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Fiscal Policy, Consumption Risk, and Stock Returns: Evidence from U.S. States

Zhi Da, Mitch Warachka, and Hayong Yun*

Abstract

We find that consumption risk is lower in states that implement countercyclical fiscal policies. Moreover, firms with an investor base that is concentrated in countercyclical states have lower stock returns, along with firms that relocate their headquarters to a countercyclical state. Therefore, countercyclical fiscal policies lower the consumption risk of investors and, consequently, their required equity return premium. This conclusion is confirmed by smaller declines in market participation during recessions in countercyclical states. Overall, the location of a firm's investor base enables state-level fiscal policy to influence stock returns.

I. Introduction

The controversies surrounding fiscal policy usually involve its macroeconomic implications for unemployment or investment. In contrast, we investigate the impact of fiscal policy at the state level on stock returns. Our study provides two novel empirical findings regarding consumption-based asset pricing in a market with imperfect risk sharing among investors. First, countercyclical fiscal policies lower consumption risk. Second, firms with an investor base that is

*Da, zda@nd.edu, University of Notre Dame Mendoza College of Business; Warachka (corresponding author), mwarachka@sandiego.edu, University of San Diego School of Business; and Yun, yunha@broad.msu.edu, Michigan State University Broad College of Business. We thank Jennifer Conrad (the editor) and Mariano Croce (the referee) for helpful comments. We also thank Bo Becker, Frederico Belo, Effi Benmelech, Michael Brennan, Cristina Cella, Henrik Cronqvist, Phillip Dybvig, Antonio Fatas, Wayne Ferson, Francisco Gomes, Klaus Grobys, Harrison Hong, Eric Hughson, Christian Julliard, Andrew Karolyi, Roger Loh, Dong Lou, Joel Peress, Jeff Pontiff, Lucio Sarno, Ivan Shaliastovich, Richard Smith, Jiang Wang, Tracy Wang, Scott Weisbenner, Shu Yan, and Fan Yu for their comments as well as participants at the 2013 Sun Trust Beach Conference, the 2013 Financial Intermediation Research Society (FIRS) conference, the 2013 Rothschild Caesarea Center Conference, the 2013 China International Conference in Finance, the 2013 Auckland Finance Meeting, the 2012 European Finance Association Meeting, the 2011 Financial Research Association Meeting, and the 2011 Center for Economic Policy Research (CEPR) Summer Symposium in Gerzensee. We thank George Korniotis for providing us with state-level retail sales data and Diego Garcia for providing us with data on the state-level operations of firms. We also thank Hojong Shin for his excellent research assistance. Some of the data used in our analysis are derived from the Restricted Data Files of the Panel Study of Income Dynamics, obtained under special contractual arrangements designed to protect the anonymity of respondents. These data are not available from the authors.

concentrated in countercyclical states have lower stock returns. Intuitively, state-level fiscal policy impacts the consumption risk of investors and, consequently, their required equity return premium.

Our results are consistent with state governments financing consumption during recessions through their budget deficits. For example, tax reductions during a recession can finance consumption that otherwise would have required investors to sell a larger portion of their equity portfolio or invest less in the equity market. Without this countercyclical fiscal policy, investors may require a higher equity return premium as compensation for their higher consumption risk. Ricardian equivalence (Barro–Ricardo equivalence theorem) disputes the ability of government budget deficits to stabilize consumption because government debt issuance increases expected taxes. However, household borrowing constraints and difficulties hedging income shocks allow fiscal policy to influence consumption.[1] The ability of state governments to issue debt also differs from that of the federal government. Because state governments are constrained by their respective balanced-budget amendments, many states have adopted budget stabilization funds that accumulate precautionary savings to facilitate countercyclical fiscal policies.

A state's fiscal policy is identified by the sensitivity of its budget deficit (surplus) to state-level economic growth. Specifically, we estimate state-level fiscal policy betas to identify variation in fiscal policy across states. We also estimate a predicted fiscal policy beta for each state based on the deposit rules of its budget stabilization fund and its frequency of having a Democratic governor. Countercyclical states are more likely to accumulate precautionary savings through stringent deposit rules and are more likely to elect a Democratic governor.[2]

We find that consumption declines less during bust periods in countercyclical states. A bust period for a state is defined as negative economic growth relative to the prior year. A 1-standard-deviation fluctuation in the fiscal policy beta results in consumption declining 1.47% less during bust periods in the countercyclical state. Thus, consumption risk is lower in countercyclical states. Moreover, consumption in the 5 most procyclical states is 34% more volatile than consumption in the 5 most countercyclical states. This cross-sectional variation in consumption is consistent with imperfect risk sharing within the United States.

The local-investment-bias literature (Coval and Moskowitz (1999)) documents the tendency of investors to overweight nearby firms. Pirinsky and Wang (2006) find evidence of return comovement attributable to correlated trading among investors in the same location. Korniotis and Kumar (2013) and Kumar, Page, and Spalt (2012) confirm that the trades of local investors are

[1]Heaton and Lucas (1992), (1996) demonstrate the importance of borrowing constraints and incomplete insurance. Lucas (1994) notes that investors self-insure against transitory shocks to labor income through precautionary savings. However, Brav, Constantinides, and Geczy (2002) find evidence that consumption is not completely insured, whereas Storesletten, Telmer, and Yaron (2004) find that precautionary savings provide inadequate insurance against a prolonged negative income shock (unemployment).

[2]Tuzel and Zhang (2017) estimate local betas for metropolitan areas based on their industrial composition. However, these local risk factors are motivated by immobile assets such as real estate whose markets clear at the metropolitan level, not differences in the fiscal policy of metropolitan areas.

correlated and, consequently, that a firm's cost of equity depends on its headquarters location.[3]

We initially compute a firm-level local-investment-bias measure that captures the sensitivity of a firm's investor base to the fiscal policy of the state in which its headquartered. We find that the combination of local investor bias and a countercyclical fiscal policy lowers equity returns. State-level political uncertainty cannot explain this finding. In terms of economic significance, a 0.70% annual difference in their cost of equity is attributable to a fluctuation in the fiscal policy beta of 1 standard deviation. The difference in the average fiscal policy beta of the 5 most countercyclical states versus the 5 most procyclical states produces a return difference of 2.59% per year. Headquarters relocations confirm the importance of state-level fiscal policy to returns because firms relocating to a more countercyclical state subsequently have lower stock returns.

We then aggregate the state-level fiscal policy betas across investors to estimate the fiscal policy of each firm's investor base. This aggregate fiscal policy beta is computed using the dollar-denominated holdings of all institutional investors in a firm and the fiscal policy beta associated with their respective state locations. Using the aggregate fiscal policy betas, we find that firms have lower stock returns if their investor base is concentrated in countercyclical states. Predicted fiscal policy betas, which condition on state-level budget-stabilization fund-deposit rules and the political affiliation of state governors, confirm that countercyclical fiscal policies lower stock returns.

Two channels enable countercyclical fiscal policies to influence stock returns: a discount-rate channel and a cash-flow channel. Both of these channels originate from geographic segmentation. The discount-rate channel arises from the location of investors, whereas the cash-flow channel arises from the location of customers. The importance of investor location to the relation between fiscal policy and stock returns supports the discount-rate channel. State-level market participation lends further support to the discount-rate channel. Specifically, participation in the equity market declines less during recessions in countercyclical states and exhibits less variation over time.

Nonetheless, by smoothing the consumption of households (including non-investors), countercyclical fiscal policies can stabilize firm-level cash flow. However, unlike consumption, cash flow does not decline less during bust periods for firms headquartered in more countercyclical states. Using the data of Garcia and Norli (2012), we construct firm-level cash-flow betas by weighting the state-level fiscal policy betas by the fraction of a firm's operations in each state. We find that the ability of these cash-flow betas to explain returns is limited to firms that operate in a single state. Intuitively, the influence of state-level fiscal policy on cash flow is mitigated by firms having diversified operations across several states. Korniotis and Kumar (2013) also conclude that a firm's cost of capital depends on the discount-rate channel instead of the cash-flow channel.[4]

[3]The economic justification for the local investment bias has been attributed to informational advantages (Ivković and Weisbenner (2005)), familiarity (Huberman (2001)), and social interactions (Hong, Kubik, and Stein (2005), Ivković and Weisbenner (2007)).

[4]Weak empirical support for the cash flow channel in our sample of public firms does not necessarily imply its irrelevance. With access to the public equity market, firms can expand and lower

Although Korniotis and Kumar (2013) do not examine the role of fiscal policy, an extensive literature on fiscal policy precedes our empirical study. Poterba (1994) examines cross-sectional variation in fiscal policy across states. However, this study does not examine its implications for consumption risk or stock returns. Moreover, the existing literature that studies the consumption implications of fiscal policy typically focuses on specific stimulus programs initiated by the federal government during recessions. Parker, Souleles, Johnson, and McClelland (2013) report that stimulus payments during the 2008 financial crisis increased household consumption, and Johnson, Parker, and Souleles (2006) document increased consumption following the 2001 tax rebates. In contrast, we focus on the cross-sectional relation between state-level fiscal policy and consumption risk, along with its implications for stock returns.

Our study of state-level fiscal policy mitigates the policy and tax uncertainty induced by intervention in the economy by the federal government. Pastor and Veronesi (2012) examine the impact of government policy uncertainty on asset prices. Pastor and Veronesi (2013) estimate a risk premium for government policy uncertainty, and Kelly, Pastor, and Veronesi (2016) find empirical evidence that political uncertainty increases the implied volatility of options. However, instead of uncertainty arising from regulatory and trade policies, the impact of countercyclical fiscal policies on tax uncertainty is more relevant to our study. Croce, Nguyen, and Schmid (2012) and Gordon and Leeper (2005) highlight the long-term cost of countercyclical fiscal policies, with Croce, Kung, Nguyen, and Schmid (2012) concluding that tax uncertainty is as important to the cost of equity as the level of taxation.

However, state-level budget stabilization funds accumulate savings before the occurrence of poor economic conditions to offset debt issuance that is constrained by balanced-budget amendments. Therefore, the countercyclical fiscal policies of state governments induce less uncertainty regarding future taxation. On average, countercyclical states have nearly identical levels of outstanding debt as procyclical states (normalized by economic output). Moreover, outstanding debt at the state level is typically below 10% of annual economic output, which is far below the federal government's ratio of debt to gross domestic product (debt–GDP ratio).

The remainder of the article is organized as follows: Section II details the estimation of fiscal policy at the state level. Section III provides our results regarding the relation between fiscal policy and consumption risk, and Section IV provides our results regarding the relation between fiscal policy and stock returns. Section V then offers our conclusions.

II. State-Level Fiscal Policy

Korniotis (2008) highlights three advantages of using state-level data to examine consumption-based asset pricing models. First, state-level data have less measurement error than individual data. Second, income shocks are not fully

their exposure to the fiscal policy of any individual state. In contrast, the sensitivity of consumption to state-level fiscal policy may reflect purchases from smaller firms whose operations are concentrated in a few states.

diversified across states. Third, there is considerable cross-sectional variation in consumption across states. Our analysis identifies another important property of using state-level data: variation in fiscal policy.

