National Center for Policy Analysis (1992-2005)	Restrictions on economic freedom imposed by governments: takings and discriminatory taxation; size of government; and labor market freedom	Cost of doing business (excl. taxes); size of government; tax rates and tax burden; welfare and transfer payments

For the SNEI index, the author of all four reports is the same (Robert Atkinson). The DRCS indexes go back earlier, but only the information beginning in 2000 was available on-line. The second column lists the focus of the index as stated by the creating institution. The third column gives our (more objective) categorization, although they are often the same as those used by the institutions that create the indexes.

Sources (for latest version of each index):
SNEI: http://www.kauffman.org/uploadedfiles/2008_state_new_economy_index_120908.pdf (viewed November, 2008); DRCS-P, DRCD-DC, and DRCS-V4: http://www.cfed.org/focus.m?parentid=2&siteid=2346&id=2346 (viewed November, 2008); SCI: http://www.beaconhill.org/compete08/BHIState08-FINAL.pdf (viewed November, 2008); SBTC: http://www.taxfoundation.org/files/bp58.pdf (viewed November, 2008); SBSI: http://www.sbecouncil.org/uploads/sbsi%202008%5B1%5D1.pdf (viewed December, 2008); CDBI: http://www.milkeninstitute.org/pdf/2007CostofDoingBusiness.pdf (viewed November, 2008); EFI: http://special.pacificresearch.org/pub/sab/entrep/2008/Economic_Freedom/map.html (viewed November, 2008); EFINA: http://www.freetheworld.com/efna2008/EFNA_complete_Publication.pdf (viewed November, 2008).

Table 2: Average State Ranks by Index, 1992-2009

	Productivity/quality-of-life indexes		Tax-and-cost indexes			Productivity/quality-of-life indexes		Tax-and-cost indexes	
State	Average rank	Average min/max	Average rank	Average min/max	**State**	Average rank	Average min/max	Average rank	Average min/max
Alabama	38.4	33.0/43.6	14.2	8.9/19.7	Montana	33.4	25.7/40.6	22.7	17.0/27.9
Alaska	34.3	26.8/42.0	28.9	22.6/33.8	Nebraska	23.5	14.4/30.2	25.1	20.9/29.1
Arizona	30.1	17.4/39.3	20.6	13.3/30.3	Nevada	32.4	20.5/41.6	13.3	5.0/17.8
Arkansas	42.0	35.9/48.2	23.2	18.4/28.3	New Hampshire	11.9	5.7/19.3	13.1	8.6/20.6
California	15.3	9.8/21.4	45.6	41.6/48.1	New Jersey	15.6	10.0/21.2	43.3	39.4/46.5
Colorado	6.4	3.0/10.7	13.5	10.1/19.4	New Mexico	36.8	30.6/42.3	34.5	27.4/40.5
Connecticut	8.9	4.4/14.3	38.4	34.7/41.8	New York	21.6	15.1/28.3	48.2	46.4/49.6
Delaware	10.4	3.3/20.0	18.3	15.2/22.9	North Carolina	29.5	23.3/36.3	28.6	24.1/33.9
Florida	28.9	21.7/35.6	14.6	11.3/20	North Dakota	29.9	21.9/39.8	21.8	15.6/27.6
Georgia	25.6	20.7/31.1	19.1	14.7/25.5	Ohio	28.8	22.4/36.3	38.2	30.7/42.2
Hawaii	39.3	30.0/45.1	38.9	32.8/42.2	Oklahoma	37.6	30.6/43.6	19.1	14.8/23.9
Idaho	22.4	12.9/31.0	20.4	16.2/25.1	Oregon	17.8	12.5/24.7	27.7	22.2/32.9
Illinois	23.3	19.3/28.1	27.6	22/33.2	Pennsylvania	19.3	15.3/23.5	30.3	26.6/34.1
Indiana	31.9	23.4/39.2	14.9	11.1/18.6	Rhode Island	23.7	15.6/31.7	45.7	42.7/47.9
Iowa	26.2	21.6/31.1	27.2	21.5/31.8	South Carolina	34.5	27.7/40.2	15.0	10.7/19.5
Kansas	23.6	16.1/31.4	22.2	18.5/27.2	South Dakota	30.1	22.9/38.3	3.7	1.6/6.1
Kentucky	37.5	31.3/42.9	27.9	22/33.1	Tennessee	33.1	23.8/38.8	12.9	9.6/17.1
Louisiana	45.5	40.9/48.6	26.1	19.6/32.7	Texas	24.8	21.2/29.1	12.6	8.6/18.2
Maine	28.0	21.2/34.6	39.1	33.2/43.3	Utah	11.2	6.2/17.1	15.5	10.0/19.7
Maryland	12.7	7.4/18.3	29.1	23.4/37.1	Vermont	18.1	12.6/25.6	39.6	33.2/44.1
Massachusetts	4.4	2.0/6.8	35.0	27.5/40.6	Virginia	9.8	5.6/14.2	13.8	10.8/17.3
Michigan	25.2	16.6/35.6	29.4	22.4/36.4	Washington	11.5	4.4/18.4	26.1	22.6/29.7
Minnesota	6.7	3.8/9.5	40.6	34.9/44.5	West Virginia	47.8	46.2/49.4	33.5	30.1/36.8
Mississippi	47.8	44.9/49.8	16.4	9.8/23.4	Wisconsin	20.2	14.8/25.7	32.6	27.6/37.2
Missouri	29.0	21.4/36.7	15.8	11.5/21.1	Wyoming	28.1	22.7/37.1	11.2	5.2/15.9

In the columns labeled "Average rank," we first average each index across years, and then average these averages. In the columns labeled "Average min/max," we show the average of the minimum the state receives on each index, and the average of the maximum.

