Volume 41, Issue 2

Does ethnic diversity hurt fiscal sustainability?

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Abstract

This paper suggests that ethnically heterogeneous societies are collectively careless about fiscal sustainability. It provides fresh evidence about the impact of ethnic diversity on fiscal governance, specifically on public spending, revenue, and debt. The findings based on a two-way fixed effect (FE) estimation for a balanced panel dataset suggest that rising ethnic diversity in the U.S. generates higher public debt per capita and fiscal indiscipline, which are mainly driven by lower contributions to public revenue while maintaining enduring public spending. Ethnically fragmented states also receive smaller intergovernmental revenue which also hurts fiscal balances.

1. Introduction

Good fiscal governance is critical for not only sustainable economic growth but also for tackling emergencies. Public debt sustainability has never received much attention than now when most countries urgently need large fiscal space to recover their economies from the COVID-19 pandemic led economic crisis. Fiscal space is the distance between the current level of public debt and the maximum level that is compatible with fiscal solvency (Ghosh et al. 2013). Most governments typically do not worry much as public debt rises in the beginning; eventually, they run into fiscal fatigue and are unable to keep cutting expenditure and raising taxes. Once this happens, debt dynamics can cause explosive consequences.

Maintaining a resilient fiscal system can be challenging in the context of regional and ethnic heterogeneity. Countries that attempted to curtail regional heterogeneity and ensure homogeneous living conditions across regions via a local transfer mechanism have experienced an unprecedented rise in public debt (Fischer and Schnabl 2018). To my knowledge, how ethnic heterogeneity impacts fiscal governance has not been yet studied empirically. However, there is controversial literature that explored the role of ethnic diversity in public goods provision (Alesina, Baqir, and Easterly 1999; Gisselquist 2014)[1], economic performance (Alesina and Ferrara 2005), underground economic activity (Berdiev, Goel, and Saunoris 2020), and social capital and crimes (Sturgis et al. 2011)[2]. In this paper, I study the effect of ethnic diversity on fiscal disciplines, namely on public revenue, expenditure, and debt in the U.S.

Most advanced economies around the world including the U.S. are facing tremendous pressure to maintain debt sustainability, which is the result of the inability to gain control over growing debt (Todorović and Bogdanović 2011). Traditionally, the rising public debt dynamics have been associated with operating war times, fluctuation in the business cycle, and expected inflation on nominal debt growth. Barro's (1979) tax-smoothing theory justifies these dynamics. Azzimonti et al. (2014) proposed a multi-country model with incomplete markets and show that governments may choose higher levels of debt when financial markets become internationally integrated. They show that public debt increases with the volatility of uninsurable income. However, such traditional macro-economic models are often not complete enough to explain rising public debt-driven fiscal indiscipline. Moreover, when we observe that the rising public debt that started a few decades early, it is difficult to comprehend this trend with only tax-smoothing and globalization theories since this period has been characterized by relatively peaceful times and less macroeconomic instability. In this paper, I argue that along with these economic reasons a non-

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[1] The evidence that suggests ethnic heterogeneity undermines the provisions of public goods cannot be considered as causal as they never took their empirical approach to a level that can produce convincing proofs. Alternatively, there are works that disprove some of this evidence. For example, Gisselquist (2014) revisited one of the most cited works of Alesina et al. (1999) on ethnic diversity and public goods provisions. He used exactly the same data and he found that their results do not hold after addressing omitted variable biases (Gisselquist 2014). Similarly, Wimmer (2016) found that the relationship between public goods provisions and ethnic fractionalization is spurious and does not hold when taking contemporary state capacity into consideration.

[2] See the work of Alesina and Ferrara (2005) for a review of the related literature.

economic factor – the ethnic heterogeneity - can explain part of the problem which has been ignored in the literature.

The next section discusses why ethnic heterogeneity should matter for fiscal sustainability. Section 3 reports methods, data, and descriptive statistics. Section 4 presents the results and section 5 concludes the paper.