Although our cross-sectional tests are limited to 50 states, international studies often involve fewer countries, and their conclusions are complicated by differences in labor markets as well as legal, political, and monetary institutions (Acemoglu, Johnson, Robinson, and Thaicharoen (2003)). In contrast, state-level data enable us to condition on deposit rules and political affiliations, whose definitions are comparable across states.

Nonetheless, in an international setting, Julio and Yook (2012) conclude that investment declines around national elections, and Durnev (2010) reports that investment is less sensitive to stock prices during election periods. In addition, Brogaard and Detzel (2015) construct a country-specific proxy for economic policy uncertainty and report that greater uncertainty reduces investment. Within the United States, Santa-Clara and Valkanov (2003) find that stock returns are higher during Democratic presidencies, and Belo, Gala, and Li (2013) report that the market is positively surprised by the spending policies of Democratic presidents. In contrast to their time-series methodologies, we examine the consumption and long-term return implications of government fiscal policy from a cross-sectional perspective. Thus, the motivation for our study is return variation attributable to differences in fiscal policy at the state level rather than errors in investor expectations.

To identify a state's fiscal policy, we examine the response of its budget deficit (surplus) to different economic conditions. Annual data on state government revenue and expenditures as well as the gross state product (GSP) of each state from 1965 to 2008 are obtained from the *Statistical Abstract of the United States* maintained by the U.S. Census Bureau. Our sample ends in 2008 due to the availability of state-level data.

Annual budget deficits, and consequently surpluses, are defined as follows:

$$(1) \qquad \text{DEFICIT}_{i,t} = \frac{\text{EXPENDITURE}_{i,t} - \text{REVENUE}_{i,t}}{\text{GSP}_{i,t}}.$$

When positive, this state-year observation represents a budget deficit for state i in year t. Conversely, when negative, this state-year observation represents a budget surplus. To clarify, withdrawals from a budget stabilization fund facilitate expenditures in excess of revenue that correspond to a budget deficit. For example, during the financial crisis, budget stabilization funds provided an average of 5.1% of state government expenditures. Deposits into a budget stabilization fund are included in expenditures and correspond to a smaller budget surplus in normal economic conditions.

The nature of each state's fiscal policy is estimated using the following state-level time-series regression:

$$(2) \qquad \text{DEFICIT}_{i,t} = \beta_{i,1}\text{GSP\_GROWTH}_{i,t} + \beta_{i,2}\text{GSP\_GROWTH}_{i,t-1} + \beta_{i,3}\text{DEFICIT}_{i,t-1} + \epsilon_{i,t},$$

based on GSP growth in state i between year t and $t-1$. Because economic conditions and budget deficits are autocorrelated, equation (2) includes a state's lagged

GSP growth and lagged budget deficit. The inclusion of additional lags does not change our results. Svec and Kondo (2012) estimate a regression specification that is similar to equation (2), but their study does not investigate the impact of fiscal policy on consumption or stock returns.

The $\beta_{i,1}$ coefficient, which measures the sensitivity of a state's government budget deficit (surplus) to contemporaneous economic growth, defines state i's fiscal policy beta. Hereafter, we abbreviate the fiscal policy beta of state i as FPB_i. Because state governments can implement countercyclical fiscal policies by lowering taxes or increasing expenditures, the dependent variable DEFICIT focuses on their difference. Nonetheless, certain government expenditures may exert a greater impact on stock returns. For example, Belo and Yu (2013) find a positive relation between government expenditures on public-sector capital and stock returns.[5]

We also include the contemporaneous state-level unemployment rate and personal income growth as additional control variables in equation (2). We then define the alternative fiscal policy beta as the $\beta_{i,1}$ coefficient in this enhanced specification. Our later empirical results are consistent using both the original and alternative fiscal policy betas. The alternative fiscal policy beta denoted ALTERNATIVE_FPB that accounts for a state's unemployment rate and personal income has a 0.532 correlation with the original fiscal policy beta from equation (2). The similarity between these fiscal policy betas and their implications for consumption risk as well as returns is consistent with GSP growth providing a sufficient economic signal to guide government policy.

Panel A of Table 1 sorts the state-level FPBs from lowest to highest, with the average FPB being −0.014. A comparison of the 5 most countercyclical states and 5 most procyclical states indicates that their average fiscal policy betas equal −0.239 and 0.206, respectively. This 0.445 difference is highly significant.

For emphasis, only a relative ranking of state-level fiscal policy is required for our analysis.[6] The actual magnitude, and hence significance, of an individual state's fiscal policy beta is irrelevant to our later empirical tests. Furthermore, fiscal policy is evaluated as a time-invariant state characteristic because our objective is to investigate the cross-sectional relation between fiscal policy and equity returns over the long term. Nonetheless, we estimate the fiscal policy betas in 2 subperiods: from 1964 to 1985 and from 1986 to 2009. In unreported results available from the authors, the correlation in the fiscal policy betas across these 2 subperiods equals 0.580. This correlation is higher, 0.746, for the alternative fiscal policy beta. Therefore, the fiscal policy betas exhibit limited variation over time.

The bottom of Panel A in Table 1 reports on the difference in state characteristics between the most countercyclical and the most procyclical states as well as the correlation between these characteristics and the fiscal policy betas. Although the statistical significance of these differences and correlations is not reported in Table 1, these characteristics are utilized later in formal empirical specifications.

[5]In unreported results, removing the government expenditure component from GSP produces nearly identical fiscal policy betas to those reported in Table 1.

[6]Therefore, any bias in the state-level fiscal policy betas due to the correlation between GSP growth and budget deficits (GSP growth and personal income in the alternative fiscal policy betas) is unlikely to affect our conclusions.

TABLE 1
State-Level Fiscal Policy

Panel A of Table 1 reports on the state-level fiscal policy betas (FPB) in equation (2) that measure the sensitivity of annual budget deficits to economic growth (GSP_GROWTH):

$$\text{DEFICIT}_{i,t} \quad = \quad \beta_{i,1}\text{GSP\_GROWTH}_{i,t} + \beta_{i,2}\text{GSP\_GROWTH}_{i,t-1} + \beta_{i,3}\text{DEFICIT}_{i,t-1} + \epsilon_{i,t}.$$

A state's budget deficit is computed according to equation (1). The fiscal policy beta of state i equals $\beta_{i,1}$. An alternative fiscal policy beta is estimated by including a state's unemployment rate and its growth in personal income as independent variables in equation (2). Panel A also reports the fraction of the sample period that each state's economic growth is negative (BUST) and its governor is a Republican. Political uncertainty is measured by the number of transitions in the political affiliation of a state's governor. The stringency of the deposit rules governing each state's budget stabilization fund on a scale of 1 to 4 is then reported, followed by the volatility of the state's economic growth. Average state-level consumption growth is then reported, along with its volatility. Panel B reports summary statistics for the budget deficits of state governments, along with the correlation between their revenue and expenditures. Average revenue, expenditures, and outstanding debt normalized by gross state product (GSP) are also reported for each state. Panel C reports predicted fiscal policy betas that are estimated using equation (3):

$$\text{FPB}_i \quad = \quad \alpha_0 + \alpha_1 \text{DR}_i + \alpha_2 \text{REP\_GOV}_i + \epsilon_i.$$

This regression conditions on the stringency of the deposit rules (DR) for each state's budget stabilization fund and their frequency of having a Republican governor (REP_GOV). t-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Fiscal Policy Betas and State Characteristics

State	FPB	Alternative FPB	BUST Fraction	Fraction Republican	Political Uncertainty	Deposit Rules	GSP Volatility	Consumption Growth	Consumption Volatility
NY	−0.347	−0.402	0.022	0.286	3	4	0.030	0.049	0.040
OH	−0.312	−0.213	0.022	0.643	5	2	0.035	0.052	0.043
PA	−0.261	−0.290	0.022	0.357	5	2	0.026	0.051	0.041
IA	−0.149	−0.077	0.043	0.571	3	1	0.044	0.051	0.037
WI	−0.126	−0.285	0.022	0.429	6	3	0.031	0.054	0.044
NJ	−0.124	−0.172	0.022	0.500	7	2	0.030	0.059	0.044
CT	−0.117	−0.174	0.022	0.429	2	2	0.035	0.056	0.049
HI	−0.117	−0.138	0.000	0.154	1	1	0.041	0.071	0.071
WV	−0.115	−0.010	0.043	0.429	6	2	0.036	0.054	0.046
DE	−0.110	−0.056	0.022	0.429	4	2	0.036	0.064	0.050
MI	−0.109	−0.056	0.087	0.429	3	4	0.050	0.053	0.048
VA	−0.107	−0.161	0.000	0.857	5	4	0.029	0.068	0.050
ME	−0.091	−0.176	0.000	0.500	2	2	0.034	0.064	0.050
NV	−0.072	−0.108	0.022	0.643	5	4	0.046	0.092	0.059
GA	−0.060	−0.090	0.022	0.615	3	2	0.037	0.072	0.055
LA	−0.040	−0.062	0.087	0.692	6	2	0.067	0.062	0.055
TN	−0.038	−0.084	0.022	0.714	6	3	0.036	0.069	0.053
IL	−0.031	−0.128	0.022	0.500	4	2	0.028	0.049	0.046
SC	−0.030	−0.119	0.000	0.786	5	3	0.037	0.072	0.050
MN	−0.030	−0.145	0.022	0.143	3	1	0.036	0.059	0.046
VT	−0.027	−0.108	0.043	0.571	7	2	0.043	0.066	0.047
MA	−0.020	−0.187	0.022	0.214	4	2	0.034	0.053	0.057
NM	−0.020	−0.109	0.065	0.571	6	2	0.055	0.066	0.051
RI	−0.017	−0.097	0.000	0.214	4	1	0.031	0.053	0.055
WA	−0.012	−0.144	0.000	0.429	3	2	0.037	0.068	0.049
MT	−0.009	−0.056	0.043	0.857	3	1	0.046	0.056	0.049
IN	−0.007	−0.037	0.022	0.857	3	4	0.037	0.053	0.046
NE	−0.006	0.012	0.000	0.857	7	2	0.039	0.052	0.040
AZ	−0.004	−0.069	0.022	0.929	6	4	0.047	0.081	0.061
TX	−0.003	−0.067	0.043	0.714	5	2	0.053	0.072	0.052
KY	0.002	−0.039	0.043	0.714	4	2	0.036	0.059	0.047
AR	0.005	−0.093	0.000	0.538	5	1	0.037	0.064	0.059
AK	0.009	0.047	0.152	0.923	6	1	0.137	0.076	0.096
MO	0.011	−0.066	0.022	0.571	6	1	0.031	0.055	0.045
NH	0.014	−0.042	0.043	0.643	6	2	0.044	0.075	0.057
FL	0.031	−0.140	0.022	0.714	5	2	0.042	0.078	0.058
KS	0.050	−0.081	0.022	0.929	7	3	0.035	0.055	0.042
OK	0.055	−0.053	0.087	0.929	5	2	0.056	0.062	0.053
MD	0.055	−0.133	0.000	0.286	3	3	0.028	0.061	0.051
AL	0.066	−0.104	0.022	0.769	4	4	0.036	0.064	0.047
CA	0.068	−0.236	0.022	0.571	5	2	0.036	0.062	0.050
ID	0.076	−0.074	0.000	0.929	2	1	0.044	0.066	0.053
NC	0.099	−0.051	0.000	0.643	4	2	0.031	0.070	0.053
ND	0.101	−0.007	0.109	0.929	2	2	0.087	0.054	0.042
SD	0.121	−0.009	0.022	1.000	2	2	0.053	0.055	0.045