Table 3: Regressions for Annualized Two-Year Changes in QCEW Employment and GSP Growth

	Productivity/quality-of-life indexes					Tax-and-cost indexes				
	SNEI	**DRCS-P**	**DRCS-DC**	**DRCS-BV**	**SCI**	**SBTC**	**SBSI**	**CDBI**	**EFI**	**EFINA**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
QCEW employment	-0.067	0.026	0.036	-0.163	0.076	0.265***	0.155**	0.338**	0.222*	0.275***
growth, 1992-2008	(0.120)	(0.096)	(0.094)	(0.112)	(0.104)	(0.090)	(0.063)	(0.159)	(0.125)	(0.062)
	[-0.114]	[0.050]	[0.070]	[-0.291]	[0.131]	[0.379]	[0.279]	[0.424]	[0.382]	[0.484]
R^2	0.587	0.617	0.617	0.625	0.628	0.539	0.703	0.563	0.624	0.726
N	96	240	240	240	288	144	528	240	96	672
GSP growth, 1997-2008	-0.23	-0.259	-0.232	-0.543***	0.032	0.276	0.212	0.503*	0.225	0.222*
	(0.220)	(0.194)	(0.173)	(0.178)	(0.160)	(0.231)	(0.133)	(0.279)	(0.273)	(0.123)
	[-0.437]	[-0.479]	[-0.446]	[-0.981]	[0.055]	[0.394]	[0.381]	[0.632]	[0.388]	[0.390]
R^2	0.455	0.454	0.452	0.488	0.422	0.49	0.376	0.448	0.481	0.398
N	96	240	240	240	288	144	480	240	96	432

Business climate indexes are standardized by year. The DRCS indexes have been reconstructed from those in Kolko et al. (2013). The methodology for constructing the indexes changed in 2003, so the 2001 and 2002 indexes were recalculated to reflect the updated methodology. The unit of observation is the state and year. The dependent variables are the annualized two-year growth rates in QCEW employment levels and Gross State Product (GSP). All models include year fixed effects and Census region fixed effects. In addition, all regressions include the following baseline controls: industry composition, population density (in logs), climate, and proximity to navigable water. Standard errors clustered by state are used for statistical inference, and ***, **, and * indicate significance at the 1-percent, 5-percent or 10-percent level. The square brackets show the estimated coefficients multiplied by the difference between the 10^{th} and 40^{th} state rankings for each variable. Hawaii and Alaska are excluded.

Table 4: Regressions for Annualized Two-year Changes in Poverty, Income Percentile Differentials, and Income Percentiles, 1992-2008