2. Why ethnic heterogeneity should matter for fiscal disciplines?

Why ethnic diversity may carry a lousy consequence on fiscal governance is based on some micro-foundations. Figure 1 shows the direction of the effect of ethnic diversity on fiscal components: low public revenue and high spending, and that eventually leads to higher public debt. *On public revenue*: heterogeneous societies contribute less to public income as they have poor tax morale and tax collection in such a society can be an expensive task (Xin Li 2010). The intergroup bias is the key mechanism between tax payment and ethnic heterogeneity. People contribute to tax revenue to help other people who share similar cultural values. Cultural values often contrast across ethnic identities. When a country becomes more fragmented and recipients of public programs are mostly from other ethnic groups, people may oppose tax contributions that may benefit people who contrast with their values. Therefore, rising ethnic diversity can erode mutual obligation, adversely affect people's tax morality, and thus, can an increase in tax evasion. For example, both Alesina et al. (2003) and La Porta et al. (1999) used cross-national country-level data to examine determinants of levels of tax compliance and found that ethnic diversity hurts tax compliance.[3]

The adverse impact of ethnic heterogeneity on tax morale can also be attributed to intergroup discrimination. People favor policies that offer beneficial treatment to their own ethnic groups and withdraw support for other groups. For example, Shayo (2009) argued that individuals present higher positive utility to the wellbeing of members of their community but the negative utility to members of other communities. Other literature suggests that conditional cooperation is an important factor to determine tax morale (Frey and Torgler 2007; Hofmann, Hoelzl, and Kirchler 2008). Several psychological and experimental studies show that conditional cooperation is stronger within social groups than across the groups, which they named intergroup bias (Tajfel et al. 1971; Charness, Rigotti, and Rustichini 2007). Consequently, ethnically fragmented societies are not willing to fund programs when they are far from their preferred types and that are consumed more by different ethnic groups (Alesina, Baqir, and Easterly 1999). People often change the tax codes to change the purposes for which taxes are utilized through various means. The Prince George's County in Maryland state passed a law in 1978 to impose a ceiling on the tax for school financing in response to an influx of a large Black community that had made the county more ethnically heterogeneous (Alesina, Baqir, and Easterly 1999, 1244).

Public programs can sometimes target a particular group, people in the ethnic majority are more likely to receive the benefits from such programs than people in the ethnic minority. Since the preference of the majority group more likely to determine the outcome while their preferences

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[3] Note that the estimates from both of these papers are not robust and they are sensitive to the empirical specifications.

over public spending can be different from minority groups, as a result, the minority groups would experience lower tax morale (Xin Li 2010). Moreover, in most societies, minority groups are less politically and economically advantaged than the majority groups. So, the minority groups may develop perceptions that they have been treated unfairly and this can cause mistrust of the political system and the government. Evidence shows that the perception of unfairness can lead to low tax morale as they rationalize tax cheating as a device to restore social equity (Spicer and Becker 1980; Hofmann, Hoelzl, and Kirchler 2008; Alesina and Angeletos 2005). Therefore, a heterogeneous society collectively contributes less to public revenue and shifts more resources for private consumptions.