(continued on next page)

TABLE 1 (continued)
State-Level Fiscal Policy

Panel A. Fiscal Policy Betas and State Characteristics (continued)

State	FPB	Alternative FPB	BUST Fraction	Fraction Republican	Political Uncertainty	Deposit Rules	GSP Volatility	Consumption Growth	Consumption Volatility
OR	0.131	−0.092	0.043	0.500	3	1	0.040	0.058	0.056
WY	0.148	−0.013	0.130	0.929	3	1	0.085	0.065	0.057
UT	0.227	−0.136	0.000	1.000	2	2	0.039	0.074	0.057
CO	0.248	−0.142	0.022	0.786	3	3	0.042	0.070	0.057
MS	0.278	−0.023	0.000	0.833	3	1	0.039	0.062	0.050
Average	−0.014	−0.106	0.031	0.629	4.240	2.16	0.043	0.063	0.051
FPB correlation		0.532	0.071	0.517	−0.191	−0.216	0.243	0.295	0.261
Countercyclical	−0.239	−0.253	0.026	0.457	4.400	2.400	0.033	0.051	0.041
Procyclical	0.206	−0.081	0.039	0.810	2.800	1.600	0.049	0.066	0.055

Panel B. State Government Deficit Characteristics

			Budget Deficit						
State	FPB	Alternative FPB	Mean	Std. Dev.	Skewness	Correlation Revenue/ Expenditure	Average Revenue	Average Expenditure	Debt
NY	−0.347	−0.402	−0.004	0.017	1.610	0.411	0.301	0.289	0.095
OH	−0.312	−0.213	−0.012	0.022	3.016	0.483	0.282	0.254	0.041
PA	−0.261	−0.290	−0.004	0.016	2.535	0.497	0.259	0.247	0.050
IA	−0.149	−0.077	−0.005	0.011	1.418	0.447	0.251	0.239	0.023
WI	−0.126	−0.285	−0.011	0.027	2.238	0.228	0.264	0.240	0.054
NJ	−0.124	−0.172	−0.006	0.011	1.864	0.598	0.216	0.207	0.078
CT	−0.117	−0.174	−0.002	0.011	0.876	0.274	0.190	0.184	0.112
HI	−0.117	−0.138	0.000	0.018	1.227	0.540	0.243	0.237	0.128
WV	−0.115	−0.010	−0.008	0.011	−1.396	0.641	0.339	0.320	0.085
DE	−0.110	−0.056	−0.006	0.014	0.343	0.258	0.149	0.140	0.124
MI	−0.109	−0.056	−0.007	0.013	0.895	0.380	0.285	0.271	0.042
VA	−0.107	−0.161	−0.006	0.012	1.047	0.331	0.170	0.158	0.035
ME	−0.091	−0.176	−0.007	0.016	0.638	0.350	0.274	0.258	0.088
NV	−0.072	−0.108	−0.006	0.012	1.061	0.363	0.143	0.136	0.035
GA	−0.060	−0.090	−0.004	0.009	1.134	0.542	0.179	0.174	0.030
LA	−0.040	−0.062	−0.006	0.012	1.362	0.401	0.249	0.235	0.071
TN	−0.038	−0.084	−0.003	0.010	1.489	0.625	0.217	0.211	0.025
IL	−0.031	−0.128	−0.005	0.012	2.721	0.417	0.217	0.209	0.051
SC	−0.030	−0.119	−0.003	0.014	2.461	0.444	0.239	0.235	0.065
MN	−0.030	−0.145	−0.009	0.015	1.642	0.308	0.236	0.222	0.034
VT	−0.027	−0.108	−0.007	0.012	1.195	0.474	0.269	0.255	0.118
MA	−0.020	−0.187	0.001	0.011	1.241	0.616	0.216	0.214	0.115
NM	−0.020	−0.109	−0.017	0.023	3.038	0.465	0.263	0.241	0.053
RI	−0.017	−0.097	−0.003	0.016	1.175	0.575	0.262	0.253	0.149
WA	−0.012	−0.144	0.001	0.017	0.807	0.287	0.226	0.219	0.048
MT	−0.009	−0.056	−0.016	0.014	1.186	0.497	0.311	0.281	0.078
IN	−0.007	−0.037	−0.007	0.007	0.677	0.452	0.219	0.208	0.033
NE	−0.006	0.012	−0.004	0.012	0.091	0.629	0.262	0.250	0.025
AZ	−0.004	−0.069	−0.004	0.010	1.010	0.465	0.182	0.177	0.020
TX	−0.003	−0.067	−0.006	0.008	0.462	0.519	0.167	0.157	0.019
KY	0.002	−0.039	−0.005	0.015	1.412	0.390	0.244	0.233	0.078
AR	0.005	−0.093	−0.010	0.013	0.857	0.510	0.231	0.211	0.031
AK	0.009	0.047	−0.040	0.077	−1.561	0.141	0.447	0.360	0.162
MO	0.011	−0.066	−0.009	0.013	1.415	0.314	0.217	0.199	0.039
NH	0.014	−0.042	−0.002	0.008	0.502	0.620	0.176	0.171	0.111
FL	0.031	−0.140	−0.005	0.012	0.758	0.304	0.198	0.187	0.036
KS	0.050	−0.081	−0.006	0.010	1.464	0.493	0.233	0.221	0.021
OK	0.055	−0.053	−0.008	0.012	0.215	0.591	0.245	0.227	0.059
MD	0.055	−0.133	−0.006	0.014	0.577	0.328	0.210	0.197	0.067
AL	0.066	−0.104	−0.004	0.013	1.771	0.380	0.253	0.247	0.047
CA	0.068	−0.236	−0.007	0.018	2.310	0.375	0.237	0.223	0.044
ID	0.076	−0.074	−0.013	0.015	1.493	0.188	0.223	0.201	0.040
NC	0.099	−0.051	−0.008	0.011	2.079	0.418	0.187	0.174	0.026
ND	0.101	−0.007	−0.016	0.015	−2.242	0.449	0.287	0.256	0.048
SD	0.121	−0.009	−0.010	0.015	0.819	0.154	0.212	0.194	0.079
OR	0.131	−0.092	−0.012	0.024	2.205	0.399	0.251	0.229	0.099
WY	0.148	−0.013	−0.028	0.032	−2.745	0.590	0.303	0.247	0.046
UT	0.227	−0.136	−0.006	0.016	1.649	0.614	0.210	0.197	0.044

(continued on next page)

TABLE 1 (continued)
State-Level Fiscal Policy

Panel B. State Government Deficit Characteristics (continued)

			Budget Deficit						
State	FPB	Alternative FPB	Mean	Std. Dev.	Skewness	Correlation Revenue/ Expenditure	Average Revenue	Average Expenditure	Debt
CO	0.248	−0.142	−0.008	0.015	2.734	0.775	0.183	0.170	0.026
MS	0.278	−0.023	−0.009	0.015	1.063	0.542	0.300	0.281	0.047
Average	−0.014	−0.106	−0.008	0.016	1.117	0.442	0.238	0.223	0.061
FPB correlation		0.532	−0.223	0.040	−0.180	0.140	−0.089	−0.154	−0.178
Countercyclical	−0.239	−0.253	−0.007	0.019	2.163	0.414	0.271	0.254	0.053
Procyclical	0.206	−0.081	−0.012	0.020	0.981	0.584	0.249	0.225	0.052

Panel C. Predicted Fiscal Policy Betas

Variable	FPB	Alternative FPB
DR	−0.0386***	−0.0300***
	−16.90	*−16.13*
REP_GOV	0.2939***	0.2007***
	33.05	*29.88*
Intercept	−0.1137***	−0.1668***
	−17.79	*−43.84*
No. of obs.	2,208	2,208
Adj. R^2	0.359	0.385

Panel A of Table 1 reports that a Republican is more likely to be governor in a procyclical state based on the 0.517 correlation between FPB and the fraction of the sample period during which a state's governor is a Republican. Procyclical states are more likely to have periods of negative GSP growth according to BUST Fraction.

The fiscal policy betas have a 0.243 correlation with the volatility of economic growth and a 0.261 correlation with consumption volatility. These positive correlations suggest that countercyclical states have less variability in their economic output and consumption. We control for GSP volatility in our later empirical tests and examine consumption risk in the next section. Besides economic uncertainty, we construct a proxy for political uncertainty using the number of state-level transitions in the governor's political affiliation. The relation between a governor's political affiliation and fiscal policy is confirmed in a later empirical test.

States have adopted budget-stabilization funds to mitigate both the financial constraints imposed by their respective balanced-budget amendments and the policy uncertainty that could arise from higher budget deficits. In unreported results, state-level balanced-budget amendments were previously used to explain state-level fiscal policy. However, these budget amendments were often adopted before the U.S. Civil War. In contrast, budget-stabilization funds reflect more contemporary political decisions. Because the deposit rules governing a state's budget-stabilization fund do not vary with economic conditions, these rules are suitable instruments for state-level fiscal policy. Wagner and Elder (2005) describe the deposit rules governing these "rainy day" accounts and enumerate their stringency on a scale of 1 (weak) to 4 (strong). Along with Knight and Levinson

(1999), these authors conclude that the deposit rules of budget stabilization funds institutionalize government savings.

In practice, deposit rules usually require a minimum percentage of a state's revenue to be deposited into its budget-stabilization fund. Following withdrawals from the budget-stabilization fund, the deposit rules also specify repayment provisions to ensure the fund is replenished to a prescribed maximum. Intuitively, stringent deposit rules facilitate more countercyclical fiscal policies through the accumulation of precautionary savings.

Panel B of Table 1 summarizes the mean, standard deviation, and skewness of state-level budget deficits. Because positive values of DEFICIT signify a budget deficit, countercyclical states have smaller average budget surpluses. This property can be explained by their larger budget-stabilization fund deposits, which are included in government expenditures.[7] Moreover, the skewness results indicate that countercyclical states are willing to tolerate larger budget deficits. The correlation between state-level government revenue and expenditures in Panel B is also higher in countercyclical states. Intuitively, maintaining or increasing expenditures in poor economic conditions reduces the correlation between a countercyclical state's expenditures and its revenue while inducing a positive skewness in its budget deficit.

The −0.089 correlation between FPB and revenue and the −0.154 correlation between FPB and expenditures in Panel B of Table 1 suggest that countercyclical states have higher expenditures and taxes as a fraction of their respective GSPs. Although the −0.178 correlation between a state's fiscal policy beta and its outstanding debt-to-GSP ratio is consistent with countercyclical states having more debt, this debt averages 6.1% of GSP due to balanced-budget amendments. This average is far below the federal government's debt-to-GDP ratio. Consequently, countercyclical fiscal policies at the state level are unlikely to induce high levels of tax uncertainty.