	Productivity/quality-of-life indexes					Tax-and-cost indexes				
	SNEI	**DRCS-P**	**DRCS-DC**	**DRCS-BV**	**SCI**	**SBTC**	**SBSI**	**CDBI**	**EFI**	**EFINA**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Poverty	-0.071	0.054	0.045	-0.077	0.052	-0.112	-0.015	-0.095	0.017	0.021
	(0.089)	(0.064)	(0.065)	(0.069)	(0.041)	(0.097)	(0.040)	(0.077)	(0.110)	(0.027)
	[-0.136]	[0.101]	[0.084]	[-0.139]	[0.091]	[-0.166]	[-0.026]	[-0.118]	[0.029]	[0.037]
R^2	0.133	0.0762	0.0755	0.0791	0.0995	0.133	0.160	0.110	0.134	0.132
50-10 differential	-1.046**	-0.493*	-0.293	-0.236	-0.242	0.364	0.107	0.140	1.132*	0.046
	(0.477)	(0.274)	(0.220)	(0.265)	(0.227)	(0.273)	(0.132)	(0.359)	(0.577)	(0.123)
	[-2.00]	[-0.926]	[-0.546]	[-0.425]	[-0.422]	[0.538]	[0.189]	[0.174]	[1.95]	[0.081]
R^2	0.118	0.0978	0.0927	0.0924	0.0912	0.0939	0.103	0.0810	0.267	0.0700
90 -50 differential	0.567	0.074	0.202	-0.190	-0.090	0.243	-0.005	-0.078	0.902	0.069
	(0.546)	(0.276)	(0.283)	(0.276)	(0.235)	(0.366)	(0.125)	(0.501)	(0.766)	(0.105)
	[1.08]	[0.139]	[0.376]	[-0.342]	[-0.157]	[0.359]	[-0.009]	[-0.097]	[1.55]	[0.121]
R^2	0.167	0.0655	0.0665	0.0667	0.0687	0.0812	0.132	0.0770	0.0975	0.0981
90-10 differential	0.033	-0.117	0.031	-0.209	-0.149	0.272	0.037	0.013	0.915*	0.057
	(0.349)	(0.192)	(0.210)	(0.199)	(0.166)	(0.250)	(0.092)	(0.359)	(0.467)	(0.077)
	[0.063]	[-0.220]	[0.058]	[-0.376]	[-0.26]	[0.402]	[0.065]	[0.016]	[1.58]	[0.100]
R^2	0.213	0.109	0.109	0.112	0.119	0.122	0.203	0.132	0.145	0.144
10^{th} percentile	1.356	-0.333	-0.790	-0.180	-0.565	0.253	-0.026	0.619	-1.073	-0.074
	(0.878)	(0.637)	(0.550)	(0.536)	(0.449)	(0.665)	(0.188)	(0.702)	(1.194)	(0.191)
	[2.59]	[-0.626]	[-1.472]	[-0.324]	[-0.985]	[0.374]	[-0.046]	[0.769]	[-1.859]	[-0.130]
R^2	0.0864	0.130	0.134	0.129	0.119	0.122	0.159	0.0800	0.0817	0.123
50^{th} percentile	-0.431	-0.432*	-0.407*	-0.207	-0.297	0.314	0.084	0.244	0.568	0.037
	(0.378)	(0.239)	(0.207)	(0.220)	(0.193)	(0.192)	(0.110)	(0.301)	(0.407)	(0.108)
	[-0.824]	[-0.812]	[-0.758]	[-0.373]	[-0.518]	[0.464]	[0.148]	[0.303]	[0.979]	[0.065]
R^2	0.111	0.139	0.137	0.132	0.128	0.170	0.218	0.135	0.266	0.141
90^{th} percentile	0.143	-0.134	-0.047	-0.196	-0.180	0.269	0.034	0.058	0.708*	0.046
	(0.318)	(0.175)	(0.186)	(0.190)	(0.163)	(0.235)	(0.084)	(0.321)	(0.410)	(0.075)
	[0.273]	[-0.252]	[-0.088]	[-0.353]	[-0.314]	[0.398]	[0.06]	[0.072]	[1.22]	[0.081]
R^2	0.216	0.142	0.141	0.144	0.150	0.174	0.271	0.168	0.149	0.184
N	96	240	240	240	288	144	528	240	96	672

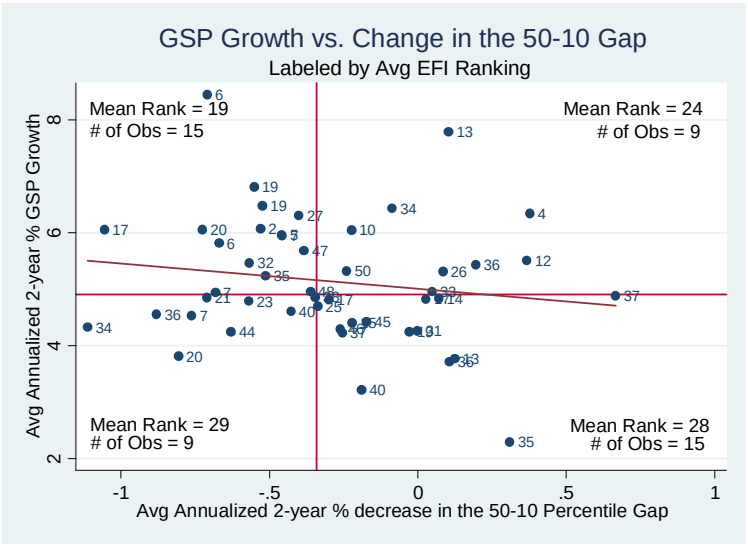
Business climate indexes are standardized by year. The unit of observation is the state and year. The dependent variables are: the annualized two-year percentage point change in poverty rates; the 2-year percent change in the differential between the 50^{th} and 10^{th} percentiles of family income (50-10 differential), the 90^{th} and 50^{th} percentiles of family income (90-50 differential), and the 90^{th} and 10^{th} percentiles of family income; and the 2-year percent change in the 10^{th}, 50^{th}, and 90^{th} percentile of family income. All models include year fixed effects and Census region fixed effects. In addition, all regressions include the following baseline controls: population density (in logs), climate, and proximity to navigable water. Standard errors are clustered by state, and ***, **, and * indicate statistical significance at the 1-percent, 5-percent, and 10-percent level, respectively. The square brackets show the estimated coefficients multiplied by the difference between the 10^{th} and 40^{th} state rankings for each variable. Hawaii and Alaska are excluded.