Figure 1: Impact of ethnic diversity on public spending, revenue, and debt
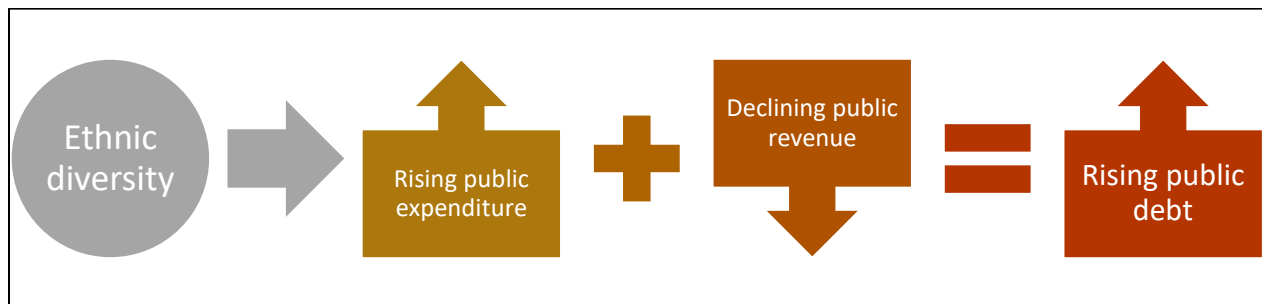
On public expenditure, on the other hand, an ethnically diverse society spends more on overall public spending than its revenue. However, the relationship between ethnic heterogeneity and public spending is ambiguous in theories. Public expenditure can be on excludable goods as well as on non-excludable goods. Excludable public goods expenditure is usually the directed expenditure to certain groups. For example, targeted transfers, or public employment used for patronage purposes. Ethnically diverse societies develop more advocacy groups to promote their specific agenda, such as language and cultural programs, which are more costly than running unified programs for homogeneous people. In ethnically diverse societies, Interest group politics, increased lobbying, collective actions, and coordination problems may lead to an increase in the group targeted spending and patronage spending via logrolling (Alesina, Baqir, and Easterly 1999).

Alternative theories suggest that an ethnically heterogeneous society opposes redistribution expense and non-excludable public goods expenditure (Alesina, Baqir, and Easterly 1999; Dahlberg, Edmark, and Lundqvist 2012). An increase in group polarization and interest group politics would lead to a larger increase in excludable public goods, which is almost pure patronage, relative to the increase in non-excludable public goods. Non-excludable public goods may decrease in level if the public good element (non-excludability) in it predominates. In other words, ethnic polarization would lead to an increase in patronage or excludable goods consumption while it will decrease the pure public non-excludable goods consumption. This implies that the impact of ethnic heterogeneity on total public spending is not clear because of the opposite effect of pressure for more group-specific spending programs, and fewer non-excludable public goods[4].

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[4] The literature that documented relationships between racial heterogeneity and spending on public goods provisions at the city, county, and metropolitan level, have failed to explain why the own group biases exist

Ethnic diversity may or may not show any statistically significant impact if the patronage expenses counterbalance the depletion of public goods spending.

On public debt, as a result, higher public spending on excludable goods and lower tax contribution can cause increasing public debt for heterogeneous societies. Ethnic groups are more interested in resolving their own and immediate problems and less interested in common and long-term problems such as public debt. So, they collectively become careless and tolerate rising high public debt. Most pressure groups in any economy care about the budgets that directly benefit them such as minority rights groups, but most societies do not have any pressure groups that advocate for fiscal sustainability.

3. Methods and data

We created an ethnic fractionalization index (1) to represent ethnic diversity, which is identical to the measures used by Alesina et al. (1999):

$$Ethnic\_fractionalization = \{1 - \sum_{s=i}^{s}(Race_i)^2\} \dots\dots\dots\dots (1)$$

Where $Race_i$ denotes the share of the population self-identified as of race i and i = (White, Black, Hispanic, Asian, American Indian/Alaska Native, Native Hawaiian/other Pacific Islander, and two/more races). Ethnic_fractionalization measures the probability that two randomly drawn people from a state belong to different ethnic groups. Note that there are several other measures of diversity such as cultural fractionalization that uses the structural distance between languages as a proxy for cultural distance (Fearon 2003), segregation index (religion/language) (Alesina and Zhuravskaya 2011), and ethnic inequality to capture the income inequality across ethnic groups (Alesina, Michalopoulos, and Papaioannou 2016). However, we use the ethnic fractionalization index, the most commonly used one, as it is more appropriate for our research question in the U.S. context. Moreover, they are highly correlated. If people identify themselves that they belong to a different ethnic group, they will also more likely to identify that they belong to a different language, religion, and cultural group since they widely vary across ethnic groups. We consider the U.S. states as the appropriate unit of analysis in this paper since states are the central administrative units that allocate budget for expenses and adjust for fiscal issues between local governments within states. Moreover, within states, the population is more heterogeneous than within counties. Therefore, if we do not see any impact of Ethnic_fractionalization at the state-level analysis, it is likely that we will not see any effect at the county-level analysis.