The limited cross-sectional variation in debt across states can be attributed to budget-stabilization funds financing countercyclical fiscal policies. The deposit rules (DR) of each state's respective budget-stabilization fund and its tendency to elect a Republican governor (REP_GOV) are examined in the context of fiscal policy using the following cross-sectional regression:

$$\text{FPB}_i = \alpha_0 + \alpha_1 \text{DR}_i + \alpha_2 \text{REP\_GOV}_i + \epsilon_i. \tag{3}$$

We define the fitted values from equation (3) as predicted fiscal policy betas, which are denoted $\widehat{\text{FPB}}$. Although $\widehat{\text{FPB}}$ depends on the frequency of electing a Republican governor during the entire sample period, there is no look-ahead bias in later empirical tests because our empirical analysis does not formulate a trading strategy to exploit cross-sectional return differences based on fiscal policy. Instead, the cross-sectional relation between fiscal policy and returns over the long term is the focus of our study.

[7]Withdrawals from the budget-stabilization fund can increase a state government's expenditures, and hence its budget deficit, without the corresponding issuance of debt. However, because withdrawals depend on the previous accumulation of funds, we focus our analysis on deposit rules.

The negative coefficient of -0.0386 (t-statistic $= -16.90$) for DR in Panel C of Table 1 indicates that more stringent deposit rules are associated with countercyclical fiscal policies. Furthermore, the positive coefficient of 0.2939 (t-statistic $= 33.05$) for REP_GOV indicates that Democratic governors are also associated with countercyclical fiscal policies. Ranking states according to FPB and $\widehat{\text{FPB}}$ produces a similar ordering. Indeed, 10 of the top 15 countercyclical states are identical under both rankings, and their correlation exceeds 0.50. The alternative fiscal policy betas are also similar to their predicted counterparts. Thus, investors are not required to estimate their state's fiscal policy beta provided they understand the two important determinants of its fiscal policy that explain nearly 40% of the variation in state-level fiscal policy according to the R^2 metrics in Panel C.

III. Fiscal Policy and Consumption Risk

According to Ricardian equivalence, government budget deficits cannot stimulate consumption because households increase savings in anticipation of future tax increases. However, higher government spending can stabilize consumption during poor economic conditions due to household borrowing constraints (Zeldes (1989)) and difficulties in hedging unemployment (Hubbard, Skinner, and Zeldes (1994)). Moreover, at the state level, balanced-budget amendments and budget-stabilization funds reduce the association between debt issuance and countercyclical fiscal policy.

To determine whether countercyclical fiscal policies lower consumption risk, our state-level proxy for consumption is retail sales (Ostergaard, Sorensen, and Yosha (2002)). Following Korniotis (2008), retail sales data on non-durables are scaled upward to account for services. The annual scale factor equals aggregate per capita consumption in the United States divided by average per capita retail sales.

To examine the relation between state-level consumption risk and fiscal policy, we estimate the following panel regression:

$$(4)\quad \text{CONSUMPTION}_{i,t} = \beta_1 1_{\text{BUST}_{i,t}} + \beta_2 \text{FPB}_i + \beta_3 (1_{\text{BUST}_{i,t}} \times \text{FPB}_i) + \epsilon_{i,t}.$$

The indicator variable $1_{\text{BUST}_{i,t}}$ equals 1 in year t if state i has negative GSP growth relative to year $t-1$. The specification in equation (4) also includes year fixed effects and state fixed effects, with the inclusion of state fixed effects requiring the removal of the state-level fiscal policy beta. This specification is also estimated after replacing the FPB values with their predicted counterparts $\widehat{\text{FPB}}$ from equation (3). Recall that the predicted fiscal policy betas capture salient aspects of each state's fiscal policy that investors can condition on when evaluating their consumption risk.[8]

A negative β_1 coefficient indicates that consumption growth decreases during bust periods. More important, a negative β_3 coefficient indicates that consumption declines less during bust periods in states that implement countercyclical fiscal

[8]The estimation is conducted using a generalized method of moments (GMM) procedure with the second stage accounting for the estimation error in the first stage. However, the results are similar using 2-stage least squares (2SLS) and limited information maximum likelihood (LIML).

policies. According to Panel A of Table 2, without state fixed effects, the β_3 coefficient for the interaction term in equation (4) is negative, equaling -0.1215 (t-statistic $= -5.03$). Thus, a more countercyclical fiscal policy is associated with a smaller decline in consumption during bust periods, and hence lower consumption risk. With the fiscal policy beta having a standard deviation of 0.121, the

TABLE 2
Fiscal Policy and Consumption Risk

Panel A of Table 2 reports on the sensitivity of state-level consumption to each state's fiscal policy beta, as estimated by equation (4):

$$\text{CONSUMPTION}_{i,t} = \beta_1 1_{\text{BUST}_{i,t}} + \beta_2 \text{FPB}_i + \beta_3 (1_{\text{BUST}_{i,t}} \times \text{FPB}_i) + \epsilon_{i,t}.$$

The indicator variable BUST equals 1 if gross state product (GSP) growth in state i is negative in year t relative to the prior year, and 0 otherwise. The panel regression in equation (4) is also estimated using each state's predicted fiscal policy beta from equation (3), $\widehat{\text{FPB}}$. These specifications include year fixed effects and state fixed effects, with state fixed effects requiring the removal of the state-level fiscal policy betas. Panel B reports the results of a similar panel regression that replaces a state's fiscal policy beta with its political uncertainty. POLITICAL_UNCERTAINTY in a state equals the number of transitions between Democratic and Republican (Republican and Democratic) governors during our sample. Standard errors are clustered at the state-level. t-statistics are reported below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Fiscal Policy and Consumption Risk

Variable	1	2	3	4	5	6	7	8
BUST	−0.0280***	−0.0294***	−0.0265***	−0.0264***	−0.0380***	−0.0400***	−0.0464***	−0.0507***
	−5.87	*−5.20*	*−5.29*	*−5.02*	*−6.74*	*−7.29*	*−6.94*	*−8.56*
FPB	0.0262***							
	3.32							
BUST × FPB	−0.1215***	−0.1300***						
	−5.03	*−4.97*						
$\widehat{\text{FPB}}$			0.0365**					
			1.98					
BUST × $\widehat{\text{FPB}}$			−0.1580***	−0.1908***				
			−3.93	*−5.34*				
ALTERNATIVE_FPB					0.0304**			
					2.09			
BUST × ALTERNATIVE_FPB					−0.1433***	−0.1733***		
					−3.65	*−4.93*		
ALTERNATIVE_$\widehat{\text{FPB}}$							0.0473*	
							1.80	
BUST × ALTERNATIVE_$\widehat{\text{FPB}}$							−0.2074***	−0.2532***
							−3.72	*−5.13*
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
No. of obs.	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Adj. R^2	0.725	0.754	0.724	0.754	0.724	0.754	0.724	0.754

Panel B. Political Uncertainty and Consumption Risk

Variable	1	2	3	4
BUST	−0.0208**	−0.0118	−0.0225**	−0.0220**
	−2.11	*−0.96*	*−2.20*	*−2.05*
POLITICAL_UNCERTAINTY	0.0007		0.0006	0.0007
	0.84		0.76	0.82
BUST × POLITICAL_UNCERTAINTY	−0.0020	−0.0044*	−0.0019	−0.0020
	−0.90	*−1.78*	*−0.86*	*−0.86*
FPB			0.0257*	
			1.88	
$\widehat{\text{FPB}}$				0.0397
				1.62
Year fixed effects	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	No
No. of obs.	2,300	2,300	2,300	2,300
Adj. R^2	0.721	0.753	0.723	0.723

−0.1215 coefficient implies a 1.47% smaller decline in consumption during bust periods in the more countercyclical state.

The predicted fiscal policy betas confirm the importance of fiscal policy to consumption risk. The interaction variable involving $\widehat{\text{FPB}}_i$ has a negative β_3 coefficient equaling −0.1580 (t-statistic = −3.93) when $\widehat{\text{FPB}}$ rather than state fixed effects are included in the specification. The alternative fiscal policy betas produce an even smaller decline in consumption during bust periods because the interaction variable has a negative β_3 coefficient equaling −0.1433 (t-statistic = −3.65).

State governments may attempt to optimize their fiscal policy based on a trade-off between higher consumption growth versus lower consumption risk. This trade-off is consistent with the positive β_2 coefficients in Panel A of Table 2, which indicate that consumption growth is higher in procyclical states. Intuitively, lower consumption growth may be the cost of a countercyclical fiscal policy that lowers consumption risk. Because the magnitude of the β_3 coefficient is 4.64 times larger than that of the β_2 coefficient, consumption growth is approximately 0.32% lower per year to obtain the 1.47% smaller decline in consumption during bust periods.

Finally, to capture the policy uncertainty associated with countercyclical fiscal policies, we replace FPB in equation (4) with the political uncertainty variable that measures the number of transitions in each state governor's political affiliation.[9]

The results in Panel B of Table 2 indicate that the interaction between political uncertainty and the indicator function for bust periods has an insignificant coefficient. Indeed, the β_2 and β_3 coefficients are consistently insignificant. Therefore, unlike fiscal policy, political uncertainty does not appear to influence consumption growth or consumption risk.

IV. Return Implications of Fiscal Policy

Variation in consumption risk across states can have cross-sectional return implications if investors have a local investment bias. Insufficient risk sharing within the United States due to poor diversification has been reported by Korniotis (2008) and Korniotis and Kumar (2013).

We first compute a firm-level local investor base measure. Individual firms are matched with specific states using the location of their headquarters in Compustat. The location of institutional investors is obtained from Nelson's Directory of Investment Managers. Korniotis and Kumar (2013) document that individual investors have a similar local bias as institutional investors. This finding is consistent with the portfolio decisions of institutional investors reflecting the investment preferences of their clients.

An institution has a local investment bias in a nearby firm (headquartered in the same state) if its aggregate portfolio weight in this firm is at least 20% greater

[9]To clarify, the frequency of electing a Republican governor differs from political uncertainty because both a low and a high frequency suggest low political uncertainty. Furthermore, a frequency near 50% does not indicate whether voters change the political affiliation of their governor once, in a permanent political shift from one political party to another, or whether the governor's political affiliation alternates between elections and causes policy uncertainty.

than its market portfolio weight. A firm has a local investor base if at least 5% of its shares are held by institutions with a local investment bias.

To determine whether countercyclical fiscal policies lower the risk-adjusted returns of firms with a local investor base, the following panel regression is estimated:

$$\text{(5)} \qquad \text{RETURN}_{k,t} = \beta_0 + \beta_1 \text{FPB}_i + \gamma \text{SF}_t + \epsilon_{k,t}.$$

The dependent variable refers to firm-level returns that have a local investor base in state i. Thus, all firms indexed by k are headquartered in state i. Returns are risk-adjusted using the methodology of Daniel, Grinblatt, Titman, and Wermers (1997), although unreported results are similar for industry-adjusted returns. The fiscal policy betas in equation (5) are replaced with their respective predicted values from equation (3). SF_t contains state and firm characteristics. To capture cross-sectional variation in state-level industrial composition, the state characteristics are average economic growth and the volatility of economic growth (measured as the standard deviation of annual GSP growth). The firm characteristics, which are computed each year, include institutional ownership (IO), capital asset pricing model beta (CAPM_BETA), idiosyncratic return volatility (IVOL), book-to-market (BM) ratio, market capitalization (SIZE), and the firm's return over the prior 12 months after omitting the most recent month (PRET).