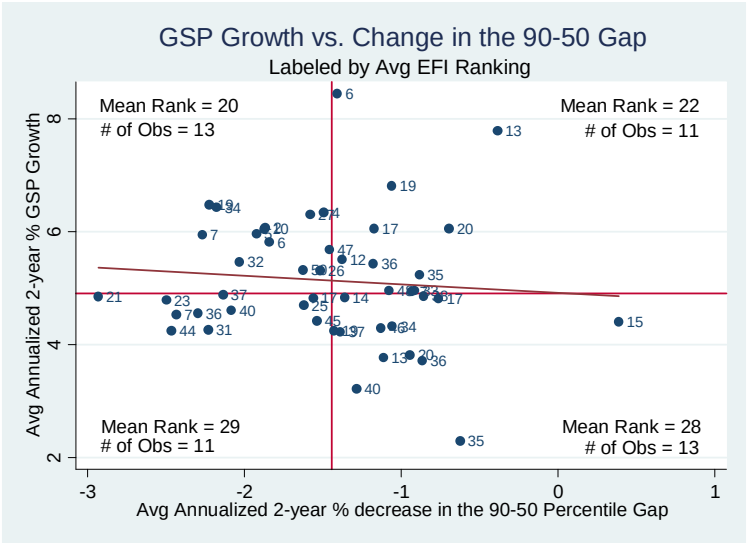
Table 5: Summary of Regressions for Changes in Poverty and Income Inequality, Different Windows for Dependent Variables

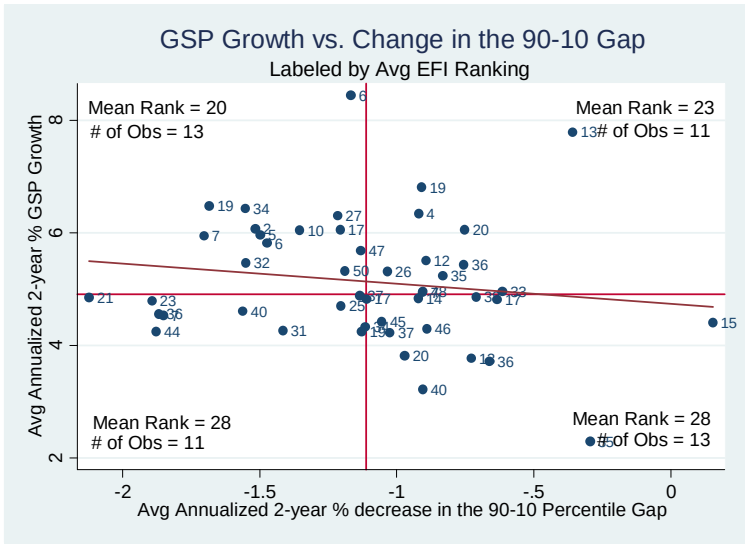
		Poverty	50-10	90-50	90-10	10th	50th	90th
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
SNEI	Mean	-0.030	-0.213	0.637	**0.353**	0.471	-0.014	**0.357**
	Range	[-0.071,0.041]	[-1.046,0.268]	[0.197,1.146]	**[0.033,0.859]**	[-0.759,1.356]	[-0.431,0.446]	**[0.079,0.848]**
	Sig. (+)/Sig. (-)	0/0	0/1	0/0	**1/0**	0/0	0/0	**1/0**
DRCS-P	Mean	**0.072**	**-0.396**	0.106	-0.064	-0.519	**-0.412**	-0.104
	Range	**[0.023,0.139]**	**[-0.493,-0.297]**	[0.05,0.193]	[-0.117,0.037]	[-1.042,-0.181]	**[-0.485,-0.32]**	[-0.134,-0.064]
	Sig. (+)/Sig. (-)	**1/0**	**0/1**	0/0	0/0	0/0	**0/1**	0/0
DRCS-DC	Mean	0.045	-0.208	0.184	0.050	**-1.012**	**-0.394**	-0.061
	Range	[0.042,0.047]	[-0.293,-0.107]	[-0.141,0.490]	[-0.176,0.296]	**[-1.193,-0.790]**	**[-0.407,-0.379]**	[-0.261,0.126]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	**0/1**	**0/2**	0/0
DRCS-BV	Mean	-0.058	-0.008	-0.167	-0.114	-0.332	-0.086	-0.131
	Range	[-0.101,0.004]	[-0.236,0.159]	[-0.190,-0.132]	[-0.209,-0.025]	[-0.651,-0.166]	[-0.207,0.067]	[-0.196,-0.036]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SCI	Mean	0.053	-0.215	-0.113	-0.156	-0.521	**-0.273**	-0.185
	Range	[0.042,0.065]	[-0.308,-0.096]	[-0.264,0.014]	[-0.216,-0.104]	[-0.641,-0.358]	**[-0.366,-0.157]**	[-0.227,-0.147]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	0/0	**0/1**	0/0
Productivity/quality-of-life indexes	Mean	0.016	-0.208	0.129	0.014	-0.383	-0.236	-0.025
	Sig. (+)/Sig. (-)	1/0	0/2	0/0	1/0	0/1	0/3	1/0
SBTC	Mean	-0.102	0.131	0.173	0.162	0.305	0.155	0.175
	Range	[-0.128,-0.065]	[-0.031,0.364]	[-0.255,0.530]	[-0.151,0.366]	[-0.057,0.719]	[0.056,0.314]	[-0.130,0.385]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SBSI	Mean	0.003	**0.182**	-0.033	0.041	-0.100	0.118	0.030
	Range	[-0.015,0.031]	**[0.104,0.334]**	[-0.131,0.036]	[-0.049,0.134]	[-0.202,-0.026]	[0.073,0.198]	[-0.047,0.102]
	Sig. (+)/Sig. (-)	0/0	**1/0**	0/0	0/0	0/0	0/0	0/0
CDBI	Mean	-0.037	0.342	-0.126	0.033	-0.049	**0.235**	0.015
	Range	[-0.095,0.074]	[0.14,0.516]	[-0.222,-0.078]	[0.013,0.067]	[-1.345,0.619]	**[0.052,0.410]**	[-0.120,0.106]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	0/0	**1/0**	0/0
EFI	Mean	0.094	**1.036**	0.723	**0.786**	**-1.904**	0.243	**0.491**
	Range	[0.017,0.167]	**[0.099,1.877]**	[0.204,1.063]	**[0.142,1.302]**	**[-3.584,-1.054]**	[-0.218,0.568]	**[0.009,0.756]**
	Sig. (+)/Sig. (-)	0/0	**2/0**	0/0	**2/0**	**0/1**	0/0	**1/0**
EFINA	Mean	0.017	0.063	0.043	0.044	-0.053	0.041	0.031
	Range	[0.012,0.021]	[0.046,0.089]	[0.019,0.069]	[0.033,0.057]	[-0.095,0.011]	[0.024,0.061]	[0.021,0.046]
	Sig. (+)/Sig. (-)	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Tax and cost indexes	Mean	-0.005	0.351	0.156	0.213	-0.360	0.158	0.148
	Sig. (+)/Sig. (-)	0/0	3/0	0/0	2/0	0/1	1/0	1/0