We estimate equation (2) using a two-way FE model for a balanced panel dataset that ranges from 2008 to 2018. While the state FE controls for both the observed and unobserved time-invariant factors that can potentially impact fiscal outcomes such as any legal history, the time FE controls for any unusual time trends like an economic crisis that can influence our outcome variables.

(Alesina, Baqir, and Easterly 1999; Desmet, Ortuño-Ortín, and Wacziarg 2017; Orr 1976; Poterba 1997; Ribar and Wilhelm 1996).

$$Y_{st} = \alpha_0 + \beta_1 Ethnic\_fractionalization_{st} + \gamma_1 X_{st} + \delta_s + \mu_t + \varepsilon_{st} \ldots\ldots\ldots\ldots\ldots (2)$$

Where Y_{st} stands for public debt, revenue, and expenditure per capita (PC) in state s in year t. $Ethnic\_diversity_{st}$ is the measure of ethnic diversity from equation (1). X_{st} is a vector of time-varying characteristics at the state level, including Gross Domestic Product (GDP) PC, population size, demographic factors such as share of children under the age of 18 and adults above 65, percentage of the American citizen, poverty rate, and intergovernmental transfers. To avoid omitted variable biases, we included all these time-varying control variables that are potential confounding factors based on theoretical reasons[5]. δ_s and μ_t are the state and year FEs, respectively.

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Debt PC ($1000)	8.37	14.04	0.19	66.51
Revenue PC ($1000)	14.76	23.37	0.38	141.63
Expenditure PC ($1000)	14.81	22.81	0.44	116.84
Intergovernmental revenue PC ($1000)	4.15	6.40	0.13	35.51
Intergovernmental expense PC ($1000)	3.49	5.82	0.01	29.63
Ethnic fractionalization	**0.43**	**0.16**	**0.09**	**0.76**
Population (million)	6.40	6.99	0.55	39.40
GDP PC ($1000)	50.28	10.06	31.50	81.59
Share of population age 65+	14.26	2.03	7.30	20.20
Share of children age 0 to 18 years	24.83	2.11	20.00	33.20
Share of population are US citizen	97.90	1.22	94.10	99.90
Poverty rate	13.37	3.33	6.40	23.10

Note: Std. Dev.=Standard deviation, Min=Minimum, Max=Maximum. This descriptive statistic does not include the District of Columbia and other U.S. non-state territories like Puerto Rico, Guam, U.S. virgin Islam, and others.

Data for ethnic identity, population demography, citizenship, and poverty rate are from the American Community Survey (ACS). We aggregated them to the state level to match with macro-variables. ACS includes a 1% sample of the US population and allows for precise state-level estimates as well as for longer trend analyses. GDP PC was from the Bureau of Economic Analysis. Government expenditure and revenue-related data came from the National Association of State Budget Officers community. Table 1 reports the descriptive statistics for all variables. The mean value of Ethnic_fractionalization is 0.43, with a minimum of 0.16 and a maximum of 0.76, which indicates there are significant variations in ethnic diversity. A higher value indicates a higher level of ethnic diversity. There are also wide variations across states in terms of their level of public revenue, expenses, and debt PC.

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[5] For example, population size serves as a proxy of state size since there are evidence that free riding is more likely to emerge in large society than small society. Moreover, people living in smaller towns develop a greater sense of community and social ethics (Olson 2009).