A positive β_1 coefficient indicates that stock returns are lower in countercyclical states for firms with a local investor base. Specifically, a positive β_1 coefficient is consistent with the discount-rate channel. To clarify, the discount-rate channel consists of a joint hypothesis. First, countercyclical fiscal policies are predicted to lower the consumption risk of investors. Second, this lower consumption risk is predicted to lower the returns of firms that have a local investor base.

Panel A of Table 3 reports the results from equation (5) for firms whose institutional investor base has at least a 5% local bias. On average, this local-investor-base restriction yields 666 firms in 43 states. The results in Panel B further restrict this subset to a 7% minimum local base that contains an average of 491 firms in 41 states. The discount-rate channel predicts a larger β_1 coefficient in Panel B compared with Panel A under the more stringent local base threshold. Conversely, in Panel C, the estimation is performed on all firms regardless of whether their investor base has a local bias. Thus, the discount-rate channel predicts a smaller β_1 coefficient in Panel C compared with Panel A.

According to Panel A of Table 3, β_1 equals 0.0583 (t-statistic = 2.54) in the full specification with all control variables. Thus, for firms with a local investor base, a higher fiscal policy beta, which corresponds to a less countercyclical fiscal policy (more procyclical fiscal policy), is associated with higher returns. The β_1 coefficient increases to 0.1197 (t-statistic = 4.41) when FPB is replaced by its predicted value, $\widehat{\text{FPB}}$.

In terms of the $\beta_1 = 0.0583$ coefficient's economic significance in Panel A of Table 3, the standard deviation of FPB in Table 1 across all 50 states is 0.121. Thus, a 1-standard-deviation difference in the fiscal policy beta implies an annual return difference of 0.70% if at least 5% of a firm's investor base has a local bias. This deviation is approximately the difference between the 10th and 90th percentiles of FPB. Furthermore, the 0.445 difference in the average fiscal policy beta between the 5 most countercyclical states and the 5 most procyclical states produces a return difference of 2.59% per year. Thus, the impact of fiscal policy on a firm's cost of equity is economically significant.

For firms with a more salient local investor base, the β_1 coefficient increases in magnitude to 0.0919 (t-statistic = 2.31) according to Panel B of Table 3. Therefore, countercyclical fiscal policies appear to lower stock returns via the discount-rate channel, with a more salient local investment bias increasing the sensitivity of stock returns to state-level fiscal policy. A similar increase in the β_1 coefficient is found for the predicted fiscal policy betas. The alternative

TABLE 3

Fiscal Policy and Stock Returns

Table 3 reports the results from the Fama–MacBeth (1973) regression in equation (5):

$$\text{RETURN}_{k,t} = \beta_0 + \beta_1 \text{FPB}_i + \gamma \text{SF}_t + \epsilon_{k,t},$$

which examines the return implications of fiscal policy for firms whose investors have a local investment bias. The state-level fiscal policy betas are measured according to equation (2) as the sensitivity of annual budget deficits to economic conditions. An alternative fiscal policy beta (ALTERNATIVE_FPB) is estimated by including a state's unemployment rate and its growth in personal income as independent variables in equation (2). Predicted fiscal policy betas are defined in equation (3) using budget-stabilization fund deposit rules and the frequency of Republican governors. SF_t contains state and firm characteristics. The state characteristics include each state's average GSP growth (GSP_GROWTH) and the volatility of this growth (GSP_VOLATILITY). Annual firm characteristics include institutional ownership (IO), capital asset pricing model beta (CAPM_BETA), idiosyncratic return volatility (IVOL), book-to-market (BM) ratio, market capitalization (SIZE), and past returns over the prior year (PRET). Institutional investors have a local investment bias if the aggregate portfolio weight they assign to local firms (firms headquartered in the same state as their location) is at least 20% greater than the aggregate market portfolio weight of local firms. In Panel A, firms have a local investor base if at least 5% of their shares are held by institutions with a local investment bias. On average, this subset consists of 666 firms in 43 states. The results in Panel B pertain to a smaller subset averaging 491 firms in 41 states in which at least 7% of a firm's shares are held by institutions with a local investment bias. Panel C reports the results for the entire sample of firms. t-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4	5	6	7	8
Panel A. Fama–MacBeth Regression with 5% Local Bias								
FPB	0.0606**				0.0583**			
	2.30				*2.54*			
$\widehat{\text{FPB}}$		0.1197***				0.1117***		
		4.41				*3.92*		
ALTERNATIVE_FPB			0.0846*				0.0742*	
			1.78				*1.67*	
ALTERNATIVE_$\widehat{\text{FPB}}$				0.1740***				0.1641***
				5.40				*4.89*
IO	−0.0977***	−0.0997***	−0.1009***	−0.0997***	−0.0966***	−0.0989***	−0.1007***	−0.0990***
	−3.59	*−3.82*	*−3.89*	*−3.82*	*−2.83*	*−3.03*	*−3.11*	*−3.03*
CAPM_BETA	0.0048	0.0061	0.0066	0.0061	0.0068	0.0080	0.0080	0.0079
	0.28	*0.35*	*0.39*	*0.35*	*0.45*	*0.51*	*0.53*	*0.51*
IVOL	−0.0573	−0.0561	−0.0558	−0.0562	−0.0527	−0.0512	−0.0507	−0.0513
	−1.56	*−1.50*	*−1.54*	*−1.51*	*−1.59*	*−1.51*	*−1.55*	*−1.51*
GSP_GROWTH	0.1663	0.2128	0.1387	0.2033	0.1130	0.1917	0.1022	0.1796
	0.65	*0.80*	*0.48*	*0.76*	*0.44*	*0.74*	*0.35*	*0.68*
GSP_VOLATILITY	−0.0370	0.2144	0.1214	0.1833	−0.0538	0.2093	0.2014	0.1740
	−0.06	*0.31*	*0.10*	*0.27*	*−0.09*	*0.30*	*0.17*	*0.25*
BM					−0.0026	−0.0032	−0.0032	−0.0033
					−0.37	*−0.45*	*−0.45*	*−0.45*
SIZE					0.0017	0.0015	0.0017	0.0015
					0.85	*0.80*	*0.93*	*0.80*
PRET					−0.0024	−0.0024	−0.0020	−0.0024
					−0.11	*−0.11*	*−0.09*	*−0.11*
Intercept	−0.1244	−0.1828	−0.0909	−0.1547	−0.0927	−0.1823	−0.0810	−0.1522
	−0.47	*−0.65*	*−0.30*	*−0.54*	*−0.36*	*−0.67*	*−0.27*	*−0.55*
Adj. R^2	0.028	0.027	0.028	0.027	0.039	0.038	0.039	0.038

(continued on next page)

TABLE 3 (continued)
Fiscal Policy and Stock Returns

Variable	1	2	3	4	5	6	7	8
Panel B. Fama–MacBeth Regression with 7% Local Bias								
FPB	0.0901**				0.0919**			
	2.12				*2.31*			
$\widehat{\text{FPB}}$		0.1707***				0.1674***		
		6.34				*6.10*		
ALTERNATIVE_FPB			0.1485***				0.1451***	
			2.58				*2.78*	
ALTERNATIVE_ $\widehat{\text{FPB}}$				0.2433***				0.2410***
				7.45				*7.14*
IO	−0.1025***	−0.1041***	−0.1053***	−0.1044***	−0.1031***	−0.1055***	−0.1069***	−0.1059***
	−5.14	*−5.73*	*−5.85*	*−5.73*	*−3.94*	*−4.55*	*−4.69*	*−4.56*
CAPM_BETA	0.0060	0.0077	0.0088	0.0076	0.0104	0.0120	0.0130	0.0119
	0.43	*0.55*	*0.67*	*0.55*	*0.74*	*0.84*	*0.94*	*0.83*
IVOL	−0.0644	−0.0636	−0.0623	−0.0638	−0.0618	−0.0608	−0.0593	−0.0609
	−1.37	*−1.33*	*−1.31*	*−1.33*	*−1.33*	*−1.28*	*−1.26*	*−1.29*
GSP_GROWTH	0.1610	0.2008	0.1542	0.1923	0.1996	0.2682	0.2074	0.2574
	0.54	*0.61*	*0.52*	*0.59*	*0.67*	*0.86*	*0.73*	*0.83*
GSP_VOLATILITY	−0.3149	0.1909	−0.3429	0.1447	−0.3861	0.1801	−0.3436	0.1227
	−0.65	*0.20*	*−0.22*	*0.16*	*−0.81*	*0.19*	*−0.24*	*0.13*
BM					0.0070	0.0057	0.0059	0.0057
					0.77	*0.60*	*0.64*	*0.60*
SIZE					0.0027	0.0023	0.0025	0.0023
					1.10	*1.06*	*1.19*	*1.08*
PRET					−0.0044	−0.0046	−0.0040	−0.0046
					−0.24	*−0.25*	*−0.22*	*−0.25*
Intercept	−0.1086	−0.1684	−0.0837	−0.1340	−0.1901	−0.2759	−0.1798	−0.2393
	−0.33	*−0.48*	*−0.27*	*−0.39*	*−0.61*	*−0.85*	*−0.62*	*−0.75*
Adj. R^2	0.032	0.032	0.033	0.032	0.045	0.044	0.046	0.044
Panel C. Fama–MacBeth Regression with All Firms								
FPB	0.0275				0.0288			
	1.26				*1.32*			
$\widehat{\text{FPB}}$		0.0326				0.0276		
		1.15				*0.94*		
ALTERNATIVE_FPB			0.0092				0.0015	
			0.24				*0.04*	
ALTERNATIVE_ $\widehat{\text{FPB}}$				0.0581				0.0518
				1.50				*1.32*
IO	−0.1131***	−0.1139***	−0.1143***	−0.1140	−0.1202***	−0.1207***	−0.1210***	−0.1208***
	−5.01	*−5.04*	*−5.12*	*−5.03*	*−4.07*	*−4.10*	*−4.16*	*−4.09*
CAPM_BETA	0.0124	0.0125	0.0126	0.0125	0.0108	0.0109	0.0109	0.0110
	0.75	*0.76*	*0.78*	*0.76*	*0.67*	*0.67*	*0.69*	*0.67*
IVOL	−0.0557**	−0.0556**	−0.0556**	−0.0556**	−0.0562**	−0.0560**	−0.0561**	−0.0560**
	−2.43	*−2.43*	*−2.45*	*−2.43*	*−2.21*	*−2.20*	*−2.22*	*−2.20*
GSP_GROWTH	0.7218***	0.8012**	0.8082***	0.7887**	0.7113***	0.8020**	0.8016**	0.7891**
	2.74	*2.57*	*2.66*	*2.49*	*2.62*	*2.49*	*2.57*	*2.41*
GSP_VOLATILITY	−0.8232	−0.6895	−0.6635	−0.7277	−0.8418	−0.6757	−0.5971	−0.7161
	−1.29	*−1.14*	*−0.86*	*−1.22*	*−1.36*	*−1.14*	*−0.79*	*−1.22*
BM					−0.0034	−0.0035	−0.0035	−0.0035
					−0.94	*−0.93*	*−0.96*	*−0.94*
SIZE					0.0036	0.0036	0.0036	0.0036
					1.12	*1.09*	*1.09*	*1.09*
PRET					0.0009	0.0011	0.0011	0.0011
					0.07	*0.09*	*0.09*	*0.09*
Intercept	−0.6926**	−0.7803**	−0.7890**	−0.7598**	−0.7243**	−0.8243**	−0.8286**	−0.8038**
	−2.52	*−2.33*	*−2.32*	*−2.24*	*−2.35*	*−2.21*	*−2.21*	*−2.13*
Adj. R^2	0.018	0.017	0.017	0.017	0.023	0.022	0.022	0.022

fiscal policy betas and their predicted counterparts also have larger coefficients in Panel B under the more stringent local-investor-base criteria.