Notes from Table 6 apply. This table summarizes information for the specifications in Table 4, and two alternative specifications defining the windows for the calculation of the changes in the inequality measures to 1-year and 3-year windows. For each inequality measure and index, the table reports the mean of the point estimates of the coefficient of the business cycle index over these three specifications, the range of the estimates, and the number of significant positive or negative estimates (at the 10-percent level or less). The shaded rows collect the results for the productivity indexes, and the tax-and-cost indexes. The bold entries are those where there is at least one significant estimate, and the estimates are all of the same sign.

Figure 1: Relationships between Economic Growth, Change in Inequality, and Rankings EFI Business Climate Index







GSP growth is computed over the 1992-2008 period. Index averages are computed over all available years in this period. Note that the horizontal axis is the negative of the increase in inequality. The plotting symbols are rankings in the indexes, with 1 being the highest ranked ("lowest taxes").

Appendix A: Information on Components of Business Climate Indexes

Table A1 gives more detail on the content of the indexes, grouping our 14 policy categories into three broad classes: taxes and costs; productivity and quality of life; and other. We then show the weights that each index puts on the 14 categories as well as the broad class. Note that we group "welfare and transfer payments" with taxes and costs even though in general we think that the outcomes of these policies contribute to quality of life. Indeed, they sometimes appear as components of the productivity/quality-of-life indexes. Net of the income distribution, higher welfare and transfer payments implies more redistribution via taxes. The latter implies more deadweight loss from taxation and, more importantly, more work disincentives, which can clearly lower the level of economic activity. This grouping of welfare and transfer payments with taxes and costs is consistent with two of the last five indexes in Table A1 capturing both welfare and transfer payments and other measures of taxes or costs of doing business.

Table A2 shows the correlations of the indexes, after they have been averaged over time and across states. Among the productivity indexes, the correlations are positive and generally large. On the other hand, the correlations of these five indexes with the five tax-and-cost indexes are mostly negative, and in many cases (especially when they are not negative) quite small. Conversely, the correlations among the latter fives indexes are uniformly positive, and again quite large.

The correlations (and cluster analysis reported in Kolko et al., 2013) suggest that there are two distinct clusters of indexes. The first includes the SNEI, DRCS-P, DRCS-DC, DRCS-BV, and SCI indexes. The second distinct cluster includes the SBTC, SBSI, CDBI, EFI, and EFINA indexes.

Table A1: Distribution of Weights of Components of Business Climate Indexes (%)

	Productivity/quality-of-life					Taxes and costs of doing business				
	SNEI	**DRCS-P**	**DRCS-DC**	**DRCS-BV**	**SCI**	**SBTC**	**SBSI**	**CDBI**	**EFI**	**EFINA**
Taxes and costs	*0.0*	*0.0*	*4.0*	*0.0*	*20.9*	*100.0*	*94.1*	*100.0*	*100.0*	*100.0*
Cost of doing business (excluding taxes)			4.0		9.3		8.8	80.0	1.3	22.2
Size of government					7.0		8.8		14.7	22.2
Tax rates and tax burden					2.3	100.0	47.1	20.0	19.2	33.3
Regulation and litigation							29.4		40.5	
Welfare and transfer payments					2.3				24.3	22.2
Productivity/quality-of-life	*90.4*	*80.0*	*92.0*	*75.0*	*65.1*	*0.0*	*5.9*	*0.0*	*0.0*	*0.0*
Quality of life		20.0	12.0		23.3		2.9			
Equity		20.0								
Employment, earnings and job quality		40.0			4.7					
Business incubation	25.1		20.0	52.5	9.3					
Human capital	3.4		20.0		7.0					
Infrastructure			20.0		2.3		2.9			
Technology, knowledge jobs, and digital economy	61.8		20.0	22.5	18.6					
"Other"	*9.6*	*20.0*	*4.0*	*25.0*	*14.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Resource efficiency / environment		20.0	4.0		7.0					
External sector	9.6			25.0	7.0					