4. Results

Table 2 reports the two-way FE estimates for selected model specifications on aggregate fiscal variables: public debt, spending, and revenues PC. The results support our hypothesis that higher ethnic diversity makes a society collectively careless about its fiscal sustainability, as measured in public debt PC. Higher ethnic fractionalization increases public debt PC. The results are mainly driven by lower contributions to public revenues but not necessarily by a higher level of overall public expenditures. We see that this result holds even after controlling for various state-level time-variant factors, including intergovernmental transfers. It shows that more ethnically fragmented states have a higher public debt PC even after adjusting for intergovernmental transfers, which is in line with the hypothesis of Alesina et al. (1999). However, the results from Alesina et al. (1999) were not confirmed in their analysis at the metropolitan area and county level for a cross-sectional estimate. They could not detect the association between ethnic diversity and public debt, possibly because counties and metropolitan areas fall within states, and if they experience higher deficits are likely to be supported by transfers from upper-level governments. Moreover, the population is less heterogeneous in the county and metropolitan areas than in the states.

Our results indicate that going from complete ethnic homogeneity (Ethnic_fractionalization=0) to complete heterogeneity (Ethnic_fractionalization=l) will cause an increase in public debt PC by $25.83 thousand (model 1). This is a large and significant amount of public debt for a single state within the federal system. For example, California, one of the most heterogeneous states with an Ethnic_fractionalization=0.68, has almost 40 million people. By moving to complete ethnic diversity, our results imply that California will have a total of $1,020.29 billion public debt more for being ethnically diverse, keeping everything else constant. Panel A in Figure 2 presents the marginal effect of ethnic diversity on public debt PC, which clearly shows that as the ethnic fractionalization increases the states will accumulate more debt PC.

Model 2 and 3 report estimates on public revenue and expense PC. While the expense PC shows no statistical association, the revenue PC shows a negative and significant statistical association with ethnic fractionalization. The coefficient in model 2 (also Panel B in Figure 2) indicates that as states become more ethnically fragmented the public revenue PC drops by a large margin. By moving from complete ethnic homogeneity to complete heterogeneity, states should experience a decline in public revenue PC by $122.24 thousand (model 2). These results in models 2 and 3 suggest the following summary pattern. Public revenue PC tends to go down with higher ethnic fractionalization, yet public expenses PC does not go down. So, public spending in more ethnically diverse states is likely financed by a combination of public borrowing and intergovernmental transfers, in this case, transfer from other states or the Federal government.

Regarding public expense, remember that the theory was ambiguous about the impact of ethnic heterogeneity. In other words, ethnic diversity can increase expenses on excludable goods and shrink expense on non-excludable goods. If expenses on one of these two types overwhelm the expenses on the other type, we may not see any significant trends. This result shows that the impact of ethnic fractionalization on increased patronage expenses has been counterbalanced by lower expenses for pure public goods. Several earlier literature presented evidence on the fact that ethnic diversity can reduce public goods expenditure, but there is no evidence of what can be the impact on expenditure on excludable goods (Alesina, Baqir, and Easterly 1999; Habyarimana et al. 2007).

Although our evidence does not intend to verify this argument, this evidence is in line with earlier findings.