The results in Panel C of Table 3 pertain to the entire cross section of firms, including firms whose investor base does not have a local bias. Thus, the discount-rate channel predicts a smaller β_1 coefficient in this unrestricted cross section. Consistent with the discount-rate channel, the β_1 coefficients are insignificant in Panel C for every specification. This lack of statistical significance, despite the larger sample size, highlights the importance of local investment bias to the relation between fiscal policy and firm-level returns, thereby lending support to the discount-rate channel.

In unreported returns, we estimate a panel regression of firm-level stock returns on state-level consumption volatility (standard deviation of annual consumption growth). Higher consumption volatility does increase the equity premium for firms with a local investor base, as the coefficient for consumption volatility is positive. However, this analysis does not explicitly condition on fiscal policy. Indeed, besides fiscal policy, consumption volatility is influenced by other factors, such as economic volatility.

A. Political Uncertainty

A large literature finds that government intervention in the economy can increase policy uncertainty. For example, government budget deficits can increase uncertainty regarding future taxation. According to Panel A of Table 1, political uncertainty has a −0.191 correlation with FPB. This negative correlation indicates that countercyclical states have greater political uncertainty. However, there is no relation between political uncertainty and either consumption or output volatility. In particular, the correlation between political uncertainty and consumption volatility is −0.012, whereas the correlation between political uncertainty and GSP volatility is 0.021.

Although our study examines the return predictability attributable to the predictable component of fiscal policy, we reestimate the Fama–MacBeth (1973) regression in equation (5) with the political uncertainty variable included as an additional control. Table 4 reports that controlling for political uncertainty does not eliminate the importance of fiscal policy to stock returns. At the 5% local bias threshold, the β_1 coefficient for FPB remains positive, equaling 0.0688 (t-statistic = 2.33) after the inclusion of political uncertainty. The magnitude of this coefficient does not decrease with the inclusion of political uncertainty. Furthermore, increasing the local bias threshold in the investor base to 7% confirms the importance of fiscal policy. In particular, both FPB and its predicted counterpart $\widehat{\text{FPB}}$ have significant β_1 coefficients. These results also apply to the alternative fiscal policy betas that control for unemployment and income growth.

The impact of political uncertainty on returns is less consistent. In particular, both political uncertainty and the predicted fiscal policy betas have a common dependence on the political affiliation of a state's governor. Nonetheless, the results at the 7% local bias threshold suggest that fiscal policy is more important to stock returns than political uncertainty. For example, the coefficient for $\widehat{\text{FPB}}$ is positive, 0.1280 (t-statistic = 2.06), whereas the coefficient for political uncertainty is insignificant, 0.0038 (t-statistic = 1.16).

TABLE 4
Political Uncertainty, Fiscal Policy, and Stock Returns

Table 4 reports the results from the Fama–MacBeth (1973) regression in equation (5) that examines the return implications of fiscal policy with an additional control variable for political uncertainty. The political uncertainty variable (POLITICAL_UNCERTAINTY) equals the number of state-level transitions from a Republican governor to a Democratic governor and, vice versa, from a Democratic governor to a Republican governor. State-level fiscal policy betas are measured according to equation (2) as the sensitivity of annual budget deficits to economic conditions. An alternative fiscal policy beta (ALTERNATIVE_FPB) is estimated by including a state's unemployment rate and its growth in personal income as independent variables in equation (2). Predicted fiscal policy betas are defined in equation (3) using budget-stabilization fund deposit rules and the frequency of Republican governors. State characteristics in this analysis include each state's average gross state product (GSP) growth (GSP_GROWTH) and the volatility of this growth (GSP_VOLATILITY). Annual firm characteristics include institutional ownership (IO), capital asset pricing model beta (CAPM_BETA), idiosyncratic return volatility (IVOL), book-to-market (BM) ratio, market capitalization (SIZE), and past returns over the prior year (PRET). Institutional investors have a local investment bias if the aggregate portfolio weight they assign to local firms (firms headquartered in the same state as their location) is at least 20% greater than the aggregate market portfolio weight of local firms. The 5% and 7% minimum thresholds apply to the percentage of shares held by institutions with a local investment bias. t-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A. 5% Threshold				*Panel B. 7% Threshold*			
Variable	1	2	3	4	5	6	7	8
FPB	0.0688**				0.0786**			
	2.33				*2.01*			
$\widehat{\text{FPB}}$		0.0796				0.1280**		
		1.80				*2.06*		
ALTERNATIVE_FPB			0.0996*				0.1400***	
			1.87				*3.00*	
ALTERNATIVE_$\widehat{\text{FPB}}$				0.1301*				0.2025**
				1.85				*2.60*
POLITICAL_UNCERTAINTY	0.0073***	0.0078**	0.0086**	0.0072	0.0045**	0.0038	0.0057**	0.0029
	2.79	*2.00*	*2.28*	*1.53*	*2.46*	*1.16*	*2.72*	*0.92*
IO	−0.110***	−0.1129***	−0.1141***	−0.1130***	−0.1054***	−0.1093***	−0.1109***	−0.1097***
	−3.36	*−4.01*	*−3.74*	*−3.69*	*−3.96*	*−4.79*	*−4.81*	*−4.80*
CAPM_BETA	0.0104	0.0115	0.0118	0.0116	0.0110	0.0120	0.0129	0.0122
	0.69	*1.29*	*0.82*	*0.79*	*1.11*	*1.22*	*1.34*	*1.23*
IVOL	−0.0560	−0.0563	−0.0544	−0.0563	−0.0605	−0.0605	−0.0581	−0.0607
	−1.41	*−1.55*	*−1.36*	*−1.35*	*−1.38*	*−1.33*	*−1.33*	*−1.33*
GSP_GROWTH	0.2740	0.2605	0.2079	0.2437	0.3390	0.3635	0.2923	0.3420
	1.07	*1.22*	*0.76*	*0.90*	*1.39*	*1.45*	*1.29*	*1.36*
GSP_VOLATILITY	−0.7166	−0.0452	−0.5750	−0.0981	−0.3154	0.2384	−0.5276	0.1576
	−1.27	*−0.08*	*−0.53*	*−0.13*	*−0.80*	*0.25*	*−0.42*	*0.17*
BM	0.0035	0.0028	0.0027	0.0027	0.0073	0.0058	0.0059	0.0058
	0.45	*0.36*	*0.33*	*0.33*	*0.88*	*0.67*	*0.71*	*0.66*
SIZE	0.0024	0.0024	0.0025	0.0024	0.0029	0.0028	0.0029	0.0028
	1.17	*1.59*	*1.30*	*1.22*	*1.34*	*1.44*	*1.54*	*1.45*
PRET	−0.0033	−0.0035	−0.0031	−0.0035	−0.0049	−0.0048	−0.0048	−0.0049
	−0.16	*−0.17*	*−0.15*	*−0.17*	*−0.27*	*−0.26*	*−0.27*	*−0.26*
Intercept	−0.2825	−0.2944	−0.2109	−0.2588	−0.3631	−0.4005	−0.2914	−0.3509
	−1.09	*−1.37*	*−0.76*	*−0.93*	*−1.40*	*−1.69*	*−1.39*	*−1.49*
Adj. R^2	0.045	0.044	0.044	0.044	0.047	0.047	0.048	0.047

B. Aggregate Fiscal Policy of Investor Base

Our next analysis computes a firm-level investor-base beta denoted IB_FPB using institutional investor holdings and the FPB of each investor's location. The investor-base beta reduces the dependence of our results on local investment bias by allowing a firm's investor base to span several states. For a firm held by investors located in multiple states, IB_FPB weights each state's fiscal policy beta (predicted fiscal policy beta) by the fraction of its investor base located in the state.[10] Thus, IB_FPB examines the aggregate fiscal policy affecting a firm's investor base instead of focusing on the fiscal policy affecting its local investors.

Because IB_FPB is irrelevant if the combined portfolio holdings of institutional investors in a firm is too small, institutional ownership is required to be above a 30% threshold. This minimum threshold parallels the earlier firm-level local bias filter that required institutional investors to overweight a firm relative to its market portfolio weight. The 30% threshold creates a subset of 1,252 stocks in 48 states on average. This subset is considerably larger than the local-investor-base subset underlying Panel A of Table 3.[11] A more stringent 40% minimum for institutional ownership reduces the subset to an average of 905 firms across 48 states.

We then reestimate equation (5) with the firm-level IB_FPB replacing the state-level FPB:

$$\text{RETURN}_{k,t} \quad = \quad \beta_0 + \beta_1 \text{IB\_FPB}_k + \gamma \text{SF}_t + \epsilon_{k,t}. \tag{6}$$

This specification does not assume any local investor bias. Instead, any firm with sufficient institutional ownership is included in this analysis, with IB_FPB representing the aggregate fiscal policy of its investor base.

A positive β_1 coefficient indicates that returns are lower for firms whose investor bases are located in countercyclical states. Panel A of Table 5 reports positive β_1 coefficients for firms with at least 30% institutional ownership. In the full specification with all control variables, the β_1 coefficient is 0.3170 (t-statistic = 4.40). This β_1 coefficient increases to 1.0309 (t-stat. = 4.85) for the predicted fiscal policy betas. These β_1 coefficients indicate that having an investor base concentrated in countercyclical states lowers a firm's cost of equity.

Panel B of Table 5 reports larger β_1 coefficients when institutional ownership is required to exceed a 40% minimum threshold. Specifically, the β_1 coefficient increases to 0.4020 (t-statistic = 4.90). The stronger result is consistent with IB_FPB capturing the fiscal policy exposure of a firm's investor base more accurately because institutional portfolio holdings are more relevant in this subset of firms.

C. Investment Sensitivity to Fiscal Policy

Although our study is intended to examine the investor-level implications of fiscal policy, state-level fiscal policy may have implications for corporate investment. The lower cost of equity in countercyclical states versus the higher consumption growth in procyclical states creates a trade-off for firms.

However, firms can obtain equity financing from investors throughout the United States. Thus, the fiscal policy of the state in which a firm is headquartered does not necessarily determine its cost of equity. Indeed, a firm's headquarters may appear in a procyclical state due to its higher consumption growth, access to natural resources, favorable regulation, or other considerations. With a local investment bias, firms headquartered in a procyclical state have a higher

[10] Our analysis of long-term returns allows for heterogeneity in the prevailing economic conditions of states during each period. This heterogeneity is more important for the cash-flow channel.

[11] In unreported results, intersecting the 5% minimum local-investment-bias filter with the 30% institutional ownership filter reduces the average number of stocks from 1,252 to 461.