See notes to Table 1 for more details on the indexes; the categories listed here correspond to the third column of that table. To get the percentages shown, we began with the list of variables in each index and assigned to each variable a weight according to each index's methods. SBSI weights each variable equally in the index, and CDBI and SNEI each assign different weights to each variable in the index. The other indexes create sub-indexes: variables are weighted equally in each sub-index, and then the sub-indexes are either weighted equally (DRCS-P, DRCS-DC, DRCS-BV, SCI, and EFINA) or are assigned different weights (EFI) in the final index. Even within an index with equally weighted sub-indexes containing equally weighted variables, each variable's weight in the final index depends on the number of variables in its sub-index. All of the SBTC variables fall under the "tax rates and tax burden" category, making it unnecessary to replicate the index's weighting scheme for this table.

Table A2: Correlations of Average Indexes across States, 1992-2009

	SNEI	DRCS-P	DRCS-DC	DRCS-BV	SCI	SBTC	SBSI	CDBI	EFI	EFINA
SNEI	1									
DRCS-P	0.56*	1								
DRCS-DC	0.76*	0.72*	1							
DRCS-BV	0.72*	0.30*	0.58*	1						
SCI	0.61*	0.75*	0.77*	0.31*	1					
SBTC	-0.12	-0.05	-0.12	-0.24	0.18	1				
SBSI	-0.17	-0.11	-0.13	-0.09	0.04	0.79*	1			
CDBI	-0.65*	-0.29*	-0.30*	-0.37*	-0.12	0.25	0.39*	1		
EFI	-0.30*	-0.01	-0.15	-0.17	0.19	0.55*	0.54*	0.66*	1	
EFINA	0.04	-0.01	0.03	0.26	0.10	0.41*	0.61*	0.33*	0.60*	1

Table reports correlations of the average across years for each index. * indicates statistically significantly different from zero at the 5-percent level. All 50 states are included.

Appendix B: Descriptive Statistics for Outcome Measures

Table B1: Descriptive Statistics for Inequality Measures

Variable	Source	N	Mean	Std. dev.	Min.	Max.
Percentage Point Change						
Poverty	CPS ASEC	720	-0.115	0.973	-5.59	3.65
Growth Rates in Inequality Measures						
50-10 Differential	CPS ASEC	720	0.305	4.42	-15.31	16.55
90-50 Differential		720	1.48	5.30	-17.14	20.28
90-10 Differential		720	1.13	3.81	-10.41	15.29
10^{th} Percentile		720	-0.417	8.23	-27.73	26.44
50^{th} Percentile		720	0.218	3.46	-11.03	11.92
90^{th} Percentile		720	1.01	3.44	-8.93	13.60
Economic growth measures (rates)						
Employment	BLS-QCEW	720	1.63	1.55	-2.17	8.26
Gross State Product (GSP)	BEA	480	5.14	1.96	0.717	13.44

Change in poverty rates are annualized two-year percentage point changes and income differential and percentile growth rates are annualized two-year percent changes (2011 dollars based on the CPI), in all cases multiplied by 100. Employment and GSP growth (nominal) are also annualized two-year percent changes. The descriptive statistics in this table cover 1992-2008 for all outcomes. In the regressions in tables that follow, subsets of the observations are used, depending on the years in which an index is available. Alaska and Hawaii are excluded from the descriptive statistics as well as the regressions that follow because some of the control variables are unavailable; however, they are included in the industry composition effect calculation. "Mean" refers to the unweighted average of state values for each variable.

Appendix C: Analysis of EFI Sub-Indexes

Table C1: Economic Freedom Index (EFI) Sub-Indexes

	Description / variables included	Sub-index weight
Fiscal sub-index	Average days required for work to cover taxes; per capita state tax revenue; per capita state and local property tax revenue; tax burden on high income families; per capita state government death and gift tax revenue; per capita state government severance tax revenue; personal income taxes; sales taxes; excise taxes; license taxes; corporate taxes; state debt; tax exemptions	34.9
Regulatory sub-index	Licensing requirements for non-health professions; licensing requirements for health professions; continuing education requirements for selected professions; percent land owned by federal government; purchasing regulations; public school regulation; labor legislation; full-time-equivalent employees of state public utilities commissions; corporate constituency statutes; property rights legislation; strictness of state gun laws; state seat belt laws; state provisions for minimum age for driver's licenses; full-time-equivalent employees of insurance regulation organization; state legislation regarding environmental health	34.2
Welfare spending sub-index	Per capita state and local welfare spending; percent of population receiving public aid; Medicare benefit payments per enrollee; per capita Medicaid spending; average monthly Food Stamp benefit per recipient; monthly TANF benefit for family of three; average monthly benefit per participant for Women, Infants, and Children Special Nutrition Program; commodity costs of National School Lunch Program per participant	37.3
Government size sub-index	State and local total expenditures as a percent of GSP; size of government workforce; citizen representation (avg. of total number of government units, and legislators per million people)	6.3
Judicial	Number of resident active attorneys; Attorney General salary; judges' compensation; judges' terms; judges' selection method; state has Illinois Brick Repealer statutes (which restrict anti-trust suits); tort reform; medical-liability reform	-12.6

Sub-index weights described are for 2004; sub-index weighting was different in 1999. The sub-indexes are weighted according to a principal components analysis, and the negative weight on the judicial sub-index presumably reflects a weak or negative correlation with other EFI sub-indexes.