Alternative interpretation can be that most states have a balanced budget requirement (BBR), which is a defining feature of state and local government budgeting and finance. The empirical evidence on the BBR shows that it is an effective tool for limiting public expenditure but not necessarily increases state revenue to reduce the fiscal deficits through higher tax rates (Poterba 1995; Smith and Hou 2013; Lewis 1994; Rueben, Randall, and Boddupalli 2018). This is because, in most cases, expenditure cuts require a simple majority vote in the state legislature, on the other hand, an increase in state tax rates requires a supermajority vote, which is often difficult to achieve. Moreover, expenditure limits dictate that spending cannot grow by more than a certain amount each fiscal year, based on changes in either inflation or demographic growth (Rueben, Randall, and Boddupalli 2018). States with strong BBR bridged less of their fiscal gap with revenue increases in more recent years than in earlier years, leaning more on spending cuts or reserve funds[6]. It should be noted that there is no reason to believe that the BBRs make the states fiscally sustainable entirely. State policymakers can circumvent their BBRs under different circumstances. In other words, the BBR rules typically apply to a narrowly defined share of total state spending, and government fund accounting practices can provide opportunities to shift obligations between funds or years. For example, BBRs are applied on a cash rather than an accrual basis, so the states can push a payroll or aid payment from the last month of the current fiscal year into the first month of the next year. This allows states to meet the legal requirement to balance their budgets while leaving actual resources and obligations out of balance (Center 2018). That is why we do not see any significant impact on the expenditure but a negative impact on the revenue. Note that these legal requirements are in place for a long-time, and there are no significant changes in the rules within the states during the study period of this paper, so I could not estimate the impact of BBR along with the state FE since it takes care of this time-invariant legal factors.

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[6] Note that the BBRs vary widely across states in terms of its legal strengths. The Tax Policy Center (2018) classified states into three: none, weak, and strong. While 13 states fall into none and weak groups, others are strong. For example, to be a strong BBR state, it must have one or more of the following three criteria: a) requires the governor to sign a balanced budget; b) prohibits the state from carrying over a deficit into the following year; or c) requires a legislature to pass a balanced budget.

Figure 2: Marginal effect of ethnic fractionalization
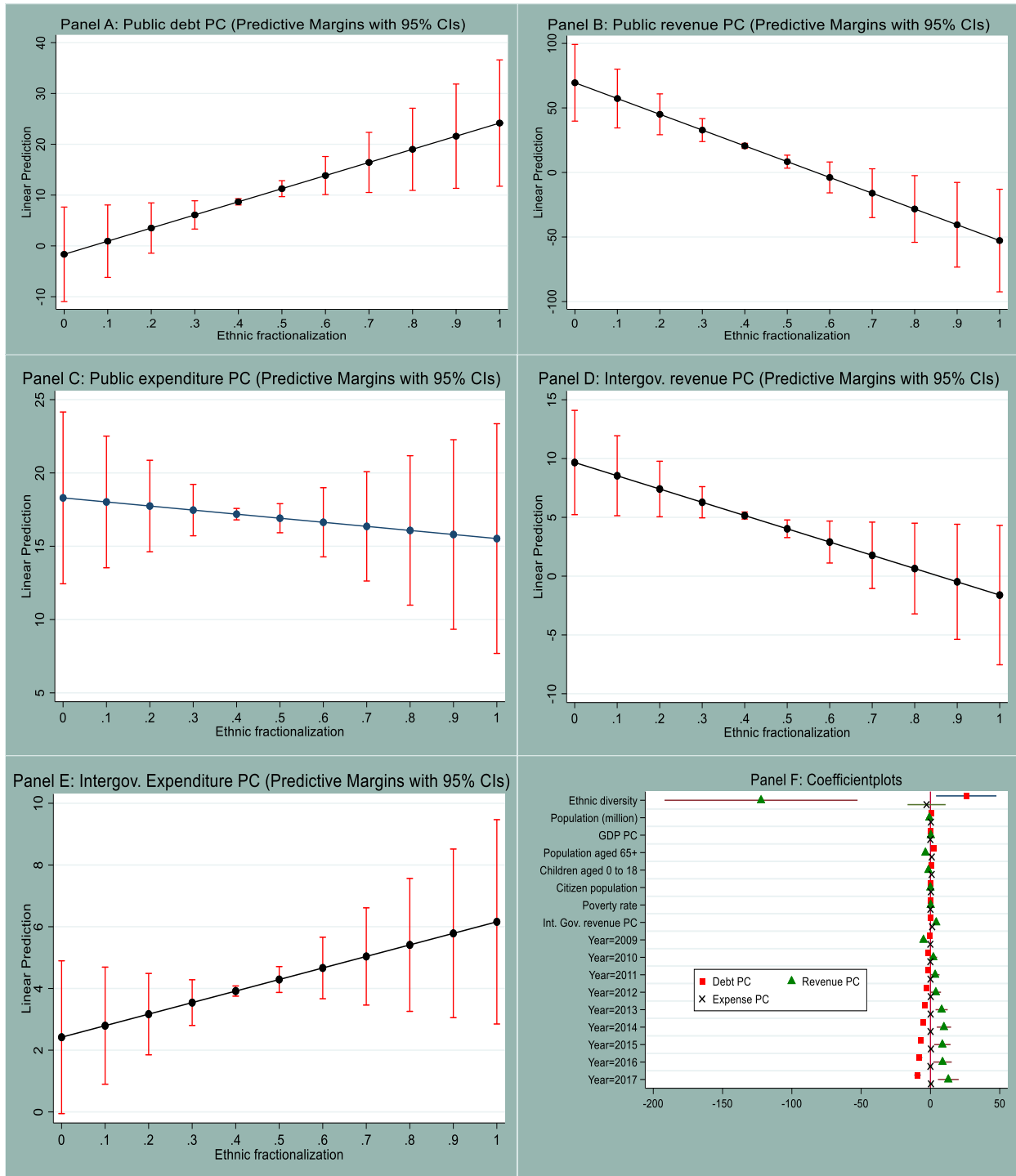
Note: Panel A to E reports the marginal effect of ethnic fractionalization with a 95% confidence interval on public debt, revenue, expenditure, inter-governmental revenue, and intergovernmental expenditure PC, respectively. Panels A to E are based on regression specification in model 1 to 5 in Table 2. Panel F reports the coefficient plot of regression on public debt, revenue, and expenditure PC using the regression specification in model 1 to 3 of Table 2. The data sources are the same as described in section 3.