TABLE 5
Aggregate Fiscal Policy of Investor Base and Stock Returns

Table 5 reports the results from the Fama–MacBeth (1973) regression in equation (6) that examines the return implications of a firm's aggregate exposure to fiscal policy through its investor base. The location of every institutional investor that owns a firm's stock determines its investor-base fiscal policy beta, denoted IB_PB. Specifically, this firm-specific aggregate fiscal policy beta is computed by weighting the fiscal policy beta (predicted fiscal policy beta) of each state by the percentage of a firm's institutional investors in the respective state. The state-level fiscal policy betas are measured according to equation (2) as the sensitivity of annual budget deficits to economic conditions. Predicted fiscal policy betas are defined in equation (3) using budget-stabilization fund deposit rules and the frequency of Republican governors. State characteristics in this analysis include each state's average gross state product (GSP) growth (GSP_GROWTH) and the volatility of this growth (GSP_VOLATILITY). Annual firm characteristics include institutional ownership (IO), capital asset pricing model beta (CAPM_BETA), idiosyncratic return volatility (IVOL), book-to-market (BM) ratio, market capitalization (SIZE), and past returns over the prior year (PRET). The results in Panel A impose a 30% minimum threshold on institutional investment, whereas those in Panel B impose a 40% threshold. *t*-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4
Panel A. Institutional Ownership Above 30%				
IB_FPB	0.3093*** *4.24*		0.3170*** *4.40*	
$\widehat{\text{IB\_FPB}}$		1.0123*** *4.41*		1.0309*** *4.85*
IO	−0.0256** *−2.23*	−0.0233* *−1.76*	−0.0294*** *−2.84*	−0.0279** *−2.38*
CAPM_BETA	−0.0127 *−0.76*	−0.0090 *−0.53*	−0.0137 *−0.85*	−0.0098 *−0.62*
IVOL	−0.1303*** *−5.19*	−0.1297*** *−5.04*	−0.1194*** *−4.34*	−0.1199*** *−4.27*
GSP_GROWTH	0.2932 *1.39*	0.3289 *1.44*	0.2805 *1.28*	0.3161 *1.35*
GSP_VOLATILITY	−0.3361 *−0.85*	−0.3769 *−1.00*	−0.3501 *−0.90*	−0.3984 *−1.05*
BM			−0.0025 *−0.45*	−0.0045 *−0.81*
SIZE			0.0062* *1.75*	0.0056 *1.62*
PRET			0.0173 *1.33*	0.0178 *1.32*
Intercept	−0.2553 *−1.07*	−0.2426 *−1.00*	−0.3282 *−1.13*	−0.3057 *−1.05*
Adj. R^2	0.031	0.033	0.042	0.044
Panel B. Institutional Ownership Above 40%				
IB_FPB	0.4020*** *4.90*		0.4060*** *4.89*	
$\widehat{\text{IB\_FPB}}$		1.4866*** *5.82*		1.4818*** *5.76*
IO	0.0262 *0.74*	0.0265 *0.84*	0.0333 *0.92*	0.0331 *1.04*
CAPM_BETA	−0.0292 *−1.42*	−0.0224 *−1.10*	−0.0305 *−1.57*	−0.0235 *−1.26*
IVOL	−0.1585*** *−4.28*	−0.1588*** *−4.14*	−0.1360*** *−3.46*	−0.1337*** *−3.47*
GSP_GROWTH	0.2044 *0.68*	0.2885 *0.95*	0.2077 *0.69*	0.2786 *0.93*
GSP_VOLATILITY	−0.0431 *−0.14*	−0.1787 *−0.63*	−0.0251 *−0.08*	−0.1473 *−0.50*
BM			−0.0017 *−0.28*	−0.0041 *−0.70*
SIZE			0.0112*** *3.49*	0.0116*** *4.46*
PRET			0.0120 *0.73*	0.0133 *0.80*
Intercept	−0.1804 *−0.57*	−0.1897 *−0.63*	−0.3454 *−0.98*	−0.3461 *−1.05*
Adj. R^2	0.047	0.051	0.064	0.069

discount rate because (undiversified) local investors require a higher equity return premium. In response, these firms can target equity investors in countercyclical states to take advantage of their lower required equity return premium. This investor-base diversification is especially important for capital-intensive firms whose investments are sensitive to their respective discount rates. To clarify, the preference of local investors for local equity securities is not an advantage for firms headquartered in procyclical states because investors in these states require a higher equity return premium.

Because firms headquartered in a procyclical state have the ability to obtain financing from investors in countercyclical states to fund their capital expenditures (CAPEX), we estimate the following specification:

$$(7) \qquad \text{CAPEX}_{k,t} = \beta_0 + \beta_1[\text{FPB}_i - \text{IB\_FPB}_k] + \gamma \text{FC}_t + \epsilon_{k,t},$$

whose dependent variable is capital expenditures normalized by total assets. Firms indexed by k are headquartered in state i. The firm characteristics contained in FC include controls for leverage and market-to-book ratios. Industry fixed effects based on 2-digit Standard Industrial Classification codes are also included, along with year fixed effects. In unreported results, the β_1 coefficients are consistently positive. Thus, capital-intensive firms headquartered in a procyclical state (high FPB) attract equity investment from countercyclical states.

Note that firms headquartered in procyclical states with lower investment opportunities are less concerned about local investment bias, whereas capital-intensive firms have a stronger incentive to mitigate local bias in their investor base. Thus, not every firm will aggressively pursue equity financing from investors in countercyclical states.

D. Headquarters Relocations

Assuming a local investment bias, relocations of firm headquarters provide a quasi-natural experiment to analyze the impact of fiscal policy on average stock returns. During the 1986–2006 period, 1,265 firms change the state in which they are headquartered, according to Compact Disclosure. We observe an even split between the number of firms relocating to states with more countercyclical and less countercyclical fiscal policies. Relocations also occur in an array of different industries. Firms are required to have 3 years of returns before and after their headquarters relocation. The first year's post-relocation return following a headquarters relocation is omitted to mitigate the possible influence of takeover premiums associated with mergers and acquisitions.

We compute firm-level average returns before and after headquarters relocations. For firms that relocated their headquarters, these average return differences are then regressed on changes in the fiscal policy beta associated with a relocation of firm k's headquarters from state i to state j:

$$(8) \qquad \text{RETURN}_{k,j,t+} - \text{RETURN}_{k,i,t-} = \beta_0 + \beta_1 \Delta\text{FPB}_{k,t} + \gamma \Delta \text{S}_{i,j} + \epsilon_k,$$

where $\Delta\text{FPB}_{k,t}$ is defined as the difference in firm k's fiscal policy beta after the relocation compared with before the relocation, $\text{FPB}_{k,j,t+} - \text{FPB}_{k,i,t-}$. The notation $t+$ refers to years after the relocation, and $t-$ refers to years before the relocation in year t. Firms can relocate between countercyclical states, with ΔFPB being negative and positive, respectively, when the firm relocates to a more countercyclical state or a less countercyclical state. $\Delta S_{i,j}$ denotes state-level differences in GSP growth as well as GSP volatility before and after a headquarters relocation.

The positive β_1 coefficients in Table 6 indicate that firms relocating to states with more countercyclical fiscal policies subsequently have lower average stock returns. The predicted fiscal policy betas also have positive β_1 coefficients. Overall, the return implications of headquarters relocations confirm the importance of fiscal policy to stock returns. However, the impact of a headquarters relocation on a firm's cost of equity requires a local investor bias before and after the relocation.[12]

Furthermore, headquarters relocations may coincide with other corporate events. For example, the higher consumption growth in procyclical states may attract firms that benefit from having their headquarters located near customers. Conversely, the lower consumption risk in countercyclical states may attract employees in volatile but high-value-added industries. Intuitively, although a headquarters relocation decision has discount-rate implications, other important factors, such as human capital (Romer (1990)), are relevant.

TABLE 6
Headquarter Relocations and Stock Returns

Table 6 examines firm-level average returns before and after headquarters relocations. Firm-level return differences are regressed on changes in the fiscal policy betas (FPB) associated with the relocations of firm k from state i to state j as in equation (8):

$$\text{RETURN}_{k,j,t+} - \text{RETURN}_{k,i,t-} = \beta_0 + \beta_1 \Delta\text{FPB}_{k,t} + \gamma \Delta \text{S}_{i,j} + \epsilon_k .$$

$\Delta\text{FPB}_{k,t}$ is defined as the difference in firm k's fiscal policy beta after the relocation compared with before the relocation, $\text{FPB}_{k,j,t+} - \text{FPB}_{k,i,t-}$. The notation $t+$ refers to years after the relocation, and $t-$ refers to years before the relocation in year t. Firms are required to have at least 3 years of stock returns before and after their headquarters relocations. Returns in the first year after a relocation are eliminated from $\text{RETURN}_{k,j,t+}$ to ensure that takeover premiums arising from mergers and acquisitions are not influencing our results. $\Delta\text{S}_{i,j}$ denotes state-level differences in gross state product (GSP) growth (GSP_GROWTH), as well as its volatility (GSP_VOLATILITY), before and after a headquarters relocation. t-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4	5	6	7	8
ΔFPB	0.2582***	0.2478**						
	2.93	*2.28*						
$\Delta\widehat{\text{FPB}}$			0.5375**	0.4681*				
			2.53	*1.92*				
ΔALTERNATIVE_FPB					0.3253***	0.2943*		
					2.61	*1.85*		
ΔALTERNATIVE_$\widehat{\text{FPB}}$							1.1477***	1.0832***
							3.46	*2.99*
ΔGSP_GROWTH		−0.8057		−0.8069		−0.7219		−0.8272
		−0.84		*−0.84*		*−0.75*		*−0.87*
ΔGSP_VOLATILITY		1.0686		2.0341		1.2809		1.7019
		0.50		*1.02*		*0.58*		*0.89*
Intercept	0.0090	0.0061	0.0103	0.0064	0.0072	0.0046	0.0098	0.0060
	0.62	*0.41*	*0.71*	*0.43*	*0.49*	*0.31*	*0.68*	*0.41*
No. of obs.	816	816	816	816	816	816	816	816
Adj. R^2	0.010	0.011	0.008	0.010	0.008	0.009	0.014	0.016

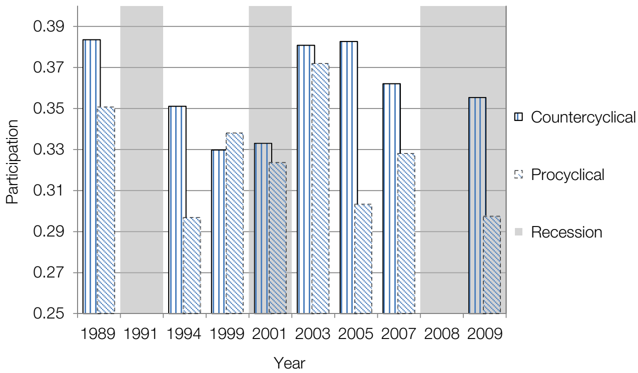
[12]In unreported results, we find evidence that local investment bias does migrate with firms to their new headquarters locations.

E. Market Participation

The Panel Study of Income Dynamics (PSID) survey records state-level equity market participation rates for 1989, 1994, 1999, 2001, 2003, 2005, 2007, and 2009. Figure 1 illustrates the decline in market participation that corresponds to national recessions identified by the National Bureau of Economic Research (NBER) that occurred during part of the following time periods: 1990–1991, 2001, and 2008–2009.