Table C2: Regressions for Changes in Poverty, Income Percentile Differentials, and Income Percentiles, on Sub-Indexes of Economic Freedom Index

	Poverty	50-10 Differential	90-50 Differential	90-10 Differential	10th Percentile	50th Percentile	90th Percentile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fiscal sub-index	0.115	0.917	0.777	0.837	-3.144**	-0.046	0.437
	(0.126)	(0.663)	(0.835)	(0.610)	(1.227)	(0.494)	(0.512)
	[0.197]	[1.573]	[1.333]	[1.436]	[-5.393]	[-0.079]	[0.750]
Regulatory sub-index	0.022	-0.308	-0.068	-0.157	0.382	-0.110	-0.093
	(0.094)	(0.499)	(0.740)	(0.440)	(1.376)	(0.408)	(0.388)
	[0.035]	[-0.484]	[-0.107]	[-0.247]	[0.601]	[-0.173]	[-0.146]
Welfare spending	0.088	0.287	1.308*	0.922*	0.486	0.365	0.890**
sub-index	(0.163)	(0.611)	(0.727)	(0.489)	(1.096)	(0.399)	(0.430)
	[0.130]	[0.424]	[1.933	[1.362]	[0.718]	[0.539]	[1.32]
Government size	-0.185*	0.878*	-0.655	-0.163	0.144	0.582	-0.173
sub-index	(0.097)	(0.504)	(0.460)	(0.323)	(0.836)	(0.360)	(0.266)
	[-0.307]	[1.457]	[-1.087]	[-0.270]	[0.239]	[0.966]	[-0.287]
Judicial sub-index	0.121	0.598	0.377	0.484	-1.456	0.058	0.255
	(0.103)	(0.591)	(0.609)	(0.376)	(0.885)	(0.422)	(0.319)
	[0.238]	[1.175]	[0.741]	[0.951]	[-2.860]	[0.114]	[0.501]
R^2	0.197	0.310	0.146	0.210	0.150	0.291	0.196
N	96	96	96	96	96	96	96

Notes to Table 5 and C1 apply. The sub-indexes aggregate up to the "parent" index, so when we substitute the full set of sub-indexes for the index, we do not omit other policies included in the index (although the weighting of specific policies is fixed).

Appendix D: Sensitivity Analysis

We carried out several sensitivity tests or additional analyses to assess the validity of the results. Table D1 shows a summary of the results from these sensitivity analyses, paralleling the shaded areas in Table 5 in the main text. First, because some of the productivity/quality-of-life indexes include components that we consider outcomes rather than policy factors that affect outcomes, we re-calculate these indexes and generate modified indexes stripped of the outcome components.[15] Our regression results changed little with these modified indexes, which is perhaps not surprising since the indexes in the productivity cluster generally showed no positive relationships with changes in inequality.

Second, we re-ran our baseline models substituting some continuous control variables for the Census region dummy variables. This gives us richer variation within regions that is more interpretable. In particular, we used the share of the population with a high-school degree or more (from the 1990 Census), the share of the state's U.S. House delegation in 1991 that was Democratic, and the Democratic share of the presidential vote in the state in 1992. The first captures baseline skill or education differences, and the latter two capture baseline political ideology that may shape policy in ways not captured by the indexes. We did not include these controls in our core models because they may, to some extent, reflect policy, and hence over-control for the policies captured in the business climate indexes. The Democratic vote share and the education variables are generally associated with declines in inequality along at least some metrics.[16] For the productivity/quality-of-life indexes, there are more significant effects of the indexes once these controls are included, but the sign pattern is still inconsistent,

[15] Examples are: the employment growth measures, unemployment rate, involuntary part-time employment, and pay measures in the DRCS-P index. We were able to generate the three DRCS indexes omitting the outcome components. We were unable to construct a modified SNEI index because we could not fully reconstruct the index from the reported sub-indexes, and it is the sub-indexes from which components are stripped out before re-aggregating to a modified index. We were also unable to construct a modified SCI index because data on sub-indexes or underlying components are not available.

[16] For example, in the regressions with annualized two-year changes in poverty, the average coefficient on the Democratic share of the House delegation across all business climate index specifications is −0.012, and the coefficient is statistically significant for the DRCS-DC index. The Democratic vote share has an average coefficient of −0.612 in the regressions with the two-year change in the 90-50 gap; this coefficient is statistically significant in the specifications with the SNEI and the CDBI indexes. The education control tends to have a negative relationship with changes in the 90-10 gap, with an average coefficient of −0.059 across specifications. Outside of this, education does not have a consistent sign across the multiple specifications for each of the seven equity outcomes.

giving no clear indication that higher rankings on these indexes are associated with declining inequality. For the tax-and-cost indexes, the evidence that higher rankings are associated with rising inequality is weakened, with only one significant estimate for the 50-10 differential remaining (compared with three for the 50-10 differential and two for the 90-10 differential in Table 5).