Table 2: Two-way FE estimate on fiscal measures

	Model 1	Model 2	Model 3	Model 4	Model 5
	Debt PC ($1000)	Revenue PC ($1000)	Expenditure PC ($1000)	Intergovernmental revenue PC ($1000)	Intergovernmental expenditure PC ($1000)
Ethnic fractionalization	**25.830****	**-122.243*****	**-2.776**	**-11.275****	**3.739**
	(11.087)	(35.437)	(6.986)	(5.287)	(2.952)
Population size (1000)	0.573*	-0.785	0.370*	-0.045	-0.039
	(0.318)	(1.015)	(0.200)	(0.152)	(0.085)
GDP PC ($1000)	-0.005	0.284**	-0.071***	0.035**	-0.057***
	(0.035)	(0.110)	(0.022)	(0.016)	(0.009)
Share of population age 65+	2.680***	-3.606***	0.964***	-0.093	0.530***
	(0.269)	(0.860)	(0.170)	(0.129)	(0.072)
Share of children age 0 to 18 years	0.622**	-1.437*	0.907***	-0.248**	0.080
	(0.263)	(0.841)	(0.166)	(0.126)	(0.070)
Share of population are US citizen	-0.097	-0.022	0.372***	-0.138	0.066
	(0.182)	(0.582)	(0.115)	(0.087)	(0.048)
Poverty rate	0.061	0.212	-0.001	-0.007	-0.005
	(0.061)	(0.196)	(0.039)	(0.029)	(0.016)
Intergovernmental revenue PC	0.344***	4.185***	1.270***		0.140***
	(0.100)	(0.320)	(0.063)		(0.027)
Year FE	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Constant	-47.611**	120.210*	-59.073***	28.230***	-10.273*
	(21.103)	(67.455)	(13.297)	(10.026)	(5.619)
Within R^2	0.25	0.49	0.65	0.27	0.33
Number of observations	500	500	500	500	500

Note: Clustered standard errors are in parenthesis. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. This table shows the results of the regression equation (2). All the independent and dependent variables are as measured as shown in descriptive statistics in Table 1. We conducted several robustness tests after including and excluding several variables and see find that these results hold. We also run the same analysis after including/excluding the District of Columbia and the results remain unchanged. I also recalculated the ethnic fractionalization index after dropping two/more race categories over the concern of two/more race people fall into multiple races, minimize inter-racial differences. I run the same analysis and it produced identical results.