FIGURE 1
Market Participation

Figure 1 provides a visual illustration of market participation in procyclical states and countercyclical states during national recessions. The Panel Study of Income Dynamics (PSID) survey records state-level market participation rates for 1989, 1994, 1999, 2001, 2003, 2005, 2007, and 2009. National recessions occurred during part of the following time periods: 1990–1991, 2001, and 2008–2009.



Consistent with countercyclical states having lower consumption risk, market participation is less volatile in countercyclical states as a result of smaller declines during recessions. In particular, the volatility of equity market participation in the most countercyclical states equals 2.85% compared with 5.17% in the most procyclical states. This 2.32% reduction in market participation volatility is significant (t-statistic = 2.59).

Figure 1 provides empirical support for the discount-rate channel. Specifically, the states with the most countercyclical fiscal policy exhibit lower consumption risk than the states with the most procyclical fiscal policy. Thus, countercyclical fiscal policies appear to finance investor consumption during poor economic conditions that otherwise would have been financed by investors liquidating their equity portfolios.

Along with the importance of investor location, the state-level equity participation provides evidence supporting the discount-rate channel. Nonetheless, countercyclical fiscal policies may lower stock returns by reducing cash-flow risk. Therefore, our next analyses examine the cash-flow risk channel.

F. Cash-Flow Risk

To investigate whether countercyclical fiscal policies lower the sensitivity of cash flow to economic conditions, we estimate the following panel regression:

$$(9) \quad \text{CASH\_FLOW}_{k,t} = \beta_1 1_{\text{BUST}_{i,t}} + \beta_2 \text{FPB}_i + \beta_3 (1_{\text{BUST}_{i,t}} \times \text{FPB}_i) + \epsilon_{i,t}.$$

The dependent variable is the ratio of firm-level earnings normalized by total assets, for all firms headquartered in state i. This specification parallels equation (4), with state-level consumption replaced by firm-level cash flow. Year fixed effects are included with, standard errors clustered at the firm level. State fixed effects are also included when FPB is removed.

Unlike consumption, Table 7 indicates that cash flow does not decline less during bust periods in countercyclical states than in procyclical states. In particular, the β_3 coefficient for the interaction variable is either insignificant or positive. An insignificant β_3 coefficient is consistent with the majority of firms in our sample having diversified operations across the United States and with heterogeneity in economic conditions across U.S. states. Furthermore, a positive β_3 coefficient indicates that firm-level cash flow declines more rather than less during bust periods in countercyclical states.

To further analyze the cash-flow channel, we utilize the data of Garcia and Norli (2012) to examine the state-level operations of individual firms starting in 1994. Their data record instances where each state's name occurs in a firm's 10-K report. Delaware and Washington are removed from the sample given the large number of firms incorporated in Delaware and the possibility that Washington refers to the U.S. capital rather than the state. On average, firms operate in fewer than 10 states.

We compute firm-level cash-flow fiscal policy betas, denoted CF_FPB, that weight the state-level fiscal policy betas in which a firm operates by the frequency of each state's name in its 10-K report. Firms have more cash-flow exposure to a state's fiscal policy if they have more operations in this state. The cash-flow

TABLE 7

Fiscal Policy and Cash-Flow Risk

Table 7 reports the results from the regression in equation (9):

$$\text{CASH\_FLOW}_{k,t} = \beta_1 1_{\text{BUST}_{i,t}} + \beta_2 \text{FPB}_i + \beta_3 (1_{\text{BUST}_{i,t}} \times \text{FPB}_i) + \epsilon_{i,t},$$

which examines the firm-level cash-flow implications of fiscal policy during bust periods. Firms indexed by k are headquartered in state i. Year fixed effects are included, as well as state fixed effects when the state-level fiscal policy betas are excluded. The state-level fiscal policy betas are measured according to equation (2) as the sensitivity of annual budget deficits to economic conditions. A bust period for a state is defined by negative gross state product (GSP) growth. An alternative fiscal policy beta is estimated by including a state's unemployment rate and its growth in personal income as independent variables in equation (2). t-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4
BUST	−0.0052 *−0.53*	0.0142* *1.71*	−0.0065 *−0.70*	0.0156* *1.76*
FPB	−0.0337 *−1.00*			
BUST × FPB	0.0018 *0.03*	0.0979* *1.84*		
ALTERNATIVE_FPB			−0.0397 *−0.89*	
BUST × ALTERNATIVE_FPB			−0.0598 *−1.03*	0.0140 *0.22*
Year fixed effects	Yes	Yes	Yes	Yes
State fixed effects	No	Yes	No	Yes
No. of obs.	2,250	2,250	2,250	2,250
Adj. R^2	0.080	0.304	0.080	0.304

betas based on fiscal policy enable us to examine the cash-flow channel using the following Fama–MacBeth (1973) regression:

$$(10) \qquad \text{RETURN}_{k,t} = \beta_0 + \beta_1 \text{CF\_FPB}_{k,t} + \beta_2 \text{BM}_{k,t} + \beta_3 \text{SIZE}_{k,t} + \beta_4 \text{PRET}_{k,t} + \gamma \text{FC}_k + \epsilon_{k,t}.$$

Because this Fama–MacBeth regression uses firm-level CF_FPB betas, the control variables are book-to-market (BM) ratio, size (SIZE), and past return (PRET) characteristics. The firm-level returns in equation (10) are not risk-adjusted due to the inclusion of these firm characteristics. FC_k contains the following firm characteristics: institutional ownership (IO), the capital asset pricing model beta (CAPM_BETA), and idiosyncratic return volatility (IVOL).

A significant β_1 coefficient is evidence that the cash-flow channel is responsible for the return implications of fiscal policy. However, according to Panel A of Table 8, the β_1 coefficients are insignificant. The lack of empirical support for the cash-flow channel can be attributed to firms having diversified operations. Indeed, the cash flows of firms with diversified operations are unlikely to be affected by the fiscal policy and economic conditions of any individual state. Therefore, we restrict our next analysis to geographically concentrated firms whose operations are limited to a single state.

However, our results are biased against the cash-flow channel if single-state firms have operations in more than one state. Therefore, we refine the single-state classification of Garcia and Norli (2012) for our purposes by applying two additional filters that eliminate firms using the following two criteria: i) firm describes itself as operating in multiple states but does not specifically mention their names, ii) firm refers to an international sales office. These filters eliminate 58 firms, leaving 419 firms that operate in a single state.

In contrast to our earlier analysis, the cash-flow channel does not require a local investment bias because the cash-flow channel requires local operations. For single-state firms, FPB equals CF_FPB. The results in Panel B of Table 8 indicate that the firm-level cash flow betas are significant for firms operating in a single state. In particular, the β_1 coefficient equals 0.0062 (t-statistic $= 2.21$) in the full specification with all control variables. Therefore, we find support for the cash-flow channel among geographically concentrated firms whose operations are limited to a single state. The positive β_2 and β_4 coefficients for BM and PRET, respectively, are consistent with the value premium and momentum, respectively.

To compare the discount-rate channel versus the cash-flow channel, recall that the β_1 coefficient for FPB equals 0.0583 in Panel A of Table 3 with all control variables, whereas a similar specification in Panel B of Table 8 yields a larger β_1 coefficient of 0.0744. These analyses focus on firms that have a local investor base and local operations, respectively. The larger coefficient associated with the cash-flow channel is consistent with single-state firms having a higher equity premium due to their undiversified operations. This difference in the equity premium is more pronounced for firms without a local investor base (Panel C of Table 3) but reverses for firms whose investor base is more local (Panel B of Table 3).

Finally, in unreported results, we estimate the panel regression specification in equation (5) for firms that have a local bias at the 5% threshold to examine

TABLE 8
Cash-Flow Beta and Stock Returns

Table 8 reports the results from equation (10):

$$\text{RETURN}_k = \beta_0 + \beta_1 \text{CF\_FPB}_k + \beta_2 \text{BM}_k + \beta_3 \text{SIZE}_k + \beta_4 \text{PRET}_k + \gamma \text{FC}_k + \epsilon_k,$$

which examines the return implications of firm-level cash-flow fiscal policy betas. The firm-level cash-flow fiscal policy betas, denoted CF_FPB, weight the state-level fiscal policy betas according to the operations of a firm. Thus, firms with more operations in a state have more cash-flow exposure to the state's fiscal policy. Firm-level control variables include book-to-market (BM) ratio, size (SIZE), and past return (PRET) characteristics, where PRET equals the firm's return over the prior 12 months after omitting the most recent month. FC_k contains institutional ownership (IO), capital asset pricing model beta (CAPM_BETA), and idiosyncratic volatility return (IVOL). The results in Panel A pertain to all firms, whereas those in Panel B are for geographically concentrated firms that operate in a single state. *t*-statistics are below each of the estimates in italics. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3
Panel A. All Firms			
CF_FPB	0.0432	0.0468	0.0552
	0.47	*1.12*	*1.64*
BM		0.0252	0.0216**
		1.57	*2.19*
SIZE		0.0000	−0.0036
		0.01	*−0.61*
PRET		0.0444	0.0612**
		1.41	*2.57*
IO			−0.0120
			−0.36
CAPM_BETA			0.0120
			0.47
IVOL			−0.0168
			−1.63
Intercept	0.0912	0.0552	0.1044
	1.41	*0.51*	*1.32*
Adj. R^2	0.001	0.035	0.062
Panel B. Geographically Concentrated Firms			
CF_FPB (FPB)	0.0876**	0.0972***	0.0744**
	2.29	*3.06*	*2.21*
BM		0.0252**	0.0372***
		2.48	*3.97*
SIZE		0.0024	−0.0060
		0.37	*−0.79*
PRET		0.0456**	0.0540***
		2.39	*3.58*
IO			0.0276
			0.47
CAPM_BETA			0.0396
			1.61
IVOL			−0.0192**
			−2.07
Intercept	0.1032***	0.0360	0.1104
	3.43	*0.44*	*1.12*
Adj. R^2	0.005	0.049	0.095

the cash-flow channel among firms with a local investor base rather than local operations. However, we find that the β_1 coefficients for CF_FPB are insignificant. This evidence confirms that the cash-flow channel is limited to firms with geographically concentrated operations. Therefore, our earlier results in Table 3 that support the discount-rate channel are not driven by firms having local operations.

V. Conclusions

Using state-level data within the United States, we find that consumption risk is lower in states that implement countercyclical fiscal policies. Furthermore, firms whose investor bases are concentrated in countercyclical states have lower average stock returns. Equity market participation is also less volatile in countercyclical states as a result of smaller declines in equity market participation during recessions. The consumption and stock return implications of fiscal policy are confirmed using the political affiliation of state governors and the deposit rules of state-level budget-stabilization funds.

Our evidence is consistent with countercyclical fiscal policies being able to lower the consumption risk of investors and, consequently, the equity premium demanded by investors. This discount-rate channel requires geographic variation across firms in the location of their investor bases. An alternative cash-flow channel, which requires geographic variation in firm-level operations, does not explain the relation between fiscal policy and stock returns. Intuitively, the implications of state-level fiscal policy are transmitted into asset prices through the location of a firm's investor base rather than the location of its operations.

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