The smaller positive effects of the tax-and-cost indexes when including the Democratic share variables is consistent with a negative correlation between the indexes and the Democratic shares, so that a low Democratic share is likely associated with other policies and factors that lead to rising inequality. Since business climate indexes are clearly imperfect measures of the bundle of relevant policies, we do not want to interpret the effect of "policy" as only the effect of the business climate indexes conditional on the controls we have added. Perhaps the more important point is that the results line up with what we might expect the relationship to be between political culture, policy, and changes in inequality.

Third, we re-ran our baseline models including state fixed effects. As expected from the high correlation of business climate indexes for states over time, standard errors increased considerably and some of the estimates were implausibly large. Nonetheless, there is still quite a bit of evidence that higher rankings on the tax-and-cost indexes are associated with growth in the 50-10 differential.

Fourth, we estimated the models dropping the controls for geographic factors and industry composition. The inclusion of these variables is more clearly motivated in the analysis of economic growth, although there is some rationale for including them in the models for changes in inequality, and there was some value in seeing estimates for comparable specifications across the growth and equality outcomes. Interestingly, dropping the controls leads to stronger evidence that higher rankings on the productivity/quality-of-life indexes reduce inequality. However, the evidence also suggests that this occurred mainly through reductions in the 50^{th} and 90^{th} percentiles of income. And even more so, dropping these controls strengthens the evidence that higher rankings on the tax-and-cost indexes are associated with faster growth in inequality, with far more specifications (10) now pointing in that direction with statistically significant evidence, and none in the opposite direction. In addition, this appears to come through declines in the 10^{th} percentile of income, and increases in the 50^{th} and 90^{th}

percentiles. We are reluctant to draw strong conclusions regarding the productivity/quality-of-life indexes based on these specifications, given the results from the specifications with the controls. The stronger conclusion, we think, is that these specifications further cement the conclusion that the tax-and-cost indexes are associated with faster growth in inequality.

Finally, one concern in interpreting the evidence is that the causality could go the other way, especially for the tax-and-cost indexes. To assess this, we estimated regressions asking whether the policies captured by the indexes respond to earlier growth in inequality. For each index, we divided the years available (as closely as possible into half) into "early" and "late" years. We then estimated regressions of the average values of the index for the late years, in each state, on the average values for the early years, and the change in inequality measure (annualized) over those same early years. If the policies captured by the indexes are endogenous, we might expect significant coefficients on early increases in inequality – for example, with earlier increases leading to lower taxes in the future, providing an alternative explanation of our main result. There was no case in which the estimated coefficient of the early change in inequality was statistically significant, and seven out of the ten estimates were negative, suggesting that – if anything – increases in inequality lead to higher taxes (a lower ranking on tax-and-cost indexes), implying a bias against our finding.[17]

[17] These results are available from the authors upon request.

Table D1: Sensitivity Analyses of Regressions for Changes in Poverty, Income Percentile Differentials, and Income Percentiles

		Poverty	50-10	90-50	90-10	10th	50th	90th
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Outcomes stripped from productivity/quality-of-life indexes								
Productivity/quality	Mean	0.024	-0.134	0.026	-0.028	-0.577	-0.240	-0.083
of life indexes	Sig. (+)/Sig. (-)	0/0	0/1	0/0	0/0	0/1	0/3	0/0
Tax and cost indexes	Mean	--	--	--	--	--	--	--
	Sig. (+)/Sig. (-)	--	--	--	--	--	--	--
B. Substituting education and Democratic vote share variables for Census region dummy variables								
Productivity/quality	Mean	-0.001	-0.071	0.199	0.107	-0.354	-0.127	0.062
of life indexes	Sig. (+)/Sig. (-)	0/2	2/2	2/0	0/0	0/0	0/3	0/0
Tax and cost indexes	Mean	-0.009	0.195	0.051	0.093	-0.340	0.060	0.044
	Sig. (+)/Sig. (-)	0/0	1/0	0/0	0/0	0/1	0/1	0/0
C. Include fixed state effects								
Productivity/quality	Mean	-0.023	0.301	-0.09	0.018	0.041	0.201	0.005
of life indexes	Sig. (+)/Sig. (-)	0/1	1/0	1/1	0/1	0/0	0/0	1/1
Tax and cost indexes	Mean	-0.118	1.756	-0.593	0.208	-1.818	0.878	0.023
	Sig. (+)/Sig. (-)	0/1	4/0	0/2	0/0	0/1	2/0	0/0
D. Drop geographic factors and industry composition variable								
Productivity/quality	Mean	0.006	-0.238	0.063	-0.042	-0.248	-0.232	-0.062
of life indexes	Sig. (+)/Sig. (-)	0/0	0/3	1/0	0/2	0/0	0/4	0/3
Tax and cost indexes	Mean	0.003	0.477	0.163	0.266	-0.240	0.293	0.209
	Sig. (+)/Sig. (-)	0/0	7/0	1/0	2/0	0/2	6/0	2/0

Notes from Tables 3 and 5 in the main text apply. For each specification, the same summary measures (although not the range) are reported as in Table 5. Specifications are as in Tables 4 and 5 in the main text with the exceptions noted in each panel.