To verify if ethnically diversified states finance their public expenses from intergovernmental revenues, we run separate regressions taking inter-governmental revenue and expense PC as dependent variables, reported in models 4 and 5 in Table 2. However, we do not see that an ethnically fragmented society receives higher intergovernmental transfers. Instead, the results in model 4 as well as in Panel D in Figure 2 show that with a higher ethnic fragmentation index, the intergovernmental revenue PC drops by $11.26 thousand. On the other hand, the coefficient of ethnic fractionalization on inter-governmental expenditures PC is positive but is not statistically significant as reported in model 5. Therefore, it is likely that public expenses are entirely financed by rising public debt. In this case, our results contrast with Alesina et al. (1999), who placed an unverified argument that more ethnically fragmented localities receive more transfers from higher levels of government. The higher-level governments try to compensate ethnically fragmented

communities precisely because of the difficulties they encounter in directing local resources to the supply of public goods and pressure groups' lobby. However, our results suggest the opposite: states also experience declines in intergovernmental revenue for becoming more ethnically heterogeneous. This makes the fiscal balance worse for an ethnically fragmented state.

An alternative interpretation of this finding is that ethnic diversity reduces revenues thereby exacerbating public debt can partially be explained by individuals moving underground. For instance, if spending is used to produce public goods and services that disproportionately benefit certain groups over others this may reduce tax morale and encourage individuals to produce underground (Berdiev, Goel, and Saunoris 2020). Since it is difficult to reliably measure the size of the shadow economy, we suggest future research should verify if this is true.

Panel F in Figure 2 shows the coefficient plots of models 1 to 3 in Table 2, which shows that the ethnic diversity index has a large and significant negative impact on public revenue PC and a positive impact on public debt PC. It shows that the year FE has captured the recent improvement as the U.S. has been recovering from the recent global financial crisis since 2008, which is the reference year in the model when President Bush signed the Economic Stimulus Act of 2008. The reported coefficient of year dummies shows that most recent years are doing better compared to the year 2008 in collecting public revenue PC and minimizing debt PC. The public expenditure PC remains mostly not impacted largely for all year, probably for the same reason mentioned earlier – patronage expenses have been compensated by lower pure public goods expenses.

5. Conclusion

This paper provides evidence that ethnic heterogeneity hurts fiscal sustainability by not limiting public debt. The main mechanism of ethnic heterogeneity to rise public debt is lower contributions to state tax revenue as well as limited inter-governmental revenue. While the state's legal requirements like BBR dictate public expenditures, the impact of ethnic heterogeneity on expenditure is ambiguous. Therefore, more ethnically diverse states finance their public expenses by allowing the public debt to rise. This pattern is broadly consistent with political economy theories mentioned earlier that heterogeneous societies are collectively careless about fiscal disciplines. Continuous rise in public debt generates bigger challenges over time and, eventually, creates fiscal fatigue. Contrary to the findings of earlier literature on cross-section data, our results are robust and based on a balanced panel dataset that allows us to control for both year and state FE. However, this analysis is still at a preliminary level that requires further testing in different contexts like large country-level panel data and experimental designs. Moreover, we assumed that ethnic diversity is exogenous, but it is conceivable that the mix of tax and expenditure alter ethnic diversity, if, for example, spending was directed towards programs that benefit specific racial groups. Future research should attempt to find an appropriate instrument to account for this simultaneity.

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